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The long-run effects of portfolio capital inflow booms in developing countries: permanent structural hangovers after short-term financial euphoria

Alberto Botta

UNITED NATIONS

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Abstract

Most of the literature about the effects of portfolio capital inflows to developing countries focuses on how macroeconomic stability is affected. Very little has been said on the long-run consequences that temporary booms in portfolio capital flows may bear by affecting the productive structure, particularly manufacturing development, of developing countries. The present paper tries to partially fill this gap. We first build a simple theoretical model to show how booming portfolio inflows may interact with domestic speculation at home, giving rise to a climate of financial euphoria featuring an appreciating exchange rate and rising prices of domestic speculative assets. We also discuss that such euphoria hardly lasts forever, but rather ends up in a phase of heightened financial turmoil and volatility. As for the long run, we maintain the Kaldorian perspective according to which manufacturing plays a crucial role for the development process of backward economies. In such a context, we show how the above finance-led *temporary* trends can have long-run negative consequences by *permanently* jeopardising the development of domestic manufacturing (with respect to the domestic speculative sector). Consistently with these concerns, we finally advise that it is of paramount importance for developing countries to curb booming portfolio capital flows, and the ensuing phases of financial euphoria, in order to pave the way for a long-term change of the domestic productive structure towards manufacturing industries producing non-traditional tradable manufactured goods.

Keywords: Portfolio capital flows, financial instability, Dutch disease, manufacturing development.

JEL code: F32, O14, O24.

Introduction

In economic literature, the Dutch disease is traditionally described as a real-side phenomenon, taking place through real-side mechanisms. As the term itself clearly says, the Dutch disease refers to the process of de-industrialization (or, better, relative contraction of the domestic manufacturing sector) that started to affect the Dutch economy in the 1960s as a consequence of the discovery of natural resources in the North Sea. In the pioneering mainstream supply-side models on this process (Corden and Neary, 1982; Bruno and Sachs, 1982; van Wijnbergen, 1984), the discovery of natural resources first modifies productive factors' marginal productivity in different sectors, increasing labour and capital (marginal) productivity in the natural resource-specific industry. Given perfectly competitive markets for productive inputs, this fact automatically brings to the relocation of labour and capital away from the sector producing tradable manufactured goods into the sector exploiting natural resources. Secondly, the increased abundance of natural resources gives rise to an "expenditure" effect. In a "richer" economy, i.e. in an economy with a larger endowment of resources, people increase their demand for both tradable (manufactured) and non-tradable goods (say services). Whilst the price of the former is assumed to be fixed on international goods markets (because of the small open economy assumption), the price of the latter tends to increase as a consequence of larger domestic demand. The relative price of non-tradable goods increases and a real exchange rate appreciation takes place. Once again, productive resources are drained away from manufacturing toward the service industry. The manufacturing sector shrinks.

The above-mentioned models ignore any possible role played by financial variables —namely capital flows influencing the determination of the nominal and real exchange rate via their effects on the equilibrium of the Balance of Payments (BoP)—, in determining Dutch disease-like structural processes. Indeed, Corden and Neary (1982) themselves acknowledge that their model "ignore(s) monetary considerations and focus(es) on [natural resource booms'] implications for real rather than nominal variables (Corden and Neary, 1982, p. 825)". Some more recent empirical and theoretical contributions have partially filled this gap by identifying various types of international resource flows as potential additional sources of Dutch disease on top of natural resource booms. Acosta et al. (2009), for instance, focus on the relationship between de-industrialization and remittances. Adenauer and Vagassky (1998) and Rajan and Subramanian (2011) pay attention to the possible negative structural "side-effect" of international aid on the productive structure of developing countries. Nevertheless, the economic mechanisms through which the Dutch disease unfolds are the same real-side mechanisms already enquired by the original works on this topic. On top of this, these contributions continue to overlook whether other types of perhaps more relevant financial flows can produce long-lasting structural changes in the productive structure of developing countries. Lartey (2008) actually presents a theoretical model in which he formally investigates the relationship between no better-specified capital inflows and the Dutch disease. In the mainstream supply-side framework he adopts, however, capital inflows *de facto* boil down to a foreign investment good, which is used as productive input in the production process of the domestic capital good sector. In such a model, Lartey completely ignores all the financial aspects related to international capital movements and international financial markets (i.e. the determination of domestic and international interest rates, as well as of the spread between them; the changes in the confidence of international investors, etc…). In a later work, Lartey (2011) addresses how the degree of financial openness of an economic system influences the probability Foreign Direct Investment (FDI) may give rise or not to Dutch disease. No attention, however, is dedicated to other forms of more unstable but increasingly relevant capital flows, namely *portfolio* capital flows.

The literature on the relation between portfolio capital flows, growth and development in developing countries is abundant. Nonetheless, this literature almost exclusively focuses on the macro-aggregated level by investigating the effects of volatile portfolio flows on the financial stability of developing countries, and henceforth on their growth prospects. At the best of our knowledge, only a small bunch of contributions has tried, so far, to analyse, implicitly or explicitly, how portfolio capital flows may foster or hinder economic development by affecting the productive structure of developing countries. Taylor (1991, ch.6), for instance, presents a theoretical model in which financial bubbles and speculation waves unfold in developing countries with poor connection, if any, with the tradable sector, but strong linkages with the (over-) expansion of the financial industry and/or the real estate sector. This was the case of Kuwait in the 1980s or Chile in the 1970s, in particular after the Pinochet-led privatization of domestic companies exploiting domestic natural resources. Even though foreign capitals are not at the core of this model (speculation develops through internal mechanisms of the domestic financial sector), they can certainly play a role, as Taylor himself stresses in the review of the several developing countries' (financial instability) anecdotes his model aims to captures. Taylor (1998) reaffirms the significant connection between episodes of financial euphoria and hypertrophic real estate sectors in a subsequent study about the financial boom-and-bust cycles of the 1990s in developing countries such as Mexico and Thailand. Interestingly, in the case of Mexico, Taylor (1998) notes that, while credit to housing increased by 1000% in a few years, investment barely recovered above 20 percent of GDP. Mexico moved from a small trade surplus to a considerable deficit before the eruption of the crisis in 1994. More recently, Gallagher and Prates (2014) analyse the case of Brazil in the first decade of the 2000s. In particular, they focus on the political economy of the resource curse, which, in the case of Brazil, comes hand in hand with the financialization of the economy, i.e. the growing importance of financial investors in the determination of commodities' prices and exchange rate dynamics through speculation in the market for futures. In a similar vein, but without discussing the political economy of the story, Botta et al. (2016) describe the macroeconomic dynamics of Colombia since the beginning of the 2000s, when the Colombian development pattern increasingly relied upon the exploitation of domestic natural resources (the so-called "locomotora minera"). The authors note that increasing oil exports, and, more relevantly, huge natural resource-oriented FDI and booming portfolio inflows caused a considerable appreciation of the Colombian peso and a statistically significant squeeze in the contribution of manufacturing to domestic GDP. Botta (2017) provides a formal model of that experience. He shows that an initial surge in (natural resource-oriented) FDI may give rise to a process in which, alongside a permanent long-run appreciation of the nominal (and real) exchange rate, speculation on the exchange rate causes heightened exchange rate volatility. In the end, both dynamics can determine a (relative) contraction of manufacturing (with respect to the rest of the economy) and, according to Kaldorian lines, a slowdown of labour productivity growth.

The present paper aims at expanding a little bit further this last contribution. In particular, it shifts the focus of the analysis to the relation between portfolio capital flows and the evolution of developing countries' productive dynamics, mediated or not by natural resource booms. In a way, this paper tries to clarify how temporary short/medium-term (speculative) capital inflows may bear long-lasting consequences on the productive structure of developing countries, possibly causing a premature de-industrialization and a permanent reduction in the dynamics of labour productivity. The present model first shows how foreign portfolio investment may give rise and interact with a boom in a domestic "speculative" sector, call it real estate or finance, causing the appreciation of the nominal and real exchange rate and an increase in the price of the speculative asset.[1] In this regard, the model also shows how this boom likely comes to an abrupt end when fundamentals of the economy deteriorates, i.e. the current account deficit sinks and depreciation pressures of the exchange rate kick in. Secondly, this model shows that, even though exchange rate/speculative sectors booms may be temporary and short-lived, they can confine developing countries into a permanent "underdevelopment trap". This takes place when an initial contraction of domestic manufacturing, with respect to the non-tradable "speculative" sector, triggers a reduction in the growth rate of domestic labour productivity, which in turn curbs manufacturing development even further by restraining the expansion of domestic demand. Consistently with the theoretical description of the above medium-to-long term dynamics, this paper finally proposes a series of policy options aimed at limiting the long-run perverse effects of temporary financial booms on the development pattern of developing countries. The attention is on the need to manage even temporary medium-term appreciation of the exchange rate; to control short-term capital flows and possibly use resources collected through the taxation of capital movements in order to spur productivity dynamics.

The paper is organised as follows. Section I discusses the main features and assumptions of our theoretical model. Section II shows the medium-term boom-and-boost cycle that may emerge out of the interaction between foreign portfolio investment, exchange rate appreciation, and the expansion of a domestic "speculative" non-tradable sector. Section III investigates the long-run consequences of an even temporary expansion of the speculative domestic sector over manufacturing, i.e. our admittedly simplified measure of industrial development. Section IV concludes with a series of policy implications.

[1] In this sense, the present model stands out as a sort of "open economy" extension of the original "closed economy" model developed by Taylor (1991, ch.3).

I. Portfolio inflows in a two-sector economy with a "speculative" sector

We assume a (relatively) small developing economy, with free trade and financial relations with the rest of the world. Also, assume that the "monetary policy regime" characterising such economy is "pure" inflation targeting (Mishkin, 2000). In line with the recent experience of several developing countries, the domestic central bank sets the domestic (benchmark) interest rate with the sole purpose of controlling inflation. The exchange rate is in turn left free to float.

We assume financial relations between the domestic economy (say the financial periphery), and the rest of the world (say the "centre") to be unfettered. Accordingly, financial flows, particularly portfolio investment, are freely determined on international financial markets through the interaction between the supply of funds from the centre and the demand of funds from the domestic financial system. Equation (1) below defines the amount of (foreign currency-denominated, say dollars) foreign resources that foreign investors would like to allocate to the "periphery" (L^S_f). For the sake of simplicity, we assume these funds to be short-term and renegotiated in each period, so that the distinction between stock and flows can be neglected.

$$L_f^S = \delta\left(i_f, i_{int}, W_f\right) \text{ with } \frac{\partial \delta}{\partial i_f} < 0; \frac{\partial \delta}{\partial i_{int}} > 0; \frac{\partial \delta}{\partial W_f} > 0 \qquad (1)$$

We assume (L^S_f) to be a negative function δ(.) of the "centre" interest rate i_f, as exogenously established (or directed) by the foreign central bank. The supply of foreign resources responds positively to the *endogenously determined* (see below) international interest rate i_{int}, i.e. the interest rate at which the periphery gets indebted (in foreign currency) to the centre. Finally, foreign investors increase their lending to the periphery in periods of global financial euphoria when financial wealth in the centre (W_f) is on the rise.

Equation (2) defines the demand for foreign funds from domestic financial actors:

$$L_f^D = \lambda\left(i_{CB}, i_{int}, e, \widehat{P_Z^e}, i_d\right) \text{ with } \frac{\partial\lambda}{\partial i_{cb}} > 0; \frac{\partial\lambda}{\partial i_{int}} < 0; \frac{\partial\lambda}{\partial e} < 0; \frac{\partial\lambda}{\partial \widehat{P_Z^e}} > 0; \frac{\partial\lambda}{\partial i_d} > 0 \qquad (2)$$

In equation (2), we first assume the *demand* for financial resources on international financial markets to be influenced by the benchmark domestic interest rate "i_{CB}", set exogenously by the domestic central bank. As Gallagher and Prates (2014) argue for the case of Brazil, central banks in several developing countries tend to adopt relatively high interest rate targets in order to keep the exchange rate rather appreciated and inflation under control.[2] In this context, domestic financial operators are frequently incentivised at looking for external funds at lower interest rates on international markets and then lend at higher rates domestically. Indeed, following Gagnon and Chabound (2007) and Gallagher and Prates (2014), this is one of the salient aspects of the so-called carry trade. Consistently with this story, in equation (2) "$L^D{}_f$" is a positive function $\lambda(.)$ of "i_{CB}". The higher "i_{CB}", the more strongly domestic financial operators will search for cheaper foreign funds. In a similar vein, we also assume that "$L^D{}_f$" is a negative function of the agreed international interest rate i_{int}.

In equation (2), "e" stands for the nominal exchange rate, defined as the quantity of domestic currency one can buy with a unit of foreign currency.[3] In our model, the demand of foreign funds negatively reacts to a higher nominal exchange rate (i.e. a rather depreciated domestic currency). Indeed, an increase in "e" will make the balance sheet of borrowers in the periphery more fragile, due to a larger mismatch between foreign currency-denominated liabilities and domestic currency denominated assets. Accordingly, domestic financial institutions will be reluctant to get more indebted on international financial markets, so that $L^D{}_f$ will eventually decrease.

Last but not least, domestic financial actors will raise their demand for foreign financial resources the higher is the *expected* capital gain $\widehat{P_Z^e}\left(=\frac{P_Z^e - P_Z}{P_Z}\right)$ from investments in the domestic speculative asset "Z" (see more on this below). By the same token, the domestic demand for foreign loans rises the higher is the domestic interest rate "i_d" domestic financial institutions charge of domestic loans to non-financial productive (manufacturing) firms.

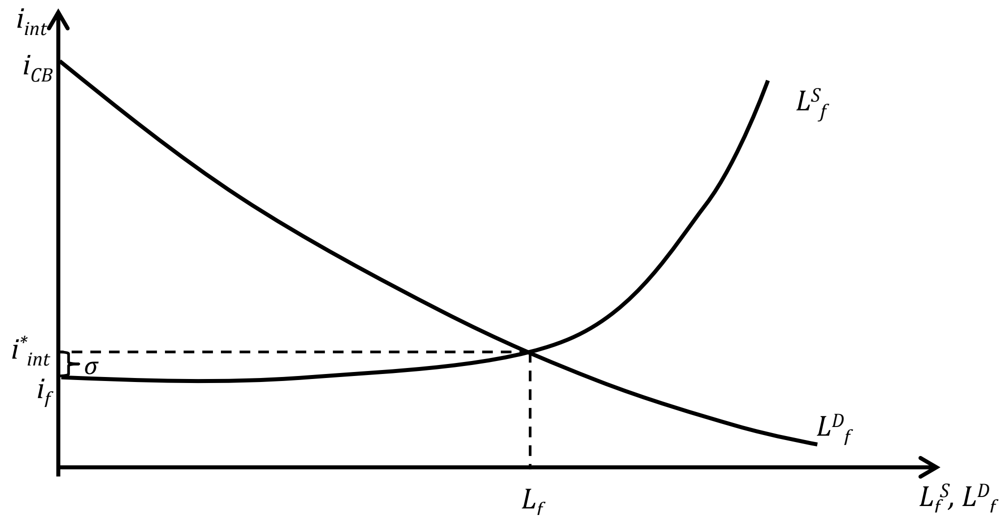
Figure 1 below shows how portfolio inflows L_f and the related interest rate i_{int} are endogenously determined on international financial markets through the interaction between the demand and supply of foreign capitals.[4] In figure 1, the endogenous spread σ between the *agreed* international interest rate i_{int} and the foreign interest rate i_f measures the "country-factor risk" international financial markets usually attach to economies at the periphery of the international financial system. Interestingly, in figure 1, we portray the supply schedule as *initially* flatter with respect to the demand curve. This fact reflects the considerably large mass of resources international financial markets can mobilise, at least with respect to the size of a relatively small developing open economy. Accordingly, changes in the demand for foreign capitals by domestic financial actors initially bear rather small consequences for the determination of the international interest rate. This is true insofar as the "country factor risk" does not become too high as a consequence of the increasing external indebtedness of the periphery. When this happens, the supply of international funds becomes much steeper, possibly giving rise to "sudden stops" in international financing. Through this assumption, we try to capture the empirical evidence about "global financial cycles" (Rey, 2015), according to which financial conditions and sentiments in the centre of the world system significantly influence, if not determine, financial optimism or financial crashes in the periphery. Accordingly, changes in the goodwill of foreign creditors can bear, both in a positive or negative way, dramatic effects on the financial dynamics of developing countries.

[2] In developing countries, the dynamics of the exchange rate and of inflation may be tightly connected. This is due to the fact that several consumption goods are imported from abroad, so that their domestic prices are eventually influenced by the evolution of the exchange rate (through the well-known pass-through rule). This is why, under inflation targeting, central banks in developing countries may show a certain bias in favour of relatively appreciated exchange rates (with respect to exchange rate devaluations), which may help to reduce domestic inflation and meet the inflation target.

[3] In this model, an increase in "e" represents a depreciation of the local currency, whilst an appreciation of the domestic currency would show up as a reduction of "e".

[4] In a way, figure 1 tries to grasp, from a graphical point of view, the *push* (supply side) and *pull* (demand side) factors that jointly drive the flow of capitals among economies.

Figure 1
Determination of foreign portfolio flows and interest rate on international financial markets



Source: Elaborated by the author.

For the sake of simplicity, we assume that the domestic provision of funds to the domestic financial system acts as a buffer. When (cheaper) resources collected on international financial markets are not enough to finance the desired uses, domestic financial operators can raise additional funds in the domestic economy, say through the domestic interbanking market at the target "penalty" rate (with respect to the international one) "i_{CB}" set by domestic monetary authorities.[5]

Domestic financial institutions are engaged in two different types of lending activities/financial investment. First, they provide long-term credit to firms in the tradable manufacturing sector in order to support the accumulation of the productive capital stock "KM" (see more on this below). Second, domestic financial institutions also invest in the purchasing (or in the provision of credit in order to purchase) of a speculative asset "Z". As sketched above, "Z" may well represent the housing sector, which has been very often tightly associated with episodes of financial euphoria in developing countries. Alternatively, it may stand for some innovative financial asset, which may have recently contributed to expand the financial sector, financial market-based actors in particular, even in some developing countries (Karwowski and Stockhammer, 2017).[6] Table 1 below provides a snapshot of the simplified balance sheet of the domestic financial system.

Table 1
Composition of the balance sheet of the domestic financial sector

Domestic financial sector balance sheet	
Assets	Liabilities
L_M	eL_f
L_Z (=$P_Z Z$)	L_d

Source: Elaborated by the author.

[5] This simplified description of the functioning of domestic and international financial markets implicitly excludes the possibility for domestic financial institutions to go bankruptcy. Still, there might be a significant change in the costs of financing, and hence in the investment decisions of financial operators, when foreign funds are no longer available (or may come to a halt) and domestic financial institutions have to increasingly rely on internal source of funds (the domestic interbank market or the domestic central bank). There is no doubt these changes will affect the overall performance of the economy, and this is the aspect the present paper focuses on.

[6] In the case of Brazil, for instance, Karwowski and Stockhammer (2017) note that the development of market-based actors and transactions has reached *medium-high* levels not significantly different from that experienced by a "financialized" economy such as the UK. This might be an additional effect of the high interest policy adopted by Brazilian monetary institutions in the last 20 years at that, following Becker et al. (2010), has represented the distinguishing feature of financialization in this economy. Market-based financial activities expanded in Mexico as well, even though at a lower extent with respect to Brazil.

More in details, we assume that domestic financial institutions fully accommodate the demand for loans coming from non-financial manufacturing firms, so that no credit rationing is considered. Other way around, we assume the expansion of "L_M" to be demand-driven and dependent on desired investment by non-financial manufacturing firms. Financial institutions charge an interest rate "i_d" on loans to domestic firms. Such an interest rate is set according to a positive mark-up (μ) on the target interest rate "i_{CB}" (see equation (3)).

$$i_d = (1+\mu) i_{CB} \qquad (3)$$

Manufacturing firms, in turn, take their investment decisions based on their expectations about future sale opportunities. On the one hand, these are (positively) influenced by the expected expansion of the domestic market, which will in turn hinges upon the increase in domestic wages. In a way, as usual in post-Keynesian models, wages stand out as a productive cost for the individual entrepreneur, but at the same time as a relevant source of demand (and profits) for the system as a whole. On the other hand, a loss of competitiveness with respect to foreign competitors may hinder domestic firms from undertaking further productive investment. The international competitiveness of domestic manufacturing is captured by the real exchange rate q ($=eP_f/P_M$). The higher is q, the more competitive are domestic goods with respect to foreign ones (at least from the point of view of price competitiveness), and the more likely domestic firms could gain market shares in the domestic economy and in international goods markets. Accordingly, they may likely be incentivised to scale investments up (see equation (7)).[7]

$$\frac{I_M}{K_M} = g(\widehat{w}, q(e)) \text{ with } \frac{\partial g}{\partial \widehat{w}} > 0; \frac{\partial g}{\partial q} > 0 \qquad (4)$$

As for the speculative asset, given "L_Z" as the outstanding amount of resources domestic financial institutions pledged to the purchases of "Z", such an amount will increase or decrease (in percentage terms) depending on the *net* expected capital gain ρ^e ($= \widehat{P_Z^e} - \Phi = \widehat{P_Z^e} - \{i_{CB} - [\phi(i_{CB} - i_{int})]\}$) on "Z". Such a net return is defined as the expected percentage variation $\left(\widehat{P_Z^e}\right)$ in the price of the speculative asset "Z" minus the average cost of financing $\Phi = \{i_{CB} - [\phi(i_{CB} - i_{int})]\}$ domestic financial institutions jointly deal with on domestic and international capital markets.[8] On top of this, we also assume that the expansion in the resources domestic financial institutions devote to the purchases of "Z" is negatively influenced by the current exchange rate "e". Indeed, the higher is "e", the more vulnerable is the domestic financial system due to a larger mismatch between foreign currency-denominated liabilities and domestic assets. Accordingly, domestic financial institutions might think twice before (and be rather reluctant to) undertaking new (finance-led) investments in the domestic speculative asset, as well as advancing new requests for external funds, which might ultimately impair their financial soundness even further.[9] Equation (5) below formalises such assumptions, whilst figure 2 provides a graphical representation.

$$\widehat{L_z} = \psi(\rho^e, e) \text{ with } \frac{\partial \psi}{\partial \rho^e} > 0 \text{ and } \frac{\partial(\partial\psi/\partial\rho^e)}{\partial \rho^e} < 0; \frac{\partial \psi}{\partial e} < 0 \qquad (5)$$

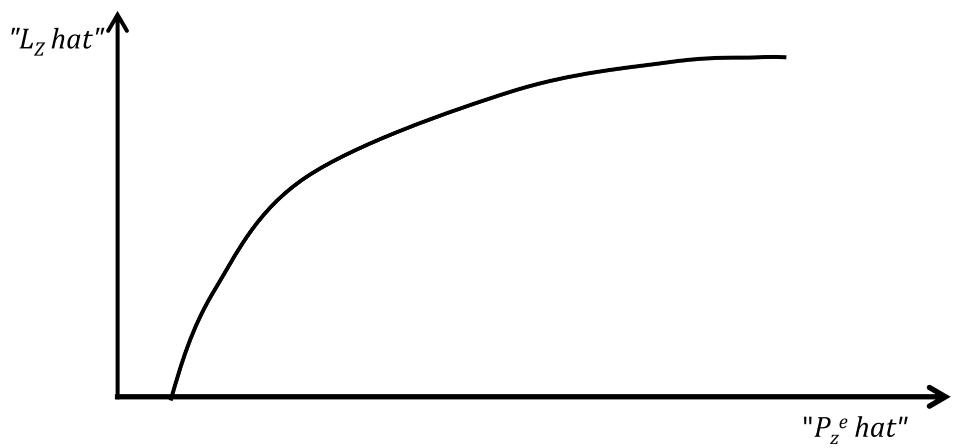
7 For the sake of simplicity, we assume investment decisions in the manufacturing sector to be fully autonomous, i.e. to be independent from the degree of current capacity utilization and from the interest rate on loans from domestic financial institutions.

8 Consistently with the assumption of $i_{CB} \geq i_{int}$, the average cost of financing Φ is a negative function of the ratio between foreign funds and total borrowing $\phi = (eL_f/(eL_f + L_d)$. On top of this, Φ responds positively to increases in the agreed international interest rate i_{int}, as due, for instance, by a rise in the expected change in the price of the domestic speculative asset (see equation (2) and the determination of i_{int} in figure 1).

9 Changes in "e" also modify the average cost of financing. Indeed, when "e" rises, the agreed international interest rate "i_{int}" may decrease (due to a smaller bid for external funds) and ϕ increase (if the rise in "e" more than compensates for the likely reduction in L_f). Such effect might in turn make investments on "Z" more attractive. This fact notwithstanding, given the strong impact that balance sheet adjustments and mismatches have traditionally displayed on the behaviour of financial institutions in developing countries (Akyüz, 2014), here we assume "e" to bear an overall negative effect on "L_Z".

In equation (5) and figure 2, we assume that an increase in the *net* expected capital gain ρ^e, as due to a higher expected increase in the price of "Z", initially induces domestic financial institutions to expand "L_Z" at increasing rates (i.e. $\widehat{L_z}$rises). This assumption captures the financial euphoria and credit over-activity that typically characterises the early stages of a financial (speculative) boom. However, the increasing exposure of domestic financial institutions on international financial markets and the ensuing rise in the average costs of borrowing (which becomes evident when the goodwill of foreign lenders runs over – i.e. when the steeper section of the L_f^S curve kicks in in figure 1 lead financial exuberance to slow down, sooner or later. Accordingly, the positive effect of ρ^e on $\widehat{L_z}$ will tend to vanish (i.e. $\frac{\partial(\partial\psi/\partial\rho^e)}{\partial\rho^e} < 0$).

Figure 2
Temporary credit euphoria in the early stages of a financial boom



Source: Elaborated by the author.

The two sectors in which we decompose our simplified economic system work in different ways. On the one hand, manufacturing produces an aggregated good used for both consumption and investment purposes in an oligopolistic fashion. The price of the manufactured good "P_M" is determined by applying a fixed mark-up rate "m" over unit labour costs (see equation (6)).[10] In equation (6), w stands for the monetary wage whilst "a" represents labour productivity.

$$P_M = (1 + m)\frac{w}{a} \qquad (6)$$

The market for manufactured goods clears through quantity adjustments.[11]

Differently from manufacturing, the speculative sector reaches equilibrium through price adjustments. In particular, given the available quantity of "Z" and of the outstanding financial resources L_Z devoted to its purchases, the short-run equilibrium on the market for "Z" implies $P_z Z = L_z$. It is straightforward to verify that equation (7) defines the equilibrium price level P_Z:

$$P_z = \frac{L_z}{Z} \qquad (7)$$

[10] In this sense, our model departs from Taylor (1991, ch.6) since that we take functional income distribution as given. In our model, income distribution does not play any role in the determination of the long-run dynamics of the peripheral economy.

[11] This paper focuses its analysis on the medium-to-long-term dynamics of developing countries as possibly influenced by temporary portfolio capital booms. Accordingly, we neglect here to provide a detailed analytical formalization of the short-run equilibrium. For the sake of simplicity, if we assume workers to consume all their wages whilst capitalists/rentiers entirely save distributed profits from manufacturing firms and financial institutions, the short-run equilibrium level of capacity utilization in manufacturing is: $u^* = \frac{g(\hat{w},q)+\xi+nx(q)}{(1-\omega)}$, where $(1 - \omega)$ is the profit share over domestic manufacturing output, $nx(q)$ is net exports over the capital stock K_M, and ξ is public spending/manufacturing capital stock ratio.

II. Portfolio booms, exchange rate appreciation and medium-term financial cycles in developing countries

Let's now move our attention to how surges in portfolio capital inflows, exchange rate appreciations and episodes of financial euphoria in the periphery interact among each other and may give rise to financial boom-and-bust cycles in the medium run.

Following Badhuri (2003), Gandolfo (2016) and Botta (2017), we assume that the nominal exchange rate varies according to appreciation or depreciation tendencies emerging from the components of the Balance of Payments (BoP henceforth). Whilst, from a purely accounting point of view, the BoP must always be balanced, still there might be *notional* surplus or deficit positions in the BoP, i.e. in the interplay between its several components. In a flexible exchange rate regime, such notional gaps will eventually be filled via changes in the exchange rate. This is the economic rationale of equation (8):

$$\dot{e} = \theta(\overbrace{TB_M(e)}^{-}; \overbrace{L_f(e,\rho^e)}^{-}; \gamma(\dot{R}, FDI, N, \overbrace{i_{int}(\rho^e, e)L_f(\rho^e, e)}^{+})) \qquad (8)$$

In equation (8), the time variation of the exchange rate ($\dot{e}$) is a negative function θ(.) of the trade balance in manufactured goods "TB_M", which in turn depends positively (assuming the standard Marshall-Lerner condition fulfils) on the nominal exchange rate. *Ceteris paribus*, a positive trade balance will cause the exchange rate to appreciate (i.e. $\dot{e} < 0$), or a lower depreciation to take place. In a similar vein, the exchange rate will appreciate in presence of large inflows of foreign portfolio investment (L_f), whose determinants have been extensively analysed in the previous section of the paper.[12] Finally, the dynamics of the exchange rate may be heavily influenced by a variety of other factors entering the BoP. In equation (8), we give account of the "foreign reserve" policy followed by domestic monetary institutions

[12] In equation (8), we rely upon the *implicit inverse* function connecting $\widehat{P_Z^e}$ to ρ^e, i.e. $\widehat{P_Z^e} = (\rho^e + \phi)$ in order to make explicit the relation between ρ^e and the intertemporal dynamics in the exchange rate.

($\dot{R}$), by the service of foreign debt ($i_{int}L_f$), as well as by the exports of national natural resources (N) and the inflow of Foreign Direct Investment (*FDI*).

For the sake of our study, it is important to analyse how ($\dot{e}$) reacts to changes in "e" and ρ^e (as determined by the expected percentage variation in P_Z). The effect of "e" on its time variation is uncertain. On the one hand, an appreciated spot exchange rate may induce a trade balance deficit to emerge, so that ($\dot{e}$) might become positive and pressures for a depreciation kicks in. On the other hand, however, a more appreciated domestic currency (vis-à-vis the foreign one) makes the balance sheet of domestic borrowers more solid and portfolio capital inflows larger (i.e. L_f increases). Booming portfolio capital inflows can easily lead to a further appreciation of the exchange rate (i.e. $\dot{e} < 0$), so that a positive destabilising relationship eventually emerges between $\dot{e}$ and "e". In times of highly deregulated international financial markets, and with financial transactions that outstrip by far, in their size, trade-related transactions, it is easy to think that the second destabilising factor dominates the first stabilising one. In the remaining of the paper, we will assume $(\partial\dot{e}/\partial e)|_{\dot{e}=0} > 0$.

The effect of ρ^e on the dynamics of the nominal exchange rate also depends on the interplay of conflicting forces. On the one hand, higher values of ρ^e tend to make investments on the domestic speculative asset more attractive. Accordingly, domestic financial institutions will bid for more funds on international financial markets, initially facing the goodwill of international lenders in times of bonanza. L_f will increase, so that the relationship between $\widehat{P_Z^e}$, ρ^e and $\dot{e}$ might initially be negative. On the other hand, however, consistently with figure 1, higher values of $\widehat{P_Z^e}$ and ρ^e will also cause the *agreed* international interest rate to rise (i.e. domestic borrowers will accept to pay a higher interest rate in order to invest in highly remunerative domestic assets), together with the amount of the periphery's external liabilities.[13] The service of the external debt will then increase, putting downward pressures on the dynamics of the exchange rate. In the end, it seems reasonable to assume that the first effect will prevail at rather low levels of $\widehat{P_Z^e}$, ρ^e, and of the periphery's external debt. The second one, in turn, will become more relevant when domestic speculation has led domestic financial institutions to go too far in the search for external funds on international financial markets. This especially holds true if an increasing spread between i_{int} and i_f, which is precisely the outcome of a rise in $\widehat{P_Z^e}$ and, hence, ρ^e, starts to be perceived as a sign of heightened financial risk in the periphery, leading foreign lenders to cut available funds.

Equation (9) describes how expectations about net capital gains evolve through time. We assume a simple adaptive rule, according to which the upward or downward revision of ρ^e hinges upon the comparison between its *observed* and *expected* value.

$$\dot{\rho^e} = \eta(\rho - \rho^e) \qquad (9)$$

Equation (9) simply states that financial institutions will revise ρ^e upward if ρ turns out to be higher than ρ^e itself, as due to a higher observed percentage variation ($\widehat{P_Z}$) in the price of the speculative asset with respect to the expected one ($\widehat{P_Z^e}$). Financial operators will adjust ρ^e downward should the opposite take place.

After reminding that $\rho = (\widehat{P_Z} - \Phi)$ and $\rho^e = (\widehat{P_Z^e} - \Phi)$, let's take the time derivative of equation (8), the ensuing percentage variation of P_Z, and plug the latter, together with equation (5), into (9). We get:

$$\dot{\rho^e} = \eta(\rho(\widehat{L_Z}(\rho^e, e), \hat{Z}(\rho^e - \Omega)) - \rho^e) \qquad (9.b)$$

[13] In figure 1, *ceteris paribus*, an increase in $\widehat{P_Z^e}$ induces an upward shift of the demand for foreign funds $L^D{}_f$. Accordingly, the *agreed* international interest rate will increase and the spread rise alongside with the external indebtedness of the domestic financial sector. Should the intersection between the $L^D{}_f$ and $L^S{}_f$ take place in the "rigid" section of the latter, the external debt exposure of domestic financial institutions will be so high that further increases in i_{int} will become useless to induce foreign creditors to expand the amount of loans conceded to the home economy.

Equation (9.b) clearly shows the negative effect that a more depreciated nominal exchange rate "*e*" bears on the evolution of the net expected capital gain. Indeed, the higher is "*e*", i.e. the deeper is the currency mismatch between assets and liabilities of domestic financial institutions, the more reluctantly they will raise investments on the domestic speculative asset. As a consequence, $\widehat{L_Z}$ will decrease, and net expected capital gains will be revised downward.

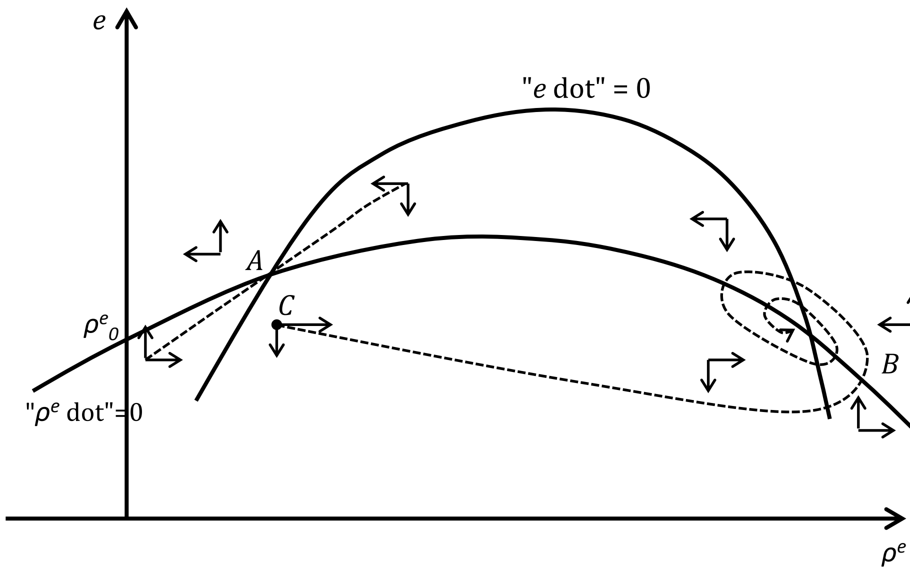
The own derivative between $\dot{\rho^e}$ and ρ^e is trickier. A higher expected increase in the price of the domestic speculative asset, and therefore a higher expected net capital gain ρ^e, may lead domestic financial operators to considerably expand resources devoted to the purchase of "Z". As a consequence, $\widehat{L_Z}$ would increase together with P_Z and the *observed* net capital gain ρ. A sort of self-fulfilling expectations might effectively materialise, in particular in the early stages of a credit boom with the "complacency" of generous foreign lenders, so that ρ^e may initially feed back positively into its own dynamics. This state of euphoria may not last forever, however. First, the increasing demand for foreign funds will eventually drive the international interest rate "i_{int}" up, foreign creditors might become less benevolent, and the overall costs of financing Φ will likely increase. The ensuing slowdown in the net expected capital gain and in $\widehat{L_Z}$ (see Figure 2) will tend to calm down the initial over-optimism in the market for "*Z*". Second, the supply of the speculative asset may itself react, perhaps with some delay (see term Ω in equation (9.b)), to the increasing demand for "*Z*" and to the rise of ρ^e. Accordingly, "Z" will increase and $\hat{Z}$ turn into positive, so that a further downward pressure on the dynamics of net expected capital gains will kick in. Last but not least, the self-stabilizing element in equations (9) and (9.b) – i.e. $\rho^e(=\widehat{P_Z^e} - \Phi)$ – will become relatively more important in presence of less exuberant financial markets. In the end, all these three forces will contribute to cool down initial euphoric expectations and to eventually revise them downward, so that a negative feed back between ρ^e and $\dot{\rho^e}$ may ultimately prevail. Accordingly, the credit boom will come to an end.

The interaction between variations in "*e*" and ρ^e may give rise to complex medium-term dynamics. Indeed, the analysis of the signs of the partial derivatives characterising equations (8) and (9.b) indicates that the two loci for constant values of "*e*" and "ρ^e " both look like non-linear inverted U-shaped curves. Accordingly, many different scenarios may emerge, depending on the relative slopes of the two geometric loci for ($\dot{e} = 0$) and ($\dot{\rho^e} = 0$), as well as from the specific points in which they may or may not intersect. We may have a scenario in which the two loci do not intersect at all, so that no equilibrium exists. Alternatively, they may intersect once or twice, each equilibrium having its own specific stability properties. For the sake of our analysis, it is interesting to analyse the scenario featuring multiple equilibria, see figure 3 below. More specifically, figure 3 portrays the case according to which two different equilibria exist. At both equilibrium points, the slope of the locus for ($\dot{e} = 0$) is steeper, in absolute value, than the slope of the locus for ($\dot{\rho^e} = 0$). On top of this, the equilibrium point A lies on the upward-bending arms of the two loci. The second equilibrium (point B), in turn, emerges from intersection between the downward-bending arms of ($\dot{e} = 0$) and ($\dot{\rho^e} = 0$). The Jacobian matrices J_A and J_B below report the signs of the relevant partial derivatives associated to the two equilibrium points in figure 3, and give an hint about the corresponding dynamics (see the mathematical appendix for a more formal analysis).

$$J_A = \begin{array}{cc} & \begin{array}{cc} e & \rho^e \end{array} \\ \begin{array}{c} \dot{e} \\ \\ \dot{\rho^e} \end{array} & \begin{bmatrix} \left.\frac{\partial \dot{e}}{\partial e}\right|_{\dot{e}=0} & \left.\frac{\partial \dot{e}}{\partial \rho^e}\right|_{\dot{e}=0} \\ + & - \\ \left.\frac{\partial \dot{\rho^e}}{\partial e}\right|_{\dot{\rho^e}=0} & \left.\frac{\partial \dot{\rho^e}}{\partial \rho^e}\right|_{\dot{\rho^e}=0} \\ - & + \end{bmatrix} \end{array} \qquad J_B = \begin{array}{cc} & \begin{array}{cc} e & \rho^e \end{array} \\ \begin{array}{c} \dot{e} \\ \\ \dot{\rho^e} \end{array} & \begin{bmatrix} \left.\frac{\partial \dot{e}}{\partial e}\right|_{\dot{e}=0} & \left.\frac{\partial \dot{e}}{\partial \rho^e}\right|_{\dot{e}=0} \\ + & + \\ \left.\frac{\partial \dot{\rho^e}}{\partial e}\right|_{\dot{\rho^e}=0} & \left.\frac{\partial \dot{\rho^e}}{\partial \rho^e}\right|_{\dot{\rho^e}=0} \\ - & - \end{bmatrix} \end{array}$$

Matrices J_A and J_B, together with figure 3, reveal the rather high degree of instability that may characterise the joint dynamics of the nominal exchange rate "*e*" and the expected net capital gain ρ^e. Point *A* shows saddle-path instability, so that, out of the equilibrium, the system will likely diverge from it. In the neighbourhood of point B, cycles may take place, which may converge back to equilibrium if the trace of the Jacobian matrix J_B is negative.

Figure 3
Multiple equilibria and financial instability in the (*e*-ρ^e) space



Source: Elaborated by the author.

Perhaps more relevantly, it is easy to see that, in the economic scenario portrayed in figure 3, even small changes in feelings of domestic and/or international financial actors may trigger financial booms, in which the exchange rate initially appreciates, and the price of the speculative asset sharply increases, but eventually collapses in a final phase of heightened volatility. For instance, let us assume the peripheral economy liberalises its own economic system, financial transactions in particular, according to standard neoliberal reform packages suggested by the so-called Washington or post-Washington Consensus. These reforms, in turn, raise international investors' willingness to invest in a now supposedly much more reliable developing country. According to Frenkel and Rapetti (2009), this story actually describes quite well the general benevolent worldwide perception of the new development path undertaken by liberalised Latin American economies at the end of the 1980s/beginning of the 1990s. Alternatively, following Botta et al. (2016) and Botta (2017), imagine that the discovery of new natural resources attracts considerable FDI in the home economy, say the case of Colombia at the beginning of the 2000s. Both facts, despite their differences, will equally tend to appreciate the domestic currency on the foreign exchange market. In figure 3, this event implies an upward shift in the locus for ($\dot{e} = 0$). If you assume the periphery to be initially located in point *A*, it is obvious that this point will not represent an equilibrium any longer after the above changes take place. Quite the opposite, the exchange rate will effectively start to appreciate. Easy access to foreign finance and a more appreciated exchange rate will in turn raise $\widehat{L_Z}$, $\widehat{P_Z}$, and ultimately ρe via equation (9.b). A more or less protracted financial boom may unfold. The exchange rate will appreciate even further; ρe will increase together with PZ; portfolio capitals will abundantly flow into the economy allowing domestic financial institutions to get easily indebted on international financial markets. This trend is represented in Figure 3 by the dashed black line moving rightward from point C towards point B.

As sketched before, such a state of euphoria will not last forever. Indeed, the explosive dynamics of "*e*" and "ρ^e " will also give rise to considerable imbalances in the fundamentals of the periphery. First, a too much appreciated exchange rate can likely cause a sizable trade deficit to emerge, which may in turn warn financial operators that a reversal in the dynamics of the exchange rate will soon or later come in. Second, such newly established depreciation pressures will further reinforce due to rising interest payments domestic financial institutions have to deal with as a consequence of their speculation-led (high) exposure on international financial markets. When the depreciation of the exchange rate will effectively start as a consequence of these misalignments, the financial party will get closer to an end. Indeed, the balance sheet of domestic financial operators will become more fragile. Accordingly, they will start to withdraw from further investments in the domestic speculative sector. The apparently endless rise in ρ^e will stop. Sudden stops in portfolio inflows will follow soon, setting the stage for financial turmoil in the periphery. All these stages of a mounting financial crisis are well described by the cyclical dynamics characterising the evolution of the economy in the neighbourhood of point *B*.

The harsh consequences such boom-and-bust financial cycles may entail for the real economy are well known. Indeed, they are at the centre of most theoretical and empirical analyses about the disruptive destabilising effects huge and volatile portfolio flows may display in developing countries. In the present paper, we want to broaden this perspective by better investigating the possible *permanent* effects such *temporary* booms may bear on the long-run development trajectory of peripheral economies. In particular, we care about how short-lived episodes of financial euphoria might permanently alter by the productive structure of developing countries and jeopardise their long-term development path. This is the topic we deal with in Section III of this paper.

III. Possible long-run damages of volatile portfolio booms and unstable financial euphoria

The idea that the process of economic development is tightly connected to the evolution of the productive structure of an economic system is a well-known and extensively investigated topic in the economic literature. On the one hand, this idea dates back to the seminal work by Raul Prebisch (1949), in which he investigated the reasons of the persistent backwardness of Latin American economies with respect to developed Western countries. Prebisch's view has been subsequently developed by the wide battery of BoP-constrained models, in which economic growth in the periphery is constrained by the need to keep the external account balanced, which in turn hinges upon the type of goods the periphery can produce and exports or, alternatively, it has to import from abroad (Cimoli, 1988; McCombie and Thirlwall, 1994; Dutt, 2003; Cimoli et al., 2010; Araujo and Lima, 2007; Thirlwall, 2011). On the other hand, from an empirical point of view, the studies by Chenery and Syrquin (1975, 1986) stand out as pioneering early attempts to measure the effects of structural change (i.e. the transformation of a system from a rural economy to an industrialised one) on labour productivity and economic development. In a way, the more recent contributions about the linkages between productive diversification and development (Imbs and Warzciag, 2003; Klinger and Lederman, 2004), as well as between product and export complexity and growth (Hausmann et al., 2007; Hidalgo et al., 2007; Felipe et al., 2012) all represent refined and advanced re-elaborations of those original works.

In the literature about economic development and structural change, manufacturing development has traditionally played a central role. This is due to the fact that the manufacturing sector has been usually described as possessing peculiar growth-enhancing properties, so that manufacturing development emerges as a necessary condition for overall economic progress. According to the seminal contributions by Nicholas Kaldor (1967), manufacturing was strategic for economic development because manufacturing presents higher level and faster growth rates of labour productivity with respect to other sectors. This peculiarity is in turn explained by better opportunities for specialization and a deeper division of labour, manufacturing displays wider scope for static and dynamic economies of scale. The more recent emphasis on the positive link between diversification, export complexity and growth still keeps an essential role for manufacturing in the overall development process. Given that manufacturing provides more opportunities than other sectors in terms of innovation, enlargement of the production space, and export diversification, manufacturing development continues to represent a "positive" structural change that feeds growth and economic take off

(Rodrik, 2009; Rajan and Subramanian, 2011). Szirmai (2012) notes that manufacturing was certainly a relevant engine of growth between 1950 and 1973, in particular in developing countries. It is still important, since that "there are no important examples of success in economic development in developing countries since 1950, which have not been driven by industrialisation" (Szirmai, 2012, p.417). Nonetheless, its centrality in the development process seems to have decreased, in developed countries at least, given a stronger role now played by services. Even acknowledging it, it is worth noting that some recent studies have cast light on the increasing complementarity between manufacturing development and service sector development (Meliciani and Savona, 2015; Castellani et al., 2016). In the last decades, manufacturing activities have considerably increased their demand for the external provision of services, in particular high value-added services related to R&D, innovation and marketing, as intermediate inputs of their production process. Such a rise in the intermediate demand for business services has in turn become a relevant factor influencing the localization of service activities (close to their manufacturing sector customers). In the end, manufacturing development is still central in the overall development process since that it may stimulate, via Hirschman-type backward and forward linkages, the growth of high-quality business services.[14]

In line with the above-mentioned literature, in this paper we stress the strategic relevance of manufacturing for the development process of peripheral countries. Accordingly, what we want to analyse is whether temporary booms in portfolio capital inflows may eventually hinder such a process by causing a premature de-industrialization of developing countries. In this regard, it is important to remember that the theoretical model presented is this paper is an extremely simplified representation of the reality. First, our model does not capture the internal complexity of the manufacturing sector. Second, it adopts a rather rough measure of industrialization or, better to say, manufacturing development (see more on this below). Third, the long-run dynamics we portray has to be intended as a very stylised description of the real development process. These points notwithstanding, the model can nevertheless shed some light and help to capture a causal relationship, which has been often overlooked in the economic literature. Booms in portfolio capital inflows, together with domestic financial speculation, do not only put growth at risk by giving rise to financial instability. They may also prompt a worrisome move of developing countries' productive structures away from manufacturing and towards other less growth-enhancing (speculation-prone) activities. This is what has been labelled in some previous contributions as the *financial* Dutch disease (Botta et al., 2016; Botta, 2017).

Consistently with the structure of our model, let assume that the level of manufacturing development characterising the peripheral economy is captured by the ratio (k) of the manufacturing sector capital stock over the value of the speculative sector. This is formally stated in equation (10):

$$k = \frac{P_M K_M}{P_Z Z} \qquad (10)$$

The evolution, through time, of (k) depends on the dynamics of several components. As far as the dynamics of the price P_M of the manufactured good is concerned, given equation (6), it hinges upon the joint dynamics of manufacturing labour productivity ($\hat{a}$) as well as of the nominal wage rate ($\hat{w}$) – see equation (11):[15]

$$\widehat{P_M} = \hat{w} - \hat{a} \qquad (11)$$

[14] See also Rocha (2018) for a comprehensive review of the theoretical arguments according to which manufacturing played and still plays a crucial role in the development process of developing countries.

[15] Equation (6), together with equation (11), implicitly assumes that the manufactured capital good is produced domestically, and that the determination of its price mainly depends on the evolution of home economy labour costs. This is certainly not true for most developing countries, in which a considerable part of the capital goods utilised in manufacturing productions are imported from abroad. This caveat notwithstanding, it is important to stress that the inclusion of *imported* capital goods in our model does not change at all its logic, but it rather reinforces it. Let assume, for instance, that K_M is imported from abroad. Accordingly, we would take its (dollar-denominated) price P_M as exogenously given and dependent on the exogenous dynamics of central economies only. Similarly to what done in the present model, we would keep P_M constant. Also, in order to make the comparison between investments in manufacturing and in the speculative sector meaningful (and comparable), we should express the price P_Z of the domestic speculative good *in foreign currency*, i.e. $P_Z^f=(P_Z/e)$. It is evident that P_Z^f would rise twofold during a phase of financial euphoria, in which P_Z increases and the nominal exchange rate appreciates (i.e. "e" decreases). In the end, the inclusion in our model of imported manufactured capital goods would simply make the negative effects of booming portfolio inflows and financial speculation over domestic industrialization even more acute.

Also imagine that the growth rate of monetary wages is determined by the growth rate of labour productivity (i.e. $\hat{w} = \hat{a}$), so that the price P_M eventually stays constant. Of course, this is a simplifying assumption. Nevertheless, it does not alter the logic of the model, whilst it makes easier to get its implication (see more on this below).[16]

Finally, we assume that the growth rate of labour productivity is a positive function $\alpha(.)$ of the relative development of the manufacturing sector (k) – see equation (12). More specifically, it is assumed that the growth rate of manufacturing labour productivity behaves as an inverted U-shaped curve with respect to the evolution of k. At the beginning of the develop process (i.e. when k is relatively small), a rather low growth rate of labour productivity tends to accelerate alongside with the progressive industrialization of the economy (i.e. a rising value of k). This is precisely due to the growth-enhancing properties that are historically associated to the manufacturing sector in the development process of developed economies, thanks to the internal static and dynamic increasing returns, but also to the technological spill-overs it carry out on the performance of other sectors, agriculture and services alike (Szirmai, 2012; Naraguchi et al., 2017). At more advanced stages of this process, the positive link between manufacturing development and productivity growth weakens. This may be the result of the exhaustion of those economies of scale, in particular *static* economies of scale, which have historically characterised the evolution of medium-tech large scale manufacturing industries at the centre of the development process in the golden age of capitalism (1950-1973), but increasingly less important thereafter. More in general, such an inverted U-shaped behaviour of labour productivity growth seems to be consistent with the historical data about the development experience of industrialised developed economies as well as of East Asian newly industrialised ones as well (Glyn et al., 1990; Maddison, 2001; OECD, 2015; UNCTAD, 2016).

$$\hat{a} = \alpha(k) \qquad (12)$$

Given equations (4), (10), (11) and (12), equation (13) below describes the *relative* dynamics of manufacturing (with respect to the speculative sector) in the periphery. Such dynamics is graphically portrayed in figure 4, where we plot together equations (12) and (13).

$$\hat{k} = g(\underbrace{\hat{a}}_{+}, \underbrace{e}_{-}) - \left(\widehat{P_z} + \hat{Z}\right) \qquad (13)$$

More specifically, in figure 4 we portray the evolution of the growth rate of (manufacturing) labour productivity as given by the degree of relative development of the domestic manufacturing sector. On top of this, we report the geometric locus that ensures (k) to remain constant. It is reported as a straight horizontal line in correspondence of the specific growth rate of labour productivity (α*), which, *ceteris paribus*, given "e" and "P_Z", would ensure the existence of stable productive structure in the periphery.[17]

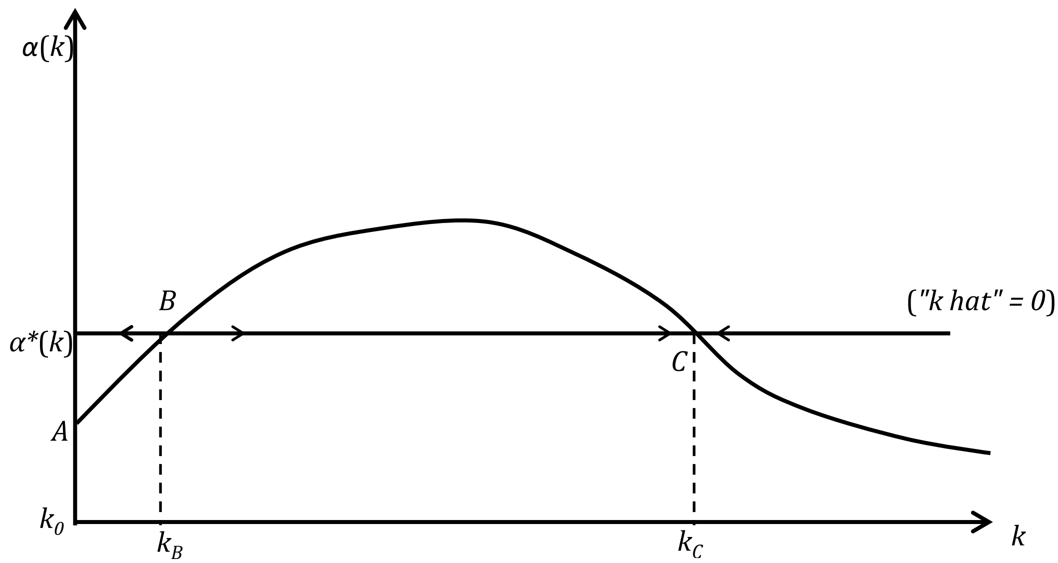
For the sake of our analysis, in figure 4 we show the case for three long-run equilibria, that is one corner solution (k_0) and two internal steady states (k_B and k_C). It goes without saying that this is just one among several different scenarios. Indeed, the locus for ($\hat{k} = 0$) may constantly lie above the inverted U-shaped curve $\alpha(k)$ without intersecting it, so that only one corner solution (k_0) with no relative manufacturing development would exist. Alternatively, we may have the opposite case, in which $\alpha(k)$ is persistently higher than $\alpha*$ for any value of k (i.e. $\alpha(k) > \alpha* \; \forall k \geq 0$), so that no equilibrium would exist, and k would increase boundless). Finally we may have the case of one single internal equilibrium, should

[16] Rigorously speaking, equations (6) and (11) take into account the levels and growth rates of nominal wages and labour productivity in the manufacturing sector only. However, given the leading role manufacturing historically carried out as major driver of the overall development process, we may assume that the dynamics of nominal wages and labour productivity in manufacturing are somehow transferred to the whole economy. As far as nominal wages are concerned, our assumption is in turn consistent with the rationale of the well-known Balassa-Samuelson effect.

[17] We could also modify figure 4 by plugging equation (12) into (13), and representing equation (13) as a dynamic equation in which $\hat{k}$ depends on k. In this case, we would have reshaped equation (13) as an inverted U-shaped curve intersecting the "x-axis" twice in correspondence of k_B and k_C.

$\alpha(0) > \alpha^*$ but $\alpha(k) < \alpha^*$ for $k > k_C$.[18] In interpreting the economic implications of figure 4, it is important to note that points *B* and *C* imply equal rates of growth of labour productivity, but different levels of it. Indeed, the development traverse from point *B* to point C (i.e. the development traverse experienced by successful developed economies) implies an acceleration of the growth rate of labour productivity itself, so that the level of labour productivity (as well as nominal and real wages) will be certainly higher in the equilibrium point *C* than in the equilibrium point *B*. In a way, we may conceive point *B* as the apparently permanent state of (relative) underdevelopment characterising most developing countries with respect to developed economies located in point *C*.

Figure 4
(Relative) manufacturing development, labour productivity growth and finance-led development traps



Source: Elaborated by the author.

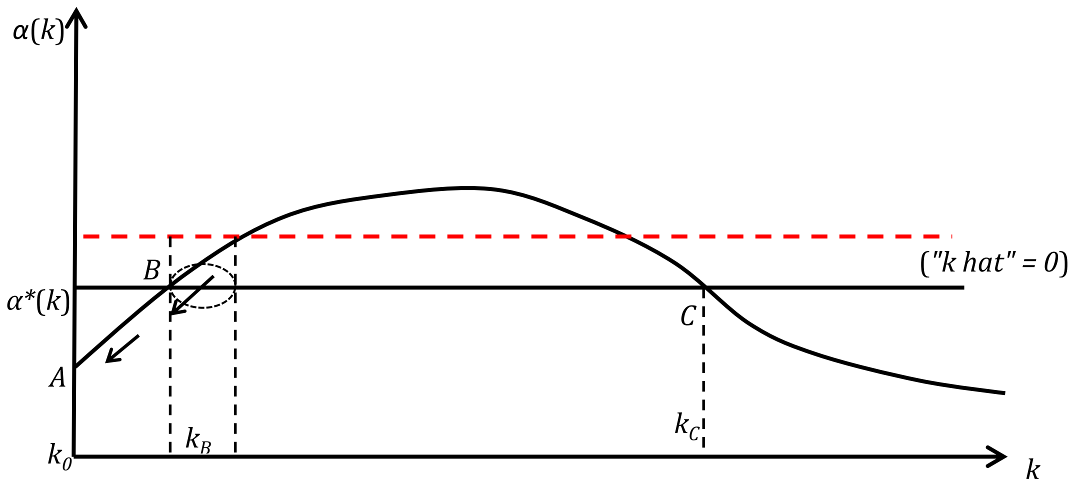
Given such a scenario, now assume that our developing country is in the equilibrium point *B* or in its neighbourhood, on the right side. Also imagine that a temporary boom in portfolio inflows starts, together with domestic financial speculation, the appreciation of the nominal exchange rate and the rise in the price of the speculative asset "*Z*" as described in figure 3. Such a climate of financial euphoria, even though temporary, will imply, at least for a while, an upward shift of the locus for ($\hat{k} = 0$), see the dashed red line in figure 5 below. On the one hand, the appreciation of the nominal exchange rate "*e*", by causing an appreciation of the real exchange rate, will curtail the international competitiveness of the domestic manufacturing industry, thus discouraging investment and capital accumulation in that sector. On the other hand, $\widehat{P_z}$ and $\hat{Z}$ will undoubtedly increase. A rise in the growth rate of labour productive α^* would be required in order to keep $\hat{k} = 0$.

Now: it is easy to see that, as a consequence of these changes, the process of manufacturing development, whether underway, could be likely reverted. Without the necessary increase in the growth rate of labour productivity, the manufacturing sector will shrink, at least in relative terms with respect to the domestic speculative sector. This will in turn bring down the growth rate of labour productivity, as well as the dynamics of monetary (and real) wages, this way causing a second-round contraction in manufacturing sector investments due to a lower expected expansion of domestic demand. Although a virtuous process of manufacturing development was taking place before the beginning of the financial "party", "our" economy

[18] $\alpha(0)$ stands for an exogenous growth rate of labour productivity which would exists anyway despite a largely underdeveloped manufacturing sector in a rural economy. Of course, it might be very close to zero.

will eventually undergo a process of premature *finance-led* de-industrialization, and end up stuck in an underdevelopment trap as portrayed by the corner equilibrium point *A* (as well as by the trajectory towards it).

Figure 5
Long-run perverse development effects of temporary portfolio inflows and financial booms



Source: Elaborated by the author.

In response to the abovementioned concerns, one might object that financial euphoria and booming portfolio capital inflows would be temporary phenomena only. More than this, they may eventually bring to a final collapse of the exchange rate, and the price of the domestic speculative asset may likely overshoot in the final stages of the financial boom. Accordingly, sooner or later, the locus for constant values of *k* may move back towards its original position or move even below in the event of a strong enough final devaluation of the exchange rate. After a phase of slowdown and regression, the process of manufacturing development might then resuscitate. Despite this objection is logically correct, the concern that the temporary initial phase of financial exuberance can produce perverse long-run development consequences is still there. Indeed, the final depreciation of the exchange rate and the partial contraction of the speculative sector "*Z*" will not be able to bring back (manufacturing) development on its track if they do not take place quickly and/or they are not enough intensive. Once the economic system is located in point *A* or close to it, nothing would be able to revert the process of de-industrialization just experienced (unless the downward shift of the locus for ($\hat{k} = 0$) would be so intensive to move it below point *A*). Moreover, the burst of financial booms associated with the ensuing reductions in the nominal exchange rate and the price of financial assets usually comes together with significant degrees of financial dislocations, widespread bankruptcies, and economic contractions. In such a shaky economic and financial environment, it might be hard to see any resurgence in productive investments, particularly of manufacturing investments. Stable and optimistic economic forecasts are basic conditions for a sustained development process to unfold. The more or less protracted period of "structural adjustments" often following the end of financial "parties" in developing countries certainly does not feed optimistic expectations. Unfortunately, the idea that "financial parties" may eventually induce a permanent state of "development hangover" is more than a theoretical speculation.

IV. Some concluding policy implications

Economic processes are often characterised by significant degrees of cumulativeness and path-dependence. The trajectory followed by an economic variable in the future may be strongly influenced by previous shocks and its own past dynamics. This is particularly true when it comes to structural change and productive development, which are shaped and directed by the knowledge, competencies and capabilities accumulated in the past. In light of this evidence, the macroeconomic management of short-run shocks and temporary medium-term trends should not be considered as different policy issues with respect to long-run development policies.

In the first part of this paper we show how temporary booms in portfolio capital inflows and financial speculation in developing countries interact and may give rise to boom-and-bust financial dynamics. Temporary appreciations in the nominal (and real) exchange rate and steep rises in the prices of domestic speculative assets usually characterise such episodes of financial euphoria before heightened volatility and downward (more or less abrupt) corrections of previous trends eventually sign the end of the "party". On top of the concern for such macroeconomic instability, in the second part of the paper we discuss how these phenomena may bear permanent perverse consequences on the development process of developing countries if they trigger a process of premature de-industrialization by making domestic manufacturing uncompetitive and an unappealing investment opportunity.

Our analysis can inform a number of policy choices. The first consideration is related to the need of introducing tight controls on capital movements, short-run portfolio capital inflows in particular. There is a widening consensus among economists about the destabilizing effects that complete financial account liberalization may have on developing countries' economies (Ostry et al., 2016). Accordingly, controls and restrictions to short-term capital flows increasingly appear as welcome policy measures, which may turn out to be usefully to tame foreign capitals-led destabilising dynamics. Given the widespread agreement on this general stand, here we want to illustrate the more specific perspective put forward by Akyüz (2014), who supports the introduction of *quantitative* restrictions impeding short-term capitals to enter the economic system. Macroeconomic policies have very often to deal with unresolvable dilemmas when they try to counteract the undesired effects of massive capital inflows.

Monetary authorities, for instance, may try to curb the appreciation of the exchange rate by piling up foreign reserves. Nonetheless, they can do so only at the cost of increasing the liquidity circulating in the economy, which may in turn contribute to ignite a likely unsustainable credit booms. In response to such a risk, monetary institutions may then try to sterilise the new money injecting in the system through open market operations in which they sell domestic government bonds. In doing this, however, they will cause an increase in the yields on government bonds and in the benchmark interest rate, thus making carry trade even more appealing. As for fiscal policy, it would be certainly wise to adopt a precautionary restrictive stance in times of bonanza in order to have wide margins of manoeuvre in the event of a subsequent downturn. However, following Akyüz (2014), fiscal policy in developing countries often acts pro-cyclically, endogenously becoming more expansionary when financial constraints (temporarily) appear slackened. On top of this, and perhaps more relevantly, there is not any wise fiscal stance that can easily tame and counteract unstable dynamics in the private sector. In the past, the bailout of over-indebted domestic financial institutions by local governments has eventually transformed a private debt crisis into a public debt one, even in countries with apparently very solid and safe fiscal stances. Ultimately, the rush adoption of restrictions to capital outflows may come too late or untimely, or it risk making speculative attacks deeper. Given these intrinsic contradictions (or weaknesses) in the policy responses to massive portfolio capital flows, the best policy option is to act ahead of time and quantitatively reduce, from the very beginning, the size of short-term portfolio capitals that may possibly enter the economy. In terms of our model, such restrictions would forcefully cut L_f, and impede domestic financial actors to get easily indebted in foreign currency on international financial markets. They should become even more binding when “push factors” are playing, i.e. all along the flat part of the $L^S{}_f$ curve in figure 1, when international financial markets flood of liquidity created by the centre (perhaps in response to a financial shock in the centre itself) and look for higher returns in the periphery.

A second policy implication of our model is about domestic monetary policy. Indeed, quantitative restrictions to portfolio capital inflows should come hand in hand with a developmentalist monetary policy, which, without neglecting inflation, does not take the control of it as its sole goal. More in details, a developmentalist monetary policy should imply the adoption of a rather stable and *low* benchmark interest rate i_{CB}. This strategy would in turn bear positive consequences on both short-term macroeconomic stability and long-run development. First, a low domestic interest rates reduces the incentives for carry trade, hence eliminating (or weakening, at the very least) a source of speculative trading connecting domestic to international financial markets. Gallagher and Prates (2014) well document how carry trade is at the core of the financialization of the Brazilian economy, which has in turn contributed to make the resource curse in Brazil in the first decade of the 2000s even more acute. Squeezing carry trade is quintessential to avoiding short-to-medium-term unstable dynamics in the financial sphere of the economy worsened macroeconomic instability and perversely feed back with real sector (natural resource) diseases. Second, low and stable interest rates usually encourage long-term productive investment, including manufacturing investment. In our model, a reduction in i_{CB} may cause “g” to rise. *Ceteris paribus*, this might certainly help to keep domestic industrialization on track regardless of any temporary phase of financial euphoria.

A final consideration refers to the importance of productivity dynamics and of “a fair” distribution of its fruits to domestic workers for the long-run development of the economy. Figures 4 and 5 actually show that long-run underdevelopment traps may exist if productivity dynamics in largely underdeveloped countries (in which manufacturing is small with respect to other sectors more easily affected by speculation) is very low (i.e. if $\alpha(0) < \alpha^*$). More than this, underdevelopment traps materialise, and manufacturing development can hardly take place, if increases in labour productivity are not transferred into increases in domestic nominal and real wages, which may stimulate manufacturing development by creating enough effective demand for domestic goods. Indeed, the “transfer” of all the benefits of domestic productivity dynamics to the joy of foreign consumers (through reductions in the price of homemade goods), i.e. a well-known problem to early structuralist economists, or the “fallacy of composition” among low-priced manufacturing exports of emerging economies, can still constitute serious constraints to the development process of backward economies.[19] In such a context, industrial and technological policies may play a fundamental role in *exogenously* boosting the dynamics of domestic labour productivity (i.e. to increase $\alpha(0)$), and creating the necessary conditions for manufacturing development to start. On top of this, fair increases in domestic wages, which are in line with the dynamics of labour productivity but do not jeopardise international competitiveness, may contribute to give rise to an equitable social environment, which can certainly foster entrepreneurs' animal spirits and their willingness to invest in the real sector of the economy. Actually, the intertwined evolution of labour productivity and wages was one of the distinguishing features of the golden age of capitalism in the developed economies until the beginning of the 1970s. It might perhaps be useful to revive this theoretical framework for the developing countries of today.

19 It is important to note that, in our model, such a constraint to development materialises unless the responsiveness of manufacturing investment to a higher international competitiveness more than compensates for the detrimental effects of a lower domestic demand.

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Annex

Mathematical Appendix

In the mathematical appendix to this paper, we report the full list of partial derivatives (as evaluated at the steady state) that determine the stability properties of the multiple equilibria scenario described in the main text. Let's start with the partial derivatives related to equation (8). Equations (a.1) and (a.2) below report the partial derivatives of $\dot{e}$ with respect to "e" and ρ^e respectively.

$$\left.\frac{\partial \dot{e}}{\partial e}\right|_{\dot{e}=0} = \left[\frac{\partial \theta}{\partial TB}\frac{\partial TB(e^{SS})}{\partial e} + \frac{\partial \theta}{\partial L_f}\frac{\partial L_f(e^{SS})}{\partial e} + \frac{\partial \theta}{\partial \gamma}\frac{\partial \gamma}{\partial (i_{int}L_f)}\frac{\partial (i_{int}(e^{SS})L_f(e^{SS}))}{\partial e}\right] \qquad \text{(a.1)}$$

With $\frac{\partial \theta}{\partial TB} < 0; \frac{\partial TB(e^{SS})}{\partial e} > 0; \frac{\partial \theta}{\partial L_f} < 0; \frac{\partial L_f(e^{SS})}{\partial e} < 0; \frac{\partial \theta}{\partial \gamma} < 0; \frac{\partial \gamma}{\partial (i_{int}L_f)} < 0; \frac{\partial (i_{int}(e^{SS})L_f(e^{SS}))}{\partial e} < 0$

$$\left.\frac{\partial \dot{e}}{\partial \rho^e}\right|_{\dot{e}=0} = \left[\frac{\partial \theta}{\partial L_f}\frac{\partial L_f(e^{SS})}{\partial \rho^e} + \frac{\partial \theta}{\partial \gamma}\frac{\partial \gamma}{\partial (i_{int}L_f)}\frac{\partial (i_{int}(e^{SS})L_f(e^{SS}))}{\partial \rho^e}\right] \qquad \text{(a.2)}$$

With $\frac{\partial L_f(e^{SS})}{\partial \rho^e} > 0; \frac{\partial (i_{int}(e^{SS})L_f(e^{SS}))}{\partial \rho^e} > 0$

From equation (a.1), it clearly emerges that the assumption of a positive destabilising relation between the time derivative of "e" and its current value hinges upon the absolute value of $(\partial\theta/\partial L_f)$, with respect to $(\partial\theta/\partial TB)$. Indeed, in a time of massive increases in the amount of international financial flows with respect to the international trade of goods and services, it is reasonable to assume that $(\partial\theta/\partial L_f) \gg (\partial\theta/\partial TB)$, and that capital movements play a far more relevant role than trade in the determination of the dynamics of the exchange rate.

When it comes to the effect that ρ^e plays on $\dot{e}$, two opposite forces are at work. On the one hand, given $(\partial\theta/\partial L_f) < 0$, the positive impact of ρ^e on L_f (i.e. $\left(\partial L_f(e^{SS})/\partial\rho^e\right) > 0$) will induce the exchange rate to appreciate. On the other hand, the increase in debt payments, i.e. $(\partial\left(i_{int}(e^{SS})L_f(e^{SS})\right)/\partial\rho^e)$ will tend to push in the opposite direction. The net effect that ρ^e will eventually bear on $\dot{e}$ likely depends on the state of the credit boom. At the beginning of the story, with a rather flat L^S_f curve, domestic borrowers may be able to receive increasing amount of foreign resources without appreciable increases in the agreed interest rate and in the corresponding debt service. Accordingly, we will have $\left(\partial L_f(e^{SS})/\partial\rho^e\right) > (\partial\left(i_{int}(e^{SS})L_f(e^{SS})\right)/\partial\rho^e))$ and an appreciation in the nominal exchange rate. Things may start to change, however, as soon as the L^S_f curve gets steeper, as a sign of increasing foreign lenders' reluctance to extend more credit to domestic financial institutions. In presence of a rigid L^S_f curve, whilst $\left(\partial L_f(e^{SS})/\partial\rho^e\right)$ will tend to zero, $(\partial\left(i_{int}(e^{SS})L_f(e^{SS})\right)/\partial\rho^e)$ will increase considerably, as due to the quick rise in the international interest rate (see figure 1). It is easy to see how these facts will turn $(\partial\dot{e}/\partial\rho^e)$ into positive and set the stage for an exchange rate devaluation.

Equations (a.3) and (a.4) define the partial derivatives related to equation (9.b) and to the evolution of net expected capital gains. The sign of equation (a.3) is negative. The sign of equation (a.4), in turn, depends on the interplay between $(\partial\widehat{L_Z}(\rho^e_{SS})/\partial\rho^e)$ and $(-((\partial\hat{Z}(\rho^e_{SS})/\partial\rho^e) + 1))$. Consistently with the analysis provided in the main text, it is reasonable to assume that the first positive term prevails at the beginning of the financial boom, whilst the second negative term will prevail in a later stage, given that the positive impact ρ^e bears on $\widehat{L_Z}$ will progressively vanish and tend towards zero. The "inverted U" shape of the locus for constant values of ρ^e follows straightforwardly, as portrayed in figure 3.

$$\left.\frac{\partial\dot{\rho^e}}{\partial e}\right|_{\dot{\rho^e}=0} = \eta\frac{\partial\rho}{\partial\widehat{L_Z}}\frac{\partial\widehat{L_Z}(\rho^e_{SS})}{\partial e} \qquad \text{(a.3)}$$

With $\frac{\partial\rho}{\partial\widehat{L_Z}} > 0; \frac{\partial\widehat{L_Z}(\rho^e_{SS})}{\partial e} < 0$

$$\left.\frac{\partial\dot{\rho^e}}{\partial\rho^e}\right|_{\dot{\rho^e}=0} = \eta\left[\left(\frac{\partial\rho}{\partial\widehat{L_Z}}\frac{\partial\widehat{L_Z}(\rho^e_{SS})}{\partial\rho^e} - \frac{\partial\rho}{\partial\hat{Z}}\frac{\partial\hat{Z}(\rho^e_{SS})}{\partial\rho^e}\right) - 1\right] \qquad \text{(a.4)}$$

With $\frac{\partial\widehat{L_Z}(\rho^e_{SS})}{\partial\rho^e} > 0; \frac{\partial\hat{Z}(\rho^e_{SS})}{\partial\rho^e} > 0$

The saddle-path instability that characterises equilibrium A in figure 3 requires det.(JA) to be negative. From a formal point of view, we get:

$$\text{det.}(J_A) = \left(\left.\frac{\partial\dot{e}}{\partial e}\right|_{(\dot{e}=0)_A} * \left.\frac{\partial\dot{\rho^e}}{\partial\rho^e}\right|_{(\dot{\rho^e}=0)_A}\right) - \left(\left.\frac{\partial\dot{\rho^e}}{\partial e}\right|_{(\dot{\rho^e}=0)_A} * \left.\frac{\partial\dot{e}}{\partial\rho^e}\right|_{(\dot{e}=0)_A}\right) < 0 \qquad \text{(a.5)}$$

After rearranging terms and keeping in mind the positive value of $\left((\partial\dot{\rho^e}/\partial\rho^e)\left|(\dot{\rho^e}=0)_A\right.\right)$, *condition (a.5) is verified when the positively sloped locus for* $(\dot{e}=0)$ *is steeper than the locus for* $(\dot{\rho^e}=0)$ *in the neighbourhood of equilibrium A:*

$$-\left.\frac{\overset{-}{(\partial\dot{e}/\partial\rho^e)}}{\underset{+}{(\partial\dot{e}/\partial e)}}\right|_{(\dot{e}=0)_A} > -\left.\frac{\overset{+}{(\partial\dot{\rho^e}/\partial\rho^e)}}{\underset{-}{(\partial\dot{\rho^e}/\partial e)}}\right|_{(\dot{\rho^e}=0)_A}$$

In figure 3, this condition is clearly met.

The local stability of equilibrium B in figure 3 is crucial in our analysis. The stability conditions for the cyclical dynamics in the neighbourhood of point B to converge back to the equilibrium require det.(J_B) > 0. Such a condition is satisfied when the locus for constant values of "e" is steeper, in absolute value, than the locus for constant values of ρ^e. More formally:

$$\text{det.}(J_B) = \left(\left.\frac{\partial\dot{e}}{\partial e}\right|_{(\dot{e}=0)_B} * \left.\frac{\partial\dot{\rho^e}}{\partial\rho^e}\right|_{(\dot{\rho^e}=0)_B}\right) - \left(\left.\frac{\partial\dot{\rho^e}}{\partial e}\right|_{(\dot{\rho^e}=0)_B} * \left.\frac{\partial\dot{e}}{\partial\rho^e}\right|_{(\dot{e}=0)_B}\right) > 0$$

Rearranging terms by taking into account the signs of the partial derivatives computed in the equilibrium point B, we get:

$$\text{det.}(J_B) > 0 \text{ if } \left.\frac{\overset{+}{(\partial\dot{e}/\partial\rho^e)}}{\underset{+}{(\partial\dot{e}/\partial e)}}\right|_{(\dot{e}=0)_B} > \left.\frac{\overset{-}{(\partial\dot{\rho^e}/\partial\rho^e)}}{\underset{-}{(\partial\dot{\rho^e}/\partial e)}}\right|_{(\dot{\rho^e}=0)_B} \text{ that is:}$$

$$\frac{\left[\frac{\partial\theta}{\partial L_f}\frac{\partial L_f(e^{SS})}{\partial\rho^e} + \frac{\partial\theta}{\partial\gamma}\frac{\partial\gamma}{\partial(i_{int}L_f)}\frac{\partial(i_{int}(e^{SS})L_f(e^{SS}))}{\partial\rho^e}\right]}{\left[\frac{\partial\theta}{\partial TB}\frac{\partial TB(e^{SS})}{\partial e} + \frac{\partial\theta}{\partial L_f}\frac{\partial L_f(e^{SS})}{\partial e} + \frac{\partial\theta}{\partial\gamma}\frac{\partial\gamma}{\partial(i_{int}L_f)}\frac{\partial(i_{int}(e^{SS})L_f(e^{SS}))}{\partial e}\right]} > \frac{\left[\left(\frac{\partial\rho}{\partial\widehat{L_Z}}\frac{\partial\widehat{L_Z}(\rho^e_{SS})}{\partial\rho^e} - \frac{\partial\rho}{\partial\hat{Z}}\frac{\partial\hat{Z}(\rho^e_{SS})}{\partial\rho^e}\right) - 1\right]}{\frac{\partial\rho}{\partial\widehat{L_Z}}\frac{\partial\widehat{L_Z}(\rho^e_{SS})}{\partial e}} \qquad \text{(a.6)}$$

A quick analysis of condition (a.6) reveals that it will more likely fulfil the lower is $(\partial L_f(e^{SS})/\partial\rho^e)$ and the higher is $(\partial(i_{int}(e^{SS})L_f(e^{SS}))/\partial\rho^e)$ at the numerator of the left-hand side of condition (a.6). Indeed, this is what happens when the increasing demand for foreign funds "LDf" by domestic financial institutions "has gone too far" (as due to "excessive" values of ρe) and intersects the supply of foreign funds in the rigid part of the "LSf" curve (see figure 1). We obtain similar implications the higher is the absolute value of the partial derivative $(\partial\left(i_{int}(e^{SS})L_f(e^{SS})\right)/\partial e)$ at the denominator of the left-hand side of condition (a.6) (which partially compensate for the positive term $(\partial\theta/\partial L_f)\,(\partial L_f(e^{SS})/\partial e)$), or the more promptly and intensively domestic financial institutions cut investments in the domestic speculative asset as a consequence of a heightened balance sheet fragility (i.e. when $(\partial\widehat{L_Z}(\rho^e_{SS})/\partial e)$ is relatively high at the denominator of the right-hand side of condition (a.6)).

The complementary condition for B representing a stable equilibrium requires tr.(JB) < 0. Given equations (a.1) and (a.4), this implies:

$$\left[\frac{\partial\theta}{\partial TB}\frac{\partial TB(e^{SS})}{\partial e}+\frac{\partial\theta}{\partial L_f}\frac{\partial L_f(e^{SS})}{\partial e}+\frac{\partial\theta}{\partial\gamma}\frac{\partial\gamma}{\partial(i_{int}L_f)}\frac{\partial(i_{int}(e^{SS})L_f(e^{SS}))}{\partial e}\right]<-\eta\left[\left(\frac{\partial\rho}{\partial\widehat{L_Z}}\frac{\partial\widehat{L_Z}(\rho^e_{SS})}{\partial\rho^e}-\frac{\partial\rho}{\partial\hat{Z}}\frac{\partial\hat{Z}(\rho^e_{SS})}{\partial\rho^e}\right)-1\right] \quad \text{(a.7)}$$

Once again, it is easy to see that condition (a.7) more likely holds true when $(\partial(i_{int}(e^{SS})L_f(e^{SS}))/\partial e)$ is large enough to largely (although not completely) compensate for $(\partial\theta/\partial L_f)\,(\partial L_f(e^{SS})/\partial e)$. By the same token, a relatively responsive trade balance to variations in the exchange rate will also contribute to make equilibrium B stable. Last but not least, the faster $(\partial(\widehat{L_Z}(\rho^e_{SS}))/\partial\rho^e)$ will tend towards zero, the relatively larger will become, in absolute value, the term into square brackets on the right-hand side of condition (a.7). Accordingly, stabilising forces will tend to prevail, this way softening cyclical dynamics in the neighbourhood of point B.

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