

# Financial openness, financial fragility and policies for economic stability

A comparative analysis across  
regions of the developing world

Esteban Pérez Caldentey

Editor



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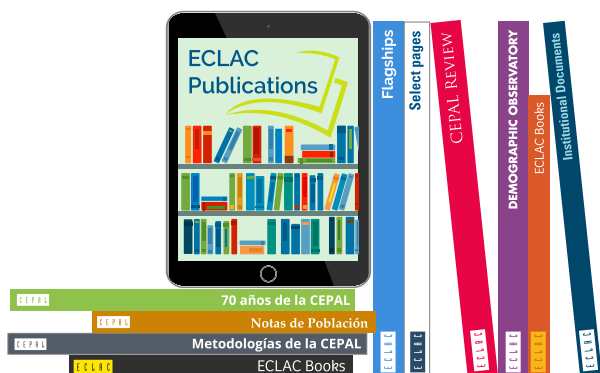


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RESPONSE



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This document was prepared under the coordination of Esteban Pérez Caldentey, Chief of the Financing for Development Unit in the Economic Development Division of the Economic Commission for Latin America and the Caribbean (ECLAC), in collaboration with Martín Abeles, Chief of the ECLAC office in Argentina.

The chapters of the book were prepared by Martín Abeles, Pablo Bortz, Alberto Botta, Chandru P. Chandrasekhar, Jayati Ghosh, Zebulun Kreiter, Terry McKinley, Juan Carlos Moreno Brid, Lorenzo Nalín, Esteban Pérez Caldentey, Gabriel Porcile Meireles, Leonardo Rojas Rodríguez, Matías Vernengo and Giuliano Yajima. Yilmaz Akyuz provided a note on chapter V.

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## Presentation

The coronavirus disease (COVID-19) pandemic has produced one of the worst economic and social crises on record. In 2020, 90% of the world's economies experienced a per capita GDP contraction far in excess of the historic 62% record reached during the global financial crisis of 2008–2009.<sup>1</sup> The pandemic has had devastating effects on production structures and supply chains, employment, poverty, equality and livelihoods, strongly affecting developing countries.

COVID-19 exacerbated the existing asymmetry between the response capacities of developed and developing economies. Despite considerable heterogeneity in the fiscal situation and debt vulnerability across developing regions, government reactions to the emergency, coupled with a drastic fall in tax revenues, have significantly raised debt burdens that had already been increasing for all developing regions since 2007.

Rising debt levels have significantly constrained the fiscal space of developing country governments, as sovereign credit quality has deteriorated for many economies. As things stand, 30% of emerging market and developing economies countries and 60% of low-income nations are in or near debt distress. This will severely hamper their capacity to meet the Sustainable Development Goals (SDGs), which would cost an estimated US\$ 4 trillion.

The war in Ukraine has added an additional layer of complexity to this already complex situation, generating the “largest cost-of-living crisis in the twenty-first century”.<sup>2</sup> Energy and food prices are at historical

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<sup>1</sup> World Bank, *World Development Report 2022: Finance for an Equitable Recovery*, Washington D.C., 2022.

<sup>2</sup> United Nations, “Global impact of the war in Ukraine: billions of people face the greatest cost-of-living crisis in a generation”, *Brief*, No. 2, New York, 2022, p. 5.

highs, deepening global food insecurity, while maritime transport costs have more than tripled their pre-pandemic average.<sup>3</sup>

The recent surge in inflation is a global phenomenon affecting both developed and developing economies. Inflation is seen as a major stumbling block to a post-pandemic sustainable recovery. Irrespective of the origins of inflation, the effort to reduce it has taken the form of restrictive central bank policies. These have been instrumented through hikes to short-term interest rates—which have been particularly steep in developing countries—and, more importantly, quantitative tightening, whose ultimate effects on domestic and international monetary markets are uncertain. Thus far, the drawdown of emerging market assets from January 2021 to the present has exceeded that seen during the global financial crisis.

The causes, intensity and persistence of inflation, as well as the adequate policy response, have taken centre stage in the economic and political debates in many countries. In some countries, the rise in inflation has occurred simultaneously with a decrease in output, while in others monetary tightening may cause a recession and thus raise the possibility of stagflation.

This context has brought to the fore, once again, the need for developing countries to have the means at their disposal to enlarge their policy autonomy to achieve manageable debt levels and promote the full employment of their resources. Besides improving and modernizing their productive structures, developing economies should have the tools to reduce their exposure and vulnerability to external sector fluctuations. To paraphrase an image of Keynes, "...in the long run there is no 'flat ocean,' neither before nor after and not even during any 'temporary' storm".<sup>4</sup>

This document is a compilation of research studies undertaken by the Economic Commission for Latin America and the Caribbean (ECLAC) for the project "Response and Recovery: Mobilizing financial resources for development in the time of COVID-19", which was coordinated by the Debt and Development Finance Branch of the United Nations Conference on Trade and Development (UNCTAD) and jointly implemented with ECLAC, the Economic Commission for Africa (ECA) and the Economic Commission for East Asia and the Pacific (ESCAP).

The publication has three objectives. The first is to present a comparative analysis of 19 country case experiences in Africa, Asia and Latin America with the use of capital controls. Capital controls refer to different types of government intervention in the financial account of a country's balance of payments with the objective of restricting either

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<sup>3</sup> Ibid.

<sup>4</sup> L. Pasinetti, *Keynes and the Cambridge Keynesians: A 'Revolution in Economics' to be Accomplished*, New York, Cambridge University Press, 2007, p. 231.

financial outflows or inflows, or both. These representative case studies serve to illustrate the objectives and modalities guiding capital flow regulation. They provide a basis on which to draw important policy lessons and guidelines regarding the feasibility and effectiveness of capital controls for sustained growth.

Following a similar logic and using the same countries, a second objective is to provide a critical assessment of macroprudential regulation in theory and practice. Macroprudential regulation is broadly defined as a set of policies aimed at reducing systemic risk originating in systemic externalities, either over time or across institutions and markets. It is shown that macroprudential regulation can be an elusive concept and of limited applicability. The critique covers both mainstream and heterodox approaches to macroprudential regulation.

The third objective is to describe and make explicit the relationships and transmission mechanisms linking the external sector to the domestic economy.

We hope that the analysis and discussions will contribute to a much-needed debate on how to expand the policy space of developing countries at a crucial juncture in their history.



# Introduction

*Esteban Pérez Caldentey*

## **A. Motivation and purpose of: *Financial openness, financial fragility and policies for economic stability. A comparative analysis across regions of the developing world***

This book is a compilation of research studies undertaken for the project “Response and Recovery: Mobilising financial resources for development in the time of COVID-19”, which is co-ordinated by the Debt and Development Finance Branch of UNCTAD and jointly implemented with Economic Commission for Africa (ECA), The Economic Commission for Latin America and the Caribbean (ECLAC), and The Economic Commission for East Asia and the Pacific (ESCAP). This project is one of the five UN Development Account short-term projects launched in May 2020 in response to the COVID-19 crisis. The project aims to enable low-income and middle-income developing countries (LICs and MICs) from Africa, Asia-Pacific, and Latin America and the Caribbean to diagnose their macro-financial, fiscal, external financial and debt fragilities in the global context and design appropriate and innovative policy responses to the COVID-19 pandemic leading toward recoveries aligned with the achievement of the Sustainable Development Goals (SDGs).

The different chapters of the book provide, on the one hand, a regional comparative perspective of the challenges posed to developing economies, which are balance-of-payments constrained, by a development strategy based to a great extent on increased external financial openness and greater exchange rate flexibility. These challenges have been made more visible by the impact of COVID-19 and the recent rise in inflation across the world accompanied by decelerating growth.

On the other hand, the chapters examine in detail the policy responses of different countries in Africa, Asia, and Latin America to a context of greater external volatility and potential for financial fragility. The analysis of the policy responses focuses on the use of capital controls and macroprudential regulatory tools to reduce external vulnerabilities and mitigate the impact of the financial cycle. The chapter also focus on the lessons learned that are common to the different country and regions included in this study.

## **B. The external financial restriction to growth**

The growth of developing economies is constrained by the performance of the external sector. The notion of growth under an external constraint places the organization of international economic relations at the heart of the analysis. The economic performance of developing countries is largely determined by the international financial architecture. The current financial and monetary system is anchored in the United States dollar as the reserve currency, and countries which do not issue the international reserve currency need to acquire and have access to this currency that they cannot issue (for example through an international reserves accumulation policy) in order to be able to import (and develop) and conduct international financial transactions.

With a 15% share of global GDP, the United States dollar accounts for a large share of the issuance of securities, global official international reserves, and the external debt of emerging economies are denominated in dollars. The global financial crisis (2008-2009) and the COVID-19 crisis have reinforced the dollar's hegemony as the main international reserve currency. Worldwide, around 80% of international transactions are conducted in dollars.<sup>1</sup> Also half of international trade is invoiced in dollars, representing more than five and three times the United States' share of total world imports and exports (Carney, 2019).

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<sup>1</sup> Calculations based on BIS (2022b) show that, in 2020, in emerging markets and developing economies, dollar-denominated debt accounted for 80% of total issuance in emerging markets and developing economies: 76% in developing countries in Europe; 78% in developing countries in Asia and the Pacific; 84% in developing countries in Africa and the Middle East; and 90% in developing countries in Latin America and the Caribbean.

This situation creates mechanisms that reinforce the dollar's dominance globally. The importance of the dollar in international transactions generates a growing demand for dollar-denominated assets that, coupled with its increased liquidity and security, reduces its return by generating a greater incentive for holding and demanding dollars, and as a corollary to dollar denominated debt. In turn, the need to cover foreign currency gaps and mismatches, implies an increase in dollar transactions.

Generally, the existence of currency hierarchy has been analyzed from the perspective of the role that the United States' Federal Reserve has in dictating global monetary policy without the need for explicit coordination with other central banks and to impose the costs of its policies on other countries, and in particular on emerging and developing economies.

The impact of the United States' monetary policy is particularly pronounced when a significant proportion of debt is denominated in United States dollars, as is the case of some governments and the non-financial corporate sector in developing economies. Changes in monetary policy (when contractionary) drive up debt servicing costs, principal payments, and the cost of potential debt refinancing.

The United States monetary policy transmission channel has been reinforced due to the growing importance of the international capital (bond) market that represents around 56% of global liquidity. In fact, the bond market provides a stronger transmission channel of United States monetary policy than commercial bank's cross-border loans.

Changes in monetary policy primarily affect debtors (borrowers) and bondholders are affected by the inverse relationship between a bond's price and the interest rate. The yield on a bond is equal to the dividend received plus the change in price ( $Yield = Interest + (P_{t1} - P_{t2})$ ).<sup>2</sup> For a given interest rate (taking into account, as noted above, that the bulk of international bond issues are fixed interest), a decrease in a bond's price between two points in time ( $t_1$  and  $t_2$ ) reduces its yield and results in a capital loss for bondholders. Under certain circumstances, this may reduce the incentive to retain bonds as assets and thus limit the potential to use the bond market as a borrowing and financing mechanism.

Global econometric information for a set of 49 countries for the period 1995–2018 shows that, as is to be expected, the federal funds rate has an inverse relationship with credit flows and debt securities. However, the impact tends to be greater when considering only debt securities. Other variables that can hamper credit flows are the level of volatility, as measured by the Chicago Board Options Exchange (CBOE) Volatility Index (VIX), and sovereign risk (EMBI). More specifically, a 25-basis-point

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<sup>2</sup>  $P_{t1}$  and  $P_{t2}$  refer to the price of a bonds at times  $t_1$  and  $t_2$ .

rise in the rate results in an 80-basis-point reduction in credit flows to banking institutions. Furthermore, the impact is more significant for debt securities, which fall by 100 and 66 basis points in case of financial and non-financial corporations, respectively (ECLAC, 2019).

Besides the direct impact that United States monetary policy can have on developing economies, another interrelated aspect of currency hierarchy refers to the ability of developing countries to pursue expansionary full employment policies when their ability to pursue this type of policies is to a great extent permanently delimited and restricted by external conditions.

It is in this sense that the growth efforts of these economies are confronted with an external constraint. More specifically, countries face an external constraint when their performance (current and expected) in external markets and the response of the financial markets to this (current and expected) performance delimit and restrict their scope for conducting domestic policies, including fiscal, exchange-rate and monetary policy.<sup>3</sup>

Traditionally the external constraint is approached from the real sector side, that is by identifying the rate of growth of an economy that is compatible with current account equilibrium. This presupposes that the behavior of the financial accounts of the balance-of-payments is determined by the current account (or that the financial account 'finances' the current account).

The existence of an external constraint implies that an economy is unlikely to be able to maintain a current account deficit for a long period, except in the case of countries that usually receive substantial amounts of foreign direct investment or official assistance flows (McCombie and Thirlwall, 1999). In the long run, countries have to keep their current account (CA) or basic balance (the current account (CA) plus long-term financial flows (FF)) in equilibrium. Maintaining a current account deficit or a 'basic balance deficit' will prove to be unsustainable as a country will either contract absorption or will end in a balance-of-payments/financial crisis. The rate of growth compatible with balance-of-payments equilibrium can be increased only through progressive structural change.

An alternative interpretation of the external constraint emphasizes the determining role of financial rather than real factors and that it may well be the case that the financial external constraint bites before the external constraint (reflected in the current account) does.

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<sup>3</sup> This definition is based on McCombie and Thirlwall (1999, p. 49), according to whom countries face an external constraint when their performance in foreign markets and the response of the financial markets to this performance restrict growth to a rate lower than internal conditions (such as the rate of both recorded and disguised unemployment and the degree of capacity utilization) would warrant. This definition assumes that countries grow at a rate lower than the one compatible with full employment. Consequently, the organization of the global economic system, including its financial architecture, has a restrictive bias and prevents countries subject to external constraints from realizing their growth potential.



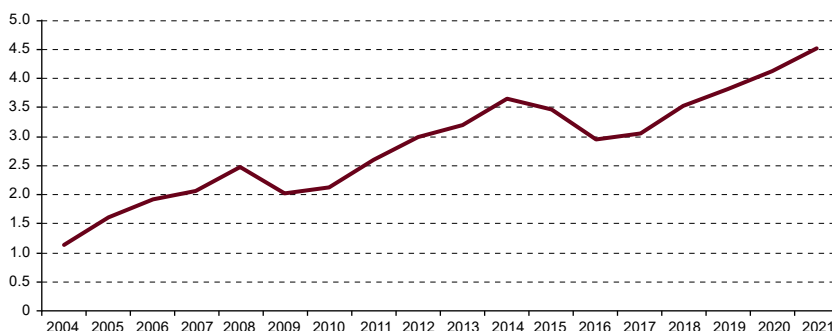
The increasing domestically and external financial openness of developing economies, including those of Latin American and Caribbean economies, jointly with their domestic policies implemented to accommodate this greater financial openness, has made their performance highly dependent on the vagaries of foreign financial flows and especially short-term flows. This has also shaped the type of transmission mechanisms between the financial and the real sector. The combination of these factors can push an economy towards a low growth plateau without the occurrence of financial crises and before the current constraint becomes binding.

### C. The increase in external financing needs and their relation to debt dynamics

The effects of the COVID-19 pandemic and the policies implemented in response to it have increased the liquidity needs of countries. The inevitable rise in international interest rates to combat rising inflation will further exacerbate the demand for increased liquidity.

In the aftermath of the Global Financial Crisis (GFC) (2008-2009) the external financing needs of developing and emerging market economies (LAC) (the sum of the current account balance plus external debt amortization) have expanded significantly. Between 2010 and 2020 these increased from US\$ 5 to 12 trillion dollars (figure 1). The rise in the external financing needs reflects on the one hand, the deterioration of developing countries' current account position between 2010 and 2018 (US\$ 277 and -52 billion dollars respectively).

**Figure 1**  
The evolution of the external financing needs of developing and emerging market economies, 2004–2020  
(US\$ trillion)



**Source:** On the basis of IMF (2022).

**Note:** Financing needs are computed as the sum of the current account balance and private and public debt amortization.

On the other hand, the increase in financing needs captures a more important process of external debt accumulation that has occurred in all developing regions since the end of the GFC. Within the developing world, Latin America and the Caribbean is the most indebted region within the developing world and, also exhibits the highest debt service ratio. Between 2010 and 2021 external debt as percentage of exports of goods and services in the cases of Asia, Latin America and the Caribbean, Middle East and Central Asia and Sub-Saharan Africa increased from 60% to 83%, 132% to 182.6%, 75% to 137.2% and from 75% to 171.1% respectively.<sup>4</sup> Rising debt obligations may jeopardize the recovery and countries' capacity to build forward better (table 1).

**Table 1**  
**External debt indicators for emerging markets and developing economies**  
**2019–2020**

Region	External debt as percentage of exports of goods and services			External debt as percentage of GDP			External debt service as percentage of exports of goods and services		
	2019	2020	2021	2019	2020	2021	2019	2020	2021
Emerging market and developing economies	116.6	137.0	111.8	30.5	32.6	30.7	42.1	38.7	35.4
Emerging and developing Asia	86.0	97.5	83.2	18.8	19.7	19.3	47.2	50.2	43.6
Emerging and developing Europe	120.9	142.2	110.9	46.8	52.3	51.9	42.5	49.2	38.3
Latin America and the Caribbean	192.6	224.7	182.6	47.9	55.5	51.8	50.9	59.5	41.7
Middle East and Central Asia	125.0	177.7	137.2	46.8	51.8	42.4	22.2	30.0	20.6
Sub-Saharan Africa	172.5	215.3	171.1	42.6	43.9	41.1	28.5	32.8	29.5

Source: IMF (2022).

## D. The composition of external debt

The rise in debt was driven by capital markets and to a lesser extent by bank's cross-border loans and deposits. The international bond market has become a major source of global liquidity and cross-border finance, outpacing bank-intermediated cross-border finance. Available evidence on outstanding debt security issued by non-bank borrowers expanded from US\$ 1.5 to 9.8 trillion between the fourth quarter of 2000 and 2021. This amount represented 56% of total liquidity at the global level. Developed economies are the main providers and beneficiaries of debt flows. Still, emerging market economies borrowing through the international bond market account for roughly a quarter of the total and bonds to 48% of global liquidity channeled to this group of economies (table 2).

<sup>4</sup> IMF (2022).

**Table 2**  
**Total credit to non-bank borrowers amounts outstanding**  
**2000–2021**  
*(US\$ trillion)*

World	2000	2007	2019	2020	2021
International debt securities (bonds)	1.5	3.9	4.6	8.6	9.8
Cross border loans	1.6	4.3	4.9	7.5	7.9
Bonds/liquidity (percentage)	47%	48%	48%	54%	56%
<b>Emerging markets</b>					
International debt securities (bonds)	0.4	0.7	0.8	2.2	2.7
Cross border loans	0.6	1.2	1.6	2.5	2.5
Bonds/liquidity (percentage)	42%	36%	34%	47%	48%

**Source:** Based on Bank for International Settlements BIS (2022a).

**Note:** The data includes bond issues and cross-border loans in US dollars, euros, and yens. All the figures were converted to United States dollars using the exchange rate for the relevant quarter. Liquidity refers to the sum of bonds and cross-border loans. The data refers to the fourth quarter of each year.

By comparison with the 1990's, where international capital markets served to finance the debt of the general government, in the period 2010-2021, the use of the international bond market has not been limited to the government. The non-financial corporate sector, besides the financial sector has also made extensive use of the bond market during this period (table 3 below).

**Table 3**  
**Outstanding stock of debt security issues by emerging market economies**  
**and selected developing regions 2018.4–2021.4. Quarterly data**  
*(US\$ billions of dollars)*

Region/sector	2018	2019	2020	2022q1	
Emerging market economies	Total	2 487	2 686	2 970	3 147
	General government	1 110	1 220	1 420	1 490
	Financial sector	1 219	1 291	1 346	1 418
	Non-financial corporate sector	646	706	756	807
Developing Africa and Middle East	Total	448	536	647	733
	General government	257	332	418	464
	Financial sector	197	209	221	249
	Non-financial corporate sector	83	91	111	131
Developing Asia and Pacific	Total	769	832	914	998
	General government	181	196	220	237
	Financial sector	606	658	707	758
	Non-financial corporate sector	198	224	248	234
Developing Latin America and the Caribbean	Total	825	870	905	941
	General government	392	412	453	487
	Financial sector	211	231	263	223
	Non-financial corporate sector	313	330	336	332

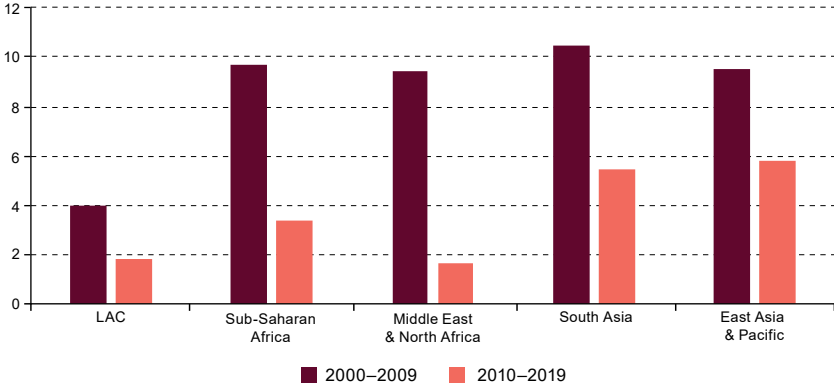
**Source:** BIS (2022b).

**Note:** The sum of the different components do not add to the total reported since public financial institutions were not included in table 3.

### E. Debt and investment

The extensive use of debt has not been accompanied by an increase in investment. The evidence points to the contrary: the coexistence between increasing debt and a decline in the rate of growth of the gross formation of fixed capital for all developing regions (see figure 2).

**Figure 2**  
**Rate of growth of gross fixed capital formation for developing regions**  
**2000–2009 and 2010–2019**



**Source:** Based on World Bank Development Indicators (2021).

This finding may indicate that, in line with recent research for other emerging market economies, indebted sector and in particular the non-financial corporate sector does not use the international bond market to expand productive capacity or for improvements in productivity, but rather for financial purposes. More precisely, non-financial corporates may have acted as financial intermediaries by capturing international liquidity and investing a growing amount in financial assets (see Advjiev 2014). The growing capital flows from non-financial corporates into emerging countries’ financial assets have given rise to concerns regarding the potential macroeconomic implications of such trend regarding financial fragility and instability in countries receiving such types of investments.

### F. The increased dependency on short-term flows

The counterpart to the rise in indebtedness is the increased dependence on short-term flows. In the case of Latin America and the Caribbean the analysis of the financial account of the balance of payments

for the period 1980-2020 shows that Latin America and the Caribbean relied significantly on short-term capital flows in the 1990s decade, and in the wake of the Global Financial Crisis (2008-2009). In the 1990's decade, short-term flows reached US\$ 25.9 billion dollars growing to US\$ 32.1 billion for 2001-2009, and to US\$ 107.4 billion for the period 2010-2020. A comparison between 2003-2009 and 2010-2019 indicates that the share of short-term inflows in total inflows rose from 37.3% to 52.1% of the total.

During the pandemic, the behavior of private capital markets has strengthened the growing dependence of emerging market economies on short-term financing flows. The available evidence for Latin America and the Caribbean shows that portfolio gross inflows increased by 30% between 2019 and 2020 (from US\$ 19.7 billion to US\$ 27.2 billion). For their part, other investment gross inflows rose by roughly 50% for the same period (US\$ 7.5 billion and US\$13.9 billion for 2019 and 2020, respectively). At the same time, foreign direct investment (FDI) inflows declined by 39% (US\$156.3 billion and US\$95.8 billion for the same period).

In addition, it must be considered that FDI inflows include equity capital, re-invested earnings, and intercompany loans, which can be regarded as a short-term flow. FDI is founded upon a long-lasting strategic interest between a firm residing in a host country and a direct investor living outside the firm's host country. By convention, the criterion to establish a long-lasting interest is provided by a benchmark of ownership by the direct investor of at least 10% of the firm's voting power. This benchmark provides the direct investor with a significant degree of influence in the firm's management (IMF, 2004).

Any capital transaction falling within the 10% or more benchmark is thus considered an FDI transaction. On this basis, a difference can be drawn between equity, re-invested earnings, and inter-company loans: while equity capital can constitute an FDI relationship- in the sense that it can provide 10%, or more, of a firms' voting power- re-invested earnings and inter-company loans are characterized as FDI once an FDI relationship has been established (Wacker, 2013).

As a result, by virtue of the above definition, equity capital flows may not behave similarly to re-invested earnings or inter-company loans. They may not respond to the same motives and logic. Indeed, equity capital may tend to behave as a long-term flow and may thus be more stable than re-invested earnings and inter-company loans, which can respond to short-term considerations, similar to those driving portfolio flows. Indeed, Avdjiev et al. (2014, p.5) argue that inter-company loans can be seen as: "portfolio flows masked as FDI."

Available data in the case of Latin America shows the rise in the importance of FDI-debt flows over time and, especially in the post-crisis period, relative to FDI-equity flows (17.6% and 38.6% in the periods 2000-2009 and 2010-2019) providing another reason for treating them as separate categories of analysis.

## **G. Rising debt and increased dependency on short-term flows take place within a context of narrower monetary and fiscal space**

Increased dependency on short-term flows and rising debt in the 2010-2019 take place in a context of narrower monetary and fiscal space than in the 1990s. Most of the countries of the region have signed investment agreements (jointly with trade agreements) which prevent them from imposing restrictions and controls on the financial and capital account of the balance of payments including on short-term flows.<sup>5</sup>

In addition, most countries have moved over time towards greater market flexibility which include more flexible exchange rate regimes. In 2021 the bulk of Latin American and Caribbean countries (representing 71% of the total) have in place free floating, managed or crawling peg exchange rate regimes (Abeles, Pérez Caldentey & Porcile, 2021). The exception to this norm include mainly Caribbean economies (Eastern Caribbean Currency Union, Bahamas, Barbados, Belize, Guyana, Trinidad and Tobago).

The move towards more flexible exchange rate regimes is justified mainly on the basis that these provide an important shock absorber to external shocks preventing the transmission of their effects to the domestic economy. However, within a context of high debt and currency mismatches exchange rate flexibility can heighten financial vulnerability and fragility and encourage capital outflows.

Two additional factors further narrow the policy space of Latin American and Caribbean countries. The first is the low value of the multiplier ( $m$ ;  $m \approx 1$ )<sup>6</sup> determined by structural factors which is compounded by low public investment levels. This means that the effect of the multiplier on growth may be insufficient to act as an engine of growth. The second is that government spending is constrained by sovereign risk perceptions which as discussed below is highly correlated with nominal exchange rate variations (ibid).

<sup>5</sup> Some have been incorporated as members of the Organisation for Economic Co-operation and Development, such as Chile, Mexico, and Colombia.

<sup>6</sup> (1)  $m = \frac{1}{s_p + \xi + \tau} s_p = (1 - \alpha) + s_w \alpha$

where  $s_p$  = the average propensity to save;  $\alpha$  = the share of wages in GDP;  $s_w$  = the propensity to save from earned income;  $\xi$  = the average propensity to import; and  $\tau$  = the average tax burden. Capitalists are assumed to spend all of their income.

## H. The financial vulnerabilities posed by greater exposure to international capital markets: exchange rate-risk dynamics and countercyclical fiscal policy

Greater exposure to the international private capital markets jointly with the increased importance of short-term flows under conditions of increased debt and financialized behaviour can set the stage for greater volatility, financial fragility, pro-cyclicality of economic policy, and reduced policy space. A key transmission mechanism that can bring these factors to the forefront is the interplay between the nominal exchange rate and risk perceptions.

The available evidence provided for one of the regions under study, Latin America, shows a statistically significant positive association between the rate of change of the nominal exchange rate and risk perceptions. Depreciations (appreciations) in the nominal exchange rate are followed by a worsening (an improvement) of risk perceptions. The empirical evidence points towards a causality from the nominal exchange rate to the Emerging Markets Bond Index (EMBI) (BIS, 2009). However, there is no reason to believe that the causality could not also be in the opposite direction (see table 4).

**Table 4**  
**Granger causality results between the rate of change of the sovereign risk index (EMBI) and the rate of change in the nominal exchange rate (NER)**

	Brazil	Chile	Colombia	Mexico	Peru
Model	VAR (2)	VAR (2)	VAR (2)	VAR (2)	VAR (1)
Dummy Correct Specification	Yes	Yes	Yes	Yes	Yes
Jarque-Bera	2.80 (0.59)	4.60 (0.32)	3.02 (0.55)	7.02 (0.13)	5.07 (0.27)
LM Test (8)	1.94 (0.74)	2.74 (0.60)	5.12 (0.28)	1.56 (0.81)	3.49 (0.48)
White Test (C.T.)	63.57 (0.07)	104.95 (0.32)	94.28 (0.82)	113.18 (0.50)	70.23 (0.11)
NER Granger causes EMBI	1.10 (0.58)	28.40 (0.00)	7.95 (0.02)	12.61 (0.00)	21.78 (0.00)
EMBI Granger causes NER	34.41 (0.00)	3.94 (0.14)	20.80 (0.00)	9.66 (0.00)	0.43 (0.51)

**Source:** Computations were undertaken by Lorenzo Nalin.

**Note:** P-values in parenthesis; LM Test= residuals autocorrelation test; White Test (C.T.) = Residuals Heteroskedasticity Test; Jarque Bera= residuals normality test. The results highlighted in light red represent statistically significant results at the 95% level of confidence.

The dynamics between nominal exchange rates and the EMBI have important implications for countercyclical fiscal policy. An increase in government expenditures and public deficit can, under given circumstances, lead to increased risk perceptions, leading to a rise in the EMBI. The rise in the EMBI not only increases the cost of borrowing in external financial markets but also results in a depreciation of the exchange rate depreciation, pushing up the debt burden in foreign currency.

This transmission mechanism takes is particularly relevant in the current Pandemic context and also in context of rising interest rates. As explained above international the international bond market momentum has opened up an important source of financing. At the same time, it has exacerbated financial vulnerability by increasing debt levels which were already historic prior to the outbreak of the pandemic.

The financial vulnerability of governments is compounded by an analysis of the sovereign ratings by the three major credit rating agencies (Moody's, Standard and Poor and Fitch) which shows that more than half of the economies for which data is available are classified with the worst ratings (substantial risk and speculative grades) (table 5).

**Table 5**  
**Credit risk ratings for selected developing regions (2021)**

Categories	Africa		Asia		Middle East		Latin America and the Caribbean	
	Number of countries	Percentage of total	Number of countries	Percentage of total	Number of countries	Percentage of total	Number of countries	Percentage of total
Very low								
Low			10	23	4	21	1	21
Medium	3	6	13	30	5	26	5	26
High	24	48	15	34	7	37	17	37
Very high	23	46	6	14	3	16	4	16
Total	50	100	44	100	19	100	27	100

**Source:** Based on Country Risk (2021).

In 2020, as the governments of the region pursued expansionary policies to counteract the effects of the pandemic, credit rating agencies downgraded a record number of sovereigns. Moreover, the analysis of the sovereign ratings by the three major credit rating agencies shows that more than half of the economies for which data are available are classified with the worst ratings (substantial risk and speculative grades). These include the majority, of smaller economies in the region and some of those that were in a weaker position prior to the pandemic.

But even if the government is not indebted in foreign currency, the mechanism described above still holds. The issue does not revolve around the currency in which the debt is denominated *per se*. It is rather a question of who owns the debt. If the debt is issued in domestic currency, but it is owned by foreign investors, an effective or expected depreciation may have a similar effect on the economy as if the debt were issued in foreign currency. It can lead to expected capital losses of the foreign investors who own the debt denominated in domestic currency. This will result in capital outflows and increased risk perceptions (a rise in EMBI). If risk perceptions affect the exchange rate, this



mechanism can provide the basis for a cumulative process. Available evidence suggests that, at least for some countries in Latin America, an important part of government debt is owned by foreign investors.

In addition, increased external indebtedness has also an endogenous vulnerability. The non-financial corporate sector in developing economies tends to operate with currency mismatches.<sup>7</sup> Liabilities denominated in foreign currency exceeds the assets denominated in foreign currency. Moreover, available evidence shows that the currency mismatch has increased in the second half of the 2000 decade (table 6).<sup>8</sup>

**Table 6**  
**Selected emerging and developing economies (12 countries): net foreign-currency assets of the private corporate sector as a share of exports, 2007–2014**  
(Percentages)

	2007	2008	2009	2010	2011	2012	2013	2014
Brazil	-43.3	-37.0	-45.6	-54.4	-60.2	-72.2	-64.1	-74.6
Chile	-20.6	-34.6	-51.8	-44.8	-43.8	-47.1	-48.5	-58.7
Hungary	-30.7	-40.1	-48.9	-34.4	-26.3	-26.3	-22.6	-16.9
Mexico	-10.3	-9.7	-15.1	-18.0	-18.9	-21.3	-27.4	-30.3
India	-15.3	-16.5	-18.4	-18.2	-16.1	-19.1	-19.5	-18.6
Indonesia	-12.6	-7.9	-4.9	-8.7	-14.5	-23.1	-31.3	-41.1
Malaysia	-8.0	-12.7	-14.5	-8.0	-7.9	-5.1	-10.8	-8.7
Philippines	-0.7	-2.9	-1.4	-11.5	-15.8	-23.5	-25.5	-16.3
Poland	-14.4	-27.6	-42.0	-38.5	-31.2	-30.6	-28.6	-22.7
Russia	-37.2	-16.0	-8.1	-5.5	-1.3	-2.1	-5.7	1.5
Thailand	8.7	1.6	-1.6	-4.9	-1.7	-6.7	-7.9	-4.0
Turkey	-41.8	-37.7	-46.1	-64.4	-60.5	-67.9	-86.9	-91.4

**Source:** M. Chui, E. Kuruc and Ph. Turner, "A new dimension to currency mismatches in the emerging markets: non-financial companies", *BIS Working Paper*, No. 550, 2016. Table A2.

**Note:** The values of the net foreign currency assets of the non-government corporate sector are aggregate as "net foreign assets of depository corporations (excluding central bank) plus non-bank foreign currency cross-border assets with BIS reporting banks less non-bank foreign currency cross-border liabilities (excluding debt securities) to BIS reporting banks less international debt securities outstanding of non-bank and non-government sectors in foreign currency; outstanding position at year-end."

A nominal exchange-rate depreciation, such as those that have occurred following the financial outflows from emerging economies resulting from the COVID-19 crisis, adds to debt service costs and increases the debt burden, thereby heightening credit risk. This effect can generate further pressure for financial outflows, by tightening financing conditions. In addition, if firms in a mismatch situation purchase foreign currency to meet their foreign exchange liabilities, the increased demand for foreign currency could cause a further depreciation of the exchange rate. This could then fuel further capital outflows and, also increase the debt burden (ECLAC, 2016).

<sup>7</sup> Borio (2019).

<sup>8</sup> See Chui, Kuruc, and Turner, 2018.

## I. Organization of the book and chapter summaries

The book is divided into ten chapters. Chapter I (*Capital flow regulation: selected experiences in developing countries from Latin America, Africa and Asia-Pacific and analysis of the type of capital controls needed to confront the disruptive effects of the COVID-19*) starts from the premise that countries need to expand their policy space to respond to short and long-term socio-economic challenges posed by COVID-19.<sup>9</sup> They must expand aggregate demand to spur growth and reduce the debt levels of the public and private sectors. Countries must have at their disposal, the required macroeconomic tool kit to monitor and control the vulnerabilities in the external sector. Capital controls are a key component of this tool kit. Capital controls refer to different types of government intervention in the capital/financial account of a country's balance of payments with the objective of restricting either financial outflows and/or inflows. The chapter analyzes capital controls for the case of nineteen countries in the Asia-Pacific, Africa and Latin America and the Caribbean regions using a taxonomy that covers the different dimensions of capital controls. These representative case studies serve to illustrate the objectives and modalities guiding capital flow regulation since the middle of the 1990s. The analysis provides a basis on which to draw important policy lessons and guidelines regarding the feasibility and effectiveness of capital controls for the current circumstances of the pandemic.

Chapter II (*Challenges Posed by the Global Development Trajectory from 2022 to 2030*) This chapter uses UNCTAD's Global Policy Model (GPM) to project the economic prospects for 34 Developed and Developing Economies from 2022 to 2030.<sup>10</sup> Fifteen Developing Countries have been added to the Model's database for this exercise. The GPM's Global Scenario covers nine Regions: Europe, North America, Russia and Central Asia, Central and South America, North Africa and the Middle East, Sub-Saharan Africa, South Asia, South-East Asia, and China, East Asia and the Pacific. The Scenario uses baseline data FROM the period 2011-19 and earlier to make projections for what it calls the COVID Period of 2020-2025 and the ensuing recovery period of 2026-2030. The focus is on trends in six Economic Variables: Real GDP Growth, GDP Per Capita, the Government Deficit, the Government Debt, the Current Account and the International Investment Position. Also included are results for the Ratio of Women's to Men's Employment. Sub-Saharan Africa; North Africa and the Middle East; and Russia and Central Asia are projected to perform poorly on Real GDP Growth and levels of GDP Per Capita while China, East Asia and the Pacific; and South Asia are projected to do well. Government

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<sup>9</sup> See Pérez Caldentey et al. (2021).

<sup>10</sup> See McKinley (2021).

Debt is projected to rise to high levels in North America; China, East Asia and the Pacific; Central and South America; and South Asia; while Debt levels remain stable in Europe and relatively low in Russia and Central Asia. China, East Asia and the Pacific, and Europe are projected to have significantly positive International Investment Positions while South Asia, Sub-Saharan Africa and North America are projected to have significantly negative positions.

Chapter III (*A critical assessment of macroprudential regulation and comparative regional experiences focusing on Latin America and the Caribbean*) provides a critical assessment of macroprudential policies focusing on developing economies, (Africa, Asia and Latin America and the Caribbean).<sup>11</sup> It argues that macroprudential regulation remains an elusive concept and is of limited applicability. At the theoretical level, within mainstream economics, macroprudential regulation can only be rationalized by arguing that the growth and development of the financial sector creates market imperfections that lengthen the intermediation chain, weakening the link between savings and investment. Thus, from this perspective the purpose of macroprudential regulation is to ensure that savings flows into investment. At the practical level, survey evidence shows that there is no agreement on the meaning of financial stability and even less so of systemic risk. Macroprudential regulation focusses on the most part on the financial sector ignoring the fact that other economic sectors such as the non-financial corporate sector is a growing source of financial fragility due to its increased financialization. At a more general level, macroprudential regulations address, only partially, the financial vulnerabilities of developing regions created by increased external financial openness and greater price flexibility.

Chapters IV, V and VI provide a more in-depth analysis of the experience with macroprudential regulation in the cases of Africa, Asia and Latin America and the Caribbean.

Chapter IV deals with the kind of macroprudential measures adopted by selected African countries (Ethiopia, Ghana, Kenya, Nigeria, South Africa and Zambia) to address systemic fragility resulting from the external instability that follows increased global integration.<sup>12</sup> Macroprudential measures gained currency after the global financial crisis of 2008 as a form of regulatory intervention aimed at pre-empting the accumulation of excessive systemic risks that disrupt the financial system and damage the real economy. Aimed at keeping indicators presumed to flag systemic risk within an acceptable range, these measures involve the use of instruments that dampen the effects of shocks that can amplify

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<sup>11</sup> See Pérez Caldentey et al. (2021a).

<sup>12</sup> See Chandrasekhar (2021).

disruptive trends in the financial system or prevent the transmission of risk across the financial system making the system as a whole vulnerable. The chapter adopts the IMF-FSB-BIS (2016) definition of ‘systemic risk’, which identifies it as “the risk of widespread disruption to the provision of financial services that is caused by an impairment of all or parts of the financial system, and which can cause serious negative consequences for the real economy.”

Chapter V examines the recent Asian experience of macroprudential controls with reference to four Asian economies: India, Indonesia, Malaysia, and Thailand.<sup>13</sup> These countries have been selected because they are countries with very significant extent of external integration with respect to both trade and finance and have all moved in the past three decades from administrative controls on capital flows and internal financial activities, to more market-based measures in both. Furthermore, while they have been affected to varying degrees by the ongoing pandemic, they are still impacted by it, unlike some countries in the region (such as China and Vietnam) that appear to have protected themselves from the worst impacts and achieved some recovery. The paper considers certain goals of such policies and consider specific policies and episodes regarding the degree to which they were able to meet these goals.

Chapter VI reviews the experience of five Latin American economies (Brazil, Chile, Colombia, Mexico, and Peru) with macroprudential policies (MPPs) in the 2000s.<sup>14</sup> These countries experienced similar developments in their balance-of-payments during this millennium. Throughout these years, and particularly after the Global Financial Crisis (GFC), all had current account deficits and negative Net International Investment Positions (NIIP). They witnessed episodes of accelerated credit growth, but rarely saw episodes of banking or financial crisis. Many of them adopted most of the measures that comprise Basel III regulatory standards, while some of them had already implemented similar measures even before Basel III. The chapter also focusses on the external vulnerabilities and the motivations behind the adoption of MPPs in the mentioned five countries. It also reviews the literature about the impact and success of the MPPs. Finally, we briefly review the macroprudential policy response to the COVID-19 pandemic. A major conclusion is that Latin American economies have successfully implemented MPPs, but new vulnerabilities arose in the last years, which present a challenge to policy makers.

Chapter VII (*A Framework to Interpret Macroprudential Policies in an Era of Financialization*) analyzes the use of macroprudential measures to support policy responses and strategies for low- and middle-income

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<sup>13</sup> See Ghosh (2021).

<sup>14</sup> See Bortz (2021).

countries in Latin America and the Caribbean to maintain the policy space necessary to both weather the immediate economic impacts of COVID-19 and prepare for the road for recovery and building forward better.<sup>15</sup> It provides a critique of the International Monetary Fund (IMF) approach to macroprudential policies and presents an alternative framework in accordance with the so-called critical macro-finance (CMF) approach that argues that global finance is organized on interconnected, hierarchical balance sheets, increasingly subject to time-critical liquidity. This alternative framework combined with the experience of the cases studies included in the book provides a basis to delineate macroprudential policy proposals for developing economies.

Chapter VIII (*A baseline stock-flow model for the analysis of macroprudential regulation guidelines and policies for Latin America and the Caribbean*) provides a critical view of macroprudential regulation/policies found in mainstream and post-Keynesian economics. The paper provides a macroeconomic framework that can be used as a basis for the analysis of macroprudential guidelines and policies. It is based on five main principles/guidelines: (i) financial fragility is endogenous and results from the normal functioning of market based economies driven by the profit motive; (ii) financial fragility can originate in the financial and real sectors of an economy; (iii) financial cycles are not necessarily driven by boom and busts and financial fragility need not originate in an economic boom; (iv) macroprudential policies should be viewed from a dynamic perspective, that is they must take into account the changes in the international financial architecture/structure and be region/country specific; and (v) macroprudential regulation/guidelines requires a truly macroeconomic framework. These principles are captured in the specification of a baseline stock-flow model for Latin America and the Caribbean with five sectors (government, central bank, financial sector, private sector, and external sector). The model is a tool that can be used for evaluating other macroprudential policies.

Chapter IX (*Finance-led premature de-industrialization and the role of external macroprudential policy for post-Covid transformative development: Latin America in a comparative perspective*) stresses the importance of structural change and productive development as leading engines of post-Covid economic recovery.<sup>16</sup> It first puts light on the perverse relation that seems to exist between underdeveloped productive structures and the intensity of the COVID-19 crisis. It then looks at those factors that may have harmed productive development in emerging and developing (EDE) countries, in Latin American ones in particular, over the last forty years.

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<sup>15</sup> See Vernengo (2021).

<sup>16</sup> See Botha et al. (2021).

The chapter investigates how abundant capital inflows may have been source of *premature* de-industrialization in a group of six Latin American economies (Argentina, Brazil, Chile, Colombia, Mexico and Peru) with respect to other EDE countries such as first- and second-tier newly industrializing East Asian economies. The chapter shows that, in Latin America, periods of financial bonanza have accelerated and exacerbated the substantial reduction of manufacturing employment and GDP shares, thus contributing to Latin American premature de-industrialization. Such perverse finance-led productive regresses are far less clear in East Asian countries instead. Given this evidence, the chapter discusses how capital flow management policies (CFM), external macroprudential policies in particular, may support transformative post-Covid recovery. The chapter emphasizes that macroprudential policies taming international capital mobility may also bear positive effects for long-run Latin American productive development on top of their implications for (short-term) financial and macroeconomic stability.

Chapter X provides the concluding reflections of the book.

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## Chapter I

# **Capital flow regulation: selected experiences in developing countries from Latin America, Africa and Asia-Pacific and analysis of the type of capital controls needed to confront the disruptive effects of the COVID-19**

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### **Introduction: the rationale for capital controls in a COVID-19 affected world**

COVID-19 is the worst global crisis since WWII. It has had devastating economic and social effects across the globe with intensity in developing countries. The increased expenditure of governments to respond to the urgent needs caused by the pandemic on health facilities, cash transfers and income support to firms and individuals, especially informal workers, in combination with the drastic fall in tax revenues has increased their fiscal deficits and debt levels.

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<sup>1</sup> Economic Commission for Latin America and the Caribbean (ECLAC) Santiago, Chile and ECLAC office in Buenos Aires. Inputs were provided by Jayati Ghosh of the University of Massachusetts Amherst, Pablo Bortz of Universidad Nacional de San Martín, Buenos Aires, C.P. Chandrasekhar of Jawaharlal Nehru University, and Matias Vernengo of Bucknell University.

The generalized increase in fiscal imbalances and indebtedness has given rise to greater liquidity needs across developing countries, despite their considerable heterogeneity in the fiscal situation and debt vulnerability. Moreover, COVID-19 has impacted some of these economies at a time of record debt levels. The widening financing gap of the public sector is compounded by the need for balance-of-payments support required by some economies because of the decline in exports—specifically in export services (tourism)—and supply chain interruptions. Increasing debt levels have also affected the productive sector at a time of declining profitability and weak balance sheet positions in the non-financial corporate sector.

The weak response of the international financial organizations has forced developing countries to rely on private capital markets to address their liquidity needs.

This has been underpinned by the increasing role of the bond market as a source of cross border liquidity, and a context of low rates of interest resulting from the expansion of major central banks' balance sheets due the adoption of quantitative easing monetary policies. The main positive effect of monetary easing and liquidity expansion measures has been recorded in the non-bank financial sector. In particular, the decline in long-term interest rates has resulted in an increase in the present value of financial assets and bonds.

At the same time bond issuers (sellers) face lower borrowing costs. The cost of foreign currency borrowing (reflected in the interest rate differential for government debt issued in dollars) for emerging market economies has fallen since the beginning of the pandemic. While the decrease in borrowing costs has encouraged the issuance of debt in international bond markets, the increase in the present value of bonds generates a capital gain and therefore an increase in the wealth of bondholders. As a result, supply and demand factors have thus boosted momentum in the international bond market which, unlike in other crises such as the 2008–2009 global financial crisis, has not been affected by the COVID-19 pandemic.

The increased access to private capital does not ensure that it this will be matched by increased and/or improved living standards. In fact, the increased role of private capital market in global liquidity carries significant financial vulnerabilities and fragilities that could jeopardize developing countries' social and economic development.

For one thing, not all countries have had access to capital markets and under the same conditions. The economies that most frequently use the capital market for sovereign bond issuance are the largest economies.

Several of the smaller economies, have made little use of the private capital market. Credit rating agencies tend to penalize the countries that are not frequent users of international capital markets. In addition, the cost of issuing sovereign debt is generally higher for smaller economies. Also, despite the low rates of interest at which countries have been able to issue debt, they tend to remain above the historical trend growth rates which will pose a debt sustainability problem.

Finally, capital markets are highly sensitive to international financial conditions and the risk perceptions of issuing countries that make them highly volatile and expose them to sudden reversals. In the current context, expansionary monetary policy by the central banks of developed economies and, by the United States Federal Reserve has encouraged the pursuit of returns by private investors in emerging economies. However, the upward trend in long-term interest rates seen since the beginning of 2021, coupled with the rising specter of an inflation comeback, could reduce the incentive to invest in emerging economies.

In the initial stages of the pandemic, developing countries registered a record outflow of capital roughly equal to \$100 billion dollars in emerging market debt and equity in March 2020, which was reversed and practically offset by September of the same year. However, since September 2020 there has been a scaling back of inflows to emerging market economies to the levels registered before the pandemic. In May 2021, total net flows to emerging market economies stood at US\$ 20 billion (US\$10.1, \$3.9, and \$6.2 billion in portfolio flows, equity, and debt inflows) (IIF, June 2021).

Rising debt levels and increasing reliance on short-term flows are a potential source of increasing vulnerability and financial fragility for developing countries, especially in the current COVID-19 context.<sup>2</sup> Countries need to expand their policy space to adequately respond to

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<sup>2</sup> Financial fragility refers to a situation where growing indebtedness generates increasing debt payments commitments that will eventually exceed income cash flows. Financial fragility is the result of the workings of an economy in which lending and borrowing take place based on a decrease in the size of the margins of safety. As the margins of safety decrease economic agents become more dependent on income flows for debt payments and the 'normal functioning of financial markets to refinance positions in long-term assets.' As a result, any disruptions in income or in financial markets, can lead economic agents to experience difficulties in paying their debt (debt service and or principal) leading to liquidity constraints and outright insolvency. The size and strength of margins of the different sectors in an economy, as well as the likelihood that an initial disturbance is amplified, determines the robustness or fragility of an economy (Minsky, 1986, p. 209). The size and strength of the margins of safety are 'safest' when economic agents can repay their debt (interest and principal) commitments with future cash flows. The size and strength of the margins of safety are the least safe when economic agents rely on the expectation of an appreciation of the underlying asset(s) which sustains their debt or of a favourable change in the underlying economic conditions (say an appreciation of the exchange rate when debt is denominated in foreign currency) to cover their liabilities (interest and principal). In between both extremes, is the case where economic agents expect future cash flows to cover interest payments but not the principal.

economic and social short and long-term challenges of the pandemic. Countries must be able to expand aggregate demand to spur growth and reduce the debt levels of the public and private sector. To this end, countries must have the required tool kit at their disposal to monitor and control the vulnerabilities in the external sector. Capital controls are a key component of this tool kit.

Capital controls refer to different types of government intervention in the financial account of a country's balance of payments with the objective of restricting either financial outflows and/or inflows.<sup>3</sup> Capital controls can take a wide variety of forms and can cover different dimensions. The taxonomy of capital controls adopted in this paper distinguishes between the following dimensions: (i) type of measures and objectives; (ii) whether capital controls are applied to inflows and/or outflows; (iii) the perimeter covered by capital controls in terms of type of flows and agents; (iv) whether capital flows distinguish between local and foreign currency; (v) whether capital controls are imposed through quantity or price based measures; and (vi) the complementary measures that often accompany capital controls.

The empirical evidence provided on the basis of the regional analysis of Africa, Asia-Pacific and Latin America shows that capital controls can reduce financial volatility, and financial fragility. Capital controls can also change the composition of capital flows in favor of long-term flows. Capital controls also increase monetary policy autonomy.

Capital controls have a long history dating back at least to John Maynard Keynes' Currency Union proposal (1942) and the Bretton Woods agreement (1944).<sup>4</sup> From the 1940 until the early 1970s the use of capital controls was extensive. Thereafter the generalized thrust towards trade and financial liberalization, that was reflected in the adoption of Washington Consensus policies by developing countries in the late 1970s and throughout the 1980s argued for the redundancy and inefficiency of capital controls. Capital controls were revived during the Asian Financial Crisis (1996-1997).

More recently, the attitudes towards capital controls have shifted quite substantially in the past decade, in the wake of the Global Financial Crisis

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<sup>3</sup> In the current IMF methodology of the Balance of Payment (BPM6), the financial account records capital inflows and outflows, i.e., refers to the previous capital account. The terms "financial account" and "capital account" will be used as synonymous.

<sup>4</sup> Keynes (1980) initially argued in favor of capital controls, as a way to deter speculative flows but then went on to argue that capital controls had a more fundamental objective, namely the freedom to pursue full employment policies through variations in the domestic policy interest rates. Around the same time in his Federal Reserve Mission to Cuba, Harry Dexter White, the other architect of the post-WWII financial order also defended capital controls as a means for developing countries to deal with negative shocks to their balance of payments although he toned down his early views on capital controls by the time he negotiated the Bretton Woods agreement on behalf of the United States in 1944. See Federal Reserve Board Bulletin, 1942.

of 2008-09. One major indication of shifting stances came with research from the IMF (Ostry et al 2010, 2011; Pradhan et al 2011). Even before that, many developing countries that had been persuaded to open capital accounts and deregulate domestic financial markets quite substantially were discovering that this exposed them to global volatility and to surges and then exits of capital that often had little relation to domestic “fundamentals” but were the outcome of macroeconomic policies and processes in advanced economies, most of all the US and the EU. While many countries sought refuge dominantly in the form of “self-insurance” through the costly practice of holding ever-larger volumes of foreign exchange reserves to guard against capital flight, others experimented with different measures, typically more market-based rather than dominantly administrative as they had been before the 1980s and 1990s.

COVID-19 and its associated economic and financial effects on developing economies has renewed the interest in capital controls to tame financial volatility and expand their policy space.

This paper is a policy-oriented study on capital flow regulation in the context of the COVID-19 pandemic with empirical assessment of selected experiences in developing countries from Latin America, Africa and Asia-Pacific and analysis of the type of capital controls needed to confront the disruptive effects of the COVID-19.<sup>5</sup> The sample of countries for Asia-Pacific include India, Indonesia, Malaysia, Pakistan, Philippines, Thailand, Taiwan Province of China— henceforth Taiwan and Vietnam. The sample of African countries comprise Ethiopia, Ghana, Morocco, Nigeria, and Zambia. Finally, the sample of countries included for Latin America and the Caribbean are Argentina, Brazil, Chile, Colombia, Mexico, and Peru.

Based on the above taxonomy the analyses of specific country cases for the Asia-Pacific, African and Latin American and Caribbean regions serve to illustrate the type of objectives and modalities guiding capital flow regulation since the middle of the 1990s to the present COVID-19 circumstances. Also, whenever possible and available an assessment of the impact of capital flow regulation is provided. The experience of capital flow regulations in three developing regions comprising nineteen countries overall provides a representative sample and basis from which to draw important policy lessons regarding the applicability and effectiveness of capital controls to the current COVID-19 circumstances.

The paper is divided into four sections. Following the introduction which explains the rationale for capital controls within a COVID-19 context, the second describes a taxonomy of capital flows along six different dimensions including: (i) the type of measure and objectives;

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<sup>5</sup> Capital flow regulation is used in the same sense of capital account management, encompassing capital controls and macroprudential measures.

(ii) type of flows subject to capital controls; (iii) controls on inflows and/or outflows; (iv) whether controls apply to local or foreign currency; (v) whether controls are implemented through quantity or price based measures; and (vi) whether controls are applied on a short or long-run basis. The taxonomy also includes other measures that accompany capital controls. This section also critically discusses the attempts to measure the extent, coverage, and intensity of interventions in capital account matters highlighting their weaknesses and limitations.<sup>6</sup>

Section three centers on capital control experiences in the cases of Asia-Pacific, Africa, and Latin America. For each of these regions the section highlights specific instances of capital controls with the aim of extracting lessons that can be useful for the present day COVID-19 circumstances. For each of the regions the section describes the background and context and goes on to identify policy lessons and guidelines. Section four concludes with the main take-aways regarding how capital controls can be a useful policy tool to combat the short-run effects of the pandemic and as a more permanent instrument to expand the degree of policy autonomy of developing countries to build forward better.

## **A. A taxonomy and measurement of capital controls**

### **1. A taxonomy of capital controls**

Capital controls refer to different types of government intervention in the financial account of a country's balance of payments with the objective of restricting either financial outflows or inflows (Erten et al., 2019).<sup>7</sup>

The evidence provided by the cases studies of countries in Africa, Asia-Pacific and Latin America shows that capital controls can take a wide variety of forms and can cover different dimensions. The purpose of controls and other measures obviously varies across country, context, and specific time-period. Although these different dimensions can be treated separately for analytical purposes, they are nonetheless interrelated as will be made clear in the different regional-based case analyses.

A first dimension refers to the type of measures and their objectives. The experience of Africa, Asia-Pacific and Latin America shows that the capital control measures do not always have the same objectives. For the most part, capital controls are aimed at offsetting the inherent pro-cyclicality of financial flows helping to prevent to occurrence of boom-and-bust financial

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<sup>6</sup> See Akyüz, 2021.

<sup>7</sup> See Annex 1 for a critical analysis of the arguments underpinning capital account liberalization and capital controls.

cycles. Capital controls not only target the volume but also their composition. In some instances, capital controls not only have the objective of taming financial volatility but also of protecting or fostering real activity in specific sector of economic activity. Two other aims of capital controls include exchange rate management and increasing economic policy autonomy (or policy space).

A second related dimension concerns whether capital controls are applied on outflows and/or inflows (that is on non-residents or residents). Measures related to capital inflows typically are designed to deal with one or several of the following: (i) to prevent/deal with surges of both equity and debt flows; (ii) to prevent/reduce domestic asset bubbles; (iii) to manage the exchange rate; (iv) to change the composition of financial flows and provide a disincentive to short-term flows; (v) to direct investible resources to particular sectors; (vi) to reduce financial fragility by preventing or reducing liquidity and maturity mismatches; (vii) for national/strategic interests (e.g. with respect to real estate, defense or other strategic sectors); (viii) to provide greater autonomy for domestic economic policies, without concern for reactions of global market.

Controls on outflows typically have one or more of the following aims: (i) to prevent or reduce capital flight; (ii) to prevent or reduce domestic asset price collapses; (iii) to prevent and reduce domestic banking and other financial crises; (iv) to manage the exchange rate; (v) to avoid excessive losses of foreign exchange through invisible outflows related to prior capital inflows (interest or profit repatriation).<sup>8</sup>

The third dimension concerns the perimeter covered by capital controls. The experiences of the country cases analyzed show that capital controls can apply to both short (portfolio) and long term (foreign direct investment) flows. In general, capital controls tend to prioritize short-term flows as these are associated with speculative behavior, which can lead to increased volatility and be a source of financial fragility and crises. Besides reducing their volume, controls on short-term flows can, in some instances, also have the objective of changing the composition of financial flows towards long-term flows. Controls on long-term flows are imposed to boost growth by directing foreign direct investment towards key sectors of economic activity.

The perimeter covered by capital controls also refers to the agents comprised in capital controls, including central government, non-financial

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<sup>8</sup> Ghosh (2021) notes that profit repatriations are registered in the current account of balance-of-payments. In this sense the definition of capital controls should be perhaps broadened to include the capital and financial account and the income account of the balance-of-payments. The income account in some countries is an important source of financial volatility.

corporations, financial corporations, and households.<sup>9</sup> Controls to manage capital flows can be divided according to the type of asset they seek to cover.<sup>10</sup> The following asset movements can be covered, and once again to varying degrees: money market funds; bonds; commercial borrowing or financial credits; equity in the form of FDI; equity in the form of portfolio holdings. These asset movements vary in importance for countries and over different periods in terms of the potential fragility they generate, depending on the composition of capital flows. So not all asset movements matter equally to all countries.<sup>11</sup>

The perimeter covered by capital controls in terms of flows and agents is related to a fourth dimension which refers to whether capital controls distinguish between local or foreign currency. This dimension is particularly applicable to bonds and loans to the government, the financial sector, and the non-financial corporate sector.

The fifth dimension of capital controls deals with quantity versus price controls. The first category refers to outright prohibitions, explicit quantitative limits, administrative restrictions which can include some type of approval procedures for outflows. Price controls seek to discourage capital movements by making them more costly to undertake. Price controls include taxation and/or subsidies of cross-border flows and other price measures. Taxes imposed on capital flows can be explicit such as taxes or levies on external financial transactions or income holding by residents of foreign financial assets, or the holding by nonresidents. Price controls can also be indirect, as is the case with unremunerated reserve requirements.<sup>12</sup>

The final dimension addresses the issue, exemplified by some of the country case studies analyzed, that capital control measures are seldom stand-alone measures. They are generally accompanied by a broader regulatory package. The other measures that accompany capital controls are here classified as complementary measures (see table I.1).

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<sup>9</sup> Note that consumer household debt is generally not considered under the category of financial fragility. However, depending on its characteristics, household mortgage debt can be a source of financial fragility. Also, consumer and household debt can amplify business cycle fluctuations (see Minsky, 1982, p. 30) An extra complication is that household surveys do not capture the debt information (especially pertaining to assets) and may understate the extent to which households are in a fragile financial position.

<sup>10</sup> This also applies to other measures, including prudential measures that have become increasingly relevant and more widely used.

<sup>11</sup> Another dimension, suggested by UNCTAD, that can be included (see Prates and Hawkins, 2020) is the incidence on the spot and derivatives FX markets, which have a much smaller impact on capital flows, but could have a much greater impact on the exchange rate due to the degree of leverage of FX derivatives instruments. Some of the FX derivatives regulations cover non-resident positions on organized markets and could not have impact on the financial account, especially if they are non-deliverable. In this case, a third type of regulation (FX derivatives regulation) is needed.

<sup>12</sup> See, IMF 2016.



**Table I.1**  
**A taxonomy of capital control**

Time-period/ context	Measure and objective	Type of flow	Resident (outflow)/ non-resident (inflow)	Local currency/ foreign exchange	Price quantity	Short-term/ long-term	Complementary measures
Context and country-specific	Financial stability; reduction of financial fragility; avoid bust and boom cycles.  Volume/ composition of financial flows.  Develop and expand specific sectors of economic activity.	Portfolio flows.  Foreign direct investment.  Other investment.  Money market funds; bonds; commercial borrowing or financial credits; equity in the form of FDI; equity in the form of portfolio holdings.	Controls on inflows aim to (i) prevent/deal with surges of both equity and debt flows; (ii) prevent/reduce domestic asset bubbles; (iii) to manage the exchange rate; (iv) to change the composition of financial flows and provide a disincentive to short-term flows; (v) to direct investible resources to particular sectors; (vi) to reduce financial fragility by preventing or reducing liquidity and maturity mismatches; (vii) for national/strategic interests (e.g., concerning real estate, defense or other strategic sectors); (viii) to provide greater autonomy for domestic economic policies, without concern for reactions of global markets.  Controls on outflows have one or more of the following aims: (i) to prevent/reduce capital flight; (ii) to prevent/reduce domestic asset price collapses; (iii) to prevent/reduce domestic banking and other financial crises; (iv) to manage the exchange rate; (v) to avoid excessive losses of foreign exchange through invisible outflows related to prior capital inflows (interest, profit repatriation).	Applicable to bonds and loans to the government, the financial sector, and the non-financial corporate sector.	Quantity controls include outright prohibitions, explicit quantitative limits, administrative restrictions which can include some type of approval procedures for outflows.  Price controls include taxation or subsidies of cross-border flows and other price measures. Taxes imposed on capital flows can be explicit such as taxes on external financial transactions or income holding by residents of foreign financial assets or the holding by nonresidents. Price controls can also be indirect, as unremunerated reserve requirements.	Temporary or longer-term measures.	Other measures including macroprudential measures that are not capital control measures.

**Source:** Authors own elaboration based on comments provided by UNCTAD and region-specific studies.

## 2. Quantifying and measuring capital controls: a critical review of the literature

There have been several attempts to measure the extent, coverage, and intensity of interventions in the capital account of the balance-of-payments. The most well-known is the Chinn-Ito Index (Chinn and Ito 2014) which aggregates various instruments on an annual basis to come up with an average index based on the number of measures over the previous five years, without specifying whether they are administrative or market-based. This is certainly useful in terms of providing some indication of the sheer number of controls over time. However, it has been noted (Karcher and Steinberg 2013) that even when a country fully liberalizes its capital account, the Chinn-Ito Index will not consider the country as completely open until five years later, thereby understating the effect of large one-off changes in policies. The index continues to increase in the years after liberalization even when capital account policy remains the same. In addition, the inclusion of the moving average biases the standard errors downward, further increasing the chance of Type I errors (or false positives).

There are other concerns with the index. Because it essentially adds up the different measures (as described in the IMF AREAER database) it cannot provide much of an idea of either coverage or intensity of such measures. Also, it can exclude certain macroprudential measures that do in fact amount to regulation of capital flows because they are not included in the database, on the grounds that superficially they do not appear to relate to cross-border flows.

Another approach has been to divide countries into categories of those with “Walls”, “Gates” and “Open” capital accounts (Klein 2012; Fernandez et al 2015). These are once again based on aggregating different measures, but this time further refined into the coverage of the measures in terms of the number of flows that they affect. The distinctions between countries are based on the average coverage over a defined period, without specifying whether they are administrative, or market based. Countries with Walls are those with >70 per cent of the value of cross-border flows covered by measures or controls; Open are those with <10 per cent coverage, and Gates are those falling in between. Gates are seen as episodic and Walls and Open as mostly permanent.

Both these widely used measures, which are popular in multi-country studies, have their limitations. The Chinn-Ito Index does capture some dynamics over time but does not give any indication of their coverage relative to all forex transactions or the nature of the interventions. The Klein approach does a better job of indicating the extent of the coverage, but does not capture any changes over time, or the intensity of interventions. Both aggregate measures of intervention

do not allow for any examination of the utility of instruments, which is probably the most important issue for policy makers.

Regarding the impact of intervention, most studies have used time series data for countries/sets of countries or panel data, using the measures described above to indicate the extent of openness or control. They come to varying conclusions regarding impact, with some (e.g., Epstein, Grabel and Jomo 2003; Erten and Ocampo 2016; Eguren-Martin et al 2020) suggesting that they are successful to varying degrees in meeting their goals, and others suggesting they have little or no impact (Klein 2012, Fernandez et al 2015, Forbes and Warnock 2011). However, regarding the studies arguing little or no impact, the degree to which the instruments are/have been successful is hard to gauge, because the counterfactual of what would have occurred in the absence of such intervention is not known. Before/after types of analysis as well as panel data studies both suffer from this problem. In general, all the empirical studies show either no impact or a positive relationship between capital controls, investment, and economic growth.

There can also be concerns that different measures could be easily thwarted if they are imposed within a broader context of more deregulated transactions that allow agents within and outside the country to work around them. For example, Spiegel (2012) has identified at least three possible modes for such circumvention: (i) over-and under-invoicing of current account transactions; (ii) disguising restricted flows (such as short-term flows) as unrestricted flows (such as purportedly long-term flows like FDI or as trade finance); and (iii) derivative products (such as non-deliverable forwards (NDFs), equity swaps, option strategies, etc. It is often difficult to identify whether such practices have occurred or how widespread and significant they are, because the resulting flows may be distributed across a range of transactions rather than concentrated in only one type where a spike would indicate something unusual.

Rebucci and Ma (2019) note the evidence of capital control policy spillovers not only across assets but also across countries, raising important coordination issues, for example through the portfolio rebalancing of global mutual funds. These may be particularly significant in the regional contexts analyzed in this paper. Similarly, Pasricha et al. (2018) found that in the context of significant increases in global liquidity after the Global Financial Crisis in 2008, capital inflow restrictions generated significant cross-country spillovers. These inevitably further complicate issues of capital flow management for any one country. An additional aspect is uncovered by Avdjiev and Takats (2016) who found that most of the explained variation in cross-border bank flows of emerging market economies during the taper tantrum was due to interbank lending rather than lending to non-banks. This points to the possible need to regulate interbank cross-border flows in addition to other more "standard" form of capital flow.

The above analysis points to the need to analyze capital controls including their objectives, modalities, extension, and effectiveness through an inductive methodology based on specific country case studies rather than relying on a deductive one-size fits all approach. The variety of country experiences here considered in different regions are essential to draw lessons for the current COVID-19 circumstances. Also, the above discussion highlights the need to consider capital controls within a global or regional context.

## **B. Capital controls in the developing world and the policy lessons for COVID-19**

The previous sections described and analyzed the different dimensions of capital controls and identified the potential financial vulnerabilities posed by the greater reliance on the international private capital markets within the pandemic context. This section presents evidence on capital controls use for nineteen countries located in three developing regions: Africa, Asia-Pacific, and Latin America. Capital controls are classified using the taxonomy developed in section 2, which provides a uniform approach for the different country cases discussed (see tables 2-13 below). The case studies provide the basis for extracting policy lessons regarding the feasibility and effectiveness of capital controls in the context of the COVID-19 pandemic.

For each region, the corresponding subsections address the context and policy lessons that can be derived for COVID-19. The evidence for most of the country case studies presented spans from the late 1990s, which coincides with a revival of capital controls due to increased financial instability and crises, (See Section 1), to the latest capital control measures available.

Countries in the sample have not adopted capital control measures during COVID-19 mainly because the massive capital outflow in the early stages of the pandemic was followed by a significant inflow (see section 1). Nonetheless, the lessons derived from the different regional experiences in capital controls are essential since the financial vulnerabilities of developing economies aggravated by the COVID-19 pandemic may lead to increased volatility, liquidity restrictions and capital flow reversals.

### **1. Asia-Pacific<sup>13</sup>**

#### **(a) Background and context**

The analysis considers seven cases studies in Asia, including more developed “emerging markets” (e.g., Malaysia and Taiwan), dynamic exporters (Thailand, Vietnam, and Indonesia), and low-income countries

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<sup>13</sup> This section is based on Ghosh (2021).

with traditionally more “closed” economies and less export success (India and Pakistan).<sup>14</sup> The analysis covers the period from the Asian financial crisis in 1997 to the present day.

The Asian financial crisis marked a watershed in macroeconomic terms, particularly for highly affected countries (Republic of Korea, Malaysia, Indonesia, Thailand, and the Philippines), which showed dramatic shifts in investment rates after the crisis, some of which have persisted to this day (Ghosh, 2009). Net inflows into the ASEAN-5 and New Industrialized Economies (NIEs) before 1997 amounted to as much as 10 per cent of GDP; the crisis marked such a reversal that it involved a net outflow of 8 per cent of GDP in 2008-09, and net inflows did not resume until 2003 (Grenville 2012).

Developing Asia is considered one of the most globally integrated regions, dominantly in trade terms, and now increasingly in finance. Since the early 1990s, when financial globalization first gathered pace, there have been broadly three phases of surging capital flows into developing Asia. To a certain extent, these phases mirrored the tendencies in the global economy that favored “emerging markets” within the backdrop of widespread financial liberalization.

The first phase started in the early 1990s and was brought to a sharp halt by the Asian financial crisis. The second phase started in the early 2000s and was again abruptly terminated by the GFC. Finally, the third stage lasted from 2011 to 2018, with a blip in between caused by the 2013 “taper tantrum”.

Not all Asian countries received foreign capital in similar proportion throughout these phases. Several economies were excluded from surges or experienced net outflows, but the region as a whole and some markets received large inflows. In the recent period, the region was already showing signs of reduced external investor interest, with some economies perceived as weaker, sometimes experiencing significant outflows. Immediately after the eruption of the COVID-19 pandemic, this trend was sharply intensified.

The very recent recovery in capital flows to developing Asia essentially reflects the short-term impact of further monetary loosening and interest rate declines in the advanced economies in response to the COVID-19 pandemic and the consequent search for global investment opportunities by liquid

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<sup>14</sup> For all countries (except Taiwan Province of China, which is not included in these data sources) data on various policies are taken from the IMF AREAER data base (<https://www.elibrary-areaer.imf.org/Pages/Reports.aspx>) with some additions from national and other sources. Data on all external flows are taken from the IMF BPM6 database. Some other data such as for savings and investment rates are taken from the World Bank WDI database. Data for Taiwan PoC are taken from reports of the Central Bank of Taiwan.

banks and non-bank investors (Chandrasekhar and Ghosh 2020). Once more, it is worth emphasizing that recently in many developing countries—particularly in Asia—non-financial corporations with little likelihood of generating dollar revenues, such as real estate and construction firms, have significantly increased US dollar-denominated borrowing. This tendency adds a potential element of currency mismatch, namely foreign currency borrowing for domestic investment (Chiu, Kuric and Turner 2016).

The analysis of the Asian experience with capital controls covers economies, which have experienced very distinct trajectories regarding growth and development. Nevertheless, there are some significant similarities concerning trends in financial policies and the capital flow regulation from the 1990s onwards, most significantly the tendency for progressive liberalization of the capital account and rules governing foreign exchange transactions in general. In some countries like Malaysia, Indonesia and Thailand, the capital account was more open even earlier. However, the period after that witnessed further liberalization in permitting foreign ownership of domestic financial companies. In other economies that were relatively closed in earlier periods, such as India, Vietnam, and Taiwan, the past three decades have seen progressive liberalization of current and capital account transactions. This liberalization trajectory meant that eventually and increasingly, in all these countries, flow regulation (for the reasons outlined in the Introduction) has relied on market-based capital controls and complementary measures (mainly, macroprudential measures) rather than administrative capital controls.

The analysis of the Asian case shows that capital controls were applied mainly in four of the eight studied countries, namely Malaysia, Indonesia, Thailand, and Taiwan. Differently, Vietnam, India and Pakistan adopted other measures to deal with financial flows. The different types of capital controls employed in Malaysia, Indonesia, Thailand, and Taiwan are found in tables 2-5.

### **(b) Policy lessons and guidelines**

A first lesson that emerges from the Asian case is that capital controls/liberalization have the symmetric effects on volatility and financial fragility. Capital controls are successful in moderating the surge in short-term capital flows. In addition, to preventing destabilising currency movements, these are also shown to be effective in enabling a Keynesian revival strategy for the macroeconomy. This is especially exemplified with the case of Malaysia where the imposition of capital controls in the late 1990s led to increased investment and improved economic growth performance. These findings confirm other empirical studies on the impact of capital controls (see Erten et Al., 2019).

Contrarily the progressive reduction of various controls on capital movement was associated with higher volatility, financial instability (and now rising problems of external debt especially through private bonds markets) even as it did not result in better economic performance.

In addition, financial liberalization was not conducive to increased formation of gross fixed capital. Following the liberalization of the capital/financial account of the balance-of-payments, Asian countries exhibited lower rates of investment and at the same time did not witness a rise in the volume of long-term flows.

The Philippine experience in the early 1990s and the mid-2000s suggests that greater financial flows liberalisation poses several challenges for monetary and exchange rate management, including increased dollarization of the economy. Furthermore, this case also shows that the liberalization reinforces the boom-bust cycles in domestic asset markets and increases the tendency towards greater fragility and volatility in the balance of payments.

Also, the cases of the Philippines and Pakistan provide two examples of countries where capital account liberalisation since the 1990s (in both cases under instruction from the IMF, which has been running almost continuous programmes in both countries) did little to attract capital inflows even as it generated greater financial volatility. In both cases, the balance of payments 'accounting' equilibrium has been essentially achieved by inward remittances from migrant workers abroad.

A second lesson derived from the Asian experience is that financial liberalization produces a path dependent effect regarding the reduction of policy space. In a more liberalized context capital control measures are more difficult to implement leading countries to opt for other policies to manage the capital account, macroprudential policies and market-based policies, and measures aimed at domestic financial activity, which are not efficient in reducing financial fragility. Path dependency regarding liberalization is also characteristic of the African case studies.

A third lesson, that is exemplified by the case of Indonesia exemplified by Indonesia's case with the offshore rupiah trade and the case of Thailand during 2006-2008, is that the regulation on capital inflows and outflows should not be seen as independent of each other. Both are complementary in their aims, and effects and should be unified under a single framework. Also, capital account control and regulation, in general, should consider, the institutional changes of international financial markets and in general, capital account flow control and regulation should consider the institutional changes of international financial markets and the distinction between the concepts of residence and nationality.

The difference between residence and nationality has currently increased importance given the rise in debt of the non-financial corporate sector. Measuring debt exposure through residence can significantly under-report the degree of vulnerability. In the case of Latin America and the Caribbean, this is important only for Brazil. For 2019, the debt of the non-financial corporate sector measured in terms of residence is roughly 15% of GDP, but it increases to 25% of GDP when measured by nationality.

A fourth lesson that can be drawn from the country case studies (Malaysia, 2010-2012) is that net financial flows are not stationary over time. The belief that gross outflows will be balanced with gross inflows so that net flows fluctuate around zero, has been an important argument to oppose capital controls. This points to the fact that gross inflows and outflows may be driven by different motives and variables and may involve transactions by different agents. A clear understanding of the relationship between gross inflows, and outflows and economics agents is important for an effective implementation of capital controls.

A similar view was held by the government of the Philippines, who, that in the face of greater higher volatility because of the GFC Global Financial Crisis (2008-2009), opted to further liberalize international transactions liberalize international transactions further. These measures aimed to promote greater integration with international capital markets, to diversify risk supportive of an expanding economy with global linkages, with the aim of promoting greater integration with international capital markets, diversifying risk supportive of an expanding economy with global linkages and to streamlining streamline the documentation and reporting requirements on the sale of foreign exchange by banks. The focus was apparently on moving away from administrative controls towards improving financial infrastructure, promotion of transparency and good corporate governance, in the hope expecting that these changes would strengthen the domestic financial sector's resilience to volatility in capital flows that continued through this period of liberalisation.

A fifth lesson illustrated by the case of Taiwan (in the 1990s decade) is that capital controls can be used not only for financial stability purposes but also to direct inflows and long-term flows to certain types of economic activities. In this sense, capital controls can also be implemented as an instrument of government planning.

Finally, the experience of Vietnam and Pakistan show that, although capital controls refer to the financial/capital account of the balance of payments, controls can also be imposed on the income account of the balance of payments. Vietnam imposed in 1999 a tax on the repatriation



of profits and dividends was subjected to a tax of 5-10 per cent, but in 2000 this was reduced to a range of 3–7%, depending on the capital contribution of the foreign investor, and in 2004 it was abolished altogether.

In 2010, Pakistan implemented a withholding tax was implemented. A 10 per cent tax became applicable on payments of dividends by a company to its headquarters abroad. Dividends paid by a non-resident company were taxable at the corporate tax rate in the hands of resident company. In 2015 this tax was slightly adjusted with different rates for different sectors. Royalties and fees for technical service paid to non-residents (without permanent establishment in Pakistan) were subjected to withholding tax of 15 percent. In 2016, other payments to non-residents, for which a withholding tax rate was not specified were subjected to withholding tax of 20 percent. It was noted that these could be reduced under the terms of applicable tax treaties.

Finally, the reliance on market-based capital controls and macroprudential measures rather than administrative controls which have met with showed varying degrees of success. Indonesia's experience suggests that the use of macroprudential measures (which have dominated) has been successful in changing the maturity structures and reducing macroprudential measures (which have dominated) have successfully changed the maturity structures and reduced potential currency mismatches in domestic borrowing from international sources in foreign currency-denominated international lending. In Thailand, exchange rate management appears to have been a major aim focus of the policies; and they appear to have succeeded in controlling depreciation and preventing excessive appreciation during two major episodes in 2009-11 and in 2014-15. Taiwan China provides a very interesting example of what was effectively a quota system for capital inflows, which operated in the early 1990s, though it has since then been eliminated.

In India, progressive liberalization since the 1990s means that only market-based capital controls and macroprudential measures are available.

These measures were used more after the GFC than during the Taper Tantrum. Meanwhile, the political nature of the regulation is evident in the fate of a specific measure designed to control and eliminate anonymous inflows coming as "Participatory Notes" in portfolio investment: they were not banned despite several attempts to do so. The significance of political interests and lobbying in determining regulatory activity is particularly evident in this case. However, it should be remembered that this is an important factor affecting policies concerning capital flows in all countries.

**Table I.2**  
**A taxonomy of capital controls for selected Asian countries: Malaysia**

Time-period/ context	Measure and objective	Type of flow	Resident (outflow)/ non-resident (inflow)	Local currency/ foreign exchange	Price/ quantity	Short-term/ long-term	Complementary measures
1994–1995 The national currency (the Ringgit) came under strong buying pressure due to significant and rising inflows of short-term capitals, which by 1993 amounted to as much as 17 per cent of GDP.	Controls on portfolio inflows to avoid the consequence of currency appreciation.	Short-term flows	Inflows	...	Quantity	Short-term	Ceilings on external liabilities of commercial banks. Bans on sales of short-term debt instruments to non-residents. Restriction on ringgit deposits of foreign institutions to non-interest-bearing accounts. Prohibition of non-trade-related currency swaps. Introduction of new maintenance charges on non-interest-bearing foreign deposits.
1998–1999 Asian Financial Crisis	Sales of assets denominated in ringgits, through authorized domestic intermediaries, to shut down ringgit's short-term speculation in offshore markets.  One-year waiting period imposed on the repatriation of Malaysian securities held in external accounts and maintained by non-residents.	Short-term flows	Outflows	...	Quantity	Short-term	There was mandatory repatriation of all ringgits held abroad to protect the ringgit's value and raise the foreign exchange reserves that had fallen in 1997 due to capital flight. Limits were imposed on the transport of ringgit by travellers. There were restrictions on transfers of funds between external accounts, complete prohibition of resident/non-resident credit arrangements, and trade settlement in ringgit and resident/non-resident offer side swaps and similar hedge transactions. CLOB share transactions were frozen.

Table I.2 (continued)

Time-period/ context	Measure and objective	Type of flow	Resident (outflow)/ non-resident (inflow)	Local currency/ foreign exchange	Price/ quantity	Short-term/ long-term	Complementary measures
1998–1999 Asian Financial Crisis	Prohibition of transfer of ringgit funds into the country from externally held accounts, except for investment in Malaysia (excluding credit to residents) or for purchase of goods in Malaysia.	Short-term flows	Outflows	...	Quantity	Short-term	Holders of offshore deposits were given the month of September 1998 to repatriate their deposits to Malaysia, eliminating the primary source of speculative buying of US dollars in anticipation of a ringgit crash.
2000	<p>Prior approval required for all investments abroad exceeding RM 10,000.</p> <p>The purchase of derivatives required prior permission for the spot or forward contracts or interest rate futures not transacted at a Malaysian futures exchange.</p> <p>Banking institutions were prohibited from extending loans in ringgit to any foreign bank or foreign stockbroking company.</p>	Short-term and long term-flows	Outflows	...	Quantity	Medium-term	<p>Trade credit could be extended to non-residents for export of goods from Malaysia up to a maximum period of six months from the date of export. The extension of commercial credit by authorised dealers to non-resident banks and stockbroking companies were allowed in amounts up to RM 200 million intraday and RM 5 million overnight in the case of technical or other inadvertent delays.</p> <p>The purchase of derivatives required prior permission for the spot or forward contracts or interest rate futures not transacted at a Malaysian futures exchange.</p>

Table I.2 (concluded)

Time-period/ context	Measure and objective	Type of flow	Resident (outflow)/ non-resident (inflow)	Local currency/ foreign exchange	Price/ quantity	Short-term/ long-term	Complementary measures
2000	<p>Prior approval required for securities issuance and for accessing credit of more than RM 5 million from non-residents, with the condition that amounts should be used to finance productive activities in Malaysia that generate foreign exchange earnings or reduce future outflows.</p> <p>For non-residents, the earlier ban on repatriation on securities was replaced in 1999 by exit taxes. At first, both capital and capital gains were taxed at 30% if repatriated within 12 months and 10% after that; subsequently, from late 1999, only capital gains and profit repatriation were taxed at 10%. Prior approval was required to buy or sell forward ringgit in forex markets. Non-residents were not allowed to extend credit in ringgit, only in forex. FDI (involving the purchase of 15% or more of equity) required prior approval from the Foreign Investment Committee.</p>	Short-term	Inflows	...	Quantity	Short-term	...

**Source:** Author's own elaboration.

Table I.3  
A taxonomy of capital controls for selected Asian countries: Indonesia

Time-period/ context	Measure and objective	Type of flow	Resident (outflow)/ non-resident (inflow)	Local currency/ foreign exchange	Price quantity	Short-term/ long-term	Complementary measures
2001 Growth of offshore Rupiah trade	<p>Banks were prohibited from transferring rupiah to non-residents, especially transfers that were not supported by underlying genuine transactions within the Indonesian economy.</p> <p>The emergence and growing importance of derivatives in financial markets in developing Asia has created a particular source of vulnerability and made it harder to ensure stability and reduced exposure to sudden changes and crises.</p>	Other investment	Inflows	Local currency	Quantity	Short-term	Restrictions imposed on derivatives transactions that were not supported by underlying real transactions. The maximum limit for derivatives transactions involving forex sales by domestic banks to non-residents was reduced from USD 5 million to USD 3 million, attempting to limit speculation in the rupiah through these routes.

Source: Author's own elaboration.

Table I.4  
A taxonomy of capital controls for selected Asian countries: Thailand

Time-period/ context	Measure and objective	Type of flow	Resident (outflow)/ non-resident (inflow)	Local currency/ foreign exchange	Price quantity	Short-term/ long-term	Complementary measures
2006–2008 Significant upward pressure on the baht, which affected export competitiveness.	<p>Limits on the daily outstanding baht balances of non-residents, prohibiting transactions involving Thai baht lending or selling to non-residents without evidence of underlying trade or investment and imposing holding periods of at least three months.</p> <p>The Bank of Thailand (BOT) has introduced the unremunerated reserve requirement (URR) on short-term capital inflows to deter short-term capital inflows and one-way speculation on the Thai baht. Speculation activities led to excessive volatility of the Thai baht that might have caused wider economic instability, mainly when domestic demand was moderate and robust export growth was the main driver of the economy.</p>	Sort-term	Inflows	Local currency	Quantity	Short-term	...

**Source:** Author's own elaboration.

Table I.5  
A taxonomy of capital controls for selected Asian countries: Taiwan

Time-period/ context	Measure and objective	Type of flow	Resident (outflow)/ non-resident (inflow)	Local currency/ foreign exchange	Price quantity	Short-term/ long-term	Complementary measures
1990–2003	<p>Qualified Financial Institutional Investor (QFII) system (and later Generalized Financial Institutional Investor System). It was a quota system intended to control the volume of capital inflows in the Taiwanese economy. It was designed to allow foreign capital access to local securities markets while still retaining control on how much each QFII could invest. QFIIs also limit the amount of funds that could be remitted at a given time. This system was an unusual strategy for quantitative controls on capital flows, which would appear incompatible with a market economy but appeared to work rather well over a decade.</p> <p>Restriction on outward remittances of capital account-related funds: US\$ 50 million per year for QFIIs, and US\$ 5 million per year for natural persons (i.e., ROC citizens over 20 years old and foreign citizens with an alien residency certificate in Taiwan). Similar restrictions were applied for inward remittances.</p>	Short-term flow	Inflows	...	Quantity	Long-term	...
2001–2008	Controls on FDI	Long-term flows	Outflows	...	Quantity	Long-term	...
2010	In December 2010, another inflow surge prompted a measure like that observed in Thailand in 2008 concerning unremunerated reserve deposits. This policy set new reserve requirement ratios for NT dollar demand deposits held by non-residents. Such deposits were made subject to a 90 per cent reserve requirement on the amount exceeding the outstanding balance recorded on December 30, 2010, and a 25 per cent reserve requirement on the amount below the December 30 level.	Short-term	Inflows	...	Quantity	Short-term	...

Source: Author's own elaboration.

## 2. Africa<sup>15</sup>

### (a) Background and context

The analysis of the African experience focusses African experience analysis encompasses six case studies. Apart from a middle-income country in North Africa (Morocco), we focus on Sub-Saharan Africa. In Sub-Saharan Africa, we provide a detailed analysis look at of six countries of which one is a low-income Sub-Saharan country (Ethiopia) and, four are middle-income Sub-Saharan economies (Ghana, Nigeria, South Africa, and Zambia). The analysis also includes a middle-income country in North Africa (Morocco).

As it is inevitable in a continent of large dimensions, nations are highly diverse. Per capita GDP (at constant price 2010) varies from between \$480 and \$600 in Sierra Leone, Niger, Mozambique, Malawi, Madagascar, and Liberia to between \$7000 and \$15000 in South Africa, Seychelles, Mauritius, Libya, Gabon, Equatorial Guinea, and Botswana. Despite this diversity in levels of development, there is one feature that is characteristic of most African countries: commodities are the main driver of growth, with inadequate diversification of the economic structure and of exports. This aspect makes most countries in the continent vulnerable to commodity price fluctuations, from the point of view of government revenues, export earnings and balance of payments stability, and overall economic performance.

Given external vulnerability and the possibility of adverse systemic shocks, most African countries have experimented with capital flow regulation. However, despite differences in levels of development and economic structure, many African countries had significantly opened their capital accounts by the early 2000s. There were indeed exceptions, such as Morocco and, to a lesser extent, Ethiopia. Many of these exceptions were countries that were too vulnerable to risk liberalisation aimed at attracting foreign capital. They were unlikely to be successful in that effort and yet may become victims of capital flight in particular periods. On the other hand, the bigger and more developed countries did attract significant inflows after liberalisation but faced new vulnerabilities.

This vulnerability was not revealed in the early years after liberalisation because of the commodity price boom stretching across the first 15 years of this century. That not only encouraged foreign financial investors to discover even lower-middle income and some low-income countries as potential investment destinations but provided many of these

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<sup>15</sup> This section is based on Chandrasekhar (2021).



countries the wherewithal in foreign exchange to service the costs of the liabilities incurred because of foreign capital inflows. The difficulty was the vulnerability to sudden shifts in commodity prices and export volumes this resulted in. That vulnerability increased when countries accumulated liabilities in the period after the 2008 crisis when the injection of cheap liquidity by developed country central banks resulted in a surge in capital flows to emerging and frontier markets.

It was when such difficulties arose that when such difficulties arose, countries that had opted for capital account liberalisation had to adopt policies to avoid crises and mitigate vulnerability. However, given the presence of legacy capital accumulated during the liberalisation years, governments in many of these countries analysed in this chapter did not see a return to 'structural regulation' and the adoption of administrative measures as feasible. The understanding seems to be that adoption of such policies will trigger capital flight and worsen the crisis. The preference, therefore, was for exchange control interventions and macroprudential measures rather than capital controls *per se*.

The different types of capital controls employed by African countries included in this chapter are found in tables 6-9.

### **(b) Policy lessons and guidelines**

The analysis of the countries in Africa provides further evidence on some of the policy lessons underscored by the country cases in Asia.

First, the analysis shows that financial liberalization can increase volatility and set the stage for increased financial fragility. Ghana is a case in point: in the 2000s, this country accelerated capital flow liberalization, which began in the 1990s. In December 2006, the Exchange Control Act, 1961 was replaced by the Foreign Exchange Act (Act 723). Under the former exchange control regime, foreign transactions were limited, with restrictions on issuance and transfer of securities involving residents and non-residents, besides regulations on external borrowing, which required approval by the central bank, the Bank of Ghana. Under the new regime, rules governing the inflow of foreign exchange were liberalised to attract foreign investment. Moreover, the Bank of Ghana waived the requirement for approval on loans contracted by residents. The banks were only obliged to submit reports to the central bank on all foreign exchange transactions. Greater financial liberalization explains, in part, the reason why average annual net inflows, which had risen 2.1 times between 1990-92 and 1998-00, rose 7.1 times between 2001-03 and 2006-08.<sup>16</sup>

<sup>16</sup> Some of this spike in inflows was on account of investments in oil exploration, discovery of new reserves (2007) and production.

South Africa illustrates the persistence that an open capital account has made the country highly dependent on short term-flows. Short-term flows have represented roughly half of total flows making South Africa vulnerable to capital reversions.

A specificity of the African case that has a bearing on capital controls is the strong relationship between capital flows and the productive structure. The experience shows that development levels, commodity export dependence and risk perceptions did limit the flow of capital to African countries, except for a few, especially Nigeria and South Africa. This was in most cases not because of a reticence to liberalise the capital account, but because of investor reticence. In cases like Zambia, this also meant that openness per se did not set off large inflows, and when inflows did occur even on a limited scale, there were signs of vulnerability.

Second capital controls can affect not only the volume of capital flows but also change their composition. The consequence of a strong regulatory environment in Ethiopia has been that, besides limited inflows, FDI and government borrowing dominated gross inflows, with trade credit coming to account for a little more than a fifth after 2004. More volatile flows have been kept at bay in a country that is extremely vulnerable to balance of payments disruption.

In the case of Morocco, portfolio flows were near absent throughout this period, with flows being mainly in the form of FDI and credit flows through the “other investments” and channelled to the government, banks, and the non-financial private sector. The absence of volatile flows meant that Morocco was relatively insulated from periodic crises that afflicted many emerging markets. Third, the African case also shows that reversing capital account liberalization is difficult pointing to the existence of path dependence. It is only countries that do not opt for significant liberalisation in the first instance that retain relatively strict administrative measures in their basket of policies relating to cross-border capital movements. One implication is that the “capital control measures” experimented with in countries affected by capital flow volatility are more in the nature of exchange control and macroprudential measures rather than interventions that directly limit either capital inflows or outflows.

Faced with a credit downgrade and a low level of reserves the Bank of Ghana chose in February 2014 to reverse liberalisation but was only able to implement it marginally. Foreign-exchange and foreign-currency account holders had to provide documentation for transfers outside Ghana. Offshore currency transactions by resident Ghanaian companies were also

to be “strictly prohibited” and exporters had to collect and repatriate in full the proceeds of their exports to their local banks within 60 days of shipment (Chandrasekhar, 2020).

Similarly, while capital account liberalisation did exacerbate vulnerabilities in Nigeria, these tended to be recognised and addressed only in periods where the oil market was weak in terms of prices and demand. Even in those circumstances, measures aimed at limiting the exposure of domestic agents to foreign exchange payments commitments were relaxed soon. Nigeria appears to be a classic case of path dependence when moving down the road of capital account liberalisation. Even when vulnerability resulting from such liberalisation weakened the balance of payments and the currency, especially in periods of oil price decline, the government appealed only to weak control measures. The basic tendency toward foreign capital and debt exposure continued. That has had adverse implications for the country in recent times, given the global output contraction and falling oil prices.

Fourth, as with the case of Asia, the analysis of Africa shows that capital controls on inflows and outflows can be interrelated. The experience of Ghana shows that when countries tend to narrow or bring down the capital controls on inflows, financial stability can become dependent on managing capital outflows.

Fifth, the case of Ethiopia demonstrates that capital account controls can not only target mitigating volatility and financial fragility but can also target mitigating volatility and financial fragility and aim at developing real sector activity. Ethiopia’s capital control regime was quite strict. While residents were not allowed to undertake direct investment abroad, inward FDI was also significantly controlled. Investment in telecommunications and defence industries was allowed permitted only in partnership with the government. And the government-maintained control over investments in postal services (except courier service), the transmission and supply of electricity through the Integrated National Grid System, and air transport services using aircraft with a seating a capacity for of more than 20 people passengers were reserved for the government. All investments (except for services and transport generation and supply of electricity) had to be approved and certified by the Ethiopian Investment Commission (EIC). But concessions aimed at boosting FDI for export were also in place. New projects in manufacturing or agro-industry in which at least 50 per cent of production was exported or at least 75 per cent of production used as an input to produce export items were exempt from income taxes for up to six years. Investment activities that exported less than 50 per cent of their production were also granted up to three years of income tax exemption.

**Table 1.6**  
**A taxonomy of capital controls for selected African countries: Nigeria**

Time-period/ context	Measure and objective	Type of flow	Resident (outflow)/ non-resident (inflow)	Local currency/ foreign exchange	Price/ quantity	Short- term/long- term	Complementary measures
2015	Ban on acquiring foreign exchange in the foreign exchange market for purchases of Eurobonds, foreign currency bonds, or foreign currency shares.	Short-term	Inflows/outflows	Foreign exchange	Quantity	Short-term	Purchases of such securities were not prohibited if the purchaser uses own funds without recourse to Nigerian foreign exchange markets.
2015–2016	Prohibition of cash deposits into foreign exchange accounts.	Short-term	Inflows	Foreign exchange	Quantity	Short-term	When borrowing in foreign currency, banks were required to borrow and lend in the same currency (natural hedging) to avoid currency mismatches, which elevates foreign currency risk. Further, to prevent mismatches between floating and fixed interest rates, the interest basis for borrowing and lending should be the same.
2017	The ceiling on aggregate foreign currency borrowing of banks was raised to 125 per cent of shareholders' funds, though deposit money banks' net open position of foreign assets and liabilities could not exceed 10 per cent (previously 20 per cent) of shareholder funds for both resident and non-resident assets and liabilities.	Short-term	Inflows	Foreign exchange	Quantity	Short-term	...
2020	Exchange control measures on portfolio assets.	Short-term	Outflows	Foreign exchange	Quantity	Short-term	Exchange controls on imports of food-related products, manufacturing inputs, textiles, and cement, which would now be ineligible for the purchase of foreign exchange on the interbank market. Those wanting to engage in such transactions will have to access foreign exchange from the more expensive parallel market.

**Source:** Author's own elaboration.

Table I.7  
**A taxonomy of capital controls for selected African countries: Ghana**

Time-period/ context	Measure and objective	Type of flow	Resident (outflow)/ non-resident (inflow)	Local currency/ foreign exchange	Price/ quantity	Short- term/long- term	Complementary measures
2014	Offshore currency transactions by resident companies were also to be “strictly prohibited”, and exporters had “to collect and repatriate in full the proceeds of their exports to their local banks within 60 days of shipment.”	Short-term	Outflows	Foreign currency	Quantity	Short-term	Foreign-exchange and foreign-currency account holders had to provide documentation for transfers outside Ghana.

**Source:** Author's own elaboration.

**Table I.8**  
**A taxonomy of capital controls for selected African countries: Ethiopia**

Time-period/context	Measure and objective	Type of flow	Resident (outflow)/non-resident (inflow)	Local currency/foreign exchange	Price quantity	Short-term/long-term	Complementary measures
2004–2005	<p>Residents were not allowed to undertake direct investment abroad, and inward FDI was also significantly controlled.</p> <p>Foreign investors could transfer their capital without limits upon final departure from Ethiopia. There were maximum limits on investment by resident institutional investors in securities issued by non-residents and on the investment portfolio held abroad.</p>	Long-term	Inflows/outflows	...	Quantity	Short-term	<p>Investment in telecommunications and defence industries was allowed only in partnership with the government. The government-maintained control over investments in postal services (except courier service), the transmission and supply of electricity through the Integrated National Grid System, and air transport services using aircraft with a capacity for more than 20 people. All investments (except for services and transport generation and supply of electricity) had to be approved and certified by the Ethiopian Investment Commission (EIC).</p> <p>EIC authorization was required for the repatriation of capital but subjected to appropriate documentation, and. Banks could not borrow from or enter into a guaranteed agreement with banks abroad unless authorized by the central bank, the National Bank of Ethiopia (NBE). Each bank's overall foreign currency position could not exceed 15 per cent of its capital at the close of the business day of each week. Effective June 1, 2004, commercial banks' holdings of foreign currency notes were limited to 5 per cent of paid-up capital. All ownership rights to land were vested in the state and private ownership was not allowed. Land user rights had to be acquired through certificates or lease arrangements. Foreign investors were also prohibited from owning land but could obtain access to land through lease arrangements with the government. Residents were not permitted to purchase personal property abroad.</p>
2007–2012	Given the need to conserve foreign exchange, Ethiopia was forced to adopt measures of capital controls, including on FDI.	Long-term	Inflows/outflows	...	Quantity	Short-term	...

**Source:** Author's own elaboration.

Table I.9  
A taxonomy of capital controls for selected African countries: Morocco

Time-period/ context	Measure and objective	Type of flow	Resident (outflow)/ non-resident (inflow)	Local currency/ foreign exchange	Price quantity	Short-term/ long-term	Complementary measures
Mid-2000s	Restrictions on (or prohibition) of outward investments by residents without FEO permission. Inward FDI were freely permitted. Non-resident portfolio investments in securities were subject to authorisation. Transfers abroad of receipts from sales to other non-residents was possible only if financed with foreign exchange inflows.	Short-term Long-term	Inflows/outflows	...	Quantity	Short-term	Capital controls were combined with macroprudential policies. Derivatives investments were permitted strictly for hedging purposes. Authorised intermediary banks, if they cannot find the appropriate hedging instrument on the local market, could turn to the international market for foreign exchange hedging instruments. Hedging transactions had to be backed by the foreign exchange options taken by customers. Authorized banks could also offer resident operators who take out foreign loans to hedge against the risk of interest rate fluctuation. These instruments had to be backed by real trade or financial transactions and could not be purely speculative transactions.

Source: Author's own elaboration.

### 3. Latin America<sup>17</sup>

#### (a) Background and context

This survey reviews the experience of six Latin American countries (Argentina, Brazil, Chile, Colombia, Mexico, and Peru) with capital controls during the period 2005-2019. Five out of these six countries experienced similar patterns in current account performance and capital flows, except Argentina. These same five countries (Brazil, Chile, Colombia, Mexico, and Peru) have inflation targeting monetary regimes. However, the policy response varied according to specific characteristics and circumstances of each country.

In general terms, one can group countries according to the implementation of CAM measures to regulate capital flows in the period under study. Chile and Mexico opted for resorting to monetary policy and discretionary intervention in foreign exchange markets to resort to monetary policy and discretionary intervention in foreign exchange markets to mitigate the impact of fluctuations in capital flows. However, they did expand their policy toolkit by intervening in derivatives markets, on top of spot foreign exchange markets. They also modified regulated pension funds investment alternatives as an instrument to influence resident external flows.

Colombia and Brazil, in turn, adopted price-based capital controls restrictions. They did so in times of surges in inflows, Brazil for a more prolonged period than Colombia. In both cases, the instruments were abolished after some years. Brazil innovated in terms of measures by implementing a novel tax on derivatives positions, but it was a short-lived experience because the currency depreciation trend that started just after associated to the reversal of capital flows.

Peru, instead, adopted a countercyclical approach to capital flow regulation, implementing an institutional framework in which penalty rates on inflows changed according to the developments in the financial account. These measures had a broader set of objectives, apart from avoiding exchange rate appreciatory pressures as in Colombia and Brazil.

Second, governments have also expanded their policy toolkit to implement CAM measures to regulate capital flows. In this regard, intervention in the FX derivatives market has become a standard tool for addressing exchange rate pressures and exposures, besides i. Interventions in FX spot markets that has also become customary. Furthermore, some countries have innovated with new types of measures, such as the tax on derivatives position implemented in Brazil. That measure was effective in terms of discouraging carry-trade investment.

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<sup>17</sup> This section is based on Bortz (2021) and Vernengo (2021).



Capital flow regulation measures reviewed in this survey had different motivations, objectives, and effects. The literature provides evidence that they were successful in improving financial stability, both domestic and external. From reserve accumulation to differential reserve requirements to taxes, measures have shifted the composition of inflows towards longer-term assets and against portfolio inflows. In Peru, CAM the measures adopted (along with other economic policies) have decreased the dollarization of its financial system and have also reduced the short-term external debt of its banking sector. Outflow measures have also been successful in reducing capital flight and improving financial stability, such as concerns for investment alternatives of pension, insurance successfully reduced capital flight and improved financial stability, such as concerns for investment alternatives of pension, insurance, and investment funds. The success was higher when they were implemented in a holistic approach, such as the case of Brazil, where taxes on different types of inflows accomplished their goal only when complemented with the mentioned tax on derivatives.

The second major challenge refers to agents' response to the measures and the degree of enforcement and compliance. The private sector has developed several innovative channels to bypass regulations, both for inflows (as in Brazil) and for outflows (as in Argentina). This is another reason for adopting a holistic approach to capital flow regulation measures and remaining careful about unintended feedback effects between sectors, instruments, and exposures.

The different types of capital controls employed by Latin American countries included in this chapter are found in tables 10-13.

### **(b) Policy lessons and guidelines**

As with the countries of Asia and Africa the Latin American case illustrates the importance of path dependency. In the Latin American case move towards signing free trade and investment agreements has severely limited, if not banned, the institutional and legal capabilities of the State to implement capital controls. Most of the countries in the sample have moved towards Some have been incorporated as members of the Organisation for Economic Co-operation and Development, such as Chile, Mexico, and Colombia. However, governments still have the institutional framework and legal capabilities to implement regulatory measures on capital flows (Marcel 2019). In some cases, such as in Brazil, these capabilities have remained in place since the times of the Great Depression.

A further limitation on Latin American countries to implement capital control measures is the establishment of inflation targeting monetary regimes since 2000. In Brazil, Chile, Colombia, Mexico, and

Peru,<sup>18</sup> the inflation targeting framework includes the implicit assumption of free capital mobility and a floating exchange rate regime. The nominal exchange rate is the variable that adjusts to external shocks.<sup>19</sup> In the inflation-targeting framework, 'liquidity issues are completely swept under the rug.... there are no major debt or financial problems that interfere with intertemporal trade...the role of liquidity in capital markets is completely obliterated' (Calvo, 2016, p. 56).

Another essential aspect of path dependence relates to the response of agents to the measures, the degree of enforcement and compliance. The private sector has developed several innovative channels to bypass regulations, both for inflows (as shown in Brazil) and for outflows (as in Argentina). This is another reason for adopting a holistic approach to capital flow regulation and remaining careful about unintended feedback effects between sectors, instruments, and exposures.

In a world that is relatively open to the movement of capital flows, greater financial integration brings to the forefront the need to think about capital controls at the regional level. There are no experiences of capital controls at the regional level, even though there are a few experiences associated with regional cooperation to reduce the use of foreign currencies as a mechanism to preserve foreign exchange reserves. Capital controls at the regional level would also require a certain degree of macroeconomic policy cooperation. Perhaps, for this reason, experiences with capital controls tend to be at the national level rather than at the regional level.

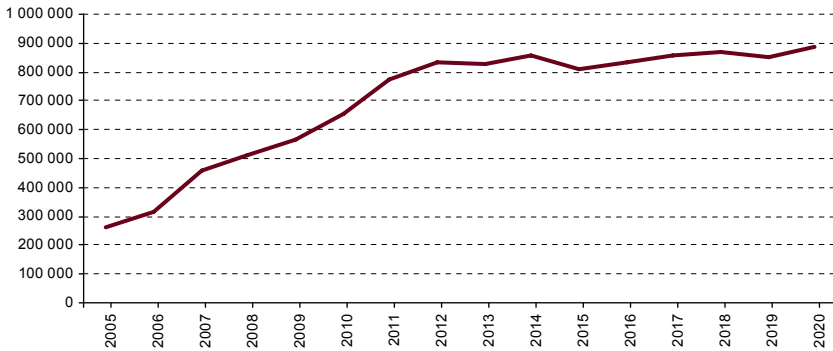
Also, within a context of financial fragility where short-term flows predominate, path dependence and the fact that countries face significant limitations to impose capital controls leads to important policy contradictions. As a result of path dependence, countries substitute capital controls with other measures such as reserve accumulation. Accumulating reserves, besides entailing costs- given domestic and foreign interest rates differentials-can have an upward effect on the policy interest rate, limiting the very counter-cyclicality which is at the basis of an inflation-targeting framework. During the COVID-19 Pandemic, most countries in Latin America intervened in foreign exchange markets to increase their levels of international reserves (figure 1).

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<sup>18</sup> Latin America countries that adhere to inflation targeting regimes include Brazil (1999), Colombia (1999), Chile (1999), Guatemala (2005), Mexico (2001), Peru (2002), and more recently, Costa Rica, the Dominican Republic, and Paraguay.

<sup>19</sup> Inflation targeting is a monetary policy framework consisting of the public announcement of numerical targets for the inflation rate, bearing in mind that the fundamental objective of monetary policy is low and stable inflation, while maintaining a firm commitment to transparency and accountability. The main instrument of monetary policy is the management of the short-term interest rate through a Taylor type policy rule. A fiscal rule is often invoked to ensure that fiscal policy is aligned with the objectives of monetary policy.

**Figure 1.1**  
**Latin America and the Caribbean. Evolution of international reserves**  
*(US\$ million) 2005–2020*



**Source:** Based on official data.

Countries have also intervened in derivatives trading, as in the case of Brazil. For instance, during the taper tantrum of 2013, the Brazilian Central Bank intervened through FX swaps instead of selling foreign currency. Its intervention positively affected the exchange rate, curbing speculation (Macalos 2017, 2018; Kohlscheen and Andrade 2014). Furthermore, they mitigated currency exposure of domestic banks that had borrowed abroad. According to Barbone González et al. (2019), the supply of currency swaps by the Brazilian Central Bank during the taper tantrum helped to halve the negative impact of the external shock on domestic credit supply. Macalos (2017) shows that this intervention managed to increase the supply of foreign currency during times of market stress by compensating the negative phases of the carry-trade investment.

Following the experience of Brazil, all the central banks of the Latin American countries included in the analysis intervened in the derivatives market as part of their policy toolkit for capital flow regulation. This instrument has shown to be particularly relevant with a large presence of foreign investors in domestic debt markets.

A third policy lesson is that within the COVID-19 context and the current structure of financial markets, complementary measures to regulate capital flows are not perfect substitutes for capital controls. In the current context the direction of flows is primarily determined by global conditions. The region experienced surges of inflows before the GFC and afterwards, as advanced economies implemented quantitative easing policies. Alternative measures to capital controls were effective in several dimensions but had difficulties preventing exchange rate

appreciations and discouraging inflows. When the course of monetary policy was tightened in advanced economies, capital flows reverted independently of the policies implemented in Latin America. This capital flows pattern calls both for an institutional and policy framework that allows changes and eventual reversals in the measures adopted and a dynamic approach to capital flow regulation, considering the evolution of external and domestic conditions.

A fourth policy lesson is that, despite the legal and institutional constraint that countries face they did not fully renounce the use of measure that can fall within the broad spectrum of capital flow regulation. These include taxes, limits authorizations and prohibitions on financial flows, and minimum stays and unremunerated reserve requirements.

The countries under analysis implemented explicit tax measures to counteract inflows. Tax rates were modified according to the different stages of the “inflows cycle”, The specific concepts covered by the taxes obeyed to the contemporaneous circumstances, to elusive efforts by investors, to concerns about exchange rate volatility, short-term fluctuations, and financial systemic risk in the aggregate and in specific markets, etcetera. The country that experimented the most with this type of measures was Brazil. Brazil implemented IOFs since the 1990s, but the tax rate was lowered to 0% after the Russian crisis in 1998, when the Real was also a target of speculative depreciatory pressures. Eventually, the exchange rate was devalued in 1999. The tax was reimposed in 2008.

Prohibitions were imposed on non-residents (and non-banking residents) from participating in the FX spot market in Brazil. Another example is provided by Peru, where a part of the carry-trade driven investment was instrumented through investment in very short-term assets such as certificate deposits or sterilization securities issued by the Reserve Central Bank of Peru. This was particularly so during the first wave of inflows to Peru, in 2007-2008. This linked monetary policy instrumentation to the volatility of external financial inflows, irrespectively of domestic financial conditions. This procedure was prohibited in 2010, effectively shutting down that market for foreign investors. The result was a relative fall in portfolio inflows compared to the previous wave, a fall in the participation of short-term external investment and mitigation of subsequent outflows (Aguirre 2016: 252-253).

Regarding measures on outflows, there are restrictions on investment alternatives for pension funds and insurance firms. In the period under study, Chile and Mexico modified the limits and options for investments by pension funds and insurance firms, granting them

a greater diversity of instruments, including external assets and derivatives instruments. Peru, instead, put a limit on exchange market turnover by pension funds. Other measures involve restrictions on participation in specific markets.

The country that adopted stricter controls on outflows was Argentina. Measures were motivated by sustained capital outflows by residents in the period 2008-2011 in the context of falling trade and current account balance, which put a pressured on the exchange rate and on reserves. There were also growing outflows through outward tourism and imports. Furthermore, because of a legal dispute with remaining hold-out bondholders from the 2001 default and 2005 debt restructuring, the country lacked access at the time to international financial markets. Measures restricted the access of residents to foreign exchange by requiring previous authorization by the tax-collection agency, via taxes on purchases with credit cards, via requirements of (informal) authorization for purchases of foreign currency for imports and profit remittances, among residents' access to foreign exchange by requiring previous authorization by the tax-collection agency, imposing taxes on purchases with credit cards, requiring (informal) authorization for purchases of foreign currency for imports and profit remittances, among other restrictions other channels. On the stated objective of the measures, it can be argued that they were effective (Rua and Zeolla 2018). Capital outflows, purchases of foreign currency by residents and profit remittances all diminished substantially because of the measures implemented.

Unremunerated reserve requirements and minimum stays were commonly implemented during times of surges in inflows, particularly before the GFC and during the inflows associated with quantitative easing, from 2009 until 2013. These measures were implemented in Argentina from 2003 to 2005 and in Colombia, firstly in the 1990s and later in 2007 and 2008. Peru had a different approach to unremunerated reserve requirements. As mentioned, these measures had the objective of discouraging capital inflows. However, their effectiveness and impact depended on the characteristics and features of the specific economy.

All the countries included in the analysis intervened in the foreign exchange market to reduce or mitigate volatility. In the case of Argentina, the Central Bank was a net purchaser of reserves until 2011 and from 2016 to 2017, particularly to build a stock of reserves (precautionary motive). Between 2011 and 2015, and from 2018 onwards, it was a net seller of reserves, intending to avoid or smooth (official) exchange rate depreciations.

**Table I.10**  
**A taxonomy of capital controls for selected Latin American countries: Colombia**

Time-period/ context	Measure and objective	Type of flow	Resident (outflow)/ non-resident (inflow)	Local currency/ foreign exchange	Price quantity	Short-term/ long-term	Complementary measures
2007–2010	<p>Foreign financial flows had to have a minimum stay of two years to be considered FDI. It also limited foreign investors' purchases of short-term (less than two years) fixed-income securities to 20% of total issuances.</p> <p>The government introduced a 40% Unremunerated Reserve Requirement ratio for a minimum of 6 months deposit in domestic currency, aiming particularly at portfolio debt inflows. The URR percentage increased to 50% in May 2008 but was subsequently abolished five months later, with the burst of the global financial crisis.</p> <p>In 2010, the government established that investments in foreign portfolios must be made through local administrators to channel most of the transactions through the official foreign exchange market (Ocampo and Malagon 2015: 472).</p> <p>That same year there were regulations and limits on investment abroad by pension and insurance funds.</p>	Long-term	Inflows	Foreign exchange	Quantity	Long-term	...

**Source:** Author's own elaboration.

**Table I.11**  
**A taxonomy of capital controls for selected Latin American countries: Brazil**

Time-period/ context	Measure and objective	Type of flow	Resident (outflow)/ non-resident (inflow)	Local currency/ foreign exchange	Price quantity	Short-term/ long-term	Complementary measures
2008	Imposition of a tax on portfolio bond purchases by non-residents in March 2008 (Imposto de Operações financeiras, IOF). The initial tax rate was 1.5% and it was lifted in September 2008 with the burst of the GFC. It was reinstated in 2009 with a 2% rate, including bond and equity flows. In 2010 it increased to 6%.	Short-term	Inflows	Local currency	Price	Short-term	...
2011	Short-term intercompany loans were likely to be used as a channel to conduct portfolio investments without paying IOFs. So, a 6% IOF tax was expanded to intercompany loans with a maturity lower than two years.	Short-term/ Long-term flows	Inflows	Local currency	Price	Short-term	...

**Source:** Author's own elaboration.

**Table I.12**  
**A taxonomy of capital controls for selected Latin American countries: Peru**

Time-period/ context	Measure and objective	Type of flow	Resident (outflow)/ non-resident (inflow)	Local currency/ foreign exchange	Price quantity	Short-term/ long-term	Complementary measures
2000 decade Financial stability and balance-of-payments objectives	Differential and changing reserve requirements for deposits in foreign currency, and for deposits in domestic currency by non-residents.  Differential reserve requirements for short-term banking external debt.  Limits on short-term and long-term net foreign currency positions.  Limits and differential reserve requirements on foreign exchange derivatives long and short positions.  Limits on exchange market turnover by pension funds.  Tax on non-resident income gains from short-term financial derivatives.	Short-term flows	Inflows	Foreign currency	Quantity          Price	Short-term	Differential reserve requirements according to credit growth in dollars for mortgages and car loans.  Differential risk- weight capital requirements according to exchange risk.

**Source:** Author's own elaboration.



**Table I.13**  
**A taxonomy of capital controls for selected Latin American countries: Argentina**

Time-period/ context	Measure and objective	Type of flow	Resident(outflow)/ non-resident (inflow)	Local currency/ foreign exchange	Price quantity	Short-term/ long-term	Complementary measures
2002–2004	<p>Limits on residents to transfer foreign exchange abroad. In 2002, the limit was initially set up to USD 100.000 monthly and was relaxed in 2004 to USD 2 million per month. Transfers over that limit required authorization by the central bank. Some FDI transactions were excluded from the limit.</p> <p>Before the repatriation, foreign investment should have a minimum of six months stay. In 2005 this period was extended to one year.</p> <p>Unremunerated Reserve Requirements of 30% with a minimum stay of one year for inflows corresponding to external indebtedness. Some FDI transactions were excluded from this requirement.</p>	Short-term/long-term	Inflows/outflows	...	Quantity	Short-term	...

**Source:** Author's own elaboration.

## C. Conclusion

The COVID-19 pandemic has significantly increased the debt levels, liquidity needs, and constraints of developing countries. The limited response of international financial organizations and the favorable global borrowing conditions- resulting from the expansion of central bank balance sheets in advanced economies - has led developing countries' governments to rely mainly on the private capital markets to cover their financing needs. The reliance on private capital markets raises important financial stability concerns.

Private capital markets are highly susceptible to international financial conditions and the risk perceptions of issuing countries that make them highly volatile and expose them to sudden reversals. Historically low interest rates in developed economies (have encouraged investors searching for higher yields to purchase developing market debt in search for higher profits. This circumstance could easily change t. The upward trend in long-term interest rates seen since the beginning of 2021 could reduce the incentive to invest in emerging economies. An aggravating factor is the fact that most developing countries are classified as being high risk by to the private investors and therefore subject to potential credit rating downgrades in the credit rating. Also, the sovereign bond yields are still higher than GDP growth rate the trends rate of GDP growth for many developing economies, putting in doubt the sustainability of current and future debt levels. This defeats the purpose of issuing debt at very long maturities to avoid potential debt restructuring situations.

High debt and liquidity constraints also affect the non-financial corporate sector, including both publicly owned and private firms. As explained above such circumstance this is not only a source of financial fragility, given the structural conditions of developing countries but also a source of financial fragility- given the structural conditions of developing countries- and, given the existing mechanisms linking the between financial and real sectors, negatively impacts the capacity of countries to increase investment and sustain growth rates. commensurate with current and future debt levels.

Capital controls are a key crucial component of the tool kit that countries require to deal with the challenges and dangers posed by the current financial context. The existing literature on capital controls shows they are effective in mitigating financial volatility and instability. Capital controls can also serve to promote long-term growth objectives. This paper presents evidence on capital controls for nineteen countries in three different developing regions, Africa, Asia-Pacific and Latin America and the Caribbean. The analyses of these country cases provide important policy lessons for the current COVID-19 crisis.

First, the country studies corroborate the usefulness of capital controls under different circumstances. Capital controls widens domestic policy space. Second, the exclusion of capital controls from the policy tool kit and increased liberalization does not lead to greater enhanced stability, does not attract long-term capital flows, or and does not lead to higher levels of investment or growth.

Third, financial liberalization creates important significant path dependency effects which limit the capacity of countries to implement capital control measures. Similarly, financial liberalization and integration make more difficult the establishment of capital controls at the national level, so that more difficult at the national level. So regional capital controls are worth exploring, even though they require a high degree of economic and financial cooperation, which is not present in developing economies.

Fourth, prudential and market measures are not necessarily adequate substitutes for capital controls. Fifth, in spite the greater financial liberalization in all of the regions included in the study some countries maintain the use of instruments that can broadly be considered capital controls. Sixth, an effective management of capital requires that countries have the freedom to impose controls on both capital outflows and inflows with different degrees of flexibility.

Seventh, capital controls can target both financial stability and real sector development. Finally, capital control measures tend to be accompanied by other complementary measures (macroprudential regulations) which makes a case for including capital controls as part of a broad sent of instruments at the disposal of governments.

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## Annex I.A1

### Capital account liberalization and capital controls

The theoretical foundations of capital account liberalization are well-established and not difficult to understand. According to Eichengreen (2001: 341), “[t]he case for free capital mobility is thus the same case for free trade but for the subscripts of the model. To put the point another way, the case for international financial liberalization is the same as the case for domestic financial liberalization.” In this view, financial markets intermediate provide intermediation for intertemporal decisions onto consuming, and guarantee that investments adjust to the full use employment of savings. The free mobility of capital equalizes leads to the adjustment of the domestic and international interest rates to the international rate, as much much as free entry in any industry at home would equalize the domestic profit rates. Based on the process of competition, a long tradition in economics emphasizes the role of real-economy forces-, ultimately driven by productivity- in determining the rate at which the financial remuneration of all other assets, adjusted by risk, would converge. Usually, , based on the process of competition. This convergence irate is s often referred to as the natural rate of interest. For simplification, the natural- or neutral-rate of interest rate calculations are based on US interest rates since the country is the provider of risk-free assets, and very often for simplicity calculations of the natural or neutral rate of interest in the United States, considered as the provider of the risk-free asset, are seen as the rate that rules the roost.

The fundamental role of capital mobility would be is to allow for intertemporal smoothing of savings and investment decisions, and allowing for international lending to reduce the frictions in the functioning of the system and allow for international lending to reduce the frictions in the functioning of the system. In addition, the existence of international financial mobility would allow for risk sharing, in particular if countries with different patterns of productive and trade specializations are hit by idiosyncratic shocks (Obstfeld and Rogoff, 1996; Gourinchas and Rey, 2014).

In part as a result of the critiques about the conventional views on about the implications of free capital mobility, alternative views perspectives on the role of capital flow regulation (also called capital account management techniques or measures) started to be discussed. During the Bretton Woods era, capital flows were severely restricted. D, and uring the 1970s, the credit boom related to the recycling of the petrodollars ended up in the external debt crisis, leading to and significant outflows from peripheral countries. The return of capital flows to the periphery in the 1990s-s, documented in the work by Calvo et al. (1993)-

and the subsequent period of financial instability starting with the Tequila crisis, but in particular, after the Asian Financial crisis, led to a reconsideration of the role capital controls. The basic approach was to introduce imperfections in the basic model. Imperfections would imply that the functioning of the international financial system is in reality, in reality, more volatile and prone to crises than what the simple model suggests. In particular, distortions in less developed economies (often related in the conventional literature on to government interventions), the existence of increasing returns of to scale, and the resulting of less competitive market structures, or lack of perfect information, would lead to capital flowing to activities in which the marginal efficiency exceeds the opportunity costs, and to inefficiency.

In this view, capital controls could be seen as temporary instruments to correct for market failures resulting from protectionism, monopolistic market structures, and imperfect information. Gallagher (2012) and Grabel (2014) note that there is a rebranding of capital controls, promoting which promotes a 'New Welfare Economics' of capital controls. In particular, the approach instrumentalized by Korinek (2011), which emphasizes financial costs associated with the instability generated by free capital mobility as an externality, implies that capital controls can be seen as an optimal Pigouvian taxes. Some models emphasize not only externalities associated with financial instability, but also externalities associated with financial instability and the ones associated with fluctuations of demand and unemployment (Erten et al., 2019). The tax, more often levied on outflows than on inflows, taxes reduces the destabilizing effects of capital flows associated with deleveraging cycles and sudden stops. Deleveraging cycles are seen as particularly problematic when there are currency mismatches between obligations and revenue flows (Krugman, 1999), when since asset price collapses, and currency depreciation would increase the value of liabilities, and create a perverse feedback mechanism leading to currency depreciation would increase the value of liabilities, and create a perverse feedback mechanism, leading to a financial crash. In that context, taxes on inflows are seen as a relevant instrument to prevent the vicious spiral of asset deflation and currency depreciation, and forcing agents to take into consideration consider currency mismatch risk.

This is not to say that the new literature only presents cases with arguments for capital account management. In fact, some arguments for maintaining capital account openness can be related to the modern approach to political economy (like North 1981), whichthat emphasizes, following the work of North (1981), the importance of property rights and the rule of law for investment, capital accumulation and economic development (Acemoglu and Robinson, 2012). For example, Gourinchas and Jeanne (2006) consider a situation in which the government of a

developing country can either commit to not to expropriate capital, but. However, given political instability and the possibility of changes in the structure of power, the commitment is too short to provide guarantees for investment to take place power structure, the commitment is too short of providing guarantees for investment to occur. As a result, there is underinvestment or investment goes to the unproductive activities, which are shorter shorter-term and can be protected from changing political regimes. Yet, the authors suggest that in the same time horizon, the politically unstable developing country can commit to maintaining an open capital account, that since an open capital account would signal to markets an intent to maintain an investor-friendly environment, to preclude capital outflows.



## Chapter II

# Challenges posed by the Global Development trajectory from 2022 to 2030

*Terry McKinley*<sup>1</sup>

### Introduction

This chapter reports on the outcomes from a Global Development Scenario that has been generated by the Global Policy Model or GPM. It is designed to examine the economic prospects of a significant array of Developed and Developing Countries for the period 2020-2030. In doing so, it focuses on several key economic variables: Real GDP, GDP per capita, Government Deficits, Government Debt, Current Account, and International Investment Position.

It is noteworthy that in contrast to past GPM Scenarios, this exercise is able to highlight trends in 15 Developing Economies that are not members of the G20 —as well as trends in all G20 members. Hence the total number of countries for which data are presented is 34.

The Global Policy Model uses long-term historical data from 1970 onwards in order to identify significant trends that influence the economic prospects and the resultant policy options of major countries, regions and the world as a whole. The analysis focuses on Developing Countries, including 8 G20 members (Argentina, Brazil, Mexico, South Africa, Turkey, India, Indonesia and the People's Republic of China).

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But for this exercise, the sample of Developing Economies has been expanded to enable a discussion of 15 additional countries: Chile, Colombia, Egypt, Ethiopia, Kenya, Uganda, Tanzania, Congo DR, Nigeria, Iran, Pakistan, Bangladesh, Thailand, Viet Nam and The Philippines. Smaller countries will continue to be incorporated as part of Regional Groups.

It is important to stress that this Scenario is constructed on the basis of a set of conditions (such as inherent structural constraints and pandemic-related impediments to progress as well as plausible policy options that are adopted to address such constraints and impediments). These factors are laid out in the section on the Working Assumptions for the Development Scenario.

For example, the likely continuing impact of the pandemic can be recognized in several major economic trends that are already visible. These include, for example, increasing Debt/GDP Ratios and the reduced growth of cross-border Service Income. The potential long-term effects of the Pandemic remain uncertain, however. But for the remainder of the decade of the 2020s, we assume that the ongoing economic and social adaptation to the Pandemic—as well as the growing concerns about both Health and Climate Risks—will have significant effects.

Combined with structural Economic Problems, such as growing imbalances in global trade and rising inequalities in the distribution of income, the Pandemic will doubtless significantly affect the priorities of Governments, especially with regard to dealing with finance and debt as well as countries' potentially beneficial participation in cross-border networks for manufacturing and related industries.

Together with the intensifying global imperative to strategically reduce dependence on fossil fuels, the Pandemic-related trends will likely retard Economic Development in many Developing and Emerging Economies at least through the decade of the 2020s, and could well do so, to some degree, even beyond 2030.

We now turn our attention to the Development Scenario itself. Its starting point for medium-terms trends is 2019. It then reports on the ensuing economic and financial downturn driven by the COVID epidemic, which began globally in early 2020. Thereafter the Scenario tracks the ensuing partial economic recovery through 2020-2021 and into early 2022. Some comparisons are also made with the past trends during 2011-2019. But the focus in this Report will cover the entire period through 2030, though the discussion of trends will usually be split into the two periods of 2020-2025 and 2026-2030.

As already indicated above, in this Report we will focus our attention on the trends in six Economic Variables: Real GDP, GDP Per Capita, Government Deficits, Government Debt, the Current Account and the International Investment Position.

## A. Working Assumptions for the Development Scenario<sup>2</sup>

### 1. Growth Rates of Real GDP

As indicated above, the Development Scenario has been based on several working assumptions. One is that major economies will utilize their leading positions in global financial markets and production chains in order to help maintain at least their minimally desirable growth rates of GDP.

For the People's Republic of China, for example, it is assumed that it will strive to maintain a 5 per cent annual rate of growth of Real GDP during at least the period 2020-2030, based on prioritizing continued domestic development (see table II.1). The USA is assumed to achieve a 2 per cent annual growth of real GDP and India a 4 per cent rate. Though the projected growth rate of the USA would be below its pre-pandemic average, it is assumed that it will maintain at least such a moderate rate of growth based on its continuing strength as a global financial center. Meanwhile, since India has a large and growing population and a substantial proportion of its economy is geared to domestic activities, it is projected to experience a relative slowdown relative to the rapid rate of growth that it has achieved in recent decades.

Table II.1  
Assumed growth rates of real GDP

Country / group	Target growth of real GDP	Comment
USA	2% p.a.	Continuing strength as a global financial centre
China	5% p.a. declining to 4% p.a. in the 2030s	Priority for continued domestic development and increasing role in the global financial market
India	4% p.a.	Priority for continued domestic development; limited external linkages
Japan	1.5% p.a.	Very strong international position
Germany	1% p.a.	Very strong international position
Other Europe (non-EU)	1.5% p.a.	Strong international position (e.g., Norway, Switzerland)
Saudi Arabia	2% p.a. declining to 1% p.a. in the 2030s	Large external assets and drive to diversify away from dependence on oil

Source: Author's own elaboration.

Both Japan and Germany are assumed to maintain a strong international position though their annual growth rates of GDP will be only 1.5 per cent and 1 per cent respectively because of the projected relatively inadequate growth of global demand. Saudi Arabia is assumed to maintain a 2 per cent annual rate of growth, which would be considerably below its nearly 3.5 per cent average growth of the pre-pandemic decades. It is projected to continuing growing, however, because of its large external financial role as well as its critical role in exporting energy.

<sup>2</sup> The projections in this chapter have not been adjusted for the potential impact of war and sanctions.

## 2. The Role of Decarbonisation

The GPM exercise assumes that countries will participate to some degree in improving energy efficiency (i.e., reducing the ratio of energy use to GDP), increasing the growth of non-fossil energy supplies and reducing emissions per unit of fossil energy used (table II.2).

The projection to 2030 assumes an overall 21% improvement in energy efficiency, which is monitored by the ratio of energy use to GDP. This projection might appear optimistic but cannot be ruled out ex-ante given that in the past there have been many episodes of even greater gains in a few countries. Note that such an improvement would accommodate increased GDP while total energy use would remain more or less unchanged.

It is assumed that accelerating the supply of non-fossil sources of energy, combined with overall energy efficiency improvements, would reduce the use of fossil fuels by 6%. It is also assumed, however, that changes undertaken in this decade will be part of a trajectory that will have to be steeper and more pervasive in the future, based on the concerted deployment of technological innovations and significant institutional changes.

**Table II.2**  
**Changes in energy variables**

Variable	Units	2019	2025	2030
Energy use	Million tons, oil equivalent	20 000	20 000	20 500
Energy use	Tons of oil equivalent per million \$ GDP	156	136	124
Non-fossil energy supply	% p.a. growth, 5-year average	3.2	4.6	6.1
Energy use: fossil fuels	Million tons, oil equivalent	17 600	17 100	16 500
Energy use: fossil fuels	Tons of oil equivalent per million \$ GDP	138	116	100
CO <sub>2</sub> emissions	Tons of CO <sub>2</sub> per million \$ GDP	288	236	193
CO <sub>2</sub> emissions	Tons per person	4.8	4.2	3.7
World price of oil	Index, 2015 = 1.00, adjusted for inflation	1.16	1.15	0.98
Energy exports	Million tons, oil equivalent	9 600	10 000	10 000
Energy exports	Value in trillion \$, 2015 pp	3.2	3.0	2.4

**Source:** Author's own elaboration.

The lower part of table 2 also shows the projected impact on oil, whose price is expected to fall to about \$54 per barrel by 2030. The falling price of fossil fuels is expected to cause a 25 per cent reduction in the US Dollar value of energy exports. Such a trend will no doubt have a major negative impact on many exporting countries in Africa and South America, as well as countries such as Egypt and Saudi Arabia in West-Central Asia and North Africa. Russia will also be adversely impacted. However, the worst-affected countries are projected to be Nigeria, Iran and Saudi Arabia.

### 3. Sources of External Income

Table II.3 below shows the assumptions about sources of external income depending on export profiles (as a ratio to GDP). Food and raw material exports are projected to continue growing modestly but the export of energy will be reduced dramatically. The export of manufactures is expected to improve by the mid-2020s but would decline thereafter. The export of services will be especially hard hit (due, in particular, to the COVID pandemic), but it will recover modestly by 2030. There will also be a moderate overall decline in remittances. In summary, table 3 illustrates little change in the ratio of external income to GDP despite reshoring with some changes in structure as exports of food and raw materials and manufactures take a larger share while shares of energy, services and income transfers decline.

**Table II.3**  
**Sources of external income**

External income sources	2019	2025	2030	Comment
	% to GDP			
Food and raw materials	2.5	3.1	3.2	increased world demand (especially from China, Korea and Japan)
Energy	2.5	2.1	1.4	shrinking market due to decarbonisation
Manufactures	16.2	18.3	18.1	temporary post-COVID recovery, longer-term decline
Services	6.8	4.8	5.4	large COVID setback, then slow recovery impeded by reshoring
Income and transfers	6.8	6.3	6.3	shift from remittances to FDI and portfolio profits
Total external income	34.8	34.6	34.5	reduced opportunities for many developing countries

**Source:** Author's own elaboration.

### 4. Trends in Savings and Investment

Table II.4 below, which shows assumed trends in Savings and Investment, highlights the pandemic-related rise in excess savings, especially in 2020. The global aggregate private sector surplus (measured as total income minus total current and investment spending) rose sharply from 3.9 per cent of GDP in 2019 to 9.9 per cent in 2020. But it is projected to slowly decline back to 3.0 per cent in 2025 and 2030.

In response to the COVID shock and in order to prevent an even worse global contraction resulting from activity lockdowns, restrictions on travel and services as well as unemployment, the global aggregate of Government Deficits rose sharply from 3.9 per cent of GDP in 2019 to 9.8 per cent in 2020. Over the longer term, Government Debt is expected to continue to increase, starting from about 75 per cent of GDP in 2019 and reaching nearly 100 per cent by 2030.

Similar to the overall surplus of the private sector, private current savings (i.e., before investment spending) rose in 2020 to nearly 33 per cent (as a ratio to GDP) and are projected to decline to about the pre-Covid rate of 27 per cent through 2025 accompanied by a slow rise thereafter. This effect is attributable to an ageing population and, to a lesser extent, stagnation in the share of income accounted for by Labor and the earnings of Small and Medium Enterprises.

In the resulting conditions of moderate global growth, Private Investment as a per cent of global GDP will only noticeably start to rise by 2025. By 2030 such investment would edge up to 25.2 per cent, well below the percent for global savings.

**Table II.4**  
**Trends in savings and investment**

Variable	Units	2019	2020	2025	2030
Private surplus (excess saving)	% of GDP	3.9	9.9	3.0	3.0
Private savings	% of GDP	27.0	32.6	26.8	28.3
Private investment	% of GDP	23.1	22.7	23.8	25.2
Government deficit	% of GDP	3.9	9.8	3.3	3.6
Government debt	% of GDP	74.8	88.0	89.9	95.6
Elderly population (65 and over)	% of total population	9.1	9.3	10.4	11.7
Labour and SME income	% of GDP	52.7	53.0	52.5	51.9

**Source:** Author's own elaboration.

## 5. The Increasing Global Role of The People's Republic of China

Table II.5 on China's Imports shows that they will play an increasingly important role internationally as a source of Demand for goods and services. For example, its import of Food and Raw Materials is projected to increase from 16.8 per cent of the global total in 2019 to 24.9 per cent in 2030. Its import of fuels and energy is also expected to expand significantly, from 14.8% of the global total in 2019 to 25.4% by 2030.

The trends for the import of manufactures and services will exhibit similar increases. Also, in quantity terms, PR China will account for an increasing share of Energy Imports by 2030 although the overall global value of such imports is anticipated to decline, especially after 2025.

The important point about this growing international economic role of PR China is that the export revenues of many Developing Countries, such as in South America, Africa, and West and Central Asia, will become increasingly dependent on China's continuing economic growth.

**Table II.5**  
**The people's Republic of China's international role**

Variable	Units	2019	2025	2030
Imports of food and raw materials	% of world total	16.8	20.7	24.9
Imports of fuels and energy	% of world total	14.8	21.2	25.4
Imports of manufactures	% of world total	9.3	13.3	14.9
Imports of services	% of world total	8.8	11.3	14.9
Income and transfers paid abroad	% of world total	5.0	4.1	4.2
Total imports, income and transfers paid abroad	% of world total	9.3	12.4	14.3
Energy imports	million tons, oil equivalent	1 700	2 100	2 400
Energy imports	value in billion \$2015 pp	476	646	608

**Source:** Author's own elaboration.

However, PR China is not likely to be able to maintain its current rates of economic growth indefinitely. In fact, projections suggest that PR China's rate of growth in Real GDP is likely to decline from an average of about 5 per cent in the 2020s to about 4 per cent in the 2030s.

## 6. The Projected Trends in Six Economic Variables

We now turn our attention to the broad projected trends in six key Economic Variables. As already illustrated, the time period stretches between 2019 and 2030. The six variables that we will examine are Real GDP Growth, GDP Per Capita, the Government Deficit, Government Debt, the Current Account and the International Investment Position.

### (a) Trends in Real GDP

Table II.6 shows the projected trends in annual Real GDP Growth (measured in Purchasing Power Rates) for 2020-25 and 2026-2030 for the World as a whole and for nine geographic regions. After growing at an average annual rate of 3 per cent between 2010 and 2019, Global Growth is projected to experience a severe slowdown in the scenario period. The estimated average annual growth through 2025 will be 2.4 per cent, and will slightly decrease to 2.3 per cent through 2030.

Developing Regions will be clearly affected, especially Sub-Sahara Africa and Latin America, mostly due to declining tendencies in their major sources of export revenues. As detailed below, this change has in large part to do with shifts away from fossil fuels and energy-intensive commodity production orchestrated mostly by Developed Economies as well as the financial vulnerabilities of Developing Economies as a result of the increase in their external deficits.

**Table II.6**  
**Real GDP growth**  
*(Annual percentage)*

World Regions	2020–2025	2026–2030
World	2.4	2.3
Africa South of the Sahara	1.6	0.0
South Asia	2.8	3.7
South-East Asia	2.5	2.3
Central & South America	1.1	0.9
North Africa & Middle East	1.6	0.5
China, East Asia & Pacific	4.4	4.0
Russia and Central Asia	1.1	-1.9
Europe	1.3	1.7
North America	1.7	1.8

**Source:** Author's own elaboration.

Meanwhile, Developing Countries in Asia will be less severely affected since they are more regionally integrated on the basis of more diversified trade structures. South Asia in particular will experience better growth performance towards the end of the Scenario Period since their energy import bills will be decreasing over time.

### **(i) Severe reductions**

The most drastic reductions would be in Africa South of the Sahara and Russia and Central Asia. In the first region Real GDP Growth would drop to 0.0 per cent during 2026-30 from +1.6 per cent during 2020-25; and in the second region it would drop to -1.9 per cent during 2026-30 from +1.1 per cent during 2020-25. In a third region, North Africa and the Middle East, the reduction would also be substantial, i.e., from +1.6 per cent to +0.5 per cent.

In Africa South of the Sahara, oil-exporting countries such as Congo DR and Nigeria would play a major role in depressing growth rates of Real GDP. Congo DR's growth rate would plummet from +6.6 per cent during 2020-25 to only +1.4 per cent during 2026-30 and Nigeria's growth rate would decline drastically from an already negative rate of -1.2 per cent during 2020-25 to a calamitous -7.9 per cent during 2026-30.

In North Africa and the Middle East, projected declines in oil output would also play a significant role in depressing Real GDP Growth: Iran's growth rate is projected to fall from +1.6 per cent during 2020-25 to -3.0 per cent during 2026-30. Egypt's corresponding growth rate for 2020-25 would be +2.8 per cent but this rate would fall to only +1.5 per cent during 2026-30.



### **(ii) Modest declines**

In both South-East Asia and Central and South America, the projected declines in Real GDP Growth would be modest. In South-East Asia, Real GDP Growth would dip from 2.5 per cent to 2.3 per cent. Indonesia's growth rate would play a pivotal role in such a decline since it would drop from 2.5 per cent during 2020-25 to only 1.0 per cent during 2026-2030.

In Central and South America, the decline in growth would be from 1.1 per cent to 0.9 per cent. For example, though Colombia's growth rate would plummet from only 0.6 per cent during 2020-25 to -1.9 per cent during 2026-2030, there would be a more moderate decline in growth in Argentina—i.e., from just 1.7 per cent to 1.6 per cent.

### **(iii) Positive growth**

In the region of China, East Asia and the Pacific (which also contains Developed Economies such as Japan, The Republic of Korea and Australia) Real GDP Growth would remain high, at 4 per cent, during 2026-2030, though this level would represent a dip from 4.4 per cent during 2020-25. For example, China's Real GDP Growth would drop from a high of 5.4 per cent to 4.5 per cent. But, in contrast, Australia's growth would decline from 2.6 per cent to only 0.8 per cent.

In the two Developed Regions of Europe and North America, Real GDP Growth would remain relatively modest, namely, 1.7-1.8 per cent, during 2026-2030. But in both cases these rates would represent a slight upturn compared to the rates for 2020-2025. In Europe Real GDP growth would increase from 1.3 per cent to 1.7 per cent and in North America such growth would edge up from 1.7 per cent to 1.8 per cent.

In Europe, Italy's Real GDP Growth would increase significantly, from 1.2 per cent during 2020-25 to 2.1 per cent during 2026-2030. France's corresponding growth rate would rise from 0.6 per cent to 0.9 per cent. But Germany's would remain the same over both periods, namely, 1.0 per cent.

The USA would help drive up the growth rate in North America: its Real GDP growth would increase from 1.8 per cent during 2020-25 to 2.0 per cent during 2026-30. But the increase in Mexico's growth would be more substantial, increasing from 0.9 per cent to 1.7 per cent. However, in sharp contrast, Canada's growth rate would drop substantially, from 1.1 per cent to -0.1 per cent.

## **(b) Trends in GDP Per Capita**

Table II.7 shows that at the global level GDP Per Capita (expressed as \$2015 pp) is projected to increase from \$16,500 in 2019 to \$19,300 in 2030, or by 17 per cent. The rate of increase in Europe would be 18 per cent since

GDP Per Capita would rise from \$41,300 to \$48,900; and the rate of increase in North America (which includes the USA, Canada and Mexico) would be 13 per cent as GDP Per Capita would rise from \$48,600 to \$55,100.

However, the percentage increase of GDP Per Capita in the region labelled as The People's Republic of China, East Asia and the Pacific would be far higher, namely, 55 per cent. This region also includes countries such as Japan and the Republic of Korea. China's percentage increase in GDP Per Capita is expected to be 67 per cent between 2019 and 2030. The percentage increase in Japan would be 22 per cent and in the Republic of Korea 39 per cent.

**Table II.7**  
**GDP per capita**  
(*\$2015 pp*)

Regions	2019	2025	2030
World	16 500	18 000	19 300
Sub-Saharan Africa	3 800	3 600	3 200
South Asia	6 400	7 100	8 100
South-East Asia	13 600	15 000	16 100
Central & South America	13 800	14 100	14 300
North Africa & Middle East	18 700	18 700	18 000
China, East Asia & Pacific	19 200	24 500	29 700
Russia and Central Asia	19 500	20 500	18 600
Europe	41 300	44 700	48 900
North America	48 600	51 600	55 100

**Source:** Author's own elaboration.

Also, there would be significant increases in GDP Per Capita in both South Asia and South-East Asia. In South Asia, the percentage increase is projected to be 27 per cent between 2019 and 2030 and in South-East Asia 18 per cent. India is the leading economy in South Asia and, remarkably, its GDP Per Capita is projected to increase by a third between 2019 and 2030. But Viet Nam would be the standout economy in South-East Asia since this country's GDP per capita is projected to increase by a phenomenal 116 per cent.

By contrast, in Sub-Saharan Africa the rate of decrease in GDP Per Capita would be -16 per cent since its level is projected to fall from \$3,800 to \$3,200 between 2019 and 2030. Within this context, it is noteworthy, for example, that Nigeria's GDP Per Capita is expected to plummet from \$4,900 in 2019 to only \$2,300 in 2030— or by 53 per cent.

Over the same time period, the rate of decrease in the region of Russia and Central Asia as well as in North Africa and the Middle East would be -4 per cent and -5 per cent, respectively. Russia's GDP Per Capita would fall

from \$26,000 to \$24,200 between 2019 and 2030, or by -7 per cent. In North Africa and the Middle East, Saudi Arabia's GDP Per Capita would decline by 11 per cent, from the high level of \$50,300 in 2019 to \$44,700 in 2030.

In Central and South America, the projected percentage increase in GDP Per Capita between 2019 and 2030 would be only about 4 per cent. For example, while Argentina's GDP Per Capita would increase by about 10 per cent, Colombia's would decrease by about 11 per cent. The countries in the subregion of Central America and the Caribbean would also experience a 5 per cent decline.

### (c) Trends in Government Deficits

Table II.8 shows the Government Deficit (as a percentage of GDP) for the periods 2011-2019, 2020-25 and 2026-30. The Global Average for Government Deficits (as a Percentage of GDP) is projected to worsen from -3.3 per cent during 2011-2019 to -5.6 per cent during 2020-2025— as a result of the Pandemic and accompanying Recessions, which would also dampen Government Revenue. Then this average is projected to return to -3.4 per cent during 2026-2030, which would be close again to its 2011-2019 average.

**Table II.8**  
**Government deficit**  
(Percentage of GDP)

Regions	2011–2019	2020–2025	2026–2030
World	-3.3	-5.6	-3.4
Sub-Saharan Africa	-3.4	-4.4	-3.0
South Asia	-5.7	-8.6	-5.6
South-East Asia	-1.4	-4.4	-2.9
Central & South America	-5.8	-5.5	-2.2
North Africa & Middle East	-2.2	-4.9	-3.0
China, East Asia & Pacific	-2.6	-6.1	-3.8
Russia and Central Asia	+0.1	-1.9	-4.2
Europe	-2.0	-3.2	-1.0
North America	-5.8	-7.3	-4.4

**Source:** Author's own elaboration.

This general pattern of increases in Government Deficits in the early years of the cycle and then reductions much later highlight the lack of effectiveness in attempting to consolidate fiscal budgets by imposing early cuts in spending, which have a knock-on negative effect on Economic Growth.

However, some Developed Regions, such as Europe and North America, are expected to achieve smaller Government Deficits by 2026-30 than they had during 2011-19. For example, Europe's average Deficit during 2026-30 would be -1 per cent of GDP, which would be half the size of its average Deficit of -2 per cent during 2011-19.

France would make a significant contribution to this reduction since its own Deficit would decline between these two periods from -3.7 per cent of GDP to only -0.2 per cent. Italy would also contribute by reducing its average Deficit from -2.6 per cent during 2011-19 to -1.4 per cent during 2026-30.

North America's deficit in 2026-2030 would be -4.4 per cent, but this would still represent a significant drop from its -7.3 per cent level in 2020-25, and even from its level of -5.8 per cent during 2011-19. The USA's deficit would decline significantly from -6.5 per cent during 2011-19 to -4.9 per cent during 2026-30. Also, Canada's Deficit of -0.9 per cent of GDP during 2011-19 is projected, in fact, to be converted into a small surplus of +0.2 per cent during 2026-30.

In contrast, the two regions of China, East Asia and the Pacific as well as Russia and Central Asia are projected to have significantly wider Government Deficits during 2026-30 than during 2011-19. During 2026-30 the region of China, East Asia and the Pacific is expected to have a sizeable Deficit of -3.8 per cent of GDP whereas this region had a Deficit of only -2.6 per cent during 2011-19. China's Deficit would widen from -2.4 per cent during 2011-19 to -7.0 per cent during 2020-25 but would then subside back to -4.4 per cent during 2026-30.

The projected Government Deficit in 2026-30 for the region of Russia and Central Asia would reach the substantial level of -4.2 per cent of GDP whereas, in sharp contrast, this region actually had a small Government Surplus of +0.1 per cent in 2011-19. Russia would contribute to this worsening trend since its small surplus of +0.3 per cent during 2011-19 would turn into a large deficit of -7 per cent during 2026-30.

South Asia is expected to have the worst trends in the Government Deficit. In 2011-19 it already had a Deficit that represented -5.7 per cent of GDP, which was exceeded at that time only by the -5.8 per cent Deficits for both Central and South America and North America.

Thereafter South Asia's deficit is expected to widen very substantially to -8.6 per cent during 2020-25 —namely, the highest level of any Region over the whole period of 2011-2030. Then its Deficit would subside back to -5.6 per cent during 2026-30, which would be roughly the same as its level of -5.7 per cent during 2011-19.

India's Deficit would be a major factor in driving the overall Deficit for South Asia. During 2011-19 India's Deficit represented -5.8 per cent of GDP. But in the wake of the COVID Pandemic and slowing economic growth, India's Deficit is projected to rise drastically to an average of -9.5 per cent of GDP during 2020-25. However, this deficit is projected to return to -6.0 per cent during 2026-30. Pakistan's Deficit would follow a

more stable, but declining trend—dropping from -6.6 per cent of GDP during 2011-19 to -6.3 per cent during 2020-25, and then declining to only -5.1 per cent during 2026-30.

North Africa and the Middle East as well as Africa South of the Sahara would both succeed in achieving a relatively moderate Government Deficit of -3.0 per cent during 2026-30. This trend would follow, however, a rise in both regions to a level of Government Deficit that would significantly exceed -4 per cent of GDP during the interim period of 2020-25.

In North Africa and the Middle East, Egypt's Deficit would progressively and significantly decline between 2011-19, 2020-25 and 2026-30 —namely, from a very high -10.6 per cent to -6.0 per cent to -3.6 per cent.

The trend in the Government Deficit for Africa South of the Sahara would be fairly moderate. For example, it would rise from -3.4 per cent during 2011-19 to -4.4 per cent during 2020-25, but by 2026-30 the deficit would revert back to only -3.0 per cent. The trends for countries such as Tanzania and Kenya would contribute to such a pattern. Tanzania's Government Deficit would decline from only -2.6 per cent during 2011-19 to -1.4 per cent during 2026-30. And Kenya's Government Deficit would drop from -6.4 per cent during both 2011-19 and 2020-25 to -4.2 per cent during 2026-30.

The downward trend in the Deficit for the countries in Central and South America would be more dramatic. Starting at the relatively high level of -5.8 per cent of GDP during 2011-19, the Deficit would drop only to -5.5 per cent during 2020-25. But then it would fall precipitously to only -2.2 per cent during 2025-30. For example, Brazil's Government Deficit is projected to plummet from -5.5 per cent of GDP during 2011-19 to only -0.5 per cent during 2026-30. Chile's Government Deficit would actually decline from -2.7 per cent during 2020-25 to zero during 2026-30.

South-East Asia is noteworthy for having started with a relatively small Government Deficit of -1.4 per cent of GDP during 2011-19. Then it would experience a sharp rise to -4.4 per cent of GDP during 2020-25. But then it is projected to succeed in reverting back to only a -2.9 per cent Deficit during 2026-30.

Viet Nam is projected to contribute to this downward trend in South-East Asia: its Government Deficit would decline progressively from -4.4 per cent during 2011-19 to only -2.2 per cent during 2026-30. The Philippines would also contribute to the relatively small deficit for South-East Asia in 2026-30 by reducing its Deficit from -5.1 per cent of GDP during 2020-25 to only -1.6 per cent during 2026-30.

**(d) Government Debt as a Ratio to GDP**

Table II.9 shows that Government Debt as a per cent of GDP is projected to worsen by 2025 at the global level and in each of our 9 Regions. By that year the Global Economy is projected to still be struggling to overcome the aftermath of the COVID-19 Epidemic and associated economic disruption. Government Debt as a per cent of GDP is not only expected to rise progressively from 75 per cent of GDP in 2019 to 90 per cent in 2025 but also to increase further to 96 per cent in 2030.

**Table II.9**  
**Government debt**  
*(Percentage of GDP)*

Regions	2019	2025	2030
World	75	90	96
Sub-Saharan Africa	58	78	93
South Asia	72	100	105
South-East Asia	48	71	82
Central & South America	72	103	122
North Africa & Middle East	46	67	83
China, East Asia & Pacific	84	95	95
Russia and Central Asia	21	26	47
Europe	78	82	80
North America	101	114	119

**Source:** Author's own elaboration.

By 2030 only Europe is projected to actually lower its Government Debt as a per cent of GDP compared to its level in 2025 but this reduction would be modest. In 2030 its Government Debt would decline to 80 per cent of GDP whereas in 2025 it would be 82 per cent. France, Germany and Italy would all contribute to this modest overall decline. For example, Germany's Debt-to-GDP level would fall from 63 per cent of GDP in 2025 to 60 per cent in 2030, France's would decline from 104 per cent to 100 per cent and Italy's from 145 per cent to 140 per cent. But, in modest contrast, The United Kingdom's Debt-to-GDP level would rise from 96 per cent to 100 per cent.

North America would have one of the highest regional levels of Government Debt in 2030. In 2019 it had indeed the highest level among our nine regions —namely, 101 per cent. However, by 2030 it is projected to have a Debt-to-GDP ratio of 119 per cent —exceeded only by that of Central and South America, which would have a ratio of 122 per cent.

The increase in North America would be driven mainly by the rise in the Debt level of Mexico. Its Debt-to-GDP level is expected to more than double from only 53 per cent in 2019 to 111 per cent in 2030. Meanwhile, the Debt-to-GDP ratio of the USA would rise from the already high level of

108 per cent of GDP in 2019 to the projected level of 121 per cent by 2030. In contrast, Canada's Debt Level is projected to increase by only 5 percentage points between 2019 and 2030, i.e., from 87 per cent to 92 per cent.

The region of China, East Asia and the Pacific would be able to at least hold its Debt-to-GDP level at 95 per cent for both 2025 and 2030. However, The People's Republic of China's debt burden would edge up from 76 per cent of GDP in 2025 to 78 per cent in 2030. In contrast, Japan's debt burden would decline modestly from an already very high level of 245 per cent of GDP in 2025 to 241 per cent in 2030 —a level that obviously would still be remarkably high.

The region of Russia and Central Asia would experience more than a doubling of its Debt Burden, namely, from only 21 per cent of GDP to 47 per cent of GDP between 2019 and 2030. But this level of Debt in 2030 would remain, in fact, the lowest across our 9 regions. Russia's Government Debt as a Ratio to GDP is projected to indeed rise from only 14 per cent of GDP in 2019 to 49 per cent in 2030. But Central Asia's Debt Burden would increase only from 34 per cent in 2019 to 44 per cent in 2030.

Central and South America is projected to have the highest Regional Debt Level in 2030, i.e., 122 per cent. This level would represent a 50 percentage-point rise from its level of 72 per cent in 2019. For example, Brazil's Debt-to-GDP ratio is expected to rise from 88 per cent in 2019 to 140 per cent in 2030, or by 52 percentage points. Colombia's ratio would indeed rise very dramatically by 101 percentage points —namely, from only 52 per cent of GDP to 153 per cent!

South Asia is also projected to have a Debt-to-GDP ratio higher than 100 per cent in 2030. Its Ratio would rise from 72 per cent of GDP in 2019 to 105 per cent. For example, India's Debt Ratio would rise from 74 per cent of GDP in 2019 to 109 per cent in 2030. However, Pakistan's Debt Ratio would increase only from 86 per cent of GDP to 99 per cent during this period and Bangladesh's ratio would only edge up from 36 per cent to 37 per cent.

South-East Asia is projected to hold its Debt-to-GDP ratio lower than South Asia's, namely, at 82 per cent in 2030. However, its ratio would rise by 34 percentage points between 2019 and 2030 from the relatively low level of 48 per cent in 2019. Indonesia's Debt Ratio would rise from a fairly low level of only 31 per cent in 2019 all the way up to 87 per cent in 2030. Thailand's Debt Ratio would rise somewhat more modestly, from 41 per cent to 79 per cent. But Viet Nam would actually manage, in contrast, to progressively lower its Debt Burden from 55 per cent of GDP in 2019 to 48 per cent in 2030.

Strikingly, North Africa and the Middle East's Debt Burden would almost double between 2019 and 2030, i.e., from only 46 per cent of GDP to 83 per cent. Egypt's Debt-to-GDP ratio would expand dramatically from the

already high level of 87 per cent of GDP to the exceedingly high level of 141 per cent. Saudi Arabia's Debt Burden was fairly low in 2019, i.e., only 23 per cent, but it is expected to expand significantly, to 77 per cent in 2030. Also, Turkey's low Debt-to-GDP ratio would practically double, from only 33 per cent in 2019 to 65 per cent in 2030. In sharp contrast, Iran's Debt Burden would only edge up from 43 per cent to 49 per cent during 2019-2030.

Africa South of the Sahara's Debt Burden would expand by 35 percentage points between 2019 and 2030 —i.e., from 58 per cent to 93 per cent. But this Debt-to GDP Ratio would still be significantly lower than those of South Asia, Central and South America and North America. For example, Congo DR's Debt Ratio would indeed rise, but from the fairly low level of 16 per cent of GDP in 2019 to 43 per cent in 2030. Also, South Africa's Debt Burden would only rise from 62 per cent of GDP to 80 per cent between 2019 and 2030.

But Nigeria's Debt Burden would rise more significantly, namely, from only 29 per cent to 77 per cent, or by 48 percentage points. However, it is remarkable that Tanzania's Debt-to-GDP ratio would only edge up by a mere 5 percentage points, i.e., from a low level of 38 per cent to 43 per cent.

### (e) The Current Account

Table II.10 shows the trend in the Current Account as a % of GDP across the nine regions that we have demarcated for analysis. At the global level, of course, all current-account surpluses and deficits should balance out.

**Table II.10**  
**Current account**  
(Percentage of GDP)

Regions	2011–2019	2020–2025	2026–2030
World	0.0	0.0	0.0
Sub-Saharan Africa	-3.7	-3.4	-3.2
South Asia	-2.2	-2.6	-2.7
South-East Asia	+0.3	+0.7	-1.8
Central & South America	-3.0	-0.7	-0.4
North Africa & Middle East	+1.5	+1.1	-0.1
China, East Asia & Pacific	+2.1	+2.0	+1.1
Russia and Central Asia	+1.7	+0.5	-2.4
Europe	+1.5	+2.0	+3.8
North America	-2.8	-3.4	-3.1

**Source:** Author's own elaboration.

Most of the nine regions in our analysis are projected to experience a worsening of their Current Account Balance between 2011-19 and 2026-30—in contrast to the few cases in which a region's surplus would



increase. Such a widening of external imbalances is a recurrent pattern over other periods of economic recovery as the structural tendencies of savings and expenditures re-emerge over time.

Europe is a region that has the tendency to gain a share of the export market while containing domestic spending. It is projected to boost its Current-Account Surplus from +1.5 per cent of GDP during 2011-19 to +2.0 per cent of GDP during 2020-25 and then to +3.8 per cent during 2026-30.

Germany would play the most decisive role in Europe by boosting its Current-Account Surplus from +6.6 per cent of GDP during 2011-19 to 10.4 per cent during 2026-30. Italy would also expand its Current-Account Surplus from +1.1 per cent of GDP during 2011-19 to +4.4 per cent during 2026-30. Also, France would contribute modestly to this trend by turning its Current-Account Deficit of -0.8 per cent of GDP during 2011-19 into a Surplus of +0.8 per cent during 2026-30.

The region of China, East Asia and the Pacific would make a positive contribution by maintaining a Current-Account Surplus of +1.1 per cent of GDP during 2026-30. But this outcome would still represent a relative decline from its +2.1 per cent Surplus during 2011-19.

In fact, it is noteworthy that the People's Republic of China would experience a worsening of its Current Account Balance from a +1.5 per cent surplus relative to GDP during 2011-19 to a -2 per cent deficit during 2026-30. But this trend would be counterbalanced by the Republic of Korea, which would dramatically expand its Current-Account Surplus from +4.2 per cent of GDP during 2011-19 to +7.1 per cent during 2026-30. Also, Japan would greatly expand its Current-Account Surplus from +2.2 per cent of GDP during 2011-19 to 8.7 per cent during 2026-30.

Two regions, namely, North Africa and the Middle East as well as Russia and Central Asia, are expected to experience the worsening of their Current-Account Surplus into a Current-Account Deficit between 2011-19 and 2026-30.

For instance, in 2011-19 North Africa and the Middle East had a Surplus of 1.5 per cent of GDP but this surplus is projected to deteriorate into a Deficit of -0.1 per cent during 2026-30. As part of this trend, Egypt's large Deficit of -4.3 per cent of GDP during 2011-2019 would enlarge further to -6.7 per cent during 2026-30. And Saudi Arabia's notable Surplus of +7.2 per cent during 2011-19 would deteriorate dramatically into a Deficit of -0.7 per cent during 2026-30. Meanwhile, Turkey's Deficit of -4.7 per cent of GDP during 2011-19 would remain at -4.3 per cent during 2026-30.

The Current Account of Russia and Central Asia is projected to worsen from a +1.7 per cent Surplus of GDP during 2011-19 to a sizeable Deficit of -2.4 per cent of GDP in 2026-30. Russia's worsening Current

Account would contribute to this deterioration: its Current Account as a Ratio to GDP would decline from +3.1 per cent during 2011-19 to -1.8 per cent during 2026-30. The situation in Central Asia would also worsen since its Deficit of -2.4 per cent of GDP in 2011-19 would widen to -3.5 per cent during 2026-30.

Both South Asia and South-East Asia would also experience a worsening of their Current Account. South Asia's Current Account as a Ratio to GDP would widen modestly from -2.2 per cent of GDP to -2.7 per cent of GDP between 2011-19 and 2026-30. India's Current Account would deteriorate, for example, from -2.3 per cent of GDP during 2011-19 to -2.7 per cent during 2026-2030. Also Bangladesh's Current Account would worsen substantially from only -0.4 per cent of GDP during 2011-2019 to -3.8 per cent during 2026-30.

South-East Asia's Current Account as a Ratio to GDP would deteriorate from +0.3 per cent of GDP during 2011-2019 to -1.8 per cent of GDP during 2026-30. For example, The Philippines' Current Account as a Ratio to GDP would worsen from +0.9 per cent during 2011-2019 to -0.5 per cent during 2026-30. And over the same time periods Indonesia's Current Account as a Ratio to GDP would widen from -2.5 per cent to -4.4 per cent.

Africa South of the Sahara is projected to continue with Current-Account Deficits between 2011-19 and 2026-30. Its overall Deficit of -3.7 per cent during 2011-19 would be reduced only marginally to -3.2 per cent during 2026-30. There would be decreases in such Deficits across Congo DR, Uganda, Ethiopia, Tanzania and Kenya. For example, Congo DR's Deficit would narrow from -5.3 per cent of GDP to -5.0 per cent of GDP while Tanzania's Deficit would be reduced more significantly, namely, from -7.7 per cent to -3.0 per cent. In contrast, Nigeria's small Surplus of +0.8 per cent of GDP would turn into a Deficit of -1.4 per cent.

Central and South America would be able to reduce its overall Current-Account Deficit from -3.0 per cent of GDP during 2011-19 to only -0.4 per cent during 2026-30. For instance, Brazil would be able to significantly convert its Deficit from -3.2 per cent of GDP during 2011-19 to a surplus of +0.3 per cent of GDP during 2026-30. Also, Argentina would succeed in converting its Deficit of -2.7 per cent of GDP during the first period into a Surplus of +1.8 per cent of GDP during the second. However, Colombia would experience a worsening of its Current-Deficit over the same two periods from -4.8 per cent of GDP to -7.3 per cent of GDP.

The Developed region of North America would continue having Current-Account Deficits as a Ratio to GDP. For example, during 2011-19 its Deficit was -2.6 per cent of GDP and it is projected to worsen to

-3.1 per cent during 2026-30. The Deficit of the USA would worsen, for instance, from -2.6 per cent of GDP during 2011-19 to -3.0 per cent during 2026-2030. And Canada's Deficit would worsen from -3.2 per cent of GDP to -4.5 per cent of GDP over the same time periods. There would also be a similar trend for Mexico, as its Deficit is projected to widen from -2.0 per cent to -3.1 per cent.

So, at the regional level there are projected to be only two regions that would maintain Current-Account Surpluses between 2011-19 and 2026-30. These are Europe and China, East Asia and the Pacific.

## 6. The International Investment Position

Table II.11 shows the International Investment Position for the nine regions into which we have divided the global economy. As is the case for the Current Account, all surpluses and deficits in the International Investment Position should balance out.

Five of the Nine regions retain a Positive International Investment Position as a Ratio to GDP up to 2030. In other words, they are Net Creditors. The other four regions have a Negative International Investment Position. In other words, they are Net Debtors.

China, East Asia and the Pacific would have the strongest Net Creditor Position in 2030. In 2019, this region's International Investment Position represented 39 per cent of GDP and in 2030 it is projected to represent 37 per cent of GDP. One might expect the People's Republic of China to represent the key agent of this regional Investment Position but in 2030 its net position is projected to be only +3 per cent of GDP. This would represent a decline from +17 per cent in 2019.

Table II.11  
International investment position  
(Percentage of GDP)

Regions	2019	2025	2030
World	0.0	0.0	0.0
Sub-Saharan Africa	-26	-35	-48
South Asia	-17	-26	-32
South-East Asia	-1	+13	+6
Central & South America	-28	-25	-23
North Africa & Middle East	+8	+10	+12
China, East Asia & Pacific	+39	+41	+37
Russia and Central Asia	+11	+22	+19
Europe	+15	+24	+36
North America	-41	-61	-67

**Source:** Author's own elaboration.

**Note:** Creditor (+), Debtor (-).

Japan would be in a much stronger position in 2030 since its Net Creditor Position would represent 112 per cent of GDP—a sharp increase from 68 per cent in 2019. The Republic of Korea would also have a Net Creditor Position of 73 per cent in 2030, which would represent more than a doubling of its Position of 34 per cent in 2019.

Europe would have the second-strongest Net Creditor Position in 2030, namely, +36 per cent—just behind the position of 37 per cent for China, East Asia and the Pacific. In fact, Europe's position would improve progressively from 2019 through 2025 and finally through 2030. Germany would be in the strongest position in Europe, with a Net Creditor Position of 147 per cent of GDP in 2030. This level would represent a 23 percentage point improvement of its 2019 Net Position. Italy's position would also be a Net Creditor although its 2030 position would only represent 27 per cent of GDP.

Russia and Central Asia would also enjoy a Net Creditor Position in 2030 that would represent 19 per cent of GDP. This position would signify an increase from 11 per cent in 2019. Russia's position would strengthen significantly between 2019 and 2030: it would more than double from 23 per cent in 2019 to 54 per cent in 2030. In contrast, Central Asia's Net Debtor Position would deteriorate from -24 per cent of GDP in 2019 to -42 per cent in 2030.

North Africa and the Middle East would also have a Net Creditor Position in 2030. But it would represent only 12 per cent of GDP although this would signal an increase from only 8 per cent in 2019. Saudi Arabia would still have a strong Net Creditor Position of +71 per cent of GDP in 2030 though this would represent a decline from +87 per cent of GDP in 2019.

South East Asia would also maintain a marginal Net Creditor Position of +6 per cent of GDP in 2030. By contrast, in 2019 it was in a Net Debtor Position of -1 per cent of GDP. Thailand would represent the main country in the region with a Net Creditor Position in 2030. Its Position is projected to rise from only 3 per cent of GDP in 2019 to 37 per cent of GDP in 2030. Viet Nam would also remain a Net Creditor in 2030, with a position that represented 20 per cent of GDP.

North America would represent the most prominent Net Debtor Region in 2030. Its Net Position would be -67 per cent of GDP, which would represent a significant deterioration from -41 per cent of GDP in 2019. The USA would be the dominant country in this region. Its Net Position would deteriorate from -48 per cent of GDP in 2019 to -74 per cent of GDP in 2030. Canada's Net Position would remain positive, but it would fall from +50 per cent in 2019 to only +19 per cent in 2030. Mexico's Net Position would be -60 per cent of GDP in 2030, and this position would represent a deterioration from -49 per cent of GDP in 2019.

Central and South America would also remain a Net Debtor Region in 2030. Its International Investment Position would be -23 per cent of GDP, which would represent only a minor positive change from -28 per cent in 2019. Brazil's Net Debtor Position would still be -23 per cent of GDP in 2030 (though this would represent a moderate improvement from -40 per cent in 2019) But Colombia's Net Debtor Position would worsen appreciably from -47 per cent of GDP in 2019 to -107 per cent of GDP in 2030. Argentina would represent a counterweight to such negative trends since its Net Creditor Position would rise to +36 per cent in 2030.

South Asia would experience almost a doubling of its Net Debtor Position between 2019 and 2030. In 2019 its Net Debtor Position represented -17 per cent of GDP but this position is projected to worsen to -32 per cent by 2030. For example, India's Net Debtor Position would worsen from -14 per cent of GDP in 2019 to -29 per cent in 2030. And Pakistan's Net Debtor Position would deteriorate from -44 per cent of GDP in 2019 to -65 per cent in 2030. Bangladesh's Position would worsen similarly—namely, from only -13 per cent of GDP in 2019 to -45 per cent of GDP in 2030.

However, the Net Debtor Position of Africa South of the Sahara would be worse than South Asia's. Africa's position would deteriorate, in fact, from -26 per cent of GDP in 2018 to -48 per cent in 2030. The deterioration of the net position of The Democratic Republic of Congo would be emblematic of this region's downward trend: it would worsen from -48 per cent of GDP to -89 per cent of GDP. Uganda's Net Investment Position would also worsen, i.e., from -48 per cent of GDP to -61 per cent of GDP between 2019 and 2030. Kenya's Net Debtor Position would also deteriorate from -38 per cent of GDP in 2019 to -58 per cent of GDP in 2030.

The Net Debtor Positions of both Ethiopia and Tanzania would remain within the range of -46 per cent to -56 per cent, and would not deteriorate significantly. Moreover, South Africa would remain in a Net Creditor Position between 2019 and 2030. For instance, in 2019 its Net Creditor Position was +12 per cent of GDP and by 2030 it is projected to edge up to +15 per cent of GDP.

## **B. Ratio of Women's to Men's Employment**

Table II.12 provides a summary by region of the projected change in the Ratio of Women's Employment to Men's Employment for the periods 2020-25 and 2026-30. At the global level there is expected to be a continuing worsening of this ratio between the two periods. But the deterioration projected for 2026-2030 of -0.2 percentage point represents a moderation of the deterioration of -0.5 percentage point projected for 2020-25.

**Table II.12**  
**Ratio of women's to men's employment**  
*(Percentage point change)*

Region	2020–2025	2026–2030
World	-0.5	-0.2
Africa South of the Sahara	+0.5	-1.2
South Asia	-0.2	+0.2
South-East Asia	+0.3	+0.5
Central and South America	-1.1	+0.8
North Africa and West Asia	-0.1	-0.6
China, East Asia and Pacific	+1.2	+1.4
Russia and Central Asia	-2.2	-1.4
Europe	+2.2	+1.2
North America	-0.5	+1.2

**Source:** Author's own elaboration.

Table II.12 shows that at the global level there would be increased discrimination against women in employment through 2030. Nevertheless, the increase is projected to lessen from -0.5 percentage point during 2020-25 to -0.2 percentage point during 2026-30.

However, employment discrimination against women is expected to worsen in Africa South of the Sahara as well as in North Africa and West Asia. In Africa South of the Sahara there would actually be a projected reversal of a positive 0.5 percentage point improvement during 2020-25 into a negative -1.2 percentage point deterioration for 2026-30.

In North Africa and West Asia gender discrimination against women is projected to worsen significantly, from -0.1 percentage point in 2020-25 to -0.6 percentage point during 2026-30.

During 2020-25, Russia and Central Asia is expected to have the highest increase in gender discrimination, i.e., -2.2 percentage points. However, during 2026-30 this rate is projected to lessen to -1.4 percentage points. But this rate would still represent the highest percentage-point deterioration for that period.

What is particularly interesting is that gender discrimination against women is estimated to be significant in North America during 2020-25, namely, by a rate of -0.5 percentage points. However, the projection for 2026-30 predicts a very significant improvement to a +1.2 percentage-point trend.

There is expected to be a similar turn-around in Central and South America. Its change in the ratio of Women's to Men's Employment is forecast to improve from -1.1 percentage point during 2020-25 to +0.8 percentage point during 2026-30. This change would

represent a significant +1.9 turn-around. There would also be a very moderate improvement in South Asia. Its ratio would improve from -0.2 percentage point to +0.2.

Europe would record the highest percentage-point improvement (for any region or any period) in 2020-25. Its percentage-point change would be a high +2.2. However, this improvement would be moderated to a +1.2 percentage-point change during 2026-30.

In contrast, in China, East Asia and the Pacific the ratio of Women's Employment to Men's is expected to improve from +1.2 percentage point during 2020-25 to +1.4 percentage point during 2026-30. South-East Asia is also expected to improve its ratio of Women's Employment to Men's, but only from the relatively low level of +0.3 percentage point to +0.5 percentage point over the same two periods.

## **C. Brief Summary of Main Economic Trends**

In this section we briefly sum up the most noteworthy trends in the six Economic Variables that we have examined across the nine global regions. We start with Real GDP Growth—in other words, the change in the size of each country's economy.

### **1. Real GDP Growth**

Unfortunately, some of the most severe reductions in Real GDP Growth are projected to be experienced by countries in Africa South of the Sahara. The region's Rate of Growth is projected to fall from +1.6 per cent during 2020-25 to effectively 0 per cent during 2026-30. Such a decline would be noteworthy for Oil Exporters such as Congo DR and Nigeria. Congo DR's rate of growth of Real GDP would be reduced from 6.6 per cent during 2020-25 to only 1.4 per cent during 2026-30. Similarly, Nigeria's rate of growth would deteriorate from -1.2 per cent during 2020-25 to the very low rate of -7.9 per cent during 2026-30.

Russia and Central Asia is projected to suffer from a similarly bleak outlook. Its Real GDP growth is expected to topple from +1.1 per cent to -1.9 per cent between 2020-25 and 2026-30. Russia's Real GDP growth would drop from only +0.8 per cent during the first period to -2.7 per cent during the second. Another oil-exporting region, North Africa and the Middle East, would experience a similar, though less severe, decline. Its growth of Real GDP would plummet from 1.6 per cent during 2020-25 to effectively 0.0 per cent during 2026-30.

Meanwhile, South Asia (led by India) and China, East Asia and the Pacific are projected to grow fairly rapidly by 2026-30. South Asia would grow by 3.7 per cent, the second-highest rate of increase; while China,

East Asia and the Pacific would grow by 4.0 per cent. These rates would far surpass those of any other regions. India's rate of growth of Real GDP would increase from 3.0 per cent during 2020-25 to 4.3 per cent during 2026-30; while PR China's growth would decline from 5.4 per cent during 2020-25 to 4.5 per cent during 2026-30.

## 2. GDP Per Capita

Next, we highlight the Rate of Increase of GDP Per Capita between 2019 and 2030. It is notable that China, East Asia and the Pacific would experience a 55 per cent increase in its GDP Per Capita during this period. PR China itself would enjoy a 67 per cent increase in its GDP Per Capita while the Republic of Korea would experience a 39 per cent increase.

There would also be significant increases in both South-East Asia and South Asia. In South Asia, for example, India's GDP Per Capita would increase by a third while in South-East Asia, Viet Nam's GDP Per Capita would expand by an amazing 116 per cent.

However, Sub-Saharan Africa is projected to experience a 16 per cent decrease in its GDP Per Capita. There would also be significant decreases in GDP Per Capita of -4 per cent to -5 per cent in the regions of Russia and Central Asia as well as North Africa and the Middle East, both of which rely significantly on the export of oil. Between 2019 and 2030 there would be a 7 per cent reduction, in particular, in GDP Per Capita in Russia and a 11 per cent reduction in GDP per capita in Saudi Arabia.

## 3. Government Deficits

Eight out of the nine regions of the World would experience expanding Government Deficits between 2011-19 and 2020-25 as result of the impact of the Pandemic and slowing Economic Growth. The one exception would be Central and South America. But table 8 also shows that 8 of the 9 regions would experience an ensuing reduction in their Government Deficits during 2026-2030 because Governments would prioritise reductions by cutting expenditures and seeking to increase tax collection.

The one prominent exception would be Russia and Central Asia. Its Government Deficit would widen appreciably from -1.9 per cent of GDP during 2020-25 to -4.2 per cent during 2026-30. Russia would be the dominant force in this trend as its own Government Deficit would worsen from a surplus of +0.3 per cent of GDP during 2011-19 to a sizeable Deficit of -7 per cent of GDP during 2026-2030.

South Asia's Government Deficit would still be -5.6 per cent of GDP during 2026-30, roughly the same as its Deficit of -5.7 per cent during 2011-19. And India's Government Deficit would still be -6.0 per cent during 2026-30, which would be slightly higher than its Deficit of -5.8 per cent during 2011-19.



#### 4. Government Debt

At the Global Level, Government Debt is projected to increase continuously between 2019 and 2030, i.e., from 75 per cent of GDP to 96 per cent of GDP. Government Debt is also projected to increase in almost every region. The one exception would be Europe: its Government Debt as a Ratio to GDP would stay relatively stable, between 78 per cent and 82 per cent, during 2019-2030.

North America, led by the USA, is projected to have the highest Debt Level in 2019 and 2025 but it would be overtaken by Central and South America in 2030. While North America's Debt would be 119 per cent of GDP in that year, Central and South America's Debt would be 122 per cent.

In contrast, the region of Russia and Central Asia is expected to shoulder the smallest Debt Burden in 2030, namely, 47 per cent of GDP. But this region would also have had the smallest Government Debt (21-26 per cent of GDP) in both 2019 and 2025.

#### 5. Current Account

Europe is projected to significantly enhance its Current-Account Surplus between 2011-19 and 2026-30. This surplus is expected to more than double from +1.5 per cent of GDP to +3.8 per cent of GDP. In contrast, North America (principally the USA) would face a worsening trend of its Current-Account Deficit. Its Deficit would widen from -2.8 per cent of GDP during 2011-19 to -3.1 per cent during 2026-30.

Meanwhile, it is indeed notable that The People's Republic of China would experience a significant worsening of its Current-Account Balance from a +1.5 per cent surplus relative to GDP during 2011-2019 to a -2 per cent Deficit during 2026-30.

Also, the main Deficit region, namely, Sub-Saharan Africa, would continue to suffer from Current-Account Deficits that exceed -3 per cent of GDP. Also, South Asia would continue to shoulder Deficits that are larger than -2 per cent of GDP and are beginning to approach -3 per cent.

#### 6. International Investment Position

Not surprisingly, Europe's International Investment Position as a Net Creditor is expected to strengthen significantly between 2011-19 and 2026-30. Its Net Position would more than double between these two periods, i.e., from +15 per cent of GDP to +36 per cent of GDP. Germany would play a prominent role in boosting this trend since its Net Creditor Position would rise dramatically from +66 per cent of GDP in 2019 to +147 per cent of GDP in 2030.

Coinciding with this trend would be a worsening of North America's Net Debtor Position, which would decline from an already low level of -41 per cent of GDP during 2011-19 to -67 per cent during 2026-30. The position of the USA would propel this decline since its Net Debtor Position would worsen significantly, from -48 per cent of GDP to -78 per cent of GDP over the same period.

Meanwhile, Sub-Saharan Africa's Net Debtor Position is also expected to worsen substantially, from -26 per cent of GDP during 2011-19 to -48 per cent during 2026-2030. The scale of such a deterioration would characterize a wide range of countries, such as Congo DR, Uganda, Ethiopia, Kenya and Nigeria.

In contrast, North Africa and The Middle East is expected to at least maintain its Net Creditor Position, which would range between +8 per cent and +12 per cent of GDP between 2011-19 and 2026-30. Saudi Arabia and other Oil Exporters are expected to contribute to this trend despite a relative decline in their oil output.

Russia and Central Asia is projected to actually enhance its International Investment Position between 2011-19 and 2026-30, from +11 per cent of GDP to +19 per cent of GDP, mainly because of the doubling of Russia's Net Creditor Position.

Meanwhile, the region of China, East Asia and the Pacific would basically maintain its Net Creditor Position at close to 40 per cent of GDP between 2011-19 and 2026-30, mainly due to the strengthening position of Japan and the Republic of Korea, and not so much PR China.

## Annex II.A1

### Statistical tables

- A1. Real GDP growth (% per annum)
- A2. GDP per capita (\$2015 pp)
- A3. Government deficits (% of GDP)
- A4. Government debt (% of GDP)
- A5. Current account (% of GDP)
- A6. International investment position (% of GDP)
- A7. Ratio of women's to men's employment (percentage point changes)

Tables in this Appendix provide listings of indicators discussed in the main text, and show results for the world as a whole, 9 world regions, 34 countries and the remaining 160 smaller countries in 11 regional groups. Countries and country groups are classified by their 2019 income level as defined by the World Bank.

Projected figures for 2025 and 2030 illustrate possible outcomes assuming no major policy change. They are not forecasts of what is likely to happen at the end of the day since such an outcome would depend on many unforeseeable factors, including the way in which people, business and government react to new situations.

The figures in tables below are particularly uncertain for many developing countries since they have limited opportunities to diversify external trade and commercial relationships and are highly exposed to fluctuations in world markets and swings in international and domestic sentiment. We have included more than 20 developing countries to illustrate the variety of their circumstances and the challenges that may arise in the aftermath of the COVID pandemic and through the later part of this decade.

**Table II.A1.1**  
**Real GDP growth**  
(Annual percentage)

Region / country	2020–2025	2026–2030
World	2.4	2.3
<b>World regions</b>		
Africa South of the Sahara	1.6	0.0
South Asia	2.8	3.7
South East Asia	2.5	2.3
Central and South America	1.1	0.9
North Africa and Middle East	1.6	0.5
China, East Asia and Pacific	4.4	4.0
Russia and Central Asia	1.1	-1.9

Table II.A1.1 (concluded)

Region / country	2020–2025	2026–2030
Europe	1.3	1.7
North America	1.7	1.8
<b>Low income and lower middle income countries and groups</b>		
Congo DR	6.6	1.4
Uganda	4.7	4.5
Ethiopia	3.2	4.8
Tanzania	5.1	5.3
Other Sub-Saharan Africa	1.5	0.2
Kenya	3.6	2.8
Bangladesh	3.3	1.0
Nigeria	-1.2	-7.9
Pakistan	1.3	0.9
Other South Asia	0.9	0.7
India	3.0	4.3
Philippines	1.9	2.9
Viet Nam	8.0	8.1
Other North Africa	1.5	-1.9
Other South America	-1.8	-1.9
Egypt	2.8	1.5
Iran	1.6	-3.0
<b>Upper middle income countries and groups</b>		
Indonesia	2.5	1.0
Central America and Caribbean	0.9	-0.2
Central Asia	1.6	-0.4
South Africa	1.8	1.4
Colombia	0.6	-1.9
Brazil	1.7	2.1
Other South East Asia	0.6	0.6
China	5.4	4.5
Thailand	1.0	1.7
Other West Asia	2.0	1.7
Argentina	1.7	1.6
Mexico	0.9	1.7
Russia	0.8	-2.7
Turkey	2.2	0.4
<b>High income countries and groups</b>		
Chile	3.6	2.3
Other Asia Pacific	3.9	2.4
Other Europe	0.8	1.3
Other EU	2.0	2.4
Italy	1.2	2.1
Korea	3.0	3.2
Japan	0.9	1.8
France	0.6	0.9
UK	0.5	0.6
Canada	1.1	-0.1
Australia	2.6	0.8
Germany	1.0	1.0
Saudi Arabia	-1.2	1.8
USA	1.8	2.0

**Source:** Author's own elaboration.

**Table II.A1.2**  
**GDP per capita**  
*(\$2015pp)*

Region / country	2019	2025	2030
World	16 500	18 000	19 300
World regions			
Africa South of the Sahara	3 800	3 600	3 200
South Asia	6 400	7 100	8 100
South East Asia	13 600	15 000	16 100
Central and South America	13 800	14 100	14 300
North Africa and Middle East	18 700	18 700	18 000
China, East Asia and Pacific	19 200	24 500	29 700
Russia and Central Asia	19 500	20 500	18 600
Europe	41 300	44 700	48 900
North America	48 600	51 600	55 100
Low income and lower middle income countries and groups			
Congo DR	900	1 100	1 000
Uganda	2 400	2 600	2 800
Ethiopia	2 600	2 700	3 000
Tanzania	2 700	3 100	3 500
Other Sub-Saharan Africa	3 300	3 100	2 800
Kenya	4 000	4 400	4 500
Bangladesh	4 800	5 500	5 600
Nigeria	4 900	3 900	2 300
Pakistan	4 900	4 700	4 600
Other South Asia	5 400	5 200	5 000
India	6 900	7 800	9 200
Philippines	8 700	9 000	9 800
Viet Nam	10 000	15 100	21 600
Other North Africa	10 200	10 400	8 900
Other South America	10 400	8 800	7 700
Egypt	12 900	13 700	13 700
Iran	14 400	14 800	12 200
Upper middle income countries and groups			
Central America and Caribbean	11 000	10 900	10 400
Indonesia	11 800	12 900	13 000
Central Asia	13 000	13 900	13 400
South Africa	13 500	14 000	14 200
Colombia	14 000	13 900	12 400
Brazil	14 700	15 700	17 000
Other South East Asia	15 200	14 800	14 600
China	15 900	21 300	26 500
Thailand	17 900	18 800	20 500
Other West Asia	18 100	18 000	17 900
Argentina	18 800	19 700	20 600
Mexico	19 000	19 000	20 000
Russia	26 000	27 400	24 200
Turkey	27 800	30 200	29 700

Table II.A1.2 (concluded)

Region / country	2019	2025	2030
<b>High income countries and groups</b>			
Chile	23 600	28 200	31 200
Other Asia Pacific	29 900	36 700	40 700
Other Europe	35 100	37 100	39 900
Other EU	38 500	43 700	49 800
Italy	38 700	42 200	47 700
Korea	41 000	48 800	57 100
Japan	42 100	45 700	51 500
France	43 000	44 000	45 900
UK	44 000	44 400	45 400
Canada	46 600	47 500	46 200
Australia	49 400	53 900	53 400
Germany	49 800	52 900	56 200
Saudi Arabia	50 300	43 000	44 700
USA	60 200	64 900	70 000

Source: Author's own elaboration.

**Table II.A1.3**  
**Government deficits**  
*(Percentage of GDP)*

Region / country	2011–2019	2020–2025	2026–2030
World	75	90	96
<b>World regions</b>			
Africa South of the Sahara	3.4	4.4	3.0
South Asia	5.7	8.6	5.6
South East Asia	1.4	4.4	2.9
Central and South America	5.8	5.5	2.2
North Africa and Middle East	2.2	4.9	3.0
China, East Asia and Pacific	2.6	6.1	3.8
Russia and Central Asia	-0.1	1.9	4.2
Europe	2.0	3.2	1.0
North America	5.8	7.3	4.4
<b>Low income and lower middle income countries and groups</b>			
Congo DR	-0.1	2.2	6.0
Uganda	3.1	4.5	2.8
Ethiopia	2.3	2.7	2.0
Tanzania	2.6	2.6	1.4
Other Sub-Saharan Africa	3.4	3.5	1.8
Kenya	6.4	6.4	4.2
Bangladesh	3.8	1.6	1.7
Nigeria	3.1	5.1	2.9
Pakistan	6.6	6.3	5.1
Other South Asia	4.3	7.4	4.1
India	5.8	9.5	6.0
Philippines	0.3	5.1	1.6
Viet Nam	4.4	3.7	2.2
Other North Africa	5.7	5.2	5.1
Other South America	11.7	3.2	1.7

Table II.A1.3 (concluded)

Region / country	2011–2019	2020–2025	2026–2030
Egypt	10.6	6.0	3.6
Iran	1.6	6.3	4.7
<b>Upper middle income countries and groups</b>			
Indonesia	1.9	5.1	4.8
Central America and Caribbean	3.1	4.1	2.7
Central Asia	0.3	2.1	-0.6
South Africa	3.8	6.3	5.4
Colombia	3.1	6.8	9.4
Brazil	5.5	6.9	0.5
Other South East Asia	-0.5	2.3	-0.5
China	2.4	7.0	4.4
Thailand	0.2	3.6	2.7
Other West Asia	-2.0	2.5	-3.4
Argentina	4.5	5.0	4.9
Mexico	3.5	3.7	3.2
Russia	-0.3	1.8	7.0
Turkey	1.5	5.3	5.1
<b>High income countries and groups</b>			
Chile	1.4	2.7	0.0
Other Asia Pacific	-0.1	1.4	1.0
Other Europe	-3.5	1.3	-0.2
Other EU	2.4	2.7	1.1
Italy	2.6	4.2	1.4
Korea	-1.6	2.7	3.1
Japan	5.3	4.8	1.3
France	3.7	3.9	0.2
UK	4.6	7.1	4.6
Canada	0.9	3.2	-0.2
Australia	2.7	6.2	4.5
Germany	-0.7	1.4	-0.9
Saudi Arabia	2.9	5.6	7.9
USA	6.5	8.0	4.9

**Source:** Author's own elaboration.

**Table II.A1.4**  
**Government debt**  
*(Percentage of GDP)*

Region / country	2019	2025	2030
World	75	90	96
<b>World regions</b>			
Africa South of the Sahara	58	78	93
South Asia	72	100	105
South East Asia	48	71	82
Central and South America	72	103	122
North Africa and Middle East	46	67	83
China, East Asia and Pacific	84	95	95
Russia and Central Asia	21	26	47
Europe	78	82	80
North America	101	114	119

Table II.A1.4 (concluded)

Region / country	2019	2025	2030
<b>Low income and lower middle income countries and groups</b>			
Congo DR	16	20	43
Uganda	37	51	52
Ethiopia	58	72	83
Tanzania	38	43	43
Other Sub-Saharan Africa	77	107	126
Kenya	62	73	74
Bangladesh	36	33	37
Nigeria	29	52	77
Pakistan	86	92	99
Other South Asia	64	101	122
India	74	107	109
Philippines	37	66	68
Viet Nam	55	53	48
Other North Africa	51	72	115
Other South America	62	94	128
Egypt	87	121	141
Iran	43	45	49
<b>Upper middle income countries and groups</b>			
Indonesia	31	61	87
Central America and Caribbean	51	68	79
Central Asia	34	45	44
South Africa	62	71	80
Colombia	52	92	153
Brazil	88	130	140
Other South East Asia	83	116	124
China	57	76	78
Thailand	41	65	79
Other West Asia	52	74	74
Argentina	90	93	115
Mexico	53	86	111
Russia	14	16	49
Turkey	33	49	65
<b>High income countries and group</b>			
Chile	28	47	58
Other Asia Pacific	25	22	21
Other Europe	42	72	92
Other EU	68	65	60
Italy	134	145	140
Korea	42	67	89
Japan	235	245	241
France	97	104	100
UK	84	96	100
Canada	87	102	92
Australia	47	64	79
Germany	59	63	60
Saudi Arabia	23	45	77
USA	108	118	121

**Source:** Author's own elaboration.



**Table II.A1.5**  
**Current account**  
*(Percentage of GDP)*

Region / country	2011–2019	2020–2025	2026–2030
World	0.0	0.0	0.0
<b>World Regions</b>			
Africa South of the Sahara	-3.7	-3.4	-3.2
South Asia	-2.2	-2.6	-2.7
South East Asia	0.3	0.7	-1.8
Central and South America	-3.0	-0.7	-0.4
North Africa and Middle East	1.5	1.1	-0.1
China, East Asia and Pacific	2.1	2.0	1.1
Russia and Central Asia	1.7	0.5	-2.4
Europe	1.5	2.0	3.8
North America	-2.6	-3.4	-3.1
<b>Low income and lower middle income countries and groups</b>			
Congo DR	-5.3	-7.5	-5.0
Uganda	-6.5	-7.9	-3.2
Ethiopia	-8.1	-4.9	-2.1
Tanzania	-7.7	-2.9	-3.0
Other Sub-Saharan Africa	-5.2	-4.4	-5.1
Kenya	-8.0	-5.6	-1.5
Bangladesh	-0.4	-3.3	-3.8
Nigeria	0.8	-2.4	-1.4
Pakistan	-3.0	-3.5	-2.6
Other South Asia	-2.2	-1.7	-1.4
India	-2.3	-2.5	-2.7
Philippines	0.9	-1.6	-0.5
Viet Nam	2.0	4.0	-0.2
Other North Africa	-6.4	-2.1	2.5
Other South America	-0.8	0.8	2.1
Egypt	-4.3	-4.1	-6.7
Iran	3.0	5.9	5.5
<b>Upper middle income countries and groups</b>			
Indonesia	-2.5	-1.6	-4.4
Central America and Caribbean	-4.2	-3.5	-4.5
Central Asia	-2.4	-1.9	-3.5
South Africa	-4.4	-0.6	-1.6
Colombia	-4.8	-4.9	-7.3
Brazil	-3.2	-0.1	0.3
Other South East Asia	7.4	5.2	-0.9
China	1.5	0.5	-2.0
Thailand	4.0	2.0	2.1
Other West Asia	5.0	3.0	1.3
Argentina	-2.7	1.0	1.8
Mexico	-2.0	-1.0	-3.1
Russia	3.1	1.5	-1.8
Turkey	-4.7	-3.3	-4.3

Table II.A1.5 (concluded)

Region / country	2011–2019	2020–2025	2026–2030
<b>High income countries and groups</b>			
Chile	-3.6	0.1	2.0
Other Asia Pacific	5.7	3.6	6.2
Other Europe	6.3	4.9	5.5
Other EU	1.5	2.8	4.7
Italy	1.1	1.7	4.4
Korea	4.2	5.0	7.1
Japan	2.2	5.8	8.7
France	-0.8	-1.0	0.8
UK	-4.5	-5.1	-5.5
Canada	-3.2	-3.6	-4.5
Australia	-3.2	-0.7	-2.7
Germany	6.6	7.5	10.4
Saudi Arabia	7.2	-1.1	-0.7
USA	-2.6	-3.5	-3.0

Source: Author's own elaboration.

**Table II.A1.6**  
**International investment position**  
*(Percentage of GDP)*  
*creditor (+) debtor (-)*

Region / country	2019	2025	2030
<b>World</b>			
<b>World regions</b>			
Africa South of the Sahara	-26	-35	-48
South Asia	-17	-26	-32
South East Asia	-1	13	6
Central and South America	-28	-25	-23
North Africa and Middle East	8	10	12
China, East Asia and Pacific	39	41	37
Russia and Central Asia	11	22	19
Europe	15	24	36
North America	-41	-61	-67
<b>Low income and lower middle-income countries and groups</b>			
Congo DR	-48	-73	-89
Uganda	-48	-64	-61
Ethiopia	-48	-56	-47
Tanzania	-47	-46	-46
Other Sub-Saharan Africa	-49	-61	-82
Kenya	-38	-58	-58
Bangladesh	-13	-27	-45
Nigeria	-11	-23	-36
Pakistan	-44	-59	-65
Other South Asia	-32	-35	-40
India	-14	-23	-29
Philippines	-9	-13	-11
Viet Nam	14	30	20
Other North Africa	1	-20	-8
Other South America	-12	-7	10
Egypt	-54	-64	-93
Iran	-52	-3	48

Table II.A1.6 (concluded)

Region / country	2019	2025	2030
<b>Upper middle-income countries and groups</b>			
Indonesia	-29	-28	-44
Central America and Caribbean	-46	-63	-81
Central Asia	-24	-28	-42
South Africa	12	26	15
Colombia	-47	-70	-107
Brazil	-40	-30	-23
Other South East Asia	93	160	141
China	17	14	3
Thailand	3	26	37
Other West Asia	29	46	52
Argentina	28	31	36
Mexico	-49	-53	-60
Russia	23	46	54
Turkey	-39	-53	-66
<b>High income countries and groups</b>			
Chile	-10	-7	2
Other Asia Pacific	165	166	160
Other Europe	135	174	174
Other EU	-6	4	17
Italy	6	14	27
Korea	34	50	73
Japan	68	96	112
France	-14	-21	-13
UK	-19	-41	-63
Canada	50	39	19
Australia	-43	-44	-48
Germany	66	105	147
Saudi Arabia	87	81	71
USA	-48	-70	-74

**Source:** Author's own elaboration.

**Table II.A1.7**  
**Ratio of women's to men's employment**  
*(Percentage point changes)*

Region / country	2020–2025	2026–2030
World	-0.5	-0.2
<b>World regions</b>		
Africa South of the Sahara	0.5	-1.2
South Asia	-0.2	0.2
South East Asia	0.3	0.5
Central and South America	-1.1	0.8
North Africa and West Asia	-0.1	-0.6
China, East Asia and Pacific	1.2	1.4
Russia and Central Asia	-2.2	-1.4
Europe	2.2	1.2
North America	-0.5	1.2

Table II.A1.7 (concluded)

Region / country	2020–2025	2026–2030
<b>Low income and lower middle income countries and groups</b>		
Congo DR	0.1	0.9
Uganda	-0.2	0.0
Ethiopia	-0.2	0.1
Tanzania	-0.1	-0.2
Other Sub-Saharan Africa	0.1	-0.9
Kenya	1.3	1.0
Bangladesh	1.2	0.8
Nigeria	2.8	-8.6
Pakistan	-0.2	0.0
Other South Asia	-1.8	-2.0
India	-0.3	0.2
Philippines	-2.0	0.3
Viet Nam	2.0	0.2
Other North Africa	1.0	-1.0
Other South America	-0.7	1.9
Egypt	0.9	0.7
Iran	-3.5	-1.2
<b>Upper middle income countries and groups</b>		
Indonesia	0.4	0.5
Central America and Caribbean	1.1	0.7
Central Asia	-3.0	-1.7
South Africa	-4.8	-4.8
Colombia	-5.9	-3.1
Brazil	-1.5	0.9
Other South East Asia	0.6	1.0
China	1.1	1.2
Thailand	1.4	1.2
Other West Asia	0.6	-0.5
Argentina	1.4	1.2
Mexico	-0.6	1.3
Russia	-0.7	-0.6
Turkey	-1.4	0.0
<b>High income countries and groups</b>		
Chile	-0.7	1.8
Other Asia Pacific	1.6	1.9
Other Europe	2.0	1.1
Other EU	2.3	2.0
Italy	1.4	2.2
Korea	1.0	2.6
Japan	2.6	2.2
France	1.3	0.5
UK	2.8	0.3
Canada	-0.3	0.8
Australia	1.8	1.4
Germany	2.5	-0.2
Saudi Arabia	5.9	-0.5
USA	0.0	1.4

**Source:** Author's own elaboration.

## Chapter III

# **A critical assessment of macroprudential regulation and comparative regional experiences focusing on Latin America and the Caribbean**

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## **Introduction**

Macroprudential policies are broadly defined as those aimed at reducing systemic risk, either over time or across institutions and markets. Systemic risk is defined as “a risk of disruption to financial services that is caused by an impairment of all or parts of the financial system and has the potential to impose serious negative consequences on the real economy” (CEF/IMF/BPS, 2009, quoted in IMF, 2010).<sup>2</sup>

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<sup>1</sup> Economic Commission for Latin America and the Caribbean (ECLAC) Santiago, Chile; National Autonomous University of Mexico, UNAM; and National University of Colombia. Inputs were provided by Jayati Ghosh of the University of Massachusetts Amherst, Pablo Bortz of Universidad Nacional de San Martín, Buenos Aires, C.P. Chandrasekhar of Jawaharlal Nehru University, and Matias Vernengo of Bucknell University. The authors wish to thank Daniela Prates and Penelope Hawkins for very valuable comments on the first draft of this paper.

<sup>2</sup> According to part of the literature on macroprudential regulation, systemic risk has two key dimensions: a temporal one (how the risk of the financial system evolves over time, how it accumulates and how it is linked to the real business cycle); and an intersectoral, one (how risk is distributed through the financial system and what interconnections and common exposures may exist among its agents) (IMF, 2010; Kaufman and Scott, 2003; Pérez Caldentey and Cruz, 2012).

The specific systemic risks can include risks of excessive domestic credit growth and associated asset price inflation; risks of exchange rate volatility arising from investor activity in on-shore and off-shore currency markets; risks of capital flow volatility because of investor behaviour, especially non-residents; risks of domestic banking fragility arising from temporary unexpected shocks (like the pandemic) and predicted other shocks (like climate change); and risks of external debt crises.

Macroprudential measures ought to identify early indicators of weakness, pre-empt, and limit the build-up of such risks and create buffers against pro-cyclical feedbacks of financial instability.

The development of macroprudential regulation was the result of necessity. Prior to macroprudential regulation the traditional approach to financial regulation focused, to a great extent, on the establishment of capital adequacy standards (CAS) and on ensuring their compliance by individual financial institutions; that is, on micro-prudential regulation. This was complemented during stress or crisis periods with the provision of liquidity to the financial system.

The CAS regulatory approach was not a deterrent of the occurrence of financial crises. In fact, the number of crises following the first Basel accord on CAS (1988) increased over time and became more systemic. Most importantly, CAS were not able to accomplish their objective since crises were shown to an endogenous source of fragility and instability. This provided an important reason to provide a more comprehensive and macroeconomic approach to financial regulation.

The empirical evidence for the period 1970-2017 shows an increase in systemic banking and currency crises. At the global level the number of systemic banking and currency crises increased from 28 in the 1970s, to 114 in the 1980s, to 158 in the 1990s. Between 2000 to 2017 there were 87 systemic banking and currency crises (Laeven and Valencia, IMF, 2019).<sup>3</sup> In Latin America and the Caribbean recurrent financial crises include the 1980s debt crisis, the Tequila Crisis (1994-1995), the East Asian Crisis (1997-1998), the Brazilian-Russian Crisis (1999), the Argentine Crisis (2001-2002), and the Global Financial Crisis (2008-2009).

Also, since the 1990s, crises have also exhibited a more systemic character. That is, countries that are not at the epicentre of a crisis tend to become vulnerable to contagion. This is exemplified by the Global Financial Crisis of 2008-2009 (GFC), where 91 economies (representing 67% of world GDP) experienced a contraction of output (Chen et al., 2019).<sup>4</sup>

<sup>3</sup> A systemic banking crisis is an event that meets two conditions: (i) significant signs of financial distress in the banking system (as indicated by significant bank runs, losses in the banking system, and/or bank liquidations); (ii) significant banking policy intervention measures in response to significant losses in the banking system. Currency crises are defined as sharp depreciations of the currency relative to the US dollar (Laeven and Valencia; IMF, 2019, pp.4 and 9).

<sup>4</sup> See also FRED (2020).

The increased frequency and systemic character of financial crises indicates that markets, and particularly financial markets, do not allocate and evaluate risk efficiently. This also disproves the hypothesis that asset prices, by reflecting all available information, ruled out the possibility of arbitrage and financial speculation.<sup>5</sup> Just as financial markets are incapable of pricing risk correctly, financial institutions have proved unable to protect real and financial asset values or prevent their collapse (Greenspan, 2008).<sup>6</sup>

Financial crises can have medium to long-term effects on growth, investment, and income distribution. In the five years prior to the GFC (2003-2007) world growth averaged 4.1%. In the five years following the GFC (2010-2014) world growth averaged 3.3%. Since the GFC (2010-2019) world growth has averaged 3.1% and 2.6% if the year 2020 is included. Similarly, In the five years prior to the GFC (2003-2007) the growth of world investment averaged 4.9%. In the five years following the GFC (2010-2014) the growth of world investment averaged 3.4%, and in the decade following the GFC (2010-2019) – and before the COVID-19 pandemic, the growth of world investment has averaged 3.2%. As a result, investment rates have been falling in most countries (this trend is particularly acute in Latin American and the Caribbean, and contrasts with growing debt in some countries).<sup>7</sup>

For developing economies, including those of Latin America and the Caribbean, macroprudential regulation is also important for economic stability and growth since their increasing external

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<sup>5</sup> Financial market efficiency has two components: informational efficiency and arbitrage efficiency. In its simplest form, informational efficiency means that the spot price is the best predictor of the future price. This is important because it suggests that prices reveal all information existing in an economy. This property implies that the price of any asset must be equal to its fundamental value or spot price —namely the present value of the expected income (payments) from dividends on an asset over its entire life discounted at the risk-free rate. The expected income is calculated through a stochastic process. Arbitrage efficiency means that, through the buying and selling process, no one can make a profit in one state of the economy without suffering losses in another state. This implies that no economic agent can systematically beat market expectations or take advantage of other agents with less information in the market.

<sup>6</sup> The prevailing consensus on the post-GFC financial system can be summarized as follows: “One of the main reasons the economic and financial crisis became so severe was that the banking sector of many countries had built up excessive on- and off-balance sheet leverage. This was accompanied by a gradual erosion of the level and quality of the capital base. At the same time, many banks were holding insufficient liquidity buffers. The banking system therefore was not able to absorb the resulting systemic trading and credit losses, nor could it cope with the reintermediation of large off-balance sheet exposures that had built up in the shadow banking system. The crisis was further amplified by a procyclical deleveraging process and by the interconnectedness of systemic institutions through an array of complex transactions. During the most severe episode of the crisis, the market lost confidence in the solvency and liquidity of many banking institutions. The weaknesses in the banking sector were transmitted to the rest of the financial system and the real economy, resulting in a massive contraction of liquidity and credit availability. Ultimately the public sector had to step with unprecedented injections of liquidity, capital support and guarantees, exposing the taxpayer to large losses” (BCBS, 2009, pp. 1–2).

<sup>7</sup> World Bank (2021a).

financial openness jointly with their domestic policies implemented to accommodate this greater financial openness, has made their performance highly dependent on the vagaries of foreign financial flows and especially short-term flows.

Since the 1990s developing economies have become increasingly dependent on short-term flows. This dependency has become more prevalent since the 2000s. In the case of Latin America and the Caribbean, available empirical evidence for the periods 2003-2009 and 2010-2019 show that the share of short-term inflows in total inflows rose from 37.3% to 52.1%.<sup>8</sup> Moreover, the increased reliance on short term flows has been accompanied by a process of external debt accumulation for all developing regions since the end of the GFC. Between 2010 and 2019 external debt as percentage of exports of goods and services in the cases of Asia, Latin America and the Caribbean, Middle East and Central Asia and Sub-Saharan Africa increased from 60% to 87%, 132% to 192%, 75% to 126% and from 75% to 174% respectively.<sup>9</sup>

Since the 1990s, there has been monetary and fiscal space in developing countries has narrowed. In the case of Latin America most of the countries of the region have signed investment agreements (jointly with trade agreements) and/or joined the Organisation for Economic Co-operation and Development (OECD), which prevent them from imposing restrictions and controls on the financial account of the balance of payments, including on short-term flows.<sup>10</sup> In addition, the majority of countries in the developing world have moved towards greater market flexibility which include more flexible exchange rate regimes (71% of total Latin American and the Caribbean economies report flexible exchange rate regimes in place).<sup>11</sup>

Some argue that the COVID-19 pandemic has made the case for macroprudential regulation more pressing. Covid-19 has had major effects on developing countries in many ways, not only because of the effects on health and well-being of the people, but through the severe and often devastating effects on economies. These economic impacts have operated within the domestic economy, through closures and lockdowns that have affected economic activity, livelihoods, and employment; and they have also operated through the impact of international economic processes that have affected trade and capital flows. For several developing countries, the external impacts of declining trade in goods and services, falling

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<sup>8</sup> See Pérez Caldentey and Vernengo (2021a).

<sup>9</sup> IMF (2021a).

<sup>10</sup> For instance, Chile, Mexico, and Colombia have been incorporated as members of the OECD).

<sup>11</sup> IMF (2020b). In practice countries intervene in foreign exchange markets so that they really adopt managed exchange rate regimes.



remittances and—most of all—volatile capital flows and pressures arising from external debt, have sometimes been so severe that they have accentuated and sometimes even dwarfed the domestic effects.<sup>12</sup>

Latin America and the Caribbean has been one of the most affected regions within the developing world - in 2020 the worst contraction on record (-6.8%), which has caused a significant increase in the unemployment rate (8.1% and 10.7% in 2019 and 2020, respectively, representing 44 million people) and poverty levels (185.5 to 209 million in 2019 and 2020). Moreover, the sharp decline in investment (-10% in real terms) will severely hamper future capital accumulation, as well as the ability of the region's economies to generate growth and employment and recover. Moreover, the growth rebound expected in the region in 2021 (5.9%), resulting from a low basis of comparison relative to 2020 within a context of deepened structural problems is unlikely to persist. It is likely to provide only temporary respite from the current economic situation and to prove insufficient to reduce the region's financing gap or improve its debt profile.<sup>13</sup>

This paper provides a critical assessment of mainstream macroprudential policies at the theoretical and practical levels focussing on the case of developing economies, including Africa, Asia and particularly Latin America and the Caribbean. It argues that the limitations of CAS, and more specifically the fact that it proved to be an endogenous source of financial instability, lead to the adoption of a macroeconomic approach to financial regulation. This paper is a companion paper to A policy/oriented study on capital flow regulation drafted for the same project (Project paper 10.21). The current paper will be followed by a third paper that will present an alternative macroprudential view to that of the mainstream.

As conceptualized within the mainstream, macro prudential regulation remains an elusive concept and is of limited applicability. At the practical level macroprudential regulation consists in a series of measures not necessarily interconnected or articulated, which focus mostly on the banking system, to limit credit expansion, improve solvency, decrease interconnectedness, and avoid excessive leverage. Survey evidence shows that there is no agreement on the meaning of financial stability and even less so of systemic risk. Also, macroprudential regulation is not identified as being a priority among financial regulators. Moreover, it does not address all the sources of financial fragility in developing economies. Macroprudential regulation focusses on the financial sector, mostly on the banking sector, ignoring the fact that other economic sectors such as the non-financial corporate sector is a growing source of financial fragility due to its increased financialization.

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<sup>12</sup> See Fokko Klein (2020) for the case of Latin America.

<sup>13</sup> ECLAC (2021).

Within mainstream economics, one way to rationalize the different of measures proposed by macroprudential regulation is by arguing that the growth and development of the financial sector creates market imperfections that lengthen the intermediation chain, hence weakening the link between savings and investment. Thus, from this perspective the purpose of macroprudential regulation is to ensure that savings flows into investment.

The paper is divided in nine sections. Sections two and three focus on the limitations of the CAS approach and describe the theoretical underpinnings for macroprudential regulation within mainstream economics. Section four describes how macroprudential regulation is applied in practice. Sections five, six and seven, present evidence on the application of macroprudential regulation to selected country case studies in Africa (Ethiopia, Ghana, Kenya, Nigeria, South Africa, and Zambia), Asia (India, Indonesia, Malaysia, and Thailand) and Latin America and the Caribbean (Brazil, Chile, Colombia, Mexico, and Peru) highlighting their strengths and weaknesses. This section also draws lessons for the adequate design of macroprudential policies. The last section concludes.

## **A. Capital adequacy standards (CAS) as a source of financial fragility and instability**

Prior to the GFC financial regulation focused on ensuring that financial institutions, and more precisely banks, meet a certain capital adequacy threshold. The establishment CAS by the Basle agreements pursues the proper internalization of the risks that financial institutions face individually (including among the most relevant credit, liquidity, interest rate and exchange rate risks). Since the primary function of capital is the protection against unexpected losses, increased capital requirements would strengthen the solvency and stability of financial institutions. The Basel Committee on Banking Supervision (BCBS)<sup>14</sup> through Basel I (1988), Basel II (2004) and Basel (2010) established that regulatory capital should be at least equal to 8% of risk-weighted assets. That is:

$$(9) \text{ Capital adequacy ratio} = \frac{\text{Capital}}{\text{Assets weighted by risk}} \geq 8\%$$

<sup>14</sup> The BCBS holds chief responsibility for formulating global standards for prudential regulation of the banks; and it serves as a forum for periodic cooperation on banking supervision. It consists of 45 members from 28 jurisdictions, representing central banks and supervisory authorities. In addition, the Committee has nine observers, including central banks, supervisory groups, international organizations, and other bodies.

However, rather than being an indicator of the solvency of financial institutions, the CAS approach turned out to be a source of endogenous financial fragility. This can be exemplified by analysing the behaviour of assets and liabilities during the upward phase of the economic cycle driven by, for instance, an expansionary monetary policy of the central bank.<sup>15</sup>

A boom phase characterized by high profitability and low risk tends to increase capital ratios and thus generate the impression of greater solvency and better financial conditions. In turn, this encourages the financial system to build up its asset positions and, more specifically, the increase in loans based on the current economic conditions. However, this often occurs to the detriment of credit standards. Empirical evidence for some developed countries reflects this stylized fact by showing that provisions tend to decrease in boom periods (Cavallo and Majnoni, 2001; Hahm et al., 2012).

On the liability side, financial institutions become more dependent on liquidity provided by other financial institutions. In this situation, the financial system tends to skew the composition and structure of liabilities towards a higher level of indebtedness, that is, towards higher leverage ratios,<sup>16</sup> so that the relationship between the growth rate of assets and that of leverage is positive. The correlation coefficient between the two variables for a sample of 21 U.S. banks for the period December 2003 to September 2010 equaled to 0.70 for the entire sample and 0.89 for investment banks.<sup>17</sup>

High leverage levels create considerable opportunities for profitability because the higher is the leverage level, the higher is the return on capital. In this regard, the expectation of higher returns provides an incentive for excessive leverage. The rate of return of equity (*ROE*) (a measure of profitability) equals the rate of return on assets (*ROA*) (time leverage (*L*)) so that  $ROE = ROA * L \Rightarrow \Delta L \Rightarrow \Delta ROE$  for  $\overline{ROA}$ . But at the same time, however, a greater dependence on debt generates greater fragility since bigger risks are assumed due to the higher exposure and vulnerability to illiquidity and, even more important, to insolvency.<sup>18</sup>

Following the above logic, the implementation of the CAS approach to financial regulation did not seem to have made a difference regarding the occurrence of financial crises. Throughout the world the number of systemic banking and currency crises increased from 130 between 1970-1988 (pre-CAS) to 196 between 1988-2007 (post-CAS) (if a similar number of years is considered for both periods). For 1989 to the latest year available (2017) the number of systemic banking and currency crises reached 257 (see figure III.1).

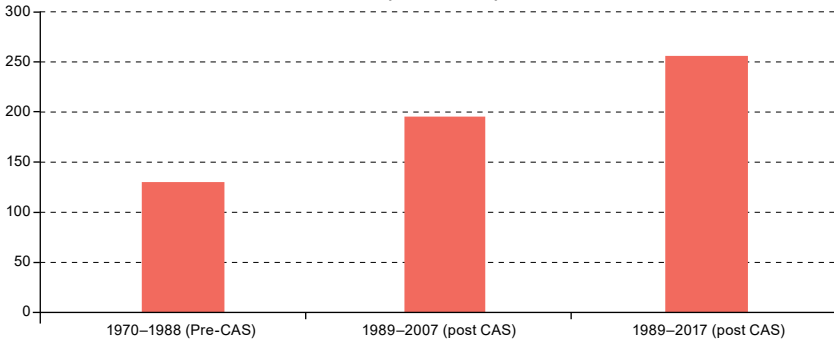
<sup>15</sup> For the relation between monetary and macroprudential policies see Bush et al. (2021); Cerutti et al. (2017); Goodfriend and King (1988); Goodhart (1993); and Sinclair (2000).

<sup>16</sup> Leverage (debt to equity ratio) reflects the extent to which financial intermediaries use borrowing to finance the acquisition of their assets.

<sup>17</sup> Pérez Caldentey and Cruz (2012).

<sup>18</sup> See Barajas et al. (2010).

**Figure III.1**  
**Number of systemic banking and currency crises pre and post CAS (1970-2017)<sup>a</sup>**



**Source:** Laeven and Valencia, 2019.

<sup>a</sup> A systemic banking crisis is an event that meets two conditions: (i) significant signs of financial distress in the banking system (as indicated by significant bank runs, losses in the banking system, and/or bank liquidations); (ii) significant banking policy intervention measures in response to significant losses in the banking system. Currency crises are defined as sharp depreciations of the currency relative to the US dollar (Laeven and Valencia, IMF, 2019, pp.4 and 9).

The rising number of crises coexisted with a decline in the rate of inflation, suggesting that price stability does not ensure financial stability. Since the beginning of the 1970s world inflation has trended downwards (10%, 8.0%, 6.9%, 4.1% and 2.6% in the 1970s, 1980s, 1990s, 2000 and 2010 decades). The amplitude of inflation measured by the standard deviation also declined from the 1990s onwards (2.3, 1.7 and 1.0 for the 1990s, 2000, and 2010 decades).<sup>19</sup>

Prior to the GFC, the financial system more than met the requirements imposed by Basel II in some of the countries that were heavily affected by this crisis, such as the United Kingdom, the Euro Zone and including the USA that was its epicenter. From 2005 to 2007, capital requirements for the Euro Zone, United Kingdom and the United States were above 12% on average.<sup>20</sup>

Also, since the middle of the 1990s crises have exhibited a greater systemic character.<sup>21</sup> That is, the effects of crises were felt not only in its epicentre, but also in the grouping of countries to which that country belongs through the so-called contagion effect. Available evidence for the period running from January 1991 to January 2004 shows that both the Tequila (1994) and Russian (1998) crises affected all emerging market economies (EMEs). The rise in risk for this group of economies is captured

<sup>19</sup> World Bank (2021a).

<sup>20</sup> Pérez Caldentey and Cruz (2012).

<sup>21</sup> From 1948 until the present, the United States has had eight annual contractions in GDP (1949, 1954, 1958, 1974, 1975, 1982, 1991 and 2009). The contraction in 2009 (-2.5%) is by far the largest contraction the United States has experienced. The second largest contraction was in 1982 (-1.8). The other contractions were always below -1%. In the case of the Euro Zone, available evidence for the period 1995-2018 that the Euro Zone in the aggregate experience two contractions: one in 2009 and one in 2012. The one in 2009 (-4.5% rate of growth of GDP for that year) far out spaced the 2012 contraction (-0.8%).

by the sharp increase in the EMBI for emerging market economies.<sup>22</sup> More recently during the GFC, 91 economies (representing 67% of world GDP) experienced a contraction of output (IMF, 2019).<sup>23</sup>

## **B. The turn from micro to macroprudential regulation: the mainstream approach**

The failings of CAS, which became obvious during the GFC, did not lead policy makers to discard this approach to financial regulation. It rather led to the conviction that regulation should focus not only on minimizing the potential risk of individual financial institutions but also that of the entire financial system. In short, micro prudential regulation needed to be complemented with macroprudential regulation.

The overall objective of macroprudential regulation is to maintain the stability of the financial system through the minimization of systemic risk. Systemic risk is defined as “the risk of disruption of financial services caused by a disruption of all or part of the financial system that may have a significant negative impact on the real economy.”<sup>24</sup> This includes limiting the formation of booms/busts of asset and credit bubbles and minimizing the economic and social costs associated with a credit crunch resulting from an excessive contraction of the balance sheets of financial institutions facing a common shock (Hanson, Kashyap, and Stein, 2010).

Within the mainstream consensus, systemic risk and thus the need for macroprudential regulation are justified due to the existence of market imperfections and, more precisely to frictions in the supply of credit.<sup>25</sup>

<sup>22</sup> See Calvo (2016, p.8). The Emerging Markets Bond Index (EMBI) spread (the difference between the interest rates on dollar-denominated bonds issued by EME governments and United States Treasury Bonds, considered risk-free). The EMBI is based on the behaviour of the sovereign bonds issued abroad by each country. The less certain a country is to meet its obligations, the higher its EMBI will be, and vice versa. The lowest rate an investor would require to invest in a particular country would be the United States Treasury Bond rate plus the country’s EMBI.

<sup>23</sup> See Chen et al. (2019).

<sup>24</sup> The origin of the term macroprudential dates back to the seventies (see Clement, 2010). Public references date back to the mid-1980s receiving new impetus from the early 2000s (Galati and Moessler, 2013; 2018). According to part of the literature on macroprudential regulation, systemic risk has two relevant dimensions, a temporary one – which is about how the risk of the financial system evolves over time, how it accumulates and how it is linked to the real economic cycle – and another intersectoral – which is about how risk is distributed throughout the financial system and what interconnections and common exposures can exist among its agents (IMF, 2010). See also Kaufman & Scott (2003).

<sup>25</sup> According to Adrian and Shin (2008, p. 13) these frictions refer: “...to the set of principal-agent frictions that operate at the level of the financial intermediaries themselves. These frictions result in constraints on balance sheet choice that bind harder or more loosely depending on the prevailing market conditions. The fluctuations in haircuts and regulatory capital ratios that are critical in determining the leverage of financial intermediaries can be seen as being driven by the fluctuations in how hard these constraints bind. When balance sheet constraints bind harder, credit supply is reduced.” Asymmetric information between lender and borrower can also be source of friction in the supply of credit (Stiglitz & Greenwald, 2003). Bernanke and Gertler (1995) provide an overview of financial frictions. Fabian et al. analyze the relation between the bank lending channel and macroprudential policies.

According to this view the way in which activity is financed is determined by real forces and savings determines investment (Shin, 2010). As a longer intermediary chains, reflected in the growth of the number and variety of financial institutions, hampers the relationship between decisions to save and invest, there is a justification for regulation on a macroprudential basis. Thus, macroprudential policy is about enabling the channelling of savings towards investment.

The conceptual basis for macroprudential regulation from which specific policy actions can be derived, can be explained through a balance sheet example that consolidates the assets and liabilities of financial institutions within a given economy (Shin, 2010). Table III.1 shows the consolidated assets and liabilities of this financial system.

**Table III.1**  
**Consolidated balance sheet**

Assets	Liabilities
<b>Loans to end-users (<math>P_i</math>)</b>	<b>Debt (<math>D_i</math>)</b>
✓ Households	✓ Non-bank agents/institutions
✓ Business	✓ Banks
✓ Government	
<b>Intermediary loans (<math>P_{ij}</math>)</b>	<b>Capital/Equity (<math>E_i</math>)</b>
Interbank loans	

**Source:** On the basis of H. Shin (2010).

Assets include loans to end-user borrowers, including those extended to households, firms, and government ( $P_i$ ). They also include loans made by bank  $i$  to other financial institutions, in this case other global banks or another type of financial institution ( $P_{ij}$  where  $j$  denotes other financial institutions). In turn, loans from bank  $i$  to other financial institutions ( $P_{ij}$ ) are equal to the value of bank  $j$  liabilities held by bank  $i$  ( $D_{ji}$ ) and to the share of bank  $j$  liabilities in the total liabilities of other financial institutions held by bank  $j$  ( $\pi_{ji}$ ) (for example, interconnectedness). Liabilities include debt held by the bank issued by other financial institutions ( $D_i$ ) along with its capital/equity ( $E_i$ ).

This consolidated balance sheet breaks down credit growth into leverage ( $\lambda$ ) outside funding of the banking system (in other words deposits)  $(1 - \Pi)$  (where  $\Pi$  is interconnectedness), and equity ( $E$ ). Leverage is defined as the ratio of assets to equity, that is  $\lambda = \frac{A}{E}$  where  $A$  = assets and  $E$  = equity. Credit growth is formally expressed through identity (1), which shows each of these components in aggregate for the financial system as a whole (see annex 1 for a detailed derivation).

$$(1) \quad P \equiv (\lambda - 1) * (1 - \Pi) * E + E$$

↓
↓
↓
↓

Credit growth  
(e.g. bank loans)

Leverage

External funding  
of the banking  
system as a whole  
(residents and  
non-residents).

Equity

Note that if leverage is defined as the ratio of assets to equity ( $\lambda = \frac{A}{E}$ ), then  $\lambda - 1$  is equal to the debt-to-equity ratio (that is,  $\lambda - 1 = \frac{A}{E} - 1 = \frac{A-E}{E} = \frac{D}{E}$  where  $D = \text{debt}$ ). Substituting this expression in identity (10) shows that credit growth is explained by the proportion of bank debt (obligations) that originates outside the financial system (that is outside savings decisions), plus equity. In other words:

$$(2) \quad P \equiv D * (1 - \Pi) + E$$

Identity (2) reflects the fact that credit can expand in aggregate, either through greater leverage, or through higher capitalization of the banking system, or through an increase in funding from sources outside the financial system (that is from savings decisions).

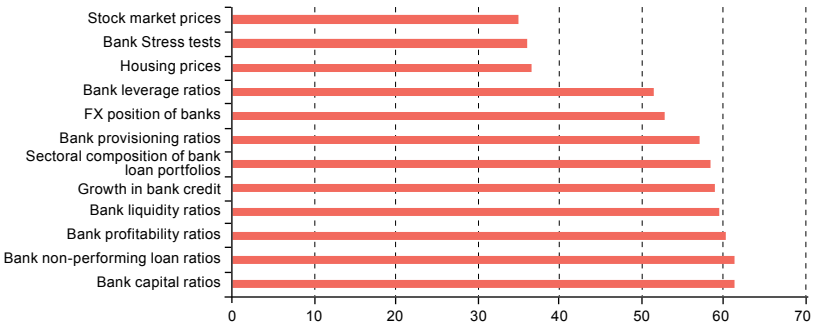
In this accounting framework, the proposed regulatory initiatives give rise to three types of macroprudential interventions. The first category of intervention is regulatory and aims to moderate leverage and make it less procyclical. It includes limits on leverage growth, countercyclical capital requirements and measures that restrict liquidity creation by the banks, such as liquidity requirements. The second type of intervention seeks to moderate the degree to which credit fluctuates, by applying countercyclical regulations. The third type aims to reform the market structure of financial institutions, with a view to shortening the financial system intermediation chain, reducing interconnectedness, and strengthening the linkage between savings and investment.

### C. Macroprudential regulation in practice: what does the evidence reveal?

Following on the above conceptual basis, macroprudential regulation focusses mainly on financial institutions, in particular banks, ignoring the fact that other sectors of the economy such as non-financial corporations

are also a source of financial fragility and instability.<sup>26</sup> It consists of a wide variety of instruments, affecting the incentives and constraints banking institutions face.<sup>27</sup> These include capital (e.g. countercyclical capital buffers), asset (e.g. loan-to-value ratios) and liabilities side (e.g. levy) tools (Shin, 2016, p. 100). The available evidence indicates that the Central bank, or supervisory agency is responsible for macroprudential policy. Macroprudential policy is based on a series of indicators to assess the existence of systemic risk (see figure III.2). The indicators refer, in the main part, to the banking system which reflects the presumption that financial instability originates only in the financial system. The existence of systemic risk is gauged on a host of different indicators.<sup>28</sup>

**Figure III.2**  
**Factors included in the assessment of systemic risk,**  
**percentage of the total (2019)<sup>a</sup>**



**Source:** On the basis of World Bank (2021b).

<sup>a</sup> The data are based on a financial regulation survey undertaken by the World Bank comprising 161 countries.

However, in practice, macroprudential policy is complicated. For one thing, there is no agreement on the precise meaning of financial stability nor a consensus definition of the terms. It may imply both micro and macro prudential supervision, as well as resolution and/or crisis management. In fact, central bank laws adopt a variety of terms to denote financial stability, and this impinges on its supervisory/regulatory role (table III.2).<sup>29</sup>

<sup>26</sup> Three initiatives that exemplify the application of the conceptual framework detailed in section 3 include Basel III (2010), the design of a methodology to classify and monitor banks which are considered systemically important and the Dodd-Frank Wall Street Reform and Consumer Act Protection in the United States (2010). See, Acharya (2012), BCBS (2019), Tarullo (2009) and FSB (2019 and 2021). See also Financial Stability Forum (2007). There is a clear difference between macroprudential regulation and Minsky’s approach to financial instability that considers that all economic sector (including households when owning residential property) are a source of financial fragility. See, Minsky (1982 and 1986).

<sup>27</sup> See for example Stiglitz and Greenwald (2003) pp. 208-233. Both authors call it the ‘portfolio approach’ to financial regulation.’

<sup>28</sup> See also Alam et al. (2019).

<sup>29</sup> See Bruno et al (2015) for a comparative assessment of macroprudential policies.



**Table III.2**  
**Conceptions of financial stability in central bank's**  
**mandates for selected countries**

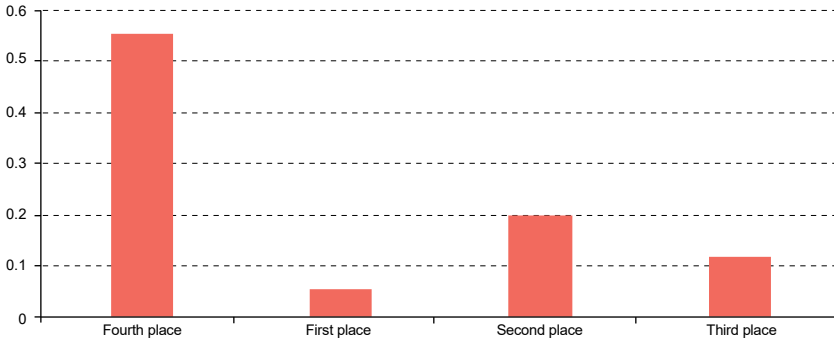
Objective	Country cases
Stability of the financial system/ financial stability	Bahamas, Botswana, Chile, EMU (and member states), Ireland, Kosovo, Mauritania, Mauritius, Mexico, Montenegro (CB Law), Myanmar, Papua New Guinea, Paraguay, San Marino, Serbia, Solomon Islands, Sri Lanka, Tonga (Constitution), Tunisia, United Kingdom, Ethiopia, Namibia, Seychelles, Uruguay, Gambia, Georgia, Ireland, Israel, Japan, Kazakhstan, and New Zealand, Argentina, Iceland, Korea, Malaysia, Montenegro (Constitution), Oman, Singapore, and Tonga (CB Law), Thailand and Zambia
Stability of the banking system	Armenia, Azerbaijan, Belarus, Ukraine, and Turkmenistan, Albania
Stable and/or competitive market-based financial system	Afghanistan, Iraq, Macedonia, Moldova, and Yemen
Financial sector confidence	Bahrain
Liquidity and solvency of financial institutions	Brazil
Stability/functioning of the banking and financial system/sector	Djibouti, Nepal, and Qatar
Functioning of the financial system	Dominican Republic
Sound financial structure	ECCU, Malawi, and Maldives
Integrity of the monetary and banking system	Egypt (Constitution)
Banking system soundness	Egypt (CB Law) and Sudan
Banking and credit systems (plural)	Ghana
Stability of the financial intermediary system	Hungary

**Source:** On the basis of Kahn (2017).

Also, the most important instrument used by banking supervisors are counter-cyclical capital requirements which points to the fact that financial regulation remains micro-based. A recent survey on financial regulation undertaken by the World Bank comprising 161 countries worldwide shows that only 6% ranked macroprudential policy as the most important activity in banking supervision.<sup>30</sup> Besides small islands (Curaçao, Macao SAR, Marshall Islands, Vanuatu), Angola, China, Bangladesh, Ukraine, and Taiwan stand among those few emerging market economies (EMEs) that view macroprudential policy as a central pillar for banking regulation. On the other hand, 55% of respondent assign to macroprudential policies the lowest ranking.

<sup>30</sup> These include in Asia: Bangladesh, China, Hong Kong SAR, China, Indonesia, Korea, Rep., Pakistan, Philippines, Singapore, Malaysia, Sri Lanka, Taiwan, China, Thailand, Vietnam, India. Latin America and the Caribbean: Argentina, Brazil, Chile, Costa Rica, Dominican Republic, Ecuador, Trinidad and Tobago, El Salvador, Belize, Guatemala, Honduras, Mexico, Paraguay, Peru, Uruguay, Colombia; G7: Japan, Canada, France, Germany, United Kingdom, United States, Italy; Africa: South Africa, Nigeria, Togo, Rwanda, Tonga, Morocco, Kenya, Ghana, Angola, Tunisia, Lesotho, Liberia, Senegal, Uganda, Madagascar, Malawi, Mali, Congo, Democratic Republic.

**Figure III.3**  
**Importance for Macroprudential supervision within Banking supervision framework**  
*(First=most important, fourth=least important)*



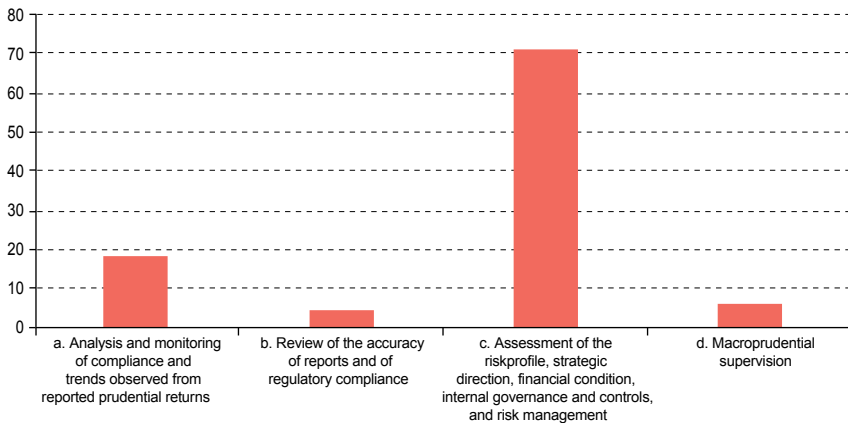
**Source:** On the basis of World Bank (2021b).

The low ranking for macroprudential activity signals that banking supervision is still primarily focused on microprudential supervisory.<sup>31</sup> This is further illustrated by looking at figure III.4 which ranks macroprudential activity as the least important for banking supervisors among the following choices: a) analysis and monitoring of compliance and trends observed from reported prudential returns; b) review of the accuracy of reports and of regulatory compliance; c) assessment of the risk profile, strategic direction, financial condition, internal governance and controls, and risk management; and iv) macroprudential supervision. The survey shows 71% of all participants placed the assessment of banks’ risk profile (option c) and the monitoring of compliance rules (option a) as their priority and only 6% identified macroprudential regulation as the most important activity.

There are nonetheless regional differences that are worth highlighting. G7 countries unanimously indicate macroprudential supervision as the activity with least importance for banking supervision. In the case of Africa, Latin America and the Caribbean and Asia, 61%, 47% and 36% of the respondents to the survey believe that macroprudential activity is the least important among banking supervisors. The regional differences are perhaps explained by the fact that both Latin America and Asia are regions with a history of financial and banking crises and recognise the importance of macroprudential regulation.

<sup>31</sup> The measures involved are different from ‘microprudential measures’ that are taken to refer to adjustments that reduce the risk of failure of individual institutions. Thus, with reference to banking, the IMF defines microprudential measures as those addressing “the responses of an individual bank to exogenous risks and do not incorporate endogenous risk and the interconnectedness with the rest of the system.” (Osinski et al 2013, p. 6).

**Figure III.4**  
**Which is the most important activity for banking supervision?**  
*(Percentage of total)*



**Source:** On the basis of World Bank (2021b).

These results are coherent with more detailed analysis at the regional level which shows that the most relevant tool for the management of the business cycle by the G7 are counter-cyclical capital requirements which are mostly a micro-prudential tool. In the case of developing regions, Asia emerges as the region that on average has adopted a larger set of measures. The evidence shows that 55% of the countries report using restriction on borrowers, instruments, and activity; an additional 50% report to adopt temporary restrictions on dividend and bonuses, and 44% also dispose of counter-cyclical loan to value ratios. To a lower extent, Asian countries also adopt counter-cyclical capital requirements (32%), restrictions on financial sector balance sheet (20%) and contracyclical provisioning requirements (22%). After the GFC, South Korea have also adopted restrictions on banks' positions in FX derivatives that was the main driven of the huge contagion-impact of the GFC.

In Latin America, countercyclical provisioning requirements – i.e., specific amount that banks need to set aside in good times above the mandatory provisioning requirement - are the most frequently available toolkit as 45% of all respondents reported to adopt them, a value two times higher than the average sample of 21%. Also, 25% of LACs' supervisors reports applying restrictions on foreign currency denominated lending, well above the average sample of 16%. At the country level Brazil also adopted limit on banks' FX positions on the spot market. In the case of Africa, the most frequently used instrument are restrictions on foreign-denominated currency lending.

The level of interconnectedness as a source of financial instability and banking sector vulnerability is an important concern to developed countries and Asian supervisors. All G7 countries focus on this issue, as well as the great majority of supervisors in Asia (90%). The monitoring of interconnectedness decreases significantly for Africa (50%) and for Latin America and the Caribbean (40%).

This is worrisome in the case of Latin America and the Caribbean as it is a region characterized by a growing banking concentration, a large presence of foreign banks, and an importance of financial conglomerates.

Latin America and the Caribbean is the only region in the developing world where the levels of concentration increased between 1996 and 2017. The assets of three largest banks as a share of assets of all commercial banks increased from an average of 63.8% to 70.3% between 1996-2000 to 2010-2017. Bank concentration has been accompanied by a growing presence of foreign banks in the region, which account for a large share of the assets of the commercial banking system. They own more than 50% of total bank assets in the cases El Salvador (100%), Uruguay (92%), Mexico (70%), Honduras (53%), Paraguay (51%), Peru (51%), and between 25% and 33% of total assets for Costa Rica (26%), Guatemala (30%) and Chile (33%). That makes the banking system highly vulnerable to changes in the global financial cycle.<sup>32</sup>

Not only has the financial sector become more concentrated, but it has also acquired growing importance in the economy in terms of power and control over both the real sector and activities that are unrelated to intermediation. Over time, the financial sector has diversified to include activities such as insurance, capital markets, and pension funds. In some countries, banks, and particularly the most important banks, operate as a part of larger financial conglomerates. A financial conglomerate is defined as “any group of companies under common control or dominant influence, including any financial holding company, which conducts material financial activities in at least two of the regulated banking areas, securities, insurance (or pensions)” (BIS, 2012). Note that a financial conglomerate, besides conducting activities in securities, insurance, or pensions, can also be involved in activities within the real sector. Financial conglomerates participate in a range of diverse activities including agriculture, commerce, energy, manufacturing, mining, retail, and telecommunications.<sup>33</sup>

<sup>32</sup> See Pérez Caldentey and Vernengo (2021).

<sup>33</sup> Chile, one of the most financially open and liberalized economies in Latin America and the Caribbean, exemplifies this trend. In Chile, the existence of financial conglomerates has important implications for the way banks operate in practice. By law, banks are not allowed to engage in activities that are not directly related to financial intermediation (LGB, Art. 69). However, because by far the majority of banks belong to financial conglomerates and operate as part of the limitations on bank activities are of a more formal nature. As put by the OECD: “Banks...operate as part of larger conglomerates, where the bank itself is controlled by a holding company, which also controls a host of other group companies, which may include securities, firms, insurance companies and/or fund and pension managers. The bank itself can, however, own a brokerage company, which in turn cross-sells the products of the other group companies. In many cases it appears that the separation of the various activities is more of a formal than a functional nature” (OECD, 2011: 21). See Pérez Caldentey and Vernengo (2021).

The next sections present evidence on the use of macroprudential policies for fifteen countries located in three developing regions: Africa (Ethiopia, Ghana, Kenya, Nigeria, South Africa, and Zambia), Asia-Pacific (India, Indonesia, Malaysia, and Thailand) and Latin America (Brazil, Chile, Colombia, Mexico, and Peru)<sup>34</sup>. Each of the sections includes the context and background explaining the rationale and use of macroprudential policies and the lessons learned. The sections also include, when applicable, the use of macroprudential policies under COVID-19. The evidence for most of the country case studies presented spans from the early 2000s to the latest adoption of macroprudential policies available.

## **D. An analysis of macroprudential measures in the Asia-Pacific region**

### **1. Context/background and brief description of macroprudential policies**

The countries of developing Asia are among the most globally integrated in the world, in both trade and capital markets, and therefore it is only to be expected that they have been particularly affected by changes in the global economy. For several of them, these have sharpened and amplified vulnerabilities that had already built up over the previous decade, because of specific policies of liberalisation that were undertaken over the past three decades.

The COVID-19 crisis is exposing the extent to which they have become more susceptible to volatile capital movements. In this context, it is important to examine the types of strategies they have adopted to protect themselves and manage the domestic impact of such volatility. As most of the Asian region moved from relying heavily on administrative controls on financial account transactions to a more liberalised approach, macroprudential measures have taken on greater significance. Given the likely volatility of the immediate future and the development challenges of the medium term, it is likely that such measures may become even more relevant.

The analysis focuses on four Asian economies: India, Indonesia, Malaysia, and Thailand. These countries have been selected because they have a significant external integration with respect to both trade and finance and have all moved in the past three decades from administrative controls on capital flows and internal financial activities to more market-based measures in both.<sup>35</sup> Furthermore, while they have been affected to varying

<sup>34</sup> Sections 4 to 6 are based on the papers elaborated by Jayati Gosh (Asia), C.P. Chandrasekhar (Asia), Pablo Bortz and Matias Vernengo (Latin America) that are part of the Project COVID-19 Response and Recovery Mobilising financial resources led by the Debt and Development Finance Branch, Division on Globalization and Development Strategies (DDFB/DGDS) of UNCTAD.

<sup>35</sup> For the case of Thailand see Jongwanich & Archanum (2012).

degrees by the ongoing pandemic, they are still impacted by it, unlike some countries in the region (such as China and Vietnam) that appear to have protected themselves from the worst impacts and achieved some recovery. A comprehensive list of all macroprudential measures undertaken in these economies over this period is not sought to be provided.<sup>36</sup> Rather, the idea is to consider certain goals of such policies and specific policies and episodes regarding the degree to which they were able to meet these goals.

The four countries here have experienced divergent patterns with respect to net capital inflows, which in turn has implications for the types of policy intervention required. The previous section showed that all four countries have had very high rates of gross capital inflow, which increased over the 2010 decade as the globally footloose capital that benefited from the monetary expansions and low interest rates of the advanced economies sought other pastures with higher returns. This was associated in all these countries with high and increasing losses resulting from differing rates of return of foreign assets and liabilities. Crucially, however, only two of these countries were recipients of significant net capital inflows over some of this period: India from 2007 and Indonesia after 2011. By contrast, Malaysia, and Thailand (both countries running current account surpluses) received high gross inflows but also recorded very large outflows as they were sometimes even net capital exporters.

Further, these annual figures do not capture the dramatic volatility evident from quarterly or monthly indicators, which were particularly marked in certain periods, such as in October-December 2008 after the collapse of Lehmann Brothers and the taper tantrum in the middle months of 2013. Individual economies also faced sharp volatility in certain periods because of changing investor perceptions resulting from domestic economic processes and policies. These differences across countries should be borne in mind when considering some macroprudential measures that have been adopted in response to specific challenges.

The section does not consider macroprudential measures designed to contain internal financial risks, such as limiting credit supply (by imposing lending rate ceilings, leverage caps, reserve requirements, credit growth limits, exposure limits, levy on noncore liabilities and sectoral limits) and/or regulating demand for credit through the loan-to-value ratios, debt-service-to-income ratios and tax policies and incentives. Rather, the focus is on risks coming from financial integration with global markets and attempts to mitigate or reduce such risks through various measures. These have become particularly important in past decades as so many emerging market economies in Asia are affected by global economic forces due to greater financial liberalisation since the 1990s.

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<sup>36</sup> The study considers macroprudential measures described in the IMF AREAER database as well as the more recent IMF Integrated Macroprudential Policy (iMaPP) Database, described in Alam et al (2019).

The analysis of country experiences is focussed on the measures for dealing with risks and threats arising from cross-border flows, specifically capital flow volatility, exchange rate volatility and external debt vulnerability. In the context of deregulated capital flows, all these countries variously applied different macroprudential measures, mostly driven by the understanding that foreign currency loans expose unhedged borrowers to foreign exchange risks, and capital flows can additionally create undesired exchange rate pressures in both directions. Broadly, these included the following sets of measures:

- Limits on foreign exchange (forex) positions, such as limits on net or gross open forex positions, limits on forex exposures and funding, and currency mismatch regulations.
- Reserve requirements (in both domestic and foreign currency) for macroprudential purposes, differentiated by currency.
- Measures to mitigate risks from global and domestic systemically important financial institutions (SIFIs), including capital and liquidity surcharges.

## **2. Some specific examples**

The specific cases analysed include the attempt to prevent unwarranted currency appreciation in the case of Thailand, dealing with speculative activity in the derivatives market in Indonesia, the controlling liberalization in the case of Malaysia, the use of incentives to manage capital flows in the case of India and the use of loan to value ratios to direct credit in India, Indonesia, and Malaysia.

In the case of Thailand, the central bank responded to the appreciation of the Baht in 2006-2008 and 2010 by implementing different measures, including open market operations to stabilise the external value of the baht, enabling more capital outflows, as well as trying to curb some more speculative inflows of “hot money” or carry trade trying to benefit from interest rate differentials. In so far as the exchange rate affects the balance sheet positions of economic agents, this can be considered a macro prudential policy. These measures included limits on the daily outstanding baht balances of non-residents, prohibiting transactions involving baht lending or selling to non-residents without evidence of underlying trade or investment and imposing holding periods of at least three months.

In 2001, the central bank (bank Indonesia, or BI) prohibited rupiah transfers by Indonesian banks to non-residents and emphasised that any transfers that were not supported by underlying real transactions within the Indonesian economy would not be allowed. In addition, restrictions

were imposed on derivatives transactions not supported by underlying real transactions, and the maximum limit for derivatives transactions involving forex sales by domestic banks to non-residents was reduced from USD 5 million to USD 3 million. The attempt was to limit speculation in the rupiah through these routes.<sup>37</sup>

In 2004, during a period of sudden increase in inflows of both external commercial credit and direct investment, the BI introduced new prudential regulations on net open foreign exchange positions of commercial banks, which restricted their ability to speculate in the swap market (Sengupta and Sengupta 2015). In addition, bank deposit accounts in rupiah and forex were subjected to higher reserve requirements and in early 2005, short-term borrowings by banks were limited to 20 percent of bank capital. Nevertheless, there was a sudden capital outflow in mid-2005, which indicated that these regulations had not been sufficient to prevent volatility and forex shortage. As a result, further measures were imposed from mid-July 2005 (Titiheruw and Atje 2008). Forex derivative transactions against the rupiah were limited to \$1 million and there was a similar ceiling on dollar purchases for forward transactions and swaps. A 3-month minimum investment hedging period was imposed for forex transactions. This had an immediate impact: the volume of swap transactions fell to half in the second half of 2005 compared to the first half. However, this still proved insufficient to stem the outward flow of capital, necessitating further measures were in August. The statutory reserve requirements of banks were increased; derivative and hedging swap transactions were further regulated; and banks foreign exchange exposure was limited by setting a limit of 20 per cent on both the balance sheet net Open Position and the overall Net Open Position. Participation in the Bilateral Swap Arrangement (arising out of the Chiang Mai Initiative of 2000) was also increased.

After the formal adoption of an “inflation targeting” monetary policy regime in 2009, the BI had allowed commercial banks to freely set their exchange rates and commissions for transactions with their clients, although transactions above a defined threshold were subject to verification of supporting documents. Non-banks (mainly money changers) were authorised to conduct money exchange activities by purchasing and selling foreign currencies (banknotes) and purchase traveller’s cheques but prohibited from conducting fund transfers or money remittances. However, all forex transactions had to be settled in full. In January 2011, BI revoked the facility that provided foreign exchange liquidity to domestic companies by conducting spot transactions through commercial banks in

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<sup>37</sup> Derivative contracts are an important element to understand the Asian Financial Crisis. See Kregel (1998).



connection with economic activities in Indonesia. However, the downward slide in the rupiah continued, and was accentuated during the “taper tantrum” of 2013, when the rupiah-dollar rate depreciated by nearly a quarter of its value between the second and fourth quarters of 2013. In late 2015, the threshold amount to provide underlying transaction for foreign exchange spot purchase, which was earlier US \$100,000, was increased to US\$25,000 equivalent a month. All forward transactions were required to be supported by underlying documents.

Limits were imposed on net open positions of banks, and there was also a maximum limit on short term offshore borrowing by banks, of 25 per cent of their capital. Banks seeking offshore borrowing with maturity beyond one year must seek clearance from Bank Indonesia. Since much of the concern on extremely comes from non-financial corporates, in 2014 Bank Indonesia issued a new rule requiring them to have (i) a currency hedging ratio of a minimum 25 per cent of their net external debt due within three and six months; (ii) a liquidity ratio (including the current foreign assets in the hedging ratio) of a minimum 50 per cent of their net external debt due within three and six months; and (iii) a minimum credit rating of one notch below investment grade (Warjiyo 2021).

In Malaysia domestic financial institutions were asked to maintain countercyclical capital buffers to reduce their vulnerabilities to global instabilities and crises. While these measures probably reduced extreme movements in these asset markets to some extent, they were not successful in addressing the more fundamental problem of net capital outflows that were enabled by the liberalisation measures of the previous decade.

### **3. The lessons learned**

The global inability to rein in finance even in the context of an unprecedented pandemic has had unfortunate consequences for developing countries. These consequences extend even to emerging markets that do not currently face problems like unpayable external debt and continue to receive significant capital inflows. These Asian countries considered here are clear examples of the constraints posed by unrestricted capital flows on domestic economic and financial stability and possibilities for economic recovery.

In countries that are unconstrained by sovereign debt concerns and IMF conditionalities, the potential for capital flight plays a major role in limiting aggressive fiscal measures for economic recovery. Asian emerging markets are now so integrated into global capital markets that they are effectively total dependent on the whims of global investors (who in turn are affected by monetary and fiscal policies in advanced economies) and face massive changes in the volume of capital entering and exiting the

country. There was a major capital flight from emerging markets, including in Asia, in March 2020, but thereafter a recovery and a renewed surge from late 2020 onwards. Now the likelihood of significant expansion in the United States and possible monetary tightening in the near future could well lead to another major outflow. In addition, there are further concerns that are likely to become even more evident during the ongoing global pandemic-induced crisis. De Bock et al (2020) have used a capital-flows-at-risk methodology to show that changes in global financial conditions tend to influence portfolio flows more during surges and reversals than in normal times. Unfortunately, stronger domestic “fundamentals” only help to mitigate outflows. This means that it is likely that the weaker growth outlook for emerging markets due to COVID-19 will decrease the demand for domestic currency denominated assets, while global financial conditions and a stronger and faster recovery in advanced economies will increase the demand for assets denominated in hard currency.

It is evident from this brief consideration of macroprudential measures in several Asian emerging markets that, while they are certainly necessary, they are generally inadequate to deal with this most significant problem. There is no doubt that an approach that uses various macroprudential instruments that consider possible and systemic risks is superior to the standard inflation-targeting approach that was commonly used by central banks across the world. But preventing extreme crises and trying to reduce instability, volatility and foreign exchange risks are not the only tasks of central banks or of monetary and financial policies more generally. Especially in developing countries, much more is required—most of all, in ensuring the availability of finance to support development, to assist fiscal policy in dealing with economic shocks and cycles and to deal with and mitigate climate change.

Essentially, macroprudential measures cannot resolve the contradictions created by open financial accounts in EMEs. They can reduce systemic fragility in the financial sector in certain contexts, and possibly prevent the build-up of speculative bubbles in sectors like real estate for some periods. But even these impacts are limited, as discussed below. In addition, they cannot provide a route out of the need for excessive and overly expensive self-insurance in the form of accumulation of forex reserves; cannot prevent significant losses to the economy because of differential rates on return on external assets and liabilities<sup>38</sup>; cannot ensure that gross inflows translate into net inflows of capital; cannot ensure that net inflows

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<sup>38</sup> Holding of reserves is extremely expensive, because these reserves are typically held in low-yielding assets and safe securities like US Treasury Bills, which have provided very low and decreasing rates of interest. This adds further to the more general problem of “sizeable wealth transfers between emerging and advanced economies. They have also resulted in significant

translate into increased domestic investment; cannot enable domestic investment in desired sectors; and cannot reduce the fear of financial market response that limits governments' ability to undertake adequate fiscal measures for economic recovery even in periods of crisis-induced downswings. In addition, in periods of severe crisis, they are at best reactive in terms of mitigating damage in domestic financial markets, and often unable to prevent this either. All these outcomes have become even more starkly evident in the period of the COVID-19 pandemic. As a result, they are relatively poor substitutes for more direct controls on the ownership of domestic and foreign financial assets and regulations governing the nature and extent of capital flows in developing countries.<sup>39</sup>

There are several reasons for this. To begin with, private players in financial markets can typically evolve new strategies to circumvent particular regulations or use other instruments and different financial products that have slipped through the regulatory framework. Since emerging markets now have fairly complex financial systems, with various kinds of resident and non-resident holders of different financial assets, regulations become even more complicated. Many non-bank financial institutions are now active agents involved in cross-border capital flows but can bypass the regulations imposed on banks. Meanwhile, governments continue to feel constrained by the possibility of capital flight and potential downgrades by global credit rating agencies and curtail their own spending despite domestic economic collapse and the urgent needs of their own people. This is why it has been argued by Erten, Korinek and Ocampo (2020) that it is of "the utmost importance that developing and emerging economies have access to capital controls as part of the toolkit of policy measures at their disposal to lean against the externalities generated by international capital flows, both to maintain financial stability and to allow full policy space for aggregate demand management."<sup>40</sup>

In such a context, it is imperative for Asian developing countries to draw on their past experience to develop new forms of macroprudential measures that are more appropriate to the contemporary situation, which would enable them to preserve some degree of financial stability, reduce their financial vulnerability, and enable domestic policies for recovery of output and employment. This need is even more pressing because of the emerging challenges posed by climate change and the

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income transfers in view of negative yield differentials between their gross external assets and liabilities." (Akyuz 2017, 2021).

<sup>39</sup> See ECLAC (2021) *A policy-oriented study on capital flow regulations. Response and Recovery: Mobilising financial resources for development in the time of COVID-19*. Project Paper 10.21.

<sup>40</sup> See Fernández et al. (2016) for a data set on capital controls.

inevitable requirement for massive public expenditures for mitigation and adaptation. Therefore, in the absence of global institutions to rein in capital, it is essential for governments in emerging market economies to take a more direct, hands-on approach to managing capital flows and limiting any possible damaging or constraining effects on economic policy and domestic financial stability. Governments across the region need to take a more clear-headed look at the past experience as well as current conditions to assess the strategies that have actually worked in the past and bring about the necessary reforms in ownership patterns and regulatory structures for financial markets.

## **E. The experience in Africa with macroprudential measures**

### **1. Context/background and brief description of macroprudential policies**

This section is concerned with the kind of macroprudential measures adopted by African countries to address systemic fragility resulting from the external instability that follows increased global integration.

Macroprudential measures gained currency after the global financial crisis of 2008 as a form of regulatory intervention aimed at pre-empting the accumulation of excessive systemic risks that disrupt the financial system and damage the real economy (Agenor 2016). The COVID-19 pandemic heightened systemic risks in Africa, by aggravating pre-existing vulnerabilities. Since many of these vulnerabilities existed prior to the pandemic, it is to be expected that governments and regulators had put in place measures that were aimed at mitigating such risks. Among such measures are those called “macroprudential” aimed specifically at limiting the build-up of systemic risks resulting from external exposures or ensuring resilience in the face of external shocks. This section aims to identify the macroprudential measures adopted in the period 2000-2020 in selected sub-Saharan African countries (Ethiopia, Ghana, Kenya, Nigeria, South Africa, and Zambia) and assessing, to the extent possible given the short-time period, their efficacy at the time of the Covid pandemic.

Most sub-Saharan economies are dependent on primary commodities for their export earnings, with a lucky few having access to oil and gas reserves and precious metals, especially gold. UNCTAD's 2019 report on the *State of Commodity Dependence* found that nine out of ten sub-Saharan African countries are commodity-dependent, “compared to two thirds of the countries in the Middle East and North Africa, half of the

countries in Latin America and the Caribbean, and half of the countries in East Asia and the Pacific.” A country is identified as commodity-dependent if commodities account for more than 60 per cent of the value of its total merchandise exports in value terms. Of the countries selected for study, South Africa is the only one that does not fall in this category.<sup>41</sup>

Moreover, the degree of diversification of the commodity export basket and export destinations is low. Ethiopia and Kenya are dependent primarily on agricultural exports. Coffee (28.7%), oilseeds (14.5%), khat (*Catha edulis*, a psychoactive stimulant) (11.4%), pulses (10.2%) and cut flowers (9.6%) are Ethiopia’s major export products and tea, cut flowers and foliage and coffee, Kenya’s. Ghana and Zambia on exports of minerals, ores and metals and Nigeria on fuel exports.<sup>42</sup>

With this overwhelming dependence on exports of a few primary products with volatile demand and international prices, the trade and current account of the balance of payments in these countries are routes through which shocks could be transmitted to the domestic economy, triggering systemic difficulties.

Commodity dependence is invariably associated with substantial and sustained dependence on capital flows. During periods of both commodity price declines and increases, there is singular tendency for increased dependence of foreign capital. When prices are rising, and the capacity for servicing foreign liabilities improves, many countries rely on foreign borrowing or foreign direct investment to develop their commodity exporting sectors, resulting in outflows of foreign exchange to finance primary income payments, such as debt service (interest payments and amortisation), technical fees, royalties, profits, and dividend repatriation. So even if the trade account is relatively resilient, the current account deficit can be large because of outflows of these payments. When commodity prices decline, the current account weakens, encouraging countries to borrow abroad to finance their import bill and sustain economic activity. As a result, commodity dependence intensifies balance of payments vulnerability.

Given their structural external vulnerability and the possibility of adverse systemic effects, most African countries have adopted different measures to regulate capital inflows. These measures include capital flow management, exchange rate management and addressing risk transmission.<sup>43</sup>

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<sup>41</sup> See Gelb and Black (2004).

<sup>42</sup> Asante-Poku et al. (2012).

<sup>43</sup> See ECLAC (2021) *A policy-oriented study on capital flow regulations. Response and Recovery: Mobilising financial resources for development in the time of COVID-19*. Project Paper 10.21. See Sivale (2021) for an analysis of the impact of COVID-10 on Zambia.

## 2. Specific examples under COVID-19

The COVID-19 Pandemic aggravated African countries external vulnerabilities and led to significant exchange rate depreciations and debt stress particularly in the cases of Ghana (48% of its debt matured in 2020 and needed refinancing)<sup>44</sup>, Kenya (the IMF's raised the country's risk of debt distress from moderate to high), and Zambia (Zambia became the first defaulter on external debt after the onset of the pandemic).<sup>45</sup> Most governments turned to the IMF for emergency finance and several became part of the G-20 Debt Suspension Initiative (DSSI) and rarely introduced macroprudential regulations to combat the external impact of the Pandemic. This is exemplified by the cases of Ethiopia, Ghana, and Kenya.<sup>46</sup>

With capital inflows adversely affected, Ethiopia was left with a foreign exchange funding gap, which required approaching the IMF for support under the Rapid Financing Instrument and requesting grant assistance under the Catastrophe Containment (CC) window of the Catastrophe Containment and Relief Trust (CCRT). Given the foreign exchange crunch, the Ethiopian authorities, having been prudent with respect to capital flows earlier, chose to relax rules relating to foreign borrowing. As of August 2020, commercial banks were allowed to engage in foreign currency intermediation through borrowing from international financial institutions in US dollars, Canadian dollars, pound sterling, euro, Chinese yuan, and Japanese yen. Banks were also allowed to grant credit to local borrowers in foreign currency. Commercial banks could thus lend locally in foreign exchange. Banks that decide to engage in foreign-currency intermediation must open a foreign-currency reserve account with the national bank of Ethiopia and maintain 5% of the outstanding balance of the external loan in foreign currency (EIU, 2020). Rather than act to reverse debt dependence, the government increased that dependence.

Ethiopian banks can borrow foreign currency from international financial institutions in US dollars, Canadian dollars, pound sterling, euro, Chinese yuan, and Japanese yen. The directive also allows banks to act as intermediaries for local borrowers. Ethiopia has been facing a foreign-currency shortage for years, and this move by the NBE should ease these pressures. The government was quick to identify foreign-exchange shortages as a bottleneck to economic development and has been committed to opening the financial sector to allow more investments in the country.

Ghana initially opted to postpone debt servicing by applying to participate in the G20's DSSI, which, however, does not cover private and even multilateral creditors. In 2020, 59 per cent of Ghana's total debt service payments were owed to private creditors. Identified as being in

<sup>44</sup> See Taylor and Sarpong 2020; Bank of Ghana (2021).

<sup>45</sup> See Siwali (2021).

<sup>46</sup> Thirty-five African states joined the DSSI including Ethiopia, Ghana and Kenya.

debt distress by the joint IMF-World Bank Debt Sustainability Framework for Low Income Countries, the country had no option other than turning to the IMF. It did so early, obtaining IMF approval on April 13, 2020, for the disbursement of SDR 738 million (about US\$1 billion) to be drawn under the Rapid Credit Facility (RCF).

Kenya also asked IMF for support. In May 2020, the IMF provided \$739 million in the form of an interest-free loan under the RCF to help Kenya cover the cost of additional spending on health and social protection. Subsequently, Kenya agreed to a new programme with the IMF to garner low-cost loans to the tune of \$2.4 billion over three years under the Extended Fund Facility (EFF) and Extended Credit Facility (ECF).

Nigeria was the exception as the central bank opted to apply exchange controls in June 2020 to defend the parity of the currency as it faced foreign exchange constraint resulting from the COVID-19 crisis and the fall in oil prices. It stepped up administrative controls by increasing the number of goods under import restrictions, enforced existing requirements for export repatriation and reduced the foreign exchange supply to various windows.<sup>47</sup>

### 3. The lessons learned

The experience of commodity dependent sub-Saharan Africa points to how current account movements resulting from the volatility in the volume and unit value of exports can contribute to financial account and overall balance of payments vulnerability, precipitating currency and even systemic crisis. The link between the current and financial account is visible not merely in periods when falling export revenues due to reduced exports and decline in export prices makes the economy more dependent on capital inflows to finance current account deficits. Rather, even when exports are doing well, the confidence that this generates encourages relying on capital inflows to raise investment and growth, in the belief that the associated commitments can be easily financed with export earnings. The ubiquitous presence of this asymmetric reliance on enhanced inflows during periods of both increased and reduced current account financing needs in almost all countries studied (except South Africa, which is not commodity dependent), points to the need for countercyclical measures to address external vulnerability.

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<sup>47</sup> As explained by the authorities (IMF, 2020): "Nigeria maintains the following exchange restrictions: (i) an exchange restriction arising from the prohibition to access foreign exchange at the Nigerian foreign exchange markets for the payment of imports of 42 categories of items; 1 (ii) an exchange restriction arising from the rationing of foreign exchange by the CBN in different FX windows, and its allocation based on the CBN's determination of priority categories of transactions; and (iii) an exchange restriction arising from existing limits on the amounts of foreign exchange available when traveling abroad (BTA/PTAs), which cannot be exceeded even upon verification of the bona fide nature of the transaction."

During periods of buoyancy in exports, countries need to be (i) cautious about excessive external borrowing and increased capital account liberalisation that led to substantially enhanced external liabilities; and (ii) must set aside 'surplus' in foreign exchange in institutions and instruments that can be deployed to deal with the vulnerability that manifests when commodity demand and commodity prices are subdued or falling. As discussed above, some countries have established sovereign wealth funds as the means to undertake such countercyclical intervention with salutary effects. But this has not gone far enough and has been accompanied by overreliance on the easier options of foreign borrowing, facilitation of foreign portfolio investment and excessive foreign direct investments.

To the extent that countercyclical measures are not adequate to cover foreign exchange needs when faced with external shocks, sole reliance on borrowing and capital flows tends to exacerbate vulnerability hugely. Short term macroprudential measures to deal with this -, varying from policies that commandeer available foreign exchange flows to shore up reserves (through enforced early repatriation of export receipts, for example) or measures to access external liquidity, like foreign currency swaps with friendly trading partners -, may be inadequate. In that event, reliance only on capital flows results in the cumulative build-up of external liabilities and exacerbates longer-term vulnerabilities. Measures to directly address the imbalance in the current account including curbs on non-essential imports need to be considered to tide over difficult times. In practice, given commitment to liberalised trade rules and external pressures, countries resort to such measures only when the crisis intensifies, and default seems inevitable.

Current account vulnerability also requires intervention to manage the exchange rate to prevent transmission of shocks across the system. For example, a sharp depreciation of the domestic currency in a context of large foreign currency corporate debts, can trigger bankruptcies because of a spike in the domestic currency value of debt service commitments and adversely affect the financial institutions exposed to these corporates. But managing the currency is a difficult exercise, since commodity export dependence implies that the real exchange rate must be stabilised to protect export competitiveness. Thus, given relative inflation rates, currency market intervention on macroprudential grounds must not just guard against precipitate depreciation, but ensure nominal depreciation at a rate that keeps the real exchange rate within a competitive range. That can be a challenge, as the experience of Africa illustrates.

In sum, macroprudential measures are crucial in addressing external vulnerability and pre-empting shocks that can prove systemic, especially given the difficulties in reversing liberalisation measures that



trigger tendencies that increase vulnerabilities. But where features like commodity export dependence and inequities in trade and access to international liquidity result in exceptional vulnerability, the policy space to turn to structural measures such as capital controls and even controls on trade may be needed.

## **F. The Latin American experience**

### **1. Context/background and brief description of macroprudential policies**

This section reviews the experience of five Latin American economies (Brazil, Chile, Colombia, Mexico, and Peru) with macroprudential policies (MPPs) in the 2000s.<sup>48</sup>

These countries experienced similar developments in their balance-of-payments during this millennium, being net recipients of surges of capital inflows before and after the global financial crisis (GFC) in 2008, and a fall in inflows after 2014. Throughout these years, and particularly after the GFC, all had current account deficits and negative Net International Investment Positions (NIIP). All of them witnessed episodes of accelerated credit growth, but rarely saw episodes of banking or financial crisis. Their financial system weathered the 2008 crisis with relative resilience, aided by the policies implemented by monetary and banking authorities. Many of them adopted most of the measures that comprise Basel III regulatory standards, while some of them had already implemented similar measures even before Basel III.

All these countries had severe crises episodes before the GFC. All of them experienced either sovereign, banking and/or currency crises in the 1980s, according to the Laeven and Valencia (2020) database. Brazil, Colombia, and Mexico also experienced at least one of these types of crises in the 1990s: Brazil in 1999, Colombia in 1998 and Mexico in 1995. Peru went through a sovereign debt restructuring process in 1996, while entering the 2000s with very high levels of dollarization of its financial system.

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<sup>48</sup> Useful references include: Agenor and Pereira da Silva (2016); Ahmed and Zlate (2014); Aizenman and Lee (2007); Avdjiev et al (2014); Avdjiev et al. (2016; 2020); Barbone González et al. (2019); Blanco Barroso et al (2020); Costa de Moura y Bandeira (2017); Goldfan & Minella (2007); IMF (2018a); Jeanne and Ranciere (2011); Kaltenbrunner, A. and Paineira (2015); Oliveira et al. (2018); Pereira da Silva and Harris (2013) and Tarashev et al. (2016) for Brazil; Cifuentes et al. (2017), Gómez et al. (2020), Ministerio de Hacienda (2020), Raddatz, and Vergara (2016) for Chile; Banrep (2020); Osotio (2021); Vargas et al. (2017) for Colombia; Armas, A. (2016), Choy and Chang (2014) Minaya, E., Lupú, J. and Cabello; Rossini & Quispe (2017) for Peru. See also all the IMF country reports cited in the references section.

Some of the measures obey different objectives. For instance, while some countries adopted a Leverage Ratio to comply with the Basel III framework, others (such as Chile) adopted it earlier. There is lack of evidence about the impact of some measures, either because they were recently adopted, or because they were not tested so far. For others, evidence is mixed. For instance, countercyclical reserve requirements were found to be more effective in busts (alleviating liquidity pressures) than in booms. There is opposite evidence of countercyclical loan-loss provision. Other measures based on capital controls such as unremunerated reserve requirements and taxes on non-residents were mildly successful, but had stronger effects when complemented, for instance, with taxes on derivatives.<sup>49</sup>

A major conclusion is that Latin American economies have successfully implemented MPPs, but new vulnerabilities arose in the last years, which present a challenge to policy makers.

In the case of Brazil, the main financial vulnerabilities arise from the exposure of the non-financial sector to external conditions, both directly (because of its scale of external borrowing) and indirectly (because of funding sources for its domestic borrowing). It can be particularly affected by sudden exchange rate volatility. The banking sector is solid, with low levels of non-performing loans reduced debt-service ratios, relatively low and stable credit to households, and low government exposure to foreign currency debt.

In Chile the major threats to financial stability arise from both the international and domestic exposure of the corporate non-financial sector, which could derail investment and growth. Another source of concern is the accelerated indebtedness of the household sector.

Colombia has reduced currency mismatch in sovereign debt, a traditional source of concern for developing countries. However, there are other worrying signs like a sustained current account deficit, increasing presence of foreign investors in local-currency debt markets, and rising larger stocks of foreign-currency corporate-issued debt securities, which are exposed to volatility in exchange rates and commodity-prices (mainly oil and coal). IMF (2020a) noted that the external financing needs of Colombia (computing the current account deficit and debt amortization needs) are particularly high for the near future, relative to regional standards. The COVID-19 pandemic has also strained the access of banking and non-banking institutions to international markets.

In the case of Mexico, already prior to the COVID-19 pandemic the government was transferring funds to state-owned companies to

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<sup>49</sup> See, Prates and Fritz (2016).

afford their external borrowing (Cantú et al 2021). Since these are large companies, their external indebtedness can create negative spillovers for both government finances and the domestic financial system.

Peru appears to be a more successful case in the implementation of macroprudential policies as these helped to address both structural (dollarization, systemic risk, and resilience) and cyclical (credit growth rates) external and domestic vulnerabilities of the Peruvian financial system.

## **2. Macroprudential policies during COVID-19**

In what refers to its macro financial impact, the COVID-19 pandemic had a similar effect on the countries under analysis and elicited a similar response in terms of macroprudential policies. The shock also revealed some of the vulnerabilities presented in this survey, such as the negative conditions implied by the presence of non-resident investors in domestic debt markets.

The region faced both an external and an internal shock. There were unprecedented capital outflows, massive and sudden depreciations, and increments in sovereign spreads, aggravated by the presence of non-resident investors (Bortz et al 2020). There were (initially) falls in commodity prices which were later reversed. On the domestic front, on top of the fall in economic activity due to lockdown restrictions, there were severe financial disturbances. These are mentioned in the Financial Stability Reports issued by each central bank, and in the Article IV Consultation Staff Reports of the IMF. The policy response was very similar across all the countries in this survey, in terms of objectives and instruments.

The Central Bank of Brazil (CBB) mentions severe disruptions in domestic financial markets, with rising margin calls, liquidity needs and credit demand (BCB 2020). The country also faced substantial capital outflows that led to major exchange rate depreciations and fall in asset prices (such as the stock exchange). In response to these disruptions, the BCB implemented different sorts of measures. On the external front, it intervened in foreign exchange markets and provided foreign exchange liquidity to bank and non-bank financial institutions (BCB 2020, 58). It should also be noticed that Brazil agreed to the establishment of a swap line with the Federal Reserve that eventually diminished the pressure on its exchange rate (Aguilar and Cantú 2020). On the domestic front, the BCB implemented an asset purchase program, reduced reserve requirements and mandatory Liquidity Coverage Ratios (LCRs), instrumented a Special Temporary Liquidity Facility, diminished the required Capital Conservation Buffers (CCBs), reduced risk-weight factors for Small and Medium Sized Firm lending, eased norms regarding dates of borrowers' obligation payments and suspended dividend pay-outs and share buybacks.

In the case of Chile, it faced the largest capital outflow ever recorded (BCCh 2020, 17). It observed a spike in local lending rates at the beginning of the pandemic, and distortions in domestic liquidity, as other countries. To boost foreign exchange resources, the country obtained a Flexible Credit Line (FCL) with the IMF.<sup>50</sup> To counteract foreign exchange volatility, the Central Bank of Chile (CBC) implemented sales of US dollars, foreign exchange swaps and repos (BCCh 2020). It provided liquidity lines in USD and Chilean peso, extending the maturity of the programmes, and temporarily suspended maturity mismatch requirements. It also relaxed LCRs, adjusted regulation on provisions to help struggling debtors, and implemented new liquidity lines to support lending.

On top of the external shock faced by many countries in the region, Colombia's external profile was particularly affected by the fall in oil prices and by the sovereign credit rating downgrading. The government extended its FCL with the IMF. The central bank intervened in the forward foreign exchange market and auctioned foreign exchange swaps. It also reduced reserve requirements, implemented asset purchases programmes, and eased collateral frameworks. The Financial Superintendence, in turn, eased conditions on borrowers to protect their credit ratings during the pandemic.

Mexico followed a similar approach regarding the macroprudential response. The central bank of Mexico implemented liquidity lines, reduced reserve requirements, extended the collateral framework, expanded dollar liquidity lines and derivatives supply, and implemented credit lines to banks to maintain a proper flow of credit to the private sector, meeting increased demand. It eased LCR and CCB requirements, and deferred credit payments.

Finally, Peru implemented policies and reached agreements with international institutions to increase foreign exchange supply and hedging. The Peruvian central bank participated in a dollar liquidity facility of the Federal Reserve, while the country obtained a FCL from

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<sup>50</sup> The FCL is designed a funding facility for crisis prevention. It does not have a quota limit and is accessed and renewed on a case-by-case basis. It provides funding at interest rates below market rate (interest rate corresponding to SDRs plus a margin (100 basis points) and is renewable after one or two years. While it does not entail 'on going condition' because it does not need to. It is granted to economies that have the following qualifications: A sustainable external position; a capital account position dominated by private flows; a track record of steady sovereign access to international capital markets at favorable terms; a comfortable reserve position; sound public finances, including a sustainable public debt position; low and stable inflation, in the context of a sound monetary and exchange rate policy framework; a sound financial system and the absence of solvency problems that may threaten systemic stability and effective financial sector supervision (IMF, 2022). The FCL assumes that countries remain committed to these objectives. As a result of these stringent access conditions only four countries in Latin America and the Caribbean have been able to access the FCL, Chile, Colombia, Mexico, Peru. While only Colombia has used its FCL, the mere fact of having it available increase the confidence of foreign investors.

the IMF. The central bank reduced reserve requirements, extended liquidity facilities, eased provision requirements, and implemented asset purchase programmes.

### 3. Lessons learned

The experience of Latin America with macroprudential regulation point to the following policy lessons.<sup>51</sup>

First, Latin American adopted a macroprudential approach to financial regulation even before the current global trend. This approach is particularly identifiable in the measures taken to contain foreign exchange vulnerability. It also obeys to specific and idiosyncratic characteristics of the surveyed economies, such as the presence of foreign banks and the degree of interconnectedness within the banking sector and between financial sectors.

Second, the case of Peru is clearly remarkable because it succeeded in diminishing the degree of dollarization of deposits and credits by pressuring banks to adopt macroprudential measures (among other measures, and together with macroeconomic stability).

Third the Basel III approach, therefore, had and still must be complemented with more focus on external vulnerabilities in all countries, which are not thoroughly addressed in the global macroprudential framework.

Fourth, the newly vulnerabilities are not concentrated on banks, which are tightly regulated, but on borrowers, related particularly to external borrowing by the corporate non-financial sector. There are examples within the region that include capital control measures such as limits, taxes and reserve requirements on external borrowing, that provide illustrations about ways to approach these new vulnerabilities. However, the current policy perspective seems to follow a different<sup>52</sup> approach, favouring for instance privately issued hedge instruments (local bonds. See BIS, 2012 for a description of some of these instruments).

Finally, the fact that some measures have different impact on booms and on busts calls for an integrated, comprehensive, and holistic approach to macroprudential regulation, going beyond Tinbergen's Rule (Tinbergen 1952) and adopt multiple instruments to multiple objectives.

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<sup>51</sup> See Gambacorta and Murcia (2020) for an analysis of the impact of macroprudential policies on Latin American economies. See also, Jacome et al. (2012); Ruiz et al. (2014); and Tovar (2012).

<sup>52</sup> This states that the number of achievable policy goals cannot exceed the number of policy instruments.

## G. Conclusion

Macroprudential regulation is not a well-defined concept and, at the same time, is of limited applicability specially to deal with the problematic of developing countries, including those of Latin America and the Caribbean.

Macroprudential regulation has the objective of addressing systemic risk to promote financial stability. Yet there is no consensus on the definition of financial stability. Also, survey evidence indicates that regulators do not consider macroprudential regulation as a priority and tend to rely on capital adequacy ratios (that is on micro prudential regulation).

Within the dominant economic thinking paradigm (Shin 2010), macroprudential regulation can only be justified as a policy to improve the intermediation function of the banking system between savings and investment. According to this view the main source of financial instability and systemic risk is the banking system. Macroprudential regulation does not recognize that financial instability can originate from the non-financial corporate sector and can be endogenous to the functioning of a private market economy. For developing economies, and, particularly for Latin American economies the accumulation of debt by the non-financial corporate sector is an important source of financial vulnerability which is compounded by the fact that the non-financial corporate sector tends to operate with currency mismatches and these currency mismatches have increased since 2007.

At the more general level this view fails to recognize that systemic risk for developing economies is the result of their increased financial openness and their greater reliance on price mechanisms as the way to produce and allocate resources. In conjunction with the changes that have occurred in the international financial system which include among other the strengthening of the international bond market as the main source of finance for developing economies and increased financialization of productive activities, this has led to a combination of greater dependency on short-term capital flows and increased debt accumulation. In some cases, macroprudential regulation that has loosened credit conditions has strengthened debt accumulation.

This pattern of economic integration has narrowed the policy space of developing country governments. This was exemplified by the impact of COVID-19 which increased the public debt of developing countries and has left some countries with little choice but to contract government expenditures when they are most needed to spur a sustained recovery. Greater dependency on short-term flows and debt accumulation has also been detrimental to long-term economic growth. In fact, at least the experience for Latin America shows, that increased debt accumulation has been accompanied by a decline in the rate of growth in the formation of gross fixed capital.

Macroprudential regulation for developing economies should have two interrelated objectives. These consists in minimizing the impact of external fluctuations on the domestic economy while providing policy space to foster growth and full employment.

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## Annex III.A1

### A macroprudential framework

This annex shows the detailed derivation of identities (1) and (2) of section 3. Table III.A1.1 shows the components of the assets and liabilities of a representative commercial bank, referred to as bank  $i$ .

Table III.A1.1  
Consolidated balance sheet

Assets	Liabilities
<b>Loans to end-users</b> ( $P_i$ )	<b>Debt</b> ( $D_i$ )
✓ Households	✓ Non-bank agents/institutions
✓ Business	✓ Banks
✓ Government	
<b>Intermediary loans</b> ( $P_{ij}$ )	<b>Capital/Equity</b> ( $E_i$ )
Interbank loans	

Source: On the basis of H. Shin (2010).

The assets side includes loans to end-users, which include households, businesses and government ( $P_i$ ). Secondly, it includes loan from bank  $i$  to other financial institutions (for example,  $P_{ij}$  where  $j$  refers to other financial institutions). The latter are also equal to the value of the liabilities of bank  $j$  held by bank  $i$  ( $D_{ji}$ ) and the share of the liabilities of bank  $j$  in the total liabilities of other financial institutions held by bank  $j$  ( $\pi_{ji}$ ).

The liabilities side includes debt held by bank  $i$  from other banking and non-banking institutions ( $D_i$ ) and also capital/equity ( $E_i$ ).

By definition, assets are equal to liabilities; in other words, loans to end-users plus claims on other financial institutions are equal to the sum of debt and equity. In other words:

$$(1) \text{ Assets} = \text{Liabilities} \Leftrightarrow P_i + P_{ij} = D_i + E_i \Leftrightarrow P_i + D_{ji} \pi_{ji} = D_i + E_i$$

$$\text{where, } D_{ji} \pi_{ji} = P_{ij}$$

Expressing loans  $P_i$  in terms of the other components of identity (1) gives:

$$(2) P_i = D_i - D_{ji} \pi_{ji} + E_i$$

Summating (2) generalizes identity (2) to the whole financial system,

$$(3) \sum_{i=0}^t P_i = \sum_{i=0}^t D_i - \sum_{i=0}^t D_{ji} \pi_{ji} + \sum_{i=0}^t E_i \Leftrightarrow P = D(1 - \Pi) + E$$

According to (3), loans from the banking system ( $P$ ) are a function of debt ( $D$ ), capital ( $E$ ) and the funding of the banking system, whether from non-bank financial intermediaries or outside sources ( $1 - \Pi$ ).

In turn, debt ( $D$ ) can be expressed as the difference between assets and equity,

$$(4) \text{ Debt} = \text{Assets} - \text{Equity} \Leftrightarrow \text{Debt} = \left( \frac{\text{Assets}}{\text{Equity}} - 1 \right) * \text{Equity}$$

$$\Leftrightarrow D = \left( \frac{A}{E} - 1 \right) * E$$

Where  $\left( \frac{A}{E} \right)$  is leverage ( $\lambda$ ).

Substituting (4) in (3) gives,

$$(5) P = D(1 - \Pi) + E \Leftrightarrow P = (\lambda - 1) * E * (1 - \Pi) + E$$

According to (5), loans from the banking system ( $P$ ) are a function of leverage ( $\lambda$ ), equity ( $E$ ), the funding of the banking system either from non-bank financial intermediaries or from outside sources ( $1 - \Pi$ ).

The latter component can be divided into non-bank funding from residents and non-bank financing from abroad. Formally,

$$(6) (1 - \Pi) = (\alpha_1 + \alpha_2) (1 - \Pi)$$

Where,

$\alpha_1$  = proportion of funding from resident non-bank sources,

$\alpha_2$  = proportion of funding from non-resident non-bank sources, and

$$0 < \alpha_1, \alpha_2 < 1 \text{ y } \alpha_1 + \alpha_2 = 1$$

This conceptual framework makes it possible to articulate a macroprudential regulatory framework around four pillars: (i) credit growth; (ii) leverage; (iii) interconnectedness (financing external to the banking system as a whole); and (iv) equity. This is formalized in identity (7).

$$(7) \quad P = (\lambda - 1) * (1 - \Pi) * E + E$$

$\downarrow$   

Credit growth

$\downarrow$   

Leverage

$\downarrow$   

External funding  
of the banking  
system as a whole  
(residents and  
non-residents).

$\downarrow$   

Equity





## Chapter IV

# Macroprudential regulation in Africa in the context of the COVID-19 pandemic

*C. P. Chandrasekhar*<sup>1</sup>

## Introduction

In this paper the focus is on the systemic risks that can be generated by external sector developments and the shocks they can impart resulting from the different forms of integration of developing countries with the global system, and the efficacy of macroprudential measures adopted to address those risks.<sup>2</sup> It is concerned with macroprudential regulation that limits risky exposures and manages tendencies of a kind that render economies vulnerable to volatile capital movements, currency instability and an inability to meet external payments commitments without disruption of the domestic financial system and the real economy. The measures involved are different from 'microprudential measures' that are taken to refer to adjustments that reduce the risk of failure of individual institutions. Thus, with reference to banking, the IMF defines microprudential measures as

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<sup>1</sup> Jawaharlal Nehru University.

<sup>2</sup> Macroprudential regulation, it has been argued, uses instruments that have two dimensions: a time dimension that counteracts tendencies that amplify cycles; and, a cross-sectional dimension that prevents or moderates the transmission of risk across the financial system. Justine Bagyenda and Charles Augustine Abuka (2014), "Challenges in Implementing Macroprudential Policy in Africa", *Africa Finance Forum Blog: Making Finance Work for Africa*, <https://www.mfw4a.org/blog/challenges-implementing-macroprudential-policy-africa>.

those addressing “the responses of an individual bank to exogenous risks and do not incorporate endogenous risk and the interconnectedness with the rest of the system.” (Osiński et al 2013: 6).

External factors can trigger systemic instability either because of weaknesses in the current account, or from excessive debt or non-debt inflows on the capital account. The two are not unrelated. Access to foreign exchange through capital flows allows countries to stay on trajectories that widen the current account deficit over time, and the widening of that deficit may, by raising creditor or investor fears about a steep depreciation of the exchange rate or the country’s ability to service the foreign exchange payment commitments associated with its liabilities, trigger capital outflows. Thus, managing inflows of volatile requires countering the effects of current account shocks or chronic current account weaknesses as well, addressing them without excessive dependence on volatile capital flows, and adopting measures to prevent volatile movements of the exchange rate that could trigger capital flight and balance of payments and currency crises.

In addition, controls on capital movements by pre-empting excess capital inflows serve macroprudential objectives irrespective of current account trends. Private borrowers in developing countries often assume that the real exchange rate will remain stable when making decisions to borrow abroad. But the very act of borrowing and the resulting inflow can strengthen the domestic currency reducing the local currency burden of foreign borrowing. This effect often encourages more borrowing leading to an excess of borrowing that increases the probability of a crisis (Pasricha 2017). So capital controls that restrict borrowing from abroad serve macroprudential objectives. Such controls may be even more necessary if there is a supply side push to capital inflows resulting from easy and cheap money policies in source countries, which encourage “carry trade”-type transactions. Needless to say, full scale physical controls on capital inflows foreclose macroprudential regulation, which refer normally to measures aimed at moderating or limiting inflows.

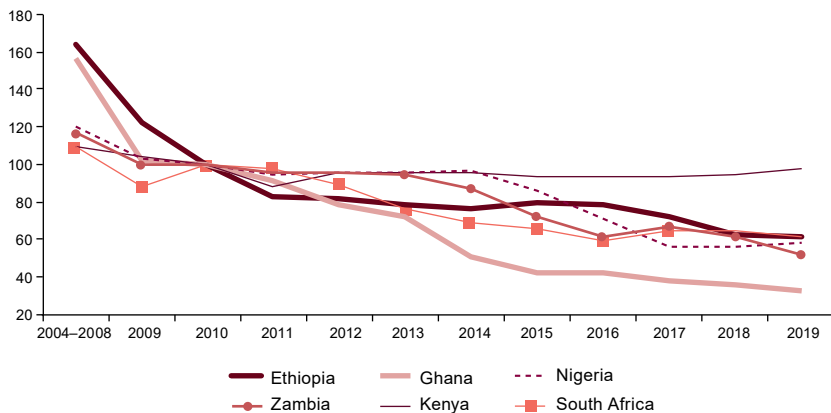
The COVID-19 pandemic heightened systemic risks in Africa, by aggravating pre-existing vulnerabilities. Since many of the vulnerabilities that contributed to such risk existed prior to the pandemic, it is to be expected that governments and regulators had put in place measures that were aimed at mitigating such risks. Among such measures are those aimed specifically at limiting the build-up of systemic risks resulting from external exposures or ensuring resilience in the face of external shocks. This study is aimed at identifying such macroprudential measures, to the extent adopted, in selected African countries (Ethiopia, Ghana, Kenya, Nigeria, South Africa and Zambia) and assessing, to the extent possible given the short time period, their efficacy at the time of the COVID-19 pandemic.

## A. Analysis of selected indicators of the external sector

### 1. Current account shocks

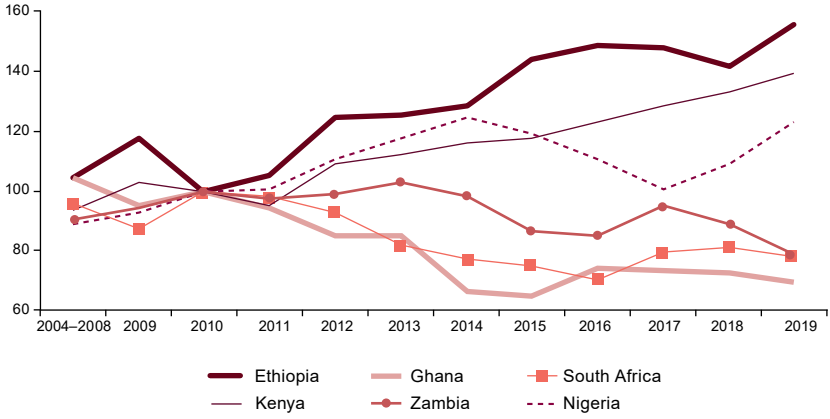
The adverse economic effects of the pandemic are likely to have heightened systemic risks for different reasons. With transportation adversely affected, export revenues and earnings from travel and tourism fell. The near stop in economic activity globally resulted in reduced export earnings and some loss in earnings of migrant workers in foreign locations, leading to a fall in remittances. To the extent that the shrinkage in foreign exchange receipts exceeds any fall in the import bill due to the domestic recession, the trade and current account deficits would widen. That, in turn, could set off a depreciation in the currency. In all cases, excepting for Kenya, the nominal effective exchange rate had been depreciating significantly after 2011, with the fall in the nominal exchange rate being sharpest in Ghana, followed by Zambia, Nigeria, South Africa, and Ethiopia (see figure IV.1). However, relatively high inflation rates meant that the *real* effective exchange rate appreciated in Ethiopia, Kenya, and Nigeria, and depreciated only in Zambia, South Africa, and Ghana (see figure IV.2). The experience during the pandemic varied. The Nigerian and Zambian currencies depreciated in nominal terms vis-à-vis the US dollar. The South African rand appreciated, and the currencies of Ghana and Kenya were relatively stable (see figure IV.1).

Figure IV.1  
Nominal effective exchange rates  
(Annual average; index 202=100)



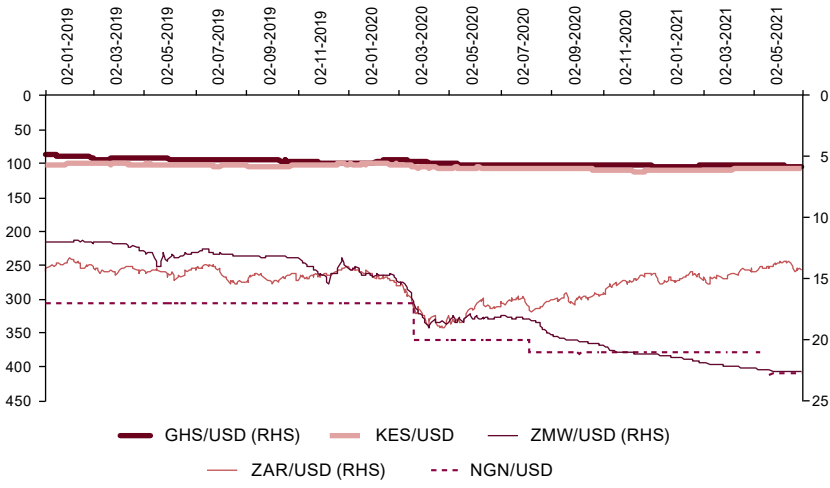
Source: IMF (2020).

**Figure IV.2**  
**Real effective exchange rates**  
*(annual average index, 2020+100)*



Source: IMF (2020).

**Figure IV.3**  
**Nominal exchange rate vis-a-vis the United States dollar**  
**during the Pandemic**



Source: IMF (2020).

Currency depreciation can fuel itself by aggravating currency speculation, including through the delayed repatriation of export receipts in the expectation of a depreciation, which would deprive the economy of a part of the even reduced foreign exchange that has been earned through exports. Reduced access to foreign exchange and currency depreciation can also lead to debt stress and even bankruptcy. Currency depreciation can substantially increase the local currency value of debt service or other payments associated

with exposure to dollar liabilities, especially external debt, leading to defaults or distress sales of assets. The larger such exposure, the greater is the vulnerability stemming from this source. Financial liberalisation, easy liquidity conditions in international financial markets, and extremely low interest rates in the developed countries have combined to increase the volume of such exposures. In the circumstances, the probability of a systemic crisis triggered by a balance of payments shock is high. Macroprudential measures of three kinds can be adopted to address this danger. One is to intervene in various ways to limit current account vulnerability and currency volatility, so as to limit the 'original' shock. The second is to adopt measures to dampen currency speculation in the context of currency depreciation. These two are instruments aimed at checking the magnitude and preventing the amplification of a shock. The third is to enforce hedging against foreign exchange risks on the part of players with foreign exchange exposure, which is a measure to dampen the horizontal transmission of the shock.

Finding the right mix of interventions to ensure a semblance of external stability remains the challenge. There are multiple measures of the macroprudential kind that countries can adopt to insure themselves against or address the external vulnerability stemming from these sources. At the minimum, they need to require full repatriation of export earnings and set and enforce a specified duration within which export proceeds must be repatriated. Almost all countries have rules to that effect, and some modify the time required for repatriation depending on balance of payments stress and fall in reserves. This not only ensures access to the foreign exchange earned to finance imports and reduce the vulnerability resulting from a rising trade deficit, but also helps reduce the intensity of any speculative attack on a currency triggered by signs of balance of payments weakness. Countries dependent on export revenues susceptible to volatile shifts in export volumes and unit values can also devise means by which in cyclical fashion foreign reserves are accumulated when prices are rising and/or high and deployed when export earnings fall. When export earnings accrue to the government these can be credited to a sovereign wealth fund when prices are buoyant, and the reserve tapped when prices are depressed. Another way to be prepared for a trade shock and its fallout is to keep in place a safety net in the form of a currency swap arrangements with the central bank of a partner country with adequate access to hard currency reserves. Swaps serve as liquidity facilities, making available dollar (or other foreign currency) liquidity on demand to a central bank seeking to support banks falling in its jurisdiction and their clients faced with crises-induced dollar funding shortages in regular markets.

A swap operation between the domestic and a foreign central bank involves two transactions: one is the sale to the foreign central bank of a specified volume of the domestic currency of the applicant for dollars at the prevailing market (spot) exchange rate; and the second is a buyback on a prespecified date in the future of the domestic currency with dollars by the borrowing central bank, at the same exchange rate. This insures the lending

central bank against any foreign exchange risk. When the second transaction is completed the borrowing central bank also pays interest at a market-related rate, depending on the duration for which it has drawn on the swap line.

## 2. Commodity export dependence and current account vulnerability

Most sub-Saharan economies are dependent on primary commodities for their export earnings, with a lucky few having access to oil and gas reserves and precious metals, especially gold. UNCTAD's 2019 report on the *State of Commodity Dependence* found that nine out of ten sub-Saharan African countries are commodity-dependent, "compared to two thirds of the countries in the Middle East and North Africa, half of the countries in Latin America and the Caribbean, and half of the countries in East Asia and the Pacific." A country is identified as commodity-dependent if commodities account for more than 60 per cent of the value of its total merchandise exports in value terms. Of the countries selected for study, South Africa is the only one that does not fall in this category.

Moreover, the degree of diversification of the commodity export basket and export destinations is low. Ethiopia and Kenya are dependent primarily on agricultural exports, Ghana, and Zambia on exports of minerals, ores and metals and Nigeria on fuel exports. Coffee (28.7%), oilseeds (14.5%), khat (*Catha edulis*, a psychoactive stimulant) (11.4%), pulses (10.2%) and cut flowers (9.6%) are Ethiopia's major export products and tea, cut flowers and foliage and coffee, Kenya's. The European Union (28 countries) is the principal destination for Ethiopia's exports, accounting for 21 per cent of the total.<sup>3</sup> China follows with 10 per cent. In Kenya's case too, the EU leads as destination (32 per cent), followed by Pakistan with 9 per cent. China does not figure in the top five destinations, as sometimes assumed. Ghana counts gold (36 per cent), crude oil (20 per cent) and unprocessed cocoa (19 per cent) among its principal exports. In its case too, the EU is the main destination (25 per cent), followed by India (14 per cent). China ranks fifth with 10 per cent. Zambia is heavily dependent on copper, which accounts for 67 per cent of its export earnings, and Switzerland and China are the main destinations, accounting for 28 per cent each of Zambia's exports. Nigeria is Africa's largest oil producer and home to the largest share of the continent's natural gas reserve, with fuels contributing 93 per cent of export earnings and around 70 per cent of government revenues, but only around 10 per cent of GDP. Here too the EU (33 per cent) and India (21 per cent) are the main destinations. South Africa depends on a combination of precious metals, minerals, agricultural commodities, and some manufacturing products. Silver and Platinum (8 per cent), iron ore (6 per cent) and gold (6 per cent) are the principal, exports, directed mainly to the EU (20 per cent) and China (17 per cent).

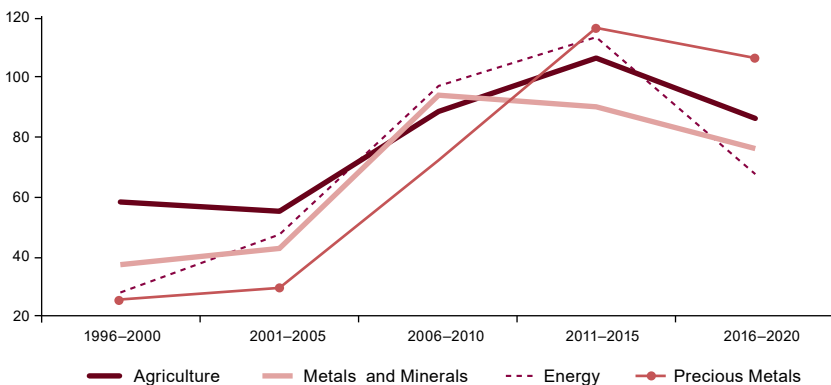
<sup>3</sup> Figures from UNCTAD 2019 reflecting the average for 2013-17.

With this overwhelming dependence on exports of a few primary products, the demand for and international prices of which are volatile, the trade and current account on the balance of payments in these countries are routes through which shocks could be transmitted to the domestic economy, triggering systemic difficulties.

A few features of the structure of the current account in the selected countries are worth noting (table IV.1). First, in all countries except South Africa, the merchandise trade balance had a dominant or significant influence on the magnitude and sign of the current account balance. Second, secondary income flows (which include remittance flows) were an important influence in all countries excepting Zambia, exceptionally high relative to GDP in Nigeria, and negative (reflecting outflows) in South Africa. Third, primary income outflows were high for Nigeria and South Africa, consistently moderate in Zambia, and were rising in Ghana and Kenya after 2012, influenced by rising non-FDI flows.

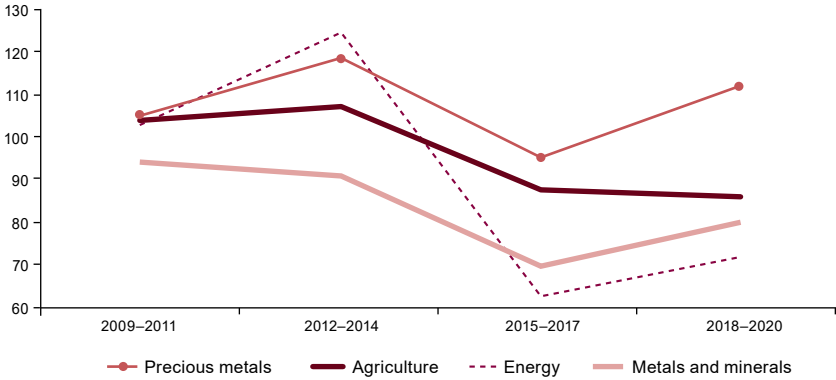
For commodity exporters, the 21<sup>st</sup> century has thus far been a mixed bag. The first decade saw an upswing in commodity prices as part of a super cycle, with only the global financial crisis proving a temporary spoiler. But, around 2012, most commodity prices peaked and have since been falling, till very recently (see figures IV.4 and IV.5). As a result, all the selected countries, with the exception of South Africa which was the only one not identified as commodity dependent suffered terms of trade losses. All six of the economies chosen for study experienced an improvement in their terms of trade (export price to import price ratio) in the years up to 2011-12 (figure IV.6), after which the terms of trade declined, with adverse consequences for the current accounts. This impacted their current accounts adversely and increased dependence on debt and other foreign capital inflows, both of which made them vulnerable to systemic instability.

**Figure IV.4**  
**Commodity price trends**  
(Average of annual indices, 2010=100)



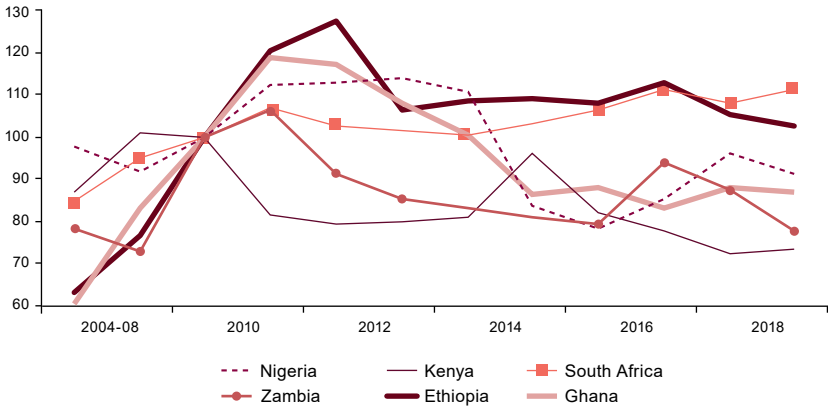
**Source:** World Bank Pink Sheet Updated (2021).

**Figure IV.5**  
**Commodity price trends**  
*(Average of annual indices, 2010=100)*



Source: World Bank Pink Sheet Updated (2021).

**Figure IV.6**  
**Terms-of-trade movements on goods**



Source: IMF (2020).

The extent to which the price gains of the first decade translated into improved current account balances varied (see table IV.1). Nigeria saw its current account surplus rise from 1.1 per cent of GDP in 2002 to 20.7 per cent in 2005, and though that surplus fell thereafter it remained extremely high till the global financial crisis in 2008. Kenya and South Africa maintained relatively low current account deficits through much of the decade. Zambia, favoured by the copper price boom saw its current account deficit fall from 18 per cent in 2001 to 1.2 per cent in 2007, and recorded current account surpluses in 2006 and 2009. Ethiopia and Ghana on the other hand recorded significant deficits in a number of years of the first decade.



**Table IV.1**  
**Current account balance as a percentage of GDP**

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Ethiopia	-4.5	-1.7	-1.6	-6.6	-12.6	-11.7	-4.2	-6.7	-6.8	-2.1	-3.3	-7.1	-6.4	-10.4	-11.7	-10.6	-7.3	-5.5	..
Ghana	-8.0	-1.7	1.3	-6.6	-10.3	-5.2	-9.6	-11.6	-7.3	-8.5	-9.0	-11.9	-9.1	-6.9	-5.8	-5.1	-3.4	-3.1	-2.8
Kenya	-2.5	-0.9	0.9	-0.8	-1.3	-2.0	-3.2	-5.5	-4.6	-5.9	-9.1	-8.4	-8.8	-10.4	-6.9	-5.8	-7.2	-5.8	-5.8
Nigeria	3.3	1.1	3.2	12.3	20.7	15.5	10.0	8.6	4.8	3.6	2.6	3.8	3.7	0.2	-3.2	0.7	2.8	1.0	-3.8
South Africa	0.3	0.9	-0.9	-2.8	-3.1	-4.4	-5.4	-5.7	-2.7	-1.5	-2.2	-5.1	-5.8	-5.1	-4.6	-2.8	-2.5	-3.6	-3.0
Zambia	-18.0	-15.8	-13.5	-7.1	-2.8	4.6	-1.2	-3.3	6.0	7.5	4.7	5.4	-0.6	-1.4	-3.6	-4.6	-1.7	-1.3	0.6

**Source:** World Bank, World Development Indicators Database (2022).

Not surprisingly, when the commodity price boom lost momentum and reversed in the second decade Ethiopia and Ghana and remarkably, Kenya, began recording high current account deficits. After the global financial crisis, the ratio of exports of goods and services to GDP in Ethiopia has fallen from 16.7 per cent in 2011 to 7.9 per cent in 2019. Nigeria still recorded surpluses, though of much smaller size, Zambia moved from surpluses to relatively small deficits and South Africa recorded relatively small deficits.

The deficits of Ethiopia were also the result of a rapid pace of growth (table IV.2) driven by budgetary deficits and investments in public sector projects financed with external debt. Most of the countries in the selected set, barring Ethiopia and Kenya, recorded a decline in GDP growth rates during the second decade when commodity prices declined. The deceleration of GDP growth was particularly sharp in Nigeria, where the contribution of oil receipts to government revenues was substantial.

**Table IV.2**  
**GDP growth rates**

	2001-2010	2011-2019
Ethiopia	9.4	9.4
Ghana	6.0	5.2
Kenya	4.6	5.5
Nigeria	7.6	2.6
South Africa	3.9	1.3
Zambia	7.7	4.0

**Source:** World Bank, World Development Indicators Database (2022).

### 3. Capital account risks

Commodity dependence is invariably associated with substantial and consistent dependence on capital flows. During periods of both commodity price declines and increases, there is singular tendency for increased dependence of foreign capital. When prices are rising, and the capacity for servicing foreign liabilities improves, many countries rely on foreign borrowing or foreign direct investment to develop their commodity exporting sectors, resulting in outflows of foreign exchange to finance interest payments, technical fees, royalties, and dividend repatriation. So even if the trade account is relatively resilient, the current account deficit can be large because of outflows of primary income payments. When commodity prices decline, the current account weakens, encouraging

countries to borrow abroad to finance their import bill and sustain economic activity. As a result, commodity dependence intensifies balance of payments vulnerability.

Dampening currency speculation is difficult if a country has increased its capital account liabilities through large net capital inflows, making it vulnerable to capital outflow or flight. Vulnerability to systemic crises is greater when the cause of balance of payments difficulties is capital flight resulting from the sudden exit of foreign financial investors investing in bond and equity markets or residents choosing to transfer wealth out of the country. This kind of vulnerability has increased and become generalised across developing countries because of the massive build-up of liquidity in the international financial system both in the run up to the 2008 global financial crisis, and after the crisis because of the unconventional monetary policies adopted in response to the crisis, involving quantitative easing and near zero interest rates. Such unconventional policies were maintained, and in some cases intensified, during the COVID-19 induced economic crisis. As a result, after a steep fall as soon as the pandemic struck, capital flows to some emerging and frontier markets bounced back. Where they did not, countries were forced to turn to the IMF or private markets for credit, with the hope that it would help tide over the crisis. Measures to pre-empt or reduce vulnerability to capital flight can involve prudential measures that discourage inflows or cap access to/limit exposure of domestic financial and non-financial players to such flows. Prudential measures could also involve interventions to reduce or discourage extremely short-term flows that are prone to quick reversal if not rolled over.

Emerging Market portfolios attracted \$313 billion in investments inflows in 2020, down 13 per cent compared to the previous year because of the coronavirus pandemic, according to the Institute of International Finance.<sup>4</sup> It forecasts that emerging markets will attract \$1.06 trillion in foreign direct investment, portfolio, and bank flows, comprising of \$500 billion of foreign direct investment, \$374 billion of portfolio investments and \$191 billion of banking-related flows. China will account for close to two-fifths of those flows.<sup>5</sup>

During the 1990s, emerging market economies<sup>6</sup> as a group saw a surge in private capital flows, with net inflows rising from just \$3.3 billion in 1985 to \$226.9 billion in 1995, two years before the Southeast Asian crisis choked off inflows for a prolonged period. [Since these are net inflows

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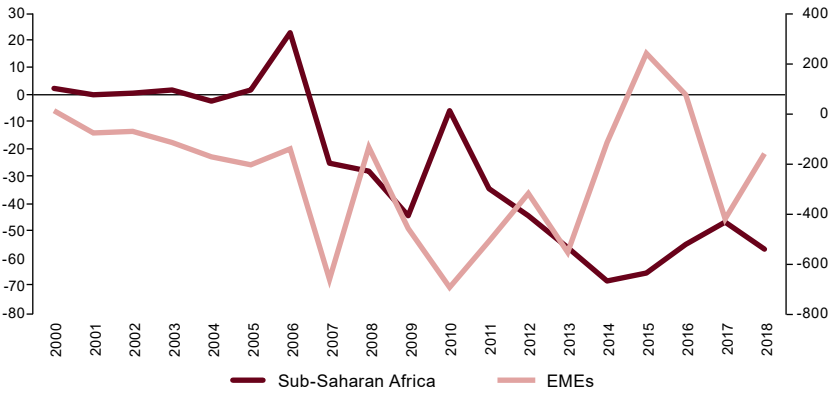
<sup>4</sup> <https://www.thenationalnews.com/business/capital-flows-to-emerging-markets-increase-more-than-three-fold-to-13-8bn-in-may-amid-recovery-1.1233916>.

<sup>5</sup> "Emerging markets inflows to top \$1 trillion in 2021 – IIF", <https://finance.yahoo.com/news/emerging-markets-inflows-top-1-140002538.html>.

<sup>6</sup> "Total Emerging Markets" in the WEO 2000 database includes developing countries, countries in transition, Korea, Singapore, Taiwan Province of China, and Israel.

computed as per the methods adopted in the IMF’s Balance of Payments Manual, sixth edition or BPM6, negative number in figure IV.7 imply net inflows and positive figures net outflows.] On the other hand, in Africa, private capital inflows remained low rose from \$2.3 billion in 1986 to just \$10.9 billion in 1995. While there was some diversion of global capital flows to Africa after the Southeast Asian financial crisis, the highest level that private flows touched in the 1990s was \$16.7 billion.<sup>7</sup>

**Figure IV.7**  
**Private capital flows 2000–2018**



Source: IMF, *World Economic Outlook Database*, 2021.

A part of the reason for tardy capital flows could be that financial reforms adopted in the 1990s were focused more on internal rather than external liberalisation. According to Reinhart and Tokatlidis (2000), liberalization sought “to grant their central banks more autonomy in conducting monetary policy, liberalize interest rates, avoid, or abolish the direct allocation of credit, implement monetary policy through indirect instruments, restructure and privatize banks and, more generally, develop and foster the environment for the proper growth, through a market-based system. Financial liberalization was a significant component of these reforms.” While such liberalization measures do not directly increase external vulnerability, they indirectly do, by encouraging financial integration and consolidation across markets, create conditions in which external shocks can be transmitted across the system.

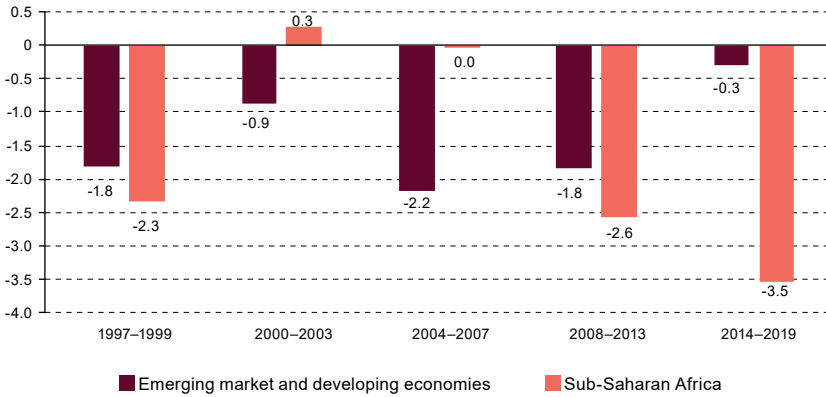
<sup>7</sup> Since the figures are based on methods adopted in the sixth edition of the Balance of Payments Manual, negative net capital flows figures indicated inflows and positive flows reflect outflows. Ndikumana (2003) reports that the share of private capital flows in total net resource flows to sub-Saharan Africa (SSA) increased only slightly from 37 per cent in 1980 to 41 per cent in 1999, when that to all developing countries increased from 58 per cent in 1980 to 82 per cent in 1999.

Briffaut et al (1998) noted that: “Although some progress has also been made with the liberalization of capital account transactions, most countries are still considered restrictive because they maintain controls over capital receipts and outflows, including investment liquidation. Controls over portfolio investments, within the limits of the existing capital markets, appear to be discouraging private capital flows.” The focus of external sector liberalization was the current account as well as the development of foreign currency markets. During that period a large number of countries shifted to unpegged currency arrangements, whereas till a decade earlier, the overwhelming majority of countries maintained pegged arrangements. This did, of course, create other kinds of vulnerabilities.

While the evidence points to some interest in Africa on the part of foreign investors during 1996 and 1997, possibly as an alternative to Southeast Asia, flows remained depressed till 2005. They spiked in 2006 and peaked in 2009 at \$44.3 billion, and after a brief reversal in 2010 resumed their climb, moving from net inflows of around \$6 billion in 2010 to \$68 billion in 2014 (see figure IV.7). Subsequently, they declined to \$47 billion in 2017 and remained in the \$50-55 billion range thereafter. Thus, the spike in net capital flows to Africa, if any, occurred after the global financial crisis. The spike was more inter-temporal, rather than an increase relative to flows to developing economies as a group.

But relative to their own economic size, Sub-Saharan African (SSA) countries did receive considerable inflows after the global financial crisis. Relative to GDP, SSA countries registered outflows amounting to about half a percentage point during 2000-03. Net inflows stagnated over 2004-07, and then rose sharply to 2.6 per cent in 2008-13, exceeding the figure for emerging and developing economies as a group. That figure rose further to 3.5 per cent during 2014-19, as compared with just 0.3 per cent for emerging and developing economies (see figure IV.2). The IMF’s regional economic outlook of October 2018 (IMF 2018) noted that: “The region has become more globally financially integrated, with a gradual relaxation of financial account restrictions and a sharp increase in nonofficial capital flows—especially since the global financial crisis. Nonofficial net capital flows to sub-Saharan Africa, which totalled about \$4 billion during the 1980s and 1990s, increased six-fold to \$25 billion in 2007, before doubling to about \$60 billion in 2017. In terms of GDP also, net capital flows to sub-Saharan Africa have been at a historically high level (3 percent of GDP) and exceeded those to emerging market economies (by about 2 percent of GDP) in 2015–17.”

**Figure IV.8**  
**Net capital flow to GDP ratios**  
*(In percentages)*



Source: IMF World Economic Outlook Database (2021).

However, with the substantial easing of liquidity conditions in the advanced economies, investors started taking interest in “frontier markets” in sub-Saharan Africa. The result has been a sharp increase in bond issuance in the region, as governments sought to exploit the opportunity to relieve balance of payments stress and fund infrastructure projects. In 2019 alone, Ghana, Kenya and Benin together issued Eurobonds in international capital markets to the tune of US\$5.7 billion. As a result, vulnerability has increased hugely. (Daniel Taylor and Bernard Sarpong (2020).

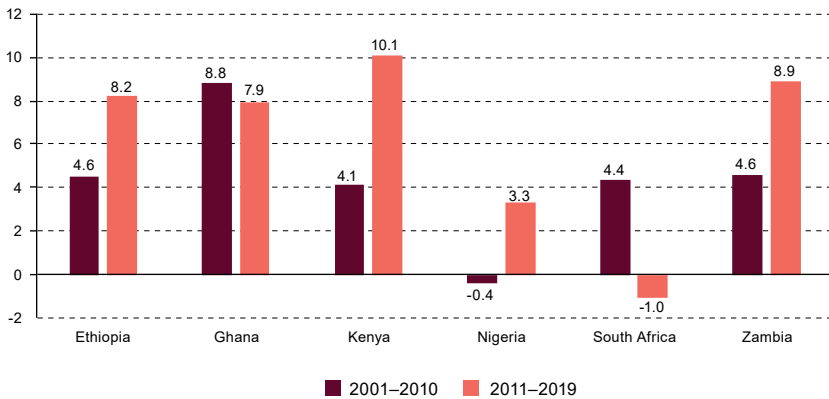
The specific measures countries adopt in response to such developments would of course depend on the kinds of vulnerabilities they are exposed to. In what follows we examine the six African economies chosen for this study to assess the nature and scope of capital account vulnerability in each of them. Besides the vulnerability resulting from current account transactions that stems from excessive dependence on export revenues from a few commodities and on remittance receipts and excessive outflows of foreign exchange to finance non-essential imports, external financial integration through debt and non-debt financial flows are a major source of vulnerability in Africa. Based on an understanding of the nature of vulnerabilities, the discussion focuses on the macroprudential measures they adopted across time to address them, and the revealed efficacy of those measures. The factors explaining efficacy, or the lack of it, are also explored.

#### 4. Capital flows

To finance current account deficits, in the second decade of the century, capital flows increased or remained high in all countries excepting for South Africa (figure IV.9). However, the pattern of gross capital flows varied with differing implications in terms of the nature and degree of external vulnerability and exposure to potential systemic risk (figures IV.10-IV.15 and

table IV.3). The three categories of capital inflows into the six countries were foreign direct investment flows, other investment flows, which are largely flows of bank capital, and portfolio capital inflows. If FDI flows do reflect, as definitionally they must, investments in assets with a long-term interest, they would be the least volatile and therefore the source that increases external vulnerability the least. Other investment flows, consisting mainly of loans, can be of short-term nature and are associated with committed annual payments in foreign exchange. They can prove volatile and, in a context of local currency depreciation, transmit risk across the system by raising the burden of servicing debt and triggering bankruptcies and closures. Portfolio flows are of course the dominant source of vulnerability, being footloose, in search of yields in the form of capital gains or margins derived from differentials in returns and driven by whimsical investors.

**Figure IV.9**  
Annual average value of gross capital flows to GDP  
(In percentages)



**Source:** IMF World Economic Outlook Database (2021).

Ghana and Zambia are predominantly dependent on foreign direct investment flows, though other investment and portfolio flows have played a noticeable, even if volatile, role (measured relative to GDP). But these seem to be the two that are least vulnerable to risk stemming from capital inflow dependence. Ethiopia had virtually no exposure to portfolio inflows, depending largely on FDI and other investment flows. Its dependence on debt rose sharply to 2014 and has moderated since then, but not enough to insulate it from the kind of vulnerability the exposure to liabilities in foreign exchange entails. Kenya too has limited exposure to portfolio flows, but on the other hand was dependent on large other investment inflows. Nigeria and South Africa, however, were the economies which attracted significant volume of portfolio capital inflows. In the case of Nigeria, this was combined with significant flows of FDI till 2012 and debt inflows more recently, whereas in the case of South Africa, portfolio flows dominated total flows for most of the period 2007-19.

**Table IV.3**  
**Net financial inflows: Selected Africa**  
*(US\$ millions) (2012-2013)*

	2011	2012	2013	2014	2015	2016	2017	2018	2019
<b>Ethiopia</b>									
Long-term debt	1 481.00	1 986.50	1 906.10	4 170.10	3 709.00	2 914.50	2 523.30	2 316.50	823.7
Short-term debt	-121.00	-141.00	166.00	88.00	258.20	377.50	-293.50	115.30	-269.60
Foreign direct investment	628.60	278.60	1 343.90	1 855.10	2 626.50	4 142.90	4 017.20	3 360.40	2 516.20
<b>Portfolio equity</b>									
Debt to total	68.40	86.90	60.70	69.70	60.20	44.30	35.70	42.00	18.00
FDI to total	31.60	13.10	39.30	30.30	39.80	55.70	64.30	58.00	82.00
<b>Ghana</b>									
Long-term debt	1 330.20	1 476.50	3 025.30	2 856.70	2 298.50	1 635.60	66.40	853.20	2 612.80
Short-term debt	590.00	-94.60	860.50	-508.70	229.60	-502.80	409.50	289.90	1 005.20
Foreign direct investment	3 247.60	3 294.50	3 227.00	3 363.40	3 192.30	3 485.30	3 255.00	2 989.00	3 879.80
<b>Portfolio equity</b>									
Debt to total	37.20	29.60	54.60	41.10	44.20	24.50	12.80	27.70	48.30
FDI to total	62.80	70.40	45.40	58.90	55.80	75.50	87.20	72.30	51.70
<b>Kenya</b>									
Long-term debt	765.70	1 311.40	997.10	4 328.80	2 713.50	2 265.50	3 750.10	5 063.20	3 712.40
Short-term debt	232.00	291.00	824.50	-391.40	695.70	-593.30	457.50	-131.80	138.60
Foreign direct investment	1 065.90	1 170.30	675.40	237.30	89.60	431.50	792.50	626.70	901.00
<b>Portfolio equity</b>									
Debt to total	47.90	52.90	65.20	76.80	97.10	77.40	86.30	93.70	80.80
FDI to total	51.20	38.60	24.20	4.60	2.60	20.00	16.30	11.90	18.90



Table IV.3 (concluded)

	2011	2012	2013	2014	2015	2016	2017	2018	2019
<b>Nigeria</b>									
Long-term debt	2 257.30	392.70	3 048.50	4 690.40	4 201.30	2 366.90	8 146.60	7 532.70	4 472.50
Short-term debt									
Foreign direct investment	8 588.70	7 002.60	5 534.30	4 680.80	3 059.90	4 447.90	3 500.70	1 811.70	3 287.00
Portfolio equity	2 570.80	9 959.00	5 532.10	1 045.00	-476.60	325.10	2 924.30	1 259.20	-1 548.50
Debt to total	16.80	2.30	21.60	45.00	61.90	33.20	55.90	71.00	72.00
FDI to total	64.00	40.40	39.20	44.90	45.10	62.30	24.00	17.10	52.90
<b>South Africa</b>									
Long-term debt	17 734.10	16 458.60	4 840.50	7 239.10	-866.90	9 363.50	21 681.60	-1 038.70	6 374.70
Short-term debt	-1 196.00	7 334.00	-619.00	793.00	1 033.00	716.00	6 839.00	124.00	-2 335.00
Foreign direct investment	2 903.40	1 671.30	2 698.90	1 291.70	-596.30	364.40	-265.50	1 377.70	1 485.90
Portfolio equity	63.20	7 159.10	7 282.90	9 337.80	8 499.10	1 639.70	7 588.30	2 945.70	-4 289.30
Debt to total	84.80	72.90	29.70	43.00	2.10	83.40	79.60	-26.80	326.80
FDI to total	14.90	5.10	19.00	6.90	-7.40	3.00	-0.70	40.40	120.20
<b>Zambia</b>									
Long-term debt	598.90	1 214.30	644.40	3 008.90	2 891.10	3 558.40	1 916.80	2 051.90	8 193.20
Short-term debt	-622.00	294.00	-72.40	69.50	-79.40	22.20	81.40	-225.10	196.30
Foreign direct investment	941.70	-24.90	369.60	726.60	309.20	267.20	547.00	-502.30	-305.60
Portfolio equity	24.60	-7.40	5.50	6.10	0.20	3.00	-2.50	-5.40	-0.70
Debt to total	-2.40	102.20	60.40	80.80	90.10	93.00	78.60	138.50	103.80
FDI to total	99.80	-1.70	39.00	19.10	9.90	6.90	21.50	-38.10	-3.80

Source: IMF World Economic Outlook Database (2021).

**Figure IV.10**  
**Capital inflows for selected African economies**  
*(In percentages)*

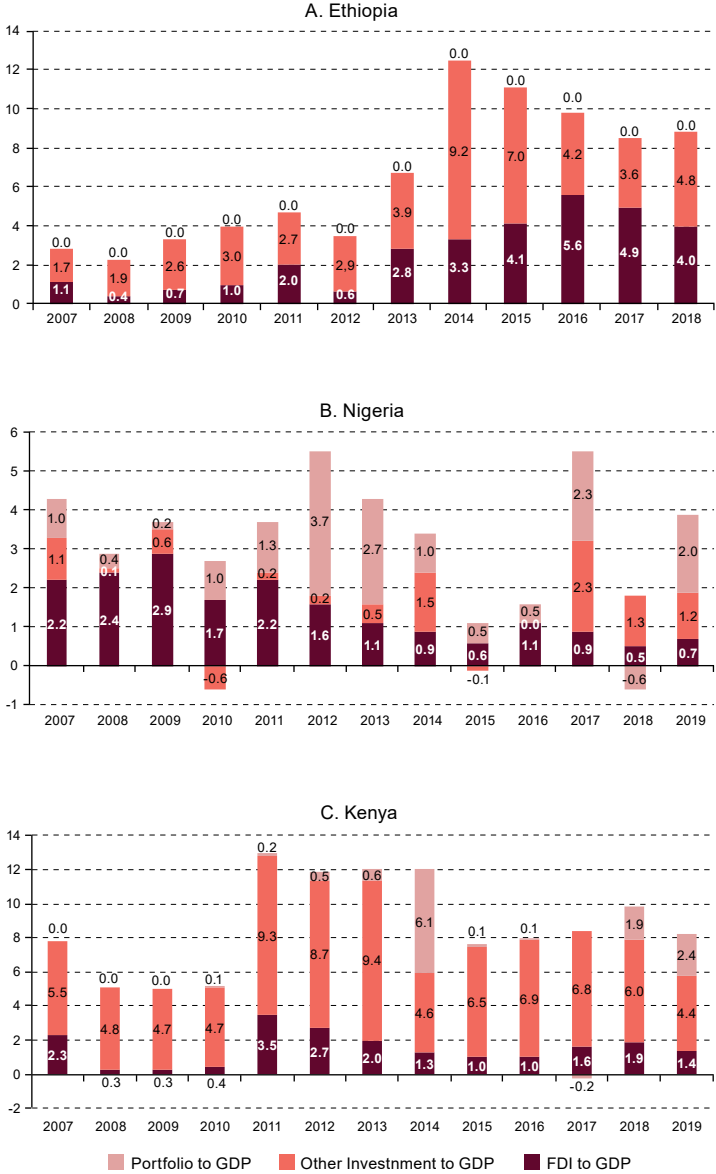
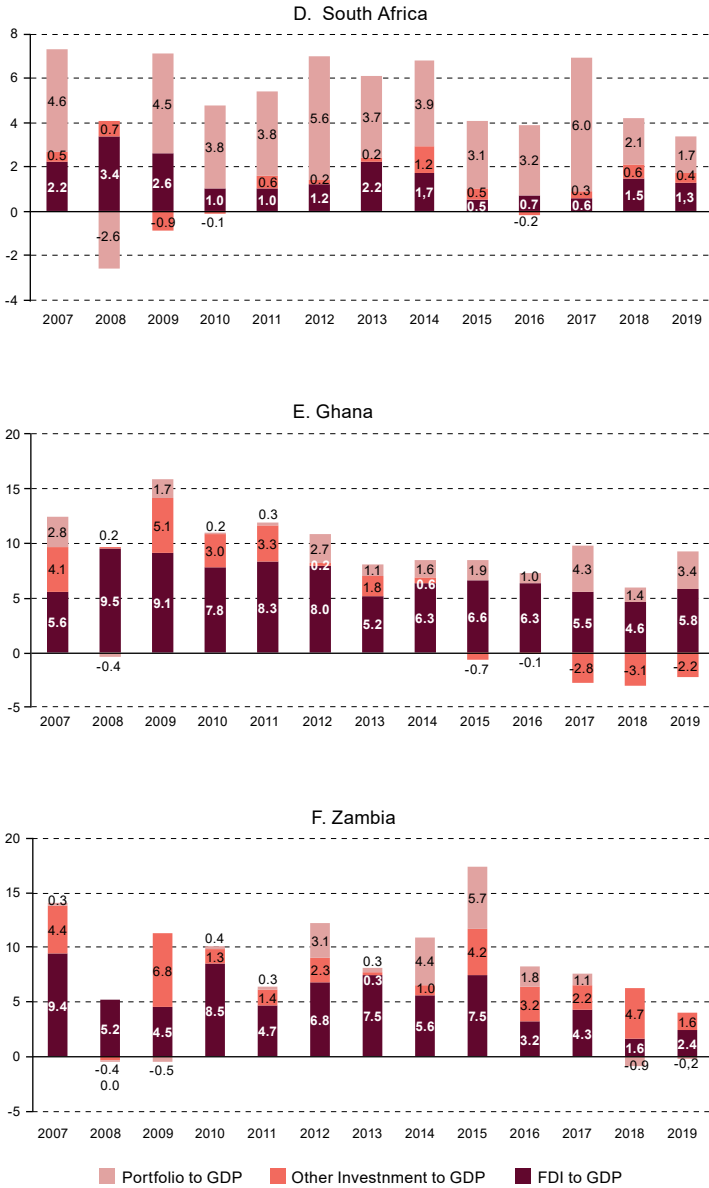


Figure IV.10 (concluded)



Source: IMF World Economic Outlook Database (2021).

The intertemporal spike in capital inflows to Africa is captured in table IV.4, which presents the ratio of average net inflows at the end and beginning of three periods: 1990-92 to 1998-00; 2001-03 to 2007-09; and 2009-11 to 2017-19 for the six selected African countries being studied here. The figures can be negative if in any of those sub-periods the country concerned recorded net outflows of capital. While the increase in net inflows into Ethiopia was gradual over the first periods (influenced perhaps by its status as a low-income country) and significant in the third, Ghana saw a much larger surge during the period 2001-03 to 2007-09. Zambia has recorded relatively small increases in net flows, despite being identified as the most liberalised in this set as per the Chinn-Ito and Klein indices, with the ratio turning negative in the most recent period, pointing to individual years of significant net outflows.

**Table IV.4**  
**Magnitude of increase in net inflows between end and beginning of periods**  
(Ratio)

	1998–2000 relative to 1990–1992	2007–2008 relative to 2001–2003	2017–2019 relative to 2009–2011
Ethiopia	0.72	1.85	4.17
Ghana	2.07	7.08	0.50
Kenya	2.53	10.18	1.97
Nigeria	0.64	0.54	0.21
South Africa	-2.03	-13.50	0.70
Zambia	1.62	0.30	-0.05

**Source:** On the basis of IMF Balance of Payments Statistics (2021).

The interesting cases are Nigeria and South Africa. While Nigeria recorded relatively small increases in net inflows during the three periods, the country recorded significant net outflows across time, averaging more than \$8.9 billion a year during 2001-08 and \$4.8 billion during 2010-2012. South Africa registered significant negative values during the first two periods, with that negative figure being particularly large in the second. This was because of net outflows during 2001-2003 (average \$1.29 billion), and a significant spike in positive net inflows thereafter, with the figure standing at \$18.5 billion in 2009. These net inflows peaked at \$25.4 billion in 2012, and then registered a slow decline initially, and a sharp fall thereafter to touch \$11.9 billion in 2018.

The spike in flows to some of these African countries since 2007 cannot be explained only by external financial liberalisation. There were factors that kindled investor interest and drove capital flows from the supply side. According to the IMF (2018), the Sub-Saharan African experience suggests that “external factors” such as the level of US interest rates and commodity prices affected the magnitude of gross inflows, with lower US interest rates and higher commodity prices encouraging inflows. The effect of lower interest rates must have been intensified by the huge infusion of liquidity in response to the global financial crisis.

Given the fact that FDI played an important role in many of these countries the volatility of capital flows would have been dampened to an extent. But other investment flows have risen significantly and according to the IMF, “among the different types of flows, the other investment category (which includes cross-border bank flows) is the most volatile for sub-Saharan Africa, as is the case in emerging market economies.” Moreover, portfolio capital inflows have risen significantly in some countries. The growing importance of portfolio flows has already resulted in an increase in the volatility of capital flows.

Thus, besides the volume of debt relative to GDP, another indicator of debt related vulnerability is the composition of debt. Vulnerability increases with the share of debt owed by private debtors, and with the share of short-term debt in the total. In addition, there is a particular vulnerability if bondholders are significant or important creditors, since they can demand higher interest rates, sell, and exit, or hold out against debt restructuring.

In Ethiopia, an overwhelming proportion (97 per cent) of external debt was long-term (table IV.3) and fully owed by the public sector, adding another dimension of resilience to the country’s capital account exposure. In Kenya and Ghana short-term debt was around 8 and 17 per cent respectively of debt outstanding in 2019, though in these countries to the public sector owed most of the external long-term debt. On the other hand, in Zambia, even though long-term debt accounted for 95 per cent of the total, as much as 57 per cent was non-guaranteed private sector debt. Clearly regulation of private sector access to external debt markets had been loosened. The consequence of this was visible in Zambia when it defaulted on debt in the midst of the Covid-induced crisis.

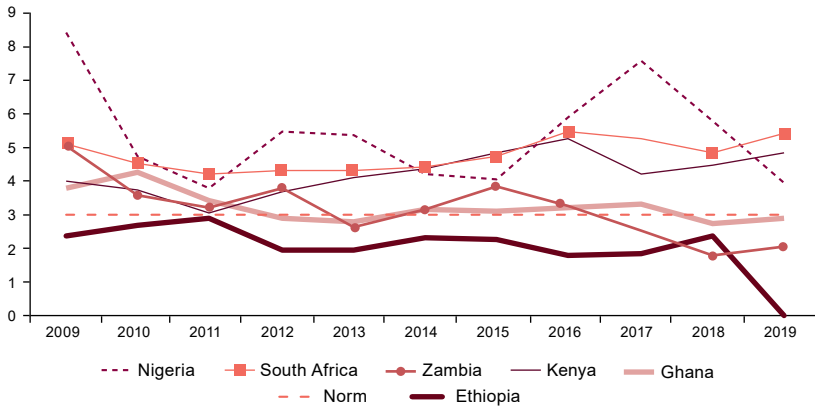
Private creditors are also becoming important in these markets. About \$6.8 billion (25 per cent) of public long-term debt in Ethiopia was owed to private creditors in 2019, of which \$1 billion was to bond holders and the rest to commercial banks. In Ghana \$11.8 billion (58 per cent) of public debt (PPG) was owed to private creditors, of which \$8 billion was to bondholders. In Kenya, \$7.1 billion (24 per cent) of PPG debt was owed to private creditors, with \$6.1 billion owed to bondholders. In Zambia, of public debt, 49 per cent was owed to private creditors, of which \$3 billion or 56 per cent was owed to bond holders. All private debt was owed to commercial banks. Given the volatile nature of private flows this was another sign of increasing vulnerability.

Though debt was a smaller share of total capital inflows in Nigeria and South Africa, there were signs of significant vulnerability. In Nigeria, though long-term debt accounted for 96 per of the total, 48 per cent of that was owed by the private sector. Private creditors provided 41 per cent of PPG debt, all held by bondholders. In the case of private debt, 11.6 per cent was held by bondholders and the rest by commercial banks. In South Africa, the public sector accounted for 57 per cent of long-term external debt stocks

in 2019, with private creditors providing 91 per cent of public long-term debt and bondholders 64 per cent. In the case of private debt, commercial banks provided 82 per cent and bondholders 18 per cent.

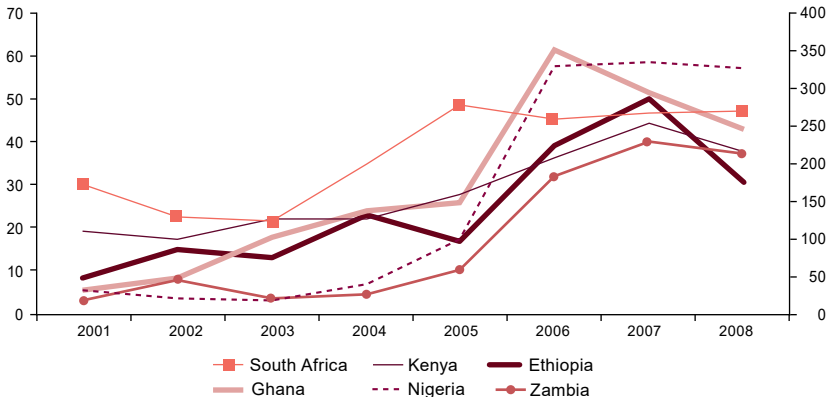
The combination of current account weakness and dependence on capital inflows has put pressure on reserves of some countries (see figure IV.11). Ethiopia has been consistently short of the recommended three months of imports reserve level, and reserves for Ghana and Zambia have fluctuated around that level. Reserves as a ratio of external debt had been rising in the years before the 2008 crisis, have since fallen across the board (see figures IV.12 and IV.13). This has also put pressure on the exchange rate of the domestic currency in all these countries (see figure IV.14).

**Figure IV.11**  
Total reserves in months of imports



Source: World Bank, World Development Indicators Database (2022).

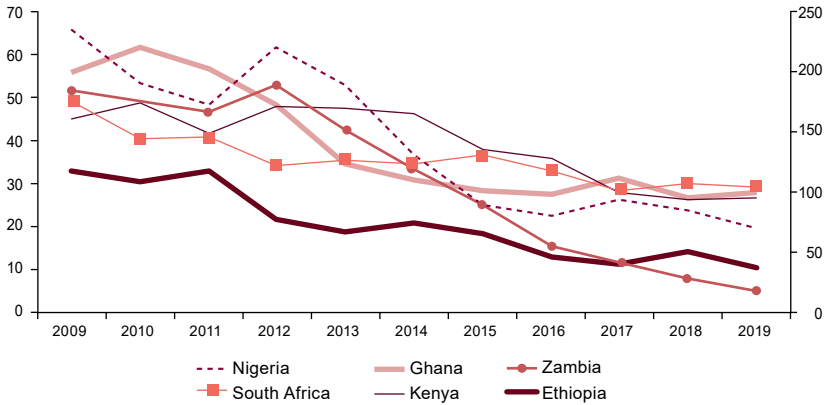
**Figure IV.12**  
Total reserves  
(Percentage of total external debt) 2001-2008<sup>a</sup>



Source: World Bank, World Development Indicators Database (2022).

<sup>a</sup> Nigeria is on the right-hand axis.

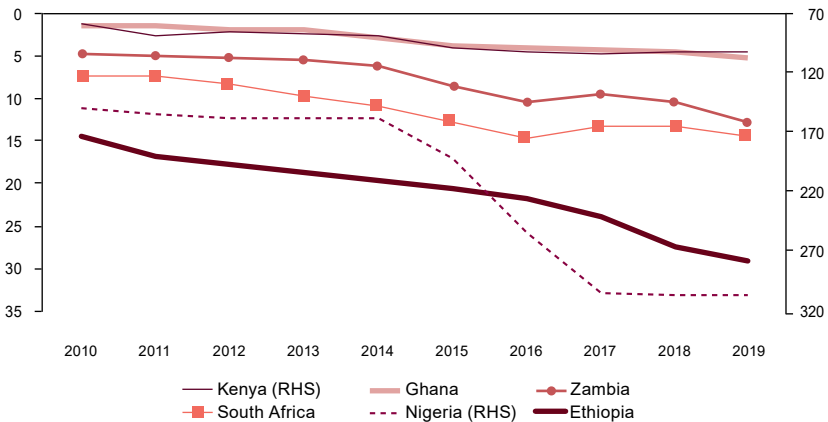
**Figure IV.13**  
**Total reserves. Percentage of external<sup>a</sup> debt 2009-2019**



Source: World Bank, World Development Indicators Database (2022).

<sup>a</sup> Nigeria is on the right-hand axis.

**Figure IV.14**  
**Official exchange rate**  
*(LCU per US\$ dollar, averages)*



Source: World Bank, World Development Indicators Database (2022).

There is one other feature of capital flows to African countries that is noteworthy. While in most of the selected countries gross flows more or less corresponded with net inflows, indicating that there was not much acquisition of assets abroad by residents, this correspondence between gross flows and net inflows does not hold for Nigeria and South Africa, pointing to the fact that capital account liberalisation in those countries facilitated outflows of capital as well and not just inflows.

The vulnerabilities created by these characteristics of capital flows can spill over in ways that can trigger systemic problems. To start with

external debt, which still remains a dominant component of non-FDI inflows, any external shock that adversely affects current receipts can set off a Ponzi scenario with additional borrowing to meet debt service commitments, leading to a situation where aggregate debt becomes unsustainable. Currency depreciation resulting from current account weakness only worsens the problem, since if the foreign exchange exposure is not hedged or is only partially hedged the local currency cost of servicing debt can spike. The larger the share of debt held by private financial or no-financial borrowers, the greater the loss suffered and more severe the damage of balance sheets, which increases the probability of default, distress sale of assets and bankruptcy.

If the debt incurred is short term debt or through bond issues open to foreign investors, creditors or investors can retreat quickly, refusing to roll over debt or selling bonds and repatriating the proceeds. The consequent exit of capital can deplete reserves, spark currency depreciation, set off a speculative attack on the currency and trigger a larger crisis. Needless to say, such a train of events can be set off also by the flight of other kinds of footloose capital like portfolio investments in equity and derivatives.

Addressing these vulnerabilities would require limiting inflows of capital other than FDI in general, and curbing exposure to the most volatile forms of capital inflows. Limiting the external debt exposure of the government requires an administrative decision to set a ceiling on such borrowing. But curbing external borrowing by private entities and limiting exposure of private agents to foreign liabilities requires measures in capital controls of a macroprudential nature. With developing countries in Africa, as elsewhere, opting for financial liberalisation that does away with capital controls that ban or set quotas on inflows of different kinds of capital, addressing volatility and vulnerability has come to depend on macroprudential measures. In what follows, the nature and efficacy of such measures in the six selected African countries is discussed.

## **B. Ethiopia**

### **1. Capital flow management**

Given external vulnerability and the possibility of adverse systemic effects most African countries have experimented with measures to regulate the inflow of capital. In Ethiopia, with relatively high trade and current account vulnerability, official policy has leaned towards curbing external capital transactions in the private sector. There were a range of measures aimed at pre-empting external vulnerability and



exchange rate instability in place in 2001 and after, as revealed by the IMF's Annual Report on Exchange Arrangements and Exchange Restrictions (AREAER) database.<sup>8</sup>

Ethiopia's capital control regime is quite strict. In 2000, banks could borrow or enter into an agreement with banks abroad only with the authorization of the National Bank of Ethiopia. Residents are not allowed to invest abroad or in foreign securities and non-residents were not allowed to invest in government bonds and treasury bills. Banks need prior approval from the NBE to borrow funds abroad. Other residents besides requiring NBE's prior approval to borrow abroad, must use the credits for export-generating investments. More specifically, residents could not provide financial or commercial credits to non-residents, lend in foreign exchange or purchase locally issued securities denominated in foreign exchange (unless specifically authorised by the NBE). They could also not acquire shares, stocks, and bonds issued abroad denominated in foreign exchange without authorisation from the NBE. There were maximum limits on investment by resident institutional investors in securities issued by non-residents and on the investment portfolio held abroad.

While residents were not allowed to undertake direct investment abroad, inward FDI was also significantly controlled. Investment in telecommunications and defence industries was allowed only in partnership with the government. Investments in postal services (except courier service), the transmission and supply of electricity through the Integrated National Grid System, and air transport services using aircraft with a seating capacity of more than 20 passengers were reserved for the government. All investments (except for services and transport generation and supply of electricity) had to be approved and certified by the Ethiopian Investment Commission (EIC).

All ownership rights to land were vested in the state and private ownership was not allowed. Land user rights had to be acquired through certificates or lease arrangements. Foreign investors too were not allowed to own land but could obtain access to land through lease arrangements with the government. Residents were not permitted to purchase personal property abroad.

FDI policy favoured export production, and concessions aimed at boosting FDI for export were put in place. New projects in manufacturing or agro-industry in which at least 50 per cent of production was exported or at least 75 per cent of production used as an input to produce export items were exempt from income taxes for up to six years. Investment activities that exported less than 50 per cent of their production were also granted up to three years of income tax exemption.

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<sup>8</sup> Unless otherwise referenced, details on exchange arrangements and exchange restrictions for all country cases are from the IMF's AREAER database.

There had been few changes in these regulations till 2018. Some capital account restrictions were relaxed in 2014 when, lending to non-residents, lending locally in foreign exchange, purchasing locally issued forex denominated securities or differential treatment of deposit accounts in forex were allowed. But this leeway was soon withdrawn in 2016.

The consequence of this regulatory environment has been that, besides limited inflows, FDI and government borrowing dominated gross inflows, with trade credit coming to account for a little more than a fifth after 2004. More volatile flows have been kept at bay in a country that is extremely vulnerable to balance of payments disruption.

## 2. Exchange rate management

With capital controls in place, macroprudential intervention was focused on current account vulnerability. With limited possibilities of transformation through trade given the country's dependence on coffee, oilseeds and gold exports, Ethiopia has consistently faced difficulties financing its import bill. With volatile export earnings, the current account deficit stood at above 5 per cent of GDP in most years since the global financial crisis and exceeded 10 per cent in many. In all years for which data are available, the deficit on account of trade in goods and services was significantly higher than the current account deficit, largely because of the inflow of remittances. But the current account deficit, together with a low rate of domestic savings, has led to substantial dependence on external debt to finance budgetary expenditures and projects in the public sector. This vulnerability has influenced policy, with some of the measures being akin to macroprudential interventions.

One such was the system of exchange rate management adopted since 2001, when the country shifted from an auction system to allocate foreign exchange and determine the market exchange rate (in a dual official-cum-market rate arrangement)<sup>9</sup> to a system in which the exchange rate was determined in the interbank foreign exchange market and influenced by central bank intervention. There are no official limits on the bid-ask spread; eligible participants quote their buying and selling rates for their own account. All NBE licensed commercial banks are eligible to participate in the market. Macroprudential intervention involved central bank intervention in currency markets to manage movements of the Ethiopian Birr (ETB). The NBE intervenes daily in the foreign exchange market to determine the indicative exchange rate and keep it on a chosen trajectory.

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<sup>9</sup> The National Bank of Ethiopia auctions foreign exchange obtained from export earnings, loans and grants and the exchange rate at which the market clears is the official selling rate. Banks trade foreign currency in an inter-bank market, determining in the process the market exchange rate.

The official exchange rate of the birr against the dollar is equated to the weighted average exchange rate prevailing in the interbank foreign exchange market on the preceding day. The official exchange rate applies to all transactions, including purchase from exporters, remittance transfers, and other purchases by commercial banks. Given persistent inflation, the nominal exchange rate within this system was to be put on a trajectory involving continuous depreciation to keep the real rate near stable and protect the competitiveness of exports. The policy, when successful, determined movement in the rate over time, except during periods of ad hoc adjustment. For example, in January 2009, the birr was devalued twice before reverting to the original trend. There were two one-time devaluations in 2010 as well.

However, given the low level of reserves (figure IV.16) the ability of the NBE to manage the exchange rate in this manner was also limited. In practice, the value of the ETB fell from around 9.5 ETB to the dollar in early October 2008 to 18.7 in October 2013, 27.8 in October 2018 and 41 ETB to the dollar on 21 March 2021. Despite this, the real effective exchange rate could not be kept stable, but appreciated over time (figure IV.2), because inflation in Ethiopia exceeded that in its major trading partners. That affected export competitiveness as well.

Given this exchange rate vulnerability, maintaining forex reserves is an important objective of macroprudential intervention. Failing that, the IMF seems to be the second-best option, not preferred because of the conditionality associated with it and the adverse effect it has on the country's image among foreign investors and credit rating agencies. More recently, developing countries have been experimenting with central bank currency swaps as a back stop arrangement to shore up reserves. For a currency swap to be effective it must be an arrangement to swap the domestic currency for hard currencies in which trade tends to be denominated, especially the US dollar, or it must be against the currency of a country which is important as a source of imports. In the latter case, the swap allows the borrowing country to save its hard currency assets when clearing dues with one of its trading partners which is a source of imports. In 2017, when Ethiopia's reserves were down to around two and a half months' worth of imports, it signed a currency swap deal with Sudan for three years for the equivalent of \$16 million that enabled them to use their currency in the territory of the other without currency convergence.

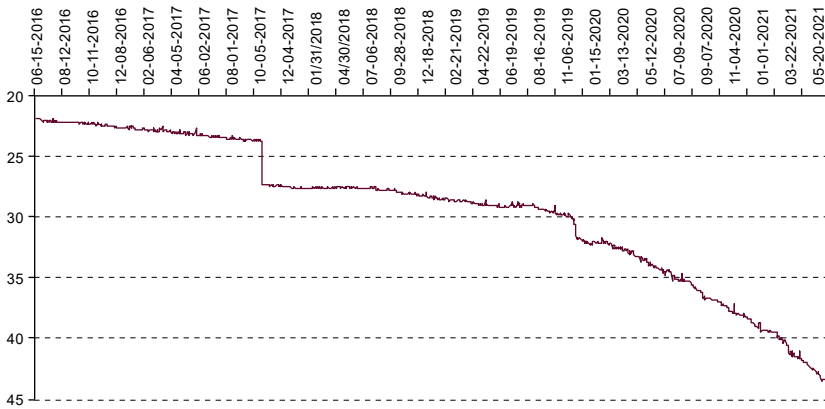
### **3. COVID-19 fallout**

The COVID-19 pandemic adversely affected remittances to Ethiopia and curtailed export earnings, including from air transportation through Ethiopian Airlines. However, because of the recession-induced sharp decline in imports,

the current account tended to strengthen by a small margin. Merchandise exports, excluding gold, fell by 4.1 percent during July-December 2020 (year-on-year). Exports of garments, textiles, and fruits and vegetables were hit with the onset of the pandemic. Exports of services, dominated by air transport, recorded negative growth. Remittances too declined by 10 percent in financial year 2020 but recovered ground during the first half of financial year 2021. However, since merchandise imports fell significantly, the current account balance narrowed from 5.1 per cent of GDP in financial year 2019 (July 8 to July 7) to 4 per cent in financial year 2020. On the capital account foreign direct investment shrank 20 per cent during financial year 2020, resulting in a fall in reserves despite the narrowing of the current account deficit.

As a result, the depreciation of the birr during the pandemic period has been much sharper than earlier (see figure IV.15). The central bank allowed the birr to depreciate to the tune of 21 percent in nominal terms against the U.S. dollar in financial year 2020 (compared to 6 percent in previous years). Consequently, the real exchange rate depreciated in the last quarter of 2019 for the first time since 2017. That trend was reversed in February and March 2020, as the pace of nominal depreciation slowed down and inflation rose relative to trading partners, driven by food and electricity.

Figure IV.15  
Ethiopian Birr to United States dollar



Source: IMF World Economic Outlook Database (2021).

With capital inflows adversely affected, the country was left with a foreign exchange funding gap, which required approaching the IMF for support under the Rapid Financing Instrument and requesting grant assistance under the Catastrophe Containment (CC) window of the Catastrophe Containment and Relief Trust (CCRT). Given the foreign exchange crunch, the Ethiopian authorities, having been prudent with respect

to capital flows earlier, chose to relax rules relating to foreign borrowing. As of August 2020, commercial banks were allowed to engage in foreign currency intermediation through borrowing foreign currency including from foreign lenders and granting credit to local borrowers in foreign currency. Commercial banks could thus lend locally in foreign exchange. Rather than act to reverse debt dependence, the government increased that dependence.

#### **4. Addressing risk transmission**

Given the risk of shocks stemming from external vulnerability, measures aimed at pre-empting currency speculation and limiting the amplification and transmission of the effects of the shocks across the system were also adopted. In almost all the African countries studied here, much emphasis was placed on ensuring repatriation of export earnings. Earnings had to be repatriated in full. In Ethiopia, other than for 10 per cent of export earnings that could be retained by the exporter in foreign exchange, the balance had to be repatriated within a maximum of 28 days and be converted to the local currency at the interbank exchange rate. Foreign exchange funds may be used for payments such as imports of goods and services, export promotion, training and education, credit repayment, and other payments approved by the NBE. Exporters needed to establish that they had repatriated earnings before being permitted to export again. As of 10 March 2017, exporters were allowed to retain 30 per cent (previously 10 per cent) of their export proceeds in foreign exchange for an indefinite period. The remaining amount (70 per cent) could, as before, be retained for a period of up to 28 days, after which it must be converted to local currency at the weighted average daily interbank exchange rate.

In addition, banks were subject to open foreign exchange position limits, with the overall foreign currency position of each bank capped at 15 per cent of its capital at the close of business on each Friday. In 2004, commercial banks' holdings of foreign currency notes were made subject to a limit of 5 per cent of paid-up capital. Such prudential measures are likely to be multiplied if the restrictions on capital inflows are relaxed as a way of dealing with balance of payments difficulties.

### **C. Ghana**

#### **1. Capital flow management**

With gold and crude oil (besides cocoa, which yields low returns in foreign exchange) in its basket of three leading exports, Ghana is less vulnerable than a typical commodity exporter. The discovery of oil reserves off the coast of Ghana in 2007 helped diversify exports away from dependence on

gold for around a century and cocoa for around six decades. The start of oil production in 2011 helped accelerate growth in the economy. While oil exports did result in the decline in the annual average trade deficit from 28.8 per cent of GDP during 2001-05 to 16.2 per cent during 2006-2010 and 11.7 per cent during 2011-2015, the figure remained high.

Besides, oil revenues are volatile, because of sharp fluctuations in oil prices. To address this vulnerability, along with the start of oil production, Ghana established two sovereign wealth funds in 2011, the Ghana Heritage Fund and the Ghana Stabilisation Fund. Under the Petroleum Revenues Management Act 815 (PRMA Act) 30 per cent of petroleum revenues are allocated to the two sovereign funds: the Stabilisation Fund gets no more than 70 per cent and the Heritage Fund receives not less than 30 per cent. In 2019 assets under management amounted to \$485 million in the case of the Heritage Fund and \$381 million in the Stabilisation Fund. The Heritage Fund cannot be drawn on, except if Parliament resolves to the contrary 15 years after the establishment of the fund. On the other hand, resources in the Stabilisation Fund can be withdrawn for excess debt payment, budgetary shortfalls or to meet contingencies. This was, thus, a form of macroprudential intervention to address the vulnerability that oil price fluctuations and limited reserves entail.

Ghana opted for relatively early liberalisation of its capital account, courting external vulnerability in the process. Ghana's financial sector reforms began in the 1990s, but it was in the 2000s that capital control liberalisation was accelerated. In December 2006, the Exchange Control Act, 1961 was replaced by the Foreign Exchange Act (Act 723). Under the exchange control regime, foreign transactions were limited, with restrictions on issuance and transfer of securities involving residents and non-residents, besides regulations on external borrowing, which required approval by the Bank of Ghana. Under the new regime:

- The prior approval of the Bank of Ghana (BOG) for the purchase, sale, and issue of capital and money market instruments by residents abroad was eliminated.
- The limitations on non-residents' purchase of shares was eliminated, except for investments in the banking sector, where the acquisition of more than a 10% stake required prior approval from the BOG.
- The requirement for BOG approval for transactions in derivatives and similar instruments, except for the sale or issue of these instruments locally by non-residents, was eliminated.
- Controls on credit flows were lifted.

- The requirement for BOG approval for outward investment was eliminated, including for residents' purchase of real estate abroad. Non-residents were allowed to hold leases of up to 50 years.
- The requirement for BOG approval for personal capital account transactions was eliminated.
- The requirement for BOG approval for pension funds, investment firms, and collective investment funds to invest in securities issued by non-residents abroad was eliminated.
- Non-residents were allowed buy three- or five-year cedi-denominated debt instruments issued by the government of Ghana.

In the more liberalised environment, access to oil revenues encouraged borrowing from international bond markets. In 2007, when around 80 per cent of Ghana's foreign debt was owed to bilateral creditors or multilateral institutions, the government of Ghana decided to tap global bond markets for the first time, raising a loan of \$750 million of 10-year maturity at an interest rate of 8.5 per cent. Though the rate of interest was on the high side, the implied risk did not keep away investors. The loan offer was oversubscribed to the tune of 400 per cent. This, then still early, interest in Ghana's bonds (and those of other African countries) has persisted. In 2013 another \$750 million loan request was oversubscribed three times, with an interest rate of 8 per cent. By 2016 Ghana had borrowed more than \$3.5 billion from international bond markets, which was more than the borrowing of any other sub-Saharan country from this source. Within a decade after 2007, 70 per cent of Ghana's external debt was commercial.

But the vulnerability associated with rising debt exposure, including through high interest bond issues, soon asserted itself. In October 2013, Fitch downgraded Ghana's credit rating from B+ to B. At that time foreign exchange reserves covered less than three months of imports, government debt was around 50 per cent of GDP, and the cedi had depreciated significantly. When commodity prices fell making it difficult for Ghana to service its debt in 2015, Ghana had to turn to the IMF for a \$1 billion three-year loan. But this was only a means of returning to commercial markets. In early 2017 the Ministry of Finance announced that Ghana's bid to raise US\$1 billion from the international capital markets had been oversubscribed. But though international interest rates were low, the rate at which Ghana could borrow was 7.875 per cent.

In sum, despite having a capital account open to a variety of forms of capital, Ghana too relied on debt flows rather than non-debt inflows of capital. The difference was that exposure to private bond

investors was rising. As the exposure to international debt increased, so did vulnerability. But paradoxically the government's response was to borrow even more.

## 2. Exchange rate management

Vulnerability was reflected in the difficulties faced in managing the exchange rate. As true elsewhere there were repatriation requirements for export proceeds (currently within 60 days), which had to be converted to the local currency. The exchange rate of the cedi is determined in the interbank foreign exchange market, consisting of over the counter transactions between banks free to trade at negotiated rates. The average of exchange rates reported by authorised dealers is used by the central bank as the official rate to buy or sell dollars, with its interventions affecting that average. The Bank of Ghana (BOG) does not publish information on its interventions. In July 2012 Ghana transitioned to a multiple currency practice (MCP) involving a dual exchange rate: the market rate and a reference rate used by the BOG for specified official transactions. Since there was no mechanism to ensure that the BOG reference rate does not differ from the prevailing market rate by more than the preferred 2 per cent, this was classified as a multiple currency practice by the IMF.

The reference rate of exchange of the Ghanaian currency after being relatively stable till mid-2008, has depreciated significantly since. Over time the government has adopted several measures to influence the pace of depreciation as well as hedge against currency risk. It was in 2011 that the government adopted the Petroleum Revenue Management Act, which requires that 30 per cent of petroleum revenue be paid into a stabilisation fund and a heritage fund. The Act also prevents the government from front-loading revenue by selling oil on the futures markets.

In an additional measure, in 2012, the daily single foreign currency net open position applicable to banks was reduced to 10 per cent from 15 per cent of the capital base, and the limit on the aggregate net open position was reduced to 20 per cent from 30 per cent of the capital base.

As matters did not get any better, and the cedi depreciated sharply, the Bank of Ghana chose in February 2014 to marginally reverse liberalisation. The following changes were announced:

- Offshore foreign exchange deals by resident and non-resident companies, including exporters and non-resident banks, were strictly prohibited.
- A ceiling of \$10,000 or equivalent in a single transaction was set for sale and purchase by foreign exchange bureaux.
- Exporters who are required to collect and repatriate in full the proceeds of their exports to their local banks within 60 days



of shipment, had to as of February 4, 2014, convert within five working days the proceeds to cedis based on the average interbank foreign exchange rate prevailing on the day of conversion with a spread not exceeding 200 pips.

- Banks were not allowed to grant a foreign-currency-denominated loan or foreign-currency-linked facility to a customer who is not a foreign exchange earner. All undrawn foreign-currency-denominated facilities had to be converted to local currency. However, existing fully drawn foreign-currency-denominated facilities and loans to non-foreign-exchange earners were allowed to run until expiration. Servicing of existing foreign-currency-denominated loans to residents by resident banks must be in cedis converted at the average interbank foreign exchange rate prevailing on the day of conversion.

These were a mix of macroprudential and exchange controls, mainly aimed at ensuring the transfer of the foreign exchange earned by residents and resident entities to the national pool and restricting the use of currency by residents. Yet opposition resulted in the relaxation of even some of these controls. As early as June 2014, the threshold for transfers abroad without initial documentation was increased from US\$25,000 to US\$50,000 as well as the limit on electronic cards from US\$10,000 to US\$50,000 for importers (BG/GOV/SEC/2014/09 dated June 16, 2014). In July 2014, commercial banks were allowed to import foreign currency to the country with prior notice to the Bank of Ghana indicating the amount and currencies to be imported for monitoring purposes only (Bank of Ghana letter #SF. 28 to all banks of July 29, 2014). Previously, there was a ban on imports by commercial banks of foreign currency. In August, Foreign exchange accounts (FEAs) and foreign currency accounts (FCAs) were allowed to continue to be opened and operated as they were before the notices of February 4, 2014. All balances in FCAs and FEAs could also continue to be held in foreign currency without conversion to cedis.

These changes may have been influenced by private sector pressure and Ghana's decision to turn the IMF for support, which it did in 2015. Ghana's experience indicates that if a country decides to narrow or bring down its capital control "wall", then it becomes dependent on manoeuvring the "gate". And, when pressures from investors present in the country with holdings of legacy investments that they can withdraw increase, then even using the gate tends to be characterised by caution and a light touch. The experience of Ghana suggests that while liberalising rules governing capital inflows to attract investments can increase systemic vulnerability, reversing such liberalisation is difficult, pointing to a degree of path dependence.

### 3. COVID-19 fallout

Ghana was one of the frontier markets that experienced capital flight from bond markets when the pandemic struck at the end of the first quarter of 2020. As a result, the cedi depreciated by more than 2 per cent between March 10 and the end of March 2020. This was also a year when, according to the Institute for International Finance, 48 per cent of Ghana's debt was maturing and needed refinancing. The stress on the balance of payments was immense (Taylor and Sarpong 2020).

Moreover, there was a specific way in which the pandemic affected Ghana's access to foreign exchange. The Ghana Cocoa Board (Cocobod) to which the cocoa harvest is sold through its marketing subsidiary, forward sells the estimated crop, and uses the forward contracts as collateral to take out a syndicated loan, normally in August or September each year. However, in 2021, international lenders were unwilling to provide the \$1.3 billion loan slated for the 2020/21 crop season. Cocobod had to seek out other sources, reducing Ghana's access to foreign exchange and make debt servicing and financing of essential imports (including medical supplies) even more difficult.

Path dependence has meant that balance of payments stress tends to be addressed by accessing emergency financing. When the pandemic struck, affecting foreign exchange receipts adversely and putting the exchange rate under pressure, as well as widening the budget deficit because of lower government revenues and higher spending to address the effects of the pandemic, Ghana decided to look for additional capital inflows.

Ghana initially opted to postpone debt servicing by applying to be considered for the G20's Debt Service Suspension Initiative (DSSI). But that does not cover private and even multilateral creditors. In 2020, 59 per cent of Ghana's total debt service payments were owed to private creditors excluded from the DSSI scheme. Identified as being debt distressed, it had no option other than turning to the IMF. It did so early, obtaining IMF approval on April 13, 2020, for the disbursement of SDR 738 million (about US\$1 billion) to be drawn under the Rapid Credit Facility (RCF).

Unusual developments have shored up the cedi though. While revived inflows from offshore investors, remittances and mining flows increased the supply of dollars, the pandemic-induced contraction in economic activity reduced demand for foreign exchange. In real terms, the cedi appreciated by 1.6 percent against the dollar in March 2021. (Bank of Ghana 2021.)

## D. Kenya

### 1. Capital flow management

During the first 15 years of the 21<sup>st</sup> century, GDP growth in Kenya averaged 4.4 per cent, marginally below the Sub-Saharan African average of 4.9 per cent and but above the population growth rate of 2.7 per cent. However, even at this rate of growth, the current account deficit was widening from 1.3 per cent of GDP in 2005 to 9.1 per cent in 2011. It has since declined but remains at relatively high levels. The current deficit would have been higher but for remittance incomes. Dependent on tea, coffee and other agricultural exports, Kenya was not earning enough export revenues to finance the imports stimulated by the trade liberalisation of the 1980s and 1990s.

Growth gathered momentum after 2015, averaging 5.7% over 2015-19, making Kenya one of the fastest growing economies in Sub-Saharan Africa. However, there was a slight decline in the current account deficit, driven partly by increased remittances.

Net capital inflows were needed to finance the current account deficits. Kenya has operated with a very open capital account since 1995, that has resulted in both inward and outward flows. It has been a leading destination for FDI flows that have been increasing since 2010. Outward flows have been the result of growing integration with the East African Community— Burundi, Kenya, Rwanda, South Sudan, Tanzania, and Uganda—with investments in areas like tourism, manufacturing, and retail and with Kenyan banks increasing their presence in the member states.

FDI flows had to be supplemented with significant foreign borrowing to finance current account deficits and capital outflows. The ratio of external debt stocks to gross national income rose from 25.3 per cent in 2013 to 36.6 per cent in 2019. In time, commercial international creditors increased their presence relative to official bilateral and multilateral creditors. Kenya too, like many other African countries turned to issuing sovereign bonds in international markets, doing so in 2014 and 2018–19, and has contracted syndicated loans from private international banks. The stock of borrowing by government from external bond markets rose from \$2.75 billion during 2014-27 to \$4.75 billion in 2018 and \$6.1 billion in 2019. Kenya also became dependent on short term capital flows to finance more than half of the deficit in most years. This was a major source of external vulnerability. With debt service commitments rising, the International Monetary Fund identified Kenya as a case of moderate external debt distress.

## 2. Exchange rate management

The exchange rate is determined in the foreign exchange market. Authorized banks are licensed to buy, sell, borrow, or lend in foreign currency or transact any other business involving foreign currency. Foreign exchange bureaus may buy and sell foreign currency. The official exchange rate is set at the previous day's average market rate and applies only to government and government-guaranteed external debt-service payments and to government imports for which there is a specific budget allocation. Official foreign exchange market interventions aim to moderate the rate of change and prevent undue fluctuations in the exchange rate, and since 2015 to stabilize the Kenyan shilling within a 2 per cent band relative to the U.S. dollar. Data on interventions are only partially disclosed. Since 2012, the shilling has experienced relative stability with limited volatility, pointing to success of the government's interventions, but critics say this has resulted in an overvalued exchange rate that adversely affects the competitiveness of Kenya's exports. Given the frequency of interventions in the foreign exchange market, the de facto exchange rate arrangement earlier classified as floating, is now identified by the IMF as "managed".

### COVID-19 fallout

The supply and demand shocks associated with COVID-19 adversely affected economic activity with GDP contracting in 2020. While agricultural production proved resilient, manufacturing and many services subsectors (e.g., tourism, education) were severely disrupted. In addition, a locust infestation affected the Northeast and other parts of Kenya starting early 2020. In the event, Kenya suffered its first recession in nearly two decades, but the output contraction eased substantially in 2020Q3, helped by strong agricultural growth. Since the crisis has raised external risks to the economy, especially because of the fall in tourism revenues, the IMF decided to raise Kenya's risk of debt distress from moderate to high.

Kenya too turned to the IMF for support. In May 2020, the IMF provided \$739 million in the form of an interest-free loan under the Rapid Credit Facility to help Kenya cover the cost of additional spending on health and social protection. Subsequently Kenya agreed to a new programme with the IMF to garner low-cost loans to the tune of \$2.4 billion over three years under the Extended Fund Facility and Extended Credit Facility.

Moving into 2021 an economic recovery has been underway, albeit highly uneven across sectors. But, with vaccination extremely slow another wave of infections is a possibility, increasing uncertainty about economic prospects. External vulnerability seems set to intensify.

## E. Nigeria

### 1. Capital flow management

Paradoxically, despite being rich in oil reserves, Nigeria too is externally vulnerable, with the extent of vulnerability influenced by oil price movements. In recent years, when oil prices rose, promising large revenues and balance of payments stability, spending also increased. When oil prices fell borrowing increased to finance external deficits. In 1978, external debt amounted to only 6.2 per cent of GDP. However, when oil prices began softening after 1978 but spending remained high, it was financed with high-cost borrowing in the hope that oil prices would quickly return to their previous highs. During the debt explosion, borrowers, including state and federal governments, were allowed to violate Decree 30 of 1978 which fixed the limit of external borrowing at N5.0 billion (\$8.3 billion). External debt rose from \$9.0 billion in 1980 to \$17.8 billion, and \$25.6 billion in 1986. Meanwhile, interest rates rose, putting Nigeria on a trajectory on which indebtedness spiralled, and, despite being an oil exporter, it had to approach Paris Club lenders for debt relief in 2005. This early vulnerability has only persisted and intensified since then.

A feature of the Nigeria's external account was that during the period starting before the global financial crisis and ending 2014, the trade and current accounts recorded surpluses, helped no doubt by high oil prices. But when oil prices were in decline starting 2014 the trade balance fell and turned negative in some years. In the 14 years from 2006 to 2019, there were six (2014 to 2019) when the country recorded a trade deficit. But there were only two when the current account was in deficit. This was because of secondary income inflows that not only covered the primary income deficit on account of interest payments on debt, but also neutralised the trade deficit. The secondary income consisted substantially of remittances. Remittances are the second-largest source of foreign exchange receipts after oil revenues in Nigeria. Around \$26.4 billion was sent to Nigeria in 2019, according to the World Bank.<sup>10</sup>

A liberal external stance, prompted possibly by access to oil, was a defining feature of Nigeria's external policies. By end-2004, well before the global financial crisis, Nigeria had substantially liberalised not just current but capital account transactions as well. There were no ceilings for foreign participation in the equity capital of enterprises in various sectors of the economy. Residents could buy from or sell to non-residents foreign currency securities. Approval was not required from the Federal

<sup>10</sup> <https://www.reuters.com/world/africa/nigeria-extends-naira-incentive-offer-boost-diaspora-inflow-2021-05-06/#:~:text=Remittances%2C%20or%20money%20transfers%2C%20make,according%20to%20the%20World%20Bank.>

Ministry of Finance (FMF) for borrowing abroad by any individual, firm, company, or branch resident in Nigeria. Approval was also not needed for liquidation of assets by foreign investors, except for assets acquired through the debt conversion programme, which could be repatriated only 10 years after the effective investment of the proceeds, with repatriation limited to a maximum of 20 per cent in a year.<sup>11</sup> Commercial banks and other credit institutions could borrow abroad and lend domestically in foreign currency, as well as purchase securities in the domestic market using foreign exchange. Reserve requirements did not apply on foreign exchange deposits. All this encouraged accessing, when available, cheap liquidity in international markets for investment and to finance lending domestically in search of high spreads and yields.

After a short post-2008 crisis period when gross capital inflows into Nigeria were restrained, the volume of flows rose from 2011 to more than double their earlier levels and stood at around \$20 billion in 2017. About two-fifths of that consisted of loans under the other investment head. With substantial differences in domestic and foreign interest rates (20-25 per cent as opposed to 7 per cent), financial and non-financial corporations borrowed heavily abroad, without hedging adequately against the foreign exchange risk involved. This impacted the pattern of capital flows to the country. To start with, the earlier dominance of FDI in total flows was on the decline, with its share in total flows falling from an average of 71 per cent between 2007 and 2011 to an average of 34 per cent during 2012-18. Over these two periods, flows of portfolio investment increased their share from an average of 25 per cent to an average of 48 per cent, with a sharp increase in the share of debt securities in those inflows. The other change was an increase in the share of other investment flows from an average of 4.4 per cent to 18 per cent. Much of the non-FDI flows consisted of loans, and included debt taken on by the banking system abroad to finance lending within the country.

With the debt problem persisting despite rounds of debt rescheduling and reduction, the government made successive attempts to stall the debt surge. In 2001, for example, the government sought to rein in excessive borrowing by non-official sources, especially banks. The Central Bank of Nigeria (CBN) issued a set of “Guidelines for Foreign Borrowing for On-Lending by Nigerian Banks” in November 2001.<sup>12</sup> Describing it as “an effort to ensure that the full benefits are reaped while managing the inherent risks,” the CBN declared its concern because “of various factors such as the quantum of such loans vis-a-vis the capacity of the institutions, the terms and conditions of the facilities, etc and our experiences in the

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<sup>11</sup> The debt conversion programme encourages conversion of part of (excess) dollar debt into domestic currency equivalent for investment in equity.

<sup>12</sup> <https://www.cbn.gov.ng/out/circulars/bsd/2001/bsd-22-01.pdf>.

recent past in terms of the inherent foreign exchange risk." The guidelines were however liberal. Banks were not required to notify the CBN before entering negotiations with foreign lending institutions, but had to submit details of the arrangement, such as terms and conditions of the loan to the Banking Supervision Department of CBN before signing agreements. Banks were encouraged when disbursing loans with foreign financing to "ensure that they do so to projects/institutions that have the ability to generate foreign exchange that will be used to service the loan." These were weak macroprudential measures at best. Additional macroprudential measures were elements in the chosen policy basket. Besides a specified single obligor limit, a ceiling was set on the aggregate borrowing by a bank from foreign institutions which was 200 per cent of its shareholders funds unimpaired by losses.

Liberal capital flow "guidelines" were in place till 2014, despite significant increases in external debt, because of the confidence generated by rising oil prices. But when starting 2014 declining oil prices and the significant build up in debt resulted in volatility in the naira's exchange rate vis-à-vis foreign currencies, the CBN decided to impose stricter ceilings. In October 2014 it issued a new circular with a set of "Prudential Regulations for the Management of Foreign Exchange Risks of Banks".<sup>13</sup> This circular considerably reduced the ceiling on aggregate foreign currency borrowing of a bank to 75 per cent of its shareholders' funds unimpaired by losses. Banks were required to reduce their foreign liabilities within six months of the circular to meet the new norms. The 75 per cent limit supersedes the 200 per cent specified in Section 6 of the 2001 Guidelines for Foreign Borrowing for On-Lending by Nigerian Banks.

But, having embraced across-the-board liberalisation of capital account rules, the CBN and Federal Ministry of Finance (FMF) resorted merely to preventing further access to foreign exchange when a crisis occurred. Thus, in June 2015, a ban was put on acquiring foreign exchange in the foreign exchange market for purchases of Eurobonds, foreign currency bonds, or foreign currency shares. However, purchases of such securities were not prohibited if the purchaser used own funds without recourse to Nigerian foreign exchange markets. Also, quick reversals of controls imposed were common. Cash deposits into foreign exchange accounts were prohibited in August 2015 and allowed again in January 2016. In 2017, the reduced ceiling on aggregate foreign currency borrowing of banks was raised to 125 per cent of shareholders' funds, though deposit money banks' net open position of foreign assets and liabilities could not exceed 10 per cent (previously 20 per cent) of shareholder funds for both resident and non-resident assets and liabilities.

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<sup>13</sup> <http://www.odujinrinadefulu.com/content/cbn-curbs-foreign-borrowing-nigerian-banks>.

Measures were also adopted to prevent transmission of the risks resulting from external exposures. Thus, when borrowing in foreign currency, banks were required to borrow and lend in the same currency (natural hedging) to avoid currency mismatches that elevated foreign currency risk, and the interest basis for borrowing had to be the same as that of lending, so that mismatches between floating and fixed interest rates did not raise the basis risk associated with foreign borrowing.

In sum, while capital account liberalisation did exacerbate vulnerabilities in Nigeria, these tended to be recognised and addressed only in periods where the oil market was weak in terms of prices and demand. Even in those circumstances, measures were aimed at limiting exposure of domestic agents to foreign exchange payments commitments and were relaxed soon. However, given the volatility in oil prices and the tendency for capital flows to move in tandem with those prices in oil-rich Nigeria, one policy option chosen was to adopt countercyclical external policies geared to accumulate foreign reserves during periods of oil price buoyancy and defensively deploy those surpluses when international prices were low. In the context of the oil price booms of the early 2000s Nigeria launched efforts to manage its oil surpluses, starting with the creation of the Excess Crude Account (ECA) in 2004. The ECA segued into the sovereign wealth fund established under the Sovereign Investment Authority Act in 2011. Under the Act the Nigerian Sovereign Investment Authority manages funds accumulated through the transfer of oil revenues in excess of some benchmark price. The corpus is divided into a Stabilization Fund (20 per cent), to be deployed in periods when oil prices and revenues fall, an Infrastructure Fund (50 per cent) to finance infrastructural investment and a Future Generations Fund (30 per cent). Even though there have been allegations of mismanagement, including corruption, the policy of reserve accumulation has on occasion served the country well, as at the time of the global financial crisis when oil prices fell sharply, albeit for a short period of time. Starting with an initial corpus of \$1 billion, the sovereign wealth fund had more than doubled its corpus to \$2.15 billion by 2019 and had declared profits every year for the preceding five years.<sup>14</sup>

Nigeria appears to be a classic case of path dependence when moving down the road of capital account liberalisation. Even when vulnerability resulting from the fall out of such liberalisation weakened the balance of payments and the currency, especially in periods of oil price decline, only weak exchange control or macroprudential measures were resorted to. The basic tendency toward foreign capital and debt exposure continued.

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<sup>14</sup> Olika, Daniel (2019), "Who's afraid of saving money?: The political economy of Nigeria's Sovereign Wealth Fund", *The Republic*, September 16, <https://republic.com.ng/august-september-2019/political-economy-of-nigerias-sovereign-wealth-fund/>.



That has had adverse implications for the country in recent times given the global output contraction and falling oil prices. Thus, Nigeria is a typical case of a 'gate' category country, that opted for macroprudential measures and partial capital controls when conditions worsened.

## 2. Exchange rate management

Till 2015 Nigeria operated with a multiple exchange rate regime involving four rates: (1) the official exchange rate, which results from auctions of foreign exchange by the Central Bank of Nigeria (CBN); (2) the interbank market exchange rate, at which commercial banks transact among themselves using proceeds from non-oil exports and personal transfers; (3) the exchange bureau rate; and (4) the parallel market rate. In February 2015, the CBN announced the closure of its Dutch Auction System window and established a dual exchange rate regime involving: (1) the interbank foreign exchange market rate, which is determined both by the CBN and the market and is used by the CBN for all CBN transactions and by commercial banks among themselves for proceeds from export and personal transfers; and (2) the bureau de change rate, which is used in small retail transactions such as travel for individuals who cannot access the interbank market.

Besides central bank intervention and export proceeds repatriation restrictions, an intervention periodically resorted to manage demand for foreign exchange was to cap the net open position in foreign assets and liabilities of the deposit money banks. At the time of the global financial crisis the net open position limit was 20 per cent of shareholder funds. This was reduced to 5 per cent in 2010, and further to 1 per cent in October 2011. In 2014, the original position was restored and the exposure limit on the net open position of foreign assets and liabilities of deposit money banks was increased from 1 per cent to 20 per cent of shareholder funds. At that time there were two types of exposure limits: (1) a daily foreign exchange trading exposure limit of 0.5 per cent of shareholder funds; and (2) a net open position of foreign assets and liabilities of, effective October 24, 2014, 20 per cent of shareholder funds (previously 1 per cent). In January 2015 the daily foreign exchange trading exposure limit was reduced to 0.1 per cent from 1 per cent of shareholder funds, only to be raised to 0.5 per cent of shareholder funds days later. Clearly Nigeria has not done enough to meet the next crisis.

Finally, in May 2018 Nigeria's central bank signed a \$2.5 billion currency swap agreement with the People's Bank of China (PBoC) to facilitate trade and help foreign reserve management. The agreement had a three (3) year tenor and allowed both the CBN and PBoC to swap a maximum amount of Chinese yuan (CNY) 15 Billion for NGN 720 Billion.

Since imports from China account for around 20 percent of Nigeria's total annual imports the ability to access the swap line to settle in CNY is an advantage because it would allow allocating scarce dollar reserves for other transactions.

### **3. COVID-19 fallout**

As of now the pandemic does not appear to be systemically threatening because after hovering at low levels oil prices have been on the rise exceeding \$70 for a barrel at the time of writing. However, Nigeria's oil sector underperformed in the fourth quarter of 2020, because OPEC-plus quota agreements reduced oil production from 1.67 million barrels a day in 2020Q3 to 1.56 million barrels a day in 2020Q4 neutralising much of the benefits of the price increase. (World Bank 2021). Meanwhile the hit on GDP has been sharp, with 6.1 percent and 3.6 per cent year-on-year contractions in the second and third quarters of 2020, and a marginal 0.1 per cent rise in the fourth quarter. Real GDP is expected to fall by close to 2 per cent over the year.

The impact of the Covid crisis and uncertainties regarding oil revenues has led to the Nigerian central bank allowing the naira to depreciate from 307 naira to the dollar when the pandemic broke to 361 naira to the dollar between 20 March 2020 and 5 August 2020, 380 between 7 August 2020 and 20 May 2021 and 410 for the period 21 May 2021 till end June 2021. In June 2020, faced with foreign exchange stringency resulting from the Covid crisis and fall in oil prices the CBN once again opted for exchange control measures to defend the naira. It announced a list of around 40 transactions, varying from acquisition of portfolio assets (Eurobonds, foreign currency bonds and shares) to imports of food-related products, manufacturing inputs, textiles, and cement, which would now be ineligible for the purchase of foreign exchange on the interbank market. Those wanting to engage in such transactions will have to access foreign exchange from the more expensive parallel market. How much this would deter such transactions is not clear, but it protects the CBN's own foreign reserves.

## **F. South Africa**

### **1. The current account**

While being an exporter of minerals and precious metals, besides some manufactures, South Africa was not a commodity export dependent economy. Nor was it an economy that displayed resilience on the trade account. In seven of the 14 years between 2006 and 2019, South Africa recorded a deficit on its trade account. But this was not the main reason

for its current account vulnerability. The current account was in deficit in all those 14 years, because of large net outflows on account of primary and secondary incomes. The primary income deficit was till 2014 mainly (60-75 per cent) on account of direct investment related flows. But after 2014 the share of net portfolio investment linked flows rose sharply, accounting for 50-70 per cent of net primary income outflows. Secondary income outflows were on account of current transfers, and reflected remittance flows out of South Africa. In sum, South Africa's current account deficits were largely due to the inability to match foreign investment related payments and remittance outflows with export revenues, from an increasingly uncompetitive export sector.

## 2. Capital flow management

South Africa has had a long history of capital controls, though the objectives underlying those controls have changed significantly. Before the end of the apartheid regime, controls were imposed as a response to international sanctions against the then government. Capital controls were intensified after the "Sharpsville massacre" of 1961, which resulted in a large outflow of capital from the country. Subsequently, as more sections of the international community joined the sanctions against the apartheid regime, a range of controls were put in place to limit loss of reserves and defend the rand. These evolved into systems of controls on repatriation in the form of the "blocked rand"<sup>15</sup>, the "securities rand" and the "financial rand"<sup>16</sup>, that had as their corollary a system of multiple exchange rates.

Policies changed dramatically after the installation of the Government of National Unity in May 1994 and the subsequent lifting of international sanctions. They veered in the direction of removal of exchange controls, setting off a gradual process of liberalisation of capital account restrictions, making it easier for non-residents to invest in South Africa and repatriate profits and capital when desired and for residents to obtain foreign exchange for undertaking investments abroad. According to the IMF (1997), the intent of the relaxation of controls "was not simply to liberalize controls in a sequence of steps that allowed different types of capital transactions one at a time, but to open a number of new windows, each subject to a cap, that would permit different types of capital transactions by residents. In this way, an increasing array of forms of resident capital transactions were permitted, but the risks of major aggregate outflows were limited by the caps applied to each type of transaction." That said, one assessment is that three-quarters of the capital controls in 1994 had been eliminated by 1998

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<sup>15</sup> These were funds that official emigrants from South Africa were not allowed to transfer abroad when they emigrated and could only be used within South Africa for specified purposes.

<sup>16</sup> Rand acquired from sale of South African securities and other investments by non-residents, use of which and conversion into foreign currency was restricted.

(Gelb and Black 2004). Between 1999 and 2015 the limit on purchases of assets abroad by individuals was increased from R 750,000 to R 11 million. By 2015 these assets covered real estate, shares, bonds, money market instruments and collective investment securities. Overtime, capital controls on inward and outward flows, originating from non-residents and residents have been relaxed considerably.

The lifting of restrictions at a time when the new government expressed an interest in adopting a relatively market-friendly growth strategy in the form of the Growth, Employment, and Redistribution (GEAR) framework, triggered significant inflows, especially in the form of short-term loans, portfolio inflows and bond purchases. From around \$4.5 billion in 1996, portfolio capital inflows rose to touch \$13.8 billion in 1999. But with a rising current account deficit and inflation, as well as the effects of the Southeast Asian crisis, the rand was under pressure in 1998 and 2001, leading to two rounds of depreciation of the currency. In the event, confidence ebbed resulting in portfolio capital outflows in 2001 and marginal inflows in the subsequent two years. But after that portfolio inflows again spiked rising to \$21.9 billion in 2006 and \$13.7 billion in 2007, influenced in part by the commodity price boom. That rise was disrupted by the 2008 global financial crisis. Given its large current account deficits financed in substantial measure with portfolio flows, the retreat of investors and the increased volatility of flows during the crisis and thereafter affected South Africa adversely. After 2007, aggregate capital inflows equalled or exceeded their level in that year only in three years till 2018 and were characterised by wide fluctuations.

### **3. Exchange rate management**

In South Africa, the exchange rate of the rand is determined by demand and supply in the foreign exchange market. With rapid external liberalisation after 1994, vulnerability increased. This was reflected in the fact that, despite significant capital inflows in some periods, the rand/US dollar exchange rate depreciated from R2.27 to the dollar in 1988 to R7.05 to the dollar in 2007. In fact, South Africa experienced sharp currency depreciations in 1996, 1998, 2001 and 2006.

Committed to liberalising exchange controls, the South African policy establishment was averse to reversing liberalisation in the face of such vulnerability. It focused on the other hand on attracting (hopefully stable) inflows as well as stabilising the rand, not least by countering depreciation with the help of market interventions and macro-prudential measures. Such intervention often increased rather than reduced systemic risk. During the late 1990s the South African Reserve Bank (SARB) ran an “oversold forward book” to back intervention to stall depreciation by selling dollars. Simultaneous with the sale of dollars the SARB entered

a parallel swap transaction involving buying dollars spot and selling dollars forward (Mminele 2013). Since there was a simultaneous sale and purchase of spot dollars, the SARB's current holding of dollars remained unchanged. But its commitment to deliver dollars in the future increased. Despite the risks associated with a large net open foreign position (NOFP) or open position in the forward market less its net international reserves, the SARB repeatedly resorted to this technique of managing the exchange rate. Immediately after the unification of exchange rates in 1995, the NOFP came down from \$25.8 billion in March 1995 to \$8.5 billion in March 1996, through purchases of foreign exchange. But when the rand depreciated in 1996 the forward book once again rose to \$22 billion. Yet again, the NOFP was brought down through purchases, but the 1998 crisis took it back to levels that prevailed a decade earlier. In 1998, the SARB announced an end to this mode of intervention and a shift to a "market driven" floating exchange rate. Intervention was now to be based on the actual sale and purchase of dollars. By 2004 the NOFP was eliminated and the SARB began accumulating foreign reserves through purchases of dollars, and central bank intervention to manage the currency involved sale and purchase of dollars. Ensuring adequate reserves to support such intervention was imperative for currency stability.

#### **4. COVID-19 fallout**

Following the pandemic and a severe lockdown, South Africa's GDP shrank by 7 per cent in 2020, whereas it had expanded by 0.2 per cent in 2019. Industry, commerce, restaurants, and hotels were all affected, with the hospitality and tourism sectors suffering the worst hit. However, relaxation of lockdowns and increased fiscal spending, which is expected to take the debt to GDP ratio from 66 per cent to an estimated 81 per cent in 2020, resulted in a slow recovery starting the last quarter of 2020. Meanwhile, given the importance of metals in South Africa's export basket, the rand has been appreciating riding on higher metals prices. But damage inflicted by the pandemic and the response to it would only aggravate accumulated vulnerability.

### **G. Zambia**

#### **1. Capital flow management**

Zambia, Africa's second-biggest copper producer, recorded a surplus on its current account in all but three of the 14 years between 2006 and 2019. But the current account balance was much smaller in years of surplus and was in deficit in 8 of the 14 years. This was because of consistent outflows

on the primary income account, reflecting dividend and interest payments on foreign investment (direct and portfolio) and debt. Foreign investment gained ground when the mines that were under government control from 1973 to 1996, were privatised in the second half of the 1990s.

Starting 2012, Zambia, which was earlier largely receiving foreign direct investment directed substantially to the extraction and export of copper, started receiving portfolio flows allowed under its capital account regulations that were substantially liberalised starting in the mid-1990s. The government's first foray into the Eurobond debt market was in 2012, with an issue of 10-year bonds to the tune of \$750m, carrying a coupon of 5.6 per cent. With that issue Zambia led the trend in which several African nations, having received debt relief under the Highly Indebted Poor Country initiative, chose to tap the international debt markets for financing.

Subsequently, encouraged by high copper prices, the country went on a borrowing spree by tapping global capital markets. By 2015 the government had gone through three rounds of bond issues, rendering itself vulnerable to external shocks. In addition, Zambia had ramped up borrowing from China, the scale, and terms of which are not clear, with a lot of it being lending to specific projects.

However, starting around 2014, Zambia faced a downturn in the prices of copper, its dominant export, because of a decline in demand from China, Zambia's principal export market. This eroded its ability to service its accumulated debt of around \$12 billion by the end of 2020, estimated at more than 100 per cent of its GDP.

The fact that Zambia had borrowed excessively relative to its debt payment capabilities was established when in mid-November 2020, reeling under the COVID-19 induced crisis, Zambia missed interest payments of \$42.5 million due on around \$3 billion of bond debt. The default occurred when the government was in the middle of negotiations on restructuring its debt. The negotiations stalled because Eurobond holders were unwilling to bailout the country, suspecting that the money released from their haircuts would be used to service Chinese debt.

The Zambia External Bondholder Committee, a consortium of lenders that own 40 per cent of Zambia's outstanding Eurobonds, blamed "lack of engagement and transparency" on the part of the Zambian government for their unwillingness to consider providing short-term relief, such as a six-month moratorium on debt service payments. Zambia turned to the International Monetary Fund (IMF) for a bailout. The IMF is demanded implementation of austerity measures at a time when they would be least popular.

## 2. Exchange rate management

The stress on the balance of payments resulting from external vulnerability set off a slide in the Zambian kwacha. This triggered an increase in dollarized transactions in the economy, in response to which the Zambian government opted for a range of macroprudential measures. In 2012 it issued Statutory Instrument 33, which banned quoting in, paying or receiving foreign currency as legal tender for goods, services sold domestically or for any other domestic transactions. Subsequently, in July 2013, the government introduced Statutory Instrument 55, according to which the Bank of Zambia would monitor balance of payments transactions and regulate charges in the financial sector. Importers, exporters, and foreign investors were required to open and maintain foreign currency denominated accounts with a Zambian commercial bank to facilitate enforcement of these regulations. In addition, exporters were required to repatriate foreign currency earned from exports back to Zambia and report on the receipt of export proceeds within 120 days of receipt. That directly affected large transnational metal giants like Glencore, Vedanta, First Quantum, and Vale. Resort to capital controls was notable for its absence. For example, persons obtaining a foreign exchange loan from a non-resident were only required to report details of the borrowing to the Bank of Zambia. The central bank kept declaring that these measures did not amount to reintroduction of exchange controls but were only meant to help monitor currency flows. While partially true, they also reflected an acceptance of the need to withdraw from an excessively deregulated environment, which because of pressures from private capital could only go thus far.

The weak intervention did little to halt the depreciation of the kwacha, which driven by a more than 10 per cent decline in the copper price in the first half of 2014 depreciated by 13 per cent during that period. This, and possibly pressures from domestic and foreign investors, led to the removal of even macro-prudential or exchange control measures. In March 2014 the government decided to scrap the two sets of regulatory measures adopted in 2012-13. Alexander Chikwanda, the finance minister, explained that the regulations were revoked because “challenges have arisen in the implementation of these instruments”. The memory of that failed effort to impose even minimal exchange regulations still haunts Zambia.

As the global growth slowdown hurt commodity exports, the kwacha was once again in steep decline in 2019. By May 2019 the kwacha had touched the lowest level vis-à-vis the dollar since November 2015, making it the worst performing African currency. The Zambian kwacha had fallen about a third against the US dollar alone in 2019. This set off speculation that the government may once again experiment with exchange controls,

forcing the Finance Minister Margaret Manakatwe to issue a statement that sought to “assure both local and foreign investors, businesses and the general public, and categorically state that the government is not about to and will not reintroduce exchange controls.”<sup>17</sup> More borrowing may not be an answer to these problems. Zambia’s foreign debt had risen to \$11.2 billion by December 2019, compared with \$4.8 billion five years earlier.

### 3. The COVID-19 fallout

The pandemic intensified the crisis in Zambia, with copper prices declining 15 per cent in the first half of 2020 compared with the previous year, and the tourism sector hit badly (Siwale 2021). The kwacha depreciated sharply from 14.7 to the dollar in February 2020 to 21.2 to the dollar at the end of 2020. It fell further to 22.6 to the dollar by June 2021. The Zambian economy contracted 4.2 per cent over 2020. Zambia became the first defaulter on external debt after the onset of the pandemic.

## H. Some lessons

The experience of commodity dependent Africa points to how current account movements resulting from the volatility in the volume and unit value of exports can have spin-offs in terms of capital account and overall balance of payments vulnerability, precipitating currency and even systemic crisis. The link between the current and capital account is visible not merely in periods when falling export revenues due to reduced exports and decline in export prices necessitate dependence on capital inflows to finance current account deficits. Rather, even when exports are doing well, the confidence that this generates encourages relying on capital inflows to raise investment and growth, in the belief that the associated commitments can be easily financed with export earnings. The ubiquitous presence of this asymmetric reliance on enhanced inflows during periods of both increased and reduced current account financing needs in almost all countries studied (except South Africa, which is not commodity dependent), points to the need for countercyclical measures to address external vulnerability. That is, during periods of buoyancy in exports and export prices, countries need to be (i) cautious about excessive external borrowing and increased capital account liberalisation that led to substantially enhanced capital account liabilities; and (ii) must set aside ‘surplus’ foreign exchange in institutions and instruments that can be deployed to deal with the vulnerability that manifests when commodity

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<sup>17</sup> <http://www.uniindia.com/zambia-dismisses-rumours-about-currency-controls/world/news/1605113.html>.



demand and commodity prices are subdued or falling. As discussed above, some countries have established sovereign wealth funds as the means to undertake such countercyclical intervention with salutary effects. But this has not gone far enough and been accompanied by overreliance on the soft options of foreign borrowing and facilitating foreign portfolio and excessive direct investments.

To the extent that countercyclical measures are not adequate to cover foreign exchange needs when faced with external shocks, sole reliance on borrowing and capital flows tends to exacerbate vulnerability hugely. Short term macroprudential measures to deal with this, varying from policies that commandeer available foreign exchange flows to shore up reserves (through enforced early repatriation of export receipts, for example) to use of short-term liquidity access measures like foreign currency swaps with friendly trading partners, may be inadequate. In that event, reliance only on capital flows results in the cumulative build-up of capital account liabilities and exacerbates longer-term vulnerabilities. Measures to directly address the imbalance in the current account including curbs on non-essential imports need to be considered to tide over difficult times. In practice, given commitment to liberalised trade rules and external pressures, countries resort to such measures only when the crisis intensifies, and default seems inevitable.

Current account vulnerability also requires intervention to manage the exchange rate to prevent transmission of shocks across the system. For example, a sharp depreciation of the domestic currency in a context of large foreign currency corporate debts, can trigger bankruptcies because of a spike in the domestic currency value of debt service commitments and adversely affect the financial institutions exposed to these corporates. But managing the currency is a difficult exercise, inasmuch as commodity export dependence implies that the real exchange rate must be stabilised to protect export competitiveness. Thus, given relative inflation rates, currency market intervention on macroprudential grounds must not just guard against precipitate depreciation, but ensure nominal depreciation at a rate that keeps the real exchange rate within a competitive range. That can be a challenge, as the experience of Africa illustrates.

In sum, macroprudential measures are crucial in addressing external vulnerability and pre-empting shocks that can prove systemic, especially given the difficulties in reversing liberalisation measures that trigger tendencies that increase vulnerabilities. But where features like commodity export dependence and inequities in trade and access to international liquidity result in exceptional vulnerability, the policy space to turn to structural measures such as capital controls and even controls on trade may be needed.

## Conclusion

As is inevitable in a continent of its dimensions, the nations that constitute Africa are extremely diverse. Per capita GDP (constant 2010) varies from between \$480 and \$600 in Sierra Leone, Niger, Mozambique, Malawi, Madagascar, and Liberia to between \$7000 and \$15000 in South Africa, Seychelles, Mauritius, Libya, Gabon, Equatorial Guinea, and Botswana. Despite this diversity in levels of development, there is one feature that is characteristic of most African countries. Commodities are the main driver of growth, with inadequate diversification of the economic structure and of exports.

The result of this has been a tendency towards significant external vulnerability, especially when commodity demand and commodity prices are on declining phase of long- or medium-term cycles. This vulnerability has been exacerbated by the decision of many African countries to use the opportunity provided by the expansion of liquidity in international financial markets. Many have sought to attract such capital by relaxing capital controls and financial rules. Others have been more reticent. However, to address different levels and kinds of vulnerability and rein in systemic risk countries have experimented with a range of macroprudential measures. This diverse experience provides useful lessons from a highly vulnerable group of countries on alternative policies to deal with external vulnerability, the contexts to which they are suited and their likely efficacy.

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## Chapter V

# **Macprudential policies in Asia: A consideration of some Asian experiences**

*Jayati Ghosh*<sup>1</sup>

### **Introduction**

The COVID-19 pandemic has had major effects on developing countries in many ways, not only because of the effects on health and well-being of the people, but through the severe and often devastating effects on economies. These economic impacts have operated within the domestic economy, through closures and lockdowns that have affected economic activity, livelihoods, and employment; and they have also operated through the impact of international economic processes that have affected trade and capital flows. For several developing countries, the external impacts of declining trade in goods and services, falling remittances and —most of

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<sup>1</sup> University of Massachusetts Amherst. I am grateful to Debosmita Sarkar for excellent research assistance. I am also indebted to Esteban Pérez Caldentey, Martin Abeles, Yilmaz Akyuz, CP Chandrasekhar and Claudia Ramirez Bulos for very helpful discussions and comments on an earlier draft. This chapter was prepared for the UNCTAD-ECLAC Project on “Response and recovery: Mobilising financial resources for development in the time of Covid-19. The chapter also includes as an annex a section of comment by Yilmaz Akyüz on an earlier paper by on capital controls in Asia which is highly relevant to the subject, ideas, and proposals of the current paper.

all— volatile capital flows and pressures arising from external debt, have sometimes been so severe that they have accentuated and sometimes even dwarfed the domestic effects.

The countries of developing Asia are among the most globally integrated in the world, in both trade and capital markets, and therefore it is only to be expected that they have been particularly affected by changes in the global economy. For several of them, these have sharpened and amplified vulnerabilities that had already built up over the previous decade, as a result of specific policies of deregulation and liberalisation that were undertaken over the past three decades. The COVID-19 crisis is exposing the extent to which they have become more susceptible to volatile capital movements. In this context, it is important to examine the types of strategies they have adopted to protect themselves and manage the domestic impact of such volatility. As most of the Asian region moved from relying heavily on administrative controls on capital account transactions to a more liberalised approach, this has implied that macroprudential measures have taken on greater significance. Given the likely volatility of the immediate future and the development challenges of the medium term, it is likely that such measures may become even more relevant.

This paper examines the recent Asian experience of macroprudential controls with reference to four Asian economies: India, Indonesia, Malaysia, and Thailand. These countries have been selected because they are countries with very significant extent of external integration with respect to both trade and finance and have all moved in the past three decades from administrative controls on capital flows and internal financial activities, to more market-based measures in both. Furthermore, while they have been affected to varying degrees by the ongoing pandemic, they are still impacted by it, unlike some countries in the region (such as China and Vietnam) that appear to have protected themselves from the worst impacts and achieved some recovery. A comprehensive list of all macroprudential measures undertaken in these economies over this period is not sought to be provided.<sup>2</sup> Rather, the idea is to consider certain goals of such policies and consider specific policies and episodes regarding the degree to which they were able to meet these goals.

Macroprudential policies are broadly defined as those aimed at reducing systemic risk, either over time or across institutions and markets. The specific systemic risks faced typically include risks of excessive domestic credit growth and associated asset price inflation; risks of exchange rate volatility arising from investor activity in on-shore and

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<sup>2</sup> The study considers macroprudential measures described in the IMF AREAER database as well as the more recent IMF Integrated Macroprudential Policy (iMaPP) Database, described in Alam et al (2019).

off-shore currency markets; risks of capital flow volatility because of investor behaviour, especially by non-residents; risks of domestic banking fragility arising from temporary unexpected shocks (like the pandemic) and predicted other shocks (like climate change); and risks of external debt crises. It is generally suggested that macroprudential measures should identify early indicators of weakness, pre-empt, and limit the build-up of such risks and create buffers against pro-cyclical feedbacks of financial instability. Since such measures can cover both domestic and external financial markets, capital management policies can be seen as a subset of macroprudential policies.

This paper is focussed on the measures for dealing with risks and threats arising from cross-border flows, specifically capital flow volatility, exchange rate volatility and external debt vulnerability. The next section provides a background in terms of the changes in regulatory structures and degree of exposure to global capital markets in the region as a whole and in the countries being studied over the past few decades. The third section considers the implications of the most widespread macroprudential measure, the accumulation of official foreign exchange reserves. The fourth section describes some specific measures adopted in the four different countries over this period. The fifth section considers the current challenges in the wake of the COVID-19 pandemic and proposes some policies relevant in the current global context.

## **A. The background**

The Asian crisis of 1997-98 focused attention on the dangers for developing countries of resorting to external financial liberalisation a world dominated by fluid finance. It brought home the fact that financial liberalization can result in crises even in so-called 'miracle economies'. The crisis marked a major setback to the "East Asian miracle": more than a decade after that crisis, the affected economies were not really able to recover their pre-crisis dynamism. It is not just that currency and financial crises have devastating effects on the real economy and thereby affect the subsequent growth trajectory. The liquidity crunch and wave of bankruptcies result in severe deflation, with attendant consequences for employment and the standard of living. The post-crisis adoption of conventional IMF stabilisation strategies tends to worsen the situation. Thereafter, governments become so sensitive to the possibility of future crises that they continue to adopt very restrictive macroeconomic policies and restrain public expenditure even in crucial social sectors. Finally, asset price deflation and devaluation pave the way for foreign capital inflows that finance a transfer of ownership of assets from domestic to foreign investors, thereby enabling a conquest by international capital of important domestic assets and resources. In

the economies that were deeply involved in the Asian crisis (Thailand, South Korea, Indonesia, Malaysia and the Philippines) recovery was accompanied by significant acquisition, at deflated prices, of productive assets in these economies by foreign firms and a substantial restructuring of the financial sector.

A key insight that emerges from an analysis of the Asian crisis is how market-oriented strategies to cope with the crisis created further financial fragility in many post-crisis economies (Chandrasekhar and Ghosh 2014), thereby rendering them extremely vulnerable to future contagion and volatility, exactly in the manner that was experienced once again in 2008-09, and now during the current pandemic. To that extent, the Asian crisis effectively predicted the severe impact on both the financial variables and the real economy that subsequent crises have had upon developing countries.

It should be noted that even prior to the crisis, there was extensive financial liberalization, specifically external or capital account liberalization, in the affected countries. During the early 1990s, almost all East Asian countries liberalised their financial sectors and allowed local corporations, banks, and non-bank financial institutions to freely access international capital markets with little commitment to earn the foreign exchange needed to service the costs of such access. This allowed inflows of capital that enabled short-term borrowing for long-term projects and broke the link between domestic agents' ability to access foreign exchange and their need to earn it. This was associated with the use of new instruments, specifically derivatives contracts that were enabled by deregulation. As Kregel (1998: 67) noted, the role of derivatives contracts can explain the existence of a number of puzzles associated with the Asian financial crisis. "The shift to short-term commercial bank lending in a region that traditionally relied on direct investment, the allocation of resources to low return uses in an area considered to be highly profitable, lax prudential supervision in systems that had introduced financial reforms early, and the co-movement of asset prices and exchange rates, which was to have been eliminated by direct equity investments, are all linked to the characteristics of derivative contracts used to provide lending to Asia." This continues to be of relevance in the current context.

Over the subsequent decades, the afflicted economies recovered, albeit in different ways and to different degrees determined by the nature of the policy response in individual countries. But this did not mean a return to "miracle" status. This is because the crisis did not lead to real changes in the export-led strategy of growth or to greater financial regulation that would have reduced financial fragility and enabled more inclusive growth (Ghosh and Chandrasekhar 2009a). The most startling change was the broad macroeconomic shift in terms of a large divergence



between savings and investment rates. The East and Southeast Asian region generally had very high savings rates, but the period subsequent to the financial crisis saw an increase in these already high rates, even as investment rates (that is the share of investment in GDP) plummeted. While these actually became *more* “open” in policy terms, especially with respect to rules regarding foreign investment, after 1998 they stopped being net recipients of foreign savings and instead showed the opposite tendency of net resource outflow, as domestic savings were higher than investment. This meant that there was a process of squeezing out savings from the population as a whole but not investing it within the economy to ensure future growth. Instead, these savings were effectively exported, either through capital outflows or by adding to the external reserves of the central banks, which were typically held in very safe assets abroad (such as US Treasury Bills). This occurred despite the continuing need for more investment within these countries (Ghosh and Chandrasekhar 2009b).

This was wrongly described as a “savings glut” (Bernanke 2005) driven by weak or inadequate financial intermediation and undeveloped financial institutions. But the evidence shows that as financial institutions became more sophisticated, and imitated the North Atlantic model, the divergence between domestic savings and investment actually grew (and was indeed the largest in economies with the most developed and sophisticated financial systems, such as Malaysia and Indonesia). In any case, it is apparent that the problem in these countries was not the rise in savings, so much as the collapse in investment, suggesting not a savings glut so much as *an investment famine*. True, savings rates increased, affected also by crisis-induced shifts in income distribution that reduced workers’ consumption and transferred more income to those in a better position to save. But the sharp collapse in investment rates came about because of other factors that then led to the emergence of this “savings surplus”. The growing savings surplus was partly – but only partly – the result of the decisions of private agents in these countries, and even these private decisions were strongly affected by official economic policies. For example, stringent monetary conditions, increasing real interest rates and an excess of very rigid and inflexible forms of prudential regulation caused bank credit to be less easily available for investment. A range of other post-crisis measures dampened private investment by directly and indirectly raising the costs of finance and reducing access to it. This obviously reduced investment by large corporate entities and had even stronger detrimental effects upon small enterprises which found it more difficult to access credit. It is worth noting that the only economy that showed a different pattern in savings and investment – Thailand – is one where the government of Thaksin Shinawatra systematically made greater access to institutional credit to small enterprises and farmers a major plank of the post-crisis reconstruction strategy (Pasuk and Baker 2009).

But monetary and financial policies are only one part of the story. A very large role in the reduction of aggregate investment was played by fiscal policies of governments in these countries, who increased their own savings and cut down on fiscal deficits or increased fiscal surpluses across the region. Even though the financial crisis in these countries was essentially brought on by private profligacy in a financially liberalised environment, the aftermath of the financial crises created an environment of excessive caution on the part of governments. The pressure was on governments to keep budget deficits under control by reducing their spending. As a result, governments in these countries did not spend as much as could be easily sustained by the economy, to ensure better conditions for the people or to encourage more sustainable growth and generate more employment. So, the major cause for this apparent excess of capital, which was then exported to the US and other developed countries, was deflationary policies on the part of these governments, which suppressed domestic consumption and investment. One obvious reason for this was the fear of a repeat of the large and destabilising movements of speculative capital which were such a strong feature of the financial crisis of 1997-98. The idea was to guard against the possibility of such potentially damaging capital flight by building up substantial foreign exchange reserves, even when these may involve large fiscal losses. The other reason was that the economic strategy in these countries was still centred on the obsession with exports as the engine of growth, which combined with deflationary domestic policies that kept levels of aggregate domestic investment lower than savings. This caused an “excess supply” of foreign exchange in the currency market, which would in turn involve an appreciation of currencies, thereby adversely affecting exports.

In a world of liberalised trade where exchange rates cannot be easily controlled, this meant that currencies had to be kept at “competitive” levels through market-based means. And this in turn meant that foreign currency inflows — whether through more exports or remittances or through capital flows — had to be counteracted by central bank market intervention to purchase foreign currency, to prevent undesired appreciation of the currency. The macroeconomic counterpart – and cause - of the rising foreign exchange reserves held by the central banks of all these countries was therefore the excess of domestic savings over investment, which was actually a huge potential wasted for these economies. Financial liberalization effectively resulted in the choice of deflationary strategies by governments. This in turn contributed to the excess of domestic savings over investment, thereby threatening currency appreciation. This is what led to the accumulation of unutilised foreign exchange in the form of growing foreign exchange reserves that were invested in “safe” assets abroad such as US Treasury Bills.

Meanwhile, the surge in gross capital inflows to developing Asia continued and was associated with a transformation of domestic financial structures, including in the countries considered here. Increasingly, the carriers of those flows, namely foreign financial firms, lobbied for reshaping of regulatory frameworks to create an environment conducive to their mode of functioning. Effectively, processes of financial liberalization and reform recast financial structures and regulatory frameworks in Asian developing countries to resemble those in the Anglo-Saxon world; to replicate the Anglo-Saxon model of finance within their own borders, despite the lower levels of per capita income and levels of development (Chandrasekhar 2008). The resulting structural changes and entry of new institutions and instruments were substantial. For example, despite the notoriety of hedge funds, gained from the role they are alleged to have played in the currency speculation that precipitated the 1997 crisis, hedge fund activity in Asian developing countries has increased substantially in recent years. Encouraged by liberalization that ensures not only entry but the proliferation of instruments, the growth of derivatives markets, the emergence of futures, and the increase in shorting possibilities, these firms have devoted much attention to these markets. Portfolio diversification by financial investors in developed countries seeking new targets, higher returns and/or a hedge has also resulted in the entry of private equity firms. Private equity involves investment in equity linked to an asset that is not listed and therefore not publicly traded in stock markets. This broad definition includes a range of transactions and/or assets, such as venture capital investments, leveraged buyouts and mezzanine debt financing, where the creditor expects to gain from the appreciation in equity value by exploiting conversion features such as rights, warrants or options. Most recently, local bond markets that were relatively shallow were opened to foreign investors, for bonds issued by both public and private entities.

All these have generated new forms of vulnerability and financial fragility, which the existing regulatory structures have not been sufficiently adept at managing. Indeed, it could be argued that the forces unleashed by greater foreign ownership of domestic financial assets combined with allowing new financial instruments that effectively serve only to disguise risk and enable more irresponsible activity, have made it much harder to devise rules and regulations without a major revamp of the ownership and regulatory structures in finance. Meanwhile, emerging markets in Asia have turned to self-insurance, in the form of massive build-up of official foreign exchange reserves, as the main macroprudential strategy. But this carries significant costs, as elaborated in the next section.

## **B. Gross and net capital flows and forex reserves**

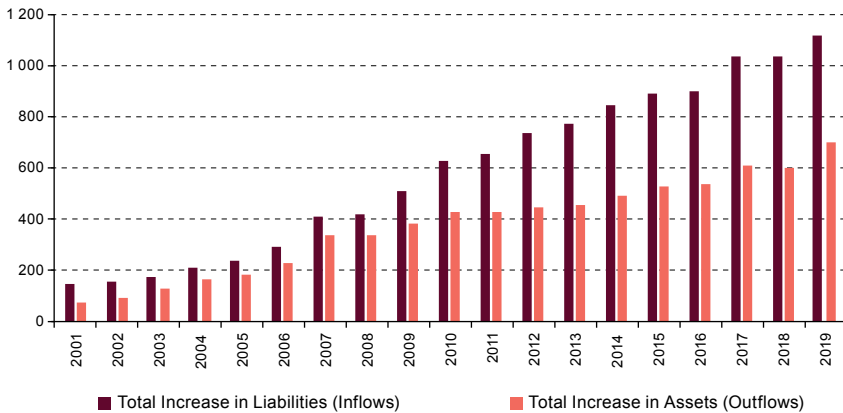
One major reason why emerging markets in Asia are increasingly prone to volatile capital movements is because they are affected by the spillovers from macroeconomic policies in the advanced countries, and most of all the massive liquidity expansions that characterised the “recovery strategy” from the Global Financial Crisis. These have been widely discussed (see UNCTAD 2017, 2019, etc.). Ultra-loose monetary policies in the advanced economies, expressed both in extraordinary expansion of liquidity and very low (sometimes even negative) interest rates may have failed in the stated aim of bringing about a broad-based and sustained global economic recovery. However, they were instead associated with what has been misleadingly called “secular stagnation”, because they did not address the central problems of inadequate demand (resulting also from increased inequality) or the vulnerabilities arising from inadequately regulated finance. Some of this easy money generated in the advanced economies made its way into emerging markets that had become increasingly more integrated into global capital markets. Developing Asia was a major “beneficiary” of this process in terms of significant increases in gross capital inflows. However, because of open capital accounts with relatively free flows of both residents and non-residents, this did not necessarily mean that net inflows of capital were significant.

Indeed, there was very substantial increase in “investor interest” in emerging Asian market economies, such that the region became the most “favoured” destination for global financial markets. Yet, as domestic private residents were also increasingly allowed to invest abroad, and central banks in the region also sought to expand their holdings of foreign assets, there were also large increases in capital outflows. Figures V.1 to V.4 show how this has played out in the four Asian countries considered here. Gross inflows (net incurrence of total liabilities in the financial account) increased sharply for all four countries. They were associated with increasing net inflows only for India and Indonesia, but even for these two countries the net inflows were substantially lower because of growing outflows. But in Malaysia, inflows were almost completely counterbalanced by outflows, and this was true also of Thailand, albeit to a slightly lower degree.

One crucial point is that the gross inflows did not translate into increased investment rates for any of these economies, which has been the stated aim of greater external financial openness in all these countries. In other words, the greater capital account integration of these countries was not associated with actual “use” of the financial flows in terms of higher investment, in aggregate macroeconomic terms. Of course, it is true that

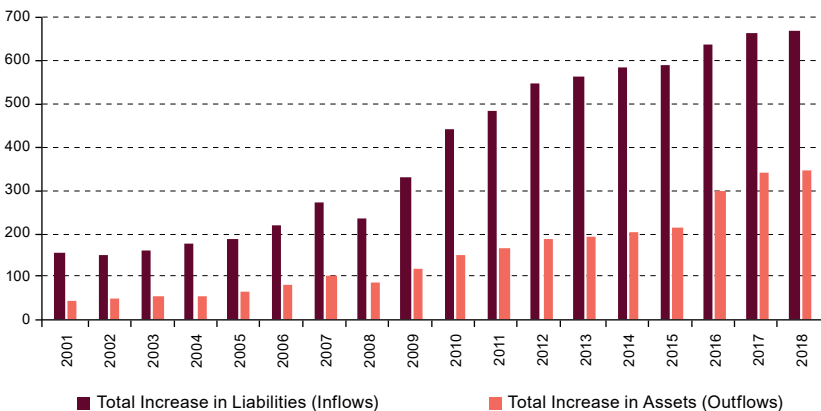
capital inflows are not required to pay for domestic investment unless the financial inflows are required to pay for additional imports resulting from enhanced investment—but this has nevertheless been presented as the explicit reason for opening capital accounts across developing Asia. At the same time, external financial liberalisation was necessarily associated with greater vulnerability because of the possibility of sudden and rapid outflows. This has also operated to repress greater fiscal spending, which has also had a relatively deflationary impact.

**Figure V.1**  
**India. Gross inflows and outflows**  
 (\$US billion)



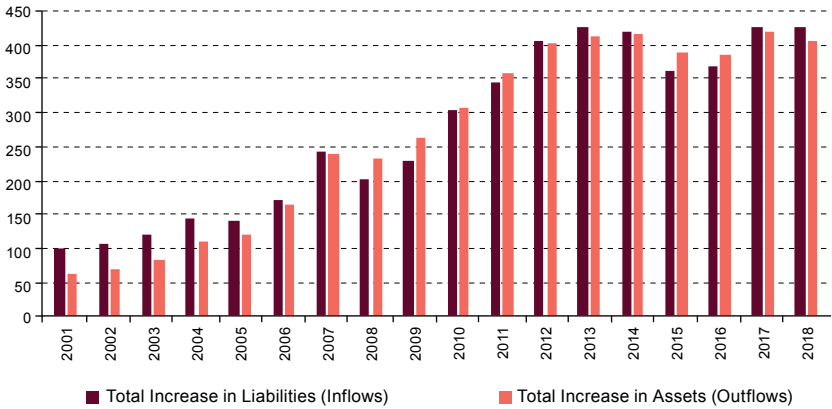
Source: IMF BPM6 Manual online, 2021.

**Figure V.2**  
**Indonesia. Gross inflows and outflows**  
 (\$US billion)



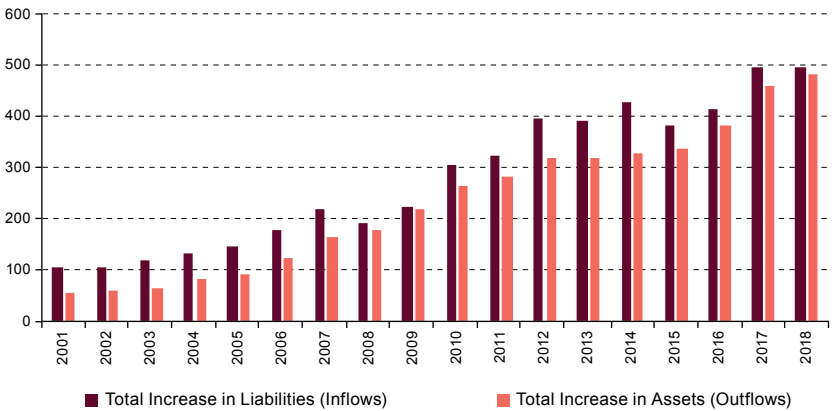
Source: IMF BPM6 Manual online, 2021.

**Figure V.3**  
**Malaysia. Gross inflows and outflows**  
(US\$ billion)



Source: IMF BPM6 Manual online, 2021.

**Figure V.4**  
**Thailand. Gross inflows and outflows**  
(US\$ billion)

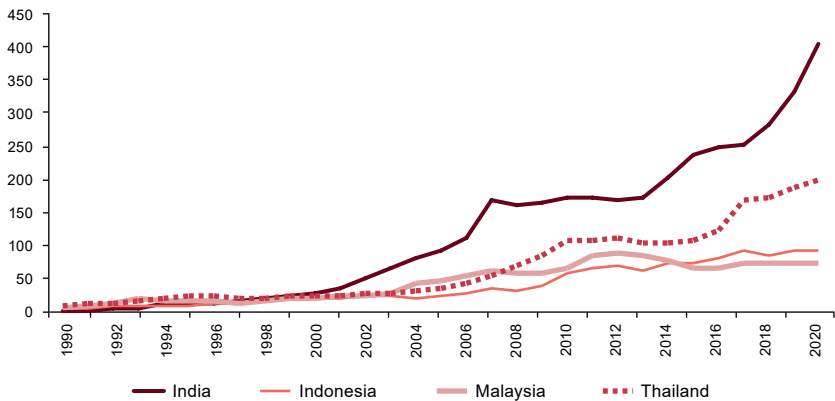


Source: IMF BPM6 Manual online, 2021.

The standard means of dealing with the vulnerabilities created by these gross inflows that could be easily reversed has been the accumulation by the central banks of more official foreign exchange reserves. Figure V.5 shows how important this has been as the basic strategy in the countries concerned. (The data are shown in SDRs to avoid the effect of currency changes.) It is evident that the more significant accumulation took place after the Global Financial Crisis. It has been sharpest for India, and least evident for Malaysia, where the level of forex reserves has stagnated since 2010. Since the significance of non-merchandise current outflows has also

been growing, however, such reserve holdings still appear to be within reasonable levels, though on the higher side for India and Thailand. By 2020, these forex reserves amounted to 8 months the value of all current account outflows for India (in the previous year 2019) and 9 months for Thailand, 6 months for Indonesia and just under 5 months for Malaysia, whereas noted forex reserves have stagnated for some years.

**Figure V.5**  
**Official forex reserves**  
(In SDR billion)



**Source:** IMF BPM6 Manual online, 2021.

Such reserve accumulation is usually designed to serve two goals. First, to provide self-insurance in the form of forex resources that can be drawn upon in the event of sudden capital flight or financial crisis, and thereby to prevent a currency crisis—and to minimise the need to go to the IMF and must face rigorous austerity measures. Second, to manage the exchange rate especially in periods of significant inflows that could otherwise cause currency appreciation and affect export competitiveness. This operates through open market operations of the central bank, through buying or selling foreign currency depending on the state of the market. Central banks in Asia have frequently engaged in this, especially to curb exchange rate appreciation, which necessarily means the accumulation of forex reserves. It is worth noting that in this case, reserve accumulation is the result of open market operations of the central bank, in the attempt to prevent exchange rate appreciation resulting from capital inflows or current account surpluses, so lack of appreciation or slight depreciation are desired outcomes. It is also important to bear in mind that, unlike many other developing countries, these countries were not major net external debtors, though gross external debts are large and increasing. Therefore, reserve accumulation is a *response* to financial fragility, not a cause. It is

a form of self-insurance for both current and capital account changes (in addition to preventing unwanted currency appreciation), albeit an extremely expensive form.

However, both of these goals —of self-insurance and managing exchange rate changes— have not really been fully served by this forex reserve accumulation, because the nature of financial holdings and financial flows has altered in ways that render this less effective. At the same time, it has also been very costly because returns on holding such reserves are very low, while capital inflows command much higher rates of return that must be paid out.

To begin with, there have been major changes in both financial structures and asset ownership in Asian emerging economies, which mean that the earlier indicators of the required levels of forex holdings may not be so applicable. Akyuz (2017) has shown how there has been a shift towards much greater foreign presence in domestic equity and debt markets, including bond markets. A growing proportion of sovereign bonds are held by foreigners, including bonds issued in domestic currency and subject to local jurisdiction. It is common for policymakers to believe that this avoids the currency and maturity mismatches that were so crucial in leading up to sovereign debt crises in the past. But this need not be so. Especially with bond holding by foreign residents, there is much greater susceptibility to shocks like interest rate changes, and sudden sales of bonds by non-residents (even those denominated in the domestic currency) can result in major currency depreciation. A floating exchange rate can actually add to problems in such a situation. Therefore, ownership of debt (resident/non-resident) is a key indicator of vulnerability, with associated implications for bailouts and debt restructuring. It has been noted that one domestic debt across develop Asia is held by foreign residents, and this is a phenomenon that has been noted across emerging markets generally (Casanova et al 2021) where the debt is also much more in the form of portfolio debt (bonds) rather than external commercial borrowing.<sup>3</sup>

This naturally alters the notion of reserve adequacy because it would no longer be enough to have enough reserves to cover short-term foreign debt or even total foreign debt if local currency debt can also be quickly sold by foreign residents anxious to exit that market. In extreme cases, no level of foreign exchange reserves would be enough to stem the capital flight or prevent currency instability. At the same time, such holding of reserves is extremely expensive, because these reserves are typically held in low-yielding assets and safe securities like US Treasury Bills, which have provided very low and decreasing rates of interest. This adds further to the more general problem of “sizeable wealth transfers between emerging and advanced economies. They have also resulted in significant

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<sup>3</sup> Detailed data on ownership of debt in these countries were not available to this author.



income transfers in view of negative yield differentials between their gross external assets and liabilities.” (Akyuz 2021). Indeed, this is starkly evident for these four countries, and reflects both official seignorage losses because of reserve holding and differences in returns on other assets, including equities, held by private agents. Figure V.3 provides some indication of the extent of such losses, according to calculations by UNCTAD (2019).

It is worth examining the Indian case in more detail, since it is the one among these four countries that has had the largest net capital inflow over the recent period. Akyuz (2021) estimates that between 2000 and 2016, gross foreign assets (claims that Indian residents have on non-residents in foreign currency) increased from 12.2 per cent of GDP to 23.3 per cent, while gross foreign liabilities (claims that foreign residents have on Indian residents in foreign currency) increased much more, more 20.2 per cent to 49.1 per cent of GDP. As a result, the net foreign asset position of India deteriorated from -17.0 per cent of GDP to -25.8 per cent over this period.

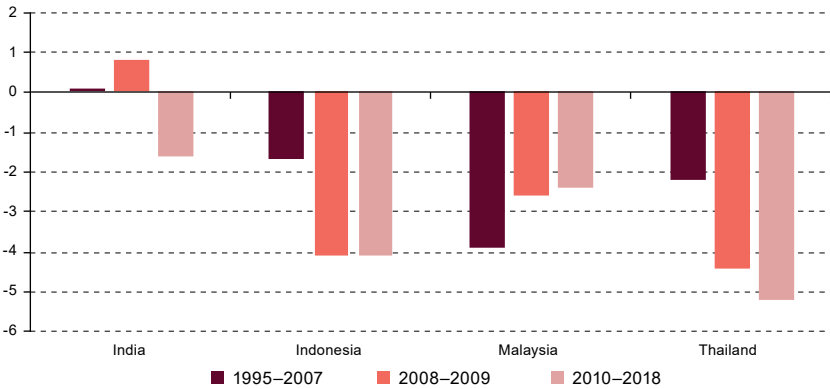
It could be argued that this is reflective of India attracting more foreign capital into the country, which would benefit domestic investment. But in the Indian case, investment rates have been falling especially since 2012. Also, the returns on assets have been significantly lower than the returns that foreign residents get on India’s liabilities. Over the period, this loss on account of different rates of return amounted to as much as 5 per cent of 2016 GDP —a huge and unnecessary loss, that deprived the Indian economy of much-needed resources for its own development.

This differential in rates of return is present across many types of international investment and credit. But one major reason for the difference overall is that, even when it seeks to attract foreign investment inflows, the Government of India and the Reserve Bank of India have been unwilling to enable domestic investment to increase commensurately, and instead effectively try to “save” the inflows by adding to foreign exchange reserves. Figure V.4 shows how significant the build-up of foreign exchange reserves was in the years leading up to the Global Financial Crisis of 2008, and have once emerged again as significant in the years after 2013. In effect, in recent years the increase in forex reserves has almost counterbalanced the net capital inflows.

This involves three contradictions. First, the capital inflows are not being used to add to domestic investment. Second, the increase in forex reserves that the Indian government sees as an indication of the success of its macroeconomic management, are actually “borrowed”, and do not represent a strength but a rather serious weakness, because they could easily decline rapidly if the net inflows are reversed. Third, there is significant downward movement of “primary income” which dominantly includes investment income, which has been significantly and increasingly negative.

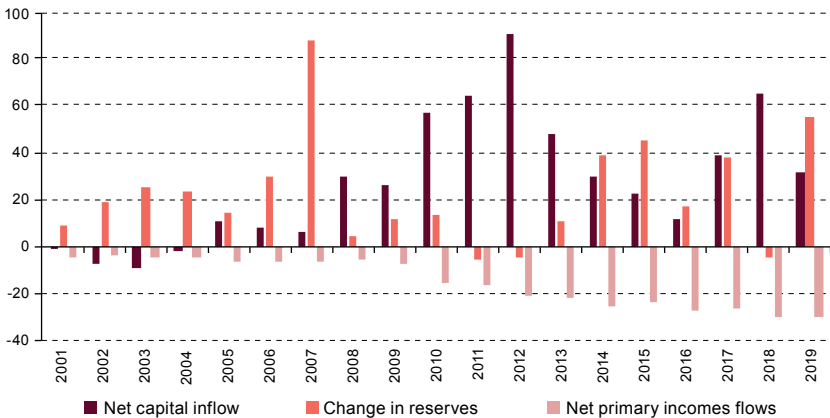
Figure V.8 shows that of the various types of capital flow, portfolio flows have been the most volatile. However, in recent years, both “other investment” (which includes investment in bond markets) and debt flows have also been very volatile, even turning negative in some years. Of course, net flows tend to mask the larger gross flows. For example, figure V.9 suggests that net inflows of direct investment have been less volatile. However, this results from the difference between gross inflows and outflows of such investment shown in figure V.6, whereby “net acquisition of assets” constitutes outward direct investment, and “net incurrence of liabilities” refers to inward direct investment. It is evident that both have been quite volatile, so the net figure provides a misleading picture of greater stability.

**Figure V.6**  
**Net yields on gross external assets minus liabilities**



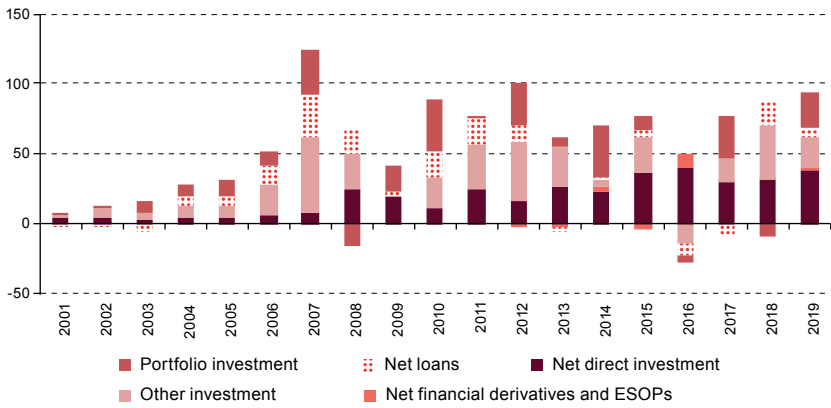
Source: UNCTAD Trade and Development Report 2019.

**Figure V.7**  
**India. Net capital flows, change in forex reserves and primary income outflows (US\$ billion)**



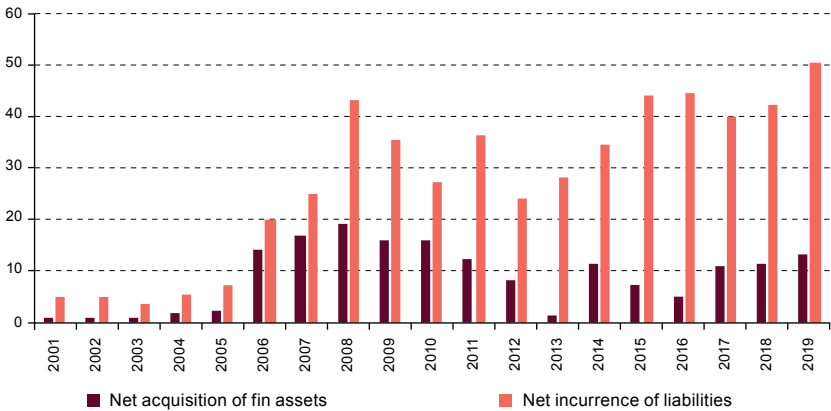
Source: IMF BPM6 Manual online, 2021.

**Figure V.8**  
**India. Composition of net foreign capital flows**  
*(US\$ billion)*



Source: IMF BPM6 Manual online, 2021.

**Figure V.9**  
**India. Direct investment inflows and outflows**  
*(US\$ billion)*



Source: IMF BPM6 Manual online, 2021.

The Indian example points to the basic question: if the economy is not going to “use” the foreign financial flows that enter the country to increase domestic investment, and if allowing such inflows and outflows by residents turns out to be so expensive for the economy, then what is the point of opening the capital account? What does it do for the economy other than increase external and financial fragility and cause significant income losses because of differing rates of return on assets and liabilities?

The other question, pertinent for this paper, is what can be done about this in the current global context. Specifically, which measures can be adopted to reduce the volatility of cross-border flows and associated currency instability, and to prevent or reduce the spillover effects in domestic financial markets. In order to examine the possibilities, I consider what measures were attempted by these countries in the recent period, specifically to cope with instabilities arising from external economic processes, such as the Global Financial Crisis of 2008-09, the increase in capital flows during the period of easy money thereafter and the taper tantrum of 2013.

### **C. Specific macroprudential measures**

The four countries here have experienced divergent patterns with respect to net capital inflows, which in turn has implications for the types of policy intervention required. The previous section showed that all four countries have had very high rates of gross capital inflow, which increased over the 2010s (figure V.1) as the globally footloose capital that benefited from the monetary expansions and low interest rates of the advanced economies sought other pastures with higher returns. Figure V.3 showed how this was associated in all these countries with high and increasing losses resulting from differing rates of return of foreign assets and liabilities. Crucially, however, only two of these countries were recipients of significant net capital inflows over even some of this period: India from 2007 and Indonesia after 2011. By contrast, Malaysia, and Thailand (both countries running current account surpluses) received high gross inflows but also had very large outflows, to the extent that they were sometimes even net capital exporters.

Further, these annual figures do not capture the dramatic volatility evident from quarterly or monthly indicators, which were particularly marked in certain periods such as in Oct-Dec 2008 after the collapse of Lehmann Brothers and the taper tantrum in the middle months of 2013. Individual economies also faced sharp volatility in certain periods because of changing investor perceptions resulting from domestic economic processes and policies. These differences across countries should be borne in mind when considering some macroprudential measures that have been adopted by these countries in response to specific challenges. This paper does not consider macroprudential measures designed to contain internal financial risks, such as limiting credit supply, by imposing lending rate ceilings, leverage caps, reserve requirements, credit growth limits, exposure limits, and levy on noncore liabilities as well as sectoral limits and/or regulating demand for credit through the loan-to-value ratios, debt-service-to-income ratios and tax policies and incentives. Rather, the focus is on risks coming from financial integration with external and global markets and attempts to mitigate or reduce such risks through various

measures. These have become particularly important in past decades as so many emerging market economies in Asia are affected by global economic forces, due to greater financial liberalisation since the 1990s.

In the context of deregulated capital account flows, all these countries variously applied different macroprudential measures, mostly driven by the realisation that foreign currency loans expose unhedged borrowers to foreign exchange risks, and capital flows can additionally create undesired exchange rate pressures in both directions. Broadly, these included the following sets of measures:

- Limits on foreign exchange (forex) positions, such as limits on net or gross open forex positions, limits on forex exposures and funding, and currency mismatch regulations.
- Reserve requirements (in both domestic and foreign currency) for macroprudential purposes, differentiated by currency.
- Measures taken to mitigate risks from global and domestic systemically important financial institutions (SIFIs), including capital and liquidity surcharges.

While these four countries adopted all these measures to different degrees at different times, a blow-by-blow account of what each country did in each period is not provided here. Rather, the attempt is to consider specific macroprudential measures directed to particular goals, and assess the degree to which they were successful, both in that period and over time. In Thailand, the specific aim of preventing excessive baht appreciation during periods of capital inflow was prominent especially in two episodes. In Indonesia, the use of macroprudential measures to curb speculative activity leading to exchange rate volatility was specifically directed to controlling derivative markets. In Malaysia, the attempt to manage portfolio capital flows (in both equity and bond markets) was evident. In India, prudential measures were imposed and relaxed according to the movement of cross-border flows, with reserve ratios being raised during periods of higher inflows and reduced when outflows were more evident.

## **1. Attempting to prevent unwanted currency appreciation in Thailand**

Thailand, like Malaysia, ran current surpluses over much of the period since 2000, and received very significant gross capital inflows. As a result, there were pressures for exchange rate appreciation that would have affected trade competitiveness. The central bank sought to control this through various measures, including open market operations to stabilise the external value of the baht, enabling more capital outflows, as

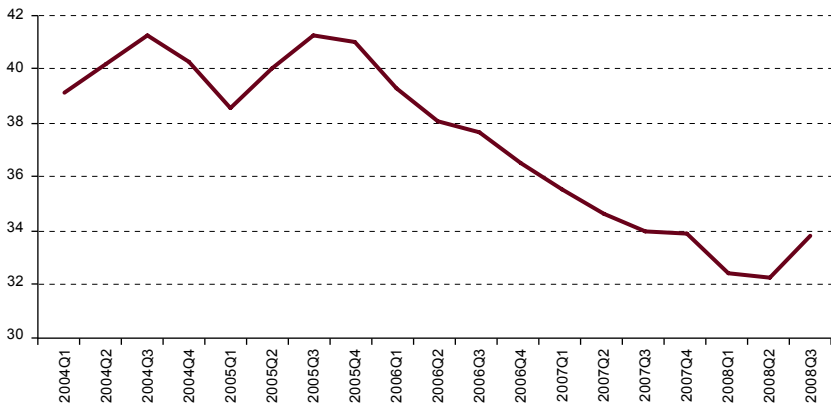
well as trying to curb some more speculative inflows of “hot money” or carry trade trying to benefit from interest rate differentials. In particular, there were periodic surges in capital inflows that threatened rapid and destabilising currency appreciation.

One such episode was over 2006-08, which created significant upward pressure on the baht, which in turn affected export competitiveness. As more and more foreign resources poured into short-term fixed income instruments (mostly into equity-based securities) with the incentive of higher yields and in anticipation of further baht appreciation, various measures were attempted at first primarily to curb currency speculation (Jongwanich and Kohpaiboon 2012). These included imposing limits on the daily outstanding baht balances of non-residents, prohibiting transactions involving baht lending or selling to non-residents without evidence of underlying trade or investment and imposing holding periods of at least three months. However, the volatility in the forex markets continued, as other means of baht speculation emerged, and the baht continued to strengthen. Finally, in December 2006, the Bank of Thailand implemented the Unremunerated Reserve Requirement (URR) that required 30 per cent of funds to be held without interest for a year, for certain types of investment that were seen to be more amenable for use by speculators. These included new inward investments in the form of foreign loans, fixed income instruments, mutual funds, property funds, currency swaps, and non-resident baht accounts without proofs of genuine underlying trade and long-term investment. The funds had to be kept in Special Non-resident Baht Accounts for Debt Securities and Unit Trusts (SNDs), allowed only for settlements related to investment in debt securities and unit trusts. Those investors seeking to withdraw money within a year would receive only two-thirds of the withheld reserve. This applied only to investments above \$20,000, and inflows related to trades in goods and services, foreign direct investment, and equity investment in the stock market were exempt.

These market-based measures involved a relatively small penalty even on speculative flows: one estimate was that investors’ profits would be trimmed by around 1.5 per cent as a result of the introduction of the reserve requirement measure, which was a small part of the 20 per cent return they were making. The measure was not applicable to transactions completed before 19 December 2006 and therefore was expected only to deter new speculative investors. In the event, however, there was a collapse in stock prices (which fell by 15 per cent in a single day) as some foreign investors immediately moved to dump their shares, causing the index to lose most of the gains made in the previous year. Concern over the impact of this on domestic asset markets eventually forced the government to partial retreat by limiting its intervention. Over time, the URR was gradually relaxed and finally lifted in March 2008.

It has been suggested that this measure operated to stabilise the baht over subsequent months and reduced the absolute size of such inflows. While this may be true, it is impossible to assess the extent to which this is true given the lack of the counterfactual, that is what would have happened to the inflows and to the value of the baht if this measure had not been imposed. In any case, as figure V.7 indicates, the baht continued to appreciate every quarter until notwithstanding a brief halt in the third quarter of 2007. It appears that the impact on the exchange rate was muted until early 2008, when the continuous appreciation vis-à-vis the US dollar was finally reversed at least for some time.

Figure V.10  
BAHT per US dollar. Quarterly rates



Source: IMF BPM6 Manual online, 2021.

Again in 2010, when the Thai government sought to impose a set of market-based controls to curtail a surge in capital inflows, this time to address the rapid build-up of external debt that was once again putting upward pressure on the baht. Most of this was into the bond market, which witnessed a dramatic increase in foreign investment, from \$730 million invested in Thai bonds by foreigners in 2009 to \$4 billion in just the first nine months of 2010. To limit this surge, in October 2010, the government imposed a 15 per cent tax on interest payment and capital gains on all sovereign debt instruments, including bonds issued by public sector companies. This was mainly oriented towards stemming speculation in debt instruments that relied on capital gains in both domestic and forex markets; the external debt was still a low share of GDP at well below 40 per cent.

However, both these episodes of significant market-based intervention did not generate greater stability in capital flows. Indeed, some restrictions had the effect of causing to switch from the newly restricted

asset classes to others that did not come under these controls (Jongwanich and Kohpaiboon 2012). This was apparently true both in 2006-07 and in 2010. Meanwhile, the central bank also had to continue with very substantial engagement in open market operations despite the various restrictions. In general, over this period, it appears that exchange rate management in terms of preventing appreciation) ultimately relied upon capital account liberalization that enabled domestic residents to purchase foreign financial assets and thereby encouraged outflows that would match or come close to the large inflows. It has already been noted in the first section that this is both risky and expensive as a strategy of exchange rate management: it exposes the domestic economy to sudden shocks resulting from capital movements and generates substantial losses because of differences in rates of return on domestic and foreign assets. However, that combination of measures did operate (at some cost) to stabilise the exchange rate and prevent extreme volatility of the Thai baht, even as the currency continued to appreciate relative to the US dollar for most of the period after 2004.

## **2. Dealing with speculative activity in derivatives markets in Indonesia**

The emergence and growing importance of derivatives in financial markets in developing Asia has created a particular source of vulnerability and made it harder to ensure stability and reduced vulnerability to sudden changes and crises. Several measures in Indonesia have been focussed on derivatives markets, both onshore and offshore, specifically regarding currency trading. The offshore rupiah trade has been a particular focus of policy attention. In 2001, the central bank (bank Indonesia, or BI) prohibited rupiah transfers by Indonesian banks to non-residents and emphasised that any transfers that were not supported by underlying real transactions within the Indonesian economy would not be allowed. In addition, restrictions were imposed on derivatives transactions not supported by underlying real transactions, and the maximum limit for derivatives transactions involving forex sales by domestic banks to non-residents was reduced from USD 5 million to USD 3 million. The attempt was to limit speculation in the rupiah through these routes.

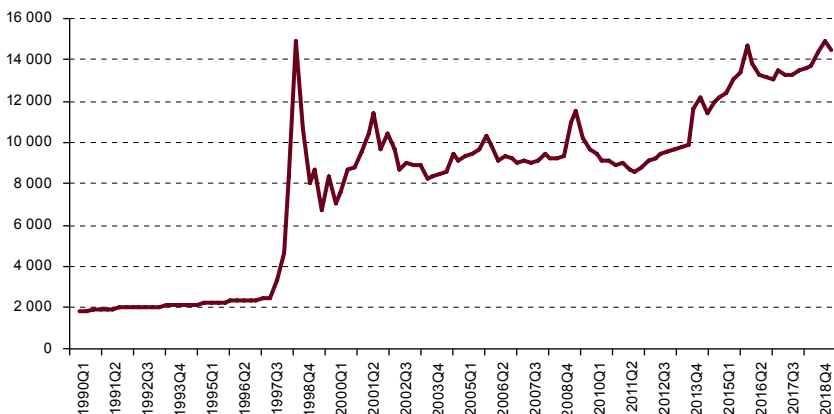
In 2004, during a period of sudden increase in inflows of both external commercial credit and direct investment, the BI introduced new prudential regulations on net open foreign exchange positions of commercial banks, which restricted their ability to speculate in the swap market (Sengupta and Sengupta 2015). In addition, bank deposit accounts in rupiah and forex were subjected to higher reserve requirements and in early 2005, short-term borrowings by banks were limited to 20 per cent of bank capital. Nevertheless, there was a sudden capital outflow in mid-2005, which indicated that these regulations had not been sufficient to



prevent volatility and forex shortage. As a result, further measures were imposed from mid-July 2005 (Titiheruw and Atje 2008). Forex derivative transactions against the rupiah were limited to \$1 million and there was a similar ceiling on dollar purchases for forward transactions and swaps. A 3-month minimum investment hedging period was imposed for forex transactions. This had an immediate impact: the volume of swap transactions fell to half in the second half of 2005 compared to the first half. However, this still proved insufficient to stem the outward flow of capital, necessitating further measures were in August. The statutory reserve requirements of banks were increased; derivative and hedging swap transactions were further regulated; and banks foreign exchange exposure was limited by setting a limit of 20 per cent on both the balance sheet net Open Position and the overall Net Open Position. Participation in the Bilateral Swap Arrangement (arising out of the Chiang Mai Initiative of 2000) was also increased. These were associated with some stabilisation of the foreign currency markets over the following years.

However, as indicated by figure V.9, these measures did not stem the medium-term slide in the rupiah or the continued speculation in currency markets through other means. Indeed, currency depreciation accelerated after 2010, and was associated with significant volatility in forex markets. The BI had been emphasising that all derivatives contracts must be supported by underlying real activity within the Indonesian economy, emphasising the “hedging” function of derivatives markets. However, actual activity in derivatives markets, especially sudden surges of buying and selling, suggest that this requirement was difficult to enforce in practice, or at the very least reasonably easy for banks and other financial players to circumvent.

**Figure V.11**  
**Rupiah per US Dollar. Quarter averages**



After the formal adoption of an “inflation targeting” monetary policy regime in 2009, the BI had allowed commercial banks to freely set their exchange rates and commissions for transactions with their clients, although transactions above a defined threshold were subject to verification of supporting documents. Non-banks (mainly money changers) were authorised to conduct money exchange activities by purchasing and selling foreign currencies (banknotes) and purchase traveller’s cheques but prohibited from conducting fund transfers or money remittances. However, all forex transactions had to be settled in full. In January 2011, BI revoked the facility that provided foreign exchange liquidity to domestic companies by conducting spot transactions through commercial banks in connection with economic activities in Indonesia. However, the downward slide in the rupiah continued, and was accentuated during the “taper tantrum” of 2013, when the rupiah-dollar rate depreciated by nearly a quarter of its value between the second and fourth quarters of 2013. In late 2015, the threshold amount to provide underlying transaction for foreign exchange spot purchase, which was earlier US \$100,000, was increased to US\$25,000 equivalent a month. All forward transactions were required to be supported by underlying documents.

Over the past decade, several other measures were brought in to manage banks’ foreign currency risks. Limits were imposed on net open positions of banks, and there was also a maximum limit on short term offshore borrowing by banks, of 25 per cent of their capital. Banks seeking offshore borrowing with maturity beyond one year must seek clearance from Bank Indonesia. Since much of the concern on extremely comes from non-financial corporates, in 2014 Bank Indonesia issued a new rule requiring them to have (i) a currency hedging ratio of a minimum 25 per cent of their net external debt due within three and six months; (ii) a liquidity ratio (including the current foreign assets in the hedging ratio) of a minimum 50 per cent of their net external debt due within three and six months; and (iii) a minimum credit rating of one notch below investment grade (Warijyo 2021).

Ever since the Asian Financial Crisis, Indonesian authorities have aimed at limit in the use of derivatives to hedging purposes. As a result, the restrictions imposed on OTC derivatives transactions and products has created a shallow OTC derivatives market with limited market participants and hedging instruments. There have been some attempts to develop an onshore derivatives market. Therefore, while Indonesia’s OTC derivatives market is relatively small, it has been growing steadily in recent years. The notional amount outstanding of OTC derivatives in Indonesia reached USD 81 billion in 2019 (0.7 per cent of GDP) and annual turnover reached USD 559 billion (51 per cent of GDP). This and subsequent data from Financial Stability Board 2021. The four classes of derivatives that

are currently traded in Indonesia are forex, interest rate, commodity, and equity derivatives. Indonesia has no credit derivatives market. Almost all derivatives market activity is conducted OTC in the forex, interest rate and commodity classes, and dominated by forex derivatives, which accounted for over 97 per cent of the 2019 turnover of the Indonesian OTC derivatives market. Domestic banks (including local subsidiaries of foreign banking groups and local branches of foreign banks) were the most active derivatives market participants in OTC forex and interest rate derivatives (52% market share) in 2019, followed by foreign clients (31%, including overseas branches and subsidiaries of Indonesian banks and overseas offices of Indonesian corporates) and domestic non-bank clients (17%, mostly non-financial corporates).

While macroprudential measures for linking derivatives activity only to hedging for underlying real transactions as far as possible have reduced the volatility of currency movements, they have not removed it altogether. More recently, currency volatility during the pandemic period suggests that derivatives markets are likely to have continued to play a role in adding to volatility, despite continued attempts to ensure that contracts in these markets are backed by real economic transactions within the economy.

### **3. Controlling and liberalising portfolio flows in Malaysia**

The experience of the Asian crisis had led to Malaysia becoming one of the first countries to actively introduce controls on capital outflows, specifically portfolio flows, after a long period of open capital accounts and liberalised rules for such flows. As a result, in 2000, there were several controls on both inflows and outflows of capital. Prior approval for all investments abroad exceeding RM 10,000 in any form required approval, for both direct investment and portfolio flows and for credit. Prior permission was required for the purchase of derivatives required prior permission, for any spot or forward contract or interest rate futures not transacted at a futures exchange in Malaysia. Similarly, prior approval was also required for the issue of securities by residents and for accessing credit of more than RM 5 million from non-residents. There was an explicit condition that issue proceeds or the borrowed amounts should be used to finance productive activities in Malaysia that generate foreign exchange earnings or save on the future outflow of foreign exchange. For non-residents, the earlier ban on repatriation on securities was replaced in 1999 by exit taxes. At first both capital and capital gains were taxed at 30 per cent if repatriated within 12 months and 10 per cent after that; subsequently from late 1999, only capital gains and profit repatriation were taxed at 10 per cent. Prior approval was required to buy or sell forward ringgit in forex markets, and non-residents were allowed to extend credit only in foreign exchange, rather than domestic currency.

However, from 2001 onwards, these controls were progressively relaxed in several important areas. This relaxation effectively reduced the ability of the government and the central bank to manage the destabilising impact of capital flows. They were associated with very substantial outflows of capital as well, with the effect that Malaysia became a net exporter of capital to the detriment of its own domestic investment and development project. Macroprudential controls proved to be relatively ineffective in dealing with this.

In February 2001, the 10 per cent levy imposed on profits arising from portfolio investments repatriated within one year of realisation was abolished. In 2002, the requirement of prior approval beyond the limit of RM 10,000 for investment in foreign securities was removed. In 2003, unit trust guidelines were revised to include investment in foreign securities traded in or under the rules of a foreign market with approval from relevant authorities and not only listed on the foreign stock exchange. The issuance of ringgit bonds in Malaysia by MDBs and foreign MNCs was permitted in 2004. Foreign financial asset purchases were further liberalised in 2005. The limit on investments abroad for investment-linked funds offered by resident insurers and unit trust management companies was increased to 30 per cent from 10 per cent of the total NAV of the funds and up to 5 per cent of their margins of solvency or total assets. Resident fund and asset management companies were allowed to invest abroad up to 100 per cent of funds managed on behalf of non-residents and resident clients with no domestic ringgit credit facilities. Residents with domestic ringgit credit facilities were allowed to invest abroad any amount of own foreign currency held onshore or offshore, up to RM 10 million from a foreign credit facility, or ringgit converted to foreign currency (subject to limits of RM 10 million per year for companies and RM 100,000 per year for individuals). In 2006, the limit on investment by resident companies in foreign assets in foreign currency using domestically borrowed funds was raised from RM 10 million to RM 50 million, and inward investment by non-residents was permitted up to RM 250,000. In 2008, the limits on investment in non-resident property trust funds and unit trust funds were lifted. In 2013, residents were allowed to issue any amount of foreign currency securities, subject to the prevailing rules on borrowing from non-residents. Also, non-residents were free to issue foreign-currency-denominated securities in Malaysia, even though their issuance of ringgit-denominated securities still required the approval of Bank Negara Malaysia. These measures were associated with the significant increase in foreign assets evident from figure V.1.

Both external lending and borrowing rules began to be eased from 2002 onwards. Banks were permitted to extend credit to non-residents to finance projects in Malaysia, up to RM 5 million. In 2003, they were allowed to extend overdraft facilities (up to RM 500,000) to non-residents, providing that

such credit was covered by fixed deposits in the bank. The limit on ringgit loans by banks to non-residents for any purpose was raised to RM 10 million; meanwhile both banks and nonbanks were allowed to lend to non-residents for real estate and construction activity in Malaysia. In 2005, the limits on foreign currency credit were increased to RM 50 million for companies and RM 10 million for resident individuals. The limit on borrowing abroad by financial institutions other than banks was increased to RM 100 million from RM 50 million in 2006. In 2007, the limit on foreign currency credit extended to residents by non-residents was raised to RM 10 million. In 2008, while the Global Financial Crisis was ongoing, resident individuals and companies were allowed to borrow in ringgit up to RM 1 million from non-residents for use in Malaysia. Licensed onshore banks and other residents were allowed to lend any amount in ringgit to non-residents to finance activities in the real sector in Malaysia. In 2010, resident companies were allowed to borrow any amount in foreign currency from non-resident nonbank companies.

In addition, foreign investment in the domestic financial sector was opened up in 2008: non-residents were allowed to participate in the equity of commercial banks up to 30 per cent, and of investment banks and insurance companies up to 70 per cent, and beyond that on a case-by-case for those companies that could facilitate “consolidation and rationalisation of the insurance industry”. Controls on outward investment by resident companies were also eased: those that could meet the prudential requirements stipulated by the Bank Negara Malaysia could undertake any amount of direct investment abroad, without limit. Presumably these were part of the efforts to revive investment and growth during the 2008-09 crisis. However, they led to the mismatch of returns that has been noted earlier in this paper. The liberalisation was stretched even further in 2012, when residents were allowed to convert existing ringgit debt obligations to foreign currency debt obligations and vice versa.

In this much more liberalised context, despite the explicit existence of a dynamic macro-prudential policy framework adopted by the central bank, macroprudential measures related to capital flows became much more difficult to implement and could not fully prevent the build-up of systemic vulnerabilities in the domestic economy in response to changes in the global economy. In the real estate and housing sector, periodic measures of tightening or loosening were designed to moderate credit flows and reduce speculation that could create asset price inflation. For example, in 2016 domestic financial institutions were asked to maintain countercyclical capital buffers to reduce their vulnerabilities to global instabilities and crises. While these measures probably reduced extreme movements in these asset markets to some extent, they were not successful in addressing the more fundamental problem of net capital outflows that were enabled by the liberalisation measures of the previous decade.

#### **4. Using incentives rather than controls to manage capital flows in India**

The Indian strategy for coping with vulnerabilities arising from the external sector in the period under consideration was largely in terms of shifting away from the administrative controls that had marked capital account management until the early 1990s. This shift was not always linear and progressive; there were several initial measures that were then stalled or even halted in the face of changing external circumstances such as the Southeast Asian crisis. However, the general movement was in the direction of continuous liberalisation, which meant that the focus had to shift towards the creation of incentive mechanisms for private actors. As a result, along with strategies aimed towards mitigating risks arising from forex markets or potentially excessive foreign currency exposures, various regulations regarding adequate and incremental provisioning and capital requirements have periodically been introduced and then altered as the circumstances changed.

These measures have been mixed in terms of the degree of success. The efforts to move away from predominantly short-term inflows to long-term investment flows have largely been unsuccessful, which means that the Indian economy remains exposed to exchange rate volatility, with attendant consequences. In addition, the more fundamental question raised in Section III, of what has been the benefit of opening the capital account if it has not enabled more domestic investment, remains. However, within this broader context, the use of macroprudential measures probably did contribute to some resilience in domestic financial markets, which in turn could have been a factor in enabling relatively speedy recovery from the various episodes of crisis/instability considered here. It is a different matter that this financial market recovery did not lead to recovery in real investment that would expand output and employment.

India's central bank (the Reserve Bank of India, or RBI) has used cash reserve requirements as an important tool for regulating domestic credit volumes that could change because of capital inflows/outflows. The Statutory Liquidity Ratio (SLR, the requirement for banks to hold a certain proportion of government securities) has also been one of the main instruments. For example, during the Global Financial Crisis in the last quarter of 2008, when there was significant capital outflow from India along with other emerging markets, the cash reserve ratio was brought down from 9 per cent to 5 per cent by January 2009, while the SLR was reduced by one percentage point from 25 to 24 per cent.

Similarly, from 2012, as the trade balance deteriorated, putting further pressure on the current account, and investment rates declined, the RBI sought to adopt an easy monetary stance, enhancing credit creation capacity

for banks and other financial institutions. In January 2012, the reserve requirement ratio was reduced from 2 per cent to 1 per cent. Subsequently, the cash reserve ratio was reduced gradually from 5.5 per cent in March 2012 to 4 per cent in February 2013. Thereafter, during after the “taper tantrum” of 2013 and resulting exchange rate volatility because of portfolio capital outflows leading to sudden depreciation, the strategy was that of further easing conditions of foreign capital entry, rather than relying on more controlled flows. For example, loan-to-value (LTV) ratios were reduced for some sectors (more on such measures below). In April 2014, external commercial borrowing was further liberalised, so as to expand the eligible borrowers to include housing finance companies regulated by the National Housing Bank, post trusts, and companies engaged in the business of maintenance, repair and overhaul and freight forwarding (in INR). There was gradual liberalization of the capital requirements attached to individual housing loans through reduction of risk weights as well as reductions in the loan-to value ratio. At the same time, these were accompanied by measures to contain financial excesses, such as lowering the maximum debt service-to-income ratio, and capital requirements and provisioning on un-hedged forex exposures were increased.

The taper tantrum episode of 2013 exposed the fragilities associated with the forex position of banks. Therefore, all banks were required to apply a capital charge of 9 per cent on the open forex position limit or the actual position, whichever was higher. Nevertheless, the extent of unhedged foreign currency exposures of the entities continued to be significant and increased the probability of default in times of high currency volatility. In consequence, in 2014 there were further incremental provisioning and capital requirements for bank exposures to entities with unhedged forex exposure.

Some of these regulations were then eased in 2015-16. For example, to provide more flexibility to market participants in managing their currency risk in the OTC market and for making hedging easier, it was decided to increase the limit for resident entities for hedging their foreign exchange exposure in the OTC market from US\$ 250,000 to US\$ one million, without the production of any underlying documents, subject to submission of a simple declaration. Overall, there was a broad loosening of external debt and forex futures markets, largely in the attempt to continue to attract capital inflows, even if they were essentially short-term in orientation. Within this broader liberalisation, there were some (albeit limited) attempts to contain risk for sectors like infrastructure that do not generate any foreign exchange in their activities. For example, currency risk exposure was not permitted for infrastructure companies and Non-Bank Finance companies’ foreign currency external commercial borrowings raised with minimum average maturity of less than 10 years, with a requirement to undertake 100 per cent hedging.

These macroprudential measures operate to contain extreme systemic risk within the Indian financial sector. However, they did little to resolve the more fundamental macroeconomic dilemma identified in this paper—that of the inability to benefit from greater integration in global capital markets through increased domestic investment rates. They also did next to nothing to resolve the concern about the seignorage costs the economy of such involvement, which were identified in Section III.

## 5. Directing credit flows: Loan To Value ratios

Loan to value (LTV) ratios have been seen as an indicator of the use of macroprudential measures, but in some studies the aggregate LTV in any country in any given year has been taken as the proxy for this (see, for example, Alam et al 2019). However, this is not a very useful indicator, at least for developing Asia, because the evidence suggests that central banks have used sector-specific LTV to stem over-investment in particular activities (most of all housing and other real estate, and to a lesser extent, construction) so as to prevent or reduce speculative bubbles. Since these can be more specific than broader measures like reserve requirements for banks, they can operate to reduce some bubbles, particularly in periods when exchange rate changes encourage private investment shifts to non-tradeable activities. Quite often these have been used in conjunction with measures like changes in reserve requirements.

Throughout this period, there were several measures adopted by central banks in these countries aimed at mitigating excessive investment and speculative activity in the property market and to contain substantial increases in property prices in response to vulnerabilities arising from external shocks. In Indonesia, it was recognised that upward pressure on the domestic currency and capital inflows could lead to diversion of short-term capital to the non-tradeable sector. To prevent speculation in the real estate sector, in June 2012, the central bank introduced the maximum LTV ratio of 70 per cent for residential real estate loans and at least 50 per cent for others. It also raised the minimum down payment on motor vehicles. To manage procyclicality in liquidity, Bank Indonesia combined LTV and reserve requirements and loan-to-funding (LFR) linked reserve requirements: banks with an LFR below 78 per cent or higher than 92 per cent have been subjected to higher reserve requirements.

In India, from June 2013, the RW for individual housing loans up to Rs 7.5 million was announced to be 50% and above Rs 7.5 million it was 75%. Also, the LTV ratio for all new individual housing loans up to Rs 2.0 million was tied to not exceed 90%; above Rs 2.0 million and up to Rs 7.5 million it was to not exceed 80%; and above Rs 7.5 million not exceed 75%.



In Malaysia, similar moves were directed towards containing a real estate bubble consequent upon capital inflows. From January 2010, the real property gains tax of 5 per cent for disposal within 5 years. Later in that year, the central bank introduced the maximum LTV ratio of 70 per cent for third and subsequent mortgages. Higher risk weights were assigned for residential mortgages. New restrictions were imposed on holding of as well as issue of credit cards, limiting credit off-take and tying it to individual income levels, with more stringent eligibility requirements for credit cards. In November 2011, the maximum tenure of loans for the purchase of motor vehicles was reduced to nine years and maximum LTV ratio for all housing loans taken by non-individuals was made 60 per cent in December 2011. In January 2012, the minimum price for house purchases by foreigners was doubled from RM 250,000 to RM 500,000 and the real property gains tax was raised to 10 per cent (and again to 15 per cent in 2013). Non-residents faced higher rates. These credit-related macroprudential policy tightening had an immediate impact in controlling the housing price boom and a marginally significant effect on credit and leverage growth.

These measures appeared to have some success in curbing the greater excesses of speculative activity consequent upon the instabilities generated by capital inflow surges, but they could not entirely prevent often substantial changes in the relative prices of tradeable and non-tradeables within the economy. Once again, it appears that the most significant role in this was played by the fact the gross capital inflows were sought to be counterbalanced by gross outflows so as to limit changes in the exchange rate—a strategy fraught with risk and high costs for the economy, and furthermore once that has been associated with low or falling domestic investment rates.

#### **D. Macprudential strategies in the pandemic context**

The global inability to rein in finance even in the context of a unprecedented pandemic has had unfortunate consequences for developing countries. These consequences extend even to emerging markets that do not currently face problems like unpayable external debt and continue to receive significant capital inflows. These Asian countries considered here are clear examples of the constraints posed by unrestricted capital flows on domestic economic and financial stability and possibilities for economic recovery.

For example, there have been very stark differences across countries at different levels of development in the level of fiscal support governments have provided in the wake of the COVID-19 shock. According to the IMF (2021) additional spending and revenues foregone by all countries

put together between January 2020 and March 2021 amounted to \$9.93 trillion, of which \$7.98 trillion or 80 per cent was contributed by just the 10 advanced economies in the G20. The United States alone accounted for 54 per cent of the total. Even among the G20 advanced economies the divergence was sharp, with Japan, the second highest spender, accounting for just \$801 billion. Japan was followed not by an advanced economy but China with \$711 billion. As a result, the fiscal stimulus that can boost recovery is concentrated in the US and a few advanced economies. This obviously affects the future prospects of economic recovery as well.

In countries that are unconstrained by sovereign debt concerns and IMF conditionalities, the potential for capital flight plays a major role in limiting aggressive fiscal measures for economic recovery. Asian emerging markets are now so integrated in global capital markets that they are effectively completely dependent on the whims of global investors (who in turn are affected by monetary and fiscal policies of the advanced countries) and face massive changes in the volume of capital entering and exiting the country. There was a major flight of capital from emerging markets, including in Asia, in March 2020, but thereafter a recovery and a renewed surge from late 2020 onwards. Now the likelihood of significant expansion in the US and possible monetary tightening in future could well lead to another major outflow. In addition, there are further concerns that are likely to become even more evident during the ongoing global pandemic-induced crisis. De Bock et al (2020) have used a capital-flows-at-risk methodology to show that changes in global financial conditions tend to influence portfolio flows more during surges and reversals than in normal times. Unfortunately, stronger domestic “fundamentals” only help to mitigate outflows. This means that it is likely that the weaker growth outlook for emerging markets due to COVID-19 will worsen local currency flows, while global financial conditions and a stronger and faster recovery in advanced economies will affect hard currency flows.

It is evident from this brief consideration of macroprudential controls in several Asian emerging markets that, while they are certainly necessary, they are generally inadequate to deal with this most significant problem. There is no doubt that an approach that uses various macroprudential instruments that consider possible and systemic risks is superior to the standard inflation targeting approach that was commonly used by central banks across the world. But preventing extreme crises and trying to reduce instability, volatility and foreign exchange risks are not the only tasks of central banks or of monetary and financial policies more generally. Especially in developing countries, much more is required—most of all, in ensuring the availability of finance to further the development project, to assist fiscal policy in dealing with economic shocks and cycles and to deal with and mitigate climate change.

*Essentially, macroprudential controls cannot resolve the contradictions created by open capital accounts in emerging market developing economies. They can reduce systemic fragility in the financial sector in certain contexts, and possibly prevent the build-up of speculative bubbles in sectors like real estate for some periods. But even these impacts are limited, as discussed below. In addition, they cannot provide a route out of the need for excessive and overly expensive self-insurance in the form of accumulation of forex reserves; cannot prevent significant losses to the economy because of differential rates on return on external assets and liabilities; cannot ensure that gross inflows translate into net inflows of capital; cannot ensure that net inflows translate into increased domestic investment; cannot enable domestic investment in desired sectors; and cannot reduce the fear of financial market response that limits governments' ability to undertake adequate fiscal measures for economic recovery even in periods of crisis-induced downswings. In addition, in periods of severe crisis, they are at best reactive in terms of mitigating damage in domestic financial markets, and often unable to prevent this either. All these outcomes have become even more starkly evident in the period of the COVID-19 pandemic. As a result, they are relatively poor substitutes for more direct controls on ownership of domestic and foreign financial assets and regulations governing the nature and extent of capital flows in developing countries.*

There are several reasons for this. To begin with, private players in financial markets can typically evolve new strategies to circumvent particular regulations or use other instruments and different financial products that have slipped through the regulatory net. Since emerging markets now have fairly complex financial systems, with various different kinds of resident and non-resident holders of different financial assets, regulations become even more complicated. Many non-bank financial institutions are now active agents involved in cross-border capital flows but can bypass the regulations imposed on banks. Meanwhile, governments continue to feel constrained by the possibility of capital flight and potential downgrades by global credit rating agencies and curtail their own spending despite domestic economic collapse and the urgent needs of their own people. This is why it has been argued by Erten, Korinek and Ocampo (2020) that it is of "the utmost importance that developing and emerging economies have access to capital controls as part of the toolkit of policy measures at their disposal to lean against the externalities generated by international capital flows, both to maintain financial stability and to allow full policy space for aggregate demand management."

In such a context, it is imperative for Asian developing countries to draw on their past experience to develop new forms of macroprudential measures that are more appropriate to the contemporary situation, which would enable them to preserve some degree of financial stability, reduce

their vulnerability, and enable domestic policies for recovery of output and employment. This need is even more pressing because of the emerging challenges posed by climate change and the inevitable requirement for massive public expenditures for mitigation and adaptation. Therefore, in the absence of global institutions to rein in capital, it is essential for governments in emerging market economies to take a more direct, hands-on approach to managing capital flows and limiting any possible damaging or constraining effects on economic policy and domestic financial stability. Governments across the region need to take a more clear-headed look at the past experience as well as current conditions to assess the strategies that have actually worked in the past and bring about the necessary reforms in ownership patterns and regulatory structures for financial markets.

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## **Annex V.A1**

### **Comments on The Asian Experience by Jayati Gosh**

**Yilmaz Akyüz**

These comments were provided on an earlier version of this paper that dealt mostly with capital controls at a virtual workshop held in April 15-16 2021. The comments raise several important issues that apply to the chapter on macroprudential policies in Asia and are also very relevant for developing economies.

Jayati gives a very good account of capital flow regulations in several Asian countries, their evolution over time and adaptation and effectiveness during surges in inflows and outflows. It appears that market-friendly measures used to check these surges had limited success in influencing the size and composition of capital flows and stabilizing the exchange rate. This is broadly consistent with the literature. We had reached broadly the same conclusion in a similar meeting we had in UNCTAD some years ago on the effectiveness of control over surges in inflows, widely seen at the time as fighting a currency war.

In my comments on the issues at hand I would like to pose a forward-looking question: under the existing capital account regimes, rules, and regulations regarding capital flows, how vulnerable are these EMEs to a significant and extended deterioration of global financial conditions which many observers expect to happen? This is important because without identifying vulnerabilities we cannot discuss policies.

Generally, global financial conditions have been extremely benign for EMEs in the new millennium. Despite some ups and downs, they did not face sustained and generalized reversals of capital flows. The adverse impact of the GFC was short-lived because of aggressive monetary policy response by the US and Europe. This is also true for the impact of Covid in the early months of 2020. Again, the Taper Tantrum in 2013 or subsequent monetary policy shifts in the US did not result in sustained cutbacks.

As pointed out in the paper EMEs have received large capital inflows in the new millennium and many of them continue to do so. According to my calculations, in nominal terms 90 per cent of gross external assets and liabilities of G20 EMEs have been accumulated after 2000. There has been limited attempt to control inflows. On the contrary countries have been 2 inclined to liberalize outflows to fend off difficulties created by surges in inflows for exchange rate management. This is important since we know that without effective control over inflows in good times, it is very difficult to stem outflows when the tide turns.

## Policy shifts in EMEs

These structural changes resulted partly from policies to address certain problems faced in earlier crises. They are also discussed in the paper. To summarize they involved:

1. Shifting from debt to equity in external financing by liberalizing FDI regimes and opening stock markets on grounds that equity is more stable and less risky than debt.
2. Opening local bond and deposit markets, trying to borrow in local currency to pass the exchange rate risk to international lenders (Original Sin). This was also a main objective of the Asian bond initiative.
3. Opening the capital account for residents, allowing them to operate in international markets as investors and borrowers. Private outflows were allowed and even three encouraged at times of surges in inflows to avoid currency appreciations and cost of sterilization (South Africa and India at time of Venue Reddy, and Philippines).
4. Opening banking to foreigners to enhance resilience to external financial shocks.
5. Allowing deposit and credit dollarization (Indonesia, Philippines, Vietnam).

As a result of these policies global financial integration of EMEs has deepened not so much through expansion of cross-border lending and borrowing as through increased penetration of international financial capital in the credit, deposit, bond, equity, and property markets of EMEs. In the past non-residents lent to residents to finance their acquisition of assets in local markets. They still do that. But now they themselves enter the markets and acquire assets. This has had a strong impact on the structure of external balance sheets, notably gross external liabilities.

## Increased equity liabilities and vulnerability

1. Debt issued in international markets in forex is no longer the most important component of gross external liabilities of major EMEs (G20 EMEs). Equity liabilities have grown in importance relative to debt.
2. But a large part of FDI (as much as 40% in some years, according to UNCTAD) in EMEs is financed from local profits; no cross-border capital flows in forex are involved.

3. There is unprecedented foreign presence in equity markets; 40-60% vs 15-20% in AEs; local base is often shallow and prices highly susceptible to entry/exit of foreigners.
4. Significant valuation effects, capital gains/losses from changes in equity prices. In many EMEs capital gains account for a large part of foreign equity holdings. This increases external liabilities and volume of potential outflows without entry of new capital.

### Changing profile of external debt

1. Unprecedented presence of foreigners in local bonds markets and increase in the share of local currency in external debt. But these are not always included in debt figures; when Malaysia did in 2013, its external debt/GDP ratio rose from 30% to 60%.
2. Some EMEs local-currency sovereign debt is internationalized even more than US treasuries. EMEs bonds are held by fickle investors not by foreign CBs as reserves and hence more susceptible to speculative impulses. Significant loss of autonomy in controlling long-term rates.
3. Private external debt now exceeds sovereign debt by a wide margin and carries significant currency risk. A greater share of the private sector in external forex debt increases overall vulnerability since, unlike public debt, it tends to lead to debt deflation and puts downward pressures on the currency at times of BOP difficulties as unhedged debtors try to protect themselves to currency falls.
4. Increased private acquisition of foreign assets. However, unlike reserves, these provide little or no protection against BOP crises –private outflows are often one-way traffic, money going out in good times do not return when needed.
5. Shift from bank loans to bonds; external debt now more susceptible to conditions in international bond markets. They are also more difficult to renegotiate even with CACs.
6. Foreign bank share increased significantly; 50% in EMEs vs 20% in AEs. International banks shifted from cross border lending to local lending to EMEs through subsidiaries. These banks engage in regulatory arbitrage much more easily than local banks. As seen during the EZ crisis they can also act



as a conduit of financial instability in advanced economies, transmitting credit crunches from home to host countries, rather than insulating domestic credit markets from international financial shocks.

### **New sources of crises**

We are no longer in a world where the bulk of external liabilities of EMEs consist of forex debt issued in international markets; little foreign presence in local markets; capital account is closed for resident outflows; dollarization is informal and limited and currencies are pegged. In such a world adherence to the Greenspan rule that reserves should cover short-term debt provides adequate self-insurance. If reserves are not enough and external help is not coming, as debt payments (possible together with current account deficits) deplete reserves, pegs break and arrears and defaults and debt restructuring follow. In such a world currency and debt crises came back-to-back.

In today conditions pressure on reserves and the currency do not generally come from short-term debt. IMF provides some evidence on that. The main threat to currency stability is strong presence of non-residents in local markets and capital flight by residents. Given flexible exchange rate arrangements, a rapid exit of foreigners from local markets and capital flight by residents tend to generate gyrations in currencies, but these gyrations are not always followed by arrears and defaults on external debt. This was seen in Malaysia in 2015 and Turkey after 2018. In Malaysia there was a massive exit of foreigners from local markets largely due to political uncertainties. Turkey was hit in addition by capital flight by residents.

The paper notes that some countries took measures to reduce the risks associated with heavy presence of non-residents in domestic asset markets. However, except for Taiwan where such risks are less serious because of a strong local investor base and BOP and asset positions, such measures do not appear to have been successful. Indeed, if you are dependent on capital inflows, you want equity rather than debt, or debt in your own currency rather than forex, and if you seek dependent financialization trying to bring depth and liquidity to your markets with the help of foreign investors, you do not have a Goldilocks option vis-à-vis portfolio flows –they are either too hot or too cold. This is also one of the key messages I take from this study. Just to give you another example, within a matter of a few years foreign holdings of Turkish bonds fell from \$72b to \$7b and stocks from \$82b to \$24b.

One last point as the paper points out capital flow regulations have many objectives beyond securing exchange rate and financial stability. One of them should be limiting resource transfer abroad through financial channel. Indeed, lowering cost of external capital was mentioned as an objective of regulations in Indonesia. Foreign assets of EMEs carry much lower rates of return than their foreign liabilities. Jayati has a chart on this, attributing it to seigniorage losses. My research also show that this has a lot to do with the composition of gross assets and liabilities as well as lower return on FDI assets than liabilities. Thus, even EMEs with positive net foreign assets positions such as China and Russia run deficits on net primary income balance.

On the other hand, we know that an important part of gross external assets of EMEs are accumulated from high-yielding liabilities. For deficit countries all gross foreign assets are borrowed rather than earned from current account surpluses; that is, gross inflows not only finance their current account deficits but also allow them to acquire foreign assets. This kind of leveraging is very costly. I estimate in a paper just came out in the ROKE that income and wealth transfers over 2000-16 on such borrowed assets reached 2.3 % of GDP per annum for G20 EMEs taken together. I think this issue should also be kept in mind in the management of the capital account.

## Chapter VI

# Macroprudential policies in Latin America

*Pablo Gabriel Bortz*<sup>1</sup>

### Introduction

This chapter reviews the experience of five Latin American economies (Brazil, Chile, Colombia, Mexico, and Peru) with macroprudential policies (MPPs) in the 2000s. These countries experienced similar developments in their balance-of-payments during this millennium, being net recipients of surges of capital inflows before and after the global financial crisis (GFC) in 2008, and a fall in inflows after 2014. Throughout these years, and particularly after the GFC, all had current account deficits and negative Net International Investment Positions (NIIP). All of them witnessed episodes of accelerated credit growth, but rarely saw episodes of banking or financial crisis. Their financial system weathered the 2008 crisis with relative resilience, aided by the policies implemented by monetary and banking authorities. Many of them adopted most of the measures that comprise Basel III regulatory standards, while some of them had already implemented similar measures even before Basel III.

All these countries had previous severe crises episodes before the GFC. All of them experienced either sovereign, banking and/or currency crises in the 1980s, according to the Laeven and Valencia (2020) database.

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Brazil, Colombia, and Mexico also experienced at least one of these types of crises in the 1990s: Brazil in 1999, Colombia in 1998 and Mexico in 1995. Peru went through a sovereign debt restructuring process in 1996, while entering the 2000s with very high levels of dollarization of its financial system.

The most commonly used and updated database to register and evaluate MPPs is the Alam et al (2019) database, called Integrated Macroprudential Policy (iMaPP) database, updated by the IMF. The iMaPP registers tightening and loosening measures along 17 indicators, with some of them split according to the sector affected, or whether they imply a foreign exchange regulation. Another relevant database was compiled by Cerutti, Claessens and Laeven (2017, CCL from now on), updated in 2018. It has a score of up to 12 indicators. There can be difference of interpretation between these two databases, in the sense that the CCL registers whether there are measures at all in these 12 groups, while the iMaPP database shows *changes* in these measures. There is also difference in their period coverage. The updated version of the CCL database covers from 2000 to 2017, while the iMaPP database covers changes monthly from 1990 to 2018.

When looking at the iMaPP database, one can classify the surveyed countries according to the degree of “activism” with respect to changes in MPPs. Table VI.1 shows the number of changes registered in the iMaPP database, distinguishing between tightening and loosening, from 2000 to 2018. There are several conclusions from this table. First, the number of tightening MPPs during this period is consistently higher than loosening MPPs, with the exception of Chile. Mexico registers *only* tightening MPPs. Second, Brazil and Peru stand out as the most active countries, not merely in terms of changes but also because of the significant number of *loosening* MPPs. This indicates a will to conduct *anticyclical* MPPs, adjusting parameters, intensity, and coverage according to the phase of the credit cycle. However, this picture might be deceitful. Chile registers only two MPPs from 2000 to 2018 in the iMaPP database, but it scores up to eight indicators (out of twelve) in the CCL database, starting from as low as 6 in the year 2000. In the CCL database Chile records *three* changes (two tightening and one loosening MPP). In the case of Chile, most of the regulatory framework was implemented *before* the 2008 GFC, and particularly during the 1980s, after the external and financial crisis the country suffered starting in 1981.

Table VI.1  
Number of MPPs in the iMaPP database

Country	Changes	Tightening	Loosening
Brazil	58	37	21
Chile	2	1	1
Colombia	13	10	3
Mexico	24	24	0
Peru	53	34	19

Source: Alam et al (2019) database.

This survey reviews the external vulnerabilities and the motivations behind the adoption of MPPs in the mentioned five countries. It also reviews the literature about the impact and success of the MPPs. Finally, we briefly review the macroprudential policy response to the COVID-19 pandemic. A major conclusion is that Latin American economies have successfully implemented MPPs, but new vulnerabilities arose in the last years, which present a challenge to policy makers.

## A. Brazil

### 1. Systemic Vulnerabilities

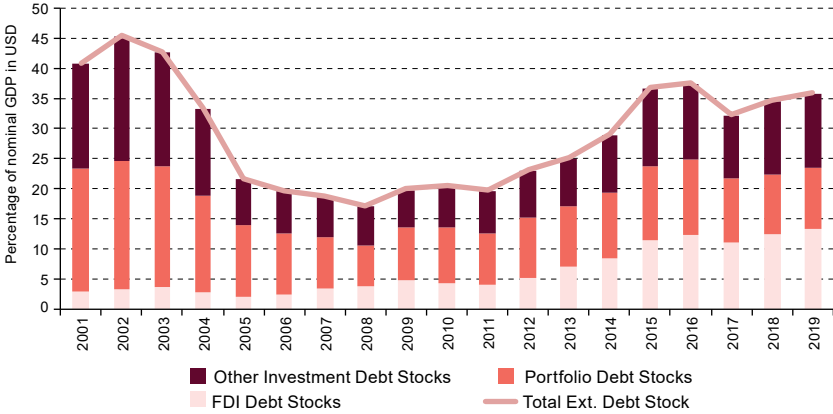
There are different dimensions to systemic vulnerabilities faced by the Brazilian economy. Some of them refer to exposures to external shocks and their interaction with domestic factors. Others refer to domestic financial developments. Vulnerabilities arise in terms of instruments, sectors and variables that propagate or amplify these shocks.

When looking at external vulnerabilities, the first place to look at is the balance of payments. Brazil had a sustained current account deficit since 2008, and a negative Net International Investment Position (NIIP) from even before. However, movements in the NIIP do not reflect movements in the current account, neither in order of magnitude nor (at times) in direction of changes. The current account performance itself may not even reflect appropriately external vulnerabilities. For instance, it may well be the case that primary income represents a substantial proportion of the current account balance, and if it has a procyclical behaviour, then it may alleviate pressures during stressed times. In the case of Brazil, primary income balance, while always negative during this period, has had a relatively acyclical nature.

The fact that the NIIP and the current account balance do not correlate entirely implies that there are issues with currency denomination and asset/liabilities price changes. Therefore, figure VI.1 presents external *debt* stocks, including FDI debt (i.e., intercompany debt), as a share of nominal GDP in US dollars. Same consideration goes for portfolio debt stocks, i.e., it excludes minority investment in stock exchanges.

This figure shows some relevant developments. First, there is a fall in external indebtedness in the mid-2000s, which corresponds to a period of high growth. External debt stocks remained relatively stable but started to pick up in 2006. This was not reflected at the time in a higher external debt/GDP ratio, because of high rates of GDP growth. However, a major development is already noticeably: the increase in the stock of FDI debt, pointing to a possible vulnerability of the corporate sector (McCauley et al 2015, Avdjiev et al 2016, Coppola et al 2020). The share of portfolio debt also recovers after the 2008 global financial crisis, up until 2014.

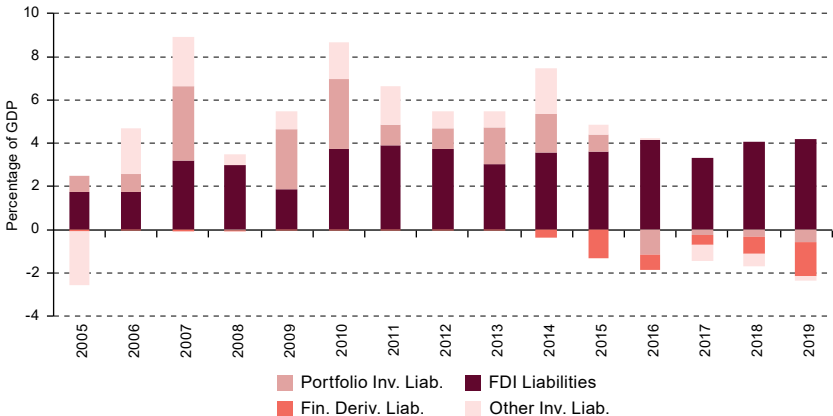
**Figure VI.1**  
**Brazil External Debt Stock, by concept**  
*(Percentage of nominal GDP)*



Source: ECLAC, based on IMF and national sources.

This increasing trend also reflected in liability flows, as shown in figure VI.2. There was a significant increase in inflows from 2005, and particularly after 2009, culminating in the “taper tantrum”. Brazil experienced an authentic surge in capital inflows, specially between 2009 and 2011. Afterwards, when interest rates in the US started to rise in 2015, inflows diminished and stabilized at a lower level, but still above the pre-GFC levels.

**Figure VI.2**  
**Brazil External Financial Liability Flows**  
*(Percentages of GDP)*



Source: Balance of Payments Statistics, IMF.

FDI liabilities represent the bulk of flows, but it needs to be kept in mind that a significant portion of this concept represents debt flows. This was a major channel for external borrowing by Brazilian firms: foreign affiliates (usually in tax-havens) would borrow in international markets and then lend to their home company (Ahmed and Zlate 2014, Avdjiev et al 2014, Avdjiev et al 2016, Tarashev et al 2016). After the 2008 crisis, portfolio flows increased faster than other investment (banking) inflows, up until 2013. Another major process is the development of derivatives market, with a significant involvement of foreign investors. After 2014 external financial derivatives show a substantial reversal, indicating an exit of foreign investors from one of the most dynamic financial markets in the country.

A more detailed look at external indebtedness shows the following developments. First, we examine *flow* data from the Locational Banking Statistics (LBS) of the BIS, which tracks all claims from reporting banking systems to Brazilian residents. Looking at cross-border bank lending in figure VI.3A, what we observe is a rapid recovery of external loan borrowing after the GFC, reaching a peak of 3.7% of GDP, but a diminution in 2011 with the implementation of Basel III regulations, followed by a deleveraging process which starts in 2014 and lasts until 2018. These figures *include* lending by foreign banks to affiliates and subsidiaries in Brazil. In terms of sectors, LBS only shows disaggregated information starting in 2014. As can be seen in figure VI.3B, the government was *not* a major recipient of foreign loans, with banks (in first term) and firms playing a more important role.

**Figure VI.3**  
**External banking claims**  
*(US\$ million)*

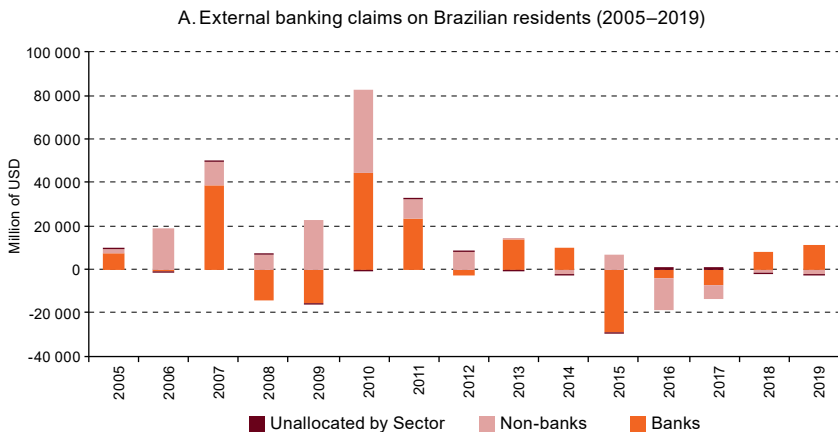
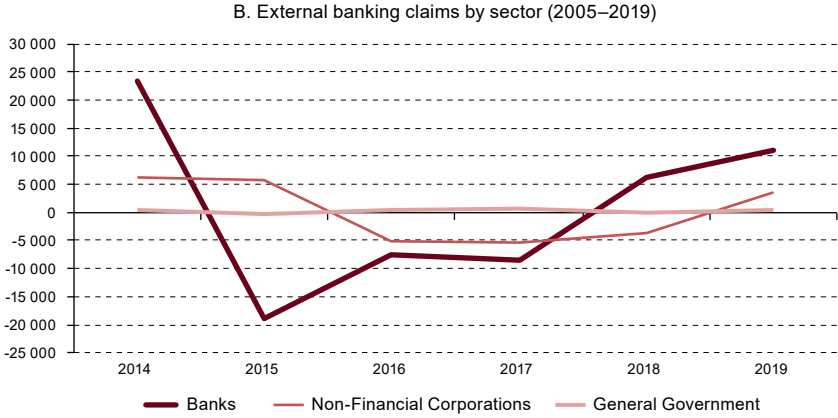


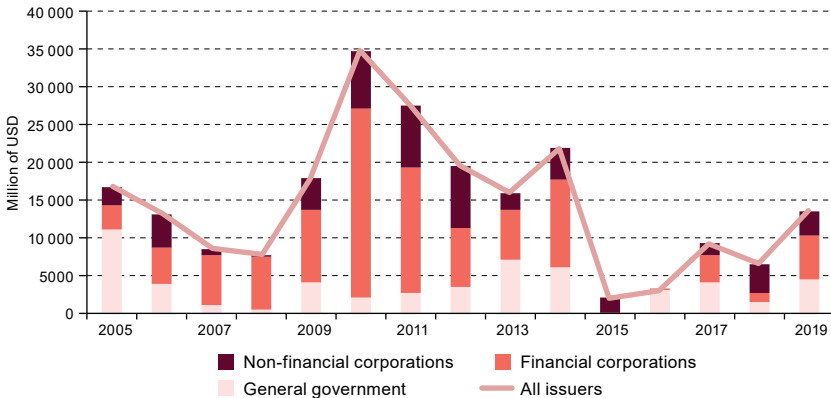
Figure VI.3 (concluded)



Source: Locational Banking Statistics, Bank for International Settlement.

Next, we look at debt issuance in international debt markets. The International Debt Securities (IDS) database from the BIS shows that gross bond issuance *in international markets* recovered fast from the GFC, reaching a peak in 2010, and maintaining levels around USD 20 billion until 2014, when they collapsed. There was a noticeable recovery in 2019. Data for 2020 is not yet complete. Financial corporations, again, represent a significant proportion of international bond issuance. One must keep in mind that a substantial portion of external borrowing by firms was registered as FDI, as mentioned above. Public bond issuance represented a smaller fraction of external bond borrowing.

**Figure VI.4**  
**International gross issuance of debt securities by Brazilian residents**  
*(US\$ million)*



Source: International Debt Securities Database, BIS.

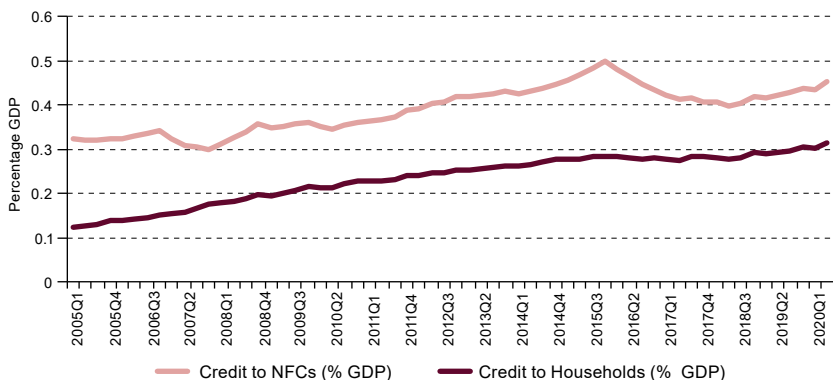


This can be further seen when analysing the composition of public creditors. Using the updated database of Arslanalp and Tsuda (2014), there are several developments that attenuate traditional vulnerabilities but create new ones (Kaltenbrunner and Paineira 2015). First, since the 2000s there is a fall in the share of total government debt denominated in foreign currency. Second, there has been greater participation of foreign (mainly non-bank) investors in the local currency bond market. Again, the peak in the share of foreign-owned local-currency debt was in 2014, and there was a decline ever since. The share stabilized in 2019, according to the latest data available. Non-residents' participation in domestic bond markets was one of the main determinants of the impact of the COVID-19 pandemic on sovereign borrowing costs, even in domestic currency terms (Hofmann et al 2020).

Summing up the developments regarding external systemic vulnerabilities, they refer mainly to external liabilities of non-financial corporations, particularly with affiliated firms (as shown in FDI statistics); and the presence of foreign investors in local currency debt markets.

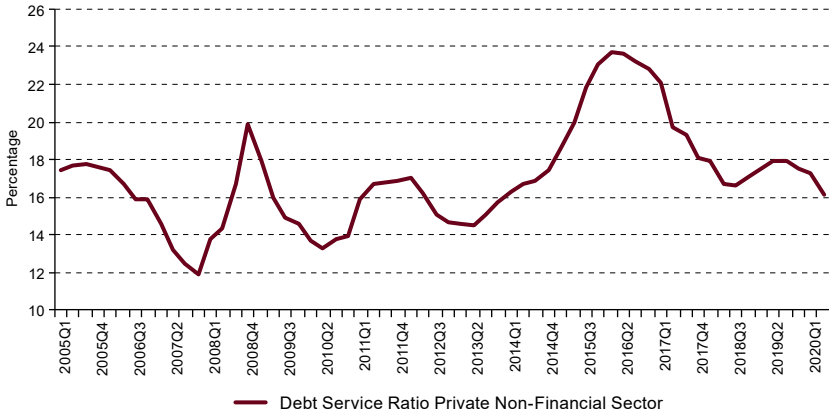
When looking at domestic systemic vulnerabilities, one portion of the literature looks at increments in credit, household indebtedness and developments in the real estate sector. Figure VI.5 shows the evolution of credit to households and to non-financial corporations (NFCs), as percentage of GDP, using statistics from the BIS. Credit *by banks* to the private non-financial sector represents over 86% of total credit to households and NFCs. Figure VI.6 shows the evolution of the debt service ratio of the private non-financial sector. However, external exposure of NFCs' total debt is not limited to their borrowing in international markets. Total exposure increases by a third if we include the share of domestic credit funded with external borrowing by banks (Avdjiev et al 2020). This represents one of the main links between external and domestic vulnerabilities.

**Figure VI.5**  
**Credit to Households and Non-Financial Corporations (NFC) in Brazil**  
(Percentages of GDP)



**Source:** BIS Statistics (2021).

**Figure VI.6**  
**Debt Service Ratio in Brazil**



Source: BIS Statistics (2021).

According to the World Bank Financial Development Database, the 2018 Financial Sector Stability Assessment of the IMF (IMF 2018a) and the FRED Economic Data of the Federal Reserve of St. Louis, the Brazilian banking system is highly concentrated, with five banks comprising over 80% of total commercial banking assets according to latest data (2017). It is a well-capitalized banking system, with a bank capital-to-risk-weighted asset ratio at around 18%. According to data from the Banco Central do Brazil (BCB), non-performing loans (NPLs) reached a peak of 4% in May 2017, falling afterwards to levels around 2% in December 2020. Non-bank financial institutions asset reached, in 2017, 6,5% of GDP, down from a peak of 11,4% in 2011. Investment funds represent around 30% of total financial assets, but the shadow banking system in the narrow definition (engaged in liquidity and maturity transformation) is very small (IMF 2018). There is little connection between the banking system and the shadow-banking system (Oliveira et al 2018).

Summarizing this section, one can conclude that main financial vulnerabilities arise from the exposure of the non-financial sector to external conditions, both directly (because of its scale of external borrowing) and indirectly (because of funding sources for its domestic borrowing). It can be particularly affected by sudden exchange rate volatility. The banking sector is solid, with low levels of NPLs, reduced debt-service ratios, relatively low and stable credit to households, and low government exposure to foreign currency debt.

## 2. Macprudential policies

Brazil lacks a legal framework that assigns explicit roles for financial stability to determined institutions (Costa da Moura and Bandeira 2017). Instead, the country has several councils that promote coordination between different supervisors. Brazil has a National Monetary Council in charge of shaping Macprudential Policies (MPPs), with the BCB playing a prominent role given the bank-based nature of the Brazilian financial system. However, some tools such as taxes are in the hands of the Ministry of Finance (more on this below). Banking, exchange, insurance, and pension supervisors are also part of the Committee for the Regulation and Supervision of Financial, Securities, Insurance, and Complementary Pension (COREMEC) within the Ministry of Finance.

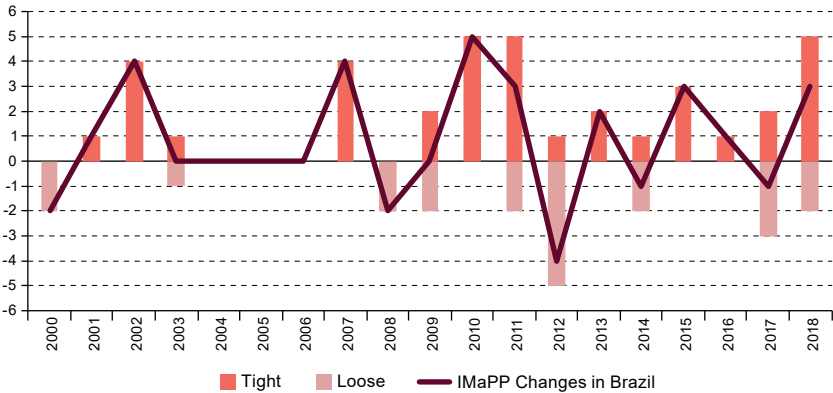
There are different ways to regroup and classify MPP (Galati and Moessner 2013, 2018). CCL (2017) distinguish between “Borrower-targeted” and “Financial Institution-Targeted” instruments. The former includes measures such as limits on Loan-to-Value (LTV) ratios, and Debt-to-Income (DTI) limits; while the latter includes loan provisioning rules, countercyclical capital buffers, leverage ratios, limits on foreign exposure and foreign loans, countercyclical reserve requirements (for foreign and/or domestic deposits and other financial instruments). One can further distinguish between “domestic-focused” and “foreign-currency-focused” (Fendoglu 2017). Gambacorta and Murcia (2020) distinguish between measures than “enhance the resilience” of the financial sector (such as capital requirements, provisioning requirements and liquidity ratios) and measures aimed at “dampening the cycle” (like LTV and DTIs, reserve requirements, limits on credit growth and foreign currency lending).

The two largest and updated MPP databases are CCL and the Integrated Macprudential Policy (IMaPP) database by Alam et al (2019), updated by the IMF staff. While CCL lists the number of MPPs, the IMaPP database lists “tightenings and loosening”. Figure VI.9 shows the changes in the IMaPP database, distinguishing between tightenings (which have a plus sign) and loosening (which have a minus sign). In the same year there can be both types of measures, even on similar variables.

Some of the most significant MPPs are not included in the survey. On the one hand, a large part the macroprudential framework predates this period (Alami 2019, ch. 5). Restrictions on currency convertibility date from the 1930s. Neither bank deposits in foreign currency nor payment in foreign currency are allowed. Measures (part of which still hold today) also included a restricted access to FXs (Goldfajn and

Minella 2007). The National Monetary Council dates from 1964. Other excluded measures refer to reserve accumulation and intervention in FX (spot and derivative) markets. For instance, reserve accumulation can serve as a precautionary measure for isolating the economy from external shocks (Aizenman and Lee 2007, Jeanne and Ranciere 2011). The stock of international reserves in Brazil grew six-fold between 2005 and 2012, according to the International Investment Position Statistics of the IMF. The Banco Central do Brazil also intervened heavily through foreign-exchange swaps after the “taper tantrum” in 2013, helping to restore market liquidity and attenuate the spillovers from the (then reverting) Global Financial Cycle (Costa de Moura y Bandeira 2017, IMF 2018a, Barbone González et al 2019). As mentioned above, since 2013 there was a period of bank deleveraging, particularly of external debt. BCB intervention through FX swaps helped to mitigate the impact of deteriorating market conditions on credit supply. While credit supply by banks exposed to foreign debt was significantly affected by the “taper tantrum”, intervention by the BCB on derivative markets halved the negative impact on credit supply, and eventually on employment (Barbone González et al 2019).

Figure VI.7  
Macroprudential Policy Changes in Brazil



Source: Alam et al (2019) database.

Surveys about implemented measures include Pereira da Silva and Harris (2013), IMF (2013a), Costa da Moura and Bandeira (2017) and Oliveira (2017). The IMaPP database details each of the measures registered as a tightening and a loosening. Drawing on these works, we will distinguish between FX-based MPPs, and domestic-currency based MPPs,

whether for dampening the cycle or enhancing the resilience of the financial system. It should be mentioned that, since 1969, the Brazilian law forbids banks from granting loans denominated in a foreign currency.

Most of the FX-based MPPs were taxes, particularly the Imposto sobre Operações Financeiras (IOF). The IOF was first applied on March 1, 2008, on portfolio bond purchases by non-residents. It was lifted during the 2008 Global Financial Crisis in September 2008 and reinstated in October 2009. Table VI.2 reproduces table VI.4 in Oliveira (2017, p. 36) with the evolution of the tax.

**Table VI.2**  
**Changes in the Financial Operations Tax in Brazil**

IOF – Financial Operations Tax								
Portfolio	12/07	03/08	10/08	10/09	10/10	12/10	12/11	01/13
Fixed Income	0%	1.5%	0%	2%	6%	6%	6%	0%
Equity	0%	0%	0%	2%	2%	2%	0%	0%
Derivative margins	0%	0.38%	0.38%	0.38%	6%	6%	6%	0%
IPO	0%	0%	0%	2%	2%	2%	0%	0%
Funds	0%	1.5%	0%	2%	6%	2%	0%	0%
External credits	12/07	01/08	03/11	04/11	03/12	06/12	12/12	01/14
90 days	5%	5.38	6%	6%	6%	6%	6%	6%
360 days	0%	0%	6%	6%	6%	6%	6%	0%
720 days	0%	0%	0%	6%	6%	6%	0%	0%
1080 days	0%	0%	0%	0%	6%	0%	0%	0%
1800 days	0%	0%	0%	0%	6%	0%	0%	0%

**Source:** Oliveira (2017).

In December 2010 the government also implemented a tax on credit card spending abroad of 2.38%, which it later increased in March 2012 to 6.38%. In July 2011 it implemented an IOF on notional amounts of currency derivatives, which was abolished in June 2013. The objective was to curb speculative inflows, prevent ER volatility, the build-up of short-term external debt and currency mismatch. On that account, measures were successful: external credit maturing in more than 2 years rose from 24% to 97% three months before and after the extension of the IOF to borrowing shorter than 2 years (Pereira da Silva and Harris 2013, 204).

Other FX-based MPPs include capital requirements (CR) on exchange exposure, limits on foreign currency exposures and reserve requirements (RR). Regarding CRs, in 2007 the Brazilian Central Bank (BCB) increased capital requirements on exchange exposure from 50% to 100%. Regarding limits to foreign currency exposure, in June 2007 authorities set a limit of 30% of base capital (down from 60%) on

exchange exposure. RRs were eased during and after the 2008 GFC. In October 2008, as part of the measures to ease liquidity pressures in the interbank market, the central bank allowed financial institutions “to deduct from reserve requirements on interbank deposits, foreign currency securities acquired from the central bank with a resale commitment” (IMaPP database). During the period of surges in inflows after the GFC, the central bank tightened reserve requirements including on FX positions. In April 2011 it introduced a 60% unremunerated reserve requirement (URR) on banks net foreign exchange position exceeding USD 3 billion, a limit tightened to USD 1 billion in July of that same year. In December 2012, as the inflow cycle started to revert, the limit returned to USD 3 billion (a loosening of the MPP), and the URR was eliminated in July 2013.

Reserve requirements were not only used to deter foreign inflows. The BCB has used numerous times changes in RR in the previous decade, and they were used countercyclically during and after the 2008 GFC. In October 2008, the BCB lowered RR on demand deposits and on additional time deposits, and increased the deduction limit to apply RR on additional liabilities (IMaPP database). The cash injection amounted to 2.8% of GDP (Blanco Barroso et al 2020, 13). It allowed larger banks to draw on their RRs to lend to smaller banks (Pereira da Silva and Harris 2013, 197). The objective was to increase market liquidity at times of a credit crunch (Pereira da Silva and Harris 2013, Agenor and Pereira da Silva 2016, Blanco Barroso et al 2020).

As the GFC receded and foreign inflows started to increase, policy changed course. In 2010, RRs for time deposits increased, as well as RRs for additional demand deposit, while protecting long—term funding (the BCB exempted from RRs bank liabilities called “Letras Financieras”, which have a minimum of five-year maturity). The measures were reversed in 2012. RRs were also lowered in 2017 and 2018, according to the IMaPP database.

To curb excessive credit growth, authorities implemented a variety of measures. They implemented an IOF on consumer credit and increased minimum credit card payments. They also made use of capital requirements. In 2007, the BCB increased capital charges on mortgage loans, while in 2010 the BCB tightened risk-weighted capital requirements for consumer loans (particularly vehicles and payroll-guaranteed). It also introduced, in September 2013, loan-to-value ratios for specific types of mortgage lending. Additionally, in line with the application of Basel III rules, the BCB implemented liquidity and capital rules such as the liquidity coverage ratio (LCR) and the net stable liquidity ratio (NSLR),

Common Equity Tier requirements (CET1, which were tightened in 2015), the capital conservation buffer (CCB, increased in 2017 and 2018), a leverage ratio (LR) and capital surcharges for domestic systemically important financial institutions.

These measures had positive effects, according to various sources. Non-Performing Loans (NPL) and households' debt-service obligations have trended down since 2016, and the share of debt-at-risk covered by assets has increased since 2013 (IMF 2018a, 21). The IMF does express a share of concern for the vulnerabilities in the balance sheets of non-financial corporations due to low profitability, particularly in the energy sector.

The tightening in MPPs after 2010 did manage to slow down credit growth (Pereira da Silva and Harris 2013, 199), but banks found a way to shift away from deposit funding through affiliates' external borrowing (IMF 2013a, 24). These developments motivated the tax on external credit. This help to explain why changes in RRs were more effective in easing instances than in tightening episodes (Tovar et al 2012, Blanco Barroso et al 2020, Gambacorta and Murcia 2020). Loosenings of RRs rules increased liquidity at times of market stress, preventing credit crunches. Tightening of RRs had a temporary success but were later overcome by financial innovations.

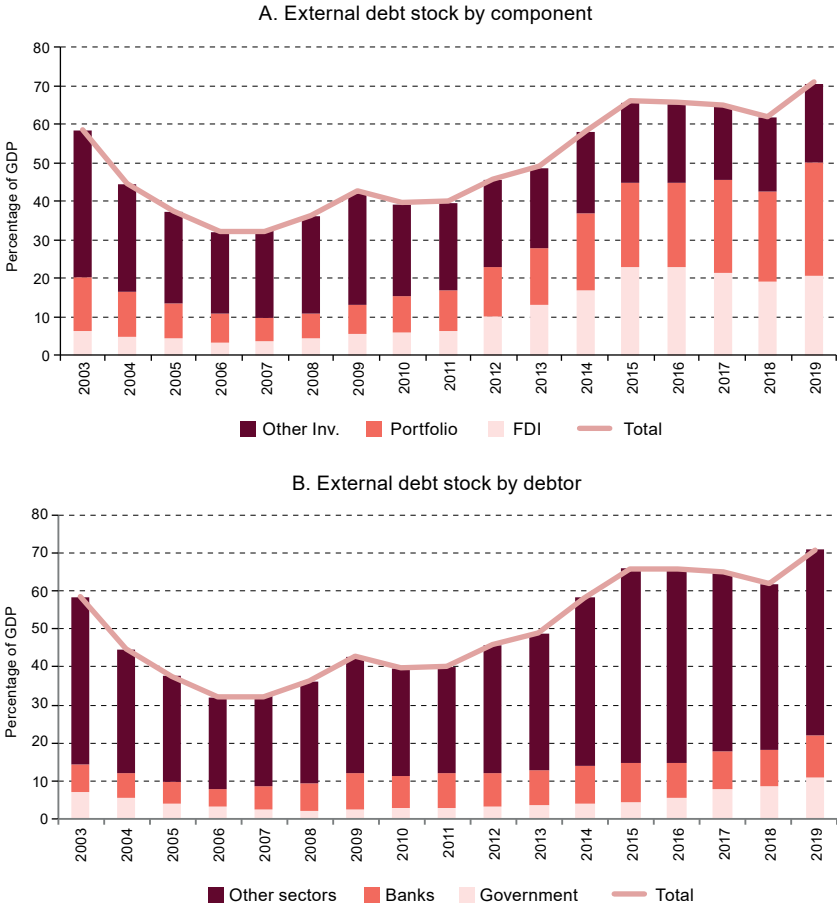
The IOF on external inflows was important in altering the volume of portfolio inflows and changing its composition, particularly with regards to maturity (Baumann and Gallagher 2012, IMF 2013a). The strongest effect was noticed with the introduction of the IOF on currency derivatives, which had become a loophole for carry-trade investment. However, they did not affect substantially external borrowing by NFCs. The reversal in global financial conditions is more responsible for the slowdown presented in figures VI.1 and VI.4.

## **B. Chile**

### **1. Systemic vulnerabilities**

While Chile has had a current account deficit throughout the 2010s, some of its deficit components have shown a countercyclical behaviour, such as the primary income balance. Vulnerabilities must be sought in the external indebtedness of different sectors and through different concepts. This is reflected in figure VI.8, which show external debt stocks components, and external debt by sector, as percentage of GDP.

**Figure VI.8**  
**Chile external debt stock by component and by debtor**  
*(Percentage of GDP)*



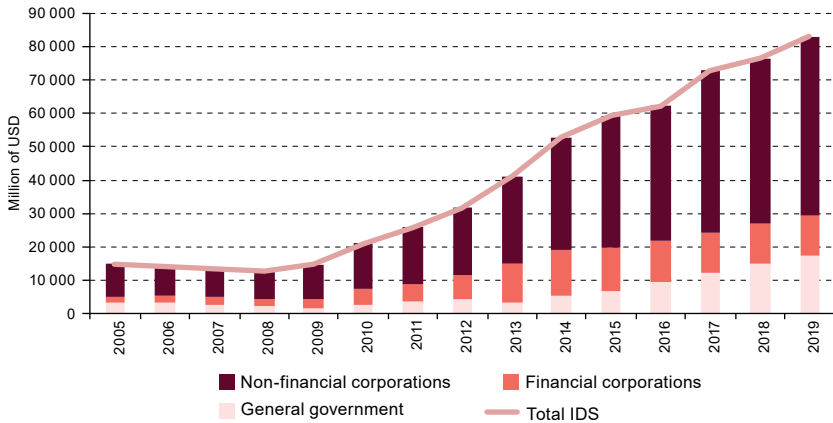
**Source:** ECLAC, based on IMF and national official sources.

There are a couple of developments to highlight in these graphs. After the 2008 Global Financial Crisis (GFC), there was an increase in portfolio and FDI debt concepts, with a relative stagnation of other investment debt (bank loans), particularly after 2012. FDI debt represent intracompany lending, a major channel for private borrowing (IMF 2018b, BCCh 2020, 24). Second, and consistent with the previous statement, the most dynamic external borrower was the corporate non-financial sector. During the whole period, the external government debt represented less than 15% of total external indebtedness, and merely in 2019 it crossed over the 10% of GDP. These developments are also reflected in the volume and composition of bond debt. Figure VI.9



shows the outstanding stock of international debt securities (IDS) issued by Chilean residents in foreign currency (the bulk of issuance), drawing on the BIS database.

**Figure VI.9**  
**International Debt Securities issued by Chilean residents**  
(US\$ million)



**Source:** International Debt Securities Database, BIS (2020).

The limited stock of government debt issued in international markets is reflected in another statistic, drawn from the Arslanalp and Tsuda (2014) database. The share of government debt denominated in foreign currency fell from 95% in 2003 to 30% in 2019 (and 36% in the second semester of 2020), with lows of 20% in 2017. Data regarding foreign ownership of local-currency denominated debt only stretches back to 2013. From lows of 3% in 2015, it increased to 20% in 2019, though it diminished in 2020. Summing up the characteristics of the external vulnerabilities, one can say that nowadays challenges are concentrated particularly in the private non-financial sector, with its level and trend of external indebtedness (Budnevich et al 2021).

The same private non-financial sector is also the biggest domestic borrower. Table 3 shows the evolution of credit to the non-financial sector as percentage of GDP, using data from the BIS. With ups and downs, the non-financial corporate sector represents the bulk of credit. Large firms are major borrowers both domestically and internationally (BCCCh 2020, 32). However, lending to the household sector has observed a steady increase and has more than doubled since the early 2000s. Though mostly provided by banks, there has been a recent upsurge in lending by non-banking financial institutions such as insurance companies and credit cards (IMF 2018b). Mortgage and education loans comprise most of the borrowing by households. This increase in household indebtedness (and particularly

mortgage lending) is also reflected in residential property prices, which accelerated after 2008, as seen in figure VI.10 (also drawing on data from the BIS). Their slowdown in 2015 matched the deterioration in commodity prices and the fall in gross capital inflows.

**Table VI.3**  
**Credit to the Non-Financial Sector in Chile**  
(% GDP)

Year	Credit to Non-Financial S.	Credit to General Gov.	Credit to Households	Credit to NFC
2002	135.1	22.1	22.2	90.8
2003	121.1	18.7	22.9	79.5
2004	112.0	16.2	24.6	71.2
2005	105.2	12.1	25.7	67.3
2006	99.8	9.5	26.2	64.1
2007	102.2	7.8	28.8	65.5
2008	120.4	8.4	32.5	79.5
2009	117.8	8.7	33.7	75.4
2010	112.5	10.9	32.5	69.1
2011	122.5	13.3	33.8	75.3
2012	130.1	13.9	35.5	80.7
2013	138.3	14.5	37.2	86.5
2014	152.4	17.8	39.3	95.3
2015	165.1	19.7	41.1	104.3
2016	166.1	23.5	42.3	100.3
2017	162.8	25.1	43.7	94
2018	172.1	27.6	45.4	99.1
2019	188.2	32.7	47.3	108.3

Source: BIS Statistics (2021).

**Figure VI.10**  
**Residential property prices in Chile**



Source: BIS Statistics (2021).

The Chilean financial system is very deep, not only in terms of credit-to-GDP ratios, but in terms of the diversity of instruments, actors, and volume. There is a deep market for hedging FX exposure and other risks, with significant involvement of institutional investors, pension funds and foreign investors. The major threats to financial stability arise from both the international and domestic exposure of the corporate non-financial sector, which could derail investment and growth. Another source of concern is the accelerated indebtedness of the household sector.

## 2. Macroprudential policies

In terms of governance, the macroprudential institutional framework of Chile changes significantly in recent years. Until 2017, powers were allocated to different supervisors for banks, securities and insurance, and pension funds. In 2017 and 2019, major reforms took place. A single supervisor was instituted in 2019, with the creation of the Financial Market Commission (FMC). It complements and coordinates its activities with the Central Bank of Chile (CBC), for instance in the Chilean Financial Stability Board, which includes the Ministry of Finance as well and the Superintendence of Pensions.

The IMaPP database by Alam et al (2019) records only two changes in MPPs in Chile from 2000 to 2018: a loosening and a tightening of limits on loan-to-value ratios in 2009 and 2012, respectively. IMaPP also includes measures which are not qualified as tightening or loosening, such as the introduction of reporting obligations on the Liquidity Coverage Ratio (LCR) and the Net Stable Funding Ratio (NSFR) in 2016. It also lists the authorization for banks in October 2008 to complete their reserve requirements in foreign currency with no distinctions between US dollars, euros, or Japanese Yen. The database by CCL (2017) also tracks very few *changes* (a tightening regarding dynamic loan-loss provision in 2010, a policy to reduce foreign currency risk of banks in 2016 and a lifting of a levy on banks activities in 2017). Ruiz et al (2014) talk outright of a virtually non-existent “macroprudential activism”, while Federico et al (2014) mention that Chile barely changed reserve requirements in a 31-years period span. Similar conclusion is drawn by Tovar et al (2012).

Chile also figures low in reserve accumulation compared to other countries in the region. The central bank intervened only punctually in the foreign exchange market and in derivatives markets. According to the Chinn-Ito (2006) database and the Fernández et al (2016) database, Chile is a financially open economy.

This description, however, is not without questioning. First, Gómez et al (2020, p. 1) mention further measures that are not included in the CCL database, including tightened mortgage loan-loss

provisioning in 2016, and changes in funding instruments for mortgage loans. Second, there have been recent policy changes that falls outside the span of time covered in the IMaPP database, that will be detailed below. Third, Jacome et al (2012), Ruiz et al (2014), Raddatz and Vergara (2016) and Rojas Quiroz (2017) mention that Chile has numerous MPPs in place. The CCL database has a grade as low as 6 and as high as 8 (from 0 to 12, where 12 is the highest grade) for Chile, recording limits on leverage ratio, concentration, exposures, etc. This apparent contradiction is solved by noticing that many MPPs that have come to the highlights in the post-GFC (such as the leverage ratio or regulations on SIFIs) were already present in Chile since the 1990s at least, and some after the 1980s financial crisis.

Through the 1985 General Banking Law (and in further modifications of that law), Chile implemented numerous MPPs which stand to this day. These have the clear objective of mitigating systemic risk arising from external indebtedness, currency mismatch, concentrated lending, and related lending. Among these, we can mention (Raddatz and Vergara 2016, Cifuentes et al 2017):

- Limits on concentrated and related investment.
- Limits on banks' trading and investment instruments, for instance on derivatives.
- Limits on interbank lending.
- Limits on interbank short-term funding.
- Limits on loan-to-value ratios.
- Limits on leverage ratios.
- Limits on currency mismatch for banks.
- Limits on currency exposure for banks' borrowers (introduced after the Asian financial crisis in 1997).
- The capability to impose capital surcharges after mergers and acquisitions.
- Loan-loss provisions and forward-looking credit risk provisions.

When assessing MPPs to mitigate external vulnerabilities, Chile's experience also goes back to the 1990s. On top of the mentioned limits on currency exposure for banks and borrowers, Chile had Unremunerated Reserve Requirements (URR) on capital inflows. There is a debate about whether these policies managed to reduce capital inflows, there is a consensus that they increased average debt maturities and improved external resilience. URRs were lifted at the end of the 1990s.

Though Chile stays at the low end of the region in terms of reserve accumulation, the country established in 2006 two sovereign wealth funds, the Social and Economic Stabilization Fund (FEES, for its initials in Spanish) and the Pension Reserve Fund (FRP). Their accumulated value at the end of 2019 stood at USD 23 billion (Ministerio de Hacienda 2020). The FEES (which stood at USD 12.2 billion in 2019) invests mainly in liquid assets denominated in major global currencies, in stocks, and in deposits. This helps to partially explain why Chile observed significant portfolio outflows since 2006 without compromising its external position. The build-up of sovereign wealth funds can be considered a sort of externally oriented MPP, though it is not included in the main MPP databases.

In recent years, however, the focus has been on the development of private hedging markets and instruments, particularly for FX exposure, with the support and occasional intervention of the CBC. Notwithstanding, in recent years the CBC and the FMC have implemented other policies associated with Basel III framework, particularly the build-up of the Liquidity Coverage Ratio (LCR) and the Countercyclical Capital Buffer (CCB). However, the impact of the COVID-19 pandemic has delayed the implementation and build-up of these indicators.

## **C. Colombia**

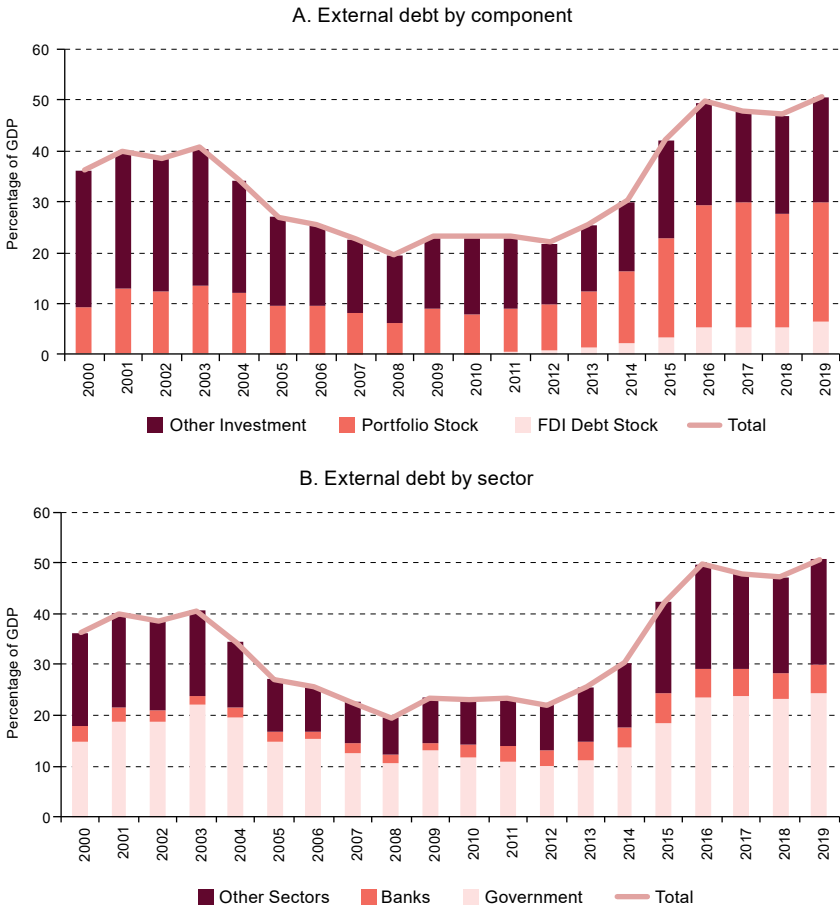
### **1. Systemic vulnerabilities**

Colombia faced a severe balance-of-payments crisis at the end of 1998, with heavy repercussions in 1999, which also involved a banking crisis. The crisis came after a strong financial liberalization episode in the early 1990s. The 1990s were a period of accelerated credit growth and external public and private indebtedness. After the 1999 crisis, Colombia implemented a series of reforms, which can be considered as macroprudential policies. However, since the 2000s it faced new vulnerabilities, such as new episodes of fast credit growth and sustained capital inflows. In the 2010s the morphology of challenges changed, in terms of instruments, institutions and currencies. Throughout this period, however, Colombia witnessed a sustained current account deficit and an ever-increasing negative NIIP.

When looking at the evolution of external debt stocks, we observe a stability in the 2000s, and an increasing trend after the 2008 Global Financial Crisis (GFC), with some occasional decelerations like in 2012 and 2015. Figure VI.11 present the evolution of external debt stocks by concept and by sector. As in other parts of the continent, the concept that grew sustainedly faster is portfolio debt, to the point that it became higher

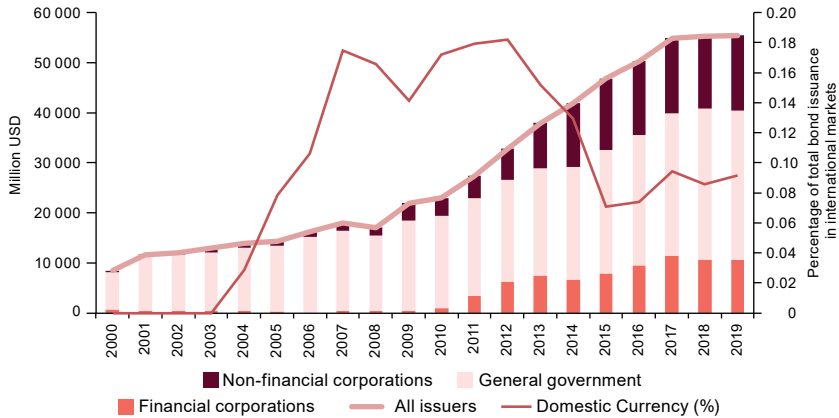
than other investment liabilities (loans) in the mid of 2010s. Total external debt rose significantly after 2012, spurred in similar terms by both the public and the corporate sector (including some state-owned companies). However, more than 70% of foreign debt of the private sector in foreign currency is hedged, either by derivative instruments or because it is owed by exporters (BanRep 2020, 28). While 70% of public companies' external debt is denominated in US dollars, its weight was reduced by 2.7 per cent of GDP between 2015 and 2019 (ibid). The dynamics of debt securities issuance in international markets is presented in figure VI.12.

**Figure VI.11**  
**Colombia external debt stock by component and by debtor**



Source: On the basis of official data.

**Figure VI.12**  
**Colombian securities issued in international debt markets (amounts outstanding)**  
*(US\$ million and as percentage of total bond issuance in international markets)*



**Source:** International Debt Securities Database, BIS (2021).

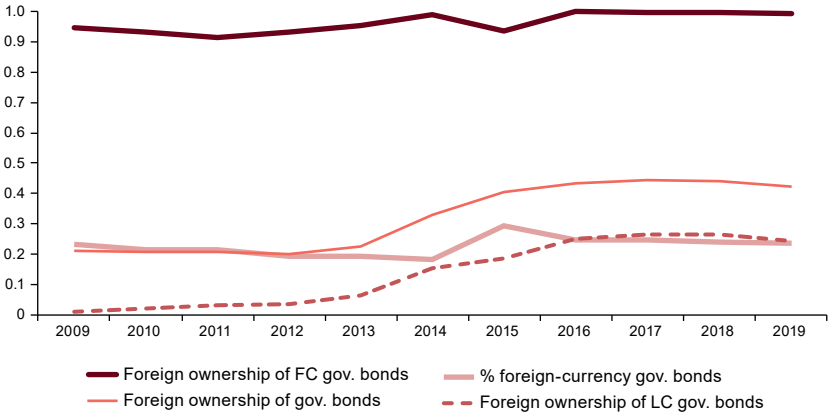
Up to 2008, the government was the predominant issuer of Colombian securities in international markets. Since 2009, the corporate sector started to issue bonds, both public and private non-financial corporations and private banks, predominantly. An interesting indicator is that, since 2004 and up to mid-2013, there was a considerable amount (up to 18%) of securities denominated in Colombian peso. Since the “taper tantrum” that share has diminished below 10%.

With the development of pension funds, government bonds became a cornerstone of the domestic financial system (IMF 2013b). However, foreign investors became attracted to domestic bond market (Vargas et al 2017). The Arslanalp and Tsuda (2014) updated database shows that the share of government securities denominated in foreign currency fell from 2004 almost uninterruptedly until 2014, and then it stabilize around 25%. However, regarding ownership, there are contrasting developments. Foreign creditors are the overwhelming majority (and in some periods, the totality) of owners of foreign-currency denominated government bonds. There is no surprise there. What is remarkable is the growth of foreign ownership of domestic-currency denominated sovereign bonds, which accelerated in 2014. Therefore, a growing share of government debt was owned by foreign investors, as shown in figure VI.13.

Summing up external vulnerabilities, Colombia has reduced currency mismatch in sovereign debt, a traditional source of concern for developing countries. However, there are other worrying signs

like a sustained current account deficit, increasing presence of foreign investors in local-currency debt markets, and increasingly larger stocks of foreign-currency corporate-issued debt securities, which are exposed to volatility in exchange rates and commodity-prices (mainly oil and coal). IMF (2020a) noted that the external financing needs of Colombia (computing the current account deficit and debt amortization needs) are particularly high for the near future, relative to regional standards. The COVID-19 pandemic has also strained the access of banking and non-banking institutions to international markets.

**Figure VI.13**  
**Foreign ownership of Colombian government debt securities**  
(Percentages)



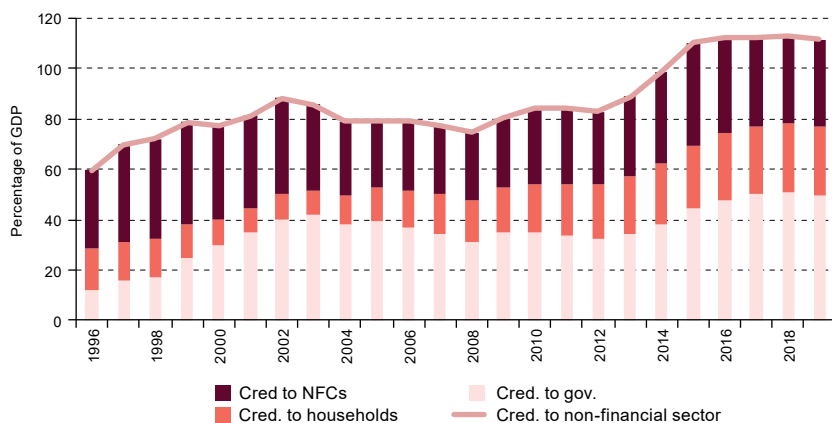
Source: Arslanalp and Tsuda (2014).

In a recent presentation, Osorio (2021) has stressed a new potentially challenged development: the internationalization of the Colombian banking system, which has expanded to Central America countries.

When looking at domestic credit, we observe a series of episodes of accelerated credit growth in the last 25 years. The earliest episode in this period (1996-1997) culminated in a balance-of-payments and financial crisis, in 1998 and 1999. There was another in 2006-2007, accompanied by high rates of GDP growth. After the 2008 GFC there was another uptick in credit growth in 2010 to 2014. The aftermath of the later uptick, the financial sector entered a period of adjustment, with lower profitability, higher provisions, and lower credit growth (Banrep 2020). This adjustment lasted until 2019, when credit started to increase again, to the household and the commercial sector. Additionally, one can also observe a structural shift of government financing with domestic sources, as will be mentioned below.



**Figure VI.14**  
**Credit to the non-financial sector in Colombia**



**Source:** BIS statistics (2021).

## 2. Macroprudential policies

In terms of governance regarding the supervision of the financial system, Colombia lacks an explicit macroprudential policy framework, with assignments of roles to different institutions (the Banrep, the Ministry of Finance, the Financial Superintendency, and the Deposit Guarantee Fund). In 2003 the Congress established the Coordinating Committee for the Monitoring of the Financial System (CCMFS), integrated by the Ministry of Finance, the Banrep, the Financial Superintendency and the Deposit Guarantee Fund.

In terms of implemented MPPs, the CCL (2017) database lists between 6 (from 2000 to 2006) to 7 (from 2007 to 2017) (MPPs) in a possible score of 0 to 12. The change registered in 2007 refers to the adoption of dynamic provision, or countercyclical loan-loss provision. The IMAAPP database (Alam et al 2019), in turn, registers several changes, mostly tightening, of MPPs in the same period. Most of the changes registered in the IMAAPP database are concentrated before, during and after the 2008 GFC. Table 4 shows the records.

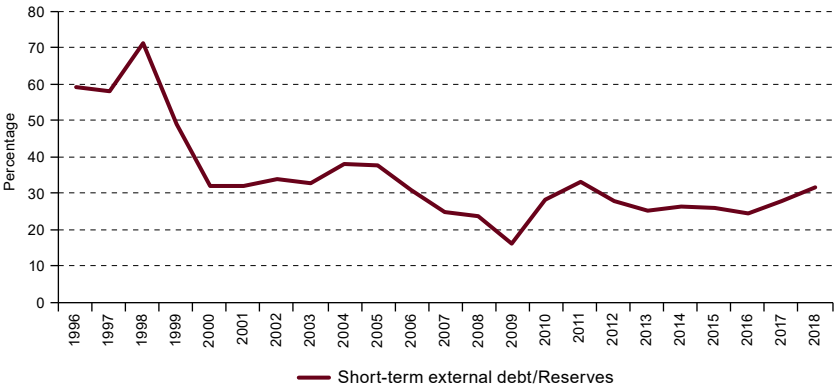
As mentioned previously in other countries, there are some measures which can be considered macroprudential (from an external vulnerability perspective) which are not included in the IMAAPP database. Notably, reserve accumulation. Between 2004 and 2019, Colombia increased more than two-fold its foreign reserves. It also stood well below the threshold of the Greenspan-Guidotti rule, by which reserves should cover at least a year of short-term external debt services. The ratio short-term external debt to reserves had a decreasing trend in the 2000s, and in the 2010s it stabilized at half the values of the 1990s. This is shown in figure VI.15.

**Table VI.4**  
**Number of changes in MPPs in Colombia**

Year	IMaPP Changes in Colombia	Tight	Loose
2000	1	1	0
2001	0	0	0
2002	0	0	0
2003	-1	0	-1
2004	0	0	0
2005	0	0	0
2006	0	0	0
2007	3	3	0
2008	1	3	-2
2009	1	1	0
2010	0	0	0
2011	0	0	0
2012	0	0	0
2013	0	0	0
2014	0	0	0
2015	0	0	0
2016	0	0	0
2017	2	2	0
2018	0	0	0
		10	-3

Source: Alam et al (2019) iMaPP database.

**Figure VI.15**  
**Greenspan-Guidotti ratio in Colombia. Short-term external debt/reserves**  
*(Percentages)*



Source: World Development Indicators, World Bank.

As Vargas et al (2017), most MPPs were used occasionally, at times of need, and not systematically. After the 1998 crisis, the government introduced limits to loan-to-value ratios for mortgage loans and caps to debt-service-to-income ratio. Before the GFC, was witnessing both a credit boom and a surge in portfolio inflows. The government reacted in several ways. In May 2007, the government introduced a 40% Unremunerated Reserve Requirement (URR) ratio, for a minimum of 6 months deposit in domestic currency, aiming particularly at portfolio debt inflows. Another regulation was implemented, by which an investment had a minimum stay of two years to be considered FDI. It also increased marginal reserve requirements for local currency liabilities, and it lowered the dispersion of reserve requirements (Federico et al 2014). In June 2007 authorities introduced a dynamic loan-loss provision regime, which amounted to a tightening in regulation (though in the IMAPP database it is not registered as such). Colombia also set limits to the leverage of intermediaries in foreign-exchange derivatives market. The percentage of the URR was increased to 50% in May 2008, but was it was subsequently abolished in October of that same year, with the burst of the global financial crisis. The central bank also lowered reserve requirements on deposits to ease liquidity draughts.

It is difficult to disentangle the impact of such a short-lived measure. Fabiani et al (2018) mentions that external borrowing fell, and that companies exposed on foreign currency faced a tighter *domestic* credit supply, while the opposite happened to firms that had not borrowed abroad. Firms inactive in foreign debt markets saw an increase in credit availability of 9% relative to firms with external borrowing. IMF (2008, 2009) also mentions that foreign borrowing diminished. In 2017, the central bank introduced new measures and limits to currency mismatches of financial institutions. As mentioned above, Banrep (2020) highlights that over 70% of private external debt in foreign currency is hedged in terms of currency risk, though it is exposed to changes in commodity prices. The internationalization of Colombian financial institutions can transmit external vulnerabilities into the domestic financial system.

As for domestic-oriented MPPs, their effect has been to increase the resilience of the financial system, in terms of solvency and liquidity (IMF 2013b, Vargas et al 2017). Non-performing loans have remained subdued, banks were correctly capitalized, and authorities have ensured the avoidance of liquidity stresses. The measure with the most positive effect in terms of solvency has been the countercyclical loan-loss provision, which was also tightened in 2011 amid an acceleration of credit growth.

## D. Mexico

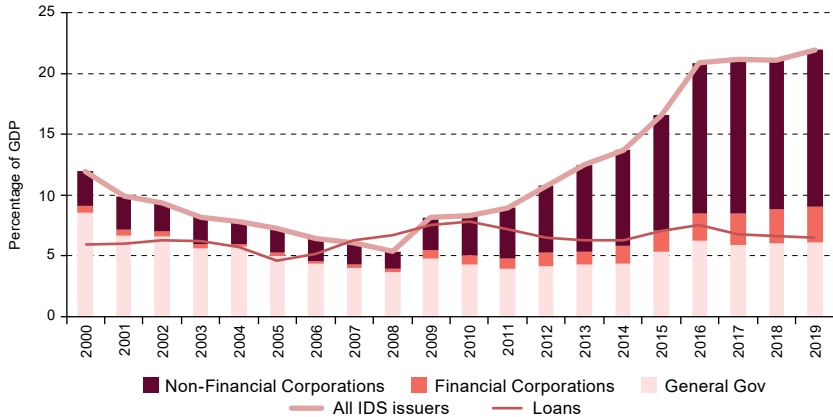
### 1. Systemic vulnerabilities

Mexico faced a severe banking and balance-of-payments crisis at the end of 1994, the first of a series of Latin American economies that would experience a similar fate in the late 1990s and early 2000s (such as Brazil, Colombia, and Argentina). Since 2005, it also faced regular current account deficits and a negative NIIP. While some traditional external vulnerabilities have been softened, there are some new that have developed in recent years.

External debt statistics from the World Development Indicators database show that external debt stocks, both public and private, observed a decreasing trend in terms of GDP since 1995 up to 2008, and upwards since that year. In 2015 that ratio surpassed the levels observed twenty years earlier. The composition, in turn, went through significant changes, in terms of instruments and actors. Figure VI.16 shows the evolution of the outstanding stock of debt securities issued in international markets in foreign currency by Mexican residents. It also includes the stock of loan claims of foreign banks vis à vis Mexican residents, drawing on the Locational Banking Statistics of the BIS. As can be seen, bonds started to outpace loans as a source of external financing, particularly after the 2008 GFC. That event also marked the entrance of Mexican non-financial corporations (NFCs) into international debt securities, and to a lesser extent of Mexican banks. Among these NFCs there was a significant role as well of state-owned companies as well. However, external borrowing by NFCs does not account for their *total of foreign currency borrowing*: there is also a share of local loans to NFCs denominated in dollars (Avdjiev et al 2020, 8). Already prior to the COVID-19 pandemic, the government was transferring funds to state-owned companies to afford their external borrowing (Cantú et al 2021). Since these are large companies, their external indebtedness can create negative spillovers both for government finances and for the domestic financial system.

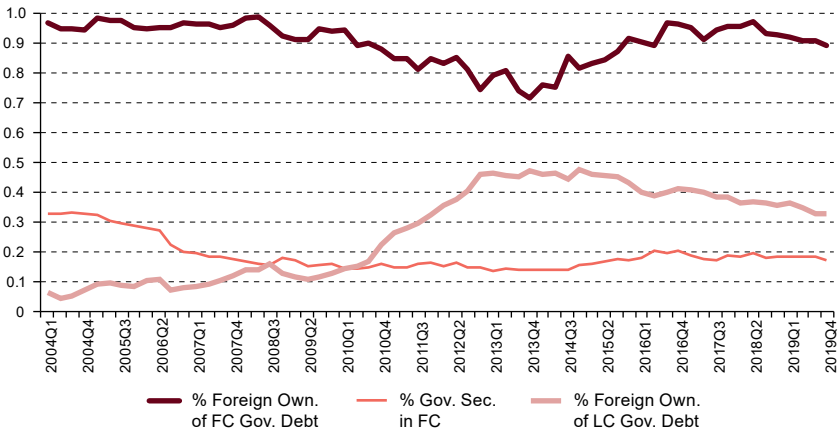
As mentioned before, there was a change not merely in instruments but also in sectors. Figure VI.17 shows the share of government debt securities denominated in foreign currency, taken from the Arslanalp and Tsuda (2014) database. As can be seen in the figure, this share observed a decreasing trend in the period, particularly in the 2000s. However, there was greater involvement of foreign investors in the local-currency debt market, reaching shares of 47% of foreign ownership in 2013. Strikingly, around the same time we can observe an involvement of *domestic* investors in the *foreign-currency* debt market, with ownership shares of 28% in 2013. This points towards one of the characteristics of the Mexican economy: its degree of financial integration to international markets. Sanchez (2015) and IMF (2016) state that the MXN market is one of the most liquid of all EMEs currency market and acts as a benchmark for EMEs currencies.

**Figure VI.16**  
**External bond and loan debt of Mexico**  
*(Percentages of GDP)*



**Source:** International Debt Securities Database and Locational Banking Statistic database (2021).

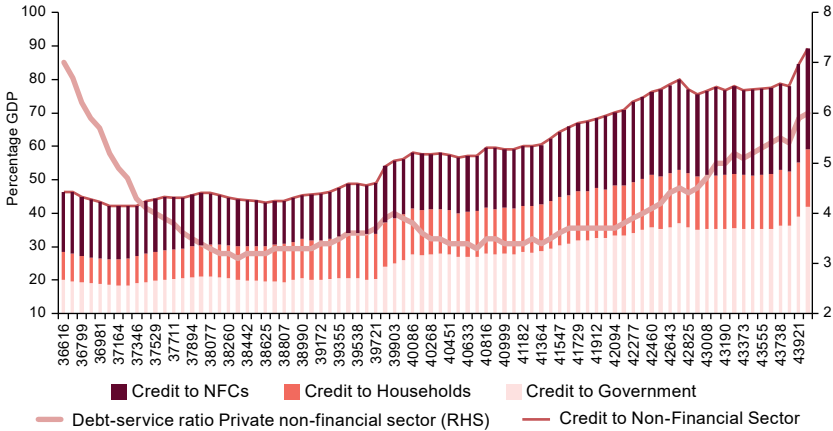
**Figure VI.17**  
**Ownership of Mexican Government Debt Securities**



**Source:** Arslanalp and Tsuda (2014) database.

When looking at the domestic financial situation, Mexico has a relatively small financial system (90% of GDP), and a highly concentrated banking sector. Seven banking institutions control around 80% of banking assets, and five out of those seven are foreign firms, which control 65% of total banking assets. Their source of funding is mostly domestic, and so is their lending (IMF 2016). Credit to households is relatively low compared to the region. The debt-service ratio of the private non-financial sector is also low, with a low level of non-performing loans (IMF 2016), but on a rising trend. These indicators are shown in figure VI.18.

**Figure VI.18**  
**Credit to domestic sector in Mexico**  
*(Percentages of GDP)*



Source: BIS Statistics (2021).

## 2. Macropreudential policies

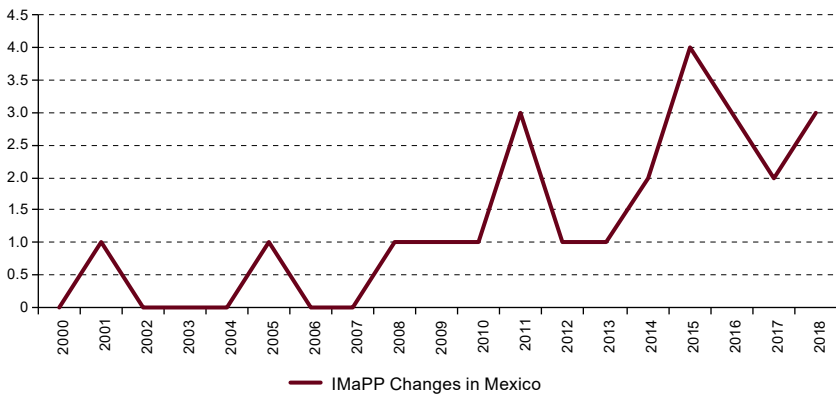
Mexico lacks an explicit assignment of roles to the different supervisory financial institutions, which include the Banco de México, the Banking and Exchange National Commission, an Insurance Commission, a Pensions Commission, and the Secretary of Finance. In 2014, Congress approved by law the creation of the Financial System Stability Council, which was already operating by government decree since 2010. It is composed of the mentioned institutions, and act as a coordinating council, presided by the Secretary of Finance, and with a significant role of the Banco de México.

Regarding the design and implementation of MPPs, Bush et al (2021) mention that EMEs have adopted MPPs for longer than developed economies, because of their crisis history. However, they argue than in the case of Mexico between 2000 and 2017 there have been very few changes in MPPs, namely three (changes in concentration and interbank exposure rules; and changes in capital requirements for “Basel 2.5” and for Basel III, in 2012). The database of CCL (2017) gives Mexico the lowest score of all the economies in this survey, starting from a position of 0 MPPs in 2000, up to 4 in 2017. Federico et al (2014) mention that Mexico barely changed one typical MPP, reserve requirements. However, when looking into financial regulation, one can distinguish numerous MPPs in Mexico, some aimed at specific systemic (and external) vulnerabilities.

To start, the CCL database shows that Mexico kept increasing its score of MPPs, with rules on concentration limits, interbank exposure, dynamic loan-loss provisioning and finally rules on systemically

important financial institutions (SIFIs). The IMaPP database, in turn, registers several changes from 2000 to 2018, and these were *all tightening measures*. Figure VI.19 shows this evolution. Mexican authorities became very active in terms of introducing new regulations after the 2008 GFC.

**Figure VI.19**  
**Number of macroprudential policy changes in Mexico**



**Source:** Alam et al (2019).

The list of these measures includes:

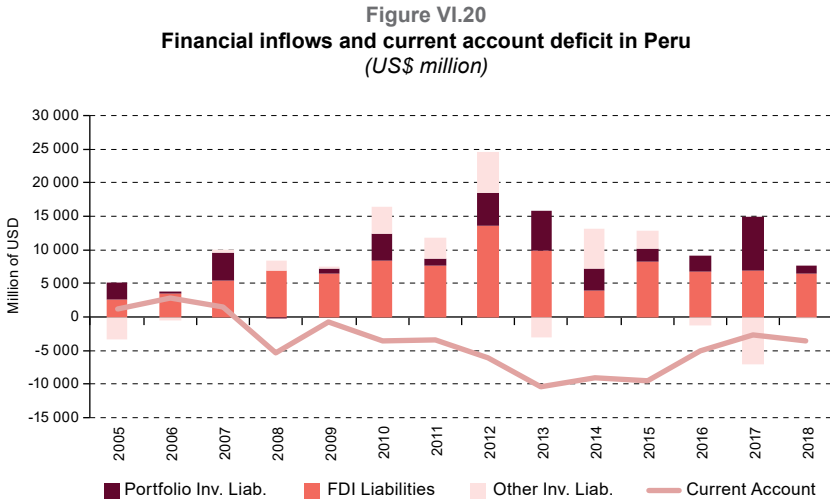
- Short-term liquidity requirements in foreign currency.
- Limits on net foreign exchange liabilities in terms of core capital (both measures introduced in the mid-1990s).
- Limits on banks' exposure to related parties (introduced in 2001, and tightened in 2008, 2011 and 2014).
- Limits on banks' exposure to single counterparties, according to banks' capital.
- Limits on interbank lending (measure introduced, along with the previous one, in 2005).
- Introduction of expected loan-loss provisioning (starting in 2009 and extended in 2011 and 2013).
- Tightening of risk-weighted capital requirements for mortgage loans with loan-to-value ratios over 70% and 80% (introduced in 2010).
- Requirements of capital conservation buffers (introduced in 2015).
- Introduction of Liquidity Coverage Ratio (LCR) in line with Basel III regulation (introduced in 2015, tightened in 2016, 2017 and 2018).
- Introduction of capital surcharge on SIFIs (in 2015).

As can be seen from this list, these measures pursue multiple objectives, but these can be summed up as follows. First, they seek to limit foreign exchange exposure and exchange risk of banks and financial institutions. Second, they seek to reduce the exposure to related parties, particularly for foreign-owned banks. In this regard, the measures aim to contain external vulnerabilities of the financial sector, but so far, they do not address the situation of the corporate non-financial sector. There were also numerous measures to reduce systemic risk arising from domestic shocks, strengthening the resilience of the financial system, and aligning regulation with the Basel III regulatory framework.

## E. Peru

### 1. Systemic vulnerabilities

Peru has had a current account deficit since 2008 and an increasingly deteriorated NIIP since even before. However, it has received financial inflows in excess of its current account deficit, which allowed the country to accumulate external reserves. This is shown in figure VI.20.



Source: IMF Balance of Payments Statistics.

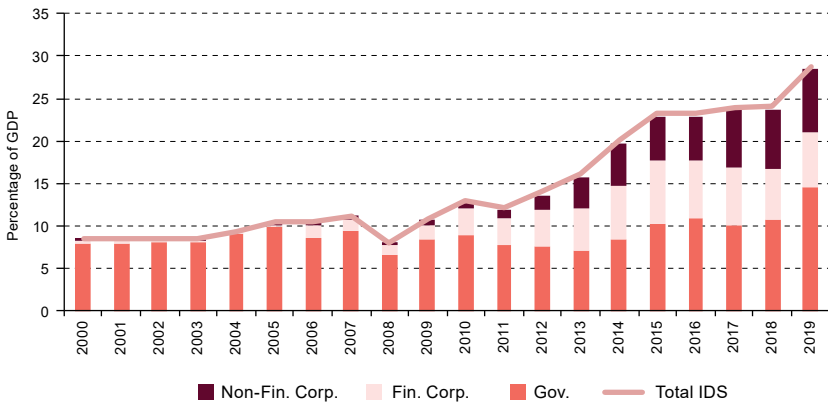
These movements are partially reflected in the issuance of international debt securities, shown in figure VI.21. This stock grew significantly after 2008, with some slowdowns compatible with the numbers of figure VI.20. The main driver during the 2010s was the



issuance from the financial sector and from NFCs. Only in 2019 did the government resort heavily to international debt markets, in the lapse covered by this study.

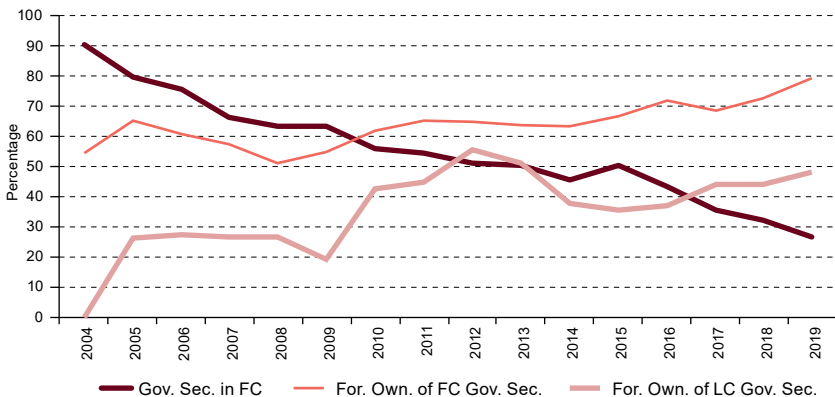
However, it would a mistake to assume that all debt issued in international markets was *external debt*, and another mistake to assume that it was all denominated in foreign currency. Figure VI.22 shows the share of government debt denominated in foreign currency, and the share of foreign investors in government debt, in domestic and foreign currency respectively.

**Figure VI.21**  
**Debt securities issuance in international markets by Peruvian residents**  
*(Percentage of GDP)*



Source: International Debt Securities Database, BIS.

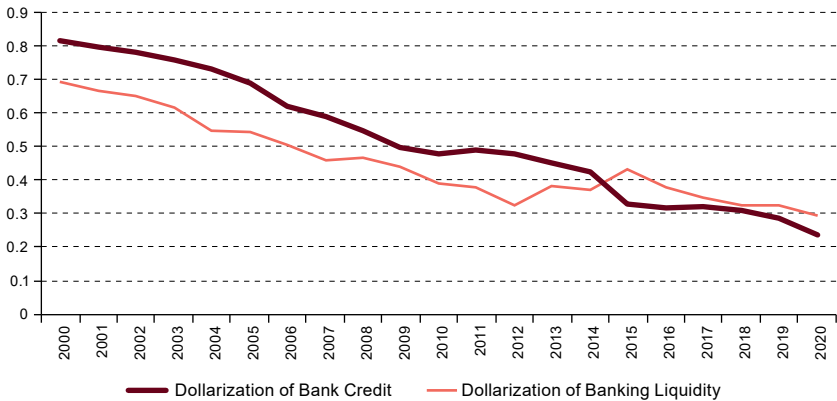
**Figure VI.22**  
**Currency composition and foreign participation in Peruvian government debt**  
*(Percentages)*



Source: Arslanalp and Tsuda (2014).

In what refers to the domestic financial system, Peru has a banking-based financial system (banks' assets comprise 63% of all financial assets, according to IMF (2018)). Its banking system is very concentrated, with 4 banks holding around 83% of all banking assets (of which 2 institutions are foreign owned), and a shallow and illiquid capital market (IMF 2018c). NPLs are low, capitalization is relatively high, and so is liquidity. During the 2000s it observed high rates of credit growth, but authorities implemented different measures to control the credit dynamics, as will be reviewed below. The most striking characteristic is the degree of dollarization of credits and deposits. While there are historical precedents dating to the independence of the country, the modern phase can be traced back to the late 1970s. The phenomenon accelerated during the hyperinflation of 1988-1990 (Armas 2016). However, it has diminished substantially in the last 20 years. This is reflected in figure VI.23.

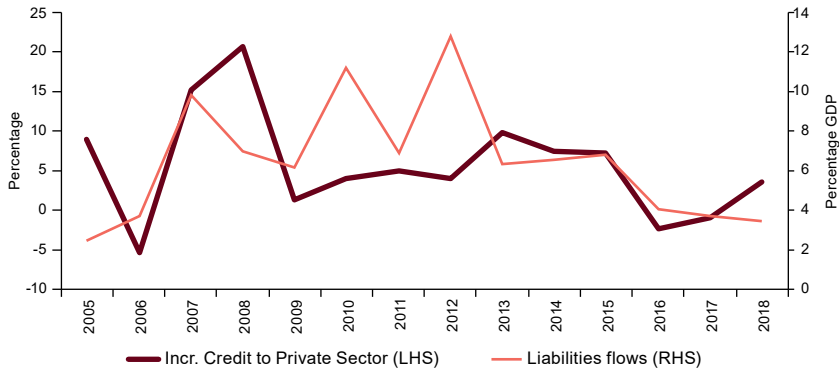
**Figure VI.23**  
**Coefficient of dollarization of banking liquidity and credit in Peru**



Source: BCRP statistics.

Furthermore, this downward trend in the dollarization of deposits and credits is more remarkable because credit growth tended to move quite closely with external flows. Figure VI.24 shows the rate of change of credit to the private sector (as percentage of GDP) and external liabilities flows (as percentage of GDP). This implies that external financial developments have a major bearing on domestic credit conditions. Nonetheless, authorities managed to reduce (though not eliminate) one of the major threats to financial stability such as the dollarization of deposits and credits.

**Figure VI.24**  
**External liabilities flows and credit in Peru**  
*(Percentages and percentages of GDP)*



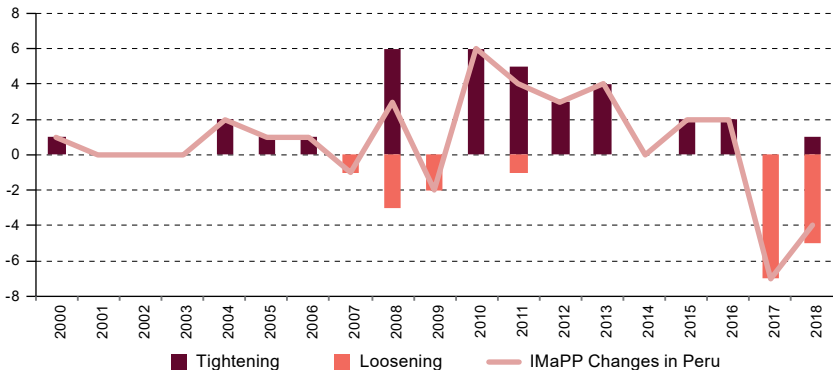
Source: BCRP statistics.

## 2. Macprudential policies

Peru’s banking supervisory institution (the Superintendency of Banking and Insurance) is a separate entity from the Central Bank. There are numerous instances of coordination, however, between the two organisms.

Peru has been a very active country regarding changes in MPPs according to the IMAPP database of Alam et al (2019), second only to Brazil in this survey. Like other countries in this survey, Peru has implemented structural, acyclical MPPs. But it also has implemented several anticyclical MPPs, which are reflected in the number of loosening MPPs during this period. Figure VI.25 shows the number of changes in MPPs since 2000. Other measures such as reserve accumulation are not included in this survey.

**Figure VI.25**  
**Number of changes in MPPs in Peru**



Source: Alam et al (2019).

A revision of Peru's MPPs must start by acknowledging the accumulation of foreign reserves, which grew threefold since 2005. But the review shows a multiple of objectives for the MPPs, addressing both external and domestic vulnerabilities:

- Disincentive surges of capital inflows.
- Reduce the degree of dollarization of the financial system.
- Enhance systemic resilience and reduce risk contagion.
- Reduce the amplitudes of credit growth and combat the accelerations of credit growth.
- Reduce currency mismatch, currency risk and currency exposure.

The most comprehensive surveys of MPPs applied in Peru are Choy and Chang (2014) and Rossini and Quispe (2017). They are all coincidental with the IMaPP database. The measures can be summarized along several groups:

- Dynamic loan loss provision activated and deactivated according to GDP growth, established in 2008.
- Additional capital requirement for domestic systemically important banks (D-SIB), established in July 2011.
- Additional reserve requirements on external debts of financial institutions.
- Additional reserve requirements on foreign currency liabilities of banks, which were tightened and eased according to the inflow cycle. They were tightened in 2008 (before the GFC), 2010, 2011, 2013, and eased in 2008 and 2009 (during the GFC), 2017 and 2018.
- Additional reserve requirements on deposits by non-residents, eased in 2008 and 2009 (during the GFC) and 2017, and tightened in 2010, 2011 and 2016.
- Limits on net positions on foreign-exchange derivatives by banks, established in 2011.
- Limits on foreign-exchange exposure by banks, tightened in 2010, 2011 and 2012, including higher capital requirements.
- Limits on interbank loans, established in July 2011.
- Higher risk weights for loans denominated in dollars for consumption and mortgage loans (the latter, according to loan-to-value ratios), established in 2013.

- Additional liquidity requirements in domestic and foreign currency, established in 2012, tightened in 2016 and 2018.
- Higher capital requirements for lending to SMEs, established in 2013.
- Limits on exchange rate turnover by pension funds, established in 2010.
- Limits on investment by non-residents in the market of the policy instrument of the Central Bank, established in 2010.

Another measure which does not appear in the IMaPP database but is significant is the obligation to advertise prices of goods and real estate in local currency (Armas 2016), to solidify the role of the Nuevo Sol as unit of account. Armas notes that there is still room to proceed in terms of currency denomination of infrastructure investment and public utilities tariffs.

These measures had multiple effects, most of them positive:

Dynamic loan loss provision attenuated rates of credit growth. Minaya et al (2017) found that the activation of dynamic loan loss provision reduced the growth rate of credit by 1.4%.

- Limits on external debt and short-term debt had the intended effect of diminishing bank external indebtedness and short-term external debt (Choy and Chang 2014).
- Additional reserve requirement in foreign currency had the positive effect of reducing the dollarization of deposits.
- Additional risk weight requirements for loans denominated in foreign currency also managed to switch credit from being denominated in USD to being denominated in local currency (Minaya et al 2017).

In sum, the implemented MPPs helped to address both structural (dollarization, systemic risk, and resilience) and cyclical (credit growth rates), external and domestic vulnerabilities of the Peruvian financial system.

## **F. Macprudential policies during COVID-19**

In what refers to its macrofinancial impact, the COVID-19 pandemic had a similar effect on the countries under analysis and elicited a similar response in terms of macroprudential policies. The shock also revealed some of the vulnerabilities presented in this survey, such as the negative conditions implied by the presence of non-resident investors in domestic debt markets.

The region faced both an external and an internal shock. There were unprecedented capital outflows, massive and sudden depreciations, and increments in sovereign spreads, aggravated by the presence of non-resident investors (Bortz et al 2020). There were (initially) falls in commodity prices which were later reversed, except for energy prices. On the domestic front, on top of the fall in economic activity due to different measures of lockdown restrictions, there were severe financial disturbances. These are mentioned in the Financial Stability Reports issued by each central bank, and in the Article IV Consultation Staff Reports of the IMF. The policy response was very similar across all the countries in this survey, in terms of objectives and instruments.

The BCB mentions (BCB 2020) severe disruptions in domestic financial markets, with rising margin calls, rising liquidity needs and credit demand. It also faced substantial capital outflows that led to major exchange rate depreciations and fall in asset prices (such as the stock exchange). In that regard, the BCB implemented different sorts of measures. On the external front, it intervened in FX markets and provided FX liquidity to bank and non-bank financial institutions (BCB 2020, 58). It should also be noticed that Brazil agreed to the establishment of a swap line with the Federal Reserve, that eventually quarrelled the pressure on its exchange rate (Aguilar and Cantú 2020). On the domestic front, the BCB implemented an asset purchase program, reduced reserve requirements, reduced mandatory Liquidity Coverage Ratios (LCRs), instrumented a Special Temporary Liquidity Facility, diminished the required Capital Conservation Buffers (CCBs), reduced risk-weight factors for SME lending, eased norms regarding dates of borrowers' obligation payments and suspended dividend pay-outs and share buybacks.

In the case of Chile, it also had the largest capital outflow ever recorded (BCCh 2020, 17). It observed a spike in local lending rates at the beginning of the pandemic, and distortions in domestic liquidity, as other countries. To boost FX resources, the country obtained a Flexible Credit Line (FCL) with the IMF. To counteract FX volatility, the CBC implemented sales of US dollars, FX swaps and repos (BCCh 2020). It provided liquidity lines in USD and Chilean peso, extending the maturity of the programmes, and suspended maturity mismatch requirements. It also relaxed LCRs, adjusted regulation on provisions to help struggling debtors, and implemented new liquidity lines to support lending.

On top of the external shock faced by many countries in the region, Colombia's external profile was particularly affected by the fall in oil prices and by the downgrading of its sovereign credit rating. The government extended its FCL with the IMF. The Banrep intervened in the forward FX market, and auctioned FX swaps. It also reduced reserve requirements, implemented asset purchases programmes, and eased collateral frameworks. The Financial Superintendence, in turn, eased conditions on borrowers to protect their credit ratings during the pandemic.

Mexico followed a similar approach regarding the macroprudential response. The Banxico implemented liquidity lines, reduced reserve requirements, extended the collateral framework, expanded dollar liquidity lines and FX derivatives supply, and implemented credit lines to banks to maintain a proper flow of credit to the private sector, meeting increased demand. It eased LCR and CCB requirements, and deferred credit payments.

Finally, Peru implemented policies and reached agreements with international institutions to increased FX supply and hedging. The Peruvian central bank participated in a dollar liquidity facility of the Federal Reserve, while the country obtained a FCL from the IMF. The central bank reduced reserve requirements, extended liquidity facilities, eased provision requirements, and implemented asset purchase programmes.

## G. Summary of measures and policy lessons

Table VI.5 sums up the measures listed in this survey, by objective and by country of adoption. We assess the impact of these MPPs according to what was expressed above. The annex provides a more detailed description of the macroprudential measures implemented in each of economies analysed in this chapter.

Table VI.5  
Summary of MPPs in Latin America

Objectives	Measures	Country	Impact
External Vulnerabilities	Limits on currency mismatch for banks.	Bra/Chi/Col/ Mex/Peru	Successful
	Limits on currency exposure for banks' borrowers	Chile	
	URR on non-residents portfolio inflows	Bra/Col/Peru	Relatively Successful
	Short-term liquidity requirements in foreign currency.	Mex/Peru	
	Additional reserve requirements on external debts of financial institutions.	Peru	Successful
	Additional reserve requirements on foreign currency liabilities of banks	Peru	Successful
	URR, taxes and limits on net positions on FX derivatives	Bra/Col/Peru	Relatively Successful
	Higher risk weights for dollar-denominated loans	Peru	Successful
	Limits on FX turnover by pension funds	Peru	Successful
	Limits on investment by non-residents in specific instruments and markets	Peru	Successful
	Prohibitions of deposits in FX	Brazil	Successful
	Limits on access to FX Market	Brazil	Successful
	URR and limits on short-term external borrowing	Brazil	Successful

Table VI.5 (concluded)

Objectives	Measures	Country	Impact
Basel III	Dynamic / Countercyclical loan-loss provisions	Chi/Col/Mex/ Peru	Relatively Successful
	LCR	Bra/Chi/Mex	
	NSFR	Bra/Chi	
	CCB	Bra/Chi/Mex	
	SIFIs	Chi/Mex/Peru	
	Leverage Ratio	Bra/Chi	
Systemic Risk	Limits on concentrated and related investment	Chi/Mex	Successful
	Limits on banks' trading and investment instruments	Chile	Successful
	Limits on interbank lending	Chi/Mex/Peru	Successful
	Limits on interbank short-term funding	Chile	Successful
Dampening credit cycle	Capital requirements for specific domestic lending	Bra/Peru	Relatively Successful
	Limits on LTV	Chi/Mex	
	Countercyclical RR	Bra/Peru	Relatively Successful
	Limits and taxes on consumer credit	Brazil	Relatively Successful

**Source:** Own elaboration.

Some of the measures obey different objectives. For instance, while some countries adopted a Leverage Ratio in order to comply with the Basel III framework, others (such as Chile) had it from earlier. There is lack of evidence about the impact of some measures, either because they were recently adopted, or because they were not tested so far. For others, evidence is mixed. For instance, countercyclical RR was found to be more effective in boosts (alleviating liquidity pressures) than in booms. There is opposite evidence of countercyclical loan-loss provision. Measures such as URR and taxes on non-residents were mildly successful, but had stronger effects when complemented, for instance, with taxes on derivatives.

If there are policy lessons to be drawn from this survey, one can make the following conclusions:

- The Latin American region has adopted a macroprudential approach to financial regulation even before than the current global trend. This approach is particularly identifiable in the measures taken to contain FX vulnerability. It also obeys to specific and idiosyncratic characteristics of the surveyed economies, such as the presence of foreign banks, or the degree of interconnectedness within the banking sector and between financial sectors.
- In that regard, the case of Peru is clearly remarkable, because it succeeded in diminishing the degree of dollarization of deposits and credits by pressuring banks (among other measures, and together with macroeconomic stability).



- The Basel III approach, therefore, had and still must be complemented with more focus on external vulnerabilities, which are not thoroughly addressed in the global macroprudential framework.
- The newly developed vulnerabilities are not concentrated on banks, which are tightly regulated, but on borrowers, particularly external borrowing by the corporate non-financial sector. There are examples within the region (such as limits, taxes, and reserve requirements on external borrowing) that provide illustrations about ways to approach these new vulnerabilities. However, the current policy perspective seems to follow a different approach, favouring for instance privately issued hedge instruments.
- The fact that some measures have different impact on booms and on busts calls for an integrated, comprehensive, and holistic approach to macroprudential regulation, going beyond Tinbergen's Rule (Tinbergen 1952) and adopt multiple instruments to multiple objectives.

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## Annex VI.A1

### Macroprudential measures in selected Latin American countries

Table VI.A1.1  
Latin America: Macroprudential Measures

Country	Context	Objective/Target	Measures	Type of market/ agent/ Flow regulated	Price or Quantity control	Short-term / long-term
Chile	Aftermath of 1980s external debt and financial crisis	Reduce external vulnerability	Limits on currency mismatches for banks	Financial sector	Quantity	Short-term
	Aftermath of East Asian crisis	Reduce external vulnerability	Limits on currency exposure for banks' borrowers	Non-Financial Private Sector	Quantity	Long-term
	Development of macroprudential framework by FSB	Comply with Basel III	Dynamic/countercyclical loan loss provisions	Non-Financial Private Sector	Quantity	Short-term
	Development of macroprudential framework by FSB	Comply with Basel III	NSFR	Financial Sector	Quantity	Long-term
	Development of macroprudential framework by FSB	Comply with Basel III	SIFI	Financial Sector	Price	Long-term
	Aftermath of 1980s external debt crisis /	Comply with Basel III	Leverage ratio	Financial Sector	Quantity	Long-term
	Aftermath of 1980s external debt and financial crisis	Comply with Basel III	Limits on concentrated and related investment	Financial & Non-Financial Sector	Quantity	Long-term
	Aftermath of 1980s external debt and financial crisis	Reduce systemic risk	Limits on bank's trading and investment instruments	Financial sector	Quantity	Short-term
	Aftermath of 1980s external debt and financial crisis	Reduce systemic risk	Limits on interbank lending	Financial sector	Quantity	Long-term
	Aftermath of East Asian crisis	Reduce systemic risk	Limits on inter-bank short-term funding	Financial sector	Quantity	Long-term
	Surge in Domestic credit in 2000s	Dampening the credit cycle	Limits on Loan-to-Value-Ratio	Non-Financial Private Sector	Quantity	Short-term

Source: Own elaboration on the basis of Alam et al. (2019).

**Table VI.A1.2**  
**Latin America: Macroprudential Measures**

Country	Context	Objective/Target	Measures	Type of market/agent/ Flow regulated	Price or Quantity control	Short-term/long-term
Colombia	Aftermath of 1998 crisis	Reduce external vulnerability	Limits on currency mismatches for banks	Financial sector	Quantity	Long-term
	Surges of capital inflows	Reduce external vulnerability	Unremunerated reserve requirements on non-residents portfolio inflows	Foreign investors	Price	Short-term
	Surges of capital inflows	Reduce external vulnerability	Unremunerated reserve requirements, taxes, and limits on net positions on foreign exchange derivatives	Foreign investors	Price	Short-term
	Aftermath of 1998 crisis	Reduce systemic risk	Loan-to-Value ratios	Financial sector	Quantity	Long-term
	Aftermath of 1998 crisis	Reduce systemic risk	Caps on Debt-to-income ratios	Financial sector		Long-term
	Credit boom	Dampening credit cycle	Dynamic/countercyclical loan loss provisions	Financial sector	Quantity	Short-term

**Source:** Own elaboration on the basis of Alam et al. (2019).

**Table VI.A1.3**  
**Latin America: Macroprudential Measures**

Country	Context	Objective/Target	Measures	Type of market/agent/ Flow regulated	Price or Quantity control	Short-term/long-term
Brazil	Banking regulation in the 1960s	Reduce external vulnerability	Limits on currency mismatch for banks.	Financial sector	Quantity	Long-term
	Surges in capital inflows	Reduce external vulnerability	Unremunerated reserve requirements on non-residents portfolio inflows	Financial sector	Price	Short-term
	Surges in capital inflows	Reduce external vulnerability	Unremunerated reserve requirements taxes and limits on net positions on foreign exchange derivatives	Foreign investors	Price	Short-term
	Banking regulation in the 1960s	Reduce external vulnerability	Limits on access to foreign exchange Market	Private sectors	Quantity	
	Surges in capital inflows	Reduce external vulnerability	Unremunerated reserve requirements and limits on short-term external borrowing	Foreign investors and domestic private sector	Price	Short-term
	Banking regulation in the 1960s	Reduce external vulnerability	Prohibitions of deposits in foreign exchange	Private sector	Quantity	Long-term
	Development of macroprudential framework by FSB	Comply with Basel III	LCR	Financial sector	Quantity	Long-term
	Development of macroprudential framework by FSB	Comply with Basel III	NSFR	Financial sector	Quantity	Long-term
	Development of macroprudential framework by FSB	Comply with Basel III	CCB	Financial sector	Quantity	Short-term
	Development of macroprudential framework by FSB	Comply with Basel III	Leverage Ratio	Financial sector	Quantity	Long-term
	Credit boom	Dampening the credit cycle	Capital requirements for specific domestic lending	Financial sector	Quantity	Short-term
	Development of macroprudential framework by FSB	Dampening the credit cycle	Countercyclical RR	Financial sector	Quantity	Short-term
Credit Boom	Dampening the credit cycle	Limits and taxes on consumer credit	Private non-financial sector	Price and quantity	Short-term	

**Source:** Own elaboration on the basis of Alam et al. (2019).

**Table VI.A1.4**  
**Latin America: Macroprudential Measures**

Country	Context	Objective/Target	Measures Quantity control	Type of market/ agent/ Flow regulated	Price or Quantity control	Short- term/long- term
Mexico	Aftermath of 1994 external and financial crisis	Reduce external vulnerability	Limits on currency mismatches for banks	Financial sector	Quantity	Short-term
	Surges in capital inflows	Reduce external vulnerability	Short-term liquidity requirements in foreign currency	Financial sector	Quantity	Short-term
	Development of macroprudential framework by FSB	Comply with Basel III	Dynamic/countercyclical loan loss provisions	Financial sector	Quantity	Short-term
	Development of macroprudential framework by FSB	Comply with Basel III	LCR	Financial sector	Quantity	Short-term
	Development of macroprudential framework by FSB	Comply with Basel III	CCB	Financial sector	Quantity	Short-term
	Development of macroprudential framework by FSB	Comply with Basel III	SIFIs	Financial sector	Quantity	Long-term
	Concentration of financial system	Reduce systemic risk	Limits on concentrated and related investment	Financial sector	Quantity	Short-term
	Concentration of financial system	Reduce systemic risk	Limits on interbank lending	Financial sector	Quantity	Short-term
	Credit boom	Dampen the credit cycle	Limits on LTV	Financial sector	Quantity	Short-term

**Source:** Own elaboration on the basis of Alam et al. (2019).



**Table VI.A1.5**  
**Latin America: Macroprudential Measures**

Country	Context	Objective/Target	Measures	Type of market/agent/ Flow regulated	Price or Quantity control	Short-term/long-term
Peru	Dollarization of credits and deposits	Reduce external vulnerability	Limits on currency mismatches for banks	Financial sector	Quantity	Short-term
	Surges in capital inflows	Reduce external vulnerability	Unremunerated reserve requirements on non-residents portfolio inflows	Foreign investors	Price	Short-term
	Dollarization of credits and deposits	Reduce external vulnerability	Short-term liquidity requirements in foreign currency	Financial sector	Quantity	Short-term
	Surges in capital inflows	Reduce external vulnerability	Additional reserve requirements on external debt of financial institutions	Financial sector	Price	Short-term
	Dollarization of credits and deposits	Reduce external vulnerability	Additional reserve requirements on foreign currency liability of banks	Financial sector	Price	Short-term
	Surges in capital inflows	Reduce external vulnerability	Unremunerated reserve requirements, taxes, and limits on net positions on foreign exchange derivatives	Foreign investors and financial sector	Price	Short-term
	Dollarization of credits and deposits	Reduce external vulnerability	Higher risk weights for dollar-denominated loans	Financial sector	Quantity	Long-term
	Dollarization of credits and deposits	Reduce external vulnerability	Limits on foreign exchange turnover by pension funds	Pension funds	Quantity	Short-term
	Surges in capital inflows	Reduce external vulnerability	Limits on investment by non-residents in specific instruments and markets	Foreign investors	Quantity	Long-term
	Credit boom	Comply with Basel III	Dynamic/countercyclical loan loss provisions	Financial sector	Quantity	Short-term
	Development of macroprudential framework by FSB	Comply with Basel III	SIFIs	Financial sector	Quantity	Long-term
	Development of macroprudential framework by FSB	Reduce systemic risk	Limits on interbank lending	Financial sector	Quantity	Long-term
	Credit boom	Dampening the credit cycle	Capital requirements for specific domestic lending	Financial sector	Quantity	Short-term
	Development of macroprudential framework by FSB	Dampening the credit cycle	Countercyclical RR	Financial sector	Price	Short-term

**Source:** Own elaboration on the basis of Alam et al. (2019).



## Chapter VII

# **A Framework to Interpret Macroprudential Policies in an Era of Financialization**

*Matías Vernengo*<sup>1</sup>

### **Introduction**

Considering the urgent need for macroeconomic stability, this report will evaluate and analyze the use of macroprudential measures to support policy responses and strategies for low- and middle-income countries in Latin America and the Caribbean (LAC) to maintain the policy space necessary to both weather the immediate economic impacts and prepare for the road to recovery. The paper will also examine how macroprudential policies affect the real economy and the possibilities of building back better policies that can contribute to provide finance and reduce uncertainty for investments necessary to avoid the external constraint, and promote environmentally friendly sectors, in particular to encourage the transition towards clean energy. A critique of the International Monetary Fund (IMF) approach and a brief alternative framework based on the case studies presented, with particular emphasis on the LAC case, are presented. Policy proposals associated to the current crisis that follow the study cases and the alternative framework developed are briefly discussed too.

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## A. The origins and evolution of macroprudential policies

Historically the origins of what might be effectively referred to as macroprudential regulation starts with the transition of the Bank of England into a modern central bank (Goodhart, 2011a).<sup>2</sup> In this view, modern central banks were also concerned with the financial stability of the whole system and the early regulation imposed could be seen as the seeds of a macroprudential framework. Microprudential policies, normally seen as essentially connected with the soundness of individual institutions would be narrower than macroprudential regulations that are concerned with systemic risk and the functioning of the financial system as a whole. In this context, the central reason for financial recessions is the existence of systemic risk, even the concept was not fully developed in that period. In the United States, from around 1832, when the Second Bank of the United States was not re-chartered by Andrew Jackson, to the Civil War, there was no effective regulation of financial markets. And a central bank proper would only be created with the Federal Reserve Board Act of 1913, even if from the Civil War period the Treasury did act to some extent as a central bank, issuing a national currency backed by government securities (Wood, 2005). Banking panics, as financial crises were referred to in the nineteenth-century, were normal and occurring with increasing regularity. That was true too in the post-bellum period, with crises occurring in 1873, 1884, 1893, and 1907.

The late nineteenth-century period saw the rise of a preoccupation with monopolies, and new legislation trying to regulate large trusts was implemented.<sup>3</sup> The rise of the regulatory era and of what might be termed the regulatory state in the so-called Progressive Era, was reinforced with the New Deal policies of the 1930s, and the reform of the Federal Reserve with the separation between commercial and investment bank activities, associated with the Glass-Steagall Act of 1933, the creation of the Securities Exchange Commission in the same year, and the centralization of power with the Federal Reserve Board in Washington, DC, after the Banking Act

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<sup>2</sup> In this regard, the notion of modern central bank follows the definition utilized by Goodhart (2011a) to refer to the late nineteenth-century Bank of England, once the preoccupation with price stability and with financial stability, in particular after the role of Lender of Last Resort (LOLR) was implemented. Note that alternative views suggest that older institutions, that were public or semi-public banks, that might not have been paper note issuers, and that acted fundamentally as fiscal agents of the state, can be seen as the original central banks (Vernengo, 2016; Bindseil, 2019).

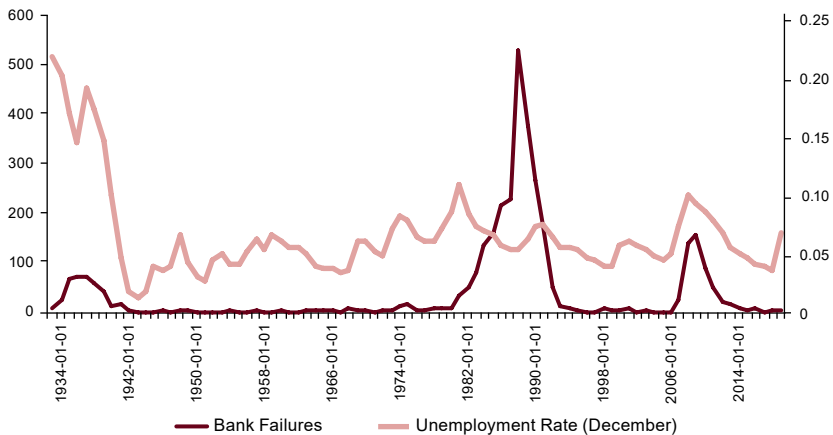
<sup>3</sup> This took place at the same time that the economics as a discipline became professionalized, instituting mechanisms by which the standards of the economists' work was to be judged by their own peers, and that marginalist or neoclassical economics became the dominant theoretical paradigm. Within this new approach, markets produced optimal allocation of resources, but the vast majority of the initial generation of economists associated with the neoclassical school thought that market failures – even though the term was only coined later – were commonly prevalent, and that government intervention was necessary in that context. See McColloch and Vernengo (2020).

of 1935 are the iconic regulatory changes of this period. The creation of deposit insurance, and the rules for disclosure of information and conflicts of interest were paramount to preclude the market imperfections that, in the view of many, were central for the understanding of the causes of the Great Depression (McColloch and Vernengo, 2020).

Regulation of financial markets and the need of a central bank are often predicated on the notion that financial markets are different than other markets and are prone to crisis (Goodhart, 1987). This view was certainly close to Keynes' view that financial markets should be seen as operating in conditions of what he referred to as a beauty contest, and were developed by some of his followers, in particular Hyman Minsky, who suggested that stability in financial markets was in itself destabilizing.

The effectiveness of the measures can be gauged by the significant reduction of the number of banking crisis in the period of the imposition of financial regulation in the early to mid-1930s and the period of deregulation that starts in the 1970s (Eatwell and Taylor, 1999). This is clear in the data presented in figure VII.1. As it can be seen the period between the 1940s and the 1970s, associated to the Bretton Woods era, was also devoid of banking failures, and was also associated to relatively low levels of unemployment.

Figure VII.1  
Bank failures and unemployment rate in the US (1934–2020)



Source: FRED and BLS.

It should be noted that deregulation for the most part was the result of complex historical events that were associated with the end of the Golden Age of Capitalism, but it did not require a complete reversal of the theoretical framework that underpinned the rise of the regulatory state. The main difference between the regulatory impulse of the previous era, and

the dominance of the financial deregulation views that became dominant increasingly in the 1970s was the view that while market failures were prevalent, government failures should be seen as even worse. It is worth noticing that while the regulation impulse received intellectual support from the Keynesian Revolution, the deregulation agenda went hand in hand with the counter offensive by Milton Friedman, who argued famously that speculation is stabilizing, and, perhaps, more importantly in this arena by the development of the notion of the Efficient Market Hypothesis (EMH), by both Eugene Fama and Paul Samuelson.

The resurgence of banking failures and financial crises starting in the 1980s, but more emphatically after the Global Financial Crisis of 2007-9, with its epicenter around the collapse of Lehman Brothers in 2008, had a significant and self-evident systemic effect, made the need for re-regulation of financial markets more urgent and created a consensus that deregulation had gone too far. Some efforts were visible at the domestic and at the international level, with an increasing concern with Systemically Important Financial Institution (SIFIs), namely banks and financial institutions that pose more risk to the system. Further, there has been an increasing understanding that the Financial Stability Board (FSB), in consultation with the Bank of International Settlements' (BIS) Basel Committee on Banking Supervision (BCBS) and national authorities, needs a stronger mandate to boost financial stability by enhancing banking supervision and promoting cooperation on a global basis and manage the systemic risk imposed by global SIFIs.

The evolution of the current BIS framework for financial stability supervision and cooperation goes back to the 1980s, during the begging of the deregulation era, and accepted the notion that speculation is overall stabilizing, and financial markets are efficient allocators of resources, channeling savings to investors. In particular, in the aftermath of the Latin American debt crisis of the 1980s, the international community agreed to call for a minimum ratio of capital to risk-weighted assets, in what became known as the Basel Capital Accord, and was later dubbed the Basel I framework for capital adequacy.<sup>4</sup> The framework accepted that risk evaluation was essentially in the hands of the financial institutions and not with the regulators, minimizing regulatory oversight. The revisions of the Basel accords started in the late 1990s and were heavily influenced by the string of financial crises that started with the Mexican Tequila crisis of 1995, the Asian crisis of 1997, the Russian crisis in 1998, and to a lesser extent the Brazilian and Argentinean crises in 1999 and 2001 respectively.

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<sup>4</sup> The Basel Accord was essentially an agreement between the Group of 10 (G-10) to apply common minimum capital standards to banks by 1992, in order to manage credit risk, seen at that time as the essential systemic risk to the functioning of the international financial system. On the history of the Basel accords see Goodhart (2011b).

The Basel II framework, which started to be developed in 1998 and was implemented in 2004, revised the minimum capital requirements, strengthened supervisory review of capital adequacy and emphasized the role of market discipline to impose sound banking practices. The new framework was designed to amplify the understanding of the underlying risks faced by international financial institutions faced with significant financial innovations that had taken place. In particular, Basel II relied on evaluating market risk, that was not contemplated in the Basel I framework, by evaluating credit exposure at market rather than book value. The emphasis was on strengthening supervisory mechanisms and market transparency to oversee regulations, with a notion that access to information would eliminate some of the imperfections that led to recurrent financial crises.

The Global Financial Crisis, as noted, indicated that the standards of Basel II were insufficient, and that excessive leverage and inadequate liquidity reserves were held by financial institutions. A poor regulatory environment, in which regulators were captured by the financial industry, and the prevalence of perverse incentives, that led to the mispricing of credit and liquidity risks, led to excessive credit growth leading to what was famously referred to as a global banking glut (Shin, 2012).<sup>5</sup> Although the notion of a global banking glut improves on the notion of a savings glut (Bernanke, 2005) emphasizing the notion that banking matters, it is predicated on the notion that the economy has a tendency to the optimal level, and that regulation should smooth the financial cycle. The Basel III regulatory accord was rolled out by the Basel Committee in 2009, and was designed to reduce risk within the international banking sector, by requiring banks to maintain proper leverage ratios and keep certain higher levels of capital reserves capital on hand.

The bank's core capital, are its equity and the disclosed reserves that appear on the bank's financial statements. In the event that a bank experiences significant losses, the core minimum capital requirements, the so-called tier 1 capital requirements, would provide a buffer to reduce the stress without disruption. However, financial institutions must also carry supplementary capital, tier 2 reserves, which would include the undisclosed funds that do not appear in the banks' statements. According to the BIS (2017: 1), introducing a leverage ratio buffer to further limit the leverage of global systemically important banks (G-SIBs) would be complemented by: "adding macroprudential elements to the regulatory

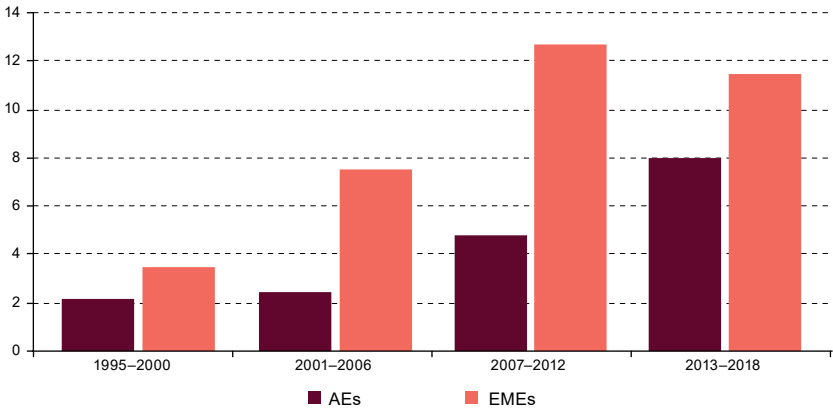
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<sup>5</sup> Shin (2012) argued that once gross flows of capital were taken into consideration, rather than net flows, the increase in credit in the United States was not the result of a global savings glut, as suggested by Bernanke (2005), and, hence not the current account result of higher savings in China that depressed the interest rate and generated perverse incentives. It was rather the cross-border flows and the movements in the capital and financial account that allowed G-SIFIs to take excessive risk and over-expand credit.

framework, by: (i) introducing capital buffers that are built up in good times and can be drawn down in times of stress to limit procyclicality; (ii) establishing a large exposures regime that mitigates systemic risks arising from interlinkages across financial institutions and concentrated exposures; and (iii) putting in place a capital buffer to address the externalities created by systemically important banks.”

In this sense, macroprudential policies are essentially seen as complementary to monetary policy and, used with the objective of reinforcing tightening during the boom to preclude new crises. Monetary policy and macroprudential regulation, mostly associated to the self-imposition of more stringent capital requirements, and the more transparent disclosure of information, would be in place to avoid excessive credit growth during a boom, and these should be loosened during crisis like the one caused by the COVID-19 pandemic. The idea is to make the credit cycle less procyclical. Basel III has put more emphasis on the cyclical nature of macroprudential regulations that are required to deal with a global financial cycle (Borio, 2019).<sup>6</sup> The countercyclical capital buffer works by requiring financial institutions to increase their capital reserves during booms, when systemic risks are increasing, and then release them in a recession. It is also clear that since the Global Financial Crisis the use of macroprudential policies by both advanced economies and developing countries has increased as evidenced by figure VII.2.

Figure VII.2  
Increase in macroprudential measures over time



Source: BIS (2018).

<sup>6</sup> In terms of macroprudential tools the Basel III accord has relied on three types of measures, capital-based tools like capital requirements, and countercyclical capital buffers, liquidity-based tools, e.g. requirement of certain liquidity coverage, and asset-based tools which limit loan-to-value (LTV) or loan-to-income (LTI) exposure. See BIS (2017).



The fundamental view is that financial crises occur as a result of market failures, and government failures that have exacerbated the problems by imposing procyclical policies should be also avoided. The new regulation fundamentally results from balancing the problems associated with the existence of both market and government imperfections.<sup>7</sup> While there is an increasing number of countries that participate and are bound by the rules of the Basel Committee, and the Basel III accord that should be in full operation by 2022, the role of IMF in rethinking the role of macroprudential policies and making them operational in developing countries cannot be underestimated. The relevance of the IMF in providing funds for developing countries facing balance of payments problems puts the institution at the center of the rethinking of macroeconomics and the macroeconomic policies, including macroprudential regulation.

## **B. The IMF stance on macroprudential regulation**

A generally accepted definition of macroprudential policy is that it is one “that uses primarily prudential tools to limit systemic or system-wide financial risk, thereby limiting the incidence of disruptions in the provision of key financial services that can have serious consequences for the real economy by (i) dampening the build-up of financial imbalances and building defenses that contain the speed and sharpness of subsequent downswings and their effects on the economy; and (ii) identifying and addressing common exposures, risk concentrations, linkages, and interdependencies that are sources of contagion and spillover risks that may jeopardize the functioning of the system as a whole” (FSB, 2011). The concern is evidently with the economy as a whole and with spillovers that might have an economy wide effect. The fundamental problem with the definition is that there are some grey areas in the distinction between macroprudential policies and capital controls. These have both been dealt by the IMF as part of their capital flow management framework.

The IMF views on the role of capital flow management measures (CFMs), both capital control measures (CCMs) and of macroprudential measures (MPMs) have changed in the aftermath of the Global Financial Crisis. Most of the discussion of IMF’s views in this report are based on the paper “The Liberalization and Management of Capital Flows: An Institutional View” (IMF, 2012) and try to explain the Fund’s

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<sup>7</sup> Li and Maskin (2021) argue that there is no subfield of economics that presents a balanced view of market and government failures. For them: “public economics, [and] industrial organization [focus] on market failure and (un- like public choice) ignores the possibility of government failure. What we are calling for, by contrast, is a new field that studies the interaction between *both* kinds of failure” (Ibid.: 13). The new subfield is referred to as Government and Economics by them.

theoretical underpinning of the relationship between policies related to capital flows and macroprudential measures and its relation to the conventional literature on the subject.<sup>8</sup> The more recent paper “Toward an Integrated Policy Framework” is also analyzed (IMF, 2020). For the Fund, policies that affect capital flow management (CFMs), including capital controls (CCMs) and macro-prudential measures (MPMs), both aim to address systemic financial risk, and are to some extent complementary, but address slightly different problems and are not perfect substitutes. This view is also complemented by the notion that traditional macroeconomic policies are also complementary to capital flow management measures.

CCMs are designed to limit capital inflows while MPMS aim at reducing systemic financial risk. The fundamental idea is that CCMs should be used only in special circumstances to preclude the volatility associated with large changes in financial flows, while “[s]ystemic financial risks that are unrelated to capital flows are better addressed by macro-prudential measures (MPMs), which are targeted specifically to deal with such challenges” (IMF, 2012: 18). It is important to note that the IMF’s views on capital mobility have not changed significantly, in spite of the debate about the changes in the institutional position.<sup>9</sup>

In the report that lays out their new institutional view, the IMF says: “CFMs should not substitute for macroeconomic policies that are needed for warranted external adjustment, domestic macroeconomic stability, and effective operation of the international monetary system... Even when CFMs are desirable, their likely effectiveness remains a key consideration. CFMs’ effectiveness may be limited, especially if they are not accompanied by the needed macroeconomic adjustment” (IMF, 2012: 19). It should be noted that the policies needed for macroeconomic adjustment remain in the IMF view some degree of fiscal austerity and a depreciated currency to reduce balance of payments problems. This is still true with the Integrated Policy Framework (IPF), written under the direction of Gita Gopinath, the IMF’s Economic Counsellor and Director of Research Department (Gopinath, 2019). In their words: “[e]ven when those imperfections are present, the active use of FXI [Foreign Exchange Interventions], MPMs, and CFMs should generally be limited to shocks emanating from financial markets rather than

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<sup>8</sup> Following Forbes et al. (2015), it would be better to think of CFMs as comprising CCMs and MPMs. This report also provides some critical perspective on the conventional view on the role of macroprudential measures, and the IMF institutional view.

<sup>9</sup> For an optimistic view of the change, that suggests that the IMF have moved away from the 1990s defense of capital account liberalization, something that never became official policy, see Grabel (2018). For an older and more skeptical view on the same subject, see Vernengo and Ford (2014).

the real economy (unless the shocks give rise to financial stability concerns). Thus, the standard macroeconomic model, which provides a good baseline for many AEs and some EMs, is nested within the broader IPF model" (IMF, 2020: 15). The standard model is not seriously questioned, and the conventional separation of real and monetary variables remains central to their analysis. The emphasis is also on the importance of preventing market imperfections.

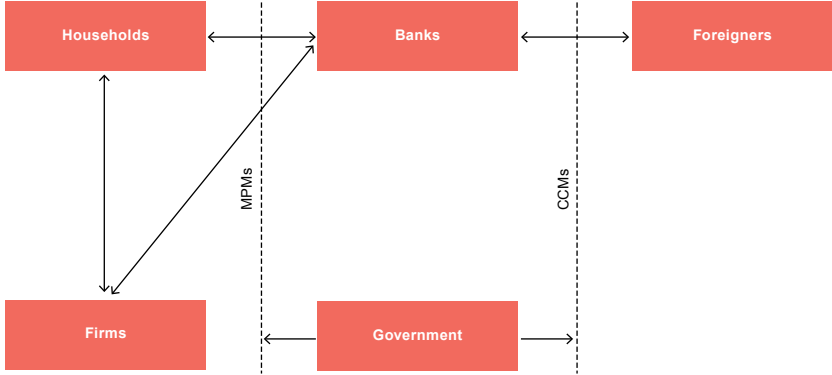
The logic of the need for capital mobility remains the same that was defended, since the 1950s, even when the Fund's mandate was explicit about the desirability of the use of capital controls. Article VI, section 3 says that countries can: "exercise such controls as are necessary to regulate international capital movements", however, the IMF reminds that: "members' right to regulate international capital movements is not unlimited" (IMF, 2012: 30), and remains in favor of capital account liberalization, if in a more subdued way. They argue that: "[ca]pital flow liberalization refers to the removal of CFMs. Liberalization does not rule out the maintenance of prudential measures nor the temporary re-imposition of CFMs under certain circumstances, if capital flows pose risks to macroeconomic or financial system stability" (Ibid.).

The view on capital mobility is still overwhelmingly as something positive that should be retained if possible. In their words:

"[t]here is no obligation to capital account liberalization under the IMF's legal framework. However, there is agreement that the flow of capital may entail important benefits for the country concerned as well as the global economy, provided that important preconditions for successful capital account openness, including in particular a robust regulatory and supervisory framework, are sufficiently met. An important long-term goal for G20 countries should be to put in place, domestically and internationally, through enhanced cooperation, the conditions that allow members to reap the benefits from free capital movements, while preventing and managing risks that could undermine financial stability and sustainable growth, and avoiding financial protectionism" (IMF: 2012: 39).

It seems that MPMs are necessary to some extent to reduce the need of CCMs, since one of the preconditions for "successful capital account openness" is "a robust regulatory and supervisory framework," which is often associated with macroprudential measures. Figure VII.3 shows a schematic framework to understand the IMF's views on CCMs and MPMs. Essentially, CCMs affect the relation of domestic economy with the world, while MPMs manage the risks of the financial sector.

Figure VII.3  
IMF's institutional view of CFMs



Source: Author's elaboration.

The IMF admits that sometimes it is impossible to disentangle CCMs and MPMs. They argue that:

“[t]here are situations, however, when CFMs and MPMs overlap. To the extent that capital flows are the source of systemic financial sector risks, the tools used to address those risks can be seen as both CFMs [sic] and MPMs. An example could be when capital inflows into the banking sector contribute to a boom in domestic credit and asset prices. A restriction on banks’ foreign borrowing, for example through a levy on bank foreign exchange inflows or required reserves on banks’ foreign exchange liabilities would aim to limit capital inflows, slow down domestic credit and asset price increases, and reduce banks’ liquidity and exchange rate risks” (IMF, 2012: 21).

In the same way that conventional views suggest that capital flows are ultimately positive and that, under certain conditions, capital account liberalization (the elimination of CCMs) should be encouraged, the consensus on the functioning of the financial sector is that it facilitates the expansion of the real economy, and that, under certain institutional circumstances, very often associated to limited regulatory and legal frameworks, they are neutral and do not affect real outcomes. Macroprudential policies are, in this framework, a complement to macroeconomic policies and an alternative to the undesired capital controls that should be used only sparingly in dire situations. The real economy is self-adjusting to some optimal level, even if there are significant market imperfections which call for government intervention. The conventional notion that the economic system is self-adjusted with a tendency to full

employment, in which money is neutral, is complemented by the idea that financial markets are stable, help facilitate the functioning of the economy, and are not the main source of crises. This view leads to the notion that regulation of financial markets is at least limited to the existence of imperfections. In addition, the existence of government failures suggests that caution should be exercised in the imposition of regulations and discretionary macroeconomic policies.

Asymmetric information – the fact that borrowers always have better information about their ability or willingness to repay a loan than creditors, leads to market failures, as banks might not extend loans to creditworthy clients – is one of the key market failures in the conventional literature on the subject. The existence of asymmetric information might lead to suboptimal results (e.g. adverse selection and moral hazard). Imperfections in a world of interconnected balance sheets may lead to even more crises. For example, the costs of credit intermediation change during the cycle. In a recession, when firm's balance sheets deteriorate, banks might demand a higher interest rate to compensate for risk, leading to a reduction in credit when firms need it the most, intensifying the business cycle. To the extent, that capital outflows intensify the problems associated with a deterioration of domestic agents' balance sheets, then a combination of CCMs and MPMs are seen as acceptable, at least in the short run.

In this context, fiscal policy is barely discussed and the predominance of monetary policy to manage the domestic financial cycle and mitigate the effects of the global financial cycle continue to dominate the conventional wisdom on macroeconomic policy. Monetary policy should be used by itself if it can stabilize both inflation and output, but if price stability comes at the cost of a recession, then there is some space for using macroprudential policy. In other words, only when and market imperfections based on lack of information or spillover effects create a systemic risk externality, then it would be acceptable to use monetary policy alongside macroprudential measures in order to limit the systemic risk stemming from the expansion in leverage ratios.<sup>10</sup> In this view, the

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<sup>10</sup> It is worth noticing that contrary to old Monetarist views on the role of money supply and its effect on the business cycle, modern New Keynesian macroeconomics emphasizes the role of risk, and recognizes that information problems and spillover effects are paramount to understand financial cycles. Changes in the money supply affect the amount of liquidity in the financial system, which is the total supply of funds available to be lent, but the level of credit would depend on the change in the amount of credit actually provided to borrowers. The levels of credit creation within an economy reflect perceived levels of risk, not just the level of the money supply. Financial markets amplify and create additional challenges for an economy, that in the absence of imperfections, would produce efficient outcomes. Financial accelerator and credit rationing models suggest that financial markets amplify demand shocks and are crucial for the business cycle. These models have received some criticism even within the mainstream of the profession, citing as an alternative the work of Hyman Minsky (Mian and Sufi, 2018: 32).

reasons for the increasing relevance of financial factors in the economic cycle are to be associated with the significant increase in the expansion of credit since the 1970s, which is often cited as one of the phenomena associated with the process of financialization.

Many authors within the mainstream associate the increase of credit necessary to maintain the expansion of aggregate demand to the increase in inequality since the 1970s, and emphasize the fact that this expansion occurred hand in hand with the reduction of interest rates, often referred to as the Liquidity Trap within country (Eggertsson and Krugman, 2012) and to savings gluts across countries (Mian and Sufi, 2018). Mian and Sufi (2018) emphasizes what he refers to as the credit-driven household demand model, and while Mian's recognition of the role of inequality and the importance of spillover effects, beyond asymmetric information, and the importance that investors "neglect tail risks" (Ibid.: 49) played a role in the Global Financial crisis, it is still true that his model remains grounded in New Keynesian analysis. As he suggests, in his model: "the downturn is driven initially by a decline in aggregate demand which is further amplified by nominal rigidities, constraints on monetary policy, banking sector disruptions, and legacy distortions from the boom. The credit-driven household demand channel is distinct from traditional financial accelerator models... primarily due to the centrality of house-holds as opposed to firms in explaining the real effects of credit supply expansions" (Ibid.: 52).<sup>11</sup>

More importantly Mian and Sufi (2018) remains tied to a view of the cycle as somewhat independent of growth, the latter being dependent on supply-side conditions presumably, and, hence, the role of monetary policy and macroprudential policy is essentially one that should be seen as smoothing out the cycle, by reducing the expansion of credit and the excessive risk taking during the boom. His policy conclusion, even if cautious, is that regulators should impose macroprudential limits on household debt and that monetary policymakers should "lean against the wind" during credit supply expansions (Ibid.: 52-53). These would contrast with alternative views, that emphasize the importance of credit for demand expansion, and of the latter for growth.

The work by Minsky, cited by Mian and Sufi (2018), is certainly relevant, but in ways that scape his analysis. Minsky argued that the conventional theory that suggested that the financial sector could only

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<sup>11</sup> The conventional view on the mechanism relating household debt and the demand boom has been compellingly challenged by Mason and Jayadev (2015) and Mason (2018) who suggest that the bulk of the increase in household debt was not associated to demand expansion, but simply resulting from an average higher interest rates, in particular in the period before the 2000s. Note that other the fundamental channel through which debt affects household consumption would be through the mortgage market.

be disrupt the functioning of an otherwise stable economy and that was equivalent to a barter economy, while the capitalist economies discussed by Keynes and his followers corresponded to what he referred to as the Wall Street paradigm. In other words, the relevant framework was that of a capitalist economy in which the objective is the accumulation of capital in monetary form. The central idea in Minsky's Financial Instability Hypothesis (FIH) was that the normal functioning of the capitalist economy would lead to a financial crisis, not as a result of imperfections, but because the process of competition would compel firms to adopt increasingly fragile financial structures. In other words, in his famous dictum, stability was destabilizing. This view, is in accordance with the so-called critical macro-finance (CMF) approach that argues that global finance is organized on interconnected, hierarchical balance sheets, increasingly subject to time-critical liquidity (see, for example, Bonizzi and Kaltenbrunner, 2020, and Gabor, 2020). This is of particular importance to understand the role of macroprudential measures in peripheral countries.

### **C. Macroprudential policies for development**

In the alternative CMF framework, the simple dichotomy between CCMs, designed to limit capital inflows when imperfections make them destabilizing, and MPMS, to reduce systemic financial risk, is untenable. Economic agents accumulate in a global economy where balance sheets are interconnected, and the balance sheets of economic agents in peripheral economies, denominated in foreign currency, are to some extent integrated into the global financial networks that are dominated by institutions, and agents from central countries. Flows of capital that affect the valuations of the balance sheets of domestic agents in the periphery cannot be disentangled from the domestic systemic risks associated with the financial sector, neither could be the latter be simply associated with excessive liquidity (Akyüz, 2021).

In this regard, the central position of the dollar, as the key reserve and vehicle currency in the global economy, puts the United States, and the so-called IMF-Wall-Street Complex (Bhagwati, 1998) at the center of the transmission mechanism of global financial cycles (Miranda-Agrippino et al., 2020). The surge in capital flows, in particular in gross flows, which suggest that centrality of capital and financial account rather than current account movements in explaining volatility, has been dealt in a variety of ways, as the three regional studies have demonstrated. The surge in the use of macroprudential measures in the last decades does not represent a more desirable complement to relatively tight monetary policy, to preclude excessive risk taking

as in the IMF's institutional view, but a fundamental complement to macroeconomic policies geared towards promoting growth, with the structural transformation of the economy, while avoiding the perils of the external constraint. In that regard, capital controls are a necessary complement of macroprudential policies, and not a substitute.

Looking at the evidence presented in the other papers in the study, it is clear that some developing countries have relied more on macroeconomic policies, such as the maintenance of a high or low interest rate (depending on the circumstances), or the use of foreign exchange market intervention (FXIs), again to promote currency appreciation or depreciation according to the necessities, than on other capital flow management measures. In other cases, macroeconomic policies have been accompanied by CFMs, both CCMs and MPMs, such as taxes on certain types of inflows, etc. (see Appendix for a list of measures utilized in some of the LAC countries included in the case study). This has made some traditional measures of financial vulnerability less reliable, and the risks of a financial crisis, in particular associated to changes in the valuation of balance sheets considerably more difficult to assess.

All countries in the Latin American study show current account deficits and a negative Net International Investment Positions (NIIP), and had, for the most part, adopted Basel III regulatory standards. Yet, as noted by Forni and Turner (2020) this was only possible as a result of the surge in "dollar bonds issued by emerging market economy (EME) corporates," which seem to significantly increase the risk of a crisis.<sup>12</sup> Arguably the lack of space for more expansionary demand management policies during the pandemic in the region, which had one of the worst downturns globally, is associated to these financial risks. All countries in the Latin American study show current account deficits and a negative Net International Investment Positions (NIIP). This does not mean that the current account does not matter. Looking at the United States and China we have that the former has a persistent negative NIIP while the latter has a positive one (figure VII.4).

Yet, having a negative NIIP is not necessarily a problem, and a positive one, not necessarily an advantage. Many analysts think that the United States NIIP is not sustainable and from time to time someone suggests that a run of the dollar is possible. Once one considers that the United States holds the key or hegemonic currency much of the discussion about the dangers of the unsustainability of the NIIP and the paradox of the positive net investment income position sort of vanishes. United States' debts are in dollars, which implies that by definition, the key currency is

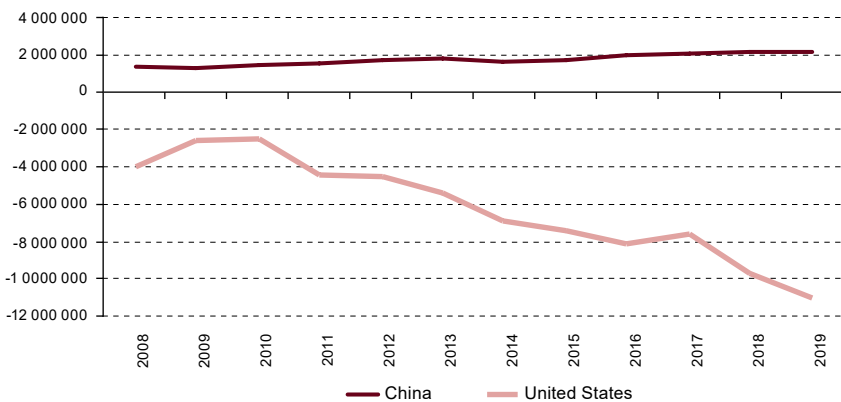
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<sup>12</sup> The surge in corporate debt is well documented. As the BIS Global Liquidity indicators show, dollar credit to emerging market and developing economies (EMDEs) expanded by 7% year-on-year, surpassing the \$4 trillion mark (BIS, 2020).



the risk-free asset and, hence, investments denominated in other currencies must pay a risk premium. In fact, Miranda-Agrippino et al. (2020) show that while China has been central to the networks of production globally, integrating successfully into the Global Value-Added Chains (GVCs) the same is not true about the Chinese integration into financial networks at a global level. They say that: “[t]he Chinese influence through portfolio investment is incompatible with the US and even negligible compared to the most financially-developed European economies” (Ibid.: 15-16).

**Figure VII.4**  
**Net International Investment Position**



Source: IMF.

Hence, the problem is not the irrelevance of the current account deficits or the negative NIIP, but the fact that these are not issues if the country has, like the United States, the ability to accumulate debts in its own currency. In the absence of that, something that has been dubbed the original sin (Eichengreen and Hausman, 1999), the accumulation of significant amounts of dollar reserves had effectively become the main line of defense against external crises. Note, however, that while relevant for the alleviation of short-term pressures, accumulation of reserves does not preclude the need for export dynamism and current account surpluses, which are the only secure long-term source of foreign reserves in dollars. That remains relevant for LAC and other peripheral countries, whether the vulnerabilities and the possibilities of crisis originate in the current account, or, as it is more likely, in the capital and financial account.

Once it is understood that what is exported matters, then it is clear that the productive structure might be central in providing long-term stability financial stability to developing countries that are required to import intermediary and capital goods, and have limited ability to

borrow in their own currency (Felipe, 2010). The productive integration of the Asian countries might be the central difference with African and Latin American countries in the study, since the former have been more successful at maintaining current account surpluses, and transforming their productive structures and the sophistication of their exports in the period analyzed. In other words, there are important macroeconomic policies that are needed for avoiding external vulnerability, but also, and perhaps as crucial as the macroeconomic policies, there are microeconomic policies associated with the transformation of the productive structure, export dynamism and the ability to obtain foreign reserves that are necessary for precluding financial crises.

Here there are some important differences between the IMF and the CMF's views of the functioning of financial markets matter. The conventional view, supported by the IMF, emphasizes that macroprudential policies should complement macroeconomic policies, and that capital controls are a necessary evil to be used only in exceptional circumstances, while being silent about both the differences in debt in domestic and foreign currency and about the needs for the structural transformation of production. Further, the conventional view suggests that adjustment (e.g. contractionary) and regulation policies are needed in the boom to avoid the excessive leverage. The alternative view would suggest that macroprudential measures are not simply complements of austere macro policies in the boom, but would emphasize the need for macroprudential policies that recognize the relevance of debt in foreign debt, imposing more stringent reserve requirements on positions in foreign currency, and using capital controls as the norm of the functioning of the system. Macroprudential policies might be seen in this context, for example, as necessary for reducing the exposure of private agents to foreign denominated debt.

## **D. Conclusions**

The challenges imposed by capital flow liberalization, the removal of CFMs in the IMF jargon, has posed more challenges than benefits, and reregulation of financial markets in peripheral countries has been fraught with problems in a global environment in which the main international regulators, the BCBS, the BIS, the FSB, and the IMF, and the national regulators of the advanced economies that play a major role in those international institutions are reluctant to recognize the instability of capital flows. The persistent overestimation of the inherent stability of the international financial markets prevails at the highest levels of decision making. If there has been a retreat in the optimistic views about the relevance of trade liberalization, epitomized in the ongoing 'trade wars'

between the US and China (that remain deeply entangled nonetheless), then the lessons of capital flow liberalization and the recurrent crises in the periphery, is that a greater degree of policy autonomy can only be regained by promoting accumulation in domestic denominated assets, and curtailing capital flows in a more persistent way.

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## Annex VII.A1

**Table VII.A1.1**  
**Macroprudential measures in Latin American countries**

Country	Measure	Years
Argentina	Mandatory 365-day unremunerated deposit equivalent to 30% of capital inflows was introduced.	2005–2016
	Prior authorization became required for foreign exchange transactions including tourism and tourism packages and web-based purchases abroad.	2011–2015
	Producers of crude petroleum and natural and liquefied gas must surrender 100% of their FX export earnings.	2011–2017
	Local insurance companies were banned from holding investments abroad.	2011–2015
	A restriction on FX transfers (both inflows and outflows) between local and foreign bank accounts was imposed.	2014–2016
	A limit on banks' net FX positions, including holdings of cash and US dollar bonds, and the net FX futures position was introduced.	2014, eased 2016, and tightened in 2018 and 2019
	Brazil	A tax was imposed on inflows related to external loans. The tax rates and/or taxable maturities varied.
The IOF tax covered (at varying rates) different types of capital flows, for example, fixed income securities, stocks, margin deposits, derivative contracts, and FDI.		2009, eased in 2013, 2014 and 2016
Peru	A reserve requirement on foreign credit lines and other external obligations maturing in less than two years was increased from zero to 35%.	2010, tightened and then eased again in 2015
	A limit was set at 40% of net worth or 400 million sol for the net position in derivatives in foreign currency, whichever was higher.	2011, tightened in 2012 and then eased in 2015
	The application of income tax at a rate of 30% was extended to all nonresident gains on financial derivatives transactions with residents, regardless of the agreed term.	2011, eased 2015
	The reserve requirements in domestic currency were increased for financial institutions whose daily operations with foreign exchange derivatives exceed 10% of their equity or US\$100 million, or whose weekly operations exceed 30% of equity or US\$400 million.	2015, tightened 2015, and then eased in 2017, 2018 and 2019
	An additional reserve requirement was set for financial institutions whose short position in foreign exchange derivatives exceed 100% of current equity at the average short position in December 2014 or above US\$800 million (the additional reserve requirement was set to 50% of this surplus).	2015 and tightened the same year

**Source:** Author's own elaboration.



## Chapter VIII

# **A baseline stock-flow model for the analysis of macroprudential regulation guidelines and policies for Latin America and the Caribbean**

*Esteban Pérez Caldentey  
Lorenzo Nalin  
Leonardo Rojas<sup>1</sup>*

## **Introduction**

Macroprudential policy/regulation focusses on maintaining the stability of the financial system through the minimization of systemic risk. Within mainstream economics systemic risk originates in the existence of externalities affecting the financial sector. The literature on the subject identifies four different types of systemic externalities. These are informational contagion; loss of informational links between a failed financial institution and its customers; the existence of interconnectivity; and upward/downward liquidity spirals. These externalities give rise to financial cycles characterized by episodes of booms leading to busts.

In practice, macroprudential regulation consists of an array of instruments to avoid the excessive expansion and contraction of balance sheets and liquidity. They are aimed at mitigating the risks that arise

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from: (i) excessive credit growth and leverage; (ii) excessive maturity mismatch and market liquidity; (iii) direct and indirect exposure concentrations; (iv) misaligned incentives with a view to reducing moral hazard; and (v) strengthening the resilience of financial infrastructures.

In post-Keynesian economics the main reference for financial and macroprudential regulation is the work of Hyman Minsky (1919-1996) and derives directly from his main contribution to economics: the financial instability hypothesis (FIH). The FIH argues that financial fragility is endogenous to the normal workings of a free market economy. Contrary to the financially centered mainstream regulatory approach, systemic financial fragility can originate not only in the financial sector but also in the real sector (the non-financial corporate sector and household (residential housing) to a lesser extent).

According to the post-Keynesian view, capital requirements should be used, but high capital requirements should be avoided as these can be a source of financial instability. Leverage and interconnectedness are also sources of financial fragility. Macroprudential regulation should be dynamic in nature. It should reflect not only current and expected economic conditions and be institution specific but also take into account changes in the financial and real sectors, and be reassessed in line with the changes in financial institutions and in the structure of financial institutions and of the non-financial corporate sector.

This Minskyan approach suffers from two shortcomings. First as in the case of mainstream economies, it views the financial cycle as a boom-and-bust cycle. Second, the economic model that explains how financial fragility is generated is, in essence, microeconomic and cannot be expanded to the macroeconomic level.

This paper provides a critical view of macroprudential regulation/policies found in mainstream and post-Keynesian economics. Building on both approaches, and especially on post-Keynesian economics, while at the same time trying to avoid their weaknesses, the paper provides a macroeconomic framework that can be used as a basis for the analysis of macroprudential guidelines and policies.

The framework is based on the following on five main principles/guidelines: (i) financial fragility is endogenous and results from the normal functioning of market based economies driven by the profit motive; (ii) financial fragility can originate in the financial and real sectors of an economy; (iii) financial cycles are not necessarily driven by boom and busts and financial fragility need not originate in an economic boom; (iv) macroprudential policies should be viewed from a dynamic perspective, that is they must take into account the changes in



the international financial architecture/structure and be region/country specific; and (v) macroprudential regulation/guidelines requires a truly macroeconomic framework.

These principles are captured in the specification of a stock-flow model for Latin America and the Caribbean with five sectors (government, central bank, financial sector, private sector, and external sector). The model assumes that, as in the case of other developing economies, Latin American countries are balance-of-payments constrained but that the external constraint is mainly financial. Financial cycles are driven by external impulses and the transmission mechanisms identified are specific to the Latin American context.

On the basis, of the discussion in this paper and the analysis of macroprudential regulation at the conceptual level and practical levels in Africa Asia and Latin America found in Pérez Caldentey, Nalin and Rojas (DA COVID-19 Project Paper 18.21) the paper applies selected macroprudential measures to the financial cycle derived from the workings of the stock-flow model. These measures include limiting leverage through increase retained earnings and a cap on foreign currency borrower, and, also, include limiting speculation. The simulations are carried out assuming a sustainability rule for the government sector developed by UNCTAD.<sup>2</sup>

## **A. Macroprudential policies/regulation in mainstream economics**

Macroprudential policy/regulation focusses on maintaining the stability of the financial system as a whole, through the minimization of systemic risk. Systemic risk is defined as “the risk of disruption of financial services caused by a disruption of all or part of the financial system that may have a significant negative impact on the real economy.”<sup>3</sup> This includes limiting the formation of booms/busts of asset and credit bubbles and minimizing the economic and social costs associated with a credit crunch resulting from an excessive contraction of the balance sheets of financial institutions facing a common shock (Hanson, Kashyap, and Stein, 2010).

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<sup>2</sup> See De Freitas (2021) & Schonerwald (2021). This paper is a companion paper to Nalin, Rojas and Pérez Caldentey (2021) and to Pérez Caldentey Nalin and Rojas (2021).

<sup>3</sup> The origin of the term macro prudential dates back to the seventies (see Clement, 2010). Public references date back to the mid-80s receiving new impetus from the early 2000s (Galati and Moessner, 2011). According to part of the literature on macro-prudential regulation, systemic risk has two relevant dimensions, a temporary one – which is about how the risk of the financial system evolves over time, how it accumulates and how it is linked to the real economic cycle –and another intersectoral– which is about how risk is distributed throughout the financial system and what interconnections and common exposures can exist among its agents (IMF, 2010). See also Kaufman & Scott (2003).

## 1. Microprudential and macroprudential regulation

Macroprudential regulation was conceived to overcome the limits of micro prudential policy/regulation in addressing financial stability, systemic risk and the procyclicality of the financial sector (Ebrahimi & Lehar, 2017; Galati & Moessner, 2013; Tang et al. 2021). Micro prudential regulation, which is concerned with the factors that affect the stability of individual financial institutions, entails several fallacies of composition including the belief that the adequate regulation of an individual financial institutional is equivalent to the adequate regulation of the system as a whole, that “actions and decisions that make sense for individual institutions in isolation, always yield desirable aggregate outcomes”, and that the same regulation (for example capital requirements) applies equally to all institutions. (Ebrahimi & Lehar, 2017; Brunnermeier et al. 2009) (see, table VIII.1 below).

**Table VIII.1**  
**Micro and macroprudential regulation and their differences**

	Macroprudential	Microprudential
Proximate objective	Limit financial system wide distress	Limit distress of individual institutions
Ultimate objective	Avoid output (GDP) costs	Consumer (investor / depositor) protection
Characterization of risk	Seen as dependent on collective behavior (“endogenous”)	Seen as independent of individual agent’s behavior (“exogenous”)
Correlations and common exposures across institutions	Important	Irrelevant
Calibration of prudential controls	In terms of system-wide risk: top-down	In terms of risk of individual institutions: bottom-up

**Source:** Borio (2003) cited in Ebrahimi & Lehar (2017) p. 94.

In fact, the different degrees in size, leverage, the interconnectedness at the individual institutional level as well as the heterogeneity of financial institutions generates negative systemic externalities which give rise to financial cycles characterized by episodes of booms leading to busts. As explained by Brunnermeier et al. 2009, p.4: “Financial crashes do not occur randomly, but generally follow booms.”

## 2. The rationale for macroprudential regulation

The literature on the subject identifies four different types of systemic externalities. These are informational contagion; loss of informational links between a failed financial institution and its customers; existence of interconnectivity; and upward/downward liquidity spirals (see, table VIII.2). Using some of these externalities a financial cycle can be described as follows (ibid. p. 5):

“...a decline in the value of the assets held by a bank...Liquidity problems usually generate underlying solvency worries. In order to deal with such liquidity problems prior to failure, and in the course of liquidation after failure, the bank in difficulties will often be forced to sell assets (fire sales).<sup>4</sup> But such sales will drive down the current market price of the same assets held on other banks’ books, when these are valued on a mark-to-market basis. And, of course, the same is true the other way around; solvency is not exogenous to liquidity. When there is a generalised liquidity problem attempts to deal with it will lead to declines in asset values, creating a solvency problem, even where none existed before. In short, there is an internal amplifying process (liquidity spirals) whereby a falling asset market leads banks, investment houses, etc., to make more sales (deleveraging), which further drives down asset prices and financial intermediaries’ assessed profit and loss and balance sheet net worth.”

**Table VIII.2**  
**Systemic externalities and their effects**

Externality	Description and impact
Informational contagion (context of intermediaries with a maturity mismatch between assets and liabilities)	The failure of one bank increases the doubt of the solvency of another bank which is in the same category. Depositors and lenders of the latter bank lose confidence and can cause a liquidity problem for this bank.
Loss of access to future funding (for failed banks customers)	Client of one failed bank can try to transfer funds to another bank but this bank will have less information on the client and is likely, within a context of failing banks, to provide replacement credit facilities on more strict terms.
Interconnectedness	Banks and financial intermediaries tend to trade much more among themselves than do corporates. This interaction between banks and other financial intermediaries relate to forward interbank market and derivative markets and involves guarantees, credit default swaps and prime brokerage services.
Liquidity spirals (expansion)	Selling financial assets to regain liquidity and improve capital ratios.
Liquidity spirals (contraction)	Restrict new credit expansion through by rationing through higher margins/haircuts or raising interest rates or other costs to borrowers.

**Source:** Brunnermeier et al. 2009.

This scenario describes the “...internal, self-amplifying dynamic that has lain at the root of both the recent (Global Financial Crisis, 2008-2009), and virtually all prior, financial crises.”<sup>5</sup> Since, booms precede busts, the same logic underlying the bust scenario presented above applied to the upward phase of the cycle.

<sup>4</sup> See al Schleiffer and Vishny (2010) on fire sales.

<sup>5</sup> Ibid. The parenthesis were added by the authors of this paper.

In the description provided above the behavior of individual financial institutions is rational. It makes sense for individual financial institutions to sell assets (or acquire assets and expand credit) when faced with a liquidity constraint (with increased liquidity) and avoid insolvency. However, this falls prey to the fallacy of composition when considering all financial institutions. Hence, risk at the aggregate level is systemic and endogenous. It depends on the collective behavior of the different financial institutions.

The logic of behavior of the financial sector and its consequences at the aggregate level is not applicable to the non-financial corporate sector. As explained by Brunnermeier et al. 2009, p. 3:

“...the existence of sufficient externalities that the social, and overall, costs of market failure exceed both the private costs of failure and the extra costs of regulation is by far the most important reason why banks, and certain other key financial intermediaries and markets, need regulation. But why does the failure of banks, and of some other financial institutions, involve systemic externalities that are not present when an ordinary manufacturing or service-sector firm goes bust. The basic answer comes from the fact that the failure of a banking-type institution, say Lehman Bros, Northern Rock or Glitnir, weakens the other banks and financial markets with which they were involved, whereas the failure of, say, a car company or a laundry tends to strengthen the remaining companies in the same sector, by removing a competitor. And lying behind this is the even more important consideration that the continued health of the financial system, and even more so of the banking sector within it, is key to the satisfactory functioning of the wider economy, to a qualitatively different extent from most other sectors.”

### **3. The failure to understand the nature of systemic risk**

The failure to understand the systemic nature of risk can lead to amplify the mechanism and dynamics described above. This is exemplified by micro prudential regulation and can be illustrated, by the establishment of capital requirements on individual financial institutions and its consequences during the upward phase of the economic cycle.

A boom phase characterized by high profitability and low risk tends to increase capital ratios and thus generate the impression of greater solvency and better financial conditions. In turn, this encourages the financial system to build up its asset positions and, more specifically, the increase in loans based on the current economic conditions. However, this often occurs to the detriment of credit standards. Empirical evidence

for some developed countries reflects this stylized fact by showing that provisions tend to decrease in boom periods (Cavallo and Majnoni, 2001; Hahn et al., 2012).

On the liability side, financial institutions become more dependent on liquidity provided by other financial institutions. In this situation, the financial system tends to skew the composition and structure of liabilities towards a higher level of indebtedness, that is, towards higher leverage ratios,<sup>6</sup> so that the relationship between the growth rate of assets and that of leverage is positive. The correlation coefficient between the two variables for a sample of 21 U.S. banks for the period December 2003 to September 2010 equaled to 0.70 for the entire sample and 0.89 for investment banks.<sup>7</sup>

High leverage levels create considerable opportunities for profitability because the higher is the leverage level, the higher is the return on capital. In this regard, the expectation of higher returns provides an incentive for excessive leverage. The rate of return of equity (*ROE*) (a measure of profitability) equals the rate of return on assets (*ROA*) time leverage (*L*) so that  $ROE = ROA * L \Rightarrow \Delta L \Rightarrow \Delta ROE \text{ for } \overline{ROA}$ . But at the same time, however, a greater dependence on debt generates greater fragility since bigger risks are assumed due to the higher exposure and vulnerability to illiquidity and, even more important, to insolvency.<sup>8</sup>

As stated above the objective of macroprudential regulation is to correct for the externalities created by financial intermediaries that are at the root of financial cycles characterized by booms and busts. The more developed and sophisticated financial intermediaries and their instruments are, the greater will be the possibility for the existence and increased importance of the externalities described above and the more likely will be the occurrence of financial booms and busts.

In this sense, the development of the financial system is prone to distorting the function of financial intermediaries which in the mainstream view is to allocate (voluntary) savings towards investment (Shin, 2009). More precisely, the sophistication of financial system goes hand in hand with longer and indirect intermediation chains between savings and investment. Thus, macroprudential policies/regulation should amount to shortening intermediation chains and ensure that the credit granted by the financial system is determined by the savings decisions of economic agents. As explained by Shin (2009, p. 22): "The idea is to restrain the lengthening of intermediation chains, and encourage the formation of shorter intermediation chains."<sup>9</sup>

<sup>6</sup> Leverage (debt to equity ratio) reflects the extent to which financial intermediaries use borrowing to finance the acquisition of their assets.

<sup>7</sup> Pérez Caldentey and Cruz (2012).

<sup>8</sup> See Barajas et al. (2007).

<sup>9</sup> This has a marked Hayekian flavor. Hayek (1931) argued that distorting the relation between voluntary savings and investment by the banking system was the root of financial crises.

In practice, macroprudential regulation consists of an array of instruments to avoid the excessive expansion and contraction of balance sheets. These instruments are described in table VIII.3 (Araujo et al. 2020). They are aimed to mitigate the risks that arise from: (i) excessive credit growth and leverage; (ii) excessive maturity mismatch and market liquidity; (iii) direct and indirect exposure concentrations; (iv) misaligned incentives with a view to reducing moral hazard; and (v) strengthening the resilience of financial infrastructures (European Parliament, 2020).

**Table VIII.3**  
**List of macroprudential tools**

Groups	Tools	Definition
Broad based	Counter cyclical buffers	Requirement for banks to maintain a countercyclical capital buffer.
	Conservation buffers	Requirement for banks to maintain a capital buffer (includes de buffer established under Basel III).
	Capital requirements	Capital requirements for banks (risk weights, systemic risk buffers, capital conservation buffers).
	Leverage limits	Limit on leverage for banks (measure for capital divided by non-risk weighted exposures).
	Loan loss provisions	Includes dynamic provision and sectoral provisions (e.g. housing loans).
	Limits on credit growth	Limits on growth, or volume of aggregate credit, household sector credit, corporate sector credit by banks.
	Loan restrictions	Loan limits and prohibitions conditioned by loans characteristics (maturity, size, LTV ratio, interest rate) and bank characteristics.
Liquidity	Limits on foreign currency loans	Limits on foreign currency lending and rules/recommendations on foreign currency loans.
	Liquidity	Measures to mitigate systemic liquidity and funding risks. Includes minimum requirements for liquidity coverage ratios, liquid asset ratios, net stable funding ratios, core funding ratios, external debt restrictions.
	Limits on loan-to-deposit ratio	Limits to the loan-to-deposit ratios and penalties for high loan-to-deposit ratios.
	Limits on foreign exchange positions	Limits on net or gross foreign exchange positions, limits on foreign exchange exposures, foreign exchange funding and foreign mismatch regulations.
Housing	Reserve requirements	Reserve requirements (domestic or foreign currency) for macroprudential purposes.
	Limits on loan-to-value ratio	Limits to the loan-to-value ratios for housing, car and commercial real estate loans.
	Limits on the debt-service-to-income ratio	Limits to the size of debt services or debt relative to income (housing loans, consumer loans, commercial real estate loans).
Other	Systemically important financial institutions	Measures to mitigate risks from global and domestically systemically important financial institutions (includes capital and liquidity surcharges).
	Tax measures	Taxes and levies applied to specific transactions, assets and liabilities, including stamp duties and capital gain taxes.
	Other	Measure other than those in the above categories (i.e. stress testing, measures on interconnectedness, restrictions on profit distribution).

**Source:** Araujo et.al. (2020).

## B. Macroprudential policies/regulation in post-Keynesian economics

The term macroprudential is seldom used in post-Keynesian economics<sup>10</sup> which may reflect the fact post-Keynesians have paid little attention to the prudential regulation of banks and of the financial systems (Docherty, 2020), even though, paradoxically, these are central a monetary/financial theory of production.<sup>11</sup> The main reference for financial regulation in post-Keynesian economics is the work of Hyman Minsky (1919-1996) and derives directly from his main contribution to economics: the financial instability hypothesis (FIH).

### 1. The Financial Instability Hypothesis (FIH)

The FIH is meant to explain instability as “an internally generated result of the normal functioning of capitalist economies” (Minsky, 1972, pp.144-145; 1978, p.92, p.111). It is based on two theorems (Minsky, 1992, 1986).

The first states that a capitalist economy has financing regimes (characterized by relations between cash payment commitments on debts and expected cash receipts) under which it is stable and financing regimes under which it is unstable. Minsky identifies three financing regimes: hedge, speculative and Ponzi. Their importance and weight in economic unit’s portfolios determine to a large extent the stability or instability of an economy.

<sup>10</sup> The term macroprudential does not appear in the most comprehensive post-Keynesian textbook and it has only one reference to prudential regulation (Lavoie, 2014).

<sup>11</sup> This paradox is not easy to explain. The banking and the financial system played a central role in Keynes’s thought as exemplified by the role played by the banking system in the *Treatise on Money* (1930) and in other lesser known early works such as for example *War and the Financial System* (Keynes, 1983 (1914) pp. 269-271 and the review of Fisher’s *Purchasing Power of Money* (ibid. pp. 375-381) focusing on the transition periods between an increase in the money supply and the proportional increase in prices. Although in the *General Theory of Employment, Interest and Money* (1936), Keynes downplays the role of banks, financial markets and in particular the stock market are important components of his overall arguments. Keynes’s disciples including Robinson (1951) and Kahn (1954 (1972)) did not further than Keynes’ view of financial markets. As explained by Ingraio and Sardonì (2019, p. 127) both retained a two-asset analytical framework. Minsky (1975, p. 69) argues that Keynes did not provide a satisfactory discussion of finance, portfolios and how these relate to the pricing of capital assets and the pace of investment. Keynes focused on interest rate instead of on the price of capital assets and the terms of money loans. Also, when discussing the determination of the price of capital assets and financial assets he reverted to an equilibrium growth perspective rather than to a financial cycle. For his part Kalecki also emphasized the importance of financial markets and their potential for instability. He highlighted the importance of internal profits to reduce the financial risk of capital subscribers (Kalecki, 1969 (1954), pp. 91-95) and, also the role of private sector debt in leading to corporate collapse and a crisis of confidence (Kalecki, 1990 (1944)). It is worth mentioning that Sraffa (1922, p. 196) went beyond the figure of the Keynesian speculator and the Kaleckian rentier as he saw financiers and financial markets as an organized industry.

Hedge finance refers to a situation where the gross capital income of an economic unit (defined as gross profits before taxes minus interest paid on business debts) “exceeds by some margin the payment commitments due to debts in every relevant period over the horizon given by the debts now on the books and the borrowings that must be made if expected gross capital income is to be earned” (Minsky, 1980a, p. 25). Speculative finance refers to a situation where cash payment commitments on debts are greater or some periods than the expected gross capital income. Ponzi finance refers to “speculative units with the special characteristics that for some if not for all near term periods cash payment commitments to pay interest are not covered by the income portion of the expected excess of receipts over current labor and material costs.” Ponzi units must borrow to pay interest on their obligations so that the outstanding debt grows over time.

The FIH second theorem holds that prosperity is conducive to financial instability, i.e., “stability is destabilizing”. As Minsky put it: “. . . over periods of prolonged prosperity, the economy transits from financial relations that make for a stable system to financial relations that make for an unstable system” (Minsky, 1992, p.8).

## **2. The financial instability hypothesis (FIH) and its implications for financial regulation**

Minsky’s proposals for financial regulation derive directly from the FIH and its priors ‘that reflect views about the fundamental characterization of capitalist economies with sophisticated and ever-evolving financial structures’ (Minsky and Campbell, 1988, p. 3). The main prior is that ‘the endogenously-determined processes of capitalist economies become incoherent, as a result, of their own dynamics’ Ibid. The FIH provides a theory that jointly with empirical facts explains why the functioning of capitalist economies becomes susceptible to episodes of incoherence (ibid, p. 6).

Although Minsky did not use the terms micro or macroprudential, his analysis addresses the limitations of microprudential regulation and his proposals can be easily viewed as macroprudential regulation *avant la lettre* (Kregel, 2012, 2014).

Minsky recognized that capital requirements must be part of bank regulation and supervision (“In order to contain the destabilizing effect of banking, it is necessary to regulate the amount and the rate of increase of bank assets. The major control device is the permitted capital-asset ratio and the rate of growth of bank capital.” Minsky, 1986, p. 356). However, he warned against the use of capital requirements as a straight-jacket and in fact the use of higher capital requirements was



not conducive to financial stability as these could constrain profits and encourage banks to adopt riskier commercial practices.<sup>12</sup> Higher capital ratios implies a higher risk-return portfolio of assets to compensate for the negative effect on profitability.<sup>13</sup>

Minsky also focused his proposals on addressing leverage and interconnectedness as sources of instability very much in line with the consensus in macroprudential regulation. Debt and leverage and their perceptions (as captured in the borrower's and lender's risk) are of the essence to Minsky's depiction of the financial cycle.

Minsky's exposition of the FIH is framed in terms of the interplay between the supply price for investment and the demand price for capital goods adjusted for the borrower's and lender's risks. During the upward (downward) phase of the cycle the lender and borrower's risks decrease (increase) and as a result, firms are willing to increase (decrease) their leverage to finance a greater (lower) volume of investment.

Assume as Minsky does (1980a; 1980b; 1986, pp.193-194; 1975, p. 114) that during an upward phase of the cycle aggregate achieved investment is above its expected level and that as a result realized profits exceed the expected level of profits. A higher level of expected profits will translate into higher than expected internal funds, an increase in the willingness of borrowers to debt finance (reduction of lender's risk) and an increase in the demand price of capital assets due both to the expectations of higher quasi-rents and a decline in the borrowers' risk. The decline in the borrower's risk is due to an increasing confidence that future profits will exceed debt commitments (De Antoni, 2006). Also, the borrower's risk declines due to a rise in the capitalization rate provoked by the increase in liquidity that is characteristic of the upward phase of the cycle and which reduces the value placed upon liquidity and increases the value placed upon non-monetary assets including capital goods (Minsky, 1975, p.102-105).<sup>14</sup>

For the upward phase of the cycle to lead to financial fragility and instability two conditions must be met. First, debt commitments have to increase at a faster pace than the underlying income supporting those levels of debt. Second the composition of debt has to shift towards the short-term (Minsky (1995, p.201).

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<sup>12</sup> Wray (2016, p. 184), Minsky (1986).

<sup>13</sup> See Pérez Caldentey, Nalin & Rojas (2021) DA COVID-19 Project Paper 18.21 for an analysis of the limitations of capital requirements recommended in Basel I, II and III.

<sup>14</sup> Minsky's story of the upward phase of the cycle and the transition from robust to fragile financial structures also assumes a given structure of the rates of interest. For example, in the case where hedge finance dominates Minsky identifies an interest rate structure favorable to profit opportunities that induces financing of investment through short-term liquid liabilities. See González and Pérez Caldentey (2012).

Also, in Minsky's view financial fragility depends on the degree of interconnectedness of the financial system. As Minsky and Campbell (1988, p. 255) explain: "...bank failures...occur mainly because of the interdependence of payment commitments and position making transactions across institutions and units." Also, according to Minsky, the financial position of an individual institution depended on the behavior of the economy and financial markets (Minsky, 1967).

The normal functioning of financial markets implies the realization of optimistic expectations regarding profit flows (i.e., quasi-rents). Within this context the possibility of crisis can arise from factors that can disappoint these expectations. According to Minsky (1975, p. 115) these include "rising wages or production costs, feedbacks from rising interest rates to the value of older long-term debt, the high cost of refunding previous debt." We can add to this list, more stringent lending restrictions, default on payments commitments by an important institution from the financial or non-financial corporate sector, and interest rates increases (Wray, 2015, p.33). The generalized sale of assets (which have increased their degree of illiquidity following a boom) to raise cash to face debt commitments leads to declines in their price of capital assets, and in the demand prices of capital goods and in general in asset values.

The above process can also include a key role of the short-term rate of interest which Minsky saw as the result of the combination of a rising inelastic demand for finance combined with an inelastic (or even less than infinitely elastic) supply of finance in leading to a downturn and the bust (Minsky, 1978 p.107).<sup>15</sup>

In perfect analogy with the description of the upward phase of the cycle, where the expansion of investment brings about an increase in leverage, the contraction of investment brings about a process of deleveraging.

A common thread running through Minsky's works is the idea that the evolution of economies is a historically and institutionally contingent process.<sup>16</sup> In line with this approach, financial regulation 'must not only reflect current and expected economic conditions but also be institution and theory specific and to remain effective must be reassessed frequently and made consistent with evolving market and financial structures.' Changes in the institutional structure of the financial system must be

<sup>15</sup> The increase in the short-term rate of interest translates into a rise in the long-term rate of interest. Both have opposite effects on the demand price for capital assets and the supply price of investment goods. The rise in the short-term interest rate will increase the supply price of capital goods while the rise in the long-term interest rate will lower the present value of quasi-rents and thus the demand price for investment goods. This will lead to a fall in investment which lowers expected profits. This in turn deteriorates firm's confidence to fulfill their financial commitments which increases both borrower's and lenders' risks reinforcing the contraction in investment.

<sup>16</sup> This expression is based Godley and Cripps (1983), p. 44.

accompanied with changes in the regulatory and supervisory structure.<sup>17</sup> That is, financial regulation and macroprudential regulation cannot remain fixed and static over time must be thought of in dynamic terms (dynamic macroprudential regulation).

### 3. The limitations of Minsky's analysis

With all its merits the approach to financial regulation found in Minsky suffers from two important limitations.

First, the type of financial cycle envisaged by Minsky corresponds to a boom-and-bust cycle. Busts are necessarily preceded by booms and the degree of the bust keeps correspondence with the size of the boom. In Minsky, financial fragility is always upwards.

The transition from stability to instability occurs during the upward phase of the cycle ("the path of this basic instability is upwards" (Minsky, 1980b, p.517; 1980a p.83).<sup>18</sup>

From the point of view of this paper cycles can differ over time. They can be characterized by booms and busts episodes. But they also follow patterns that do not conform to booms and busts. In, the particular case, of Latin America and the Caribbean, the available evidence since the early 1980's shows a persistent decline in the trend rate of growth of GDP for Latin America and the Caribbean. The available evidence for the period ranging from 1950 to 2019 shows that the growth rate of regional GDP fell from an average of 5.6% for the period 1951-1980, to 2.5% for the period 1981-2009, to 1.9% for the period 2010-2019 (See Nalín, Rojas and Pérez Caldentey, 2021).

During the 1980's and 1990s Latin American and the Caribbean was affected by a series of recurrent financial crises which had a dampening effect on the region's growth trajectory. These crises include the 1980s debt crisis, the Tequila Crisis (1994-1995), the East Asian Crisis (1997-1998), the Brazilian-Russian Crisis (1999), the Argentine Crisis (2001-2002), and the Global Financial Crisis (2008-2009).

However, the same argument cannot explain the decline in the economic growth rate between 2010 and 2019 (6.2% and 0.1% respectively), which, in fact, is one of the sharpest on record, since there were no economic shocks or crises of the magnitude registered during 1981-2009. In this sense, an adequate exposition of the causes of growth and, also business fluctuations, must supersede that based on booms and busts which characterizes a great deal of the literature on this topic.

<sup>17</sup> Kregel (2014), pp.7-8; Minsky and Campbell (1988).

<sup>18</sup> Minsky thought that fragile financing patterns take time to emerge due to four factors: (i) the limits placed by borrower's and lenders' risk; (ii) conservatism and orthodoxy as a barrier to the assimilation of financial innovation; (iii) the "assured refinancing by organizations engaging in speculative finance." and (iv) the rise in profits and in internal funds (Minsky, 1986, pp. 211-213).

The second limitation is the microeconomic nature of Minsky's analysis which leads to so-called "Paradox of debt." Minsky's explanation of booms and busts financial cycles builds from generalizing his representative firm analysis to the macroeconomic level (1975, 1982 and 1996). His analysis assumes an unchanging financial constraint (a given curve of retained profits) that ultimately leads to characterize business cycles as leverage-deleveraging cycles. However, at the same time, on the basis of Kalecki (1969 (1954)) Minsky argued that the financial constraint depends on the phases of business cycle.

As a result, when the level of investment changes the level of aggregate profits must also change. This has to induce a change in the profits of the representative firm and in its capacity to finance investment with retained earnings. Thus, when the risk perceptions of the borrower and lender change the level of investment, the internal financing constraint of the representative firm has to change. This means that the basic condition to generate leverage and deleveraging cycles which are at the core of the FIH may not be present.

Hence upward phases of the cycle may coexist with deleveraging while downward phases can coexist with leveraging. This means that debt and financial fragility are inversely correlated. and that debt and investment move countercyclically. Thus business cycles can exhibit the opposite leveraging patterns than those described by Minsky.<sup>19</sup>

### **C. Macroprudential regulation: an alternative approach**

The following sections present an alternative macroprudential framework building on both mainstream and post-Keynesian approaches, but especially on the latter, while at the same time trying to avoid their weaknesses described above. The framework proceeds from the ideas developed in the companion papers (Pérez Caldentey, Nalin & Rojas (2021) DA COVID-19 Project Paper 18.21 and Nalin, Rojas and Pérez Caldentey (2021) DA COVID-19 Project Paper 17.21).

The framework is based on the following on five main principles/guidelines: (i) financial fragility is endogenous and results from the normal functioning of market based economies driven by the profit motive;

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<sup>19</sup> The possibility of the paradox of debt has been underscored by several post Keynesian authors which have contested Minsky's assertion that during expansions, debt grows at a higher rate than the underlying income to support it (Lavoie and Seccareccia, 2001; Bellofiore and Halevi, 2009; Passarella, 2012). See González and Pérez Caldentey (2012) for an econometric analysis of the paradox of debt in the case of Latin America.

(ii) financial fragility can originate in the financial and real sectors of an economy; (iii) financial cycles are not necessarily driven by boom and busts and financial fragility need not originate in an economic boom; (iv) macroprudential policies should be viewed from a dynamic perspective, that is they must take into account the changes in the international financial architecture/structure and be region/country specific; and (v) macroprudential regulation/guidelines requires a truly macroeconomic framework.

These principles are captured in the specification of a stock-flow model for Latin America and the Caribbean with five sectors (government, central bank, financial sector, private sector, and external sector). The model assumes that, as other developing economies, Latin American countries are balance-of-payments constrained but that the external constraint is mainly financial. Financial cycles are driven by external impulses and the transmission mechanisms are specific to the Latin American context.

The specification of the equations of the model are based on prior empirical work (descriptive statistics and econometrics) that exemplify the main transmission mechanisms that give life to a financial cycle narrative, linking external, domestic, financial and real factors in a consistent manner and that simulates satisfactorily the economic performance of Latin America during the period 2000-2020 (see Nalin, Rojas and Pérez Caldentey. 2021 DA COVID-19 Project Paper 17/21). These transmission mechanisms include:

- (i) The high sensitivity of bond prices to international interest rates which has increased since the Global Financial Crisis (2008-2009);
- (ii) The high correlation between nominal exchange rate variations and the EMBI inverse correlation between the trend of sovereign risk as measured by the Emerging Markets Bond Index (EMBI)<sup>20</sup> and nominal currency depreciation or appreciation. A depreciation (expected or effective) of the local currency is associated with a higher risk perception and can easily cause capital flight (BIS, 2019). Empirical data collected for Latin America

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<sup>20</sup> The emerging market bond index is the key emerging economy risk indicator. It is calculated as the spread between the interest rate that countries pay on dollar-denominated bonds issued by those economies and United States Treasury bonds, which are considered risk-free. The index is based on the behaviour of external debt issued by each country. The less certainty there is that a country will meet its obligations, the higher its EMBI, and vice versa. The minimum rate that an investor would require to invest in a certain country would be equal to the rate on United States Treasury bonds (risk-free) plus the EMBI. The reasoning here assumes that changes in EMBI are endogenous to changes in the nominal exchange rate. See Borio (2019).

display positive and statistically significant correlations between the rates of variation of the EMBI and those of the nominal exchange rate—for example, Argentina 0.21, Brazil 0.71, Chile 0.46, Colombia 0.64, Mexico 0.63 and Peru 0.39 (see Abeles, Pérez Caldentey and Porcile, 2020);

- (iii) The high association between sovereign and non-financial corporate sector risk, captured by the positive and statistically significant correlation between EMBI and CEMBI;
- (iv) The positive correlation between EMBI, CEMBI and external debt service;
- (v) The non-linear relationship between cash flow and investment below a certain leverage (debt) threshold, cash flow (derived from the issuance of bonds in the international capital markets) and investment (and obviously debt) have a positive One hypothesis focuses on the dynamics between firm cash flow and investment. It argues that both variables have a non-linear relationship. Beyond that threshold the relationship turns negative as firms may feel more financially constrained, leading them to increase their retained earnings and cash holdings to protect themselves against illiquidity and ultimately insolvency.<sup>21</sup> Another hypothesis maintains that nonfinancial corporations become financial intermediaries by capturing international liquidity through bond issues and investing a growing amount in financial assets (Advjiev 2014; De Camino, Vera and Pérez Caldentey, 2022). The available evidence shows the region has been receiving increasing flows into financial assets from corporations outside the region. Those flows have been channeled through trade credit and cross-border loans and deposits and, especially, intercompany loans.<sup>22</sup> This hypothesis implies the extensive use of the international bond market by the nonfinancial corporate sector has not been accompanied by an increase in investment and is associated with a strategy of financial accumulation.<sup>23</sup>

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<sup>21</sup> An econometric estimation that relates investment in tangible assets to cash flow by degree of leverage for 270 firms in six Latin American countries (Argentina, Brazil, Chile, Colombia, Mexico and Peru) for the 2010–2016 period, shows that when leverage exceeds a 0.77 threshold, a 1% increase in cash flow-to-assets is associated with a reduction in investment of 0.25%–0.24%. In terms of the growth of tangible assets, the estimated equation shows that when leverage exceeds the 0.77 threshold a 1% increase in cash flow-to-assets is associated with a 0.75% reduction in the rate of growth of tangible assets. See Pérez Caldentey, Favreau-Negroni and Méndez (2019).

<sup>22</sup> This explanation contrasts with the view that attributes to decline in investment to real factors, such as for example a lack of competitiveness due to an appreciated real exchange rate.

<sup>23</sup> See Advjiev (2014), Rodrigues-Bastos et al. (2016), and Pérez Caldentey and Vernengo (2021).

The workings of the financial cycle, its origins and transmission and propagating mechanisms can be exemplified with the case of an expansionary monetary policy such as that currently followed by the United States Federal Reserve Board and other major central banks. The expansionary monetary policy consists in the lowering the short-term policy rate to levels close or at zero (in nominal terms) and the increase in central bank's balance sheets, as a result, of the purchase of government securities.

In turn, the expansion of central banks' balance sheets results in a decline in the yield to maturity of government securities. The decline in the yield to maturity pushes investors to search for higher profitability (higher yields) and demand and invest in developing country sovereign and corporate bonds. On the supply side, governments and non-financial corporations are willing to take advantage of the favourable external financial conditions to issue debt. As a result, short-term financial gross inflows increase while at the same time the government and non-financial corporations witness an increase in their debt levels.

Also, the increase in gross short-term financial inflows can lead to an appreciation of the nominal exchange, which in turn leads to a decline in the risk of sovereign (EMBI) and non-financial corporates (CEMBI) pushing down future borrowing costs. In addition, the appreciation of the exchange rate improves balance sheet conditions by reducing government and firms' liabilities external debt servicing costs (for those firms that work with domestic currencies) and, also the debt stock). In the case of firms, currency mismatches are narrowed which means that the net-worth increases. Finally, the appreciation of the nominal exchange creates windfall profit opportunities for foreign investors that hold domestic bonds issued in local currency.

This set of factors can set the stage for an upward movement consisting of increasing short-term gross inflows, appreciating nominal exchange rates and higher debt levels. These are three stylized facts observed in the period 2010-2019.

The impact of these financial factors on the performance of the real sector will depend on profitability, actual relative to normal capacity utilization, and, also on leverage. As explained above, up to a given leverage threshold, increases in debt can increase investment. Beyond this threshold increases in debt do not translate in an increase in investment. Thus, increasing financial flows, exchange rate appreciation and rising debt coexist with declines in investment.

The following section presents a consistent stock-flow model that incorporates these transmission mechanisms, which have come to

characterize the functioning of Latin American and Caribbean economies in the 2000s decade and especially since the Global Financial Crisis (2008-2009). This is also applicable to other developing economies.

On the basis, of the discussion in this paper and the analysis of macroprudential regulation at the conceptual level and in its implementation in Africa Asia and Latin America found in Pérez Caldentey, Nalin and Rojas (DA COVID-19 Project Paper 18.21) the paper applies selected macroprudential measures to the financial cycle derived from the workings of the stock-flow model. These measures include limiting leverage through increase retained earnings and a cap on foreign currency borrower, and, also, include limiting speculation. The model also incorporates the debt sustainability rule proposed by UNCTAD for the government.<sup>24</sup>

#### **D. A brief description of the stock-flow model**

The stock-flow model presented in its transaction-flows matrix (TFM) form, reported below, incorporates five institutional sectors: (i) the private sector, which includes households, non-financial corporations; (ii) the financial sector; (iii) the public sector, which includes central national government, non-financial public enterprises, and financial public enterprises; (iii) the central bank; (iv) and the Rest of the World (ROW), which, following Valdecantos (2016), represents foreign partners linked to the domestic economy through trade and international capital markets.

The model includes five financial assets: (i) public debt issued in domestic and foreign currency, both purchased by the private and financial sector, as well as ROW; (ii) private debt issued in domestic and foreign currency purchased by the financial sector and the ROW; (iii) debt issued by the ROW and purchased by both the public sector and the private sector as form of investment or reserve accumulation. We also consider two type of direct bank lending, that is, loans and consumer credit to the private sector.

The variables EMBI and the CEMBI risk premiums are among the main novelties of the model. They affect several real and financial variables, such as private investment, exchange rate expectations, interest rate premiums, and ROW demand for local assets. The model also considers explicitly the role of debt - and in particular mismatches - in determining the path of financial variables. The model a debt sustainability rule for the government to capture the relationship between financial dynamics and fiscal policy.

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<sup>24</sup> See De Freitas (2021) & Schonerwald (2021).



Table VIII.4  
Transactions flow matrix

	Production	Private Sector		Financial Sector		Government Sector		Central bank		ROW	$\Sigma$
		Current	Capital	Current	Capital	Current	Capital	Current	Capital		
Consumption	$+C_d$	$-C_d$									0
Investment	$+I^k$		$-I^k$								0
Government Spending	$+G_d$					$-G_d$					0
Imports	$-IM$									$+IM$	0
Exports	$+X$									$-X$	0
[GDP]	$[-Y]$	$[+Y]$									$[Y]$
Interest on	Govt Bonds (domestic currency)	$+int_p^g$		$+int_{fs}^g$		$-int^g$		$+int_{bc}^g$		$+int_{row}^g$	0
	Govt Bonds (FX currency)	$+int_p^{sg}$		$+int_{fs}^{sg}$		$-int^{sg}$				$+int_{row}^{sg}$	0
	Private Debt		$-int^p$		$+int_{fs}^p$		$+int^p$			$+int_{row}^p$	0
	Private Debt FX		$-int^{sp}$							$+int_{row}^{sp}$	0
	Bonds ROW		$+int_p^{row}$		$+int_{fs}^{row}$				$+int_{bc}^{row}$	$-int^{row}$	0
	Public Deposits						$+int_{mmg}^{cb}$		$-int_{mmg}^{cb}$		0
	Private Deposits		$+int_{mmp}^{fs}$		$-int_{mmp}^{fs}$						0
	Consumption Credit		$-intc^p$		$+intc_{fs}^p$						0
	Advances				$-int^{afs}$				$+int_{cb}^{afs}$		0
	Loans		$-int^{lp}$		$+int^{lp}$						0
	Loans (FX)				$-int^{slfs}$					$+int^{slfs}$	0

Table VIII.4 (concluded)

	Production	Private Sector		Financial Sector		Government Sector		Central bank		ROW	$\Sigma$
		Current	Capital	Current	Capital	Current	Capital	Current	Capital		
Financial gains (dividends)						$+FB_g^{bc}$		$-FB^{bc}$			0
[Gross National Income]		$[GNI_{PS}]$		$[GNI_{FS}]$		$[GNI_{GS}]$					$[GNI]$
Taxes		$-T$		$-T$		$+T$					0
Savings		$[S_{PS}]$		$[S_{FS}]$		$[S_{GS}]$				$[S_{ROWS}]$	0
Capital		$+K$									$-K$
Inventories		$+IN$									$-IN$
Govt Bonds (domestic currency)			$-B_p^g$		$-B_{fs}^g$		$+B^g$		$-B_{bc}^g$	$-B_{row}^g$	0
Govt Bonds (FX currency)			$-B_p^{sg}$		$-B_{fs}^{sg}$		$+B^{sg}$			$-B_{row}^{sg}$	0
Priv Debt			$+D^p$		$-D_{fs}^p$		$-D_g^p$			$-D_{row}^p$	0
Priv Debt FX			$+D^s$							$-D_{row}^s$	0
Bonds ROW			$-B_p^{row}$		$-B_{fs}^{row}$				$-B_{bc}^{row}$	$B^{row}$	0
High power money			$+H^{bc}$						$-H^{bc}$		
Public Deposits							$-M^g$		$+M^g$		0
Private Deposits			$-M^p$		$+M^p$						0
Consumption Credit			$+Cc$		$-Cc$						
Advances					$+A^{fs}$				$-A^{fs}$		0
Loans			$+L_p^{fs}$		$-L_p^{fs}$						0
Loans (FX)					$+L_{fs}^{srow}$					$-L_{fs}^{srow}$	
$\Sigma$	0	0	0	0	0	0	0	0	0	0	0

Source: Authors' own elaboration.

The sections below present and explain the rationale underlying the specification of the model for each of the sectors considered. The specification of the real sector is for the most part standard and follows (Godley and Lavoie, 2007; Lavoie and Zezza, 2012). The most innovative features of the model relate to the specification of the financial sector and its interaction with the real sector.

## 1. Production, Income, and Wealth

Consumption, together with private investment, public spending and ROW trade determines the level of sales. Expected sales depend on the previous level of sales adjusted for world GDP growth. There is no assumption of full employment, and thus in each period there is a target level of inventories by the production sector. Expected sales and the deviation of the level of inventories from their target determine the level of production. Finally, nominal GDP is obtained by multiplying the level of sales by a domestic price index.

$$(1) \quad c = \alpha_1 y d^e + \alpha_2 v_{-1}$$

*Sales*

$$(2) \quad s = c + i + g + (x - m)$$

*Total Production*

$$(3) \quad y = s^e + (in^T - in_{-1})$$

*Expected sales*

$$(4) \quad s^e = \beta \cdot s_{-1} + (1 - \beta) \cdot \Delta Y_{row}$$

*Target inventories*

$$(5) \quad in^T = \gamma \cdot s^e$$

*Real inventories*

$$(6) \quad in = y - s$$

*Nominal GDP*

$$(7) \quad Y = s \cdot p$$

Private sector consumption is specified as a function of real expected disposable income and wealth. The specification of income follows the High-Simmons' tradition that defines it as the sum of real (wages earned) and financial (interest on assets held) flows, adjusted for the tax rate,  $\theta$ . The proportion of income that is not consumed increases wealth.

*Disposable Income*

$$(8) YD = (Y + int_p^g + int_p^{sg} - int_g^p - int_{row}^{sp} + int_p^{row} + CG_{-1}) \cdot (1 - \theta)$$

(9)

*Consumption*

$$(10) c = \alpha_1 yd^e + \alpha_2 v_{-1}$$

*Expected disposable income*

$$(11) yd^e = \beta_1 \cdot yd_{-1}$$

*Wealth*

$$(12) \Delta V = YD - C$$

Sales prices are obtained applying a profit margin over the historical unit cost, where the latter is a function of its lagged value and the nominal unitary cost (the ratio of the wage bill over physical output). The level of employment depends on the deviation of the current level of employment from its target level. The latter is a function of production and productivity. Wages and productivity grow according to  $gr$ , an exogenous parameter.

*Sales Price*

$$(13) p_s = (1 + \pi) * UC$$

*Unitary Cost*

$$(14) UC = \frac{((WB) + M + int^p + int_{row}^{sp})}{y}$$

*Wage Bill*

$$(15) WB = W \cdot N$$

*Employment Level*

$$(16) N = N_{-1} + \Omega_n \cdot (N_{-1} - N^T)$$

*Employment Target*

$$(17) N^T = N_{-1}^T + \Omega_{n_1} \left( \frac{y_{-1}}{pr_{-1}} \right)$$

*Productivity*

$$(18) pr = pr_{-1} \cdot (1 + gr)$$

*Wages*

$$(19) W = w_{-1} \cdot (1 + gr)$$

*Capital Gains*

$$(20) CG = (B_{p-1}^s + B_{p-1}^{row}) \cdot \Delta E$$

## 2. Capital accumulation and Private Debt

The level of investment is determined within the private sector. In each period, investment flows vary according to the evolution of capital depreciation (a fixed proportion of the stock of capital) and that of an investment confidence index,  $\Delta i_{ic}$ . Expectations are crucial for investment. Prospects on future returns,  $\pi^e$ , are a function of two elements: the return on investment, ROI, and a corporate risk premium, CEMBI (defined below). In turn, expectations, jointly with the rate of growth of the ROW,  $\Delta Y_{ROW}$ , determine the investment confidence index,  $i_{ic}$ . The parameter  $\delta$  governs the impact of  $\pi^e$  on  $i_{ic}$ . Its value depends on firms leverage, that is on debt to capital ratio (D / K). The parameter  $\delta$  is not fixed. It declines when firms leverage expands beyond a given threshold. (Perez Caldentey et al, 2019).

Additionally, the model includes the parameter,  $\delta_1$ , which captures the effect of world growth on expectations. This parameter also exhibits a nonlinear relationship with  $i_{ic}$  which is meant to reflect the impact of a world contraction on the performance of the domestic economy. When world GDP growth turns negative, the parameter increases in order to take into account the effect of this negative external real shock. The specification here adopted permit investment flows to be closely related to the development of the domestic, external, and financial sectors.

*Capital Accumulation*

$$(21) \Delta k = i - d \cdot k_{-1}$$

*Private Investment*

$$(22) i = (dp \cdot k_{-1}) \cdot p_d + i_{-1} \cdot \left( \frac{\Delta i_{ic}}{i_{ic-1}} \right)$$

*Confidence Index*

$$(23) i_c = \delta \cdot \pi^e + \delta_1 \Delta Y_{ROW}$$

*Expected Profits*

$$(24) \pi^e = \zeta_1 \cdot \frac{F_{-1}}{L_{-1}} + (1 - \zeta_1) \cdot \Delta cembali_{-1}$$

*Total Profits*

$$(25) F = YD - UC \cdot y - int^p - int_{ROW}^{pfx} + int_p^g + int_{pfx}^g - cons + WB + depreciation_p$$

Private profits,  $F$ , are computed as the difference between real and financial revenues and costs. When  $F$  is positive, a proportion of profits is retained within the private sector to finance investment. Profits that are not retained are used in two ways: a fraction is allocated to the repayment of previously accumulated debt, while the remaining is distributed to the private sector that uses it to buy financial assets. If investment requirements are lower than the retained profits allocated to finance it, then the excess of profits will be used to accumulate more financial assets.

$$(26) Fr = \theta_f \cdot F$$

*Distributed Profits*

$$(27) Fd = FdT - Fdc$$

*Profits not retained*

$$(28) FdT = (1 - \theta_f) \cdot F$$

*Profits not retained used to repay debt*

$$(29) Fdc = \theta_{fdT} * FdT$$

*Excess profits*

$$(30) Frn = Fr - i \quad \text{if } Fr > i$$

*Private Budget Constraint*

When investment is higher than retained profits, the private sector issues debt ( $\Delta D^t$ ), a fraction of which (is in foreign currency. According to the available empirical evidence in Latin America, 25% of total debt is issued in foreign currency. As a result,  $\delta$  is set at 0.75.

In the domestic market, there are two types of fixed-income instruments available in local currency for financing investment, bonds and loans. The proportion of bonds to loans in local currency is given by  $\Delta L_p^d$ .

*Retained Profits*

$$(31) \Delta D^t = I - Fr$$

*Total Private debt (local currency)*

$$(32) \Delta D^{tlc} = \delta_{cd} \cdot \Delta D^t$$

*Proportion of Private debt issued as Bonds (local currency)*

$$(33) \Delta D^p = \delta_d \cdot \Delta D^{tlc}$$

$$(34) \delta_d = \delta_{d_0} + \delta_{d_1} \left( \frac{(1+i^p)}{(1+i^p)} \right)$$

*Loans demanded by private sector in local currency*

$$(35) \Delta L_p^d = (1 - \delta_d) \cdot D^{tlc}$$

*Total Private debt (foreign currency)*

$$(36) \Delta D^{\$p} = (1 - \delta_{cd}) \cdot \Delta D^t$$

(37) Allocations

*Private debt supply to Financial Sector (local currency)*

$$(38) \Delta D_{fs}^p = \min [\Delta D_{fsd}^p, \Delta D^p]$$

*Private debt supply to RoW (local currency)*

$$(39) \Delta D_{row}^p = \min [\Delta D^p - \Delta D_{fs}^p, \Delta D_{row}^p]$$

*Private debt supply to Govt (local currency)*

$$(40) \Delta D_{row}^p = \min [\Delta D^p - \Delta D_{fs}^p, \Delta D_{row}^p]$$

The private sector accumulates wealth through three financial assets, domestic and foreign currency bonds issued by the domestic government, and ROW bonds (issued in foreign currency). The demand for each asset depends on two components. This first is an exogenous parameter that implies that, despite market conditions, the private sector always demand a proportion of those assets. The second component is endogenous and relies on 'arbitrage' conditions among yields (Godin and Yilmaz, 2020).

Private sector demand for domestic currency government bonds depends on the differential between the domestic interest rate and the expected rate of profits on physical capital. The government's demand for foreign currency bonds depends on arbitrage between the domestic and ROW interest rates. Finally, for the case of ROW securities, the private sector behavior is explained on the basis of the differential between the domestic interest rate on foreign currency liabilities and the ROW interest rate.

*Private Demand for Govt bonds*

$$(41) \Delta B_{p,d}^g = \epsilon_1 \cdot F_d$$

*Private Demand Sensitivity for government bonds*

$$(42) \epsilon_1 = \epsilon_{10} + \epsilon_{11} \left( \frac{1+i^g}{1+i^e} \right)^{\sigma_b}$$

*Private Demand for domestic bonds in USD*

$$(43) \Delta B_{p,d}^{\$g} = \epsilon_2 \cdot F_d$$

*Private Demand sensitivity for domestic bonds in USD*

$$(44) \epsilon_2 = \epsilon_{20} + \epsilon_{21} \left( \frac{1+i^{g\$}}{1+i^{row}} \right)^{\sigma_{b\$}}$$

*Private demand for ROW bonds*

$$(45) \Delta B_{p,d}^{row} = \epsilon_3 \cdot F_d$$

*Private Demand sensitivity for ROW bonds*

$$(46) \epsilon_3 = \epsilon_{30} + \epsilon_{31} \left( \frac{1+i^{row}}{1+i^{g\$}} \right)^{\sigma_{row}}$$

### 3. Risk premiums and their relationship with investment

The modelling of perceived country risk (*EMBI*) and corporate risk (*CEMBI*) is one of the novelties of the model. The determinants of *EMBI* include the debt-to-GDP ratio, foreign-debt-to-reserve-ratio, and exchange

rate variations (IMF, 2010). For its part, corporate risk (CEMBI) is a function of country risk ( $EMBI$ ), a premium,  $\phi_0$ , the currency mismatch,  $\frac{D^{sp}}{B_p^{row}}$  that is, the ratios of foreign liabilities to foreign assets, and the loan-to-GDP ratio.

$$(47) embi = \varepsilon_0 + \varepsilon_1 \cdot \left(\frac{B^g}{Y}\right) + \varepsilon_2 \cdot \left(\frac{B^{sg}}{B_p^{row}}\right) + \varepsilon_3 \cdot \Delta E$$

$$(48) cemb i = \phi_0 + \phi_1 \left(\frac{D^{sp}}{B_p^{row} + B_p^{sg}}\right) + \phi_2 \cdot embi + \phi_3 \cdot \left(\frac{D^{sp} + D^p}{Y}\right) + \phi_3 \cdot \left(\frac{L_{fs}^{row}}{Y}\right)$$

Substitution of (71) and (72) into (22) and (23), and then plugging the result into (21), investment flows are expressed as a function of real and financial variables, that is:

$$(49) i = (dp \cdot k_{-1}) \cdot p_d + i_{-1} \cdot \left\{ [\zeta_1 \cdot \frac{F_{-1}}{L_{-1}} + (1 - \zeta_1) \cdot \Delta[\phi_0 + \phi_1 \left(\frac{D^{sp}}{B_p^{row}}\right) + \phi_2 \cdot [(\varepsilon_0 + \varepsilon_1 \cdot \left(\frac{B^g}{Y}\right) + \varepsilon_2 \cdot \left(\frac{B^{sg}}{B_p^{row}}\right) + \varepsilon_3 \cdot \Delta E]] + \delta_1 \Delta Y_{ROW} \right.$$

In summary investment flows are determined by:

- Real Capital depreciation,  $(dp \cdot k_{-1}) \cdot p_d$ .
- Return on investment (ROI),  $\frac{F_{-1}}{L_{-1}}$ .
- Private currency mismatch  $\left(\frac{D^{sp}}{B_p^{row}}\right)$ .
- The government overall level of public debt sustainability  $\left(\frac{B^{sg}}{B_p^{row}}, \frac{B^g}{Y}\right)$  due to its effect on risk premiums.
- Currency fluctuations,  $\Delta E$ .
- ROW growth rate,  $\Delta Y_{ROW}$ .

#### 4. The external sector

The specification of the external sector equations follows a standard approach. The quantity demanded of exports and imports (in terms of rates of growth) depend on foreign and domestic GDP growth, as well as the performance of the nominal exchange rate adjusted by the ratio of external to internal prices. As usual, the current and financial accounts track the movement of financial and real flows among ROW and the domestic economy.

*Exports growth*

$$E. \Delta x = \eta_0 \cdot Y_{row}^{\eta_1} \cdot \left(E \frac{p^*}{p}\right)^{\eta_2}$$

*Real Exports*

$$F. X = x \cdot p$$



*Imports growth*

$$G. \Delta m = \eta_3 \cdot \frac{Y^{\eta_4}}{(E^E_p)^{\eta_5}}$$

*Real Imports*

$$H. M = m.p$$

*Current Account*

$$I. CAB = X - M - int_{B_{row}}^g - int_{BFX_{row}}^g - int_{d_{row}}^p - int_{dFX_{row}}^p + int_B^{row}$$

*Capital Account*

$$J. KAB = \Delta B_{row} + \Delta B_{row}^{\$} + \Delta D_{row} + \Delta D_{row}^{\$} - \Delta B^{row}$$

On the one hand, the ROW demand for domestic government bonds depends on world GDP growth adjusted by the parameter  $\xi_1$  which varies according to interest differentials and currency expectations. On the other hand, the ROW demand for government bonds issued in foreign currency is determined by interest rate differentials. The sum of public ( $\Delta B_{row}^{\$}$  +  $\Delta B_{row}^g$ ) and private bonds ( $\Delta D_{row}^{\$p}$  +  $\Delta D_{row}^p$ ) bought by the ROW are equal to the world financial flows (WFF).

The ROW total supply of securities to the domestic economy is the sum of ROW bonds demanded by the private and public sector. In this case, the model assumes that supply always matches demand, and that the international interest rate is exogenous. Also, as expected, the world GDP growth is exogenous.

*ROW Demand for Private Debt (local currency)*

$$K. \Delta D_{row}^p = (1 - \lambda) \cdot D^p$$

*ROW demand for Private Debt (foreign currency)*

$$L. \Delta D_{row}^{\$p} = \Delta D^{\$p}$$

*ROW demand for Govt Debt (local currency)*

$$M. \Delta B_{row,d}^g = \xi_1 \cdot (Y^{row})$$

$$\xi_1 = \xi_{10} + \xi_{11} \cdot (i^{\$g} - i^{\$}) + \xi_{12} \cdot \Delta E^e$$

*ROW demand for Govt Debt (foreign currency)*

$$N. \Delta B_{row,d}^{\$} = \xi_2 \cdot Y^{row}$$

$$O. \xi_2 = \xi_{20} + \xi_{21} \cdot (i^{\$g} - i^{\$})$$

*ROW supply of debt*

$$P. \Delta B^{row} = \Delta B_p^{row} = \Delta B_g^{row} + \Delta B_{fs}^{row}$$

*World Financial Flows (WFF)*

$$Q. WFF = \Delta B_{row}^{g\$} + \Delta B_{row}^g + \Delta D_{row}^{\$p} + \Delta D_{row}^p$$

*ROW GDP*

$$R. Y^{row} = \textit{exogenous}$$

*International interest rate*

$$S. i^{row} = \textit{exogenous}$$

Note that for consistency purposes, it is important to consider that in each period the holding of foreign assets may generate capital gains or losses according to variations in the exchange rate:

$$T. \textit{Capital loss} = \Delta E. B_p^{row} + \Delta E. B_p^{g\$} - \Delta E. D_{row-1}^{\$p}$$

$$U. \textit{Capital loss}_g = -\Delta E. B_{-1}^{g\$}$$

$$V. \textit{Capital loss}_{ROW} = -\Delta E. B_{-1}^{row} + \Delta E. B_{row-1}^{g\$} + \Delta E. D_{row-1}^{\$p} + \Delta E. L_{fs}^{row}$$

$$W. \textit{Capital loss}_{CB} = \Delta E. B_{cb-1}^{row}$$

$$X. \textit{Capital loss}_p = \Delta E. B_{fs-1}^{row} = \Delta E. B_{fs-1}^{g\$} - \Delta E. L_{fs}^{row}$$

## 5. The public Sector

The public sector collects taxes on income and a proportion of it ( $T_d$ ) is used for the repayment of public debt. Real spending fluctuates each year according to the rate of growth of government spending,  $gr^g$ . The rate of growth of government spending follows a standard debt sustainability rule that adjust according to the deviation between actual debt and its target level ( $B_t^*$ ) – i.e., there is space to increase public spending, as long, as debt remains below the target. The target depends on two components. The first is the differential between the real target interest rate and output growth rate ( $r - \Delta Y$ ). The real target interest rate,  $r$ , is a function of the nominal interest rate adjusted by the growth rate of domestic ( $\partial_d$ ) and foreign debt ( $\partial_f$ ) and a risk premium ( $\varphi^g$ , formalized in the following section). The second component is the fiscal deficit as a proportion of GDP. This sustainability rule will be replaced later on by a sustainability rule developed by UNCTAD that captures the specificities of developing countries.

*Taxes*

$$D. T = \theta. Y$$

$$E. T_d = \theta_{T_d}. T$$

*Government spending*

$$F. G = G_{-1} + gr^g$$

*Debt sustainability rule*

$$G. \quad gr_g = \varphi_0 + \varphi_1(B_t^* - B_t)$$

*Debt Target*

$$H. \quad B_t^* = (r - \Delta Y) d + \frac{(G-T)}{Y}$$

*Real interest target rate*

$$I. \quad r = (i_g \cdot (\partial_d + (1 + \varphi^g)), \partial_f)$$

The total amount of debt issued depends on the public sector budget restriction (*PSBR*), that is on the difference between inflows and outflows in the public balance alleviated by the central bank's profits obtained from holding reserves,  $FB^{bc}$ . A fraction,  $\zeta$ , of debt is issued in foreign currency. The supply of debt equals to the minimum among sectorial demands ( $-\Delta B_{p,d}^g$ ,  $\Delta B_{row,d}^g$ ) for domestic bonds and  $\Delta B_{p,d}^{g\$}$ ,  $\Delta B_{row,d}^{g\$}$  for foreign debt) and total public financial needs,  $\Delta B$ .

*Public sector budget restriction*

$$J. \quad PSBR = G - T - int_B^g - int_{B_{fx}}^g + int_{d_g}^p + int_{B_g}^{row} + -FB^{bc}$$

*Government Debt Supply (local currency)*

$$K. \quad \Delta B = \zeta \cdot PSBR$$

*Government Debt Supply (foreign currency)*

$$L. \quad \Delta B^{\$} = (1 - \zeta) \cdot PSBR$$

*Government Debt Supply to Financial Sector (Local Currency)*

$$M. \quad \Delta B_{fs}^g = \min [\Delta B_{fsd}^g, \Delta B]$$

*Government Debt Supply to Private Sector (Local Currency)*

$$N. \quad \Delta B_p^g = \min [(\Delta B - \Delta B_{fs}^g), \Delta B_{pd}^g]$$

*Government Debt Supply to ROW (Local Currency)*

$$O. \quad \Delta B_{row}^g = \min [\zeta_{row} \cdot (\Delta B - \Delta B_{fs}^g - \Delta B_p^g), \Delta B_{rowd}^g]$$

*Government Debt Supply to ROW (foreign currency)*

$$P. \quad \Delta B_{row}^{g\$} = \min [\Delta B^{\$}, \Delta B_{rowd}^{g\$}]$$

*Government Debt Supply to Financial sector (foreign currency)*

$$Q. \quad \Delta B_{fs}^{g\$} = \min [\zeta_{fs} \cdot (\Delta B^{\$} - \Delta B_{row}^{g\$}), \Delta B_{fsd}^{g\$}]$$

*Government Debt Supply to Private Sector (Foreign Currency)*

$$R. \quad \Delta B_p^{g\$} = \min [(\Delta B^{\$} - \Delta B_{fs}^{g\$} - \Delta B_{row}^{g\$}), \Delta B_{pd}^{g\$}]$$

*Government deposits to financial sector*

$$S. \quad M^g = \text{superávit}$$

## 6. Interest Rates, and Exchange Rate

Following Godin and Yilmaz (2020) the demand and supply of bonds may differ, and both adjust via interest rates. The domestic interest rate,  $i^g$ , depends on the international rate of interest,  $i^{row}$ , a spread  $\varphi^g$ , and sovereign risk (*EMBI*). But it also varies according to the excess demand for debt – calculated as the sum of private, central bank, and ROW demand over the total issuance of debt. The nominal interest rate on foreign-denominated debt is obtained by adding to the international interest rate a risk premium, where the latter is a function of sovereign risk (*EMBI*). Private sector nominal rates on domestic and foreign debt are specified in a similar fashion.

*Government Nominal Rate (domestic currency)*

$$G. i^g = i^{row} + \tau_1 \cdot \left( \frac{\Delta B - \Delta B_{p.d}^g - \Delta B_{row.d}^g - \Delta B_{cb.d}^g}{\Delta B} \right) + (1 - \tau_1) \cdot \Delta embi + \varphi^g$$

*Government Nominal Rate (foreign currency)*

$$H. i^{\$g} = i^{row} + \varphi^{\$g}, \text{ where } \varphi^{\$g} = \varphi_0^{\$g} + \varphi_1^{\$g} \Delta embi_g$$

*Private Nominal Rate (domestic currency)*

$$I. i^p = i^g + \varphi^p, \text{ where } \varphi^p = \varphi_0^p + \varphi_1^p \cdot \Delta cembip$$

*Private Nominal Rate (foreign currency)*

$$J. i^{\$p} = i^{\$g} + \varphi^{\$p}, \text{ where } \varphi^{\$p} = \varphi_0^{\$p} + \varphi_1^{\$p} \cdot \Delta cembip$$

The specification of the nominal exchange rate is modelled on Lavoie and Daigle (2011). In addition it is assumed that the nominal exchange rate follows an autoregressive process of order 1 (AR(1)) and is affected by the degree of ‘rationality embodied’ in expectations and by the ROW financial flows to developing economies.

The parameter  $\Psi$  (whose values range between 0 and 1) determine the degree of rationality in the formation of expectations. The closer is the value of this parameter to 1, the higher the degree of rationality. In turn, expectations depend on the composition of the foreign exchange market.

There are two types of agents: the fundamentalists and the chartists. Fundamentalists consider the existence of a fundamental  $E^T$ , influenced by traditional macroeconomic factors – we proxy  $E^T$  by the 3-years moving average of  $E$ , implicitly assuming that over a horizon of three years shocks in  $E$  are absorbed and that there is convergence to its long run trajectory.

Sovereign risk (*EMBI*) also influences fundamentalists’ expectations, which represent an extension of Lavoie and Daigle (2011). Also given the specific conditions of Latin America and the Caribbean, it is important to include the terms-of-trade (*TOT*) as a relevant variable in both the fundamentalist and chartist specifications. Furthermore, the model assumes that fundamentalists have a higher elasticity than chartists, and that

chartists are trend-followers that is, speculative agents that rely on technical analysis. They also follow as it incorporates valuable information on public debt and include the behavior of  $TOT$  in the definition of their expectations. Expectations are given by the market structure: the higher the share of chartist traders, the more volatile are expectations and, in turn, the more volatile is the nominal exchange rate.

The inclusion of the terms-of-trade ( $TOT$ ) not only expands the vector of explanatory variables but also makes explicit another channel that in practice reflects the financial nature of the external restriction. The evolution of the  $TOT$  is determined not only by real but also by financial factors.

*Nominal Exchange Rate*

$$K. E = E_{-1} + \psi. \Delta E^e + \psi_{wff}. \Delta WFF_{ec}$$

*Nominal exchange rate expectations (fundamentalist)*

$$L. \Delta E_f^e = \psi_{f1}(E_{-1} - E_{-1}^T) + \psi_{f2}. \Delta EMBI_{-1} + \psi_{f3}. \Delta TOT$$

*Nominal exchange rate expectations(chartist)*

$$M. \Delta E_c^e = \psi_{c1} \Delta E_{-1} + \psi_{c2}. \Delta EMBI_{-1} + \psi_{c3}. \Delta TOT$$

*Total Expectations*

$$N. \Delta E^e = \omega_f. \Delta E_f^e + \omega_c. \Delta E_c^e$$

*Exchange Rate Target*

$$O. E^T = 5 \text{ year Moving Average}$$

## 7. Central Bank

The central bank demands domestic bonds according to a target, which depends on the performance of the credit and exchange rate market. Indeed, the ideal quantity of bonds the central is willing to hold depends on the interest rate differential between the current rate,  $i_{-1}^g$ , and the central bank's target rate,  $i_{-1}^{cb}$ , and the volatility observed in the exchange rate,  $e^{risk}$ . The volatility observed in the exchange rate market is calculated as a rolling standard deviation. When it is above 3 standard deviations, the coefficient  $\vartheta_{e^{risk}}$  will take a value of 1 and the demand for bonds will adjust accordingly. This mechanism works equally, but with opposite sign, in case of both appreciations and depreciations in the nominal exchange rate. Additionally, the central bank follows a Taylor Rule reflecting the fact that deviations in inflation and output growth from their target level determine the desired monetary policy rate.

*Central bank target of its demand for domestic government bonds*

$$H. B_{cb}^{g*} = B * (\vartheta_{bc}(i_{-1}^g - i_{-1}^{cb}) + \vartheta_{e^{risk}}. e^{risk} )$$

*Taylor's Rule*

$$I. i^{cb} = \pi_t + i_t^{cb*} + \vartheta_1(\pi_t - \pi_t^*) + \vartheta_2(\Delta y_t - \Delta y_t^*),$$

$$\text{where } \Delta y_t^* = 5\text{yr MA}, \quad i_t^{cb*} = i^{row} + \varphi^{cb}$$

*Central bank currency volatility indicator*

$$J. e^{risk} = \begin{cases} \text{if s.d. of } E \geq 3, & 1 \\ \text{if s.d. of } E < 3, & 0 \\ \text{if s.d. of } E \geq -3, & -1 \end{cases}$$

The quantity of domestic government bonds assigned to the Central Bank ( $\Delta B_{cb}^g$ ) is the maximum, between its demand for bonds and the residual not allocated to financial, private, and external sector. The supply of international reserves to the central bank from the ROW is illimited and equals to the net financial flows between both the developing economy and the ROW.

*Public sector supply of bond to the central bank*

$$K. \Delta B_{cb}^g = \max[\Delta B - \Delta B_{fs}^g - \Delta B_{row}^g - \Delta B_p^g, B_{cb}^{g*}]$$

*ROW supply of debt to the central bank*

$$L. \Delta B_{row}^{row} = -CAB + WFF + B_p^{row} \cdot E - \text{depreciation}_{ROW}$$

Finally, the central bank's demand for bonds is equal to the amount of deposits that the government is willing to supply (see equation 85).

**(a) Stock**

The positive (negative) variation in flows of each period translate into an accumulation (deaccumulation) of stocks:

$$(50) B = B_{fs}^g + B_p^g + B_{row}^g + B_{fs}^{\$g} + B_p^{\$g} + B_{row}^{\$g}$$

$$(51) B_p^g = B_{p-1}^g + \Delta B_p^g - T_{d3}$$

$$(52) B_{row}^g = B_{row-1}^g + \Delta B_{row}^g - T_{d4}$$

$$(53) B_{fs}^g = B_{fs-1}^g + \Delta B_{fs}^g$$

$$(54) B_{fs}^{\$g} = (B_{fs-1}^{\$g} + \Delta B_{fs}^{\$g}) \cdot E$$

$$(55) B_p^{\$g} = (B_{p-1}^{\$g} + \Delta B_p^{\$g} - \frac{T_{d1}}{E}) \cdot E$$

$$(56) B_{row}^{\$g} = (B_{row-1}^{\$g} + \Delta B_{row}^{\$g} + \frac{T_{d2}}{E}) \cdot E$$

$$(57) D^T = D_{-1}^T + \Delta D^T$$

$$(58) D_g^p = D_{g-1}^p + \Delta D_g^p$$

$$(59) D_{fs}^p = D_{fs-1}^p + \Delta D_{fs}^p$$

$$(60) D_{row}^p = D_{row-1}^p + \Delta D_{row}^p$$

$$(61) D_{row}^{\$p} = (D_{row-1}^{\$p} + \Delta D_{row}^{\$p}) \cdot E$$

$$(62) D_{fs}^{\$p} = (D_{fs-1}^{\$p} + \Delta D_{fs}^{\$p}) \cdot E$$

$$(63) V = V_{-1} + \Delta V$$

$$(64) k = k_{-1} - d + \Delta k$$

$$(65) M^P = M_{-1}^P + \Delta M^P$$

$$(66) M^G = M_{-1}^G + \Delta M^G$$

$$(67) A^{fs} = A_{-1}^{fs} + \Delta A^{fs}$$

$$(68) L_p^{fs} = L_{p-1}^{fs} + \Delta L_p^{fs}$$

$$(69) L_{fs}^{\$row} = L_{fs-1}^{\$row} + \Delta L_{fs}^{\$row}$$

The identity between the capital and current account represents the closure of the model:

$$(70) CAB \equiv KAB$$

#### (b) Interest payments

Interest paid by the government on bonds in domestic currency

$$(71) int^g = i_{-1}^g \cdot B_{-1}^g$$

Interest paid by the government to the private sector

$$(72) int_p^g = i_{-1}^g \cdot B_{p-1}^g$$

Interest paid by the government to financial sector

$$(73) int_{fs}^g = i_{-1}^g \cdot B_{fs-1}^g$$

Interest paid by the government to rest of the world

$$(74) int_{row}^g = i_{-1}^g \cdot B_{row-1}^g$$

Interest paid by the government for the Bond in foreign currency

$$(75) int_{FX}^g = (i_{-1}^{\$g} \cdot B^{\$g}) \cdot E$$

Interest paid by the government to private sector (foreign currency)

$$(76) int_{pFX}^g = (i_{-1}^{\$g} \cdot B_p^{\$g}) \cdot E$$

Interest paid by the government to ROW (foreign currency)

$$(77) int_{rowFX}^g = (i_{-1}^{\$g} \cdot B_{row}^{\$g}) \cdot E$$

Interest paid by the government for bonds in foreign currency to financial sector

$$(78) int_{fsFX}^g = (i^{\$g} \cdot B_{fs}^{\$g}) \cdot E$$

Interest paid by the private sector on debt (domestic currency)

$$(79) int^p = i^p \cdot D^p$$

Interest paid by the private sector to the government (domestic currency)

$$(80) int_g^p = i^p \cdot D_g^p$$

Interest paid by the private sector to ROW (domestic currency)

$$(81) int_{row}^p = i^p \cdot D_{row}^p$$

Interest paid by the private sector to the financial sector (domestic currency)

$$(82) int_{fs}^p = i^p \cdot D_{fs}^p$$

Interest paid by the private sector on foreign currency

$$(83) int_{FX}^p = i^{\$p} \cdot D^{\$p}$$

Interest paid by private sector for the debt in foreign currency to fs

$$(84) int_{FXfs}^p = (i^{\$p} \cdot D_{fs}^{\$p}) \cdot E$$

Interest paid by private sector for the Debt in foreign currency to the ROW

$$(85) int_{FXrow}^p = (i^{\$p} \cdot D_{row}^{\$p}) \cdot E$$

Interest paid by ROW sector for the Foreign Bonds

$$(86) int^{row} = (i^{row} \cdot B^{row}) \cdot E$$

Interest paid by ROW sector for the Foreign Bonds to the Government

$$(87) int_g^{row} = (i^{row} \cdot B_g^{row}) \cdot E$$

Interest paid by the ROW sector for the holdings of foreign bonds to the private sector

$$(88) int_p^{row} = (i^{row} \cdot B_p^{row}) \cdot E$$

Interest paid by the ROW sector for the Foreign Bonds to the financial sector.

$$(89) int_{fs}^{row} = (i^{row} \cdot B_{fs}^{row}) \cdot E$$

Interests paid by the financial sector to the private sector

$$(90) int_{mm,p}^{fs} = i_{-1}^{mm} \cdot M_{-1}^p$$

$$(91) int_{fs}^c = i_{-1}^c \cdot Cc_{-1}^p$$



$$(92) \text{int}^{afs} = i_{-1}^{afs} \cdot A^{fs}$$

$$(93) \text{int}^{lp} = i_{-1}^{lp} \cdot L_p^{fs}$$

$$(94) \text{int}^{slp} = i_{-1}^{slp} \cdot L_{fs}^{row}$$

## 8. The financial sector

The financial sector covers its financial needs by issuing two types of liabilities. These are central Bank's advances, ( $A^{fs}$ ), and foreign currency bonds issued to the ROW, ( $L_{fs}^{row}$ ). Advances are calculated as a proportion ( $\delta_{afs}$ ) of the sector's financial needs, which are given exogenously. The remaining financial needs are covered through bonds issued in foreign currency and sold to the ROW.

The financial sector's balance sheet comprises seven assets. Two of these assets, consumer credit ( $Cc_s^p$ ) and loans for investment purposes ( $L_p^d$ ) are acquired from the sector's lending activity to the private sector. The demand for consumer credit ( $Cc_s^p$ ) depends on the difference between the private wage bill and private consumption. When the latter exceeds the former, the financial sector finances private consumption with consumer credit ( $Cc_d^p$ ). It is assumed for simplicity, that the financial sector meets the total demand for consumer credit.

The financial sector also finances private sector investment with loans ( $L_p^d$ ). In this case, the demand for loans depends on profits and capital expenditures. The supply of loans also meets the demand for loans. The sum of consumer credit and loans corresponds to the total volume of deposits ( $Mm$ ) of the private sector in the financial sector.

The interest payments received for holding local bonds and foreign reserves constitute the financial sectors' inflows. Interests paid on foreign borrowing and for advances from the central bank correspond to outflows. The difference between inflows and outflows determines profits ( $f_{fs}$ ).

A share of profits ( $fa_{fs}$ ) is used to accumulate wealth through financial assets: government bonds (in local and foreign currency), private debt (only in domestic currency), and foreign debt used as reserves. The demand for each type of asset reflects arbitrage conditions as postulated by Godin and Yilmaz (2019).

*Demand for consumer credit*

$$(95) Cc_d^p = C - WB$$

*Supply of consumer credit*

$$(96) Cc_s^p = Cc_d^p$$

*Loans supplied by financial sector to the private sector*

$$(97) \Delta L_p^s = \Delta L_p^d$$

*Profit of the financial sector*

$$(98) f_{fs} = int_{fs}^g + int_{fs}^{\$g} + int_{fs}^p + int_{fs}^{row} - int_{mm_p}^{fs} + int_{fs}^p - int^{afs} + int^{lp} - int^{lfs}$$

$$(99) \Delta FN_{fs}^t = T + \Delta B_{fs}^g + \Delta B_{fs}^{\$g} + \Delta D_{fs}^p + \Delta D_{fs}^{\$} + \Delta B_{fs}^{row} + \Delta L_p^{fs} + \Delta CC_{fs}^p - (1 - \sigma_{Rb})M^p - f_{fs} + R_p$$

*Financial Proportion of assets bought by the financial sector*

$$(100) f_{a_{fs}} = (1 - \sigma_{Rb})M^p - f_{fs}$$

*Advances of the financial sector*

$$(101) \Delta A^{fs} = \delta_{afs} \cdot \Delta FN_{fs}^t$$

*Loans demanded by the financial sector in foreign currency*

$$(102) \Delta L_{fs}^{row} = \frac{((1 - \delta_{afs}) \cdot \Delta FN_{fs}^t)}{E} \text{ where } \delta_{afs} \text{ is exogenous}$$

*Financial Sector Demand for Government bonds*

$$(103) \Delta B_{fs,d}^g = \epsilon_{f_1} \cdot f_{a_{fs}}$$

*Elasticity of the demand of the financial sector for government bonds*

$$(104) \epsilon_{f_1} = \epsilon_{f_{10}} + \epsilon_{f_{11}} \left( \frac{1+i^g}{1+i^{\$}} \right)^{\sigma_{fb}}$$

*Financial Sector Demand for domestic bonds in USD*

$$(105) \Delta B_{fs,d}^{\$g} = \epsilon_{f_2} \cdot f_{a_{fs}}$$

*Elasticity of the demand of the financial sector for domestic bonds in USD*

$$(106) \epsilon_{f_2} = \epsilon_{f_{20}} + \epsilon_{f_{21}} \left( \frac{1+i^{\$}}{1+i^{row}} \right)^{\sigma_{fbs}}$$

*Financial Sector demand for ROW bonds*

$$(107) \Delta B_{fs,d}^{row} = \epsilon_{f_3} \cdot f_{a_{fs}}$$

*The demand for finance is the same as the supply for finance*

*Elasticity of the demand of the financial sector for ROW bonds*

$$(108) \epsilon_{f_3} = \epsilon_{f_{30}} + \epsilon_{f_{31}} \left( \frac{1+i^{row}}{1+i^{\$}} \right)^{\sigma_{frow}}$$

$$(109) \Delta D_{fs,d}^p = \epsilon_{f_4} \cdot f_{a_{fs}}$$

*Elasticity of the demand of the financial sector for government bonds*

$$\epsilon_{f_4} = \epsilon_{f_{40}} + \epsilon_{f_{41}} \left( \frac{1+i^p}{1+i^g} \right)^{\sigma_{fd}}$$

## E. Macprudential measures and their results

The model above is specified to capture the business cycle of Latin America and the Caribbean which is shaped by the external financial restriction and by the transmission mechanisms described in section III.

Using the above model, this section shows the impact of selected macroprudential measures on the evolution of the business cycle. The choice of macroprudential measures is based on the conceptual discussion of macroprudential regulation in this paper and on the analysis of the companion paper *A critical assessment of macroprudential regulation and comparative regional experiences focusing on Latin America and the Caribbean DA-COVID 19 Project* 18.21 (Pérez Caldentey, Nalin & Rojas, 2021).

The measures include: (i) the increase in retained profits of the private sector; (ii) the reduction in the number of speculators (chartist traders) in the Forex market; and (iii) the decline in the foreign debt in the private sector. The model also shows that these measures are more effective when combined with a government sustainability rule that takes into accounts the specificities of developing countries.<sup>25</sup> The measures are simulated over the period 1995-2025 and the description of the results focus on the 2020 COVID-19 crisis. The scenarios assume that macroprudential policies are implemented starting in 2016. The result of adopting these measures is compared with a baseline scenario with no macroprudential policies in place.

The choice of these macroprudential measures is derived from both theoretical and empirical considerations.

The first macroprudential policy considered, retained earnings, has a direct relation to Minsky's model of financial fragility using the representative firm. According to Minsky's model, the greater are retained earnings to 'finance' investment, the less likely will be the need for firms to obtain finance via debt and thus the more robust will the margins of safety and the less likely with the weight of speculative and Ponzi finance in the financial structure. The theoretical argument is also based on Kalecki (1969 (1954)). At the empirical level, the evidence presented for macroprudential policies in the case of Asia analyzed in Pérez Caldentey, Nalin & Rojas (2021) indicates that 50% of banking supervisors have implemented temporary restrictions on dividends and bonuses as a tool for the management of the business cycle. The simulation proposed increases the parameter of equation 8 from 0.18 to 0.30.

The second macroprudential measure applied concerns the composition of the foreign exchange currency market. The foreign exchange market structure is crucial in determining the behavior of

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<sup>25</sup> See De Freitas (2021) & Schonerwald (2021).

nominal exchange rates (Daigle and Lavoie, 2011). A higher proportion of speculators – i.e., trend-followers – can turn the foreign exchange market into an asset-like market with procyclical performance. The simulation of this measure seeks to explore the implications of a reduction in speculators in favor of fundamental traders – i.e., those who pay less attention to trends and focus on macroeconomic fundamentals. In this sense, this second measure aims at reducing the destabilizing effects of foreign exchange speculators in the era of financial globalization.

This measure is highly relevant to the current Latin American and Caribbean context. In the last decade, emerging markets including many Latin American economies liberalized their foreign exchange markets and, partly, as a result, of this experienced a growing level of volatility in the exchange rate. This can represent a source of instability given the increasing foreign debt in government sector and the corporate sector coupled with the existence of increasing of currency mismatches in the developing world (Perez Caldentey et al., 2019; Nalin and Yajima, 2021).

The third macroprudential measure contemplated is the establishment of a *de jure* cap on the private sector. The establishment of restrictions on foreign currency-denominated lending to tackle systemic risk is well documented in the case of Latin America and the Caribbean (see Pérez Caldentey, Nalín, and Rojas, 2021). To evaluate the outcomes of such policy, the simulation consists in a reduction of the proportion of foreign debt in the private sector's balance sheet by increasing the corresponding parameter from 0.74 to 0.95 (see equation 31 above). The main implication of this policy is the private sector's preference towards domestically issued debt. With this measure in place foreign debt is reduced from 26% to 5%.

This section also shows that these measures are more effective when combined with a sustainability rule developed by UNCTAD, that takes, into account, both the domestic and external constraints for government expenditure (Schonerwald Da Silva, 2021).

Tables VIII.5 and VIII.6 below summarize the individual and combined simulation results of applying the above macroprudential measures on the evolution of selected variables including the nominal exchange rate (*NER*), sovereign and corporate risk (*EMBI* and *CEMBI*), total debt-to-GDP and private debt-to-GDP ratio, currency mismatch, profits-to-sales, investment confidence and the investment-to-GDP ratio. For the sake of completeness, tables VIII.5 and VIII.6 also show the impact of UNCTAD's government sustainability rule on the evolution of these variables. The impacts over time are traced in figures VIII.1A-VIII.1D and VIII.2A-VIII.2D below.

Table VIII.5

**Individual impact of selected macroprudential measures on the nominal exchange rate (NER), sovereign and corporate risk (EMBI and CEMBI), total debt-to-GDP and private debt-to-GDP ratio, currency mismatch, profits-to-sales, investment confidence and the investment-to-GDP ratio (2016–2023)**

	NER	NER Vol.	EMBI	CEMBI	Debt-to-GDP	Private Debt-to-GDP	Mismatch	Profit-to-Sales	Investment Confidence	Investment -to-GDP
Increase in Retained Profits	Depreciation	L	L	L	H	L	L	H	H	H
Reduction of speculators in the foreign exchange market	Appreciation	L	H	N	H	L	H	L	L	L
Reduction in external debt	Appreciation	H	H	N	L	L	L	N	N	N
UNCTAD's debt sustainability rule	Appreciation	L	L	N	L	N	L	N	N	N

**Source:** Authors' own elaboration.

**Note:** L= lower; H= higher; N=neutral.

Table VIII.6

**Combined impact of selected macroprudential measures on the nominal exchange rate (NER), sovereign and corporate risk (EMBI and CEMBI), total debt-to-GDP and private debt-to-GDP ratio, currency mismatch, profits-to-sales, investment confidence and the investment-to-GDP ratio (2016–2023)**

	NER	NER Vol.	EMBI	CEMBI	Govt Debt-to-GDP	Private Debt-to-GDP	Mismatch	Profit-to-Sales	Investment Confidence	Investment -to-GDP
Increase in Retained Profits & Reduction in FX Leverage	Appreciation	L	L	L	H	L	L	H	H	H
Higher in Retained Profits & Reduction in FX speculators	Appreciation	L	H	L	H	L	L	H	H	H
Increase in Retained Profits & Sustainability Rule	Appreciation	L	L	L	H	L	L	H	H	H

**Source:** Authors' own elaboration.

**Note:** L= lower; H= higher; N=neutral.

**Figure VIII.1**  
**Evolution of the individual impact of selected macroprudential measures on currency mismatch, investment-to-GDP, profits-to-sales, investment confidence and CEMBI 2016–2023**

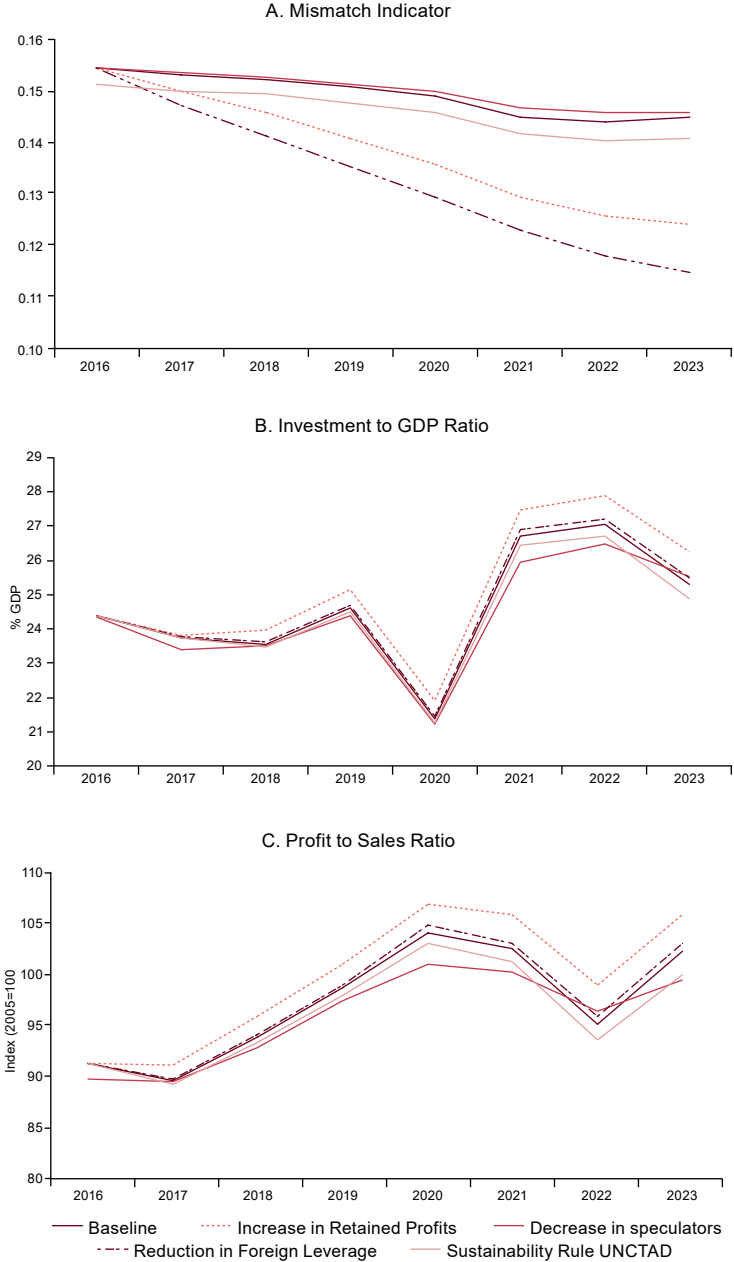
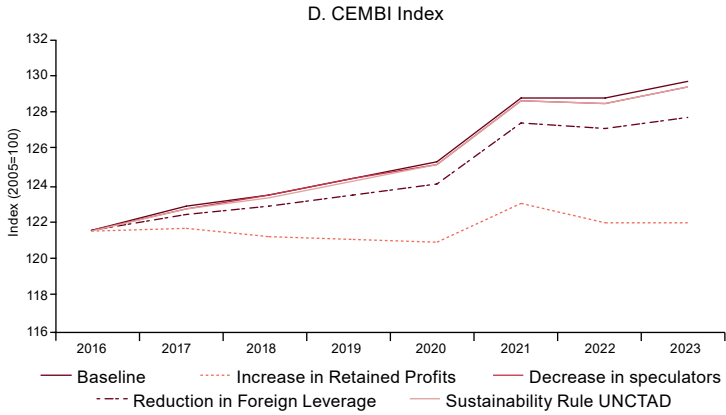


Figure VIII.1 (concluded)



Source: Author's own elaboration.

### Figure VIII.2 Evolution of the individual impact of selected macroprudential measures on the nominal exchange rate (NER), public debt-to-GDP ratio, index and volatility index 2016–2023

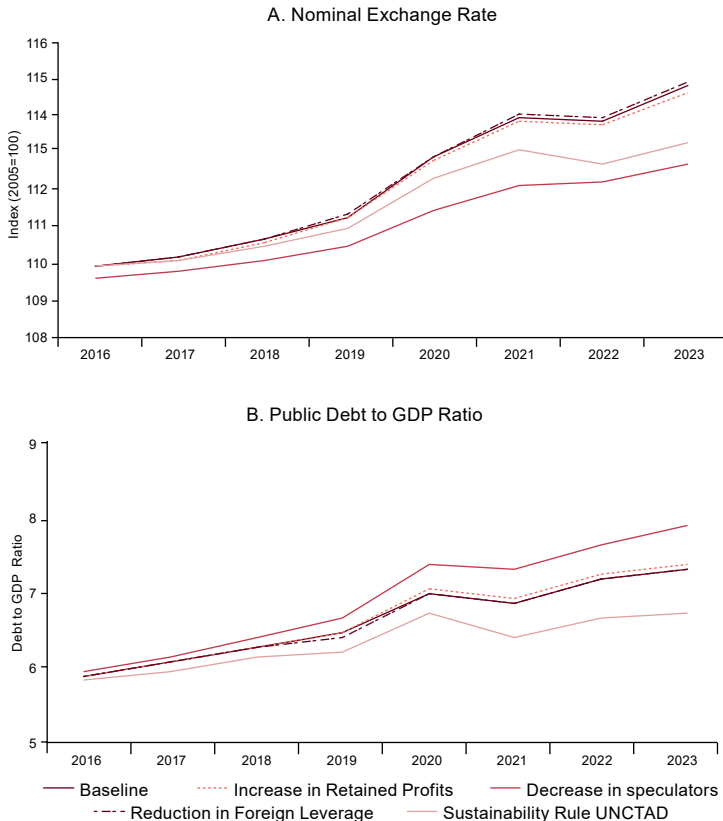
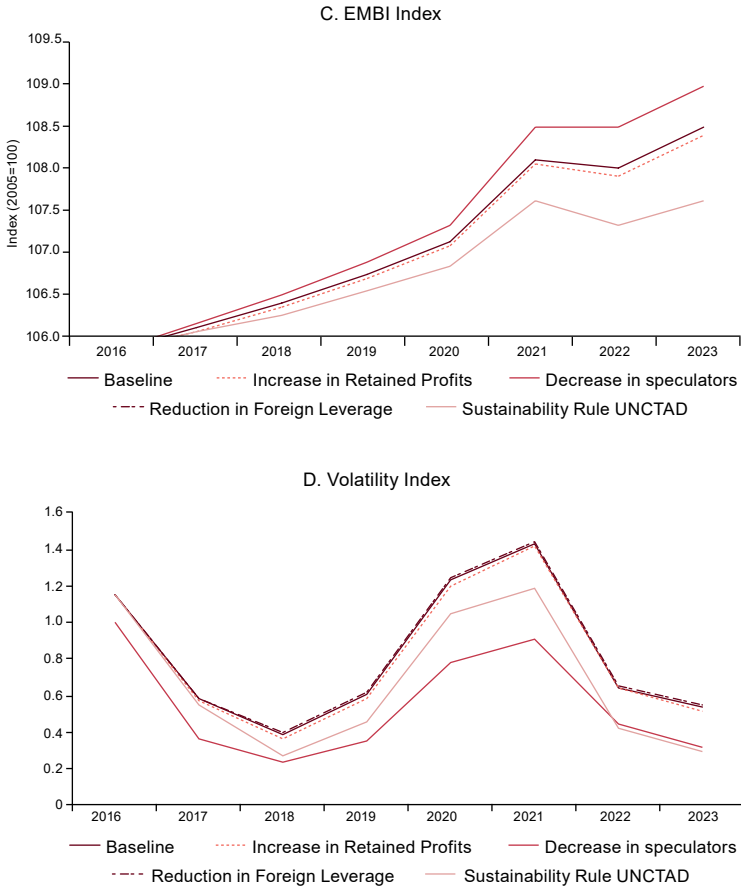


Figure VIII.2 (concluded)



Source: Author's own elaboration.

The analysis shows that an increase in retained earnings reigns in nominal exchange rate depreciation, lowers risk perceptions and narrows currency mismatches. At the same time, this measure improves the profit-to-sales ratio and increases investment-to-GDP. The sequence of effects of the increase in retained earnings are traced in figures VIII.1A-VIII.1D and VIII.2A-VIII.2D.

Higher retained earnings imply less reliance on corporate debt and thus a reduction in the corporate risk index (*CEMBI*). The reduction of *CEMBI* has significant implications for the system. On the one hand, the lower level of risk reduces the corporate interest rate, which decreases the total amount of interest paid on debt. As a result, benefits per unit of sales are higher. On the other hand, lower corporate risk (*CEMBI*) and higher benefits raise the investment confidence index which has a positive effect



on the investment-to-GDP ratio. The results show that the increase in the investment-to-GDP ratio is three percentage points of GDP higher relative to the base scenario. In a similar way, the private debt-to-GDP ratio which in the baseline scenario averages 17% of GDP over the period 2016-2021, drops to 7%, resulting from increased retained earnings.

The second measure applied (the reduction in foreign exchange speculators) is effective in tackling currency depreciation and volatility yet does not lead to an improvement in corporate investment. Figure VIII.2A shows that this measure leads to a more appreciated and stable nominal exchange rate relative to the other measures. Visual inspection of the impact of this measure also illustrates that the gap between the evolution of the nominal exchange rate (*NER*) using this macroprudential measure and the evolution of the nominal exchange rate (*NER*) with the other macroprudential measures tends to widen over time, suggesting the ability of the former to tackle depreciation.

The analysis of the volatility index —calculated as the rolling standard deviation of the nominal exchange rate (*NER*)— also suggests the reduction in chartist traders is positive for currency stabilization. Benefits materialize mainly during times of crisis, such as during the 2020 COVID-19 episode, when volatility is on average reduced by 50% in the case of the reduction in foreign exchange speculators relative to the impact of using other macroprudential measures.

However, currency appreciation and stability do not guarantee an overall improvement in the business cycle. One of the effects derived from a reduction in foreign exchange speculators is the observed higher level of debt and the consequent increase in sovereign risk (*EMBI*) relative to the baseline scenario.

This results from the role played by reserve accumulation in emerging market economies including in Latin America and the Caribbean in maintaining macroeconomic stability (see Pérez Caldentey, Abeles and Kreiter, 2021). In the present model the initial stock of international assets held by the central bank is 6.6 times higher than the total foreign debt in the private and public sectors. Within this context, a depreciating exchange rate generates capital gains on foreign reserves, and according to the specification of the model described above, the central bank uses those gains to relax the government's budget constraint.

This in turn could result in an expansion of the debt-to-GDP ratio and an increase in sovereign risk (*EMBI*) (Eq. 14 includes the debt-to-GDP ratio as among the determinants of *EMBI*). The degree to which *EMBI* increases in response to a rise in the debt-to-GDP ratio depends on historical patterns. The more a country has been prone to debt mismanagement and crisis, the more sensitive is the *EMBI* to increases in the debt-to-GDP ratio. A similar logic can be applied to describe the effects of an exchange rate appreciation.

The reduction in foreign exchange speculators does not generate significant changes in private investment. A decrease in foreign exchange speculators yields the lowest investment-to-GDP ratio among the different macroprudential measures applied (See figure VIII.1B).

The third macroprudential measure contemplated, the *de jure* external debt cap for the private sector, reduces the currency mismatch but does not result in a positive externality to the rest of the system. Note that the overall level of debt issued by the private sector does not change. There is only a change in its composition from foreign to domestic securities. Since there is mechanism to reduce the demand for finance of the private sector, domestic debt markets will absorb the proportion of debt not issued in foreign currency. As a result, the outcome resulting from imposing an external debt cap resemble that of the baseline scenario. This underscores the importance of confronting the problem of private debt by reducing the financial needs of the private sector rather than by changing its composition.

Finally, the introduction of UNCTAD's fiscal sustainability rule lowers debt levels relative to the other scenarios and, in turn, reduces perceived sovereign risk (*EMBI*). According to this rule the growth rate for public expenditure is determined by the elasticity to the domestic economic growth; the sustainability rule of debt in domestic currency; and the sustainability rule of debt in foreign currency.

Given the implementation of the sustainability rules starting in 2016, the existence of a negative gap between the rate of growth of government expenditures and interest payments in local currency ( $g - i^g$ ) leads to a reduction of the former to ensure the sustainability of public debt in domestic currency. With the positive gap between the rate of growth of exports and interest payments in foreign currency ( $x - i^{g\$}$ ) for several years, from 2016 to 2019, allows for greater space in public spending. This occurs in the 2016-2019 period. The opposite result prevails in 2020 when the growth rate of exports decreases relative to the interest rate of the government's foreign currency liabilities. With this rule in place the public debt grows at a much lower rate than in the other scenarios and registers the lowest debt-to-GDP ratio.

The application of the UNCTAD debt sustainability rule also slightly reduces currency mismatch. The lower public consumption leads to an insufficient supply of domestic public debt, and, in turn, the private sector allocates its savings shift towards foreign assets. In other words, the private sector is forced to accumulate higher foreign reserves, improving the mismatch indicator. However, no significant effects are perceived for the other variables that are considered in this exercise.

Up until this stage, the model simulation shows the impact of each individual macroprudential measure separately, and that of the UNCTAD's debt sustainability rule. A more realistic approach is to combine different

macroprudential measures treating these as complementary rather than as substitutes. As a first approximation the analysis combined the most effective of the three macroprudential measures considered (the increase in retained earnings) with each of the other measures and, also with UNCTAD's debt sustainability rule.

Among the three policy combinations considered ((i) the increase in retained profits and reduction of foreign leverage; (ii) the increase in retained profits and reduction in FX speculators; and (iii) the increase in retained profits and implementation of the fiscal sustainability rule) the increase in retained profits jointly with the fiscal sustainability rule provides the best results for exchange rate stability, public and private debt behavior, risk, and investment. The investment-to-GDP ratio, the investment confidence index, and the profit-to-sales reach their highest levels thanks to lower financing needs resulting from increased retained profits.

These indicators benefit from extended periods of lower private debt –which only adjust upward in 2021 due to the rapid recovery in the 2020 shock– and a contained level of public debt (1% of GDP higher than the baseline scenario). Also, with the combination of retained profits and fiscal sustainability rule, the mismatch is lower than the baseline scenario. All in all, there also exist positive spillovers on the financial side of the simulation. The exchange rate appreciates and shows a more stable path over time. In turn, lower debt, and greater nominal exchange rate (*NER*) stability positively impact risk premiums as both *EMBI* and *CEMBI* decrease.

Similar results in the nominal exchange rate (*NER*) and its volatility, and risk (*EMBI* and *CEMBI*) are observed when combining the increase in retained profits with a reduction of foreign leverage in the private sector

Indeed, the empirical results show a more appreciated and less volatile nominal exchange rate (*NER*) and a lower *EMBI*. The reduction of total private debt and currency mismatch generates a much lower level of *CEMBI*. These results translate into improvements in the investment ratio to *GDP*, the investment confidence index, and the proportion of profit to sales ratio.

However, investment to *GDP* reaches a lower level in comparison to the scenario combining higher retained profits with the fiscal sustainability rule due to the higher profit-to-sales and investment confidence.

Overall, relative to the baseline scenario, the combination of increased retained profits and the reduction of foreign leverage substantially improves the performance of the economy under the circumstances of an external shock, such as the COVID-related crisis.

Finally, the increase in retained profits and the reduction of foreign exchange speculation presents ambiguous results since the decrease in exchange market participation and its adverse effects on debt and risk (discussed above) far outweigh the benefits of retained earnings in the private sector.

## F. Conclusion

This paper presents a baseline macroeconomic model for Latin America and the Caribbean to analyse and evaluate macroprudential guidelines and policies. This model is based on the idea that the growth of Latin American and Caribbean economies is balance-of-payments constrained and that the external constraint is financial. The binding character of the external constraint is also reflected in the introduction of a fiscal sustainability rule developed by UNCTAD that emphasizes the relationship between the external constraint and debt accumulation.

The model specification captures the dominant transmission mechanisms (in place since the 2000s and particularly since the Global Financial Crisis 2008-2009) between the external and domestic sectors of the economy, and between real and monetary/financial variables that are specific to the Latin American and Caribbean case. These transmission mechanisms describe a financial cycle that can evolve over time without being characterized by alternating booms and busts.

The analysis of macroprudential policies builds from a critical reading of the mainstream and, especially, post-Keynesian literature on financial regulation. The paper argues that the use of macroprudential policies should not only prevent systemic crises but should also be a permanent component of the management of the business cycle.

The paper exemplifies the usefulness of the model by tracing the effects of three macroprudential measures that focus on the external sector: an increase retained earnings, a cap on foreign currency borrower, and, also, a limit on foreign exchange speculation. The results show that these measures, and in particular, an increase in retained earnings, can mitigate the fluctuations of the business cycle. The results tend to improve with the UNCTAD debt sustainability rule. The baseline model is flexible enough to incorporate other macroprudential measures described in the text and can thus serve as a tool for policy makers to evaluate their impact and usefulness.

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## Annex VIII.A1

### Debt sustainability rules

#### Debt sustainability rule in domestic currency.

Following Carlos Schonerwald Da Silva(2021) concerning the domestic level, the central issue is the debt to GDP ratio. The sustainability of public debt in domestic currency can be expressed as follows

$$\Delta d = \frac{G - T}{Y} - \frac{\Delta M}{PY} - (\beta - \pi + g).d. \quad (I.)$$

Where

$\Delta d$  = Change in domestic debt-GDP ratio

$\frac{G - T}{Y}$  = Primary deficit

$\frac{\Delta M}{PY}$  = Change in import-GDP ratio

$i^g$  = Average of liabilities cost of Government

$\pi$  = Change in domestic prices

$g$  = Domestic growth rate

$d$  = Stock level of debt-GDP ratio

This equation following Bhering(2021) can be re-expressed as

$$\Delta d = \frac{G + F - T}{Y} - \left(\frac{g - i^g}{1 + g}\right).d \quad (I.a.)$$

Where

$F$  = Transfers from government to other sectors

As mentioned by Schonerwald(2021), the second part of the equation (I. a.)  $\left(\frac{g - i^g}{1 + g}\right).d$  is the well-known snowball effect, so this part of the equation will largely determine the sustainability of foreign currency public debt according to the gap between  $g - i^g$ .

In the case of our model, we take equation (Ia.) as a starting point to formulate the sustainability rule and obtain the following equation

$$gr_{g_2} = \left(\frac{g_{-1} - i^g_{-1}}{1 + g_{-1}}\right).d_{-1} - \frac{G_{-1} + F_{-1} - T_{-1}}{Y_{-1}} \quad (II.)$$

Where

$gr_{g_2}$  = Sustainability rule

Given the role assigned to the government in the framework of macroprudential policies, this rule determines a part of the growth rate of public expenditure for each period according to the behavior of public debt concerning the gap between the two parts of the equation (II).

**Foreign currency debt sustainability rule.**

Following Schonerwald(2021) we start from the equation of the Balance of Payments.

$$X - M + RMT + NIFA + D + FDI + PI - \Delta R = 0 \text{ (III)}$$

Where

$X = \text{Exports}$

$M = \text{Imports}$

$RMT = \text{Remittances}$

$NIFA = \text{Net Income from Abroad}$

$D = \text{Net Debt (both in local and foreign currency)}$

$FDI = \text{Foreign Direct Investment}$

$PI = \text{Portfolio Investment}$

$\Delta R = \text{Variation of Reserves}$

From where you can get to

$$\Delta NEL = M - X - RMT - NIFA \text{ (IV.)}$$

Where

$\Delta NEL = \text{Variation of The Net External Liabilities}$

And

$$\Delta nel = \frac{NEL}{X + RMT}$$

The change in foreign liabilities can be restated as follows

$$nel = \frac{M - X - RMT - NIFA}{X + RMT} - nel \left( \frac{\Delta(X + RMT)}{X + RMT} \right) \text{ (VI.)}$$

And finally, following Bhering(2021) the above equation can be expressed as a function of the growth rates of exports and the average interest rate of the economy's liabilities ( $r$ ).

$$\Delta nel = \frac{M - X - RMT - NIFA}{X + RMT} - \left( \frac{x - r}{1 + x} \right) . nel \text{ (VII.)}$$

The behavior of the foreign debt will therefore depend on the second part of the equation (VII.)  $\left( \frac{x - r}{1 + x} \right) . nel$ , and the gap  $x - r$ .

In the case of our model, we take equation as a starting point to formulate the sustainability rule and obtain the following equation

$$gr_{g_2} = \left( \frac{x - ig^{\$}}{1 + x} \right) \cdot nel - \frac{M - X}{X} \quad (VIII.)$$

This gives the following equation for the variation of public expenditure

$$gr_g = \varphi_0 + \varphi_1(gr_y) + \xi_{gr_2} \cdot gr_{g_2} + \xi_{gr_3} \cdot gr_{g_3} \quad (71)$$

Where

$\xi_{gr_2}, \xi_{gr_3}$  are elasticity parameters. In the baseline scenario their values are zero.

## Annex VIII.A2

### Debt sustainability rules

#### Debt sustainability rule in domestic currency.

Following Carlos Schonerwald Da Silva (2021) concerning the domestic level, the central issue is the debt to GDP ratio. The sustainability of public debt in domestic currency can be expressed as follows

$$\Delta d = \frac{G - T}{Y} - \frac{\Delta M}{PY} - (\beta - \pi + g) \cdot d. \quad (I.)$$

Where

$\Delta d$  = Change in domestic debt-GDP ratio

$$\frac{G - T}{Y} = \text{Primary deficit}$$

$$\frac{\Delta M}{PY} = \text{Change in import-GDP ratio}$$

$i^g$  = Average of liabilities cost of Government

$\pi$  = Change in domestic prices

$g$  = Domestic growth rate

$d$  = Stock level of debt-GDP ratio

This equation following Bhering(2021) can be re-expressed as

$$\Delta d = \frac{G + F - T}{Y} - \left(\frac{g - i^g}{1 + g}\right) \cdot d \quad (I. a.)$$

Where

$F$  = Transfers from government to other sectors

As mentioned by Schonerwald(2021), the second part of the equation (I. a.)  $\left(\frac{g - i^g}{1 + g}\right) \cdot d$  is the well-known snowball effect, so this part of the equation will largely determine the sustainability of foreign currency public debt according to the gap between  $g - i^g$ .

In the case of our model, we take equation (Ia.) as a starting point to formulate the sustainability rule and obtain the following equation

$$gr_{g_2} = \left(\frac{g_{-1} - i^g_{-1}}{1 + g_{-1}}\right) \cdot d_{-1} - \frac{G_{-1} + F_{-1} - T_{-1}}{Y_{-1}} \quad (II.)$$

Where

$gr_{g_2}$  = Sustainability rule

Given the role assigned to the government in the framework of macroprudential policies, this rule determines a part of the growth rate of public expenditure for each period according to the behavior of public debt concerning the gap between the two parts of the equation.

**Foreign currency debt sustainability rule.**

Following Schonerwald(2021) we start from the equation of the Balance of Payments

$$X - M + RMT + NIFA + D + FDI + PI - \Delta R = 0 \quad (III)$$

Where

$X = Exports$

$M = Imports$

$RMT = Remittances$

$NIFA = Net Income from Abroad$

$D = Net Debt (both in local and foreign currency)$

$FDI = Foreign Direct Investment$

$PI = Portfolio Investment$

$\Delta R = Variation of Reserves$

From where you can get to

$$\Delta NEL = M - X - RMT - NIFA \quad (IV.)$$

Where

$\Delta NEL = Variation of The Net External Liabilities$

And

$$\Delta nel = \frac{NEL}{X + RMT}$$

The change in foreign liabilities can be restated as follows

$$nel = \frac{M - X - RMT - NIFA}{X + RMT} - nel \left( \frac{\Delta(X + RMT)}{X + RMT} \right) \quad (VI.)$$

And finally, following Bhering(2021) the above equation can be expressed as a function of the growth rates of exports ( $x$ ) and the average interest rate of the economy's liabilities ( $r$ ).

$$\Delta nel = \frac{M - X - RMT - NIFA}{X + RMT} - \left( \frac{x - r}{1 + x} \right) . nel \quad (VII.)$$

The behavior of the foreign debt will therefore depend on the second part of the equation (VII.)  $\left( \frac{x - r}{1 + x} \right) . nel$ , and the gap  $x - r$ .

In the case of our model, we take equation (VII.) as a starting point to formulate the sustainability rule and obtain the following equation.

$$gr_{g_2} = \left( \frac{x - i^{g\$}}{1 + x} \right) \cdot nel - \frac{M - X}{X} \quad (VIII.)$$

This gives the following equation for the variation of public expenditure.

$$gr_g = \varphi_0 + \varphi_1(gr_y) + \xi_{gr_2} \cdot gr_{g_2} + \xi_{gr_3} \cdot gr_{g_3} \quad (71)$$

Where

$\xi_{gr_2}, \xi_{gr_3}$  are sesibilities. In the baseline scenario their values are zero.

## Chapter IX

# **Finance-led premature de-industrialization and the role of external macroprudential policy for post-COVID-19 transformative development: Latin America in a comparative perspective**

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## **Introduction**

After more than two years since its outbreak, most economies worldwide are struggling to recover from the COVID-19 crisis. In 2020, the drop in world GDP has been steeper than what observed in 2009 after the last financial crisis. It has been the deepest recession since the Great Depression, with global trade in goods and services estimated to have decreased by 7.6 percent (UN, 2021). Economic activity has rebounded in 2021, but the scars from the 2020 downturn may give rise to square-root shaped recovery and long-lasting stagnation.

The COVID-19 crisis has taken different degrees of intensity in different regions. Among emerging and developing countries (EDE henceforth), economic dynamics slowed down but remained positive in some East Asia countries and in China. Latin America and the Caribbean, instead, stand out

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as the most affected regions of the World together with South Asia (UN, 2021). Latin America's GDP is estimated to have contracted by around 7.0 percent according to IMF's April 2022 World Economic Outlook (2022). Such a decline is more than four times larger than that observed in Sub-Saharan Africa. Latin American economic growth has been substantial in 2021 (6.8 percent), but lower than what observed in emerging Asian countries. More importantly, it is expected to languish around a mere 2.5 percent in the upcoming three years, i.e., lower than what forecasted for most of the other developing world.

There is not a unique factor that can explain the tremendously high toll paid by Latin America to COVID-19. According to Aguilera (2020), Latin American countries are developing and emerging economies that nevertheless suffer from advanced economy-type diseases such as obesity and hypertension. On the one hand, such diseases worsened the effects of the contagion and more likely turned infected people into intensive care. On the other hand, higher pressures on fragile healthcare systems could have raised the death toll and, at the same time, induced local governments to more stringent and prolonged lockdown measures, with obvious harsh repercussions for the economy. The pandemic has led all governments worldwide to adopt discretionary fiscal measures in support of their economies. Latin American governments do not make an exception and have implemented fiscal packages broadly consistent with those of other EDE economies, although smaller than the fiscal response of advanced countries (see more on this below). Fiscal reaction, however, has been heterogenous among Latin America countries. Mexico, for instance, is a striking case of fiscal inactivism. According to the IMF's Fiscal Monitor Report 2020 (IMF, 2020a), fiscal reaction to COVID-19 in Mexico amounted to a mere 2 percent of GDP, so that Swarnali *et al.* (2020) suggested a fiscal twist by adopting more counter-cyclically measures now and postponing fiscal adjustments over the medium term. In 2019, the Mexican economy represented almost 27 percent of the whole Latin American GDP. It is easy to see how lack of counter-cyclical fiscal measures and a deepening crisis in Mexico could have perverse spill-over effects for the economy of the entire region. Perhaps more importantly for the sake of our analysis, there is some evidence that the negative medium-term economic implications of COVID-19 may become more acute in the context of fragile and relatively underdeveloped productive structures characterized by widespread informality, high inequality standards, large dependence on natural resources and/or contact-intensive services (Hevia and Neumeyer, 2020). This is the case of Latin American economies, even in comparative terms with respect to other EDE economies.

The perverse relation between underdeveloped productive structures, the intensity of the COVID-19 crisis, and the weakness of post-Covid recovery puts structural change at the heart of any development strategy that aims at feeding sustained economic growth and increasing resilience



to any similar shock in the future. In this report, we address this issue by investigating the factors that may have harmed productive development in EDE countries, Latin American ones in particular, over the last forty years. More specifically, we investigate the role of financial integration in the global financial economy and periods of financial “bonanza” as potential source of *premature de-industrialization* (see more on this below) in a subset of relevant Latin American economies, namely Argentina, Brazil, Chile, Colombia, Mexico and Peru. Our work intends to analyze whether periods of abundant capital inflows to those Latin American economies may have fed changes in domestic productive structures away from those sectors, namely manufacturing, traditionally recognized as prime sources of long-run sustainable development (Benigno and Fornaro, 2014; Botta, 2021). In order to do so, we will first describe how the above-mentioned Latin American countries present relevant signs of *premature de-industrialization* with respect to other emerging and developing countries, East Asian ones first and foremost. Then, we will provide some preliminary evidence about how capital inflows, in particular net portfolio investment, may have contributed to such a premature (relative) decline of manufacturing contribution to overall GDP and employment.

The structure of our work is as follows. In Section 2, we discuss how and why weak Latin American productive structures may have contributed to aggravate the economic implications of the pandemic. In Section 3, we move our attention to the link between structural change, productive development and financial integration. In Section 4, we pay attention to the way forward and to policies that may support a transformative recovery in the context of a more resilient economy. More specifically, we analyze whether macroprudential policies taming international capital mobility may also bear positive effects for the long-run productive development of Latin American economies on top of their implications for (short-term) financial and macroeconomic stability. Section 5 draws some final remarks.

## **A. COVID-19 and “vulnerable” productive structures in Latin America**

Various factors may have contributed to deepen or soften the economic implications of the pandemic: the effectiveness of early confinement measures; the generosity of discretionary fiscal stimuli; the speed of the vaccination campaign. Emerging empirical evidence suggests that different productive structures may also help to explain cross-country differences in the intensity of the crisis. There are at least three ways through which differences in productive structures may affect the economic vulnerability to COVID-19. They are related to (i) the quality of employment that different productive structures generate; (ii) the sector-specific exposure to

Covid-related confinement measures; (iii) the more general dependence of an economy on specific productive “assets” (read natural resources), and the way the related sectors respond to global shocks.

EDE countries usually present poorly diversified productive structures, at least in relative terms with respect to advanced economies. They lag behind the technological frontier; the industrialization process is often incomplete as the capital good and/or high-tech sectors are underdeveloped, and backward and forward linkages are not adequately exploited. Following La Porta and Shleifer (2014), lack of productive development is generally mirrored in *dual* economic structures, where a large and seemingly permanent informal sector co-exists alongside a small formal economy.<sup>2</sup> Informality in low-middle income countries has become even more important in time of COVID-19 as it may be disproportionately affected by the economic consequences of the pandemic. First, small informal firms are characterized by shorter “surviving periods” than (relatively) larger formal companies and are more exposed to bankruptcy in the absence of revenues during lockdowns. This is due to the fact that small informal firms or self-employees usually accumulate less capital and cash reserves than formal companies and are more easily excluded from credit and financial markets due to the lack of valuable collaterals (Céspedes *et al.*, 2020; Valensisi, 2020). Second, informal entrepreneurs or employees do not usually benefit of any form of insurance or social protection against unemployment and/or inability to work. This fact considerably increases the difficulties of national governments to cushion the economic effects of the pandemic since that they may have to create some universal social protection schemes from nihilo. On top of this, the lack of adequate social safety nets could make the contraction of family income particularly acute. Whilst this may not be captured by official

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<sup>2</sup> In the last three decades, following the original contribution by De Soto (1988), several economists have developed a more “positive” view of informality. According to this approach, informality is seen as an open choice of economic actors in response to excessive regulation and bureaucratic costs of the formal economy that enable firms to be flexible and to avoid formal sector’s rigidities (Maloney, 2004). La Porta and Shleifer (2014) contrast this approach. They provide a comprehensive empirical description of informal businesses as far less productive, less profitable and producing lower quality goods than formal activities. The scope for innovation and investment is minimal, and there is no real competition between informal and formal firms. Indeed, “informal entrepreneurs would gladly close their businesses to work as employees in the formal sector if offered the chance, even if wages in the formal sector are taxed while income in the informal sector is not” (La Porta and Shleifer, 2014, p.112). In a way, La Porta and Shleifer defend a more traditional Lewis-type perspective of informality in which informality is an involuntary feature of dualist economies due to lack of productive development and that may spontaneously shrink if and when countries develop and the formal economy expands. Following Loyaza (2018), informality may be the result of both underdeveloped productive systems and inefficient governance depending on country-specific factors. The recognition of this last possibility does not make structural change and productive development less important for the absorption of informality. In this report, we will pay prevalent attention to how productive development, by squeezing informality, may increase economic resilience to COVID-19 and possible future pandemics.

statistics, it could equally show up in the form of sharp drops in domestic demand injections, private consumption first and foremost (see more on this below).

COVID-19 is an economy-wide crisis that negatively affected almost all productive sectors. The crisis, however, did not hit homogeneously all the industries. In general terms, the service industry seems to have been more severely affected than manufacturing and agriculture, although considerable heterogeneity exists even inside these three macro sectors.<sup>3</sup> According to ECLAC (2020), activities in the hospitality, transportation, tourism, retail trade, repair and, more broadly, commerce are those that suffered the most. On the one hand, this is due to the intrinsic nature of the services they offer, as they are “*contact-intensive*” services almost completely banned during lockdowns. On the other hand, firms in these sectors are characterized by considerably shorter “*survival times*” than manufacturing companies (Bosio *et al.*, 2020). Economic systems that more heavily rely upon these industries likely experienced tougher economic contractions than other countries during lockdowns.

The outbreak of the pandemic has also caused significant fluctuations in the price of primary commodities. The reaction has not been uniform across sectors. Price indexes for agricultural products and metals did not decline so intensively as in the wake of the 2007-2008 financial crisis. The price of agricultural products has actually increased since January 2020. In the case of metals, after an initial modest reduction, it is now above its pre-crisis level. According to the World Bank Commodity Market Outlook (WB, October 2020a), the price index for the energy sector, oil in particular, dramatically decreased by almost 60 percent in the first quarter of 2020. It partially rebounded in the second part of that year and moved to higher pre-Covid levels in 2021. Such heterogeneous evolutions in the market for primary commodities may have led resource dependent economies to be less negatively affected by Covid than in previous global shocks. Nonetheless, the pandemic has demonstrated once more the potential exposure of some EDE countries to *volatility* in the price of primary commodities. The initial drop and subsequent volatility in the price of the energy sector seem to emphasize the quest for productive diversification in those economies that depend upon exports of oil and natural gas as primary sources of foreign currency. In these countries, economy-wide uncertainty may increase during times of high volatility in commodity prices. The external balance constraint may get significantly tighter when the price of exported commodities declines, leading economic growth to an abrupt halt.<sup>4</sup> This is even the more

<sup>3</sup> Following UN (2021), world trade in the automotive sector contracted massively in 2020. Trade in office machineries and communication equipment increased by around 10 percent, instead.

<sup>4</sup> In external balance constrained economies, economic growth and capital accumulation strongly rely upon capital goods’ imports, which in turn depend on the availability of “hard currency” via exports. From a historical point of view, declining and volatile terms of trade of “peripheral” countries versus “central” economies have recurrently forced the former to curtail investment and slow down economic growth.

so since that international financial markets seem to offer these countries small space for protracted current account deficits (Vernengo and Pérez Caldentey, 2020).

Productive structures in Latin American countries seem to present at least some of the above-mentioned features that can make them more vulnerable to the economic consequences of the pandemic even in comparison to other EDE economies.

First, Latin American countries present the highest informal sector's *GDP share* among EDE economies together with Sub-Saharan Africa (see World Bank, 2019; Islam and Lapeyre, 2020).<sup>5</sup> This fact may contribute to exacerbate the negative consequences of COVID-19. Official statistics cannot capture the full drop in informal sector's output. Nonetheless, we can somehow infer the implicit and indirect economy-wide consequences of Covid-led contraction in informal income by looking at the dynamics in the different demand components of GDP. Indeed, it is reasonable to assume that Covid-related damages to informal employment may be somehow reflected in the relative behavior of private consumption vis-à-vis other demand components. Available data<sup>6</sup> indicate that, in Latin America, the bulk of the drop in annual GDP in 2020 is imputable to the contraction in domestic private consumption. In Chile and Argentina, private consumption contributed up to 85 and 94 percent of the overall reduction in domestic income, respectively<sup>7</sup>. Improvements in the trade balance, mainly due to the collapse of imports, have partially counteracted the decline in domestic demand. The picture is somehow different in other developing countries such as South Africa and Indonesia, or in developed countries that have been harshly hit by the crisis such as Italy and Spain. In South Africa and Indonesia, the reduction in private consumption explains less than 60 percent of the overall decrease in real GDP in 2020. In the case of Italy and Spain, it is about 73 and 64 percent, respectively. Both Italy and Spain experienced sizeable contractions in the trade balance due to the tough crisis in the tourist and hospitality industry.

Second, Latin America is the region with the highest share of *contact-intensive* employment (over total employment) in the World (IMF, 2020b). To a large extent, this is due to a "perverse" regional productive

<sup>5</sup> This is not the case for the *employment* share, as informal sector's employment share in Latin America is relatively smaller than in African, Asian or Arab countries (Islam and Lapeyre, 2020). This is due to the fact that informal activities in Latin America are relatively more productive than what observed in other parts of the developing world.

<sup>6</sup> Available data about demand components of real GDP in 2019 and 2020 have been collected from OECD at <https://stats.oecd.org/index.aspx?queryid=60702>.

<sup>7</sup> We computed the contribution of different demand components to the most recent evolution of real GDP according to the following accounting rule:  $\frac{Y_t - Y_{t-1}}{Y_{t-1}} = \frac{C_t - C_{t-1}}{C_{t-1}} \frac{C_{t-1}}{Y_{t-1}} + \frac{G_t - G_{t-1}}{G_{t-1}} \frac{G_{t-1}}{Y_{t-1}} + \frac{I_t - I_{t-1}}{I_{t-1}} \frac{I_{t-1}}{Y_{t-1}} + \frac{NX_t - NX_{t-1}}{NX_{t-1}} \frac{NX_{t-1}}{Y_{t-1}}$ , where "Y" stands for real GDP, "C" represents private consumption, "G" is final government purchases, "I" is gross capital formation and "NX" is net exports in goods and services. The subfix "t" refers to 2020, whilst "t - 1" to 2019.

specialization in relatively low-skill “contact-intensive” sectors such as transport, hotels and restaurant, trade, and storage<sup>8</sup>. Following the UN (2021), there are quite striking productive asymmetries between Latin America and emerging (see China and India) or newly industrialized (see South Korea and Singapore) Asian countries. Whilst the former relies upon relatively “low value-added” services that have been more heavily exposed to the pandemic, the latter have increased their participation to high-skill high value-added services such as ICT, finance, education, R&D and business-related services. This structural divergence is of paramount importance given that high-skill high-value added services have been less affected by Covid (they can be more easily performed via homeworking); they are increasingly traded in international markets<sup>9</sup>; they are characterized by economies of scale and offer wider opportunities for innovation and learning-by-doing<sup>10</sup>. Such structural productive asymmetries among EDE countries may help to explain why, after the outbreak of COVID-19, Latin America has suffered the most acute drop in employment compared to both developed and other emerging economies (IMF, 2020b).

Third, even neglecting for a second diverging productive structures in the service industry, Latin American countries have been penalized by “bad” specialization in or participation to global value chains of those industrial sectors that have been hit the most by the crisis. This is the case, for instance, of the oil and energy industry in Colombia. The collapse in the global price of energy products, which only partially rebounded in the second half of 2020, significantly restrained capital accumulation in these oil-dependent economies. A similar line of reasoning applied to Mexico and Brazil for the case of the automotive industry. When looking at trade statistics, trade in the automotive sector declined by almost 20 percent in the first half of 2020. On the contrary, trade in office machines and communication equipment, i.e., staple productive sectors in emerging Asian countries, expanded by around 10 percent (see UN, 2021). In the end, Latin American vulnerability to COVID-19 may be partially attributed to the traditional high dependence on natural resources, energy products in particular, and to a far less developed service sector. In addition, it may also come from the idiosyncratic exposure to the economic implications of the pandemic characterizing the few medium/high-tech Latin American manufacturing industries.

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<sup>8</sup> The high dependence of Latin American economies on contact-intensive non-teleworkable jobs is also due to lack of ICT infrastructures such as access to broadband internet.

<sup>9</sup> The 2021 UN World Economic Situation and Prospects (UN, 2021) notes that trade in high-skill services has increased faster than trade in goods over the last 15 years. Interestingly, the increasing participation of emerging economies to this type of services has mostly concentrated in emerging and newly industrialized Asian countries.

<sup>10</sup> According to Baldwin and Forslid (2020), high-skill services may somehow present similar growth-enhancing properties traditionally attributed to manufacturing.

## **B. Financial integration, capital inflows and premature de-industrialization in Latin America**

The possible role of underdeveloped productive structures in exacerbating the economic implications of COVID-19 brings back structural change and productive development as central goals of any policy aiming at feeding a sustained and sustainable post-Covid recovery. The analysis of available policy options promoting post-Covid transformative recovery first requires the identification of the factors that may have been source of enduring productive backwardness in Latin American countries. In this work, we pay attention to the possible perverse relation between productive development and periods of large capital inflows, volatile portfolio investment first and foremost.

The literature about the causal relation between capital flows and growth in EDE countries is quite abundant. It now shows quite a large consensus among economists that surges in capital inflows, perhaps stimulated by financial liberalization reforms, may eventually increase macroeconomic instability (Taylor, 1998; Kaminsky and Reinhart, 1999; Ocampo *et al.*, 2008) whilst paying relatively little, if anything, in terms of faster growth (Ostry *et al.*, 2016). The detrimental effects of increased financial integration may not be limited to short-run fluctuations only but extend to medium/long-run dynamics if financial and currency turbulences or full-fledged crises are followed by enduring “balance sheet” depressions, permanent output losses and slack economic recoveries (Cerra and Saxena, 2008, Koo, 2014).

The detrimental effects of periods of large capital inflows on long-run development may well go beyond heightened macroeconomic and financial instability. Indeed, some theoretical contributions (Palma, 2005 and 2014; Ocampo, 2011; Benigno and Fornaro, 2014; Botta, 2017 and 2021) and an expanding body of empirical works (Benigno *et al.*, 2015; Bortz, 2018; Botta *et al.*, 2022) identify them as possible sources of persistent productive backwardness, finance-led Dutch disease and, eventually, premature de-industrialization<sup>11</sup>. As to the empirical contributions, Bortz (2018) shows that there is a positive correlation between the increase in *gross* capital

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<sup>11</sup> According to Rowthorn and Ramaswamy (1997) and Palma (2005) among others, the productive structure of an economy usually follows an inverted parabola trajectory throughout the overall development process. In the early stages of development, the share of manufacturing increases, both in terms of total employment and GDP. At more advanced stages, however, manufacturing contracts, at least in relative terms. This is the expected de-industrialization phase of the whole development process. Premature de-industrialization takes place if such a decline in the economy-wide importance of manufacturing is more pronounced than expected or when it kicks off earlier than expected (at a lower level of per-capita GDP or at a lower “peak” of manufacturing shares themselves) with respect to the historical experience of the advanced economies.

inflows towards some EDE countries and the variation in the contribution of the financial, real estate and commerce sectors to GDP. Benigno *et al.* (2015) find that periods of capital inflows bonanza are associated to the squeeze (at least in relative terms) of manufacturing. More recently, Botta *et al.*, (2022) provide empirical evidence that periods of large net capital inflows, portfolio investment and international credit in particular, bear negative effects on manufacturing (relative) contributions to economy-wide GDP and employment<sup>12</sup>. In a way, Botta *et al.*, (2022) give empirical validation to the above-mentioned theories about finance-led Dutch disease and complement the previous empirical literature about premature de-industrialization put forward by Tregenna (2009 and 2015) and Rodrik (2016), among others.

These studies consider a relatively large set of EDE countries that goes well beyond Latin America. Indeed, the application of their analyses to Latin America and/or to other specific regions is complicated by lack of data and insufficient observations. As a consequence of this, econometric findings at regional level often lose statistical significance and part of their empirical solidity (see Rodrik (2016) and Tregenna *et al.* (2021), for instance). This fact notwithstanding, the available evidence for Latin America remains quite robust and indeed suggests that financial integration in the global financial market and the ensuing periods of large capital inflows may have actually contributed to exacerbate regional (premature) de-industrialization. This even the more so in comparison with other emerging and developing countries.

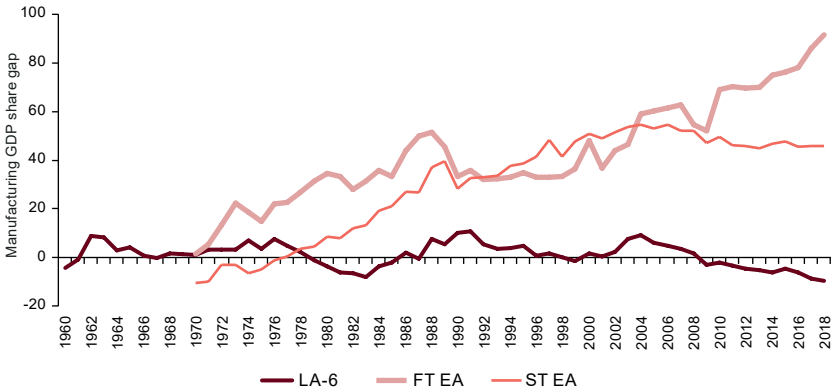
Figures IX.1-IX.4 below offer a comparison of the evolution of the productive structure of the group of the six Latin American countries considered in this study (LA-6) with respect to other emerging or developing regions or countries from 1960 to 2018. In figures IX.1 and IX.3, we compare LA-6 with respect to first-tier (FT EA) and second-tier (ST EA) emerging East Asian countries. The first group is made up by South Korea, Singapore and Taiwan. Indonesia, Malaysia and Thailand compose the latter, instead. Figure IX.1 portrays the evolution of the manufacturing nominal GDP share *gap*. This is the difference between actual manufacturing GDP share and what we would expect according to the “fundamental” sources of industrialization/de-industrialization giving rise to the well-known inverted U-shaped pattern in industrial development (Rowthorn and Ramaswamy, 1997; Palma, 2005; Tregenna, 2009) and estimated in Rodrik (2016). This gap is then presented as a ratio of the “expected” (Rodrik-type) level of manufacturing GDP share. Figure IX.3 presents the same evidence for the manufacturing *employment share*.

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<sup>12</sup> Acosta *et al.* (2009) analyze the possible Dutch disease-like effects of international remittances, while Rajan and Subramanian (2011) study the role of international aid.

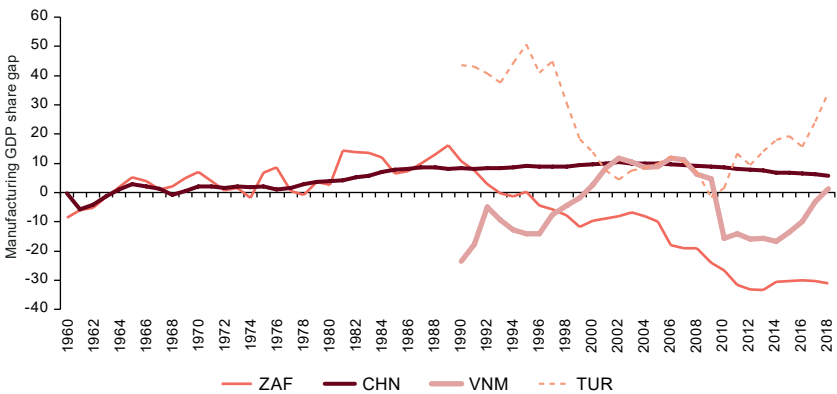
Positive values of these variables stand for levels of manufacturing development that are higher than “normal”. Negative values indicate that a process of premature de-industrialization is unfolding. Figures IX.2 and IX.4 portrays the manufacturing GDP share gap and employment share gap respectively for a set of other EDE countries, namely China (CHN), Turkey (TUR), South Africa (ZAF) and Vietnam (VNM), taken as additional terms of comparison.

**Figure IX.1**  
**Manufacturing GDP share gap in LA-6, FT EA and ST EA, 1960–2018**



Source: Authors’ computations on the basis of data from Groningen Global Development Centre (GGDC).

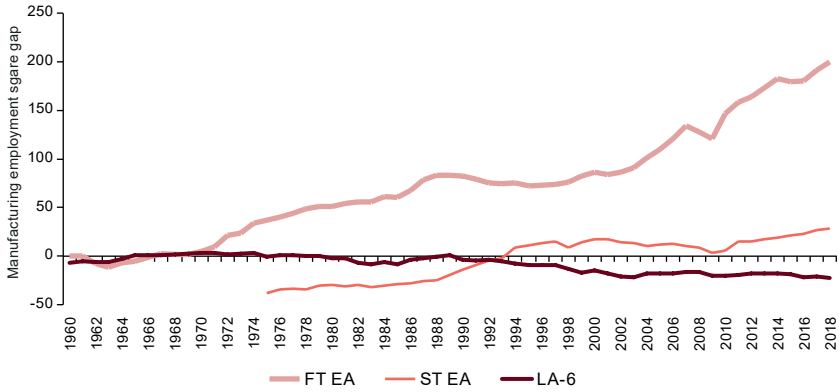
**Figure IX.2**  
**Manufacturing GDP share gap in CHN, TUR, ZAF and VNM, 1960–2018**



Source: Authors’ computations on the basis of data from Groningen Global Development Centre (GGDC).

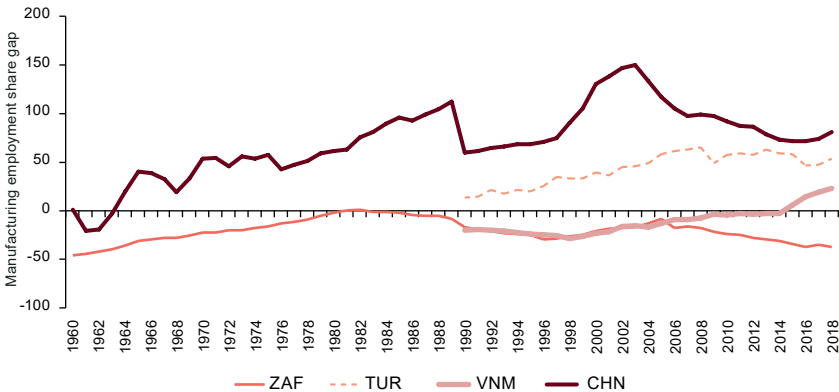


**Figure IX.3**  
**Manufacturing employment share gap in LA-6, FT EA and ST EA, 1960–2018**



**Source:** Authors' computations on the basis of data from Groningen Global Development Centre (GGDC).

**Figure IX.4**  
**Manufacturing employment share gap in CHN, TUR, ZAF and VNM, 1960–2018**



**Source:** Authors' computations on the basis of data from Groningen Global Development Centre (GGDC).

Regional differences emerging from Figures IX.1-IX.4 are quite striking. On the one hand, both FT EA and ST EA present upward sloping trends in their manufacturing gaps, which take rising positive values (in some cases, astonishingly so...) in the last three decades. The same applies to China and, to a lesser extent, Turkey. For LA-6, the manufacturing GDP share gap fluctuates through time around zero but, since the second half of the 1970s and, more importantly, in the last decade, it frequently takes

negative values. In the case of the manufacturing employment share gap, LA-6 show a quite stable negative trend since the beginning of the 1990s. This variable has been taking increasingly negative values since then.

More relevantly for our study, periods of large capital inflows to EDE countries and, most notably, Latin American ones, seem to be associated with worsening manufacturing GDP and employment share gaps. Some Latin American countries are amongst the firstcomers of financial liberalization and financial integration in the second half of the 1970s (Diaz-Alejandro, 1985). Surges in net capital inflows also took place in the first half of the 1990s and in the second decade of the 2000s, since 2009 at the very least if not before in some cases (Palma, 2012). LA-6 manufacturing GDP share gap declined and, very frequently, became negative during all these episodes of financial bonanza.

It is perhaps interesting to note that even East Asian countries do not seem entirely immune to the possibly negative effects of periods of financial bonanza on productive development. At least at first sight, they have experienced protracted reductions in the economy-wide importance of manufacturing and/or stagnation in its (relative) capacity to generate employment when they have been at the centre of global capital movements towards EDE countries, i.e., in the first part of the 1990s before the outbreak of the East Asian financial crisis. Consistent with Taylor (1998), episodes of financial booms are very likely associated with the expansion of some non-tradable sectors, the real estate first and foremost, and could actually move countries away, at least in related terms, from tradable manufacturing sectors.

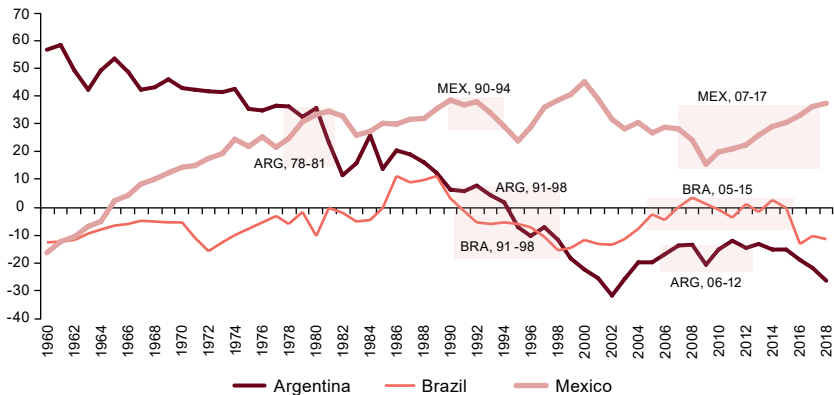
We dig further into the possible negative relation between premature de-industrialization and periods of large capital inflows by looking at specific country case studies. The focus is again on LA-6, FT EA and ST EA countries, now taken individually. For the sake of space, we now concentrate on the manufacturing employment share gap only. This choice is also consistent with Felipe *et al.*, (2019), who identify manufacturing employment (more than output) as the most prominent indicator and proxy for economic development (or enduring backwardness).<sup>13</sup>

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<sup>13</sup> Tregenna (2009) rightly observes that a proper analysis of de-industrialization should consider the evolution of sectorial employment shares together with empirical evidence about output. Indeed, a reduction in the manufacturing employment share should be interpreted differently if it comes together with positive growth in manufacturing output (and even the more so if the manufacturing GDP share increases) with respect to a scenario where both employment and output decline. In the first case, diverging dynamics between employment and output could be explained by technological progress and rising manufacturing productivity, so that it might actually be inappropriate to talk about de-industrialization. The fact that, in this part of our work, we focus on the evolution of the manufacturing employment share only remains nonetheless consistent with Tregenna (2009). First, we focus on the manufacturing employment share gap. This is the evolution in the manufacturing employment share that differs from what would be expected given “natural” structural changes in the economy taking place all along the whole development process. Second, this part of the study should be considered as integrated with the previous analysis about manufacturing contribution to GDP. Structural differences between Latin America and Asia stand out very clearly.

Figure IX.5 portrays changes in the manufacturing employment share gap in the three largest Latin American economies, i.e., Argentina (ARG), Brazil (BRA) and Mexico (MEX). Figure IX.6 shows data for Chile (CHL), Colombia (COL) and Peru (PER). In Figure IX.7, we focus upon South Korea (KOR), Singapore (SGP) and Taiwan (TWN). Figure IX.8, finally, shows the cases of Indonesia (IDN), Malaysia (MYS) and Thailand (THA). In all figures, we highlight periods of large capital inflows (grey areas) as defined and detected in Botta *et al.*, (2022).<sup>14</sup> Three points are worth stressing.

**Figure IX.5**  
**Manufacturing employment share gap and financial bonanza in ARG, BRA and MEX, 1960–2018**



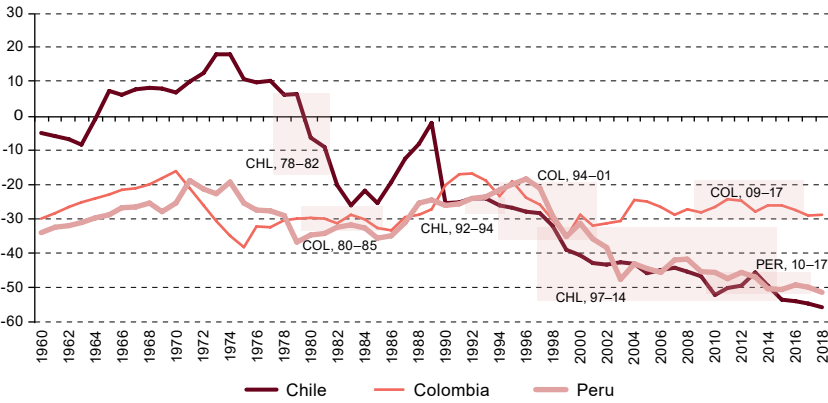
**Source:** Authors' computations on the basis of data from GGDC and ECLAC.

First, the quite long-time span covered by Figures IX.5-IX.8 enables us to identify two well distinguished development patterns between Latin America and East Asia. With the exception of Mexico, most of the time Latin American countries presented manufacturing gaps that were *negative but declining* (Argentina before mid 1990s), or a *mix* of both (Argentina and Chile in the last two decades). “Active” industrial policies in the 1960s and in the 1970s may have temporarily contributed to compensate for the

<sup>14</sup> Botta *et al.*, (2022) look at non-FDI net capital inflows (namely portfolio investment and international banking credit) and define periods of financial bonanza as those that simultaneously fulfil three different criteria: (i) net non-FDI capital inflows are not negative or equal to zero; (ii) net non-FDI capital inflows show positive values for at least three years consecutively; (iii) the sub-period average is higher than the full-period country-specific average adjusted (increased) by ten percent of one standard deviation. Despite this definition is somehow arbitrary (as it is in any event identification-based study), it nevertheless captures all the major episodes of large capital inflows already tracked by the economic literature for the set of countries considered in their study: financial booms in Latin America and in East Asia at the very beginning of the 1980s (Latin America) or in 1990s (Latin America and East Asia); pre-2007 large capital inflows to peripheral eurozone countries; international capital surge towards EDE countries in the second part of the 2000s.

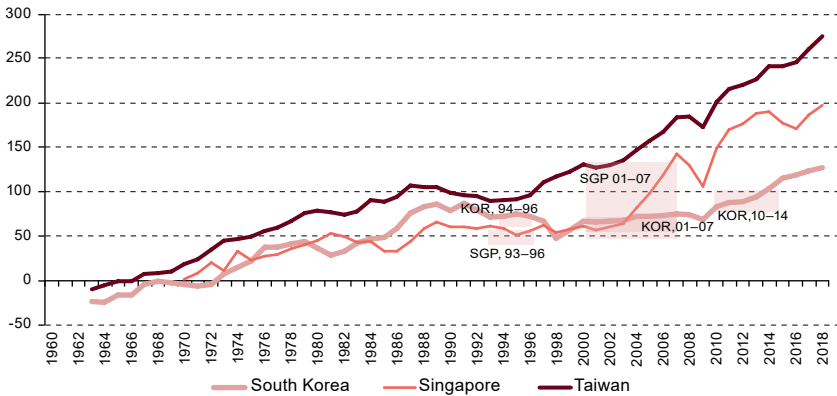
sub-dimensioned size of domestic manufacturing by encouraging domestic substitution for imported goods (see, for instance, Chile before 1973 and Brazil between 1974 and 1978).

**Figure IX.6**  
**Manufacturing employment share gap and financial bonanza in CHL, COL and PER, 1960–2018**



Source: Authors' computations on the basis of data from GGDC and ECLAC.

**Figure IX.7**  
**Manufacturing employment share gap and financial bonanza in KOR, SGP and TWN, 1960–2018**

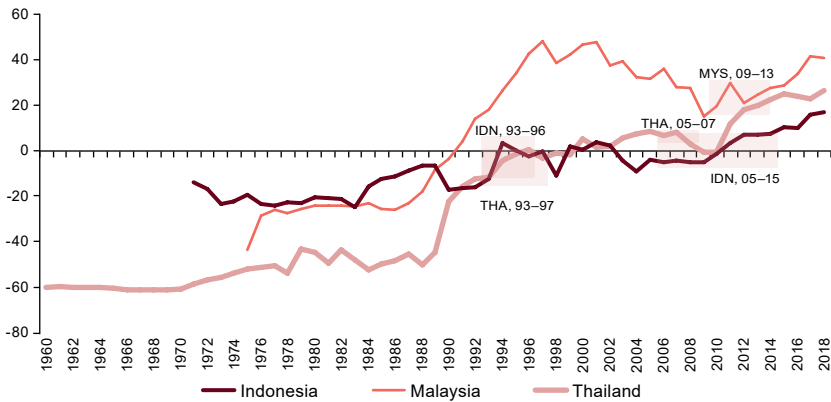


Source: Authors' computations on the basis of data from GGDC and ECLAC.

The switch to neoliberal policies since 1980s, instead, may have prompted a further “relative” downsizing of domestic manufacturing. Mexico is the noteworthy exception to this, as its productive structure went through a considerable shift towards (maquila-based) manufacturing

after Mexican integration in the North American Free Trade Agreement (NAFTA). Given these general trends, periods of large capital inflows may have *accelerated* or *exacerbated* the process of premature de-industrialization in Latin America (see more on this below). The picture related to East Asian countries is somehow opposite.

**Figure IX.8**  
**Manufacturing employment share gap and financial bonanza in IDN, MYS and TWN, 1960–2018**



**Source:** Authors' computations on the basis of data from GGDC and ECLAC.

All East Asian countries started with negative manufacturing (employment) gaps, which however followed a long-term *positive* trend over time and became positive thereafter. Malaysia and Thailand now present manufacturing sectors, whose size is comparable to the Mexican one. In FT EA countries, their *positive* manufacturing employment share gap ranges from being about two times (see South Korea) to more than six times larger than that of Mexico.

Second, the actual share of manufacturing employment and, as a consequence, the manufacturing employment *gap* seem to move pro-cyclically. In general, the manufacturing employment gap worsens during major domestic and/or “imported” international economic crises. It may improve, instead, during periods of strong domestic or worldwide economic growth, also depending on the capability of the economy of benefitting from upward phases in global business cycles.

This seems to be a common pattern among Latin American and East Asian countries. See, for instance, the dramatically negative values taken by the manufacturing employment gap in Argentina at the heights of the Argentinian crisis at the beginning of the 2000s (figure IX.5), the case of Mexico in 1995 *after* the outbreak of the “Tequila” crisis (figure IX.5), or the

downswing observed in East Asian economies in correspondence of the 1997 East Asian crisis (figures IX.7 and IX.8). Alternatively, see “relative” throats in the manufacturing employment share gap recorded in most if not all the economies, Latin America and East Asia alike, at about the time of the 2007-2008 financial crisis. Latin American economies, however, also present some noteworthy exceptions to such a stylized fact.

Take the case of Mexico at the beginning of the 1990s *before* the “Tequila” crisis. In that period, up until the end of 1994, large portfolio inflows contributed to boost Mexican growth, at least with respect to economic stagnation during the “lost decade” of the 1980s (Krugman, 1999). Yet, manufacturing employment share contracted quite substantially, and the manufacturing gap decreased by almost 15 percentage points even in a fast-growing economy. We can observe very similar structural dynamics in expanding economies in about the same period in Brazil and Argentina, as well as in Chile and Colombia. Even before that, Chile experienced a sizable contraction of the manufacturing employment share and worsening manufacturing gaps during the short-lived foreign capital-led economic boom it went through at the end of the 1970s and the beginning of the 1980s. Indeed, Chile is usually considered a frontrunner of financial integration among EDE economies. In that period, very large capital inflows (international credit in particular) fueled Chilean economic rebound after painful neoliberal reforms were introduced by the military junta in 1974 and 1975. It is however quite clear that large capital inflows did not target the development of domestic manufacturing but pushed for the relative (likely unsustainable) expansion of other sectors, as they also seem to be doing since 1997 on.

Third, the effects of periods of large capital inflows on the structural features of East Asian countries seem to be somehow different than that experienced by Latin American economies. In the case of South Korea and Singapore, in the 1990s, abundant capital inflows did not contribute to the relative expansion of manufacturing employment share and may have actually counteracted it, at least partially (figure IX.7). Nonetheless, they did not permanently reverted East Asian manufacturing development. At the very least, they do not seem to be correlated with the “unexpected” (in the, say, Rodrik-type sense of the term) squeeze of manufacturing observed in Latin American economies. In ST EA countries, surges in capital inflows were associated to quite steep initial increases in the importance of manufacturing that flattered out or partially reverted thereafter (figure IX.8).

These different regional patterns may be partially explained by the asymmetric way through which surges in capital inflows influenced consumption and investment in Latin America and Asia, respectively. Whilst abundant capital inflows gave rise to a temporary consumption-led economic boom in the former region, investment was the demand

component that benefitted the most from larger external finance in Asia (Calvo *et al.*, 1996). Following Cimoli *et al.*, (2020), the two regions also differed as to the role played by “active” industrial and “developmental” macroeconomic policies in the context of a general process of financial liberalization. After 1982 (and even before in the case of Chile and Argentina), most Latin American countries adopted a “shock therapy” approach according to which financial liberalization was implemented together with the dismantling of active industrial policy. In East Asian countries, instead, increasing liberalization of trade and financial flows notwithstanding, national governments kept “new developmentalist” industrial and macroeconomic policies well in place (Bresser-Pereira, 2012). They actively kept on pursuing the development of high-tech tradable sectors and tried to tame finance-led appreciations in the real exchange rate that could harm productive development. Indeed, “the effects of financial shocks crucially depend on the country’s combination of macroeconomic and industrial policies” (Cimoli *et al.*, 2020, p.1).

The above-mentioned differences in the type of institutions and policies accompanying (and perhaps contrasting) the effects of financial liberalization may help to explain why large capital inflows may have affected manufacturing development differently in Latin America and East Asia in the 1990s. By the same token, the (partial) rediscovery of (some) industrial policy tools in Latin America (see Cimoli *et al.*, 2020), together with increased awareness about long-run effects of exchange rate appreciation, may have led Latin American governments to more actively contrast the perverse structural implications of large financial inflows, in the 2000s. In East Asian countries, periods of large capital inflows did not seem to revert such long-run trends, which are likely rooted in the different type of industrial and macroeconomic policies followed in East Asia with respect to Latin America (Ocampo and Porcile, 2020).

We complement the descriptive analysis carried out so far and, at the same time, circumvent the problem of missing data at regional level by aptly modifying the econometric study carried out in Botta *et al.*, (2022). More specifically, in this study we adopt a more comprehensive definition of net capital inflows that does not focus on volatile portfolio investment and international credit only (these sub-components of capital flows are often not available). Following Benigno *et al.*, (2015), we now indirectly measure net *total* capital inflows as given by the difference between the current account balance and the variation in central banks’ holdings of foreign reserves. According to Balance of Payments’ (BoP) accounting principles, this corresponds to the overall finance account balance (the capital account included...) of the BoP.

This measures obviously includes FDI, which may have different motives (at least as to greenfield FDI) and different dynamics (see Krugman (2000) about “fire-sale” FDI) with respect to portfolio investment

and international credit. Nonetheless, aggregate capital inflows may still mimic, at least partially, the volatility and the booms-and-bust dynamics characterizing the latter. This may allow us to capture periods of *unusually* abundant capital inflows anyway. Equation (1) below formally describes our empirical investigation when the above-mentioned *extended* capital flow measure is plugged into the regression analysis carried out by Botta *et al.*, (2022):

$$y_{i,t} = \beta_0 + \beta_1 x_{i,t} + \beta_2 x_{i,t}^2 + \beta_3 pop_{i,t} + \beta_4 pop_{i,t}^2 + \beta_5 FA_{i,t} + \beta_6 topen_{i,t} + \beta_7 g_{i,t}^{ROW} + \beta_8 r_{i,t}^{NR} + \epsilon_{i,t} \quad (1)$$

In Equation (1),  $y_{i,t}$  stands for the manufacturing employment share in country “*i*” at time “*t*”. On the right-hand side of equation (1),  $x_{i,t}$  is the level of real per-capita GDP, whilst  $pop_{i,t}$  is the level of population. Following Rodrik (2016), both factors, taken in square terms, are meant to capture the structural factors behind the evolution of manufacturing employment share through time.

$FA_{i,t}$  stands for “our” extended net capital flows variable. Along with such financial variable, equation (1) also includes a series of additional control explanatory factors.  $topen_{i,t} = (exp + imp)/GDP$  measures the degree of trade openness characterizing an economy. It is defined as the ratio of exports (*exp*) plus imports (*imp*) over GDP.  $g_{i,t}^{ROW}$ , in turn, is the rate of growth of the Rest of the World (ROW). Finally,  $r_{i,t}^{NR}$  is the share of natural resource rents over GDP as measured by Lange *et al.*, (2018). By using these control variables, we seek to capture the effects of other forces that contribute to shape the pattern of specialization, besides liquidity cycles in the international financial system.

Table 1 below reports the outcome of our analysis once applied to the set of developing regions considered in Botta *et al.*, (2022).<sup>15</sup>

If we focus our attention on the effects of net capital flows over the manufacturing employment share, this is unexpectedly positive but very small and insignificant in the case of EDE Asian economies. This result, however, could be partially distorted by the peculiar case of China, which has traditionally implemented discretionary tight restrictions to most volatile capital movements (Ma and McCauley, 2008) and, at the same, has emerged as the factory of world manufacturing. When we remove China from this sample of countries, the sign of this effect becomes negative and its magnitude increases, even though it remains statistically insignificant. Similar result also holds for Africa.

<sup>15</sup> EDE regions considered in our study are organized as follow. EDE Asian countries include China Hong Kong, India, Indonesia, Malaysia, Philippines, South Korea and Thailand. Latin America is formed by Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Mexico, Peru and Venezuela. Africa is made up by Botswana, Egypt, Ghana, Kenya, Mauritius, Nigeria, Senegal, South Africa and Tanzania.



**Table IX.1**  
**Manufacturing employment share and financial bonanza in selected EDE regions,**  
**1980–2017**

Dep. variable: manufacturing employment share Explanatory variables:	EDE Asian countries	EDE Asian countries (excluding China)	Latin America	Africa
GDP per capita	0.000403*** (9.76e-05)	0.000410*** (9.31e-05)	0.000898*** (0.000266)	0.00113*** (0.000338)
GDP per capita, squared	-6.34e-09*** (1.38e-09)	-6.60e-09*** (1.31e-09)	-3.53e-08*** (1.08e-08)	-4.51e-08** (1.85e-08)
Population	-9.96e-06** (4.73e-06)	-9.57e-06*** (3.46e-06)	5.65e-05*** (1.71e-05)	4.93e-06 (3.57e-05)
Population, squared	0** (0)	0*** (0)	-2.88e-10*** (8.24e-11)	-1.04e-10 (2.33e-10)
Net capital flows	<b>0.000474</b> (0.0121)	<b>-0.00107</b> (0.0122)	<b>-0.0405***</b> (0.0130)	<b>-0.00498</b> (0.00668)
Trade Openness	0.0173*** (0.00430)	0.0187*** (0.00421)	-0.00589 (0.0102)	-0.00388 (0.00707)
GDP growth rate of ROW	0.00689 (0.00907)	0.00270 (0.00895)	-0.000532 (0.0101)	0.00473 (0.00556)
Total natural resources rents (% of GDP)	-0.0258 (0.0341)	-0.0499 (0.0331)	0.00767 (0.0186)	0.00742 (0.0263)
Constant	10.88*** (1.230)	10.85*** (1.130)	6.781*** (1.612)	6.014*** (1.125)
Observations	295	259	327	278
R-squared	0.512	0.588	0.612	0.318
Number of c_id	8	7	9	11

**Standard errors in parentheses:** \*\*\* p < 0.01; \*\* p < 0.05; \* p < 0.1

**Source:** Authors' own elaboration.

More importantly for the same of our study, table IX.1 reports a strong and statistically significant negative effect of large capital inflows over manufacturing employment in the case of Latin America. Indeed, this result seems to confirm, once more, the peculiarities characterizing Latin America as to its integration in the global financial markets and the “perverse” implications on regional productive development.

### **C. International capital flows, structural change and premature de-industrialization: the role of (external) macroprudential policy for post-COVID-19 transformative recovery**

Periods of large capital inflows in EDE countries have been usually described as following boom-and-burst patterns. Frenkel and Rapetti (2009) stress how these episodes tend to present typical Minskyan features, albeit in a different way with respect to advanced economies. In their

view, *exogenous* events such as changes in the domestic (macroeconomic) policy paradigm (say the move to trade liberalization, financial integration and neoliberal policies in the 1990s) or in the prevailing conditions in international financial markets (changes in FED's monetary policy, for instance) are the main triggers of unstable phases of financial euphoria in EDE countries. This point by Frenkel and Rapetti (2009) has many things in common with increasingly acknowledged exposure of EDE countries to global financial cycles (Rey, 2018) or "push" factors.

The most recent and perhaps unusually long period of large capital inflows to EDE countries that started in the 2000s, and in the aftermath of the last financial crisis in particular, did not prompt any initial *acceleration* in the growth process of recipient economies, Latin American ones at least. If we look at the six Latin American economies considered so far, all of them actually experienced a decline in the average growth rate after the start of the episode with respect to mean growth in the three years before. This is quite a substantial difference with respect to the 1990s, during which financial booms effectively gave rise to remarkable but short-lived growth spells in all the six economies but Colombia.<sup>16</sup> To some extent, following Erten and Ocampo (2016), this might be the appreciable result of Latin American economies being more capable to tame finance-led macroeconomic instability thanks to the reconsideration and re-introduction of capital controls dismantled before.

Despite an initial finance-led growth boom did not take place in the 2000s and the burst is yet to come, relevant similarities between the current episode of large capital inflows and the previous ones are still worth noticing. First, current financial (and economic) dynamics continue to be strongly influenced by external factors. After 2008, abundant liquidity from central banks in advanced economies via repeated rounds of quantitative easing and the drop in international interest rates significantly contributed to originate the surge in international capital.

This view is reinforced by financial flights observed in 2020. On the one hand, the outbreak of the pandemic and the increase in perceived global risk explain most of the deepest post-2008 reversal in capital flows and peak in JP Morgan EMBI experienced by Latin American and other EDE countries in the first quarter of 2020 (IIF, 2020a and 2020b; ECLAC, 2021). On the other hand, bold reactions by leading monetary institutions helped to ease external financial constraints to "peripheral" countries (read a downward

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<sup>16</sup> A very preliminary analysis of growth dynamics in the 2000s for the six Latin American economies at stake reveals that they all scored negative values in the *difference* between average real GDP growth rate during the last recorded period of large capital inflows (see Table A.4) and average growth in the three years before the start of the episode. Data are as follows: Argentina (-4.58); Brazil (-0.45); Chile (-2.68); Colombia (-1.96); Mexico (-1.50); Peru (-1.38). When we look back to the 1990s, the picture is almost opposite: Argentina (+9.37); Brazil (+2.85); Chile (+0.31); Colombia (-2.04); Mexico (+1.75); Peru (+4.94).

swing in the EMBI) in the second half of the last year, and to resuscitate capital inflows, although on a relatively weak basis, in Latin America in particular, with respect to the post-2008/2009 rebound (IIF, 2020a and 2020b). Second, Following Chui *et al.*, (2016) and Pérez Caldentey *et al.*, (2019), Latin American and other EDE countries non-financial corporations have taken advantage of enduring favorable international financial conditions to raise cheap external funds in foreign currency. In doing this, however, their balance sheet has become more vulnerable to currency mismatch and exchange rate fluctuations (read depreciations). In Latin America, non-financial corporations have increasingly moved towards fragile speculative or “Ponzi” financial positions (see Perez-Caldentey *et al.*, (2019)). In the end, stability may continue to breed instability, very much in line with Minsky.

Finance-led instability, together with possible perverse sectorial effects of large capital inflows, bring capital controls and (external) macroprudential policy back to the center of the economic debate. Indeed, mainstream economic theory has made a quite remarkable U-turn in its view about capital flows management (CFM) measures. Since the 1970s up to the 1990s, there was widespread consensus about the virtues of financial integration, and about economic and efficiency gains that could be reaped by lifting restrictions to capital mobility. Since the beginning of the 2000s, and even the more so after the 2007-2008 financial crash, several mainstream economists reconsidered the usefulness of regulatory and/or market-based limits to unfettered capital flows (Klein, 2012). In a similar vein, the literature trying to empirically assess the effectiveness of these measures have been flourishing in the last decade or so.

Ostry *et al.*, (2012) provide a useful classification of the various instruments available in the CFM toolkit. For instance, they distinguish between capital (inflow) controls and “external” FX-related macroprudential policies. The first type of measures looks at residency of actors as “discrimination” criteria for limiting financial transactions between them. External FX-related macroprudential regulation, instead, may restrict the accumulation of certain financial assets or liabilities depending on the currency they are denominated in whatever is the residency of actors involved. The two set of policies, although conceptually different, may de facto overlap each other as to the goals they pursue (ex: reducing financial instability caused by external borrowing in foreign currency); in the variables they influence (ex: the exchange rate and foreign indebtedness); in the phenomena they try to control (ex: domestic credit booms fueled by foreign capitals).<sup>17</sup> Similar overlaps

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<sup>17</sup> See Mendoza and Terrones (2008), among many others, about the strong association between capital inflows and credit booms in EDE economies in particular.

also exist between capital controls and the broader range of internal macroprudential measures (Rey, 2018) to the extent that limits to, say, domestic lending may eventually dampen foreign borrowing.

The empirical evidence about the effectiveness of these measures is mixed. Klein (2012), for instance, tend to downgrade the role of CFMs. In his view, neither long-standing capital controls (“walls”) nor episodic restrictions (“gates”) seem to have relevant effects on domestic financial variables, although they may reduce surges in gross capital inflows. Other contributions, however, present quite opposite results. Ostry *et al.*, (2012), for instance, find that capital controls and FX-related macroprudential measures do not change the overall amount of gross capital inflows. Nonetheless, they modify their composition away from debt instruments (and towards equities) and reduce the relevance of FX-denominated credit in domestic lending.

Both facts are taken as evidence of strengthened financial solidity. Forbes *et al.*, (2015) reach similar conclusions. In their study, capital controls and external macroprudential policies do not seem to prevent in a significant and consistent way surges in capital inflows and exchange rate appreciations. Yet, they may tame domestic credit booms and reduce domestic financial fragility (as captured by increases in domestic banks’ leverage and credit provision). Baumann and Gallagher (2015) make a comparative analysis of the relative effectiveness of CFM measures implemented in Brazil with respect to interventions in the FX market adopted in Chile in response to foreign capital surges between 2009 and 2013. They find that Brazil was more successful than Chile in controlling the level and the volatility of the exchange rate. Brazilian CFMs also induced a change in the term structure of foreign capitals, longer-term flows getting relative more importance than speculative short-term ones. Ahnert *et al.*, (2021) note that FX-related macroprudential policies tend to reduce financial sector and aggregate economy-wide exposure to exchange rate risk, even though this is partially moved to the non-financial corporate sector. Erten and Ocampo (2016), finally, claim that, once the problem of endogeneity is properly considered in econometric analyses<sup>18</sup>, then capital controls and external macroprudential policy stand out as effective measures against sources of macroeconomic instability, namely appreciation of the real exchange rate and foreign currency “pressures”.<sup>19</sup>

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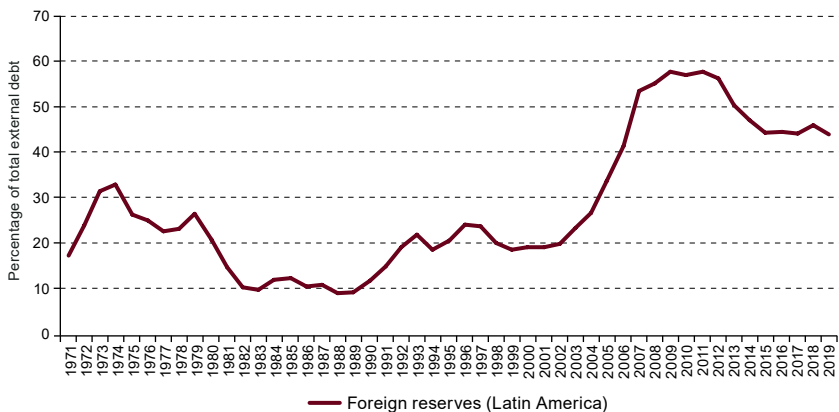
<sup>18</sup> Indeed, whilst capital controls and external macroprudential policies may influence capital inflows, they often emerge as *endogenous* policy responses to surges in foreign capitals themselves. Neglecting this endogeneity issue might generate a downward bias in the estimated effects of the former over the latter.

<sup>19</sup> Erten and Ocampo (2016) measure foreign exchange “pressures” as a weighted average of real exchange rate appreciations and accumulation of foreign reserves. In their view, this could capture the extent by which domestic monetary institutions might have to intervene in financial markets to manage the “external channel” of money creation and its implications in terms of exchange rate and inflation dynamics, as well as liquidity expansion.

This work does not aim at contributing to such an empirical debate. The provision of new empirical evidence about the relation between capital controls, external macroprudential policy, and macroeconomic and financial instability goes well beyond our goals. Nonetheless, we want to spot two ways through which, from a theoretical point of view, external macroprudential policy may also address the long-term sectorial consequences of periods of large capital inflows.

- (i) External macroprudential policy, foreign reserves and monetary policy independence: Since the beginning of the 2000s, increasing concern about foreign capital-led appreciations in the nominal and real exchange rate has led EDE countries to accumulate large amounts of foreign reserves. Monetary institutions in Latin American countries do not make an exception despite they switched to more flexible (free floating or managed) exchange rate regimes than in the 1990s. Figure IX.9 below documents the unprecedented increase in the stock of foreign reserves (as a percentage of total external debt) held by Latin American countries in the 2000s.

**Figure IX.9**  
**Stock of foreign reserves (as percentage of total external debt), Latin America, 1971–2019**



**Source:** World Bank.

Large stock of foreign reserves can certainly enable EDE countries to better control the exchange rate, in particular to prevent exchange rate crises during periods of financial turbulences. Nonetheless, they may imply non negligible implicit or explicit costs. First, following Akyüz (2021), there is a negative income transfer from EDE countries to developed ones due to differences in the yields on their respective foreign investments.

Whilst foreign reserves of EDE countries are usually invested in low-yield safe assets issued by developed countries (US Treasury bonds or bills, for instance), investors from developed countries purchase much more remunerative liabilities of EDE countries. Second, the accumulation of foreign reserves comes with intrinsic contradictions. When accumulating foreign reserves, domestic monetary authorities expand domestic liquidity. Despite the *nominal* exchange rate may be under control and appreciations avoided, domestic inflation may accelerate and lead, in one way or the other, to uncompetitive *real* exchange rates.

The accumulation of foreign reserves may reduce financial instability but may be quite ineffective in avoiding the crowding out of non-traditional tradable sectors that could originate from real exchange rate appreciations. Alternatively, central banks in EDE countries may sterilize the extra liquidity created via the external channel by selling domestic bonds in open market operations. This way, however, yields on domestic public bonds will increase and the space for active expansionary fiscal policy narrow. Possible constraints to fiscal policy become even more worrisome in the present context in which expansionary fiscal measures, public investment in particular, may play a leading role in feeding transformative post-Covid recovery.

External macroprudential policies that discourage external borrowing in foreign currency may be very useful tools to reduce the “subtle” costs of large holdings of foreign reserves. Consistent with Erten and Ocampo (2016), they may weaken pressures on the appreciation of the nominal (and therefore real) exchange rate. This will in turn allow domestic monetary authorities to take milder positions in the FX market, to reduce average holding of foreign reserves, and to avoid the adoption of sterilization measures. Following Rey (2018), all this may permit domestic monetary policy to become more independent from global financial cycles.

This is even the more so if external macroprudential policies also enable EDE economies to more easily adopt *managed* exchange rate regimes by lowering the scale of international capital flows. Indeed, managed exchange rate regimes seem to perform better than fixed and free-floating ones in reducing the sensitivity of domestic credit and housing prices to global financial shocks (see Obstfeld *et al.*, 2018), hence strengthening financial stability. In a similar vein, managed exchange rate regimes may soften the “original sin redux” and dwindle foreign investors’ reactions to swings in the exchange rate (Hofmann *et al.*, 2021) by dampening exchange rate volatility itself. In the end, once reduced the vulnerability to global financial shocks, domestic monetary authorities may gain wider margins of maneuver for pursuing “developmentalist” goals. National strategies

for post-Covid sustainable recovery, in particular, could contemplate more independent monetary policies that more easily *accommodate* the implementation of ambitious publicly financed recovery plans putting emphasis on public investment, public (social and physical) infrastructures and, eventually, structural change.

- (ii) Sector-specific external macroprudential policy: Whilst point 1 somehow refers to the “pure” macroeconomic implications of external macroprudential policies, the designing of such measures should also take explicitly onboard the sectorial effects of large capital inflows. Other way around, regulatory or market-based restrictions to financial integration should pay attention to which sectors are mostly affected by inflows of foreign funds, either directly via foreign investors’ purchases of home securities or intermediated by the domestic financial system.

From the point of view of productive development, it makes a difference whether foreign funds fuel housing booms in the domestic real estate, whether they finance the expansion of the domestic service industry, or whether support productive investment in the non-traditional (say, non-natural resource) tradable sector. Consistent with this view, external macroprudential policies should impose restrictions to foreign capitals that differ from sector to sector. Consider (non-interest bearing) deposit requirements or direct taxes levied on foreign borrowing, for instance. On the one hand, these measures should become tighter when foreign debt is denominated in foreign currency. On the other hand, they should foresee and apply tougher “penalty” rates on foreign borrowing by corporations in the non-tradable sector with respect to companies in the non-traditional tradable one. In a similar fashion, given foreign currency-denominated debt of the domestic banking system, macroprudential policy should discriminate against credit to non-tradable industries and favor banks’ loans to activities that are capable to generate “hard currency” revenues.

The purpose of sector-specific differential external macroprudential measures is twofold. First, consistent with the primary goal of broader macroprudential regulation, additional restrictions imposed at sectorial level may further concur to reduce economy-wide currency mismatches and tame financial instability when perceived global risk and exchange rate volatility increase. Second, they go beyond avoiding excessive external borrowing, and try to influence the *allocation* of collected funds with the aim of creating a more diversified technologically advanced productive system with stronger export capacity. On the one hand, by doing this, industry-specific measures explicitly tackle and try to counteract the perverse squeeze in tradable activities that large capital inflows may prompt via Dutch disease-like mechanisms. On the other hand, they

recognize and try to embed in concrete policy actions the fact that the accumulation of technological knowledge and the diversification of the productive system may be the ultimate necessary conditions for macroeconomic stability (Chang and Lebdioui, 2020). It is perhaps not by chance that, from an historical point of view, higher export orientation and more advanced industrialization in East Asia than in Latin American made the former mostly immune to external debt crisis in the 1980s (Sachs, 1985) and quicker in post-crisis recoveries thereafter. The latter, instead, was at the epicenter of the crash in 1982 and has continued to suffer from more acute recurrent financial and economic instability since then.

Given these general guidelines, table IX.2 offers a list of possible policy measures pursuing the two main goals mentioned above. We first recommend the implementation of *quantitative limits* to external borrowing that should be applied *horizontally* throughout the entire economy. They could take the form of ceilings imposed to firms' external debt-own fund ratios or to the debt service ratio (as a percentage of profits). Such limits are meant to avoid speculative/Ponzi financial positions to emerge at firm level and unstable Minskyan cycles to unfold at macro level. In doing so, they may contribute to reduce "foreign currency pressures" and provide domestic institutions with more leeway in the control of the exchange rate, the management of foreign reserves and the implementation of monetary policy.

**Table IX.2**  
**Economy-wide and sector-specific capital control**  
**and external macroprudential policy measures**

Economy-wide horizontal measures		
Measure	Target variable	Main purpose
Quantitative limits to external borrowing	External debt/own fund ratio Debt service ratio	1. Tame Minskyan cycles
		2. Reduce "foreign currency pressure"
		3. Create more leeway for FX control and autonomous monetary policy
Sector-specific measures		
Measure	Target variable	Main purpose
Sector-specific reserve requirements on foreign borrowing	Relative costs of foreign borrowing	1. Contrast Dutch disease effects of capital inflows
		2. Direct external funding towards non-traditional tradable sectors
		3. Discourage overexpansion of non-tradable sectors
		4. Reduce currency mismatch
Sector-specific taxation of portfolio capital inflows	Financial returns/capital gains	1. Squeeze returns/capital gains on short-term investment
		2. Tame stock exchange/real estate bubbles

**Source:** Authors' own elaboration.



The design of quantitative limits to international borrowing should adopt a broad definition of external debt. They should obviously discourage the (excessive) issuance of foreign currency-denominated corporate bonds. Nonetheless, they should also target bonds denominated in domestic currency and purchased by international lenders. Indeed, both types of transactions and the connected capital inflows can cause the appreciation of the exchange rate and Dutch disease-like phenomena.<sup>20</sup> On top of this, such a comprehensive definition may help to address the “original sin redux”: who owns the debt, foreign or domestic creditors, also matters as much as the currency of denomination does.

Quantitative limits to external debt should pay attention to the residency of the actors involved in financial transactions (rather than their nationality). This criterion aims at impeding legal practices that may enable counterparts to circumvent capital restrictions. For instance, quantitative limits should apply to, say, “*internal*” transactions between domestic branches and off-shore subsidiaries of a company that may have been set with the (hidden) purpose of escaping capital controls. By the same token, they should be levied upon local subsidiaries of foreign companies that may collect foreign funds via their headquarters and subsequently intermediate them in the domestic economy.

Restrictions to external funding should be better conceived as permanent “walls” rather than temporary “gates” so as to avoid untimely implementations due to the complex identification of upswing and downswing phases in financial cycles. Given a permanent base, “walls” can nevertheless be progressively raised whenever factors causing surges in capital inflows become more prominent. According to the literature about global financial cycles, policy makers in EDE countries should primarily pay attention to global push factors. It is time for tougher quantitative restrictions to foreign debt when foreign monetary policy becomes strongly expansionary, unconventional monetary measures are at work and/or liquidity overflows in the center of the global financial system. A large and widening positive gap between the domestic policy rate and that prevailing in international markets or the VIX index constitute natural indicators policy makers may look at to determine updates in quantitative limits to foreign borrowing.

The second set of measures reported in table IX.2 are meant to explicitly and directly address the long-term productive and sectorial implications of periods of large capital inflows. The general goal here is

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<sup>20</sup> In the case of foreign currency-denominated bonds, “foreign currency pressures” may materialize *ex-post* when domestic borrowers try to convert foreign currency into the domestic one. In the case of domestic currency-denominated bonds, such pressures may emerge *ex-ante* when foreign creditors purchase domestic currency in the FX market in order to then purchase assets denominated in that same currency.

to channel external funds, when admitted according to economy-wide quantitative restrictions, to those sectors that can generate “hard currency” revenues by exporting non-tradable tradable goods and services, rather than non-tradable sectors whose foreign indebtedness is source of currency mismatch. For instance, these measures may try to tame bubbles in the real estate that are fueled by foreign capitals, whilst favoring investment in new activities producing tradable goods and services.

The measures at stake are complementary to the quantitative limits we have just discussed. Given their goals, they should be modulated according to different levels of tightness and intensity among different sectors. In table IX.2, we suggest the adoption of *sector-specific* reserve requirements on foreign borrowing that implicitly increase the relative costs of foreign borrowing (with respect to internal borrowing), and even the more so in the case of non-tradable sectors. Measures at sectoral level may also include the imposition of differentiated tax rates on returns to short-term portfolio investment. More specifically, we think about the taxation of capital gains on investment in equities that may fuel bubbles in the financial sector or, again, in the real estate. Following Taylor (1991), this is far from being an unknown event in the history of EDE countries, in particular in the aftermath of the privatization of strategic state-owned companies. These measures may contribute to “neutralize” possible destabilizing feedbacks between asset price inflation and debt accumulation (Taylor and Rada, 2008), and reduce, at least partially, the long-term (productive) distortions that even temporary episodes of financial frenzy may bring about.

## D. Conclusions

In this chapter, we document the perverse effects that net capital inflows may bring about long-run productive development in Latin America in comparison to other developing regions of the world economy. More specifically, we document how large capital inflows may have been source of premature de-industrialization in a group of six Latin American countries (LA-6: Argentina, Brazil, Chile, Colombia, Mexico and Peru) by exacerbating (anticipating) the squeeze of manufacturing GDP and employment share in the productive structure of those economies. More than this, we also notice that heterogeneity exists among EDE countries. Indeed, premature de-industrialization is far ahead on its way and the detrimental effects of large capital inflows appear significantly stronger in LA-6 countries than in emerging Asia economies.

The economic effects of COVID-19 seem to be particular harsh in those EDE countries, Latin American ones in particular, characterized by relatively weak and poorly diversified productive structures that largely

depend on natural resource exports, participate to low-skill intensive stages of global value chains, and did not develop high-skill intensive tradable services in the last decades. On the one hand, this evidence seems to suggest that any national strategy for post-Covid sustained and sustainable recovery should put structural change and productive development at the core of its agenda. On the other hand, it may strengthen even further increasing recognition by economic literature that capital flow management measures (CFMs) may not only improve overall macroeconomic and financial stability of EDE economies, but also bear positive consequences for their long-run development trajectory by counteracting perverse Dutch disease-like phenomena triggered off by periods of financial bonanza.

External macroprudential measures may do this by enabling EDE economies, Latin American ones first and foremost, to reduce the implicit costs of large foreign reserves' holdings, to more easily adopt managed exchange rate regimes, and by increasing the degree of independence of domestic monetary policy from global financial cycles. Policy makers could magnify these desirable effects of external macroprudential measures by designing them with sector-specific differential restrictions and opportunities. External macroprudential measures should limit excessive external borrowing, but they should also prompt a "virtuous" allocation of funds towards the non-traditional export-generating tradable sector and away from non-tradable activities.

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## Chapter X

# Conclusions

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Emerging market and developing economies find themselves in an economic and social straitjacket. This is the result of a process that began during the run-up, on-set and aftermath of the Global Financial Crisis (GFC) (2008-2009) and that was exacerbated by the Pandemic and post-Pandemic.

Prior to the GFC, all developing regions witnessed, starting around 2007, with different degrees of intensity, an increase in government external indebtedness which in some cases was also accompanied with a rise in internal indebtedness.

As developed countries began to first lower short-term interest rates to the near zero bound and then moved to decrease long-term yields to historical lows to confront the impact, through the implementation of quantitative easing monetary policies (balance sheet expansion), the growth of indebtedness also extended to other sectors of developing countries' economies including the financial and, especially, the non-financial corporate sectors. The monetary response to the effects of the Pandemic reinforced this process.

Following the collapse of Lehman Brothers in September 2008, the effective federal reserve funds rate declined from 1.5% to 0.15% in June 2009 and remained below 1% until May 2017. Between March 2020 and

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<sup>1</sup> Economic Commission for Latin America and the Caribbean (ECLAC) Santiago and Autonomous University of Mexico, UNAM.

May 2022, the effective federal reserve funds rate also remained below 1%. In the case of the Euro Area, the fixed rate on main refinancing operations was set at level below 1% since July 2012 reaching 0% in 2019 and stayed at that level until the end of July 2022, when it increased to 0.50%. Longer-term yields also decreased during the global financial crisis and fell to an all time low during COVID-19.<sup>2</sup>

The growth of the balance sheets of the major central banks (Federal Reserve, European Central Bank and Bank of Japan) which expanded from US\$ 4 in 2008 to 26 trillion in June 2022 was unprecedented.<sup>3</sup> At the time of the global financial crisis quantitative easing monetary policies had the objective of spurring economic growth mainly through a portfolio rebalancing effect (a monetary transmission mechanism aimed at changing the relative returns on a chain of different assets).

During the Pandemic, quantitative easing was crucial to support budget deficits to sustain aggregate demand. Between 2019 and 2020 the budget deficit in the United States grew from US\$ 3.9 to 6.3 billion dollars. Obviously low rates of interests helped to reduce the cost of government indebtedness.

In both crises, quantitative easing monetary policies were central to maintain the buoyancy of stock markets and the liquidity of the financial system and of the economy. Most important, at the international level, quantitative easing policies increased the dominance of the United States dollar and the power of the Federal Reserve as the global central bank.

During this time developing countries took advantage of the cheaper cost of issuing external relative to domestic debt. The majority of developing country international bonds were issued in US\$ dollars thus propping the demand for dollars and its external value. For their part, foreign investors were willing to take on more risk by investing in emerging market economies in exchange for higher returns. Some developing countries issued debt on the international bond market as a way to pay for existing debt obligations denominated in local currency indicating that financial markets were used to maintain a Ponzi financing structure.<sup>4</sup>

This process was facilitated by the increasing importance of the international bond market as a source of finance for emerging and developing economies (35% and 50% of global liquidity in 2007 and 2022)<sup>5</sup> and the rise to prominence of the non-banking sector including the asset management

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<sup>2</sup> See Fred (2022).

<sup>3</sup> Yardeni Research, INC. (2022a).

<sup>4</sup> A Ponzi financing structure refers to a situation where a debtor can only face its debt commitments by taking on additional debt. Ponzi financing regimes are unsustainable and thus lasts a short-period. See Minsky (1986).

<sup>5</sup> Global liquidity is defined as the sum of bank loans and debt security issues. See BIS (2022).

industry. The importance of the latter is exemplified by the asset manager Black Rock that in 2021 had a sheer volume of US\$ 10 trillion in assets its balance sheet out of which US\$ 2.7 trillion are investments in fixed income.<sup>6</sup>

A study by the IMF showed that at the end of 2012, 80% of sovereign debt were held by non-bank financial institutions including large institutional investors, hedge funds, sovereign wealth funds.<sup>7</sup> Available information for Latin American and Caribbean for 2007-2022, shows that a significant number of countries with different credit ratings, issued sovereign bonds in the international capital markets.<sup>8</sup>

**Table X.1**  
**GDP growth for selected emerging market and developing regions**  
**2000–2007; 2008–2009; 2010–2019. 2020 and 2021 Averages**

	2000–2007	2008–2009	2010–2019	2020	2021
Sub-Saharan Africa	5.4	4.1	3.5	-2.0	4.1
Latin America & Caribbean	3.4	0.9	2.2	-6.7	6.8
East Asia & Pacific	5.5	3.5	5.1	-0.2	5.8
Middle East & North Africa	4.8	2.7	3.0	-3.9	4.3
Europe & Central Asia	2.9	-1.7	1.9	-5.5	5.8

**Source:** On the basis of the World Bank (2022).

An odd fact that occurred during the Pandemic is the countercyclical behavior of short-term capital flows (in contrast to long-term flows such as foreign direct investment which in the case of Latin America and the Caribbean showed a marked contraction). Traditionally different types of financial flows tend to show co-movement as they move together over time, the more so during crises as exemplified by the Global Financial Crisis. This anomaly gave a false sense of security to bond issuing governments. Some went as far as to underscore 'the positive response of private financial markets' to the Pandemic in light, of the weak actions undertaken by international financial institutions to counteract its social and economic impact.

The expansion of debt was accompanied by a decline in economic growth in all emerging market and developing regions prior to the Pandemic (Table 1 above) which had the effect of reinforcing this trend. In 2020, all regions registered an economic contraction (East Asia and the Pacific, -0.2%; Europe and Central Asia, -5.5%; Latin America and the Caribbean, -6.7%; Middle East and North Africa, -3.9%; Sub Saharan Africa -2.0%)

The growth rebound that all emerging market and developing regions experienced, proved, as in the case of the aftermath of the Global Financial Crisis to be short-lived. An important part of the growth differential between 2009

<sup>6</sup> Blackrock (2022).

<sup>7</sup> Arslanalp, S & Tsuda, T. (2014).

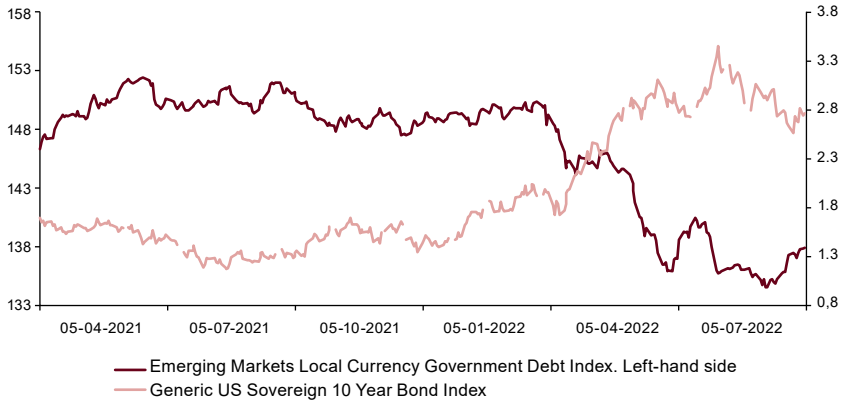
<sup>8</sup> CEPAL (2022).

(Global Financial Crisis) and 2010 and between 2020 (Pandemic) and 2021 is explained by a low basis for comparison and by the rise in consumption which tends to occur following any type of economic crises. In 2010, consumption was mainly induced. In 2020 a large part was driven by its autonomous component due to government transfers which were an important component of the counter cyclical fiscal policy adopted by developing countries to offset the social and economic effects of COVID-19.

In 2021, signs began to emerge that the expansionary financial cycle for emerging market and developing economies was slowing down and probably coming to an end. One visible sign of this situation was the rise in long-term treasury yields in the developed world (including in Germany, Japan, Sweden, the United Kingdom and the United States) which extended into 2022. When in the case of the United States the treasury inflation protected securities (TIPS) are used it is shown the rise in long-term yields is not only in nominal but also in real terms.<sup>9</sup>

This was accompanied by a decline in the profitability of investing in sovereign debt denominated in both local and foreign currency (United States dollars). This is shown in figures X.1 and X.2 below. Thus, within this context a change in the slope of the yield curve for developed countries signaled the possibility of restrictive monetary conditions and lower growth in developing economies.

**Figure X.1**  
**Evolution of generic US sovereign 10-year bond index and emerging markets local currency government debt index. 4<sup>th</sup> May 2021–8<sup>th</sup> August 2022**

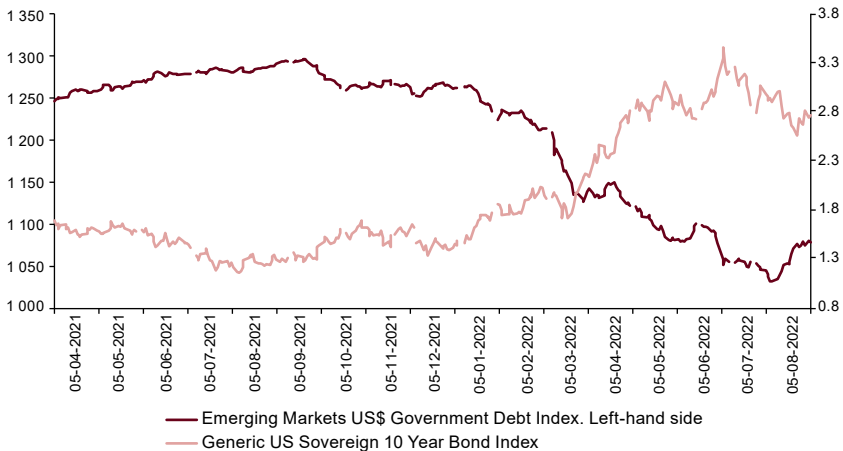


**Source:** Bloomberg (2022).

**Note:** The emerging markets local currency government debt index measures the returns of sovereign emerging markets in local currency with maturity of at least two years and less than 30 years.

<sup>9</sup> See Yardeni Research Inc. (2022b)

**Figure X.2**  
**Evolution of generic US sovereign 10-year bond index and emerging markets US\$ government debt index. 4th May 2021–8th August 2022**



**Source:** Bloomberg (2022).

**Note:** The emerging markets US\$ government debt index measures the performance of investment-grade and high yield US dollar-denominated debt issued by governments, regional governments, government-sponsored entities and corporations domiciled in over 60 emerging markets.

The effects of restrictive financial conditions were enhanced by the announcement of the central banks in the developed world to hike their monetary policy interest rates to confront the rise in inflation. As of July 2022, all developed countries had increased their short-term interest rates.<sup>10</sup> At the same time the major central banks of the developed world announced the reduction of their balance-sheets through quantitative tightening.

Quantitative tightening is defined as a monetary policy consisting of not rolling over into new issue of securities the principal received by the central bank from its Treasury holdings.<sup>11</sup> |In the case of the Federal Reserve, the central bank uses the proceeds of the principal to extinguish the reserves credited by the central bank itself to the Treasury for the purchase of the Treasury security it bought in the first place. In this way, the central bank reduces both its assets and liabilities. If the Treasury decides to sell securities, it would have to sell them, say to a private investor, who would then have to draw down her/his deposits at a financial institution (say a commercial bank) to make the purchase. In turn, the financial institution would register a decline in deposits and reserves. In this way the reduction in the balance sheet of the central bank would spill over into the commercial banking system.

<sup>10</sup> The exception is the Central Bank of Japan that has maintained a short-term interest rate of -0.10% since January 2016.

<sup>11</sup> See Wang (2022).

The Federal Reserve began to apply quantitative tightening on June 1, with a limit on the redeeming of securities of US\$ 30 monthly from June to August. From September onwards the limit will be expanded to US\$ 60 billion. In addition, the Federal Reserve began selling mortgage-backed securities to the tune of US\$ 7.5 billion per month increasing to US\$ 35 billion after three months. Overall, by September, the Federal Reserve will contract its balance sheet by US\$ 95 billion monthly.

The size of this monetary experiment has never been tried before and its effects on interbank and emerging market and developing country liquidity are uncertain. Recent estimates indicate that a reduction of the Federal Reserve balance sheet equivalent to US\$ 2.5 trillion (approximately a reduction of US\$ 90 billion for 2 years) would be “equivalent to raising the policy rate a little more than 50 basis points on a sustained basis.”<sup>12</sup>

This sets the stage for financial cycle dynamics much in line with the analyses presented in this book whose building blocks include capital outflows, exchange rate depreciations with the consequent rise in inflation and also balance-sheet effects as well as, increases in sovereign and corporate risk which then feedback into aggregate demand through their effects on gross capital formation.

The drawdown of emerging market assets between January 2021 to the present is larger than that experienced during the Global Financial Crisis (21.39% and 21.27% respectively). All regions of the developing world have witnessed increases in sovereign risk. At present a third of emerging market economies have sovereign bond yields above 10%. In the case of Latin America and the Caribbean, these include Brazil, Colombia, Ecuador, El Salvador, Honduras and Venezuela. Moreover, as things stand, according to the IMF (IMF, 2022b) 60% of developing countries that were either eligible/participating in the G-20 Debt Suspension Initiative (DSSI) are at high risk or already in debt distress (at a more general level 30 percent of emerging market countries and 60 percent of low-income nations are in or near debt distress).

This context has been exacerbated by the war in Ukraine which sent food and energy prices skyrocketing provoking significant pressure on the balance of payments (for non-oil and non-food producing countries), and causing cost inflation, and food insecurity for many developing countries.

At the same time, that, emerging market and developing economies face a range of distinct challenges, as a result, of their pattern of international insertion, this very same pattern of integration has significantly reduced their policy autonomy. The limitations in the use of capital flows is a case in point.

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<sup>12</sup> See Crawley et al. (2022) p. 1.

The academic community and international financial institutions have examined in detail the technical aspects and advantages and disadvantages of implementing regulations on capital flows. The ensuing vast literature has generated a consensus in favor of de-demonizing capital flow regulations and restoring its legitimate use as a tool for macroeconomic stabilization.<sup>13</sup> Capital flow regulations are considered an essential policy tool not only during times of financial and balance-of-payments crises, but also, in more normal times. Yet, as demonstrated in this book, policy makers in developing countries are reluctant to regulate capital flows.

This reluctance can be explained, in part, by the existing technical challenges that their implementation imposes on regulators, and to the smooth functioning of financial intermediaries. Opponents to capital flow regulations argue that in a context where, emerging market and developing economies have a high degree of financial openness, it may be expected that the establishment of capital regulation measures have more than just disruptive minimum effects, and not produce the expected positive results.<sup>14</sup>

But there are more important historical, institutional, and political reasons that prevent their use. For one thing, the perception of association between financial disruptions, balance of payments difficulties and capital flow regulations will undermine any attempt to apply these except perhaps under extreme conditions. Fear of creating destabilizing pressures on the domestic financial markets may be used as an argument even when capital flow regulations are considered only a theoretical possibility. In such cases, any move towards regulating capital flows will require the buildup of a consensus that the fiscal, monetary, and financial fundamentals of the economy are strong and that the government's development agenda is fully committed to preserve stability and a sustainable trajectory of public debt. This is a major technical and political challenge.

There are also political economy issues that need to be considered and that become visible at a more granular level of analysis. Capital flow regulations can have heterogeneous effects at the microeconomic level.

For certain economic groups whose financial operations are highly integrated within the global capital markets, the implementation of capital flow regulations may cause an important disruption in their activities. While the monetary authorities can perceive short-term financial flows as a threat to macroeconomic instability, certain economic groups may, on the contrary, view this an opportunity for profit through portfolio adjustment. As a result, the regulation that is needed at the macroeconomic level to

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<sup>13</sup> The IMF and BIS have stressed the pervasive destabilizing effects of short-term capital flows recognizing the usefulness of capital flow managements techniques. See IMF (2022a).

<sup>14</sup> Moreno-Brid and Nalín (2022).

ensure financial stability may, in fact, reduce expected profits and alter the business climate for the financial sector and other investors, say foreign direct investors. This could inevitably be a source of tensions between the business community and political actors.

The lessons of history show that private interests may be powerful enough to overturn or circumvent capital flow regulations. This can be exemplified by the last-minute intervention of New York bankers in the final draft of the IMF's Articles of Agreement in 1945 to water down John Maynard Keynes and Harry B. White's proposals for an international lending facility (Keynes, 1980). The tensions between the aims of politicians and those of the business community also explains the origins and boom of the Eurodollar market in London in the 1950s and 1960s, partly, as a result, of a "loophole" in the capital flow regulations that permitted transactions on the forward exchange market in England (Schenk, 2021).

The receptiveness to capital flow regulations also depends on the degree of dependence of countries' financial systems on foreign financial flows, and, also, on its ownership structure. The more dependent and exposed are financial intermediaries to foreign flows the more likely these will oppose capital regulations. The same situation occurs when foreign banks account for a large share of the assets of the commercial banking system. When looking at the productive structure, capital regulations are justified when foreign financial flows are mainly devoted to financial rather than productive purposes.

Most emerging market and developing economies have a high degree of financial openness and have signed free trade and investment agreements which discourage or even prohibit any policy intervention to restrict foreign capital outflows or inflows, although capital flow regulations are considered a legitimate tool to confront periods of financial turmoil and more importantly to manage the financial cycle. As explained in the book since the adoption of Washington Consensus policies, there are few experiences in Africa, Asia, and Latin America and the Caribbean with capital flow regulations per se.<sup>15</sup> These source cases provide important lessons on their applicability, scope, and their effectiveness in mitigating financial volatility and instability.

The limitations placed on developing countries policy autonomy is also put to the test by closely examining 'macroprudential policies' at the theoretical and empirical levels. Macroprudential policies have become the main instrument for financial regulation in both developed and developing countries following the Global Financial Crisis.

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<sup>15</sup> This excludes the use of a broader definition of capital flow regulation. See Chapter I of this book.



There are different definitions of macroprudential policies, but they all have as their main objective the reduction of systemic risk either over time or across institutions and markets. Systemic risk is defined as “a risk of disruption to financial services that is caused by an impairment of all or parts of the financial system and has the potential to impose serious negative consequences on the real economy.”<sup>16</sup>

Macroprudential policies view, for the most part, the banking system as the main source of macroeconomic disruption and financial instability. As explained by Shin (2016, p. 102): “Most macroprudential tools are aimed at the banking sector...Their design is influenced by the experiences of past crises. Watchwords are credit growth, leverage, maturity mismatch, complexity and ‘too big to fail.’ While these factors are still relevant, it does not follow that all future bouts of financial disruption must follow the same mechanism as in the past.”

Chapters III to VIII show that that the non-financial corporate sector and the non-banking sector can also be sources of instability and financial fragility and cannot be ignored in the analysis. Chapter VIII postulates, the existence of a non-linear relationship between debt and investment by the non-financial corporate sector as a key component of a financial cycle in Latin America and the Caribbean. The non-banking sector has become an important player in financial intermediation and has become intertwined with the banking sector giving rise to financial conglomerates which have become key players in both the financial and real spheres of economic activity and which in many emerging and developing countries are not regulated simply because the legal figure of ‘financial conglomerate’ does not exist. Also, the external sector as such is not considered as a source of vulnerability.

The focus placed on the banking system has important implications for the way in which policy makers and academics understand the role of money and finance. Macroprudential regulation is based on the premise that banks are financial intermediaries channeling ‘voluntary savings’ to investment and that financial regulation through its different tools needs to shorten, as much as possible, the chain between savings and investment.

According to this approach, the Global Financial Crisis occurred precisely because the growth of finance lengthened the intermediary chain between savings and investment.<sup>17</sup> Yet this view point hardly corresponds to the modern notions of money and finance according to which loans creates deposits (expenditure including investment generates savings) and which sustains that the main role of banks is to validate debts.

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<sup>16</sup> This is the definition adopted in Chapter III of the book (IMF, 2010).

<sup>17</sup> See Shin (2010a).

At the heart of macroprudential regulation is the notion that business cycles are a series of episodes of booms and busts. Financial vulnerabilities are created during the boom and the bust is proportional to the boom. However, the reality of emerging market and developing economies hardly conforms to this pattern. As argued in Chapter VIII, booms and busts are a particular type of cycle but certainly not its general manifestation.

Finally, the design of macroprudential regulation fails to incorporate to its full extent the relationship between monetary policy and financial stability.

According to the existing consensus, central banks should abide by the Tinbergen principle: one instrument, one objective. Monetary policy should target price stability while regulatory policy should focus on financial stability.<sup>18</sup> In this sense, the consideration of regulation at the macroeconomic level has not made a difference to the standing dissociation between both functions, which has been a pervasive feature of mainstream monetary economics. This dissociation emanates from the fact that according to orthodox monetary policy and regulatory functions of central banks are assumed to be complements.

Since macroprudential and monetary policies share similarities, as both affect the demand and supply of credit through by reallocating spending through time and by influencing the cost of funding of financial intermediaries, there is space for analyzing the interaction between both types of policies. On the one hand, macroprudential policies can facilitate the conduct of monetary policy by containing risk, dampening the impact of economic shocks, and providing greater policy space to achieve its primary, price stability, objective. On the other hand, given the existence of financial market imperfections, monetary policy can affect the stability of the financial system through the following channels: "(i) by shaping ex-ante risk-taking incentives of individual agents, through leverage, short-term borrowing, or foreign-currency borrowing; or (ii) by affecting ex-post the tightness of borrowing constraints and possibly exacerbating asset price and exchange rate externalities and leverage cycles." (IMF, 2013, p.9; Nier & Kang, 2013).

Yet the evidence also indicates that they can pull in different directions. And, as result, monetary policy can be a contributing factor to financial instability and given the importance of central banks in an economy this has to be a central feature of macroprudential regulation. There are five channels through which monetary policy can lead to an increase in financial instability (balance sheet, risk-taking, risk-shifting, exchange rates and asset price). These are summarized in table X.2, above, along with the existing literature on this topic and the empirical findings.

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<sup>18</sup> See Shin (2010b).

**Table X.2**  
**Transmission channels from monetary policy to financial instability**

Channel	Effects	Impact on financial stability/instability	Authors	Findings
Increase in policy interest rate				
Balance sheet	Increases debt repayments Reduces loan repayment capacity Decrease net worth	Higher default rates Lower banking profits Larger non-performing loans	Sengupta (2010) Jimenez et al. (2009) Gertler & Gilchrist (1994) Asea & Blomberg (1998)	Increase in default of borrowers and decline in the quality of banks' portfolios. Increase in defaults in mortgage loans.
Risk-taking	Increase in capital and collateral values	Increased exposure to risk as a result of expansion of balance sheets, increased leverage and lower quality borrowers	Jimenez et al. (2009) Loannidou et al. (2009) Merrouche & Nier (2010)	Loan level and survey data provide evidence in favor of the risk-taking channel. Evidence at the macro-level is weaker.
Risk-shifting	Reduce intermediation margins leading lenders to increase risk taking	Increase in leverage to maintain profitability	Gan (2004) Landier et al. (2011)	Strong favorable empirical evidence prior to a crisis.
Exchange rate	Higher interest rate differentials increase capital inflows	Increase in credit growth and leverage	Hahn et al. (2012) Merrouche & Nier (2010)	Strong empirical evidence across different countries.
Decrease in policy interest rate				
Asset price	Increase in the value of assets for lenders and in the net worth of borrowers	Increases in the supply and demand for loans leading to higher asset prices through a 'financial accelerator' mechanism.	Altumbas et al. (2012) Del Negro & Otrok (2007) IMF (2009)	Mixed evidence and small impact of lower interest rates on asset price booms.

**Source:** IMF (2013).

The above discussion points to the need to take a broader and more comprehensive approach to macroprudential policy. This should include the financial sector in its entirety, and the real sector (i.e., the non-financial corporate sector) and, also the interaction between both.

The only way to break free of the straitjacket created by the combination of low growth and high debt within a highly restrictive external context is to expand the policy autonomy of emerging market and developing economies. This has been a long-standing demand of policy makers, practitioners, and academics that think outside mainstream economics and that have long argued that the main stumbling block to access a wider economic policy space is not related to its underlying economic logic as shown throughout this book.

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This book presents a comparative analysis of the policy responses of developing countries in Africa, Asia and Latin America and the Caribbean to the challenges that greater external financial openness and price and exchange-rate flexibility pose to economic stability. Greater external openness has significantly narrowed developing economies' policy space, while at the same time increasing the potential for financial fragility and instability. These challenges, which have come to the fore since the global financial crisis of 2008–2009, are also manifest in the profound impact of the COVID-19 pandemic and will shape the post-pandemic recovery. The book examines how different countries have used capital controls and macroprudential tools and highlights key lessons learned. It contains an extensive critical assessment of macroprudential policies at the theoretical and practical levels. It also presents alternative frameworks for the analysis of external stability policies, including the development of a baseline stock-flow consistent model for Latin America and the Caribbean with five sectors (government, central banks, financial sector, private sector and external sector). The model can be used to evaluate different policy measures and assess their impact on financial stability and economic growth.