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SUMMARY

Explanatory notes

The following symbols are used in tables in the *Review*:

… Three dots indicate that data are not available or are not separately reported.

(–) A dash indicates that the amount is nil or negligible.
A blank space in a table means that the item in question is not applicable.

(-) A minus sign indicates a deficit or decrease, unless otherwise specified.

(.) A point is used to indicate decimals.

(/) A slash indicates a crop year or fiscal year; e.g., 2006/2007.

(-) Use of a hyphen between years (e.g., 2006-2007) indicates reference to the complete period considered, including the beginning and end years.

The word "tons" means metric tons and the word "dollars" means United States dollars, unless otherwise stated. References to annual rates of growth or variation signify compound annual rates. Individual figures and percentages in tables do not necessarily add up to the corresponding totals because of rounding.

KEYWORDS

United States
Financial crisis
Financial institutions
Securities
Gross domestic product
Credit
Unemployment
Investments
Capital movements
Exports
Economic indicators
Latin America

The bigness of smallness:
The financial crisis, its contagion mechanisms and its effects in Latin America

Daniel Titelman, Esteban Pérez Caldentey, Ramón Pineda

This paper has two purposes. First, it seeks to explain the reason why a relatively small shock (in the subprime market in the United States) had a systemic effect on the world economy. It is argued that this responds to the combination of off balance sheet funding and pro-cyclical leverage management. Second, it analyses the transmission mechanisms and the possible effects of the crisis on Latin American economies. Past crises had generalized, deep and enduring effects across the region, and restricted access to external finance and the disruption of international trade turned out to be their main channels transmission. In spite of specificities, the current episode and its manifestations are not an exception to the pattern of previous crises. The final outcome will depend on the type of recovery that takes place in the developed world and on the effectiveness of the counter-cyclical policies applied in Latin America.

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I
Introduction

The current international financial crisis, which is considered to be the most severe since the Great Depression, is set in the context of unprecedented global imbalances and high levels of international liquidity. The build up of liquidity was channelled through the banking system to the real estate sector, including to borrowers with a high risk profile, significantly bidding up initially house prices and eventually those of other assets as well. This was facilitated and enhanced by a process of financial innovation in the context of unregulated markets.

The current international crisis began in a relatively small segment of the real estate market of the United States, the subprime market, which represented roughly 4% of all United States financial assets. However, the crisis did not remain focalized within that submarket and the consequent contagion effects, felt in the real and financial sectors of the developed world, have by far outstripped the initial losses. Moreover, the effects have also spread to emerging market regions of the world, including Latin America.

The purpose of this paper is twofold. First, it seeks to shed light on one of the most fundamental and enduring questions regarding the crisis, namely: how can a shock to such a small segment of the real estate market in the United States trigger such a worldwide debacle?[1] In other words, how can something so small turn into something so big? Second, bearing in mind the systemic character of the crisis, the paper identifies the possible effects of the crisis on Latin American economies and transmission mechanisms involved. The paper is structured accordingly in two parts.

The first part argues that the disproportion between the relatively small size of the sector that triggered the crisis (the subprime sector) and the importance of the magnitude of its effects on asset values and the systemic worldwide contagion is rooted in the combination of off balance sheet funding and pro-cyclical leverage management. Off balance sheet funding set the stage for the crisis, and pro-cyclical leverage management acted as the amplifier mechanism. This combination led eventually to a contagion process characterized by generalized and cumulative asset price deflation, which led to significant contractions in financial institutions' balance sheets. This in turn reduced financial institutions' lending capacity and paved the way for a worldwide credit crunch.

The second part provides an analysis of the transmission mechanisms of the current crisis and its effects on Latin American economies using as a benchmark past crises, including the debt crisis (1980-1983), the United States savings and loan crisis (1987-91), the Mexican crisis (1994-1995), the Asian-Russian crisis (1997-1999) and the Argentine crisis (2001-2002).[2]

The analysis indicates that, in general, international financial crises have deep and enduring negative effects on the region's economies. Also, the evidence presented shows that the main transmission channels, albeit not always acting jointly, include restricted access to external finance and the contraction of international trade flows. Both transmission channels are present in the current episode even though the initial effects of the crisis have not been as severe as in past episodes. Finally, regardless of countries' initial conditions, the negative economic results and the restricted access to external finance has affected a large number of countries across the region. In short, the available empirical evidence suggests that in the case of Latin

☐ The authors are grateful to Cecilia Vera and Pablo Carvallo for their valuable comments and suggestions.

[1] Blanchard (2008) poses a similar question: 'how can such a small trigger have such enormous effects', which is the basic question surrounding the current crisis. For analyses along similar lines, see Eichengreen (2009) and Greenlaw et. al. (2008).

[2] Eichengreen, Rose and Wyplosz (1996), De Gregorio and Valdés (1999), Calvo and Mendoza (2000), Forbes and Rigobon (2001), Rigobon (2001), Edwards (1999) and Kamisnky, Reinhart and Vegh (2002) have identified several critical moments in the international financial markets that could be considered as systemic crisis. These episodes include the debt crisis in early 1980s, the Mexican crisis of 1994, the Asian crisis of 1997, the Russian Crisis of 1998, the Brazilian crisis of 1999, the long term capital management crisis of 2000, the Argentine crisis of 2001 and the Turkish crisis of 2002. Other examples in the literature on financial crises, such as Levean and Valencia (2008) and Reinhart and Rogoff (2008a), have identified episodes such as the savings and loan crisis in the mid-1980s, and the Scandinavian and the Japanese crises of the early 1990s as part of the "big five" financial crises in terms of financial cost.

America, the current episode and its manifestations are not an exception to the patterns of previous crises and that, as suggested by Pineda, Pérez-Caldentey and Titelman (2009), the current episode might well turn out to be a case of "old wine in new goatskins."

The strength of the expected effects will be nonetheless shaped by the duration and intensity of the crisis in the developed economies and by the effectiveness of the counter-cyclical policies announced by Latin American governments.

II

The build-up and propagation of the global financial crisis

1. The macroeconomic setting for the financial crisis

The current crisis took place in a context of global imbalances: an external account deficit in the United States, which was by far the largest and most persistent in the country's economic history, that was mirrored by significant current account surpluses in the economies of Asia (in particular China) and to a lesser extent in Middle Eastern countries.

The increased demand for dollars which translated initially into an appreciation of the dollar and the concomitant build-up in liquidity allowed the Federal Reserve Bank to undertake an expansionary monetary policy while keeping inflation at bay. The expansionary policy lasted until 2005 as shown by the decline in the Federal Funds Rate from 6.1% to 1.0% between January 2000 and May 2004. Monetary policy became less expansive thereafter. Increased liquidity was also present in world financial markets as the evolution of the LIBOR rate mirrored the movement in the Federal Fund rate.[3]

The build-up of liquidity set the stage for increased lending by the financial system to the residential real estate sector including to high credit risk borrowers (the subprime market) leading to a rapid rise in house prices and the formation of bubble in the housing market.[4] The empirical evidence shows that in the five years prior to the unfolding of the crisis the ratio of private sector credit to GDP rose from 169% to 209%. Also, the increase in liquidity was accompanied by an accumulated increase in real estate properties reaching 184%.

The increase in loans to high credit risk borrowers was facilitated and enhanced by a process of deregulation and financial innovation in the context of unregulated markets which permitted excessive risk-taking as a result of changes in the incentive structure and the relaxation and virtual circumvention of existing financial regulations and prudential provisions.[5]

2. How could such a small trigger cause such a worldwide debacle?

The housing price bubble eventually stopped expanding when real estate prices suffered a significant decline between 2006 and 2008 (30%). The ensuing initial

[3] These macroeconomic and financial conditions are not exclusive to the current situation; they were also present in other financial crises, including the Latin American debt crisis, the savings and loan crisis, the Nordic countries crisis, the Japanese crisis, the Asian crisis and the dot-com crisis, as shown in Table 11 in the Appendix.

[4] The subprime market gained importance as of the mid-1990s and especially from 2003 onwards. Data available for 2001-2006 shows that new subprime loans increased from US$ 120 billion to US$ 600 billion. A decade ago, five percent of mortgage loan originations were subprime; by 2005 the figure had jumped to approximately 20 percent. Currently, there are about US$1.3 trillion in outstanding subprime loans, with over US$ 600 billion in new subprime loans originating in 2006.

[5] The possibilities of extending loans and borrowing were expanded for financial intermediaries by several means. These included the relaxation of geographical and activity limitations on bank holding companies and new regulatory interpretations of existing law. They also comprised the expansion of activities of depository institutions to allow them to act like commercial banks, the repeal of the separation of commercial and investment banking imposed in the Banking Act of 1933, and the creation of new entities, such as private equity firms and hedge funds, within the financial sector. One important example is the Commodity Futures Modernization Act (2000) which preceded the 2007 crisis. The Act established a series of provisions affecting the regulatory and supervisory roles of the Commodity Futures Trading Commission and the Securities and Exchange Commission. At a practical level, however, the act shielded the market for derivatives from federal regulation and thus inevitably led to riskier financial practices.

defaults and losses were mainly limited to subprime mortgage loans and securities. The subprime mortgage sector is a small component of the residential sector, consisting mostly of lower-income lenders. These represented roughly 20% of all mortgage loans in 2007 and 4% of all United States assets. The losses on subprime loans and securities amounted to only roughly US$ 400 billion.[6]

However, the consequent effects of the crisis have by far outstripped the initial losses. Indeed it is estimated that the cumulative declines of United States real estate wealth and of stock market capitalization values one year after the subprime crisis reached roughly US$ 1 trillion and US$ 7 trillion dollars, respectively.

In addition, far from remaining focalized within the subprime sector of the United States, the crisis has spread widely to affect some of the most important financial institutions in the United States and in other developed countries. Moreover, the contagion effects have also reached the emerging market regions of the world. Currently it is estimated that the cumulative decline of world GDP, relative to its trend, surpasses US$ 3 trillion.[7]

The disproportion between the relatively small size of the sector which triggered the crisis (the subprime sector) and the importance of the magnitude of its effects on asset values and stock market capitalization and the systemic worldwide contagion beg an answer to the question posed in the title of this section.[8]

The answer lies in the combination of the widespread adoption of off balance sheet funding and pro-cyclical leverage management practices. Off balance sheet funding and pro-cyclical management practices are respectively analysed in the following two sections. As shown, these practices provided a working mechanism for financial contagion through generalized asset price declines and balance sheet contraction. The end result was a worldwide credit crunch and a global slowdown of economic growth.

(a) *Off balance sheet funding*

Off balance sheet funding is a form of funding that enables a firm to obtain finance: (i) without at the same time showing debt on its balance sheet and (ii) through the issue of high credit rated securities against a collateral pool of risky assets (i.e., securitization).[9] As such it enables financial institutions to obtain liquidity, improve the debt ratios that analysts use to assess the financial risk of a firm and expand their borrowing capacity.[10]

In the subprime crisis episode, off balance sheet financing was instrumented through the creation of new and independent legal entities termed special purpose vehicles (SPVs) and the sale to SPVs of a designated portfolio of assets that included residential mortgage loans.

Against this designated portfolio of assets (i.e., collaterals), the SPVs issued liabilities (i.e., debt) in the form of fixed income securities to be sold to investors. The fixed income securities, which represented a significant part of the equity of major banks in the developed world, are known as asset-backed securities (or more precisely in the subprime episode as mortgage-backed securities) (see table 1). Collateralized debt obligations (CDOs) are a special type of asset-backed security.[11]

[6] This estimate is provided by Blanchard (2008) and refers to the losses of subprime loans and securities by October 2007. This is the same estimate as that provided by Greenlaw et al. (2008). The estimate provided by Hatzius (2008) is slightly higher and of the order of US$ 500 billion.

[7] These estimates are based on Blanchard (2008).

[8] See, Eichengreen (2009), Greenlaw et al. (2008); Blanchard (2008); Hatzius (2008); Adrian and Shin (2008 a/, 2008 b/, 2008 c/) for an analysis of the effects of the crisis focusing on the disproportion between the trigger of the crisis and its effects. Prior to the crisis a similar question was posed by Bernanke et al. (1996), namely, how can small impulses provide large aggregate fluctuations in economic activity? These authors named this mechanism the financial accelerator. The IMF poses a similar question in the World Economic Outlook published in April 2009 (see page 2, Chapter 1).

[9] A more general definition is "any form of funding that avoids placing owners' equity, liabilities or assets on a firm's balance sheet." By contrast, using balance sheet funding means making any form of funding, whether equity or debt, appear on the balance sheet (see, http://www.riskglossary.com).

[10] Up until the eruption of the 2007-2008 subprime crisis, the major investment banks of the United States included Bear Sterns, Merrill Lynch, Lehman Brothers, Goldman Sachs and Morgan Stanley. Bear Sterns collapsed in 2008 and was sold to JP Morgan Chase. In spite of having weathered the Great Depression, Merrill Lynch also collapsed during the 2007 crisis and was sold in 2008 to Bank of America. Lehman Brothers filed for bankruptcy in 2008 and was bought by Barclays plc. Finally, Morgan Stanley and Goldman Sachs survived the crisis but were converted into commercial banking institutions in 2008.

[11] This is referred to in the literature as securitization. It is defined as the process of pooling assets of varying quality and risk in order to repackage them into tranches of securities that differ in liquidity, maturity, contingency and risk, and each appeal to a particular clientele of investors. Securitization started in the 1970's as a way for financial institutions and corporations to find new sources of funding —either by moving assets off their balance sheets or by borrowing against them to refinance at a lower market rate.

TABLE 1

Percentage of asset-backed securities over equity for selected financial institutions

Financial Institution	Country	Asset-backed securities *(US$ billion)*	Equity *(US$ billion)*	Asset-backed securities over equity *(In percentages)*
Citibank	United States	93	120	77.4
ABN Amro	Europe	69	34	201.1
Bank of America	United States	46	136	33.7
HBO	Europe	44	42	105.6
JP Morgan Chase	United States	42	116	36.1
HSBC	Europe	39	123	32.1
Societé Générale	Europe	39	44	87.2
Deutsche bank	Europe	38	44	87.8
Barclays	Europe	33	54	61.5
WestLB	Europe	30	9	336.6

Source: Acharya and Richardson (2009).

The SPV transferred the proceeds received from the sale of securities to the originating institution. Thus, the originating institution increased the value of its assets without showing a concomitant increase in its liabilities (debt) on its balance sheet.

The value of the principal and the interest yielded by these securities issued by the SPV depended on the cash flow produced by the designated portfolio of assets, that is, by residential mortgage loans. The SPV guaranteed that it was in a position to make the payments on its debt commitments by de-linking the credit quality of the securities it issued from the solvency status of the originating financial institution (in other words, bankruptcy was an extremely remote possibility for the SPV).

The SPV provided further protection to investors against possible losses on the underlying assets by dividing the securities issued into slices (i.e., tranches) of different seniority, broadly-speaking senior, mezzanine and junior tranches. In the case of subprime mortgages, the most junior tranche was overcollateralized.[12] The SPV tranching process implied that payments on the securities were to be first made to the senior tranches, then to the mezzanine tranches and then to the junior ones. Losses were first absorbed by the junior tranches, then by the mezzanine tranches and then ultimately by the senior tranches.

This process of subordination acted as a form of credit protection and enhancement because it protected senior asset tranches against loss of payments stemming from defaults and guaranteed a very high probability of payment. Subordination ensures that, as noted by Nadauld and Sherlund (2008 p.9), "loans that default first will destroy the principal balance of the overcollateralization before touching any tranche more senior. Only after the overcollateralization principal has been fully exhausted will defaults accrue to the next most junior tranche. Thus senior tranches benefit from 'thick' junior tranches, and in this way, subordination acts as a form of credit protection."

Following the logic of this prioritization and subordination scheme, the most senior tranches were also the ones that received the highest credit ratings, followed by the mezzanine and junior tranches.

The design of SPVs implied that even if the senior security tranches were issued against risky collateral (such as subprime mortgage loans), these securities would still receive a high credit rating, that is, they would be considered 'prime' securities. This is due, in the first stage, to the fact that the credit rating of the securities issued by the SPVs are, by virtue of their creation, independent or again 'delinked' from the credit quality of the originator or issuer of the asset (or collateral) in question.[13] In a second stage, the SPVs would also provide further protection to the senior tranches against losses on the underlying assets by guaranteeing the respective payments on principal and interest.

[12] A tranche is said to be overcollaterilized when 'the principal balance of the mortgage loans exceeded the principal balance of all the securities (debt) issued by the SPV.' See Aschcraft and Shuermann (2008, p. 29).

[13] That is, the SPV is bankruptcy remote.

In the case of the subprime crisis episode, the representative subprime mortgage securitization structure concentrated the bulk of the investment in the senior asset tranches. Empirical evidence for the period 1997-2007 shows that the total principal balance of senior tranches represented on average 81% of total principal deals.[14]

In summary, the off balance sheet practice allowed the transformation of risky assets (such as subprime mortgages) into 'safe and high credit rated securities.' At the same time, the deconstruction of a financial institution into an on-balance entity (the institution itself) and an off balance one (the SPV) allowed the former (through the transfer of income receipts from the off balance institution) to have access to an untapped source of financing and liquidity, without showing at the same time, the corresponding debt on their balance sheets.

The procedure made it very difficult to judge and value risk because it led to an opaque ownership structure that obscured the identity of the agents holding the underlying risk. Also the lack of transparency tended to result in the mispricing of asset values. The process of off balance sheet funding cum securitization and its main consequences for assessing risk are summarized in table 2 below.

[14] See Gorton (2008).

TABLE 2

Steps in the off balance-securitization process and its consequences for risk assessment

Steps in the off balance-securitization process	Consequences for risk assessment
Step 1: A mortgage lender, such as a bank, extends a loan through a broker or agent to a homeowner.	Brokers and agents are paid an up-front fee that is unadjusted for borrower quality. Bonuses reward the growth of business. Brokers and agents are not part of the bank staff and thus outside regulation.
Step 2: The mortgage lender then sells the loan to one of the government-sponsored enterprises or agencies or to a private entity, such as a bank or finance company (an investment bank).	Mortgage lenders have no incentives to closely scrutinize borrower quality as they are aware that products would be repackaged and sold. Mortgage lenders did not hold assets to maturity. Profits create incentives to mortgage lenders to obtain new loans. The lender can still service the mortgage, making this process invisible to the borrower.
Step 3: The agency or private entity, through a SPV, then takes a number of the mortgage loans it has purchased and bundles them together into a "pool" product (the actual number of individual mortgages in the pool can vary from a few to thousands of loans).	
Step 4: The SPV then sells claims on the cash flow generated by the pool of mortgages, in the form of securities, to investors. After the initial sale, these securities trade on the open market.	The mortgage-backed securities are created through financial entities known as special purpose vehicles (SPVs) which are not under the control of banks and have an off balance sheet status. The existence of tranching allows the construction of products with ratings suitable only for certain types of investment. Rating agencies make a large share of their profit from rating these 'pool' products. Fund managers receive bonuses for enhancing portfolio performance.
Mortgage payments, consisting of interest and principal, are passed through the chain, from the mortgage servicer to the bondholder.	

Source: on the basis of Gorton (2008) and Ashcraft & Schuermann (2008).

The process of off balance sheet funding and securitization was successfully applied over time to subprime mortgage loan-based originations in the United States as long as the spot and future price (value) of the underlying asset (collateral) showed an upward trend, which happened to be the case during the boom phase. Table 3 shows that between 2001 and 2006, the percentage of subprime mortgage loans that were securitized increased from 50% to 81% of total subprime loans.

However, in the 'distress phase', when real estate prices collapsed, it became clear that the off balance sheet model, through its separation of real risk from financial risk and investor protection with the 'tranching' of securities, had encouraged excessive risk taking and thereby increased the vulnerability and fragility of financial institutions' balance sheets. More to the point, it showed that securities could be downgraded to 'subprime' just as quickly during the bust as they had risen to 'prime' during the boom.

(b) *Pro-cyclical leverage as the amplifying mechanism*

The losses resulting from the decline in real estate sector values were not limited to the subprime mortgage sector; they were witnessed among some of the most important financial institutions in the United States and other parts of the world as well. This can be explained by the widespread adoption of the combination of high leverage ratios (which shows an extensive reliance on debt financing) and pro-cyclical leverage management practices.[15]

The leverage ratio reflects the extent to which financial intermediaries use debt to finance the acquisition of assets. The greater the leverage ratio of a financial intermediary is, the greater its level of indebtedness. Relying heavily on debt financing may impact negatively on the credit rating of a financial intermediary and make it difficult for funds to be raised in the future.

In addition, since equity is a cushion against insolvency, the greater the dependency on debt financing, the smaller the buffer that the financial intermediary in question has against any unforeseen change in asset values. In short, relying heavily on debt financing implies that a financial intermediary assumes a higher risk by becoming more exposed and vulnerable to illiquidity and, more importantly, to insolvency.

However, although leverage ratios that show an extensive reliance on debt financing entail greater risks, they also create significant profit opportunities since the higher the leverage ratio, the higher the rate

[15] Obviously, as shown below, the leverage ratios are higher for financial institutions such as the investment banks that are not subject to the regulation applied to commercial banks.

TABLE 3

Mortgage Originations and Subprime Securitization

Year	Total mortgage originations *(US$ billions)*	Subprime originations *(US$ billions)*	Subprime share in total originations *(Percentage of dollar value)*	Subprime mortgage-backed securities *(US$ billions)*	Percentage of subprime securitized mortgages *(Percentage of dollar value)*
2001	2 215	190	8.6	95	50.4
2002	2 885	231	8.0	121	52.7
2003	3 945	335	8.5	202	60.5
2004	2 920	540	18.5	401	74.3
2005	3 120	625	20.0	507	81.2
2006	2 980	600	20.1	483	80.5

Source: Gorton (2008).

of return over equity.[16] In this sense, the expectation of higher profitability provides a significant incentive to overleverage.

In congruence with this, the available empirical evidence on the leverage ratios across regions and countries indicates that financial institutions rely extensively on debt financing. In 2007, the commercial banks of the United States exhibited average leverage ratios of 10-12, while those recorded by investment banks were higher, reaching the 20-30 range. In the case of Japan, the average leverage ratio stands at 18 and in Europe it reached 34 (see figure 1 below).[17]

Moreover, available empirical evidence also indicates that, the correlation coefficient for the period 1990-2007 between the average leverage ratio of the most important banks in the United States and that of earnings over equity is equal to 0.69, and that it is statistically significant at the 95% level of confidence.

Financial institutions not only exhibit high leverage ratios, but also manage leverage on a pro-cyclical basis. In other words, banks adjust their leverage in reaction to a rise or fall in the value of their balance sheet assets. More precisely, they tend to adjust the leverage ratio upwards when the economy experiences a boom and asset prices increase. Contrarily, banks tend to adjust the leverage ratio downwards (deleverage) when the economy experiences a recession and asset prices decline.[18]

Pro-cyclical leverage management is explained by risk considerations. Financial institutions and other firms adjust their balance sheet according to the expected risk of loss on their asset portfolios. During boom conditions, the expected risk of loss among financial institutions and other firms is low and, as a result, they tend to increase their leverage by acquiring assets through debt financing. Contrarily, during bust conditions, the expected risk of loss among financial institutions and other firms is high and, as a result, they tend to deleverage by selling assets with a view to reducing debt.

The available empirical evidence for the United States investment banks shows that these financial institutions increased their leverage from 21 to 30 during the period November 2001-November 2007, which was an expansionary phase of the cycle. On the contrary, they decreased their leverage (or they deleveraged) starting in 2007 when the recession started to take hold of the United States economy.

This means that in the period November 2001-November 2007 investment banks began to rely more on debt financing. During this period, investment banks, on average, increased the proportion of assets financed by debt from 95% to 98%.[19] By increasing the proportion of debt financing, banks became riskier. However, at the same time they became more

[16] If an investment bank has a 30:1 leverage ratio as was the case prior to their virtual extinction, the bank can borrow US$ 3,000 per US$ 100 in capital. If it is assumed that the rate of interest on the loan is 5% and the bank earns 6% on its total new capital (3,000 + 100 = 3,100), the bank can earn a profit of US$ 129 (or a 29% rate of return on the original capital of US$ 100). At a more formal level, this can be seen through a simple banking profit identity, also known as the Du Pont de Nemours and Company return over equity (ROE) decomposition, which states that the ratio of earnings to equity equals the product of the ratio of earnings to assets and assets to equity. That is,

$$\frac{Earnings}{Equity} = \left(\frac{Earnings}{Assets}\right) * \left(\frac{Assets}{Equity}\right)$$

where $\frac{Assets}{Equity} = Leverage$ and thus,

$$\frac{Earnings}{Equity} = \frac{Earnings}{Assets} * Leverage$$

As a result, for a given assets to equity ratio, the greater the leverage is, the greater the profit opportunities captured by the ratio of earnings over equity. However, high leverage ratios also lead to very high losses. If for any reason there is a decline of 10% in the value of the total investment of US$ 3,100, the total value of the investment after taxes will be equal to US$ 2,940. However, the debt is equal to US$ 3,000 and, as a result, the bank has a loss of US$ 60. In this case, the investment of the bank in this example is based on more than 100% debt. To some extent, this approximates the case of some of the investment banks such as Lehman, whose investment portfolio was based on 3% equity capital and 97% on borrowed funds. See Haughey, J. (2008).

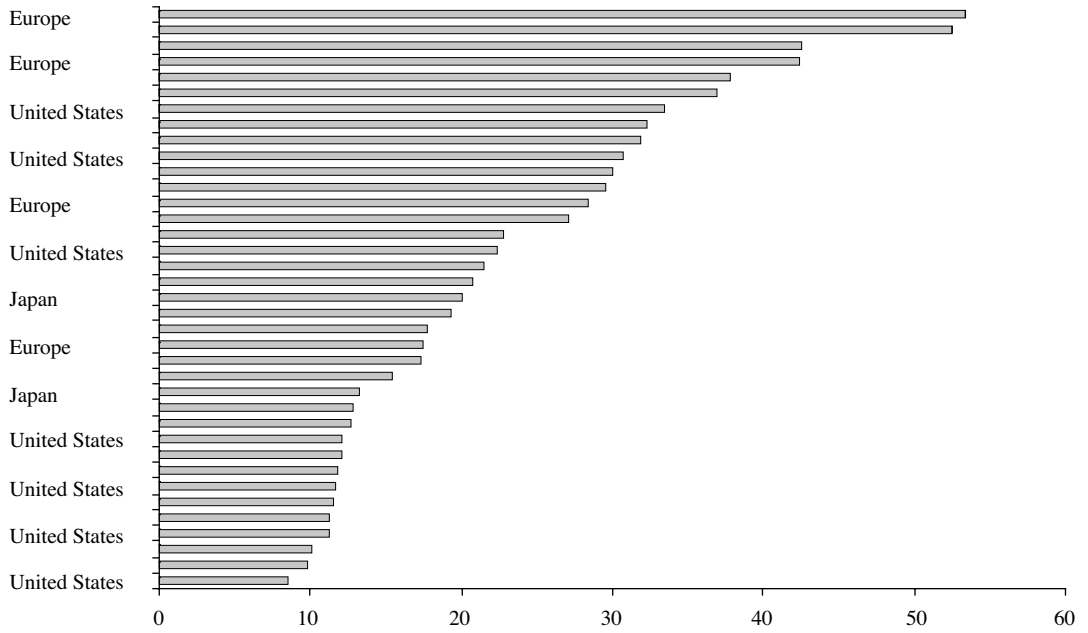
[17] To put things in perspective, if the leverage ratio is equal to 10, then debt and equity finance represent 90% and 10% of the financial intermediary's acquisition of assets, respectively. With a leverage ratio of 34, the respective debt and equity ratios are 97% and 3% respectively. Figure 1 lists 37 financial institutions out of which 14 are European, 5 are Japanese and 16 are from the United States. The two remaining institutions are from the Middle East and Asia, respectively. The financial institutions from the United States comprise commercial banks, savings institutions, credit unions, government-sponsored enterprises and brokers/hedge funds.

[18] Adrian and Shin (2008a/, p.3) define pro-cyclical leverage management in the following way: "…there is a positive relationship between changes in leverage and changes in balance sheet size. Far from being passive, financial intermediaries adjust their balance sheets actively and do so in such a way that leverage is high during booms and low during busts. Leverage is pro-cyclical in this sense." Pro-cyclical leverage entails downward sloping demand curves and upward sloping supply curves. As a result the equilibrium is unstable.

[19] See footnote 16 above.

FIGURE 1

Leverage ratios for selected financial institutions (2007)



Country/Region	Average	St. Dev.
United States	15.5	7.2
Japan	18.0	3.6
Europe	34.3	10.9

Source: on the basis of Bloomberg (November, 2008)

profitable. The empirical evidence shows that during this time the net earnings of most investment banks more than doubled.[20]

In the same way that high leverage ratios can yield high profits in the upward phase of the cycle, the shift to lower leverage ratios in the downward phase of the cycle can entail significant losses. This is due to the fact that, when balance sheet growth is sustained mainly by overborrowing and excessive debt, financial institutions will struggle to pay down their debts in the downturn by selling assets. The losses can become systemic when such sales become a widely adopted practice.

The sole action of one institution may succeed in reducing debt and not produce systemic effects. However, the same action by many or the most important financial institutions and other firms can produce systemic effects by igniting a cumulative process of asset debt deflation as changes in debt financing (or the adjustment of leverage) and in asset prices 'reinforce each other in an amplification of the financial cycle'.[21] In this way, pro-cyclical leverage management practices entails the propagation of contagion through cumulative asset price deflation in the distress phase.

This perverse cumulative process provides a working mechanism for financial contagion in the present current crisis episode. Indeed, in the case of the subprime crisis episode, contagion worked through asset price declines and balance sheet contraction.

[20] Own computations based on Bloomberg (2008).

[21] Greenlaw et al. (2008) p. 30.

These were caused by sharp falls in the asset-backed collateral, which in this case consisted of real estate mortgages held in large quantities by financial institutions.[22] The working dynamics of this mechanism involved declines in the value of mortgage-backed asset securities that were matched by commensurate falls in the price of equity and followed by adjustments in the leverage ratio through debt reduction achieved via the sale of assets.

The empirical evidence shows that from the moment the most recent recession began in November 2007 in the United States (and the values of assets fell due to the sharp decline in house prices), the financial sector began a process of deleveraging. Between November 2007 and April 2008, the average leverage ratio of investment banks in the United States declined from 30 to 24. The deleveraging process was accompanied by an average contraction in the value of assets of 20% for investment banks.[23]

In this sense, contrary to other financial crisis episodes, the contagion mechanisms in the subprime financial crisis did not reflect only the domino effect of default.[24] As explained by Adrian and Shin (2008 b/ p.2), "If the domino effect of financial contagion is the relevant one… then defaults on subprime mortgages would have had limited impact.[25] This is because the exposure to the subprime sector is small relative to the total size of the balance sheet, and to the capital held by the financial institutions themselves. Any defaults by subprime borrowers could easily be absorbed by the total capital of the financial sector."

To summarize, generalized pro-cyclical leverage management can lead to widespread debt reduction, resulting in an excess supply of assets that puts downward pressures on their price. Then, a continued fall in asset prices leads to continued adjustments in the leverage ratio which can in turn depress the price of assets even further.

Asset price deflation can have significant effects on liquidity as the reductions in equity and contractions in balance sheets undermine the capacity of banks to lend. Hence, the stage is set for a 'credit crunch' since, as argued by Greenlaw and others, (2008, p.30) aggregate liquidity refers to the rate of growth of balance sheets.

An analytical exercise undertaken by Greenlaw and others (2007) shows that for the current subprime crisis a US$ 200 billion loss (such as that suffered by the leveraged sector in the United States) can result in an aggregate asset contraction equivalent to US$ 2 trillion assuming a 5% decline in leverage. In a similar vein, a 10% decline in leverage can result in a contraction of the financial system aggregate balance sheet of US$ 3 trillion. In other words, a 5% decline in leverage multiplies initial balance sheet losses by 10. A 10% decline amplifies initial losses by a factor of 15.

The subprime crisis has led to significant contractions in asset prices and financial institutions' balance sheets. The crisis has affected more than 63 of the most important financial institutions in the world. Recently, it has been estimated that the subprime crisis resulted in a loss in the capital valuation of financial assets of US$ 50 trillion in 2008 worldwide, which is roughly the equivalent of the world's GDP for that year.[26] In turn, the contraction in the value of assets and the balance sheets of financial institutions has led to a notable reduction in credit availability (i.e. to a credit crunch).

[22] As put by Greenlaw and others (2008, p.31): "…mortgages and asset-backed securities built on mortgage assets are held in large quantities by leveraged institutions –by the broker dealers themselves at the warehousing stage of the securitization process, by hedge funds specializing in mortgage securities and by the off-balance sheet vehicles that the banks had set up specifically with the purpose of carrying the mortgage securities and the collateralized debt obligations that have been written on them." Federal Reserve data shows that these financial institutions held 37% of the mortgage debt at the end of the third quarter of 2007.

[23] Own computations based of Bloomberg (2008).

[24] See for example Adrian and Shin (2008a/ b/); Blanchard (2008); Greenlaw et al. (2008); Hatzius (2008). For a supportive but critical view of this balance sheet contagion mechanism see, Mishkin (2008).

[25] The domino effect of financial contagion refers to a situation where "Bank A has borrowed from bank B, and bank B has borrowed from bank C, etc. Then, if A takes a hit and defaults, then bank B will suffer a loss. If the loss is large enough to wipe out B's capital, then B defaults. Bank C then takes a hit. In turn, if the loss is big enough, bank C defaults, etc. We could dub this the "domino" model of financial contagion." (Adrian and Shin, 2008 b/p.2).

[26] See, Loser (2009).

III

The potential effects of the global financial crisis on Latin American economies

The asset price deflation process described in the previous section has induced a major reduction in household and corporate financial wealth in the developed world, inducing a contraction in spending that in turn triggered a drop in private consumption and investment and, consequently, a contraction of aggregate demand. This pattern, which has been common to all the developed economies, is expected to cause, in 2009, world output to fall by close to 1.5% and global international trade by roughly 9.0%. This simultaneous contraction in world gdp and international trade is a phenomenon that has no precedent in recent history. Also, the decline in financial wealth and the greater need for financial resources among developed economies mean that international financial markets could become very illiquid during 2009.

The unprecedented magnitude and global reach of the financial crisis have led Latin American policymakers to focus their attention on its potential impact on the economies of the region. One of the main concerns is the intensity and duration of both these aspects of the crisis. It should be emphasized, however, that most governments in the region have announced aggregate demand policies to mitigate the effects, a reaction that is somehow different to those adopted in previous crisis episodes and one which may bring different results.

On the basis of recent data and past experience, the next subsections of the paper examine the future performance of Latin American economies as a result of the current international financial crisis and the policy responses adopted by the governments of the region.

1. The global financial crisis: 'old wine in new goatskins' for Latin America

As things stand, the available data show that Latin American countries are not immune to the contagion effects of the current global financial crisis. Moreover, the manifestations of this episode in the region's economies, and their interpretation in light of the analysis of past episodes, suggest that the effects of the global financial crisis on Latin American economies will conform to previous crisis patterns.

As in the case of past crises, the current episode is having a generalized, deep and protracted negative impact on the economies of the region. Indeed, in line with the preliminary evidence available in the region and the performance of the developed economies, forecasts for the region's growth have been systematically and drastically revised downwards since the start of the crisis. Given that the crisis is still unfolding, further revisions are most likely in order.

Also, as in past crisis episodes, the available evidence shows that the deep and protracted effects are strongly associated with the extent to which countries face restricted access to external finance and contractions in international trade flows. Finally, as in the past, the negative economic results and the restricted access to external finance is affecting a large number of countries across the region regardless of their specific characteristics, such as the degree of development of their financial markets, their level of integration with international financial markets, their trade openness, their export bias, their initial conditions prior to the onset of the crisis and their policy responses to crises.

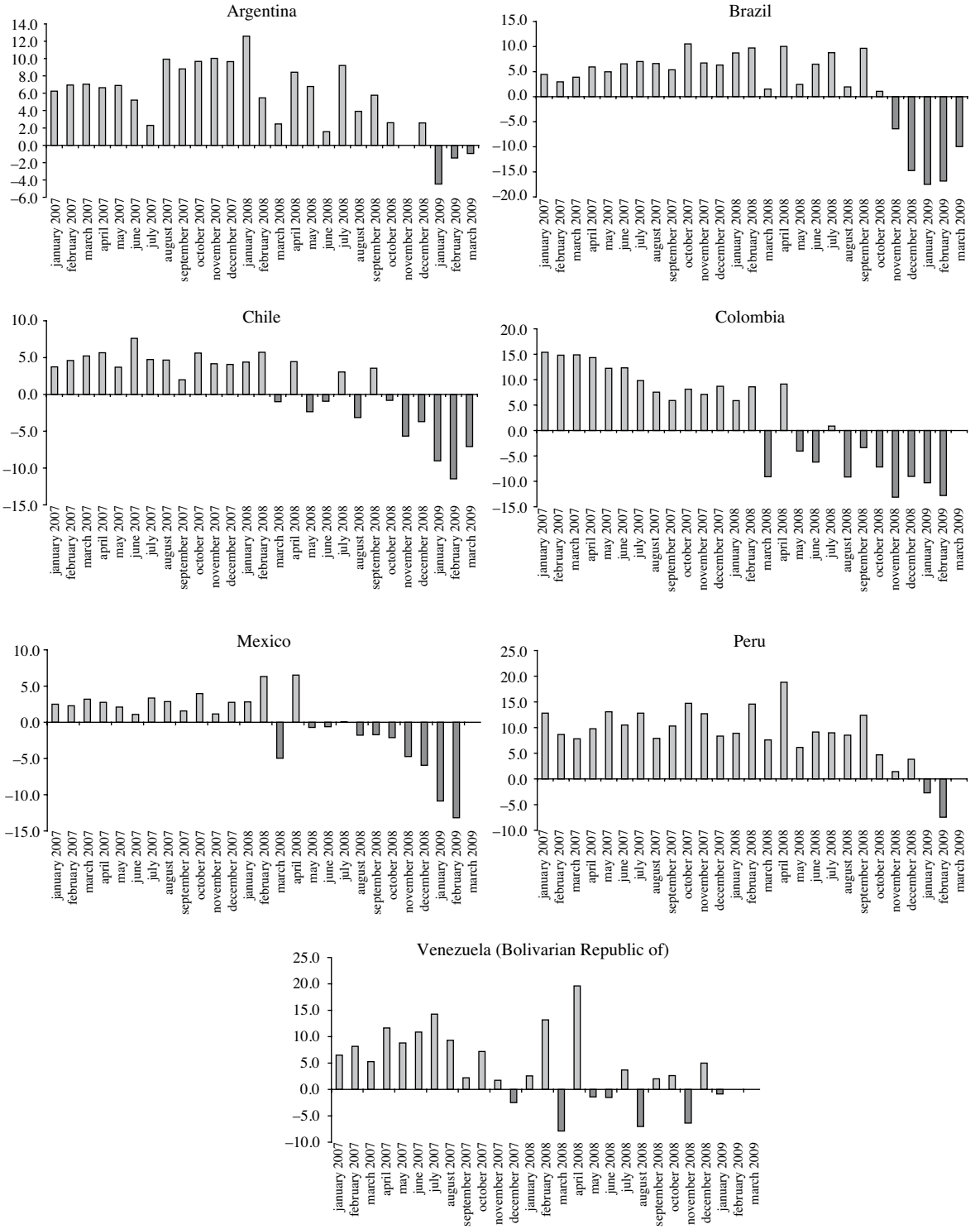
2. The effects on real activity

The available evidence for the current episode shows that the region is heading for a new period of significant contraction in economic activity. Thus far, most of the LAC (7) economies (Argentina, Bolivarian Republic of Venezuela, Brazil, Chile, Colombia Mexico and Peru) have posted negative annual growth rates in industrial production (on the basis of monthly indexes), a pattern that in some cases has been repeated for several months (see figure 2).

Also, leading indicators of economic activity, such as lending to the private sector and imports, are validating the negative expectations arising from the behaviour of real activity dynamics. Growth rates of credit provided by financial institutions to the private

FIGURE 2

Year-on-year variation in industrial production during the current financial crisis
(Percentages)



Source: own computations based on national sources of information (2009).

sector are still positive for almost the entire set of LAC(7) countries.[27] However, with the exception of the last semester of 2008, credit growth has declined and significantly so in countries like Argentina, Colombia and Mexico (see figure 3).

This limited evidence and the forecasts for the region's growth for 2009 are consistent with the behaviour of real variables registered during past crisis episodes.

The financial crisis episodes studied here had deep and long-lasting effects on economic activity. In all the cases considered, they produced a recession in the countries affected. Taking the entire sample of crisis episodes into account, the average contraction of per capita GDP for all countries affected was 6.2%.

A closer analysis on a case-by-case basis shows that the debt crisis was the most costly in terms of per capita GDP contractions and also in terms of the extent of its contagion effects. Indeed, the debt crisis affected all the countries in the sample without exception. During that crisis episode, the median decline of per capita GDP reached 12.6%. In the other episodes, the data also shows a contraction in GDP across the region, with a median decline ranging from 1.2% in the case of the Argentine crisis to 5.4% in the Asian-Russian case (see table 4).[28]

The negative effects of these crises have been not only significant but also persistent. The duration of the crisis (defined as a the number of years required to recover the pre-crisis GDP level) was 13 years in the case of the debt crisis, 5 years in the savings and loan (S&L), 2 years in the Mexican, 5 years in the Asian-Russian, and 3 years in the Argentine crisis episodes.[29]

In keeping with the evolution of output, unemployment tended to increase during these episodes. In general, all the countries included in the sample showed an increase in the unemployment rate ranging from 1.5 percentage points in the Mexican crisis to 4.0 percentage points in the Asian-Russian crisis. The average increase in unemployment for the whole sample was 3.9 percentage points (see table 5).

As in the case of GDP, the repercussions on unemployment were very persistent. The median duration (measured in the number of years needed to return to pre-crisis levels) of 6 years for the debt crisis, 18 years for the S&L and Asian crises, 11 years for the Mexican crisis, 8 years for the Asian-Russian crisis and 5 years for the Argentine crisis.

For its part, investment also presented drastic and persistent reductions across the region. Moreover, the drop in per capita investment tended to be significantly larger and more persistent than that of output. In the most severe of all the crises considered, the debt crisis, the contraction of investment was nearly four times that of output. In terms of persistence, after that crisis, it took per capita investment 15 years to return to its pre-crisis level, in other words, two more years than it took output to recover (see table 6).

3. The conditions of access to external finance

The effects on economic activity of the current and past episodes have a common denominator in the sense that they are strongly associated with the region's restricted access to financial markets and to the disruption in international trade flows that occurs in periods of economic distress. Both these aspects are addressed, respectively, in this and the following subsections.

The extent of the restriction in access to financial markets is ascertained by analysing the evolution of changes in both capital inflows and outflows,

[27] In the case of the Bolivarian Republic of Venezuela, credit to the private sector has been declining since September of 2008.

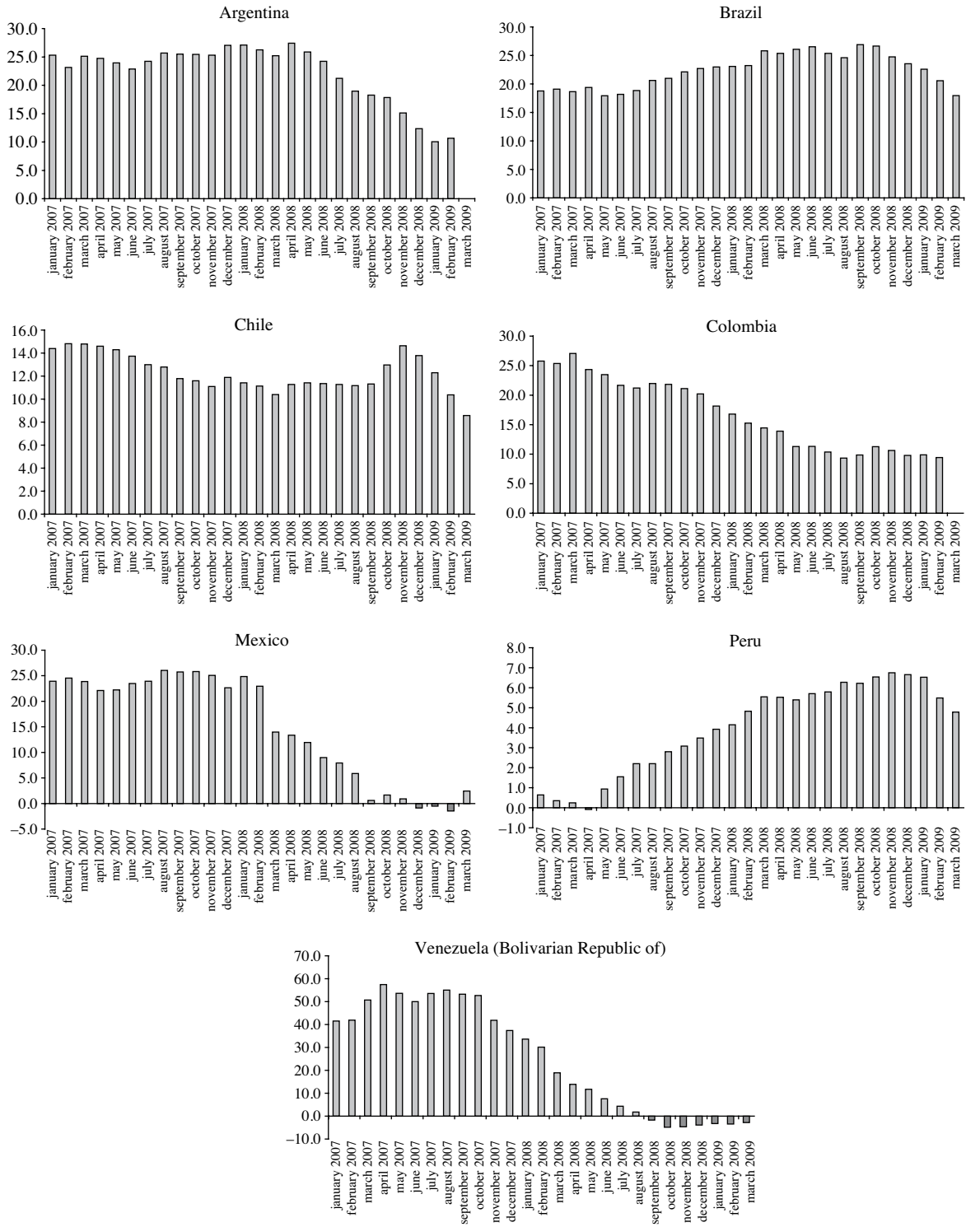
[28] The maximum and minimum declines were 22.2% (Plurinational State of Bolivia) and 0.5% (Dominican Republic) during the debt crisis, 28.1% (Peru) and 0.24% (Costa Rica) during the savings and loan crisis, 7.8% (Mexico) and 0.13% (Ecuador) during the Mexican crisis, 21.7% (Argentina) and 1.6% (Costa Rica) during the Asian-Russian crisis, and 18.9% (Bolivarian Republic of Venezuela) and 0.12% (Guatemala) during the Argentine crisis. The contraction of per capita GDP in Argentina during the Argentine crisis episode was 16.5%. Authors like Cerra and Chaman-Saxena (2007) argue that the large and permanent output costs, induced by political and financial crises, could explain why the Latin American region has failed to reduce the income gap between the region's economies and the developed ones. Other authors like Calvo and Mendoza (2000), Calvo, Izquierdo and Talvi (2006), Edwards (2007) and Reinhart and Rogoff (2008b), have presented evidence of how sudden stops of capital inflows have induced the collapse of output in emerging markets, and in particular, in Latin American economies.

[29] The maximum duration of the declining phase of per capita GDP that started during the debt crisis was 6 years (Guatemala and the Plurinational State of Bolivia) and the minimum one year (Dominican Republic), during the S&L crisis those values were 3 years (Argentina and Peru) and one year (Bolivarian Republic of Venezuela, Brazil, Costa Rica, Ecuador, El Salvador, Honduras, Mexico, Plurinational State of Bolivia and Uruguay). In the Asian-Russian episode, the maximum duration of the declining phase was 5 years (Paraguay) and the minimum one year (Chile, Ecuador, Honduras and the Plurinational State of Bolivia), during the Argentine crisis the maximum duration was two years (Argentina, Bolivarian Republic of Venezuela, Dominican Republic, Mexico, Paraguay and Uruguay).

FIGURE 3

Year-on-year variation in credit to the private sector (banking system) during the current financial crisis, in real terms

(Percentages)



Source: own computations based on national sources of information (2009).

TABLE 4

Variation in per capita GDP during previous international financial crisis episodes

Crisis	Countries that experienced contraction *(Number of countries)*	Median duration of the declining phase *(Number of years)*	Median decline (Peak-to-trough) *(Percentages)*	Years to recover the pre-crisis level (Median) *(Number of years)*
1980-83: Debt	17	2	12.6	13
1987-91: Savings and Loan	14	1	2.3	5
1994-95: Mexican	10	1	2.0	2
1997-99: Asian-Russian	12	2	5.4	5
2001-02: Argentine	13	1	1.2	3

Source: own computations based on United Nations statistics (National Accounts database, 2009).

TABLE 5

Variation in unemployment during previous international financial crisis episodes

Crisis Episodes	Countries that experienced increase *(Number of countries)*	Median duration of the increase *(Number of years)*	Median increase in absolute terms (Trough-to-peak) *(Percentages)*	Years to recover the pre-crisis level (Median) *(Number of years)*
1980-83: Debt[a]	11	1	3.1	6
1987-91: Savings and Loan[b]	16	2	2.4	18
1994-95: Mexican[c]	17	2	1.5	11
1997-99: Asian-Russian[c]	15	2	4.0	8
2001-02: Argentine[c]	17	2	1.9	5

Source: own computations based on World Development Indicators, World Bank, 2009.

[a] 11 countries in the sample.
[b] 16 countries in the sample.
[c] 17 countries in the sample.

TABLE 6

Variation in investment during previous international financial crisis episodes

Crisis Episodes	Countries with contraction *(Number of countries)*	Median duration of the contraction *(Number of years)*	Median decline (Peak-to-trough) *(Per capita)*	Years to recover the pre-crisis level (Median) *(Number of years)*
1980-83: Debt	17	2	46.6	15
1987-91: Savings and Loan	17	2	16.7	5
1994-95: Mexican	15	1	13.7	4
1997-99: Asian-Russian	16	2	24.4	6
2001-02: Argentine	16	1	13.7	4

Source: own computations based on United Nations statistics (National Accounts Database, 2009).

which reflect the prevailing conditions in financial markets.[30]

Thus far, the evidence available on the dynamics of capital flows (measured as non-foreign direct investment (non-FDI) financial flows/GDP) is mixed. Figure 4 shows that Argentina and Colombia witnessed a change in their situation between 2007 and 2008 from being net recipients of non-FDI financial flows to net exporters of financial resources. Some economies such as, the Bolivarian Republic of Venezuela, Brazil and Mexico have not seen a significant variation in their conditions as net recipients of financial flows. Others, such as Chile and Peru have even improved their relative position in the same period. Nevertheless, at the aggregate level for LAC(7), the ratio of non-FDI financial flows to GDP dropped by 2% between the third quarter of 2007 and the third quarter of 2008 (see figure 4).

The restrictions in accessing financial flows are not unique to the present episode. It is in fact also a prominent feature of all financial crisis episodes considered here. The majority of the financial crises that have affected the region were characterized by "sudden stops" in capital inflows and substantial increases in capital outflows.[31] The median decline in capital inflows, from peak-to-through, was 8.4% of GDP during the debt crisis, 2.7% during the S&L crisis, 2.9% during the Mexican crisis, 4.4% during the Asian-Russian crisis and 4.5% during the Argentine crisis (see table 7).[32]

The reduction in capital inflows was accompanied by large capital outflows in the majority of countries. The median increase of capital outflows ranged from 1.2% to 2.9% of GDP in the different crisis episodes (see table 8).[33] In summary, the average regional reduction of net financial flows for the entire sample represented approximately 5.8% of GDP.

The drastic reductions in net financial flows were not limited to a small set of countries, but rather affected all the countries of the region independently of the geographical origin of the crisis, the countries' level of financial development (or initial conditions) or the degree of their integration with international financial markets. The declines in net capital flows and exports worsened the balance-of-payments position, inducing adjustments in international reserves and in the real exchange rate.

As in the case of past crises and consistent with the current less favourable external conditions, the more restricted access to financial flows is accompanied by an increase in the cost of accessing external financing. The Emerging Markets Bond Index (EMBI) for most economies in the region showed a sharp increase between August 2008 and March 2009, reaching a maximum in October 2008. This pattern has, with different intensity, occurred in all the countries (see figure 6).[34]

[30] In the past three decades, Latin America has faced both financial and trade shocks, although their relative importance has tended to vary across countries and time periods. Nonetheless, in spite of the difficulties in isolating one crisis from another, the evidence shows that the region's GDP performance has had a stronger statistical association with the changes in external financial conditions than with the behavior of external aggregate demand. For instance, the coefficient of correlation between the GDP cycle and financial flows is positive and statistically significant at the 5% level for the 1980s and 1990s, reaching 0.52 and 0.54, respectively. For its part, the correlation of coefficient between the GDP cycle and that of the terms of trade was also positive and statistically significant, albeit at the 10% level for the 1990s (see Titelman, Perez-Caldentey and Minzer, 2008).

[31] Several explanations have been proposed to explain the dynamics of capital flows. Kaminsky, Reinhart and Vegh (2002) and Calvo and Talvi (2005) have suggested common financial intermediaries play a role in the sudden and generalized stop of financial flows. Calvo and Reinhart (1996) have pointed out the spillover effects that large neighbours could have in other smaller economies, and Calvo and Mendoza (1996) and Chari and Kehoe (2002) have argued that herd behavior by financial investors also explains why financial resources stop flowing to emerging market economies.

[32] There are also differences in the duration of the decline in inflows. The maximum duration of the declining phase during the debt crisis was 6 years (El Salvador) and the minimum one year (Bolivarian Republic of Venezuela and Guatemala), during the S&L crisis the maximum value was 3 years (Argentina and Honduras) and the minimum one year (Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Mexico and Peru). During the Mexican crisis the maximum duration was 2 years (Argentina, Bolivarian Republic of Venezuela, Guatemala, Honduras, Mexico, Panama and Paraguay) and the minimum one year (Chile, Colombia, Costa Rica, Dominican Republic Ecuador, El Salvador and Peru). In the Asian-Russian case, the maximum duration was 5 years (Argentina, overlapping with other crisis episodes) and the minimum duration one year (Brazil, Chile, Costa Rica, Dominican Republic, Guatemala, Honduras, Mexico and Panama,). During the Argentine crisis episode the declining phase of inflows had a maximum duration of 4 years (Plurinational State of Bolivia) and one year in the Bolivarian Republic of Venezuela, Chile, Colombia, Costa Rica, Ecuador, Panama, Peru and Uruguay.

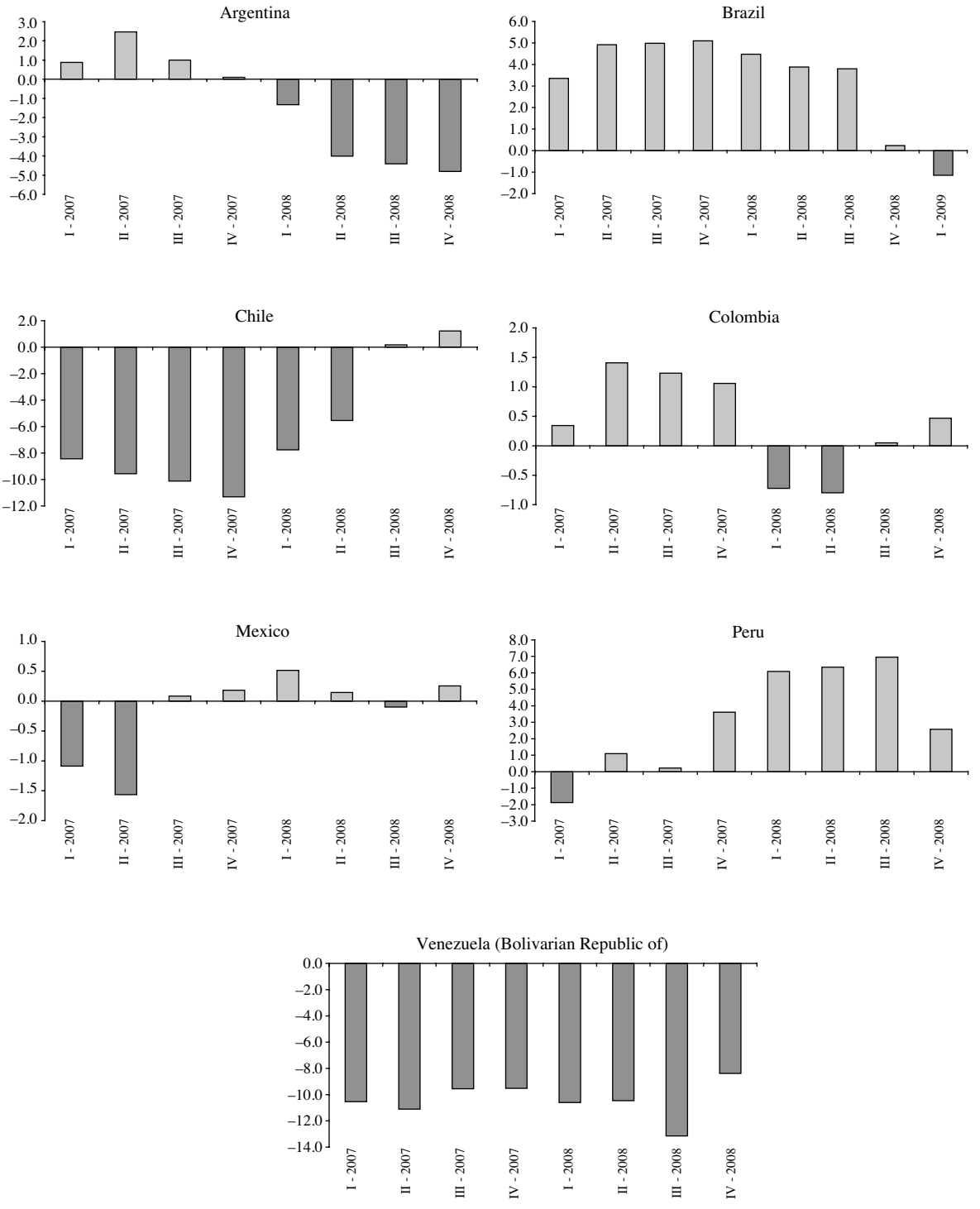
[33] Some studies, including Cuddington (1986), Dooley (1986) and Pineda (1998), have suggested that capital outflows, and in particular, capital outflows by private non-financial institutions, are the reaction of individuals in response to change in domestic risk that could be induced by an increase in expropriation risk, devaluation risk or inflation risk or any other changes in the expected return on domestic assets, in addition to changes in other fundamentals.

[34] The changes in the EMBI indicator, as well as other variables, for some countries in the region, has reflected not only the deterioration of their external conditions, but also the increase in risk associated with idiosyncratic political considerations that explain the differences in the embi level in the cases of the Bolivarian Republic of Venezuela and Argentina.

FIGURE 4

Non-FDI financial flows during the current financial crisis

(One-year cumulative values as percentages of GDP)

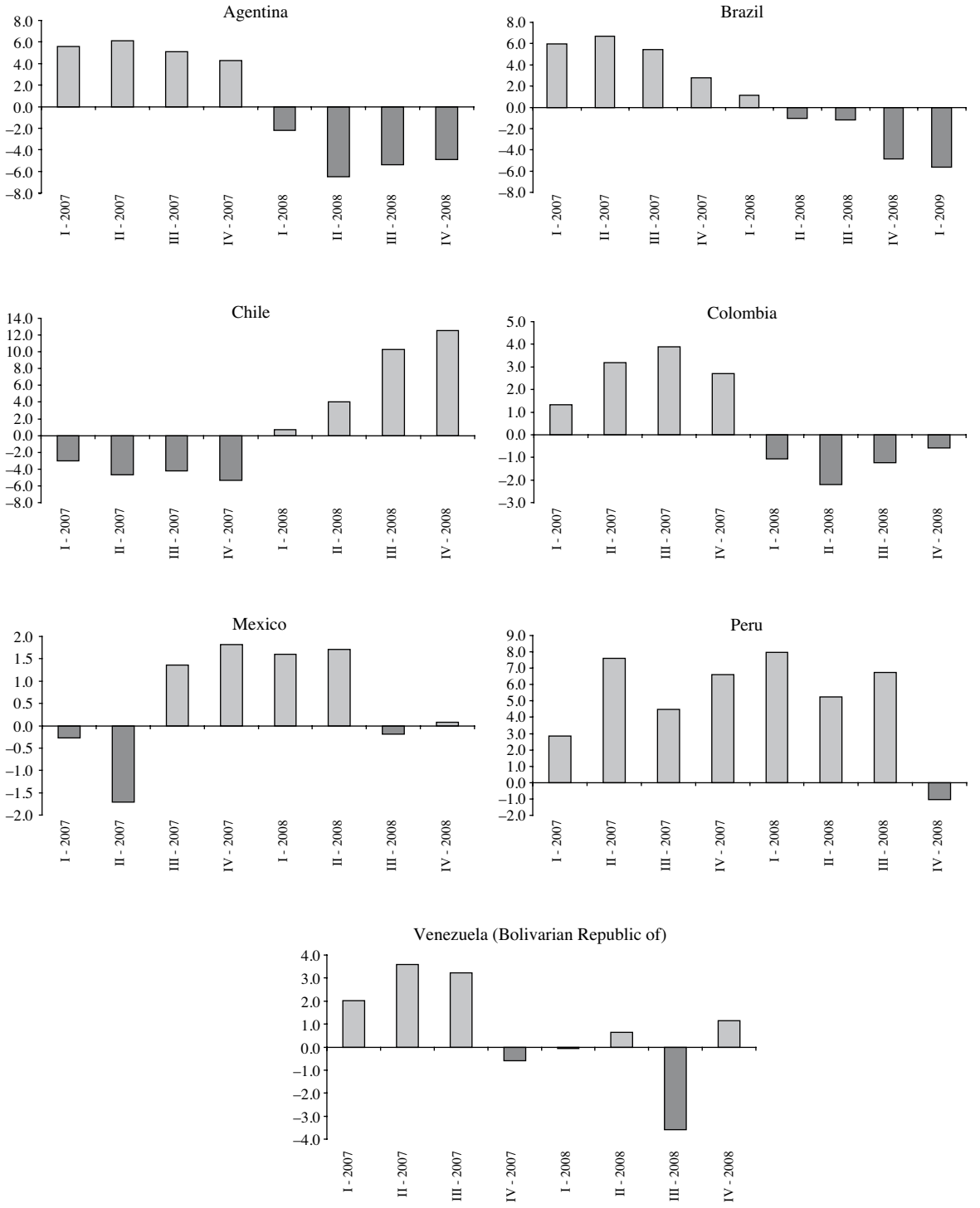


Source: own computations based on national sources of information (2009).

FIGURE 5

Non-FDI financial flows during the current financial crisis

(Year-on-year variations in terms of GDP)



Source: own computations based on national sources of information (2009).

TABLE 7

Capital inflows during previous international financial crisis episodes

Crisis Episodes	Countries that experienced contraction *(Number of countries)*	Median duration of the contraction *(Number of years)*	Median absolute decline (Peak-to-trough) *(Percentages of GDP)*
1980-83: Debt	17	2	8.4
1987-91: Savings and Loan	17	1	2.7
1994-95: Mexican	14	2	2.9
1997-99: Asian-Russian	17	2	4.4
2001-02: Argentine	16	2	4.5

Source: own computations based on ECLAC (2009).

TABLE 8

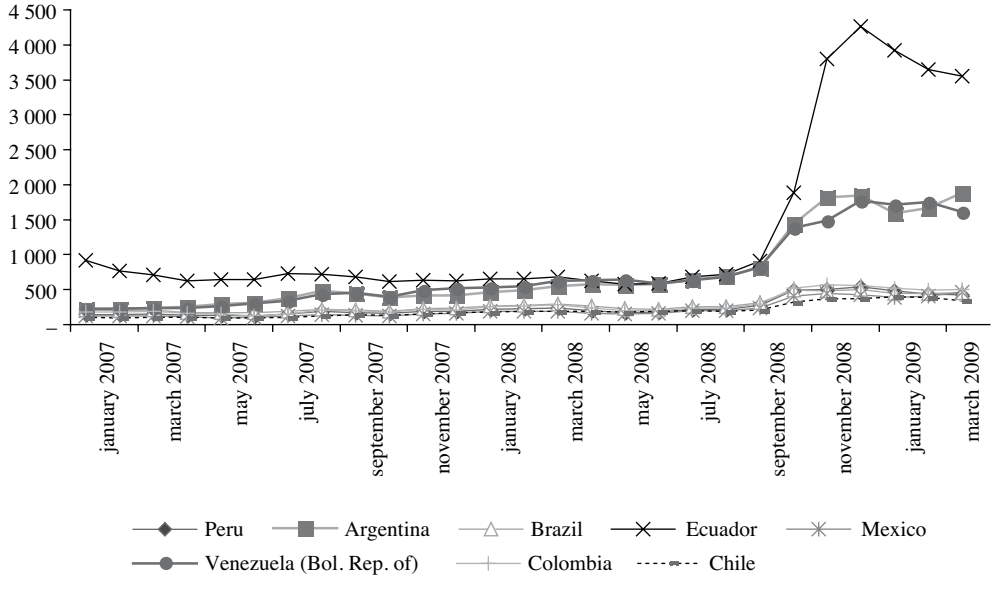
Capital outflows during previous international financial crises episodes

Crisis Episodes	Countries that experienced an increase *(Number of countries)*	Median duration of the increase *(Number of years)*	Median absolute increase (Peak-to-trough) *(Percentages of GDP)*
1980-83: Debt	15	1	1.2
1987-91: Savings and Loan	17	2	1.8
1994-95: Mexican	17	1	2.1
1997-99: Asian-Russian	17	1	1.4
2001-02: Argentine	17	1	2.9

Source: own computations based on ECLAC (2009).

FIGURE 6

Latin America (8 countries): recent evolution of EMBI
(Basis points)



Source: own computations based on data from the central bank of Peru (2009).

4. Export dynamics in the present and past crisis episodes

Besides being strongly related to the curtailment of financial flows in terms of volume and cost, the effects on economic activity of past and current episodes are also significantly associated with the disruption of international trade flows. More to the point, as in previous crisis episodes, export dynamics are playing an important role in transmitting the effects of the current financial crisis to the region.

The significant recession that has affected the developed world and the slowdown of the main market emerging economies have induced a significant reduction of global international trade, which is expected to decline by more than 9% in 2009 (WTO, 2009). The resulting decline in world aggregate demand has induced a sharp reduction in commodities prices, and similar conditions are projected to prevail in the near future.[35]

Moreover, the contraction of the external demand for manufacturing goods will also affect the capacity of Latin American countries to restrain the drop in non-commodity exports. Figure 7 illustrates the dynamics of LAC(7) exports during 2007 and 2008 and shows that the annual growth rate of exports[36] for all of the LAC(7) economies has been negative or has presented a significant slowdown since the second semester of 2008.[37]

In past international financial crises the region also faced a contraction in external aggregate demand that was reflected in the decline of exports during those episodes.[38] On average, for the entire sample (all countries and all crisis episodes), the contraction of exports was 19.1%. The largest reductions in exports took place during the debt crisis and the Asian-Russian episode. The median decline of exports reached 38.2% in the former and 13.9% in the latter (see table 9).[39]

The shocks to exports also tended to be very persistent in all the crisis episodes. The median duration required for exports to recover their pre-crisis level was 10 years for the debt crisis, 7 years for the S&L crisis, 3 years for the Mexican crisis, 4 years for the Asian-Russian episode and 3 years for the Argentine episode.

As in past financial crises, the curtailment in financial flows and the drop in exports have resulted in a decline in the stock of international reserves for most economies (see figure 8).

The drops registered in international reserves for this episode are in line with those registered in past crisis episodes which ranged from 19% in the

[35] Between March 2008 and April 2009, oil prices declined by 53% in the case of West Texas Intermediate, close to US$ 50 per barrel. In the same period, the JP Morgan composite commodities index indicates a contraction of 40%. For 2009, IMF estimates a reduction of 31.8% in oil prices and of 18.7% in prices for non-fuel commodities.

[36] Year-on-year variation as a percentage.

[37] For those countries in which exports fell (Argentina, Chile, Colombia, Mexico and Peru) the median decline was 29.3% between the fourth quarter of 2007 and the fourth quarter of 2008, and the difference in the growth rate for the country that posted a slowdown in exports (Brazil) was more than 12.7 percentage points for the same period.

[38] The importance of international trade as a crisis propagation channel was stressed by Eichengreen, Rose and Wyplosz (1996).

[39] During the debt crisis, the maximum reduction of exports, peak-to-trough, was 72% (Plurinational State of Bolivia) and the minimum was 14% (Mexico). In the S&L crisis, the maximum was 39% (Brazil) and the minimum 0.6% (Guatemala). During the Mexican crisis, the maximum reduction was 29% (Paraguay) and the minimum 3.13% Guatemala. During the Asian-Russian episode the maximum cumulative reduction of exports was 42% (Bolivarian Republic of Venezuela) and the minimum was 2.9% (Chile). In the Argentine crisis, the maximum decline in exports was 29.9% (Ecuador) and the minimum 1% (Argentina).

TABLE 9

Exports during previous international financial crisis episodes

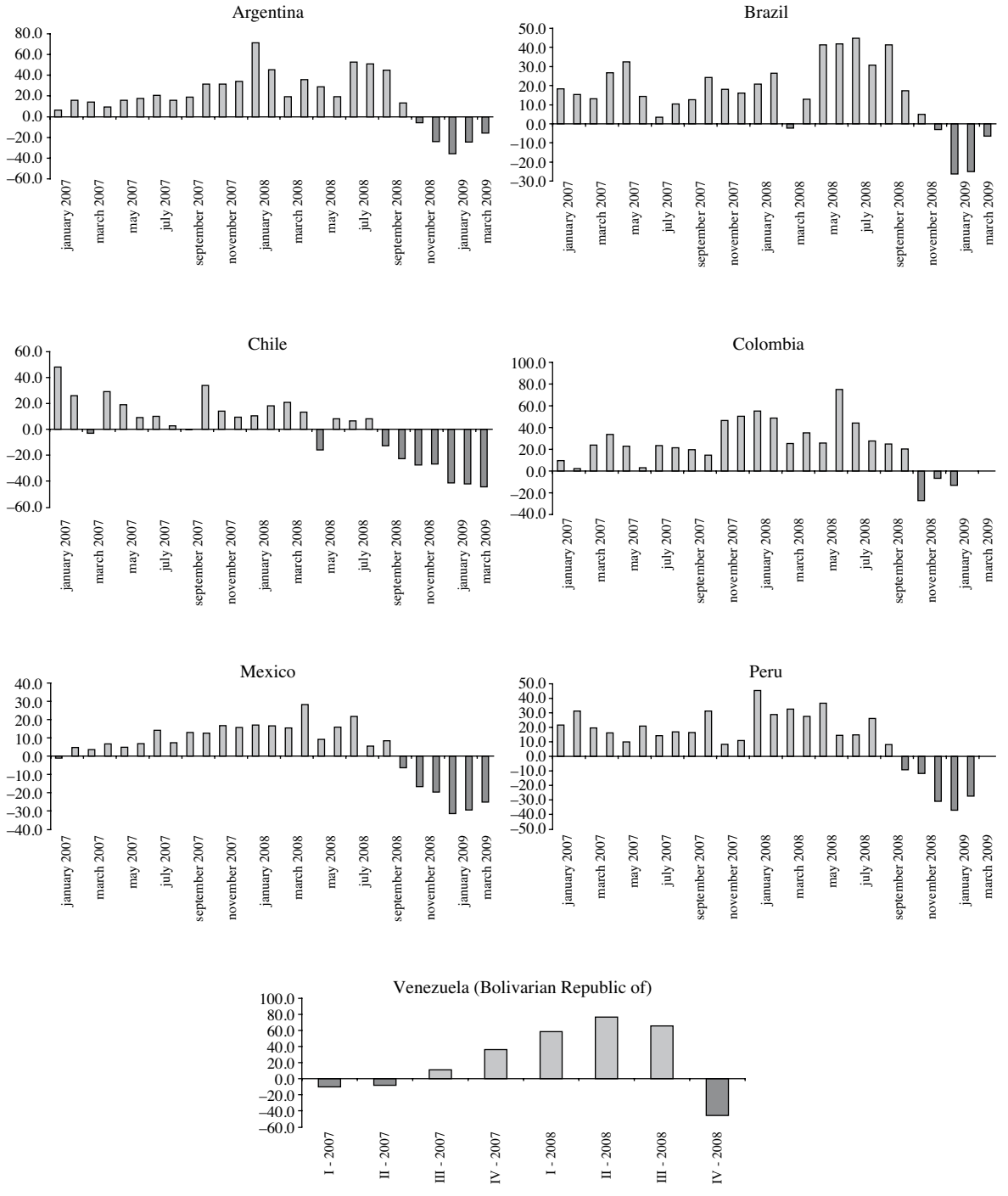
Crisis Episodes	Countries with contraction *(Number of countries)*	Median duration of the contraction *(Number of years)*	Median decline (Peak-to-trough) *(Per capita)*	Years to recover the pre-crisis level (Median) *(Number of years)*
1980-83: Debt	17	3	38.2	10
1987-91: Savings and Loan	17	1	10.7	7
1994-95: Mexican	10	1	4.1	3
1997-99: Asian-Russian	14	1	13.9	4
2001-02: Argentine	14	1	10.7	3

Source: own computations based on ECLAC (2009).

FIGURE 7

Exports during the current financial crisis

(Year-on-year variations as percentages)

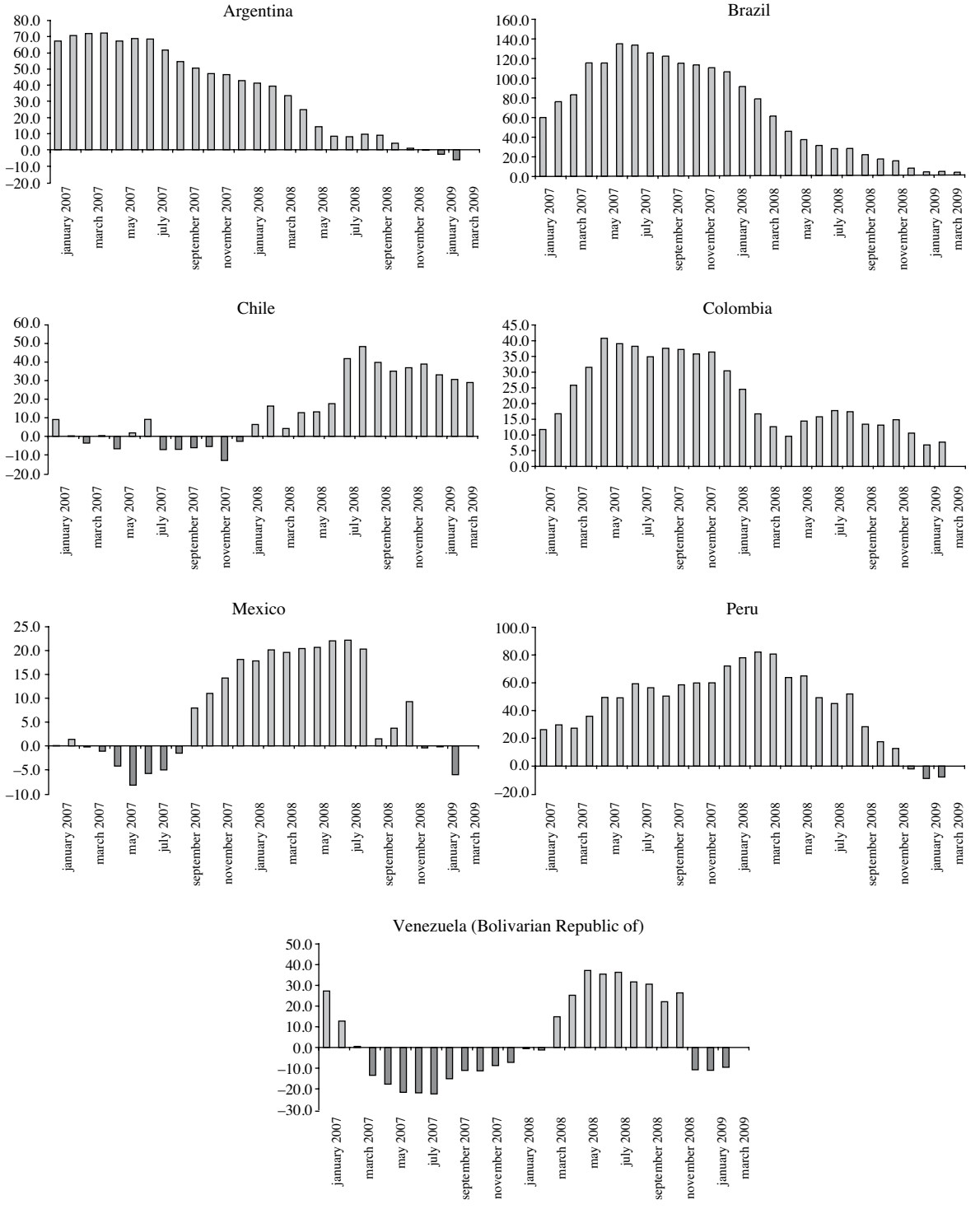


Source: own computations based on national sources of information (2009).

FIGURE 8

International Reserves during the current financial crisis

(Year-on-year variations as percentages)



Source: own computations based on national sources of information (2009).

Mexican crisis and the Asian-Russian crisis, to 43% in the debt crisis (see table 10).[40]

Traditionally, international financial crises have been accompanied by deterioration in the stock markets and the depreciation of the nominal exchange rates across the region. During the current financial crisis, at least in its initial stages, there was an apparent, or temporal, decoupling of the dynamics of these markets in the region from those in the developed world. Both the stock markets and the nominal exchange rates of countries in the region were getting stronger while those markets in the developed world were sinking. This behaviour seems to have come to an end during the second semester of 2008, and the stock markets in LAC(7) have declined since June of 2008.

Regarding the dynamics of the nominal exchange rate, during this crisis episode, the exchange rate of LAC(7) went through two distinct phases. Until July of 2008, most of the nominal exchange rates across the region tended to appreciate. However, since August 2008, most countries have witnessed significant depreciations of their exchange rate, of more than 30% in the case of Mexico and Brazil.[41]

In a context of lower exports and a deceleration in net capital inflows, the growth rate of the international reserves of the LAC(7) economies has slowed down significantly since the second semester of 2008. The median deceleration of the international reserves growth rate between the second semester of 2007 and the second semester of 2008 was 6.9%.

[40] Notice that the adoption of more flexible exchange rate regimes in some countries has reduced their need for holding international reserves as a buffer stock to defend exchange rate parities or bands.

[41] The official exchange rate of the Bolivarian Republic of Venezuela has not been modified since March of 2005.

TABLE 10

International reserves during previous international financial crisis episodes
(United States dollars)

Crisis Episodes	Countries with contraction *(Number of countries)*	Median duration of the contraction *(Number of years)*	Median decline (Peak-to-trough) *(Percentages)*
1980-83: Debt	17	1	42.7
1987-91: Savings and loan	15	1	40.5
1994-95: Mexican	9	1	19.1
1997-99: Asian-Russian	15	1	18.7
2001-02: Argentine	11	2	37.3

Source: own computations based on ECLAC (2009).

IV
Conclusion

The staggering effects of the current global financial crisis can be explained by the combination of off balance sheet funding and pro-cyclical leverage management.

Off balance sheet funding practices provided the basis for the gestation of the crisis. Off balance sheet practices seemingly separated the risk of investing in an asset or asset-backed security (financial risk) from the risk associated with the originator of the asset or security and even from the risk of the asset or security itself (real risk). Moreover, off balance sheet practices, through credit enhancement techniques, blurred the distinction between the relative risks of a broad spectrum of assets. As a result, risk perceptions on assets tended to move in tandem with the boom and bust phases of the crisis. In the boom phase, assets

were considered 'prime', while in the bust phase they were downgraded to the 'subprime' category.

The effects of off balance sheet funding were amplified by pro-cyclical leverage management practices. Pro-cyclical leverage management meant that financial institutions pursued a strategy of expanding their asset base by relying on debt financing in the boom phase. Then, in the bust phase, they would try to reduce their debt. The generalized practice of pro-cyclical management resulted in cumulative increases in asset prices in the boom phase and cumulative declines in the bust phase.

Generalized and continued asset price deflation in the bust phase contracted the balance sheets of financial institutions and curtailed their capacity to lend, which set the stage for a worldwide credit crunch and the ensuing global slowdown.

The effects of the crisis are being felt not only by developed countries but also by developing countries. In the case of Latin America, the analysis and the empirical evidence suggest that the current episode and its manifestations are likely to conform to previous crisis patterns. That is, the current global financial crisis is "old wine in new goatskins" for Latin America.

Previous crisis patterns are epitomized by their deep and lasting negative effects on the economic performance of the region. These are explained mainly by the extent to which countries face restricted access to external finance and the disruption of international trade flows. Moreover, in accordance with previous crisis patterns, the negative economic results and the restricted access to external finance are affecting a large number of countries across the region regardless of their specific characteristics, such as the degree of development of their financial markets, their integration with international financial markets, the openness of their economies, their exports bias, their initial economic conditions and the policy responses taken by their governments.

In the current crisis episode countries also face restricted access to finance and severe disruptions in international trade flows. Since the second semester of 2008, private financial flows have been slowing down and even reversing in some countries. The median reduction in non-FDI financial flows between the third quarter of 2007 and the third quarter of 2008 was 2% of GDP. Furthermore, private capital flows to the region are projected to be significantly smaller in 2009 than in 2008 (50%) and global trade is expected to fall by more than 9% during 2009. Some countries in the region have already been witnessing declines since the second semester of 2008.

Contrary to previous episodes, the current crisis has found the economies of the region in better fiscal and macroeconomic conditions, which translate into high levels of foreign assets and low unemployment and inflation rates. This improved macro context has allowed countries to adopt counter-cyclical policies to mitigate, at least initially, the negative effects of the severe contraction of external aggregate demand, as well as the possible reduction of international financial flows.[42]

As a result, the strength of the expected effects of the crisis on Latin American economies will be ultimately determined by the duration and intensity of the crisis in the developed economies and by the effectiveness of the counter-cyclical policies that the governments of the region have announced.

(Original: English)

[42] See CEPAL (2009).

APPENDIX

Table 11
Past crisis episodes

Country/Region (Crisis episode)	Crisis episodes	Increased levels of liquidity	Expansionary monetary policy	Financial deregulation and institutional change
Sweden (Nordic Crisis)	1991-1994	Ratio of bank lending to GDP rose from 43% to 63% between 1985 and 1990	The money market rate declined from 17% to 11% between 1984 and 1988. Thereafter these increased to reach 15% in 1991.	Abolition of liquidity ratios for banks (1983). Lifting of official lending guidelines by the Central Bank (1985). Removal of interest rate and lending ceilings for banks (1985).
Finland (Nordic Crisis)	1991-1994	Ratio of bank lending to GDP rose from 64% to 92% between 1985 and 1990	The money market rate declined from 15% to 10% between 1984 and 1988. Thereafter these increased to reach 15% in 1990.	Removal of interest rate ceilings (1986) and liberalization of corporate lending from abroad (1987).
Norway (Nordic Crisis)	1991-1994	Ratio of bank lending to GDP rose from 71% to 80% between 1985 and 1990	The money market rate declined from 14.2% to 11.4% between 1986 and 1990. Rates increase to reach 20% in 1993.	Removal of quantitative regulation of banks' lending and interest rate caps on lending (1984-1985).
Latin America	1982-1983	Net financial flows increased from 3.4% to 7.4% of GDP between 1973 and 1981.		Variable interest rate or rollover loans "designed to protect banks against adverse interest-rate developments on their short-term deposits."
Thailand (Asian Crisis)	1997-1998	Ratio of bank lending to GDP rose from 98% to 147% between 1992 and 1996.	The money market rate declined from 11.2% to 6.5% between 1991 and 1993. Rates increase to reach 16% and 13% in 1997 and 1998.	Deregulation of FDI and liberalization of cross-border financial transactions (1980s and 1990s).
South Korea (Asian Crisis)	1997-1998	Ratio of bank lending to GDP rose from 61% to 72% between 1992 and 1996	The money market rate declined from 17% to 12% between 1991 and 1993. Rates increase to reach 13.2% and 15% in 1997 and 1998.	Lifting of restrictions on the capital account at the beginning of the 1990s. Inbound foreign investment liberalized. Banks are allowed to borrow from abroad. Increase in limits of external indebtedness for local banks.
Malaysia (Asian Crisis)	1997-1998	Ratio of bank lending to GDP rose from 143% to 187% between 1992 and 1996	The money market rate declined from 7.1% to 4.2% between 1993 and 1994. Rates increase to reach 7.6% and 8.5% in 1997 and 1998.	Deregulation of FDI and liberalization of cross-border financial transactions (1980s and 1990s).
Japan	1991-2001	Ratio of bank lending to GDP rose from 158% to 197% between 1985-1990	Interest rates declined from 7.3% to 3.8% between 1985 and 1989. Thereafter rates increased, reaching a peak of 7.5% in 1991.	Liberalization of deposit rates and lifting of banks capital controls. Absence of regulatory distinctions among financial institutions. Establishment of offshore market.
United States (Savings and Loan)	1986-1995	Ratio of bank lending to GDP rose from 92% to 100% between 1980 and 1985	The federal funds rate declined from 12.3% in 1982 to 6.7% in 1987 and increased thereafter to levels comprised between 8%-9% in the period 1989-1990.	Depository Institutions Deregulation and Monetary Control Act (the Garn-St Germain Act) (1982). Elimination of regulations initially designed to prevent lending excesses and minimize failures.
United States (Dot-Com)	2001	Ratio of bank lending to GDP rose from 135% to 170% between 1994-2000		Financial Services Modernization Act (1999).
United States (Subprime)	2007-2008	Ratio of bank lending to GDP rose from 169% to 209% between 2002 and 2006.	The Federal Funds rate fell from 6% to 1% between 2001 and 2003. There followed a change in the monetary policy stance and the federal funds rate increased to 5% in 2006.	Commodity Futures Modernization Act (2000).

Sources: The sources used for the Nordic Crisis include Hansen (2003); Barot and Takala (1998); Kennedy and Andersen (1994); and Girouard and Blöndal (2001). The source used for Latin America is Lamfalussy (2000). The sources used for the Japanese case include: Kennedy and Andersen (1994); Herring and Wachter (1999); and Honda (2003). The sources for the East Asian crisis include: Quigley (1999) and Senhadji, A. and Collyns Ch. (2002). The sources used for the savings and loan crisis include Kennedy and Andersen (1994).

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KEYWORDS

Economic growth
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Poverty reduction in Latin America:

the role of demographic, social and economic factors

Jaime Ros

The recent socio-economic development of Latin America presents a puzzle. This is that while economic growth in the region in the past 25 years has been very slow, falling behind past performance and behind most of the rest of the world, poverty rates have continued to fall significantly and soginicial indicators have continued to improve. This paper assesses the role of various factors —income distribution, social spending and demographic changes— in explaining the paradox. The main finding, rather disturbingly, is that with few exceptions (Chile in particular) the major factor contributing to the reduction of poverty has been the demographic dividend brought about by the demographic transition that the region recorded over the period.

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I
Introduction

The recent socio-economic development of Latin America presents a puzzle. This is that while economic growth in the region in the past 25 years has been very slow, falling behind past performance and behind most of the rest of the world, poverty rates have continued to fall significantly and social indicators have continued to improve. In some countries, progress with social indicators appears even to have accelerated compared to past trends. This paper assesses the role of various factors —income distribution, social spending and demographic changes— in explaining the paradox. Have changes in income distribution contributed to the reduction in poverty rates? Have the increase in social spending and more targeted poverty reduction programmes made possible the decline in poverty despite sluggish economic growth? What has been the role of the demographic transition and the associated demographic dividend in the reduction of poverty?

The paper is organized as follows. Section II presents the analytical framework and documents the puzzle of social progress in the midst of slow growth in Latin America. Sections III and IV then present a formal regression analysis of the role of growth, income distribution, social spending and demographic changes in the observed variations in poverty rates and show the contributions that each of these factors has made to poverty reduction. The analysis finds that the demographic transition has had the greatest role in the decline of poverty. Section V concludes with a warning: as the demographic transition is completed, the demographic dividend will disappear and further social progress may necessitate more rapid economic growth. Appendix 1 addresses reciprocal causation between poverty reduction and demographic change and appendix 2 presents the definitions of the variables and data sources used.

II
Poverty reduction and its determinants

The analytical framework adopted is simple. It makes the poverty rate dependent on the level of GDP per worker, the degree of inequality in the distribution of income, government social spending and the AGE structure of the population. The role of the first three determinants is straightforward: other things being equal, an increase in GDP per worker, a fall in inequality, and an increase in social spending will all tend to reduce the poverty rate. The role of the population AGE structure requires more explanation. Given the other determinants, the demographic structure can affect the poverty rate through the following channels.[1] First, an increase in the working-AGE population as a share of the total population (or a fall in the dependency ratio) and the resulting increase in the activity rate produce the traditional demographic dividend, that is, they imply that the increase in income per capita is greater than it would otherwise have been. Second, the sharp reduction in the growth rate of the number of children allows for an inertial increase, resulting from past investments in education, in enrolments and teacher-student ratios at the primary and secondary levels. An example of such an increase is the fact that, whereas in the early

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[1] For surveys on the effects of changes in the AGE structure on economic growth and the consequences of the demographic transition for poverty, see Bloom and Canning (2001), Bloom, Canning and Sevilla (2003), Eastwood and Lipton (2001) and Kelley and Schmidt (2001). For a review of surveys on population and poverty, see Merrick (2001).

1980s some 20% of children of school AGE in Brazil were not attending school, by 2000 the figure was down to 3%.[2] Third, the change in the AGE structure of the population has a positive composition effect on the poverty rate given that the incidence of poverty is higher among children than for the population as a whole. It is worth noting that this list of channels does not include the effects of demographic change on poverty through saving behaviour or inequality. These effects are already controlled for by the inclusion of GDP per worker and the distribution of income among the determinants of poverty. The paper thus concentrates on the role of demographic change as a proximate determinant of poverty.

In the rest of this section, I look at the evolution of the poverty rate in Latin America from around 1990 to 2006 together with the evolution of each of its determinants. The sample of countries for which information is available on poverty and its determinants includes Argentina, the Bolivarian Republic of Venezuela, Brazil, Chile, Costa Rica, Ecuador, Honduras, Mexico, Panama, Paraguay, the Plurinational State of Bolivia and Uruguay.

Following the lost decade of the 1980s and since around 1990, Latin America has resumed the long-term trend towards lower poverty rates that characterized the four or five decades before the debt crisis. According to ECLAC estimates for the region as a whole, the poverty rate fell from around 48% in 1990 to about 35% in 2007 and the extreme poverty rate fell from around 22% to about 13% in the same period. Both urban and rural areas shared in the progress on poverty reduction. As table 1 shows, the reduction in urban poverty rates is a generalized phenomenon occurring in most countries in the region with data available between the early 1990s and 2006. The reduction in poverty is significant —nearly 9 percentage points for the simple average of our 12 countries— and particularly so in the largest countries, since Brazil experienced a fall of over 11 percentage points and Mexico a decline of over 15 percentage points. There are only three exceptions to this pattern: Uruguay, the Plurinational State of Bolivia and especially Paraguay with, as we shall see, a heavy drop in GDP per worker and a significant increase in inequality over the period.

TABLE 1

Latin America (12 countries): Urban poverty rates, 1990-2006
(Percentages)

Country	1990	2006	Change
Chile	38.5	13.9	-24.6
Ecuador	62.1	39.9	-22.2
Mexico	42.1[c]	26.8	-15.3
Brazil	41.2	29.9	-11.3
Panama	32.7[b]	21.7	-11.0
Honduras	70.4	59.4	-11.0
Venezuela (Bol. Rep. of)[a]	39.8	30.2	-9.6
Costa Rica	24.9	18.0	-6.9
Argentina	21.2	19.3	-1.9
Uruguay	17.9	18.8[d]	0.9
Bolivia (Plur. State of)	52.6[c]	53.8[e]	1.2
Paraguay	43.2	48.5[d]	5.3
Average	*40.6*	*31.7*	*-8.9*

Source: Economic Commission for Latin America and the Caribbean (ECLAC), *Social Panorama of Latin America, 2007* (LC/G.2351-P/E), Santiago, Chile, 2007. United Nations publication, Sales No. E.07.II.G.124.

[a] National poverty rate.
[b] 1991.
[c] 1989.
[d] 2005.
[e] 2004.

Along with the reduction of poverty, social indicators have continued to improve (table 2). Life expectancy is up by almost eight years since 1980-1985 and infant mortality has fallen by more than 50%. Illiteracy has been halved and is down to less than 13% while school enrolments are up at all levels of

TABLE 2

Latin America and the Caribbean: health and education indicators

	1980-1985	2000-2005
Life expectancy at birth	65.4	73.1
Infant mortality rate[a]	57.5	24.2
Illiteracy rate (%)	24.2	12.8
	Around 1990	Around 2004
Gross enrolment ratios		
Primary level[b]	103.1	112.2
Secondary level[b]	49.4	74.6
Tertiary level[c]	19.1	30.5

Source: Economic Commission for Latin America and the Caribbean (ECLAC) and World Bank, EdStats.

[a] Per 1,000 births.
[b] Simple average for 17 Latin American countries.
[c] Simple average for 16 Latin American countries.

[2] World Bank, *World Development Indicators*, cited by Fraga (2004).

education, and very significantly so at the secondary and tertiary levels (primary school enrolments were already very high at the beginning of the period).

Meanwhile, growth performance has been disappointing. As can be seen in table 3, total GDP growth and per capita GDP growth since 1981 fell below half their rates in the period 1960-1981 (2.5% against 5.2% in the case of GDP growth). The performance since 1990, following the end of the debt crisis, has been slightly better but still well below the record over 1960-1981 (3.2% against 5.2%). The growth performance of GDP per worker has been even poorer, with a growth rate of -0.3% per year over 1981-2006 and 0.6% from 1990 to 2006. Latin America is lagging behind the rest of the world: in 1981 its GDP per capita was 20% above the world average, but by 2006 GDP per capita was 11% below the world average (table 4).

In our sample of countries, there is only one outlier to this pattern of very slow growth in GDP per worker—Chile, with an annual growth rate of nearly 4% over the period 1990-2006. In the rest of the countries, the annual growth rate was 1.6% or less and in four of them GDP per worker actually fell during this period (Bolivarian Republic of Venezuela, Ecuador, Honduras and Paraguay).

The average Gini coefficient for the 12-country sample remained nearly constant from 1990 to 2006 (a decline of 0.3 percentage points, see table 6). Income concentration increased in five countries, especially

TABLE 3

Latin America: economic growth

(Percentages, constant 2000 dollars)

Annual growth rate	1960-1981	1981-2006	1990-2006
GDP growth	5.2	2.5	3.2
GDP per capita	2.6	0.8	1.6
GDP per worker	--	-0.3	0.6

Source: prepared by the author on the basis of World Bank, World Development Indicators [online database].

TABLE 4

Latin America: per capita GDP[a] as a ratio of per capita GDP in other regions of the world

Region	1981	1990	2006
East Asia and the Pacific	6.00	3.31	1.34
South Asia	5.41	3.75	2.62
Sub-Saharan Africa	3.37	3.46	4.29
Middle East and North Africa	1.69	1.48	1.38
World	1.20	0.97	0.89
Europe and Central Asia[b]	--	0.79	0.91
High-income OECD countries	0.36	0.26	0.25

Source: prepared by the author on the basis of World Bank, World Development Indicators [online database].

[a] Per capita GDP expressed in year 2000 international dollars.
[b] Developing countries.

TABLE 5

Latin America: annual growth rate of GDP[a] per worker, 1990-2006

(Percentages)

Country	Growth rate[b]
Chile	3.8
Panama	1.6
Argentina	1.6
Costa Rica	1.4
Uruguay	0.7
Mexico	0.7
Bolivia (Plur. State of)	0.2
Brazil	0.2
Ecuador	-0.6
Honduras	-0.9
Venezuela (Bol. Rep. of)	-1.1
Paraguay	-1.4
Simple average	*0.5*

Source: prepared by the author on the basis of World Bank, World Development Indicators [online database].

[a] GDP is measured at purchasing power parity (PPP) in year 2000 international dollars.
[b] Growth rates for each country are calculated over the period for which information on urban poverty rates is available (table 1).

TABLE 6

Gini concentration coefficients in Latin America

(Percentages)

Country	Around 1990	Around 2006	Change
Paraguay	44.7	50.4	5.7
Costa Rica	41.9	46.9	5.0
Ecuador	46.1	50.5	4.4
Argentina	50.1	51.9	1.8
Bolivia (Plur. State of)	53.8	55.4	1.6
Brazil	60.6	59.3	-1.3
Chile	54.2	51.7	-2.5
Panama	53.0	50.1	-2.9
Venezuela (Bol. Rep. of)	47.1	44.1	-3.0
Honduras	56.1	52.7	-3.4
Uruguay	49.2	45.2	-4.0
Mexico	53.0	47.8	-5.2
Average	50.8	50.5	-0.3

Source: Economic Commission for Latin America and the Caribbean (ECLAC), *Social Panorama of Latin America, 2007* (LC/G.2351-P/E), Santiago, Chile, 2007. United Nations publication, Sales No. E.07.II.G.124.

Paraguay, Costa Rica and Ecuador, and declined in seven, especially Honduras, Uruguay and Mexico. There is some apparent inverse correlation between the change in the Gini coefficient and the reduction in poverty: Mexico, with the largest decline in inequality, is one of the countries with the largest reductions in poverty while Paraguay, with the largest increase in inequality, is the country with the largest rise in the poverty rate. However, the overall stability of income concentration suggests that the evolution of inequality is unlikely to explain much of the decline in poverty.

Social spending has increased as a percentage of GDP in the region, a possible consequence of the restoration or establishment of democratic regimes in Latin America.[3] Social spending has increased across the board among the 12 countries in table 7, with the exception of Ecuador, and the (simple) average increase has been 2.6 percentage points. This increase seems, however, rather too modest to explain much of the reduction of poverty in the region. Moreover, and somewhat puzzlingly, there is no clear pattern of correlation between higher social spending and lower poverty. The Plurinational State of Bolivia, with the largest increase, is one of the few countries that recorded an increase in the poverty rate, while Ecuador, with a decline in social spending, features the second-largest reduction in poverty.

The data on the demographic transition, which began in most Latin American countries before 1990, are also worth recalling (table 8). Between the late 1960s and the mid-2000s, the fertility rate fell from 5.6% to around 2.4% and the population growth rate from 2.6% to around 1.3% per year. From 1970 to 2005, the percentage of the total population under 15 years of AGE declined from 42.4% to 29.6% as a result of a dramatic fall in the growth of the under-15 population from 2.6% per year in the 30 years before 1980 to 0.1% per year today. As a result of these

[3] On the democratic dividend in Latin America and its effects on social spending, see Ocampo (2004). More generally, on the positive effects of democracy on social spending, see Lindert (1994) and Brown and Hunter (1999). For a contrarian view that argues that democracies spend the same or somewhat less on social programmes as economically and demographically similar non-democracies, see Mulligan and Gil (2002).

TABLE 7

Latin America (12 countries): social spending as a percentage of GDP

Country	1990-1991	2004-2005	Change
Bolivia (Plur. State of)	9.0	18.6	9.6
Paraguay	3.2	7.9	4.7
Honduras	7.5	11.6	4.1
Brazil	18.1	22.0	3.9
Mexico	6.5	10.2	3.7
Venezuela (Bol. Rep. of)	8.8	11.7	2.9
Costa Rica	15.6	17.5	1.9
Panama	16.2	17.2	1.0
Uruguay	16.8	17.7	0.9
Chile	12.7	13.1	0.4
Argentina	19.3	19.4	0.1
Ecuador	7.4	6.3	-1.1
Simple average	11.8	14.4	2.6

Source: Economic Commission for Latin America and the Caribbean (ECLAC), *Social Panorama of Latin America, 2007* (LC/G.2351-P/E), Santiago, Chile, statistical appendix table 43. United Nations publication, Sales No. E.07.II.G.124.

TABLE 8

The demographic transition in Latin America

	1965-1970	1975-1980	1985-1990	1995-2000	2005-2010
Total fertility rate	5.6	4.5	3.4	2.7	2.4
Population growth rate (%)	2.6	2.4	1.9	1.6	1.3
	1970	1980	1990	2000	2005
Population under 15[a]	42.4	39.7	36.1	31.7	29.6
Dependency ratio[b]	87.3	78.9	68.9	58.8	55.0
Labour participation ratio (%)	NA	34.7	39.1	44.1	45.9

Source: Latin American and Caribbean Demographic Centre (CELADE) – Population Division of ECLAC, *Demographic Bulletin*, No. 69, *Latin America and Caribbean: Population Estimates and Projections, 1950-2050* (LC/G.2152-P), Santiago, Chile, 2002; and World Bank, World Development Indicators [online database].

[a] As share of the total population.
[b] (Population aged 0-14 + population aged 65 and over)/population aged 15-64*100.

demographic changes, the dependency ratio declined from 87.3% to 55% between 1970 and 2005. With the decline in the fertility rate, the female labour force participation ratio increased, further contributing to the increase in the overall activity rate resulting from the decline in the dependency ratio.

The overall picture conceals important differences across countries in the region, however. These differences are presented in table 9, which shows the evolution of the dependency ratio and of the share of the population under 15 in the 12-country sample. At one extreme there is a group of five countries (Bolivarian Republic of Venezuela, Brazil, Ecuador, Honduras and Mexico) with a reduction in the dependency ratio of more than 15 percentage points and a reduction of over 7 percentage points in the share of the population under 15 since 1990. With the exception of Brazil, these are countries that had very young populations at the beginning of the period, so that the dependency ratio was initially relatively high and there was scope for the demographic transition to reduce it sharply. At the other extreme, there is a group of four countries (Argentina, Chile, the Plurinational State of Bolivia and Uruguay) with relatively small declines in the dependency ratio (especially Chile and Uruguay) as well as in the share of the population under 15. With the exception of the Plurinational State of Bolivia, these are the countries which had the oldest populations at the beginning of the period and where the demographic transition was already well advanced. They therefore had less potential to reduce the dependency ratio than the previous group of countries. Among the rest of the countries, Costa Rica and Panama show medium-level initial dependency ratios and a medium-sized reduction in this ratio during the period. Paraguay, like the Plurinational State of Bolivia, is an outlier with a relatively high dependency ratio in 1990 but a reduction that is significantly less than the average for the first group of countries.

TABLE 9

Latin America (12 countries): dependency ratio and share of the population under AGE 15, 1990-2006
(Percentages)

	Dependency ratio			Share of population under AGE 15		
	Around 1990	Around 2006	Change[a]	Around 1990	Around 2006	Change[a]
Mexico	76.2	55.6	-20.6	39.3	30.3	-9.0
Honduras	93.0	73.3	-19.7	45.2	38.5	-6.7
Ecuador	75.7	56.8	-18.9	38.9	31.0	-7.9
Brazil	64.1	47.6	-16.5	34.7	26.3	-8.4
Venezuela (Bol. Rep. of)	71.8	56.7	-15.1	38.2	31.2	-7.0
Paraguay	84.1	69.9	-14.2	42.0	37.4	-4.6
Costa Rica	68.6	55.0	-13.6	36.5	29.8	-6.7
Panama	66.5	53.2	-13.3	34.9	28.6	-6.3
Argentina	65.5	57.3	-8.2	30.6	26.5	-4.1
Bolivia (Plur. State of)	81.8	74.4	-7.4	41.4	38.5	-2.9
Chile	56.7	52.0	-4.7	30.1	26.3	-3.8
Uruguay	60.2	59.6	-0.6	26.0	24.3	-1.7
Average	*72.0*	*59.3*	*-12.7*	*36.5*	*30.7*	*-5.8*

Source: Latin American and Caribbean Demographic Centre (CELADE) – Population Division of ECLAC, *Demographic Bulletin*, No. 69, *Latin America and Caribbean: Population Estimates and Projections, 1950-2050* (LC/G.2152-P), Santiago, Chile, 2002.

[a] Changes for each country are calculated over the period for which information on urban poverty rates is available (table 1).

III
Empirical estimation

This section presents the results of a regression analysis of the model outlined in the previous section for the 12-country sample. For each of these 12 countries, observations are available for four time periods: around 1990, around 1995, around 2000 and around 2006.

As noted earlier, the model to be estimated makes the urban poverty rate dependent on the level of GDP per worker (in constant PPP dollars, GDPW), the degree of inequality in the distribution of income as measured by the Gini concentration coefficient (GINI), the level of government social spending (SG) and the AGE structure of the population (AGE). Two indicators of the level of government social spending are used: the share of social spending in GDP (SG%GDP) and the level of social spending per capita (SG per capita). Two indicators of the AGE structure of the population are considered: the dependency ratio (DEP ratio) and the share of the population under 15 (POP<15). We thus have four regression equations to be estimated (table 10).

Table 10 presents the ordinary least square (OLS) estimates of the model. As can be seen in the table, all the coefficients have the expected signs and, with one exception (social spending per capita in equation 4), are statistically significant at the usual levels. In particular, an increase in GDP per worker reduces poverty, an increase in inequality increases it, an increase in social spending reduces it, and an increase in the dependency ratio or in the share of the population under 15 years increases it.

Table 11 presents the estimates of a fixed effects model where the constant term has been dropped and a vector of dummy variables for each country has been included to control for country-specific effects. In addition to the four specifications described above,

TABLE 10

Latin America (12 countries): determinants of the urban poverty rate (OLS estimates)[a b]

	(1)	(2)	(3)	(4)
Constant	-20.7	-21.09	-32.03[c]	-35.17[c]
	(1.29)	(1.30)	(1.79)	(1.89)
GDPW	-1.03[e]	-0.96[e]	-0.54[c]	-0.77[d]
	(5.39)	(4.82)	(1.83)	(2.63)
GINI	1.08[e]	0.92[e]	0.86[e]	0.70[e]
	(5.03)	(4.23)	(3.59)	(2.94)
SG%GDP	-1.20[e]	-0.99[e]		
	(5.21)	(3.84)		
SG per capita			-0.016[d]	-0.007
			(3.35)	(1.19)
DEP ratio	0.51[e]		0.62[e]	
	(4.06)		(4.51)	
POP<15		1.14[e]		1.51[e]
		(4.01)		(4.43)
Adj. R^2	0.85	0.84	0.80	0.80

Source: prepared by the author on the basis of regression exercises using the data cited in tables 1, 5, 6, 7, 8 and 9.

[a] Number of observations = 48.
[b] Absolute t-values are shown in parentheses.
[c] Significant at 10%.
[d] Significant at 5%.
[e] Significant at 1%.

TABLE 11

Latin America (12 countries): determinants of the urban poverty rate (fixed effects model)[a b]

	(1)	(2)	(3)	(4)	(5)	(6)
GDPW	-1.24[e]	-1.08[e]	-1.38[d]	-1.23[d]	-1.25[e]	-1.08[e]
	(3.32)	(2.80)	(2.55)	(2.30)	(3.40)	(2.83)
GINI	0.71[d]	0.66[c]	0.74[d]	0.69[c]	0.73[d]	0.68[c]
	(2.06)	(1.91)	(2.15)	(2.00)	(2.15)	(1.99)
SG%GDP	-0.16	-0.22				
	(0.38)	(0.51)				
SG per capita			0.004	0.005		
			(0.33)	(0.40)		
DEP ratio	0.51[e]		0.58[e]		0.54[e]	
	(3.48)		(3.60)		(4.36)	
POP<15		1.16[e]		1.35[e]		1.25[e]
		(3.39)		(3.49)		(4.25)
Adj. R^2	0.96	0.96	0.96	0.96	0.96	0.96

Source: prepared by the author on the basis of regression exercises using the data cited in tables 1, 5, 6, 7, 8 and 9.

[a] Number of observations = 48.
[b] Absolute t-values are shown in parentheses.
[c] Significant at 10%.
[d] Significant at 5%.
[e] Significant at 1%.

two equations which drop the social spending variables were estimated, given that these variables turned out to be insignificant in the other specifications. The results, as can be seen from the table, are very similar to those in table 10 except for the lack of significance of the social spending indicators. The rest of the coefficients have the expected signs and in all cases are statistically significant at the usual levels.

IV

Contributions to the reduction in the poverty rate

How much of the reduction in the poverty rate in Latin America can be explained by each of the different determinants? Tables 12 and 13 address this question using the models estimated in the previous section. Table 12 presents the contributions to the predicted reduction in the poverty rate in each country (as well as the Latin American simple average) using regression equation (5) in table 11, which considers the role of growth in GDP per worker, the change in inequality and the change in the dependency ratio (results do not differ significantly when using equation 6 in table 11, which considers the change in the share of the population under 15). For example, the second column of table 12 shows by how much poverty would have fallen as a result of the increase in GDP per worker in the absence of changes in the other determinants of the poverty rate.

TABLE 12

Latin America (12 countries): contributions of different determinants to the reduction in the poverty ratea

(Percentage points, based on fixed effects model)

	Growth[b]	Inequality[c]	Demographic changed
Mexico	3.4	3.8	11.1
Honduras	-1.4	2.5	10.6
Ecuador	-1.1	-3.2	10.2
Brazil	0.5	0.9	8.9
Venezuela (Bol. Rep. of)	-3.1	2.2	8.2
Paraguay	-2.7	-4.1	7.7
Costa Rica	5.4	-3.6	7.3
Panama	4.1	2.1	7.2
Argentina	8.1	-1.3	4.4
Bolivia (Plur. State of)	0.2	-1.2	4.0
Chile	15.2	1.8	2.5
Uruguay	2.1	2.9	0.3
Average	*2.6*	*0.2*	*6.9*

Source: prepared by the author on the basis of the results obtained from regression equation (5) given in table 11.

[a] Equation: UPOV = -1.25 GDPw + 0.73 GINI + 0.54 DEPratio.
[b] Measured by increase in GDP per worker.
[c] Measured by fall in the Gini coefficient.
[d] Measured by fall in the dependency ratio.

Several remarkable conclusions emerge from the table. First, for the average of the 12 Latin American countries, demographic change, as measured by the fall in the dependency ratio, is by far the main contributor to the reduction in the poverty rate. Out of an average predicted reduction in poverty of 9.7 percentage points (the actual reduction being 8.9 percentage points), the fall in the dependency ratio contributed 6.9 percentage points (71% of the total) compared to only 2.6 percentage points for the growth in GDP per worker (27% of the total) and 0.2 percentage points for the fall in inequality (2% of the total). The absolute contribution of demographic change is of course particularly remarkable in those countries where the fall in the dependency ratio was most pronounced. In the Bolivarian Republic of Venezuela, Brazil, Ecuador, Honduras and Mexico, the fall in the dependency ratio contributed more than 8 percentage points to the reduction in the poverty rate. By contrast, demographic change is much less influential in the Plurinational State of Bolivia and those countries which were already well advanced in the demographic transition at the beginning of the period considered (Uruguay, Chile and Argentina). In these countries the poverty rate increased (the Plurinational State of Bolivia and Uruguay) or, when it fell, growth in GDP per worker was the main contributor to the reduction in poverty (Argentina and Chile). This is especially true in the case of Chile, the country with the largest reduction in the poverty rate, where growth contributed over 15 percentage points to poverty reduction. Growth also had a significant impact (although not as large as that of demographic change) in two other countries: Costa Rica and Panama. Paraguay, the country with the largest increase in the poverty rate, is in a separate category where relatively large negative contributions from the fall in GDP per worker and the increase in

inequality were partly offset by a fairly large positive impact from demographic change.

The counterpart of the importance of demographic change in poverty reduction is of course the limited relevance of growth and changes in inequality. Poverty would have fallen by 2.6 percentage points on average as a result of the increase in GDP per worker (in the absence of changes in the other determinants) and by 0.2 percentage points as a result of the reduction in inequality. As the second column of the table reveals, poverty would have fallen significantly as a result of growth only in the cases of Chile (where the reduction of poverty due to growth is 15.2 percentage points) and Argentina. Even in this last case, the seemingly large contribution of growth is in fact the result of the equation overpredicting the fall in poverty during the period considered. Thus, with the exception of Chile, poverty reduction in the midst of slow growth is indeed a puzzle in the context of Latin America's recent socio-economic development. As for changes in inequality, shown in the third column, there are no exceptions to the conclusion that these have had a minor role in poverty reduction.

Table 13 presents the contributions to the predicted reduction in the poverty rate in each country (as well as the Latin American simple average) using regression equation (1) in table 10, the one with the best fit, which considers the role of growth in GDP per worker, the change in inequality, the change in social spending as a percentage of GDP and the change in the dependency ratio.

The main findings are similar to those presented in table 12: the large contribution of demographic change to the reduction of the poverty rate and the limited relevance of the increase in GDP per worker and, especially, the change in inequality. The main difference is of course that in this equation the change in social spending has a significant effect on poverty reduction, larger in fact than the contributions of growth and inequality although much smaller than that of demographic change. It is also worth noting that the average contribution of social spending is pulled up by its relatively large contribution in the Plurinational State of Bolivia and Paraguay, two of the three countries where the urban poverty rate increased. Excluding these two countries reduces the average contribution of social spending to 2.1 percentage points, the same as the average contribution of the increase in GDP per worker.

TABLE 13

Latin America (12 countries): contributions to the reduction in the poverty rate[a]
(Percentage points, based on ols estimates)

	Growth[b]	Inequality[c]	Social spending[d]	Demographic change[e]
Mexico	2.8	5.6	4.4	10.5
Honduras	-1.2	3.7	4.9	10.1
Ecuador	-0.9	-4.8	-1.3	9.6
Brazil	0.4	1.4	4.7	8.4
Venezuela (Bol. Rep. of)	-2.6	3.3	3.5	7.7
Paraguay	-2.2	6.2	5.6	7.2
Costa Rica	4.4	-5.4	2.3	6.9
Panama	3.4	3.1	1.2	6.8
Argentina	6.7	-2.0	0.1	4.2
Bolivia (Plur. State of)	0.1	-1.7	11.5	3.8
Chile	12.6	2.7	0.5	2.4
Uruguay	1.8	4.3	1.1	0.3
Average	*2.1*	*0.3*	*3.2*	*6.5*

Source: prepared by the author on the basis of the results obtained from regression equation (1) given in table 10.

[a] Equation: UPOV = -20.7 -1.03 GDPW + 1.08 GINI - 1.20 SG%GDP + 0.51 DEPratio.
[b] Measured by increase in GDP per worker.
[c] Measured by fall in the Gini coefficient.
[d] Measured by increase in social spending as percentage of GDP.
[e] Measured by fall in the dependency ratio.

V
Conclusions

The results presented in this paper have implications for the present and future of poverty reduction in Latin America. For the present because they suggest that, had it not been for the demographic dividend, poverty reduction would have been much slower than it actually was, and for the future because the demographic transition is now largely over: at around 2.4, the fertility rate is near the 2.1 replacement level and is not expected to go below replacement in the future, while the dependency ratio will not fall by more than a few percentage points and will eventually start rising (towards 2025) as the elderly come to represent an increasing fraction of the population. Thus, from now on the effects of the demographic dividend on poverty will largely disappear. The resumption of faster growth in GDP per worker, the reduction of income inequality and quite possibly further increases in social spending will be imperative if the region is to continue to record a significant reduction in poverty rates.

APPENDIX 1

Reciprocal causation between demographic change and the poverty rate

This appendix addresses the possibility of reverse causation between demographic changes and changes in the poverty rate, i.e., the possibility that changes in the poverty rate cause demographic changes through their effects on the fertility rate rather than vice versa. In doing so, it follows a similar procedure to that adopted in Eastwood and Lipton (1999). This is to include as regressors in the poverty rate equation the contemporaneous change in the fertility rate together with the change in fertility lagged 10 years. Then, if causation runs primarily from poverty to the fertility rate, the change in poverty should be more strongly associated with the contemporaneous change in the fertility rate than with the lagged change in fertility. Conversely, if the change in poverty is more strongly associated with the lagged change in fertility we can conclude that causation runs mainly from fertility to poverty through the demographic changes triggered by the change in fertility.

Table a.1 shows the results of this procedure for a cross-section of 17 Latin American countries with information on urban poverty, the fertility rate and GDP per worker.[4] The contemporaneous change in fertility has a positive and significant effect on the change in poverty when the lagged change in fertility is absent from the equation. Yet when both variables are included as regressors the strongest and only statistically significant association is between the change in poverty and the lagged change in fertility, clearly suggesting that causality runs primarily from demographic change to poverty.

TABLE A.1

Latin America (17 countries): poverty and fertility equations (OLS estimates)[a] [b]

	(1)	(2)
Constant	5.14	7.82[c]
	(1.32)	(2.60)
Δ GDPw	-32.12[d]	-31.34[d]
	(3.60)	(4.70)
Δ Fertility rate	11.54[c]	1.96
	(2.69)	(0.46)
Δ Fertility rate lagged 10 years		9.54[d]
		(3.48)
Adj. R^2	0.44	0.69

[a] Number of observations = 17. The dependent variable is the change in the urban poverty rate from around 1990 to around 2005.
[b] Absolute t-values are shown in parentheses.
[c] Significant at 5%.
[d] Significant at 1%.

[4] Argentina, Bolivarian Republic of Venezuela, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Paraguay, Plurinational State of Bolivia and Uruguay.

APPENDIX 2

Data sources and definitions

This appendix gives the definitions and data sources of the variables used in the econometric analysis.

Dependency ratio: ((population aged 0-14 + population aged 65 and over)/population aged 15-64)*100. Latin American and Caribbean Demographic Centre (CELADE) – Population Division of ECLAC, *Demographic Bulletin*, No. 69, *Latin America and Caribbean: Population Estimates and Projections, 1950-2050* (LC/G.2152-P), Santiago, Chile, 2002, table 10.

Fertility rate: total fertility rate. Latin American and Caribbean Demographic Centre (CELADE) – Population Division of ECLAC, *Demographic Bulletin*, No. 69, *Latin America and Caribbean: Population Estimates and Projections, 1950-2050* (LC/G.2152-P), Santiago, Chile, 2002, table 3.

GDP per worker: GDP is at PPP (2000 international dollars) divided by total labour force. Source: *World Bank, World Development Indicators*, Washington, D.C.

Gini: Gini concentration of income coefficient. Economic Commission for Latin America and the Caribbean (ECLAC), *Social Panorama of Latin America, 2007* (LC/G.2351-P/E), Santiago, Chile. United Nations publication, Sales No. E.07.II.G.124.

Population under 15 years of AGE (percentages). Latin American and Caribbean Demographic Centre (CELADE) – Population Division of ECLAC, *Demographic Bulletin*, No. 69, *Latin America and Caribbean: Population Estimates and Projections, 1950-2050* (LC/G.2152-P), Santiago, Chile, 2002, table 9.

Social spending: government social spending as percentage of GDP or per capita. Includes public spending on education, health and nutrition, social security, employment and social welfare, housing, and water and sewerage systems. Economic Commission for Latin America and the Caribbean (ECLAC), *Social Panorama of Latin America, 2007* (LC/G.2351-P/E), Santiago, Chile. United Nations publication, Sales No. E.07.II.G.124. The data shown for the Plurinational State of Bolivia for 1989 are estimates by the author.

Urban poverty: population under the poverty line (as percentages) in urban areas. Economic Commission for Latin America and the Caribbean (ECLAC), *Social Panorama of Latin America, 2007* (LC/G.2351-P/E), Santiago, Chile. United Nations publication, Sales No. E.07.II.G.124. For the Bolivarian Republic of Venezuela, the poverty rate refers to the total poverty rate.

(Original: English)

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KEYWORDS

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Youth and feelings of belonging in Latin America: causes and risks of social fragmentation

Gonzalo A. Saraví

Over the last few decades, Latin American societies have undergone structural and secular reforms that have caused far-reaching social fragmentation extending over many spheres of social life. It is therefore pertinent to ask whether this has affected the socially shared notions that define a common sense of belonging. What has happened to such sentiments and how have they changed in the heat of the changes that have taken place in the region? This article analyses the weakening of two institutions capable of engaging individuals and generating shared perceptions, wishes and values, which had become key mechanisms of integration and social cohesion in the past: namely school and work. In this context, the article reviews the experiences and meaning of school and work for young people from the most disadvantaged sectors of the population, and the emergence of new competing institutions that display increasing capacity to engage and give meaning.

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I
Introduction

Social fragmentation is a key feature of a new social problem that is hovering over contemporary Latin American society. Although related to other issues of similar level and importance, such as social exclusion processes and increasing socioeconomic inequality, social fragmentation has its own specific connotations. As an *ad infinitum* process, it can be seen as a path leading to the dilution of social issues, or, to be more precise, their individualization (in Beck's terms, institutionalized individualism). Nonetheless, in the case of Latin America at least, social fragmentation is deeply interwoven with processes of socioeconomic exclusion and inequality involving compartmentalized lifestyles and biographic experiences, with urban spaces, domains of sociability and fields of interaction that are also fragmented. One could continue citing examples of this phenomenon in other spheres of social life, but in all cases it involves fragmentations that are permeated by inequality and risks of exclusion.

Over the last few years, perhaps decades, Latin America has undergone far-reaching but silent transformation processes. Alongside political transition, economic crises and changes in the roles of the State and market, less specific social changes have also been unfolding in our region, which are just as relevant as the previous ones or even more so. These are currently being expressed in a society that is very different than what it was few years ago and, particularly, in a new social structure. Today's poverty is not the same as yesterday's; contemporary cities face new challenges —insecurity in particular, and others related to urban segregation, territorial stigmatization, fear and sociability with "others" (Kaztman and Wormald, 2002; Portes, Roberts and Grimson, 2005; Saraví, 2007). Consumption has assumed an unprecedentedly central role, both in the social order and in the subjectivity of individuals (Bauman, 2007). Lastly, social inequality has reached levels that were unimagined in the recent past, even penetrating societies with a broad-based middle class that seemed to be diverging from the Latin American pattern (Reygadas, 2008).

As a result of these and other processes, we are living today in deeply and increasingly fragmented societies. Not only is this revealed in the material conditions of existence, but, as I shall try to argue in this article, it also permeates the meaning of institutions —an aspect that has been studied less and hardly valued at all until recently. The growing concern for social cohesion in our region and elsewhere can only be understood against a backdrop of disintegrating senses of belonging. What are the shared values that make it possible to define a shared sense of belonging? What has happened to those values and how have they changed in the heat of structural and secular changes that the region has undergone in recent decades? Are the deepening of inequality and the emergence of social exclusion processes causing fragmentation in factors that are crucial for the social order? Is it possible to agree upon certain values and norms of collective existence without a shared foundation that stems from a common sense of belonging?

In this context, it is pertinent to question whether, in the most deprived sectors of our societies, which bear a heavy and longstanding burden of disadvantages, earlier socially shared senses of belonging have been weakened by the emergence of new frames of reference. As a contribution to this broader and more ambitious discussion, this article focuses exclusively on an analysis of the meaning attributed to school and work by young people from deprived or vulnerable urban sectors.

Focusing on education and the labour market is not a random or capricious choice, but reflects the fact that, for most of the past century, these two institutions were key mechanisms of social mobility in our region and, consequently, also of integration —to a greater or lesser degree depending on the specific national setting in question (see for example Bayón, 2006). This should not be interpreted as an idealization of the recent past; nor should one assume that in those years education was a channel of social mobility that was equally accessible to all, or that poverty and precarious jobs were unknown to young people from low-income sectors. Instead it means that both institutions were recognized in society as key mechanisms of mobility and social integration. This recognition might have been expressed in terms of experiences or merely aspirations; but, one way or another, it became the fundamental pillar of personal and social life in all cases.

The initial question I pose on this subject is simple: do young people from low-income sectors, and

particularly those living in the most disadvantaged and vulnerable conditions, still see school and work as mechanisms of social mobility and paths to integration? The full answer is not merely yes or no, for the question invites a far-reaching exploration of the crisis of meaning from which these institutions are suffering, and of their current ability to construct social subjectivities and the consequences that may arise therefrom. This is not a spontaneous social mutation, but the outcome of an intensive social fragmentation process. Nor does it involve new subjective constructions that are capricious and post-modern in meaning; instead it is a crisis whose outcome produces institutions that are unable to engage individuals and construct subjectivities.

The analysis and arguments presented below draw on various information sources, the most important being the results of my own research on youth and vulnerable transitions in Mexico and Argentina, based on intensive qualitative work with disadvantaged youth.[1] Nonetheless, an attempt has also been made to systemize the numerous references found among studies on youth and other issues in various Latin American countries, which were consistent with my own findings and hypotheses. There is no doubt that our region is extremely diverse, and generalizations nearly always ignore important specific features. Accordingly, the analysis is focused on Mexico, while remarks on other countries are used to strengthen an argument that might reflect common regional trends.

II

The experiences and meaning of school

Latin America has made sustained progress in terms of access to education and educational attainment over the last two decades. The proportion of children and young people attending school has risen significantly at all levels —particularly primary, where universal access has been achieved. In terms of attainment, practically all young people today complete primary school, and many of them go on to complete secondary (see ECLAC, 2007).[2] Nonetheless, secondary education continues to pose major challenges, for while access has increased massively, it remains a school level of little capacity to retain students and the highest dropout rates. Regionwide even today, over half of young people between 20 and 24 years of age fail to complete the 12 years of education —the minimum level of schooling which, at the end of the 1990s, the Economic Commission for Latin America and the Caribbean (ECLAC) considered necessary to avoid poverty. In the case of Argentina, a recent report sponsored by the World Bank actually states that young people born between 1975 and 1980 were more likely to complete secondary school than those born 10 years later, between 1986 and 1990 (Giovagnoli and Verter, 2008).

This difference in educational attainment is not unrelated to inequality in the social structure. In all of the region's countries, the percentage of young people that enter and complete secondary education falls sharply with the income level and educational climate in their homes of origin. Mexico is a paradigm case: in 2002, 63.2% of 20-24 year-olds from families in the highest income quintile had completed secondary school, compared to just 12.0% among those in the poorest quintile. Even more worrying are that inequality persists, despite progress in expanding the educational system, and the education gap between the wealthiest and poorest sectors has been widening. In Mexico, the difference between those two income quintiles in terms of the proportion of 20-24 year-olds completing secondary school not only failed to narrow in 1989-2003 but actually tended to widen (the ratio grew from 5.1 to 5.3). In Argentina, the report mentioned above states that schooling among the three wealthiest quintiles increased by between 1 and 1.2 years in the last decade, whereas the two poorest quintiles only gained between 0.7 and 0.8 years of schooling. As a result, the education gap continued to grow (Giovagnoli and Verter, 2008). In Latin America

[1] Both pieces of research combined quantitative analysis with intensive fieldwork. The study on Argentina was based on the Permanent Household Survey (EPH) and 60 semi-structured interviews with young people of between 15 and 29 years of age in two areas of Greater Buenos Aires (Lanús and Florencio Varela). The research in Mexico drew on the National Youth Survey (2000 and 2005) and a total of 38 semi-structured interviews with young people of the same age held in several low-income boroughs of Mexico City (Iztapalapa, Nezahualcoyotl and Valle de Chalco).

[2] Hereinafter the term "secondary" will be used to mean 12 years of formal schooling.

as a whole, the ratio between the percentages of 15-19 year-old students from the first and fifth per-capita income quintiles who were behind their school age-group increased from 2.5 to 3.8 between 1990 and 2006 (ECLAC/OIJ, 2008).

One needs to ask, therefore, what factors explain why over half of all young people today still fail to complete secondary school, despite all the efforts made. As most of them come from the poorest households and those with the poorest educational climate, the question can be specifically targeted on youth living in situations of greatest social disadvantage. Why does secondary school have such little power to retain them? In the terms in which the question has been posed, part of the answer seems almost inevitable and obvious: the economic needs of their families would be one reason why they drop out of school. This factor helps to explain the phenomenon and represents one of the main obstacles to spreading and increasing educational attainment among this sector of the population. Nonetheless, others also need to be considered, such as the "meaning" of school and the importance of formal education in the expectations held by low-income youth. A number of studies have started to recognize a possible central role for both factors. For example, a short report by the Information System on Educational Trends in Latin America (SITEAL, 2007, p. 4) ends by asking whether young people interrupt their education because they need to go out to work, or whether they move into the world of employment because they perceive that school does not meet their expectations, or simply excludes them. Along the same lines, based on an analysis of the National Youth Survey for 2005 in Mexico, Reguillo (2007, p. 81) states that, even taking account of structural difficulties, school is less and less able to retain young people.

Recent research on vulnerable youth in outlying areas of Mexico City showed that the experiences and meaning of school are permeated by a state of mind best described as boredom. Adolescent tedium, especially in relation to school, may seem self-evident and can easily be inferred from daily interaction with young people in this age group. But, as Cristina Corea points out in *Pedagogía del aburrido*, it can also be interpreted as a pointing finger, as a sign, among others, that some experiences are now empty of meaning (Corea and Lewkowicz, 2008). In other words, the boredom that permeates the school experience of the most disadvantaged young people can help explain the meaning that school has acquired for this population group.

Boredom seems to be a state of mind that is typically significant (in) and almost exclusive to the secondary school level, which, in practice is the key school dropout period. Moreover, boredom is not something these young people associate with a specific activity —it is not that studying, reading, doing homework, sitting in classrooms or any other school occupation is boring— but an attribute they associate with school as an institution. As can be seen in the following quotes from two young people who dropped out of school at 14 years of age, after starting secondary, the boredom of school relates to a loss of interest in studying.

> *Why did you start to have a few more problems?* Yes, a few more problems. *Why?* Well, I got a more bored with school, my classmates and *"desastre"*, I wasn't much interested in studying, but I enjoyed causing trouble, to relieve the boredom (Martín, 18 years, Valle de Chalco, México).

> *You were telling me then that the main reason for abandoning your studies was economic…?* Well, not the main reason no, because… studying didn't interest me much, so I didn't make any effort. I wasn't motivated and I also had many problems at school. *What type of problems?* Well I didn't do my homework, so my marks dropped a lot, I started to behave very badly… (Rubén, 22 years, Iztapalapa, México).

Underlying the boredom are feelings such as impatience, extreme apathy, waste of time or aimless existence. In other words, it is not an activity that is boring, but a purpose that is not valued that somehow justifies the boredom. The sense of tedium projected by these young people relates mainly, although by no means exclusively, to the meaningless of doing and being (in school). In the first few pages of *Chicos en banda. Los caminos de la subjetividad en el declive de las instituciones*, the authors question the extent to which attending school means coming out changed, in other words whether it is a place that actually leaves a mark on its pupils (Duschatzky and Corea, 2002). The boredom expressed by the young people when interviewed can be interpreted as an answer to this question, since it reveals their perception that school is incapable of generating any change, or of leaving any mark on its pupils' development.

This crisis of meaning at secondary school level has also been noted in other studies undertaken in

different national contexts, with individual variants and features. A recent report on vulnerable youth in Peru states that many young people have lost interest in studying or working, so the expectations deposited in both institutions are very low and lead to a state of uncertainty and inactivity characterized by not knowing what to do (Benavides, 2008). Something similar seems to happen among young people from the favelas of Rio de Janeiro. An analysis of the changes that have occurred in these poor Brazilian neighbourhoods over the last 30 years shows that, after witnessing underemployment and unemployment among friends and older brothers and sisters who stayed longer in school, [these young people] conclude that there is no point in education (Perlman, 2006, p. 170). In my own research on at-risk youth in Argentina at the start of this decade, I also found a similar crisis of meaning, compounded by a lack of capacity to engage on the part of the school and other stakeholders. At that time I wrote: "What we find in young people suffering from institutional exclusion is precisely that these possible links [with the school] are all absent. There is no expectation of entering the next (university) level; either there is no commitment with parents, or else the latter have no influence on young people's decisions; they do not perceive any potential achievement since this seems a very distant and uncertain goal, and in many cases they sense that school also has no interest in keeping them" (Saraví, 2006, p. 111).

Boredom at school generally seems to be linked to what young people from low-income sectors tend to call *"desastre"* in Mexico or *"bardo"* in Argentina. Although *"desastre"* is a form of entertainment that involves breaking or transgressing certain established rules, essentially there is a clear link with boredom. Rather than opposites, these are two ways of manifesting the same state of mind: while boredom expresses meaningless through passivity, *"desastre"* does it through action, by doing. Among other things, it involves challenging the authority of teachers, cutting class, not submitting homework, having fun and going out with friends when they should be in school. As Martín indicated in the interview quoted above, *"desastre"* seems to be a mechanism for relieving the boredom caused by the meaninglessness of school. The latter loses its significant and "performative" capacity.

> No, I used to try, but then in the third year (secondary) I went off the rails, because we were causing trouble . *In what way?* In the first and second year I was more interested in things, but not in third year no, then I quit classes… (Mariana, 16 years, Valle de Chalco).
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> Then I stopped studying because they expelled me. Well, the first time they expelled me, or the second really... I asked my mother to give me a chance, to let me enter secondary school again. She said, "Yes, why not, I support you", but from the start I did it with the idea that I was only going to fool about cause trouble. I only lasted a few months and then left, but it was not because… it was because I didn't want to go anymore, nothing else, more than anything I didn't like going to school. *You didn't like it?* I liked it, but I liked doing what I wanted (Alex, 18 years, Iztapalapa).
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> *Why did you leave?* The thing is… like all young people who find school hard and get into trouble. *What do you mean get into trouble?* When I was more... involved in studying, there were always friends who would say "come on, let's go out…" in other words a bad influence. And once you start to fool about and cause trouble, you get to enjoy it… So I got hooked on it. I was no longer going to school, I was out causing trouble, and then… That's why I say I got into trouble, because everything went wrong (Javier, 20 years, Valle de Chalco).

This set of practices has a lot in common with what Paul Willis defined as the counter-school culture of British working-class youth in his classic *Learning to Labour. How Working Class Kids get Working Class Jobs*. He argued that beyond the form and specifics of the practice, there is a deep-rooted scepticism of the value of the qualifications that could be obtained in relation to the sacrifices needed to obtain them: a sacrifice not simply in terms of lost time, but in the quality of activities, commitments, and independence. The sacrifice could even be exorbitant, yet possibly ultimately meaningless (Willis, 1977, p. 126). Boredom and "desastre" are expressions of secondary school's superficial role in the perceptions of these young people in terms of their life, or at least, their scepticism in relation to it. The qualifications obtained will not significantly change their job opportunities, and they do not seem necessary for the type of jobs they are likely to get.

> *Do you really believe that school or studying are important?* Yes of course. Of course it's

> important, but, as I say, not many people take it that way, or expect to get a good job; and that's a fact. Once I was talking to a friend who is a master bricklayer, and he asked me: "Why are you studying?" and I replied: "I want to make a lot of money without much effort". And he said: "Well I didn't study and… I supervise works, I make sure they are done well and I'm earning a good wage without doing anything." And then you start to think "That's true, you're making a big effort to get ahead while others have success by only knowing how to fix a wall" (Emilio, 17 years, Valle de Chalco).

The substantial difference compared to the argument put forward by Willis is that in England at that time this process helped to reproduce a working class that these young people would join and thus start to develop a job career from an early age. As will be seen in the next section, conditions in the labour market today are very different, and work itself is facing its own crisis. The same process today no longer leads to a collective homogeneous and predictable category, but to an uncertain multiple destination. As Reguillo points out:

> Concern —as a constant— about lack of work, reflects a major mismatch between young people's imaginations, the dominant social expectations (integration through work) and the reality perceived by youth —a reality in which school is no longer the traditional trampoline to productive integration; and, although, it still has an aura as a place of knowledge, in the youth perception such notions seem unconnected with the possibility of social mobility (Reguillo, 2007, p. 105).

The boredom that permeates the experiences and meaning of secondary school is not a state of mind that is exclusive to the most disadvantaged young people; nor is it proposed as the main cause of school dropout. As noted above, it is a sign which, in conjunction with others, reveals the changes that have taken place in the meaning attributed to school. Nonetheless, this combination can also have cumulative effects that help explain why school is unable to attract or retain some young people from the most vulnerable sectors.

The importance attached to school in the home is another sign of those changes, although it could either be something that increases the meaningless of secondary school or, in contrast, a factor of resilience in the face of apathy or doubt among young people. The expectations placed in education, emotional support and even pressure to continue studying from the family or a "significant other" can become crucial, beyond the retention capacity of school as an institution. For middle- and higher-income youth, completing secondary school is a firmly established and undisputed premise of the family order. For many low-income families, it is a key challenge involving major efforts and expectations. In both cases, this situation can help combat doubts and uncertainty among the young people themselves. Schoon and Bynner (2003, p. 24) have highlighted the importance of parental interest and commitment for school performance, by stating that one of the factors linked to positive adaptation of students is a stable family environment, in which parents provide support and show interest in their children's studies, and want them to continue beyond the basic education level. When Rubén was asked about his lack of motivation for staying on at school, he spontaneously mentioned the lack of interest shown by his parents.

> I don't know; actually I think it also relates to communication with parents, doesn't it? If parents don't communicate very well with you and are not backing you, supporting you and everything… That's what I felt… that I never had support from a mother who would say "Hey, let me see what you're doing, what mark did you get?, or I'll help with your material", or something like that. No. *How did you feel?* Well… You feel very much on your own, you get despondent, don't you? You say "No matter how hard I try they don't support me" (Rubén, 22 years, Iztapalapa, México).

Many comments like this one, very similar ones in fact, were made by young people interviewed early in this decade in Argentina (see Saraví, 2002), all of whom claimed that their own lack of interest in school was reinforced by the lack of commitment and support they perceived from their parents. The importance of school in family members' concerns, expectations and interests is a key factor for remaining in the school system. Statistical data confirm and afford greater reliability to the qualitative findings that direct conversations with vulnerable young people capture in full. For example, in Argentina, the likelihood of starting secondary education was 93% among young people who felt their parents were highly involved in their education, but only 78% among those who did not perceive the same interest. The contrast is even

greater in terms of completing secondary, which is much more likely among young people who felt supported by their families (73%) than those who did not (16%) (Giovagnoli and Verner, 2008). In Mexico, data from the National Youth Survey (ENJ) 2000 reveal a similar relationship between staying at school and the degree of communication young people have with their parents regarding school — a variable that indirectly indicates parents' interest in their children's studies. Even when controlling for the educational climate in the family of origin, the percentage of children whose school performance is poor tends to rise when school is talked about less. As figure 1 shows, in families of poor educational climate, the proportion of young people not subject to educational deficit[3] rises from 18%, when there is little conversation about their studies with their mother, to 40% when there is a lot; whereas in households of better educational climate the increase is from 40% to 70%.

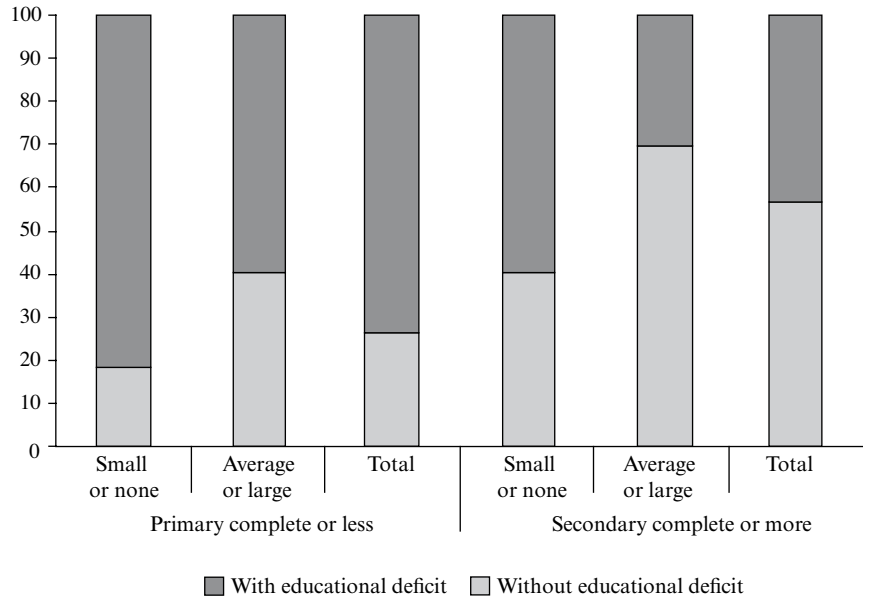
School is not only losing its central place in many families, but its value (or usefulness) is actually starting to be questioned in some social settings. Education as a channel for mobility and social integration faces competition from alternative routes that have gained recognition and acceptance, given the few expectations placed in school. In fact, work is initially one of these competitors still today.[4]

[3] "Educational deficit" is defined, among young people who have already abandoned school, as not having completed 12 years of education; and, among those who continue studying, as being behind their school age group.

[4] Another competitor for school in the case of young women is an early start to family-making, either through marriage, motherhood, or both. This article does not analyse family as a potential "competitor" of school, since its purpose is to demonstrate a process of successive "disillusionments" that occur between school and work.

FIGURE 1

Mexico (urban areas): young people of 25-29 years of age, without and with education deficit, according to the schooling of the mother and degree of communication with the mother on studies.
(Percentages)



Source: prepared by the author on the basis of the National Youth Survey, 2000.
Note: Urban areas with at least 15,000 inhabitants.

So which was more important for you: studying or working? I've always preferred working. *Why?* Because that way I feel you're more… how can I put it? You earn your own money, you buy the things that you most need, you earn more to help in your home. In fact, I've always preferred earning money than studying, since I was a little girl, I've always liked doing other things better than studying. Because I was never a very good student, I never gained recognition for that (Karla, 20 years, Valle de Chalco, México).

As figure 2 shows, "lack of resources" is one of the most important motives justifying school dropout among young people who failed to complete the 12 years of education. Nonetheless, equally relevant are a loss of interest in continuing to study (22.7%) and the need to work (22.9%) —aspects which to some extent are complementary, as can be inferred from the interview with Karla above. Among young men, both of these factors are even more important than lack of resources (26.7% and 30.5%, respectively, compared to 21.0%).[5]

These figures suggest a gradual loss of interest in education, but also an increasingly high valuation of work. The importance of the latter stems basically from its capacity to give access to consumption and to satisfy economic needs — family and personal ones, as well as symbolic and identity needs, which are also important in the process of becoming an adult. But just as the meaning of work has become confined to the domain of consumption, the meaning of school has also been pared down, and as result it has become comparable to work.

The meaning attributed to post-primary education relates almost exclusively to its potential to generate

[5] A recent survey in Argentina produced similar results; 52% of young people who dropped out of school cited work as the main reason for their decision, whereas 16% attributed it to low academic performance and 8% to pregnancy (Giovagnoli and Verter, 2008).

FIGURE 2

Mexico (urban areas): reasons for school dropout among young people of 20-24 years of age with educational deficit
(Percentages)

Source: prepared by the author on the basis of the National Youth Survey, 2000.
Note: Urban areas with at least 15,000 inhabitants.

higher income in the future. In other words, both secondary and other education levels are evaluated essentially in terms of what they add to income-generating capacity —whether having better "academic credentials" will translate into greater economic reward. This limited perception of school, dominated by a market-centred approach, raises new dilemmas by making it comparable and commensurable with work. Firstly, the long-term reward promised by school comes into conflict with the immediate income —no matter how small— offered by work, even if this is informal and precarious. This is not an insignificant point, because no matter how small the income, what is at stake when opting to stay in school is not only a several-year investment of resources and effort, but also the need to cope throughout that time with an undefined identity, or one that is questioned in some social settings, namely being a student.

Secondly, the problem does not amount simply to waiting for a few years to harvest the fruits of a higher educational level, for it is a road strewn with uncertainties. As mentioned by several of the young people interviewed, the various economic, family and personal factors mean there is no certainty that they will be able to complete such a long training process. For that reason, fear of failing in mid-course fuels a socially supported tendency to think that it is best not to start the course at all. "Losing time" or "wasting money" are expressions I have frequently encountered in direct relation to this tension.

Thirdly, if a young person still opts for school despite these doubts, the final insult is that nowadays it is not clear that a higher level of education effectively guarantees the possibility of obtaining more and better income. As Janice Perlman (2006, p. 176) argues, "More years of schooling, often seen as the panacea by policy makers, has not significantly improved access to employment in a changing economy." This is not only perceived and pondered by young people themselves, but also by a family and community environment that can shift preferences in one direction or the other. As noted by Schoon and Bynner (2003, p. 25), owing to the different opportunities and constraints faced by young people from more or less privileged families, they and their parents make different calculations of the potential costs and benefits of choosing between the various educational strategies. The experience of family members, friends or acquaintances is a powerful argument that leads to the virtues of school being questioned if only valued for its economic potential. According to the latest National Youth Survey held in Mexico in 2005, only 38% of young people stated that education served to earn more money, while 44% claimed it had enabled them to obtain work. Another way of reading these data is to say that about 60% of the young people interviewed did not perceive that additional schooling led to higher incomes or finding a job. These figures, in themselves worrying, are even more critical in the lower economic strata, where only 21% and 25% of young people, respectively, saw education as leading to better income and job prospects. Thus, while consumption is increasingly pre-eminent as a value and pillar of individual and social life, and even a key factor for integration-exclusion, at the same time, young people —in particular the most deprived— do not see school as useful in this regard.

III

The experiences and meaning of work

The previous section noted that the two key reasons cited by young people for dropping out of school are "the need to work" and "lack of interest in continuing to study". In Mexico, one in every four 15-19 year-olds who stopped studying said they did so because of the need to work; and in Argentina half of all dropouts cited that reason. What needs are satisfied by work? What does it provide young people in their transition to adulthood? What factors promote it and favour it?

To say that the need to work is directly related to income may seem self-evident. While apparently trivial, however, it raises a number of issues that are worth examining in greater detail. The first is that by giving priority to income and money, other aspects often associated with work are neglected. "Vocation" or the notion of a "calling" to undertake a given activity, does not form part of the image held by the young people interviewed. Also apparently absent is the idea of work relating to a craft, occupation, or

association to belong to, as it traditionally represented for the "working class", and as a way of embarking on a job career. Work is not a source of identity in any of those aspects. The first element, therefore, is that in low-income sectors, the meaning of work has shifted from the sphere of production to the domain of consumption.

> *Was that the only reason for leaving school?* No, although I also liked the money. *Ah!, why? Had you been working before?* Yes I was working before, I worked and studied. Then, when I stopped studying I started to work during the day and I earned more; then I tried to return to studying, but I no longer earned the same amount, I'd got used to the money. Yes, then I started to earn more, and I started to see life differently, so you tend to learn more and feel more important when you start to earn more (Francisco, 18 years, Valle de Chalco, México).

Work is no longer an end in itself, but a means; its value stems from its status as a means to achieve other ends. In this sense it is closer to consumption than to production, where work becomes relevant both economically and symbolically. Firstly, the contribution to the family income made by children produces significant direct economic effects, but also has identity repercussions by triggering a realignment of authority roles within the family; and it provides the chance to gain autonomy, independence and individuality. Secondly, earning money is also valued, since it makes it possible to satisfy needs —not only family needs but also personal ones that pertain to being young, which are also clearly gender-specific (Pérez Islas and Arteaga, 2001). In other words, access to consumption through work has significant repercussions for the identity-building that takes place during the transition to adulthood.

It is not through production, but through consumption that the adjustment of roles, spaces of autonomy and independence, and identity recognition among peers and others takes place. Nonetheless, work involves a cruel trap for large swathes of young people, particularly those who are in situations of greatest disadvantage and vulnerability. The expectations they place in work quickly start to dissipate in the early years of work experience, since their youth means that the conditions of early jobs tend to be uniform: in the absence of major intra-cohort differences or contrasts, precariousness pervades the entire youth labour market. Nonetheless, as the years pass, young people in better situations tend to gravitate towards better jobs, while the most disadvantaged become trapped in a segment of the labour market that is characterized by precarious and unstable jobs and low incomes (Saraví, 2008). What for some will become a memory of the start of a job career, for others will remain a permanent feature of their work experience.

The National Youth Survey in Mexico asked young people about the characteristics they valued most in their current job, to gain a rough idea of the expectations for work held by different youth segments, and how they have evolved through time. The different answers can be classified in the following three categories: (i) aspects relating to the satisfaction of material needs; (ii) aspects relating to development of a job career; and (iii) aspects not related directly with work, but with the outside-work activities to which work gives access or encourages (see table 1).[6]

In terms of the total number of replies in each age group, the three categories maintained roughly the same ratios: just over half of young people prioritize aspects relating to the job career, about 30% value outside-work activities highest, and the rest emphasize the satisfaction of needs. Nonetheless, an analysis of the results obtained by educational status shows, firstly, that there are significant differences in the replies given by each age group, and, secondly, that these vary substantially as age increases.

Among 15-19 year-olds with no educational deficit, the percentage of replies prioritizing job-career aspects relating (46.5%) is similar to those relating to activities outside work (39.3%). Nonetheless, among adolescents of the same age group with an educational deficit, the gap between the two types of reply is substantially wider (54.2% and 29.6%, respectively). In other words, most young people who fall behind their age-group at school at an early age, or who have already dropped out of school, seem to have expectations concerning the possibilities work provides for pursuing a job career, whereas the preferences of those who continue their studies are focused on factors outside work.

[6] The replies in each of the three categories were as follows: (i) aspects relating to the satisfaction of material needs: "wage or salary"; (ii) aspects relating to a job career: "that you learn", "that you gain experience", "that you can move up", "that you do what you like", "that you are applying what you studied"; and (iii) aspects relating to activities outside work: "that there is a good environment", "that you have time to study", " that you have time to be with your family".

TABLE 1

Mexico (urban areas): expectations from work, according to degree of education deficiency and age group
(Percentages)

	Educational deficit		Total
	Without	With	
Age group: 15 to 19 years			
Aspects relating to satisfaction of material needs	11.0	12.9	12.2
Aspects relating to job career	46.5	54.2	51.3
Aspects relating to activities outside work	39.3	29.6	33.2
Other aspects	3.2	3.3	3.3
Total	*100.0*	*100.0*	*100.0*
Age group: 20 to 24 years			
Aspects relating to satisfaction of material needs	11.0	15.1	13.7
Aspects relating to job career	60.1	48.0	52.3
Aspects relating to activities outside work	25.5	33.8	30.7
Other aspects	3.4	3.1	3.3
Total	*100.0*	*100.0*	*100.0*
Age group: 25 to 29 years			
Aspects relating to satisfaction of material needs	8.4	16.4	13.3
Aspects relating to job career	66.1	47.1	54.3
Aspects relating to activities outside work	18.9	30.9	26.4
Other aspects	6.6	5.6	6.0
Total	*100.0*	*1000.0*	*1000.0*

Source: prepared by the author on the basis of the National Youth Survey 2000.
Note: Urban areas with at least 15,000 inhabitants.

Nonetheless, these preferences change substantially as age increases. In the 20-24 year age bracket, and even more so in the next group, the categories that generate the largest percentage of replies among young people with and without education deficits are reversed. While a clear majority of 20-24 year-olds with higher levels of education (60.1%) value job-career aspects, the trend is even clearer in the 25-29 age group, where two out of every three young people with no educational deficit (66.1%) focus their expectations on this aspect of work. In contrast, as age, and hence labour-market experience, increase, the job career starts to lose weight in the expectations of young people with less education, who increasingly rank aspects outside work (33.8% and 30.9% in the 20-24 and 25-29 year age groups, respectively), and income (15.1% and 16.4%).

Here again, the aspect that older youth most like about their work differs significantly according to educational status, which suggests that this will have a different degree of centrality in their future life. Furthermore, as time passes, the preferences indicated by each group of young people reverse. Those with a greater continuity and higher level of education soon come to value the opportunities their work can provide to engage in outside activities, such as time to study. As they grow older, and (as predicted) they start to complete their studies, they rank the chance to develop a job career ahead of outside-work factors. In contrast, the perceptions and expectations placed in work by young people with an education deficit follow the reverse pattern: job career gradually loses its centrality, perhaps as a result of rapid disillusionment, and instead they start value the wage and various extra-work aspects such as the working environment or to be able to spend time with the family.

The most disadvantaged young people move rapidly from enthusiasm to disenchantment, as reflected through a parallel shift of expectations placed in work. Following their initial work experiences, they start to perceive the precariousness of their job and a lack of better opportunities. It is not that they were unaware of that at the outset; but a situation that seemed temporary then is now seen as a long-term

sentence. They soon come to recognize a truncated job career stuck in precariousness as an inevitable future; and they slump from enthusiasm to disenchantment. Expectations shift away from work itself, which becomes almost a necessary evil, and they start to value other aspects related to it.

The young people interviewed repeatedly mentioned that their work offered them no possibilities for "growing", "developing", or " progressing", which causes them to change jobs and seek new opportunities, where they again face the same frustration. Many others describe this job experience in terms of "boredom". As in the case of school, boredom is now expressed in terms of the loss of meaning of work.

> *So why did you chop and change jobs?* Because I didn't know what I wanted, in other words I wasn't aware, or not fully aware. I was bored, and simply (said) "I don't want to know anything anymore" (Marcos, 27 years, Nezahualcoyotl, México).

Work becomes meaningless; it ceases to engage people and becomes just a necessary evil. It is therefore logical to predict that job-career aspects will initially take precedence in the valuation made by low-income youth, but as these young people gain experience their expectations will shift towards activities outside work. High rates of job turnover, or more specifically continual job changes, reflect these sensations and perceptions. In a recent article on the new challenges facing labour market entry by young people in Latin America, Weller (2007, p. 73) reaches the same conclusions. The author refers to the job trap as one of the main tensions facing young people today, and poses it the following terms.

> "Young people place a high value on work as such, but their experience with actual jobs tends to be frustrating. *While there is a growing functional perception of work as primarily a source of income* (and one that in some cases *has to compete with others offering higher returns for less effort*), for many young people it is still the cornerstone for the development of their personal identity, not least because of the new social contacts they forge in the workplace. *Often, however, the initial experience of work does not live up to expectations*, with many young people reporting low earnings, few opportunities to acquire skills and know-how, threats of dismissal, ill-treatment, sexual harassment or unpleasant personal relationships; in short, conditions that do not help them fully realize the potential contribution work can make to their individual and social development" (italics added).

In his article, Weller mentions two key aspects: one has already been referred to, and the other will be the topic of the next section. The first is the "functional perception" of employment, in other words, as argued in the foregoing paragraphs, that the expectations deposited in work shift towards the sphere of consumption, which leads to frustration. The second aspect is that this shift in the meaning of work and its reduction to an exclusively instrumental nature, allows alternative or competing paths to emerge, particularly among the most disadvantaged youth segments. It is the fact that alternatives have emerged, and particularly the situations in which young people have to face them, that reveals the crisis of work and school as key institutions in this stage of the life cycle.

IV

Alternatives in the face of institutions in crisis

The crisis of meaning affecting both institutions has led to the emergence of new alternatives that stand alongside school and work and are starting to act as spaces of integration and meaning. The alternatives available to disadvantaged youth are not exhausted in the labour market; just as work seemed initially to be an alternative to the meaninglessness of school, today alternatives to the meaninglessness of work are also emerging, such as migration, evasion and criminality — all of which are forms of a common situation of exclusion.

For young people from Mexico and Central America in particular, migration to the United States offers a chance to achieve the consumption

opportunities and social mobility that were originally expected from work. Various studies have revealed a revival of migratory flows. Data for 1997 show that 17.5% of United States residents who were born in a Latin American or Caribbean country were 15-24 year-olds. The proportion of those born in Mexico was even higher, representing 1/5 (20.3%) of all migrants of Mexican origin (CELADE, 2000). This same trend is reported by Canudas (2004), who shows that the likelihood of Mexicans migrating to the United States is significantly higher during adolescence and early youth, tending to peak around 18 years of age among men and between 16 and 26 among women. This is clear from the most recent data, which show a substantial proportion of youth among people who decide to migrate: every year about 400,000 migrants leave Mexico, of whom that just over half (225,000) are young people (García Alonso, 2006).

> Well my Dad said to me "Look, you're doing no good here, find something to do over there even if it's only washing cars. See what you can do over there" […] And afterwards there was a time when I wanted, I wanted to consume the world. *Why did you go to… there?* Because I wanted to have everything, I wanted a car, I wanted a house, so that was my idea. I wanted that immediately, I badly wanted to have a car and the second thing was the house […] *Did you have experience, or knowledge of United States, people who were already there?* Yes, for example my uncle was there but… well he came back from there and we chatted and you form illusions, don't you? *Oh yes! What an attracted your attention?* Well, the houses, I suppose? *Here?* No, in the State of Puebla, I mean they come back and build their own homes. So, I said "if they can do it why can't I?" Then to be able to go, you know, I got some money together and asked my father for a bit; and yes, he gave it to me, but said "you must pay me back later". *How old were you when you left?* 19 (Marcos, 27 years, Nezahualcoyotl, México).

> *Why did you go to the United States?* Well, one reason was that I had relatives over there, and they came back wearing great clothes, many things like that, you know what I mean? Things that probably many people (didn't have), especially people in the neighbourhood who hadn't gone… So I wanted to experiment, "to try it out", like an adventurer. In other words, despite the fact that my mother was no longer living, I said "well, what the hell?" like "What am I doing here", you see? "I'll see if I can get ahead over there." My father said to me "Well you know what you want; if you want to go I'll help you", so I went to the United States. *How old were you?* I was… 14, nearly 15 (Lucas, 28 years, Nezahualcoyotl, México).

These cases show clearly that migration is becoming a depository for expectations that were initially placed in work until experience in this domain proved unrealistic. In Mexico, it is estimated that of every 10 young people who join the labour market at 18, only four find a formal job, another three enter the informal economy, and the rest attempt to cross illegally into the United States (García Alonso, 2006). Marcos and Lucas belong to this latter contingent, and, as can be inferred from their comments, consumption again seems one of the most important motivations for migration, since it makes it possible to gain peer recognition (among both sexes), gain independence and autonomy, obtain goods and even progress and "get ahead". It is now migration that makes it possible, through consumption, to satisfy the same old economic and symbolic expectations; in reality, this means continuing to put your faith in work, but outside the country's borders. As the foregoing comments make clear, migration is also a channel that not only enjoys social recognition and acceptation, but is also encouraged in certain community and family settings.

As noted by ECLAC, international migration, particularly to the United States, is dominated by young potentially vulnerable migrants who display disadvantaged conditions in terms of educational achievement and labour market participation, and a likely rapid transition to adult life" (ECLAC/OIJ, 2004, p. 66). Along the same lines, Reguillo (2001, p. 13) states that apart from being a sign of the times, the migratory movement is directly linked to the growing exclusion experienced (and suffered) by millions of young people on the continent. Interviews consistently revealed an emerging pattern of migration that coincides with this framework of vulnerability among young migrants: a family context that encourages young people to leave home; early school dropout, precarious labour-market entry and an uncertain future; a migratory project that is not clearly defined or planned, largely motivated by desires for consumption, a sense of adventure, and the pursuit of peer recognition in the community of origin.

Nonetheless, migration is not the only response to the unfulfilled promises of school and work; there are others which are also directed towards boundaries — not geographic borders, but the boundaries of social integration. In addition to young migrants who as such "are no longer there", there is a very large proportion of young people who are also not there, even though they have not abandoned their countries of origin. As indicated in SITEAL (2008), it is not exclusively the labour market that has absorbed adolescents that school was unable to attract or retain, or simply expelled; a varying but substantial proportion of adolescents are outside both school and work, which thus aggravates their social vulnerability. This is a youth sector whose links with institutional affiliations are seriously weakened, for whom the meaningless of the main traditional channels of social integration has cast them virtually adrift.

Table 2 shows that this is not a negligible group. In most of the countries of the region, considering "urban areas" only,[7] roughly 10% of adolescents between 15 and 17 years of age are not studying, but are also economically inactive. In other words, apart from not working, they are also not looking for a job. The proportion of young people in this situation of institutional disaffiliation is growing

[7] Based on countries that have national data, it can be seen that the percentage of young people in this situation is tending to increase, considering the country as a whole and not just urban areas. The increase is generally less in the Southern Cone countries, but very significant in Central American countries.

TABLE 2

Latin America (selected countries): young people who are not studying and are economically inactive, by sex, income and educational climate of the home, 2006
(Percentages, urban areas)

Country	Age	Total	Sex		Household incomes		Educational climate	
			Men	Women	Deciles 1-3	Deciles 7-10	Low	High
Argentina	15-17	8.2	7.0	9.4	10.9	2.2	20.2	1.5
	18-24	15.1	7.3	22.2	23.2	4.7	31.5	5.6
Brazil	15-17	7.3	5.3	9.2	10.5	2.5	11.0	1.7
	18-24	14.1	7.1	20.9	23.6	6.3	21.3	5.2
Colombia	15-17	11.4	9.8	12.9	15.7	5.0	18.1	3.3
	18-24	13.2	6.6	18.6	19.2	6.0	21.3	4.9
Chile	15-17	5.8	4.5	7.1	8.4	1.7	13.4	2.0
	18-24	16.3	9.1	23.6	25.6	9.5	32.3	10.8
Ecuador	15-17	6.6	3.8	9.5	10.5	3.0	11.5	2.4
	18-24	13.9	3.4	24.4	22.9	7.4	23.6	6.7
El Salvador	15-17	13.7	7.7	19.7	19.7	5.3	20.0	5.6
	18-24	22.3	11.3	31.2	33.6	12.9	29.9	12.5
Guatemala	15-17	11.2	4.6	17.2	14.1	8.5	14.7	1.4
	18-24	19.1	3.6	32.7	24.4	13.9	22.3	6.8
Honduras	15-17	12.8	9.9	15.3	18.2	6.1	18.8	5.6
	18-24	17.4	5.9	26.9	27.5	9.2	26.1	5.7
Mexico	15-17	11.7	5.4	18.8	18.5	6.8	18.1	3.9
	18-24	17.7	3.1	31.2	29.0	9.5	26.5	9.2
Panama	15-17	6.8	6.9	6.7	10.8	1.8	20.6	1.8
	18-24	13.9	3.4	23.2	25.0	4.4	31.2	6.0
Paraguay	15-17	7.2	3.6	10.6	12.3	1.3	13.1	2.4
	18-24	13.2	5.7	19.6	15.9	7.1	21.3	12.8
Uruguay	15-17	12.3	11.5	13.2	18.5	2.7	25.8	2.2
	18-24	11.1	5.1	17.0	18.6	3.7	25.8	2.3

Source: prepared by the author on the basis of tabulations of the Information System on Educational Trends in Latin America (SITEAL).
Note: Household incomes indicate the position in the household per-capita income distribution; the educational climate of the home refers to the average number of years of schooling among family members over 18 years of age (low = less than six years, medium = 6-12 years, high = more than 12 years).

substantially in the 18-24 year-old age group; and the percentages tend to be higher among women, owing to an early introduction to domestic chores (see note 4). Nonetheless, this does not diminish the seriousness of the problem; whether in the private space of a home or in the public domain of the street, conditions of exclusion can be as dramatic for men as for women.

Here again, as in the case of migration, although now in a much more accentuated way, young people suffering from institutional disaffiliation tend to display a series of disadvantages that aggravate their condition, not only in terms of vulnerability but also in terms of exclusion. In all of the countries analysed, without exception, the percentage of young people in this situation from the poorest households greatly exceeds those whose families are better placed in the income distribution. In Argentina, the proportion is 11% compared to 2.2%; in Chile, 8.4% compared to 1.7%; in Mexico, 18.5% and 6.8% and in Uruguay, 18.5% and 2.7%, respectively, to mention just a few examples of the gap between the poorest and wealthiest households in terms of the proportion of adolescents who are excluded from school and work. These differences are repeated, but in a much more accentuated way, when the educational climate of the home of origin is considered (see table 2). Studies of specific countries have shown that, over the last few years, adolescents and young people outside school and work have tended to suffer from a higher concentration of other social disadvantages in terms of education, poverty, and family composition (Saraví, 2004 and 2006). A SITEAL study on Argentina, Brazil, Chile and Mexico highlighted the same trend and concluded that the fact that increasing homogeneity of those who are socially excluded suggests that it will be more difficult to implement inclusion policies. (SITEAL, undated).

> *So what are you doing now… I mean with your friends, in the community?* Well nothing, its true... the people in the neighbourhood… well, the young people, of my generation, are stuck in the mire of drugs… maybe some less than others, but everything is immediate with drugs. *Have they stolen?* Yes. *And the money is for that?* For that, for drugs, I mean we don't steal every day, or go out to steal every day to obtain the drugs, but there are times when… I'm not making excuses, you understand? Because stealing itself is obviously bad, but .. but no, so far, up to now we've not done that […] *Did you go to other places to steal?* No, here in the neighbourhood. Not our own neighbours, no, but… yes… people we knew, because whether or not they are friends we know them, for we all know each other, we grew up here together (Jesús, 18 years, Iztapalapa, México).
>
> *So is the neighbourhood unsafe? Are there many problems here?* Yes!! a huge number. Kids are lost nowadays… probably because of hunger or drugs. More because of drugs, because they… People say if they don't have work they'll steal to buy brand name trainers like Adidas. And they go out to steal, they buy clothes and stuff, and three hours later steal again, but they already have clothing and everything, and they go to drugs. That's how it works. *Are your friends in that situation?* Yes. *And you, how… why aren't you in that situation?* Why don't I steal? Because I'm afraid, because if I go out and get shot… I… sometimes I feel like doing it too, going out to steal, not to buy a pair of training shoes but to feel cool, you know what I mean? To help my family more, right? *Do you think you could live better or earn more by stealing rather than going out to work?* No, because one day you'll lose, one day you'll lose, you understand? I was arrested once (Matías, 21 years, Lanús, Argentina).

In fact, social exclusion is significantly worse for young people involved in illegal activities. A situation of institutional disaffiliation usually goes hand in hand with engaging in unlawful activities and the increasing violence that characterizes the large Latin American cities, particularly their "new" exclusion enclaves (ECLAC, 1998; Perea, 2007; Rodríguez, 2004; Saraví, 2004). Given the increase crime and violence in the major cities of our region over the last 15 years, insecurity has become one of the main topics on the regional public agenda. Moreover, various studies on this subject show that young men from poor families, who are unemployed or have precarious jobs and low levels of education, are more likely to be in this type of activity than members of other social groups (see Kessler, 2007; Perea, 2007 and the collective volumes published by ERIC/IDESO/IDIES/IUDOP, 2004; Azaola, 2004; Moro, 2006).[8] Underlying the growing participation of young people in these criminal and

[8] As a result, a stigmatization and criminalization process has been triggered among poor youth, which represents a new disadvantage for the most vulnerable and deprived young people in our societies.

violent activities are factors such as changes in the meaning attributed to the traditional channels of social mobility; their frustration as a result of experiences in these institutions; and a new socio-cultural scenario that is heavily dominated by consumption.

In an analysis of the reconfiguration of the class structure in Latin America, Portes and Hoffman (2003) note that criminal activities have become established as one more adaptation alternative, alongside other strategies such as migration. In certain settings and activities, particularly those linked to drug trafficking, merely participating in them can be a source of recognition and social mobility, since it increases consumption opportunities. As noted by Benvenutti (2003) in the case of Rio de Janeiro —a city where poverty rates are extremely high and 36% of adolescents from the lowest socioeconomic strata neither study nor work— the income opportunities offered by drug trafficking gangs can be exceptional. Nonetheless, this is not simply a survival or adaptation strategy of the "mertonian deviance" type. As shown in previous sections, the meaning of both school and work has been profoundly devalued; both institutions have been overwhelmed by a mercantile logic that values them exclusively for their income-generating potential. Consequently, as argued by Kessler (2007) in the case of the *"pibes chorros"* (street-based juvenile thieves) in Argentina, a supplier logic is imposed that erases boundaries and equates work with crime as a way of generating income. The following quote from the study by Janice Perlman shows that a similar process is occurring among young people from the Rio de Janeiro favelas.

> That sense of not believing it would make a difference and not even trying anymore was simply not present in the first generation of rural-urban migrants. Their idea was to do whatever it took to survive in the city. Another story that sticks in my mind is that of a young man who went to see about a job as bus fare collector. He began by saying that he found that type of work humiliating. It was fine for his father's generation, but he expected to do better. When he was told what the pay would be, and he deducted his travel and lunch costs, and the cost of the clothing and shoes he would need to buy, his net earnings would be so low as to be virtually insignificant. He would end up travelling three to four hours a day and working another twelve for little or no gain. So he remained at home, "flying kites" like a little kid, his father told me. If the father complained, the son would say "Don't pressure me or I'll join the drug trade" (Perlman, 2006, pp. 170-71).

Youth participation in criminal and violent activities suggests a scenario of meanings in crisis and institutions that are unable to engage their subjects. In this setting, several alternatives arise which are not only equivalent to school and work, but start to display a number of virtues for the most deprived groups. As stated by Reguillo (2008, p. 221) in the case of drug trafficking in Mexico and in relation to the growing presence of young people in this activity, their empowerment in various domains of social life entails filling a vacuum, compensating for an absence and crisis of meaning.

V

Conclusions

Senses of belonging, which include a set of shared perceptions, values and wishes, are crucial to social cohesion. In that regard, education and work have played a leading role in the recent history of Latin American societies; both formed part of a collective imagery that accompanied the modernization and industrialization processes of the past century, representing social mobility channels *par excellence*. This does not mean that it happened that way always and for everyone, although experience confirmed this image in many cases. Nonetheless, it was not only experiences that underpinned the strength of these two institutions and the meaning attributed to them, but their capacity to influence and mould subjectivities, and their capacity to construct a subject around a set of norms and values which govern social life (Duschatzky and Corea, 2006, p. 82). Those shared meanings in terms of school and work were not directly expressed in the material domain exclusively, but also in a set of values and desires that revealed and made possible a common sense of belonging.

The initial purpose of this article was to investigate the extent to which the fragmentation processes seen in other spheres of social life have now affected senses

of belonging. The analysis undertaken suggests that the meaning of education and work has changed and become weakened in the perceptions and expectations of certain segments of the population, particularly vulnerable segments of urban youth. The crisis of the two institutions stems from their inability to engage young people from social sectors that have a long history of cumulative disadvantages and today are on the verge of exclusion.

From this standpoint, the school-to-work transition, which is naturally problematic in contemporary society, involves new dilemmas. Firstly, evidence from various sources shows that a growing number of young people have started to view secondary education as incapable of improving their conditions of life —not only as a result of their own experience, but because education has become discredited as a channel of social mobility. Secondly, the labour market, in which low-income sectors traditionally placed their expectations for advancement, has been similarly discredited by widespread precarious jobs and careers that remain stuck in poverty. The meaning of school and work as mechanisms of social mobility has been undermined along with their semantic and performative capacity. At the same time, consumption is increasingly pre-eminent and becoming a social inclusion-exclusion mechanism and a badge of identity (Reguillo, 2007, p. 85), while also helping to reformulate the meaning of those institutions.

In this setting, in Mexico and elsewhere in our region, alternatives have arisen that are comparable to school and work. The crisis of meaning in the two institutions has spawned new competitors such as migration, criminal and illegal activities or evasion. García Canclini (2007) states that given the difficulties of achieving work and consumption within the prevailing social order, young people from the most disadvantaged sectors organize themselves in parallel societies constituted on the fringes of legality. The presence of these societies, traversed by inequality and exclusion, reveals the absence of a common sense of belonging; in other words it broadens the problem of social cohesion.

In fact, in Latin America, the social fragmentation of urban spaces, social rights, domains of sociability and interaction, and even lifestyles, biographic experiences and consumption habits reveals an accentuation of inequality and in some cases the appearance of exclusion processes. This article has attempted to show that shared values are also becoming weaker in terms of key institutions such as education and work, which signifies fragile social cohesion.

From this standpoint, the dilemmas that appear on the public agenda are becoming more complex. School dropout is not only the result of a lack of resources or family support; migration is not just a matter of networks; insecurity is more than just a problem of juvenile delinquency and dysfunctional families; and exclusion does not boil down to poverty among the most vulnerable young people. Thus far, most of the responses have aimed at "managing" social fragmentation. But it is difficult to construct shared senses of belonging and institutions that are able to engage individuals around a set of socially shared norms, aspirations and values, without eliminating the profound levels of social inequality that exist today. In the meantime, societies will become increasingly fragmented and we will continue to experience the consequences of persistent processes of social exclusion, which —to paraphrase Touraine— call into question the chances of living together.

(Original: Spanish)

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KEYWORDS

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Trade policy reform and poverty: successes and failures in Central America

Marco V. Sánchez-Cantillo

During the past two decades, trade regimes in Latin America have been reformed to facilitate export-led growth, in the expectation that the benefits of this growth would eventually trickle down and thereby help the poor. These goals have been achieved to differing degrees. Their accomplishment has depended not only upon the effectiveness of the trade policy reforms but also upon exchange-rate policy, external shocks and remittance inflows. Technological change has also been crucial when it comes to capitalizing on the benefits of the reforms. These assertions are substantiated using simulation results from a computable general equilibrium model solved with data for Costa Rica, El Salvador and Honduras. The model is combined with a microsimulation methodology to capture the full distributive implications of simulated policy and external shocks.

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I
Introduction

After overcoming the debt crisis and stabilizing their economies, most Latin American countries initiated a process of economic reform. Trade policy reforms, consisting chiefly of import liberalization and deliberate export promotion, were implemented most rapidly to exploit comparative advantages in agriculture and some manufacturing sectors. Reforming countries expected to achieve rapid export-led growth that would ultimately translate into a diminution of poverty.

Even though most Latin American countries have opted for fairly similar reforms to their trade regimes, their trajectories with regard to export-led growth and poverty have been divergent in numerous cases. This paper contends that trade policy reforms have met their goals in countries which, firstly, have been able to maintain competitive and relatively stable real exchange rates and, secondly, have become more productive. External shocks, originating from global price fluctuations and massive inflows of capital and workers' remittances, are viewed here as factors that have kept some countries from attaining real exchange-rate stability and competitiveness. Furthermore, even though less costly imports and increased inflows of foreign direct investment (FDI) have played an essential role in spurring productivity growth during periods of trade policy reform, these gains have materialized only in countries with relatively abundant skilled labour and diversified and modernized export sectors.

The argument of this paper is substantiated with evidence for three Central American countries, Costa Rica, El Salvador and Honduras. Specifically, this evidence is gathered by associating simulation results from a static computable general equilibrium (CGE) model solved using data for the three countries with actual trends for the period 1990-2003. The CGE analysis is also complemented by a microsimulation methodology implemented using microdata to capture the full distributive implications of simulated policy and external shocks.

The remainder of this paper is structured as follows. The main trade policy reforms undertaken and the socio-economic performance observed in the three countries under consideration during the 1990-2003 period are described in section 2. The analytical and methodological aspects of the paper are dealt with in section 3. Section 4 is devoted to the analysis of CGE simulation results, where these are associated with observed trends. Lastly, the main conclusions and policy implications of the paper are summarized in section 5.

II
Trade policy reforms and socio-economic performance

During the past two decades, Costa Rica, El Salvador and Honduras, like the rest of Central America, have promoted exports and rapidly liberalized imports with the aim of achieving high and sustained export-led growth and, eventually, reducing poverty. These countries have instituted special export regimes and restructured their export procedures. Temporary tax credit certificates were heavily used at one stage to subsidize non-traditional exports. Tax exemptions on imports of raw materials and capital goods have been extended to export producers. Quantitative restrictions and import surcharges have been phased out and customs procedures simplified. Furthermore, the three countries have signed free trade agreements with other nations, including one whose other signatories are the Dominican Republic and the United States of America

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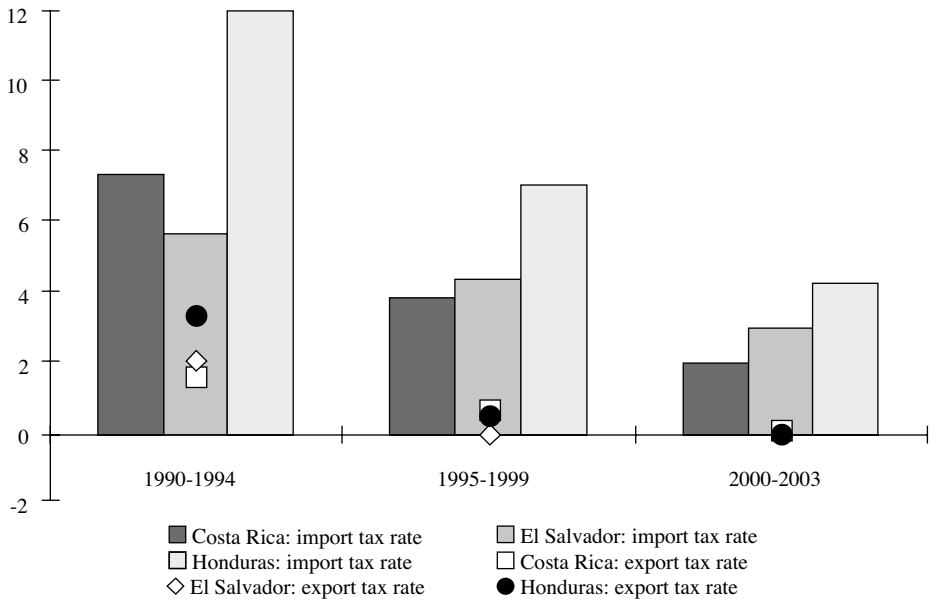
(commonly known as CAFTA-DR), and all of them are active members of the World Trade Organization (WTO). All these reforms have been reflected in a remarkable decline in taxes on international trade. Not only have import tariff rates been cut sharply, but export taxes have essentially been abolished (figure 1).

The three countries considered here have opted for fairly similar trade policy reforms; in fact, they have followed the broader Latin American trade policy pattern. Their trajectories with regard to export-led growth and poverty have been divergent, however. Exports have risen in all three countries (table 1), but genuine export-led growth has been achieved only in Costa Rica (Sánchez and Sauma, 2006). Exports from El Salvador did expand considerably in the 1990s, but non-tradable sectors seem to have been more important engines for the country's unimpressive economic growth (Acevedo, 2004). Exports have grown less rapidly in Honduras (Cuesta and Sánchez, 2004).

Export diversification has been a precondition of export-led growth. A wide range of agricultural and manufacturing goods, some of them produced by infant high-tech industries, have gone to make up Costa Rica's export supply. Non-traditional exports have expanded impressively in Costa Rica, accounting for nearly 80% of merchandise exports in 2000-2003 (table 1), and are going to a growing number of trading partners. Honduras and El Salvador, on the other hand, have not treated export diversification as a primary goal, but have instead relied more on the development of the drawback industry commonly termed the "maquila" industry, which mainly produces textiles and clothing for export, especially to the United States. By 2000-2003, Honduran non-traditional exports were not exceeding 45% of merchandise exports each year, whereas maquila exports had risen to more than 30% of merchandise exports. Non-traditional exports from El Salvador have grown, but maquila exports

FIGURE 1

Costa Rica, El Salvador and Honduras: average effective nominal tax rates on exports and imports,[a] 1990-2003
(Percentages)



Source: prepared by the author on the basis of data from the Economic Commission for Latin American and the Caribbean (ECLAC).

[a] Estimated on the basis of collected export- and import-tax revenues and export and import value.

have contributed more than half of all merchandise exports since 1999.

Trade liberalization has spurred imports but, once again, patterns differ (table 1). Imports of raw materials and capital goods have increased consistently in Costa Rica as export growth has allowed the country to build up its capacity to generate foreign exchange. In the other two countries, most especially El Salvador, imports of intermediate inputs for maquila production have soared, and for this reason net maquila exports have not been particularly high. As a source of foreign exchange, El Salvador and Honduras have been more reliant on workers' remittances, especially from the United States, as these have averaged more than 62% and 86%, respectively, of the external goods and services balance in the years since 1995 (table 1).

TABLE 1

Costa Rica, El Salvador and Honduras: macroeconomic indicators, 1990-2003
(Annual averages for the period)

Indicator	Country	1990-1994	1995-1999	2000-2003
Employment (annual growth rate)	Costa Rica	2.8	2.8	6.3
	El Salvador	7.6	3.1	3.8
	Honduras	4.6	5.2	-0.5
Goods and services exports (annual growth rate)	Costa Rica	9.2	14.8	1.0
	El Salvador	13.7	13.0	6.4
	Honduras	-0.9	2.7	3.0
Exports of non-traditional goods (percentage of merchandise exports)	Costa Rica	50.5	67.9	79.5
	El Salvador	48.4	34.1	34.8
	Honduras	36.3	42.7	44.0
Exports from drawback industries (percentage of merchandise exports)	Costa Rica	13.6	9.0	6.5
	El Salvador	17.5	45.8	57.8
	Honduras	4.8	20.0	31.4
External goods and services balance (percentage of GDP)	Costa Rica	-5.4	-1.5	-1.8
	El Salvador	-14.5	-12.9	-15.3
	Honduras	-7.5	-7.7	-15.9
GDP (annual growth rate)	Costa Rica	5.4	5.4	3.0
	El Salvador	5.9	3.9	2.1
	Honduras	2.8	2.7	3.6
Goods and services imports (annual growth rate)	Costa Rica	9.9	9.2	2.2
	El Salvador	20.1	8.8	6.2
	Honduras	3.8	3.4	2.8
Imports of consumer goods (percentage of merchandise imports)	Costa Rica	21.6	20.6	18.7
	El Salvador	26.0	24.2	26.0
	Honduras	21.4	24.9	29.6
Imports of raw materials and capital goods (percentage of merchandise imports)	Costa Rica	78.0	79.4	81.3
	El Salvador	66.3	56.5	50.2
	Honduras	76.8	71.9	67.9
Imports of other goods (percentage of merchandise imports)[a]	Costa Rica	0.5	0.1	0.0
	El Salvador	7.7	19.3	23.8
	Honduras	1.8	3.2	2.5
Net workers' remittances from abroad (percentage of goods and services trade balance)	Costa Rica	-[b]	13.8	16.0
	El Salvador	70.9	84.8	88.7
	Honduras	58.0	62.0	62.5

Source: estimates on the basis of ECLAC data, except for remittances and GDP data, which are from the World Bank, World Development Indicators [online database] http://devdata.worldbank.org/dataonline/.

[a] "Other goods" are basically imports for drawback industries (maquila).
[b] Workers' remittances from abroad were too small to be accounted for separately in the balance of payments.

Export growth has put Costa Rica in a position to reduce its trade deficit despite rising imports, but the same is not true of the other two countries.

In the 1990s, economic growth was 5.4% and 4.9% per annum in Costa Rica and El Salvador, respectively, and just below 3% per annum in Honduras (table 1). The first two countries experienced a major economic slowdown in 2000-2003 as world prices for some of their key export commodities plunged, while Honduras was able to sustain its modest growth.[1] An outstanding trade performance and agricultural growth of more than 4% in the 1990s are indications that comparatively-advantaged export sectors have been a source of economic growth for Costa Rica (Sánchez, 2004). Yet growth has been fairly evenly balanced in Costa Rica, with export-oriented industrial sectors and trade-related services also expanding satisfactorily (Sánchez and Sauma, 2006). In spite of trade policy reforms, non-tradable sectors have paradoxically been of more fundamental significance for growth in El Salvador and Honduras (Acevedo, 2004; Cuesta and Sánchez, 2004). Comparatively-advantaged sectors have not been boosted by the reforms as expected in those two countries; for example, agricultural growth has been meagre, particularly in the 1990s (Sánchez, 2005).

The incidence of poverty is not as high in Costa Rica as in El Salvador and Honduras; even Costa Rica's rural poverty is lower than urban poverty in the other two countries (table 2). In the 1990s, the evolution of employment and real wages helped reduce poverty in Costa Rica and El Salvador (tables 1 and 2). This trend could not be sustained into the new millennium in Costa Rica, as the economy slowed down and income distribution as measured by the Gini coefficient became more uneven (table 2).[2] Poverty did continue to fall in El Salvador in spite of the economic slowdown because, even though real

[1] The period of analysis is 1990-2003, but it is worth mentioning that the Costa Rican economy recovered during 2004-2005, growing by just over 4%. El Salvador also continued to grow in the same period, although by little more than 2% per annum. Economic growth in Honduras was roughly on a par with that in Costa Rica.

[2] The level of employment in Costa Rica rose substantially into the new millennium even as the economy slowed (table 1). This, however, was due to rising informality in the labour market.

TABLE 2

Costa Rica, El Salvador and Honduras: incidence of poverty, and level and distribution of real incomes, selected years of the 1990-2004 period

Country	Year	Real wage per worker (monthly, US$)		Gini coefficient of per capita income	Incidence of poverty (percentage of population below the poverty line)		
		Urban	Rural		Urban	Rural	National
Costa Rica	1990	306	207	0.44	24.8	27.3	26.2
	1997	450	327	0.45	19.3	24.8	22.5
	1999	510	337	0.47	18.1	22.3	20.3
	2002	521	355	0.49	17.5	24.3	20.3
	2004	483	341	0.48	18.7	23.1	20.5
El Salvador	1995	197	86	0.51	45.8	64.4	54.2
	1997	252	103	0.51	44.4	69.2	55.5
	1999	281	147	0.52	38.7	65.1	49.8
	2001	272	108	0.53	39.4	62.4	48.9
	2004	259	133	0.49	41.2	56.8	47.5
Honduras	1990	148	55	0.62	69.8	88.0	80.5
	1997	114	60	0.56	72.6	84.2	79.1
	1999	157	87	0.56	71.7	86.3	79.7
	2002	192	72	0.59	66.7	86.1	77.3
	2003	186	60	0.59	62.7	84.8	74.8

Source: Economic Commission for Latin America and the Caribbean (ECLAC), Social Panorama of Latin America 2002-2003 (LC/G.2209-P), Santiago, Chile, 2003. United Nations publication, Sales No.E.03.II.G.185; and Social Panorama of Latin America 2006 (LC/G.2326-P), Santiago, Chile, 2006. United Nations publication, Sales No.E.06.II.G.133.

wages by and large decreased, income distribution improved as remittances flowed into the country, and particularly into rural areas. Since trends in real wages and income inequality did not favour the urban population, however, the number of urban poor rose. In Honduras, on the other hand, employment, real wages and income distribution evolved satisfactorily on the whole in the 1990s, but poverty showed only a modest decline between 1990 and 1999. Developments in the labour market became more unfavourable to Honduran workers as the new millennium began, since income distribution worsened too. Nonetheless, inflows of remittances into Honduras favoured the poor, even though income distribution worsened because remittances went mainly to urban areas, and rural workers experienced a greater decline in real wages. Only in Honduras was income distribution more equal in 2003 or thereabouts than in 1990, and there is no clear evidence that this was a result of the country's trade policy reforms.

III

Analytical and methodological issues

Trade policy has been reformed in Central America in order to raise the relative prices or profitability of exportable goods and services (hereafter, exportables) with a view to promoting export-led growth. Export promotion policies aim directly at this result. Tariff reductions, meanwhile, would be expected to lower the cost of imported inputs used in export production, i.e., to reduce the price of imported goods and services (hereafter, importables) relative to exportables. The relative prices of exportables and importables (i.e., tradables) would also rise if domestic liberalization led to a reduction in the domestic prices of non-tradable goods and services (hereafter, non-tradables).

This kind of relative price adjustment would ultimately affect the relative remuneration of workers (i.e., income distribution), as can be concluded from the Heckscher-Ohlin-Samuelson (HOS) framework of traditional trade theory and its extensions (Salvatore, 1995; Evans, 1989; Wood, 1994) or, alternatively, from the dependent economy model that comes out of the literature on small-open developing economies (Cox-Edwards and Edwards, 1994; Edwards, 1988). These theories were not in fact formulated to explain the poverty effects of trade policy, although the issue has recently been studied empirically.[3] In addition, they tend to overlook the effects that internal and external factors other than trade policy can also have on relative prices. World price shocks and nominal exchange-rate adjustments, for example, affect the prices of tradables. Inflows of capital and remittances could also affect relative prices through the real exchange rate, among other factors.

A shift in relative prices, whether resulting from macroeconomic policies or from an external shock, will affect consumer prices and hence goods and services markets. Shifts in sales revenues and input costs will alter the relative profitability of sectors, in response to which producers' investment choices will change. Household consumption will probably adjust too, although the ultimate effect will depend on other factors affecting household income, i.e., the labour market, government transfers and remittances from abroad. The government may adjust spending in response to changes in tax revenue or social policy objectives, triggering second-round effects in goods and services markets. All these changes will be accompanied by supply and demand adjustments in factor markets. The ultimate consequences for domestic absorption will also depend partly upon the impact on factor income and may have feedback effects in the demand system by way of further price adjustments.

Producers' demand for factors will shift as the relative profitability of sectors changes, and this will affect the level and possibly the composition of labour demand, with repercussions for the level and distribution of labour income, especially if the labour supply responds simultaneously. The effects on the level and distribution of household income would presumably reproduce the changes in labour income, but this may not necessarily be the case if households

[3] See, for example, Ganuza and others (2002 and 2004), Sánchez (2004 and 2005) and Vos and others (2006), among other studies.

receive government transfers and remittances, and if non-poor households receive non-labour incomes. The ultimate impact, primarily upon the level and distribution of household income but also upon consumer prices, will determine the capacity of households to satisfy their basic consumption needs, and hence their level of income poverty.

Macroeconomic adjustments will eventually be added to this multiplicity of transmission mechanisms, and their interaction will probably also depend on other internal factors such as technological change, human capital endowments, productivity and so on. A CGE framework is required to capture most of such a wide range of transmission mechanisms and interrelated effects, and their ultimate impact on the poor.

A static CGE model for each of the three countries studied was used to generate simulation results that, combined with actual trends, helped to substantiate this paper's assertions. The model shares most of its features with the widely used CGE model developed at the International Food Policy Research Institute (IFPRI), which is fully explained in Löfgren and others (2002).[4] This model belongs to the family of neoclassical CGE models with certain structuralist characteristics, developed for trade policy analysis, the theoretical foundations for which can be found in Dervis and others (1982) and Robinson (1989). It is a model well suited to performing analyses of policy and external shocks and gauging how these shocks affect relative prices and hence the allocation of resources and income distribution. A particular feature of the model is the inclusion of imperfect substitution functions whereby, given a change in relative prices at given elasticity values: (i) the producer substitutes between intermediate goods and factors of production, (ii) the producer substitutes between factors of production, (iii) the producer substitutes between the domestic market and exports in the allocation of output, and (iv) the consumer substitutes between consumption of domestically-produced output and consumption of imported goods.

The database for the base-year calibration of each country's CGE model comes from a social accounting matrix (SAM) and elasticity and factor stock data. The SAM provides the accounting consistency and the dimensions of the model (that is, the number of production activities, goods and services, factors and institutions). The elasticities, meanwhile, define the degree of substitution as one of the optimization problems facing both producers and consumers in response to a change in relative prices.

The data for Costa Rica were originally compiled in Sánchez (2004) to conduct an analysis of how trade reform had affected poverty in the country. Similar studies for the trade-poverty nexus have been conducted for El Salvador and Honduras, as reported in Ganuza and others (2004), and both the SAMs and the other data required have been borrowed from those studies for the purposes of the present one. The SAMs of Costa Rica and Honduras are for 1997 whereas that of El Salvador is for 1999, these being the respective base years of each country's CGE model.

The SAMs go into considerable sectoral detail (that is, they are broken down into a large number of activities and goods and services), with variations between the countries reflecting their different production structures. The main export products are duly identified, whereas sectors that play only a fairly small part in the economy are aggregated. All other accounts in the SAMs, dealing with factors and institutions, are set up in a more standard way. Labour, in particular, is classified according to skill level and occupational category. The elasticities are all defined at the sectoral level (that is, for both activities and goods and services) in order to reflect sector-specific behaviour for the producer and the consumer. Even though the data inputted into the model necessarily differ by country in terms of disaggregation and the values given, the simulation results are comparable as the model's functions do not differ by country.

Any typical SAM-based CGE model provides results for inter-group income inequality across different groups of households. It would not produce any result for intra-group inequality, however, even though this is also important in explaining total income inequality and poverty. In trying to remedy this limitation, each country's CGE model was combined with a microsimulation methodology originally developed by Almeida dos Reis and Paes de Barros (1991) to analyse earnings inequality. This method was further developed to analyse per capita household income inequality and poverty in a CGE framework, as explained in Ganuza and others (2002).

The microsimulation methodology essentially isolates changes in inequality and poverty due to labour market adjustments. The CGE model provides a base-year labour market structure identical to the one that would be calculated from the household survey data used to calibrate the model and to compute base-year

[4] Only a few minor changes were introduced with respect to the model in Löfgren and others (2002), as detailed in Sánchez (2005).

inequality and poverty measures.[5] Any CGE simulation of a policy or external shock can be used to generate a counterfactual labour market structure that is then imposed in a sequential, top-down fashion on the household survey data in order to generate random numbers from a normal distribution. This has two objectives: first, to determine how many individuals of working age change their participation status or move from one segment of the labour market to another as a result of the situation simulated, and second, to assign labour incomes to newly employed individuals using the mean income of the decile of the distribution to which previously employed workers with identical socio-economic characteristics belonged. It is assumed that, on average, the effects of the random changes correctly reflect the impact of actual changes in the labour market. Since labour supply and occupation decisions are approximated as largely random processes, the microsimulations are repeated several times in Monte Carlo fashion to allow construction of 95% confidence intervals for the indices of inequality and poverty.[6] The latter are compared with base-year indices of inequality and poverty so that conclusions can be drawn. All individuals in the household survey database are accounted for in determining the income distribution impact.

IV

Analysis of simulation results

Once calibrated and feasibly solved using the General Algebraic Modelling System (GAMS) with data for each of the three countries, the CGE model was used to conduct various policy and external shock simulations. The results are discussed in this section and are reported in table 3 as percentage deviations from the base-year solution value. Most simulations were conducted under a set of initial closure rules designed to ensure equilibrium in the different markets covered by the CGE models. In the factor market, for example, quantities allow for an "equilibrium" to be reached for capital, unskilled wage labour and self-employed labour (unskilled and skilled). The employment level of skilled wage labour is fixed, and the wage equilibrates this factor's market. The difference between current government revenues and current government expenditures is made up by government savings. The current account balance with the rest of the world clears through foreign savings, and the exchange rate is kept fixed, consistently with the predominant exchange-rate regimes of the three countries in the base year. Only this external-sector closure rule was changed to conduct some simulations. Savings were made equal to investment using a "balanced" closure rule whereby adjustments in absorption were spread proportionally across all its components. Investment and government consumption were assumed to be a fixed share of base-year nominal absorption and, given this specification, the residual share for household consumption was also fixed implicitly. The saving rates of households and enterprises were adjusted by an equal number of percentage points such that aggregate savings equalled aggregate investment.[7]

1. Trade policy reforms

The trade policy reform that was simulated consists of a 50% reduction in import tariffs for all imported goods and services (import liberalization) and a 50% reduction in export taxes for all exported goods and services (export promotion).[8] The magnitude of the

[5] The labour market structure, whether for the base-year solution or a simulation, is defined by economic participation and unemployment rates; employment structure, as defined by sector of economic activity and occupational category; remuneration structure, as defined by sector of economic activity; average remuneration in the economy; and composition of the employed labour force by skill level. For more detail, see Ganuza and others (2002).

[6] Endogenous poverty and indigence lines were calculated using the price and expenditure systems of the CGE model, following the procedure spelled out in Sánchez (2005). These lines were used to compute poverty indices after each microsimulation, considering that policy and external shocks typically affect the prices of basic consumer goods and services.

[7] This "neutral" macro closure reduces the risk of erratic swings in macro aggregates when simulations cause trade or fiscal balances to change substantially.

[8] Since no export tax rate was recorded in the El Salvador SAM, the export promotion measure for that country was simulated by means of a 50% rise in the implicit export price subsidy for non-traditional agricultural exports (all agricultural exports except coffee, cotton, sugar cane and basic grains).

TABLE 3

Costa Rica, El Salvador and Honduras: simulation results

(Percentage deviation from the base-year value)

	Trade policy reforms with:												External shocks involving:								
	No other policy/shock[a]			External shocks[b]			Devaluation[a]			Productivity shock[a]			Foreign savings[b]			Remittances[b c]			Terms of trade[a]		
	CRI	ESV	HON	CRI	ESV	HON	CRI	ESV	HON	CRI	ESV	HON	CRI	ESV	HON	CRI	ESV	HON	CRI	ESV	HON
Importables/exportables price ratio	-4.2	-2.4	-2.9	-3.1	-0.3	-1.6	-4.2	-2.5	-3.3	-4.2	-2.4	-2.3	0.0	0.0	0.0	0.0	0.0	0.0	1.1	2.2	1.3
Non-tradables/exportables price ratio	-1.2	-0.9	-0.1	0.9	8.3	1.2	-3.5	-3.4	-2.8	-1.2	-0.9	0.6	2.7	5.0	0.2	0.2	3.7	0.3	1.0	2.2	1.3
Non-tradables/importables price ratio	3.1	1.5	2.9	4.2	8.6	2.9	0.7	-0.9	0.5	3.1	1.5	2.9	2.7	5.0	0.2	0.2	3.7	0.3	-0.1	0.0	0.0
Exchange rate	0.0	0.0	0.0	-1.6	-7.3	-0.5	2.5	2.5	2.5	0.0	0.0	0.0	-2.7	-4.8	-0.2	-0.2	-3.6	-0.3	-0.4	-0.9	-0.5
Private consumption[d]	-2.0	0.3	0.7	3.9	3.6	-0.5	-9.7	-0.8	-7.1	2.5	7.0	10.7	3.8	2.1	0.5	0.3	1.6	0.6	3.1	0.5	-0.7
Government consumption[d]	-2.1	0.0	1.4	4.1	2.5	0.3	-10.2	-1.2	-7.5	4.1	6.8	11.2	4.3	2.2	0.6	0.3	1.7	0.7	3.2	-0.6	-0.5
Gross capital formation[d]	-0.4	1.0	1.3	6.0	7.0	0.0	-9.3	-1.1	-7.8	3.8	7.1	10.4	5.1	3.9	0.6	0.3	2.9	0.7	3.1	0.8	-0.8
Exports[d]	6.0	0.6	4.6	-4.7	-7.3	3.5	20.1	3.7	13.9	13.5	8.4	13.4	-6.6	-5.5	-0.5	-0.4	-4.2	-0.9	-6.0	-0.9	-1.5
Imports[d]	1.8	2.1	4.8	5.8	11.1	4.1	-4.4	-1.0	1.7	6.7	8.9	12.7	3.9	6.2	0.3	0.2	4.6	0.4	1.6	0.3	-0.8
GDP[d]	0.6	0.2	0.8	0.6	0.3	-0.7	1.4	0.3	-2.1	6.7	7.2	12.2	0.0	0.0	0.2	0.0	0.0	0.0	-0.1	0.1	-1.1
Tradable sectors	0.6	0.2	0.7	0.4	0.0	-0.9	1.8	0.3	-2.4	7.0	7.2	12.9	-0.1	-0.2	0.2	0.0	-0.2	0.0	-0.2	0.1	-1.1
Non-tradable sectors	0.7	0.9	1.2	1.4	6.2	0.1	-0.3	-0.9	-0.5	5.3	7.1	8.0	0.4	3.5	0.1	0.0	2.6	0.1	0.3	0.7	-0.9
Employment	1.7	0.8	0.9	0.7	1.4	-0.3	2.9	0.9	-5.8	5.9	7.9	9.7	-0.3	0.0	-1.1	0.0	0.2	0.1	-0.7	0.1	-1.3
Tradable sectors	1.7	0.8	0.8	0.5	0.8	-0.5	3.3	1.0	-6.6	5.2	7.6	9.4	-0.4	-0.2	-1.2	0.0	-0.2	0.1	-0.7	0.1	-1.3
Non-tradable sectors	1.8	1.6	1.6	1.4	9.5	1.0	1.4	-0.3	-2.2	7.8	11.4	11.3	0.2	3.0	-0.6	0.0	5.6	0.1	-0.4	0.5	-1.1
Real wage per worker	-0.2	10.2	0.4	2.4	5.7	-0.3	-1.1	9.8	-1.3	0.5	10.4	-2.6	1.1	0.5	-0.3	0.0	-0.4	-0.1	1.5	-0.5	-0.2
Tradable sectors	-0.4	9.9	0.5	2.5	5.5	-0.3	-1.1	9.5	-1.3	0.4	9.9	-2.1	1.1	0.4	-0.4	0.0	-0.6	-0.1	1.7	-0.5	-0.3
Non-tradable sectors	0.3	13.2	0.2	2.2	4.9	0.1	-1.5	13.0	0.4	1.1	12.8	-5.3	1.1	0.2	0.1	0.1	-0.4	0.1	1.1	-0.6	0.0
Gini coefficient: wages	0.7	0.1	-0.3	0.9	0.2	0.0	-0.5	-0.2	-0.3	1.4	0.5	-3.7	0.2	0.2	0.2	0.0	0.1	0.1	0.0	-0.3	0.1
Gini coefficient: per capita household income	0.3	0.0	-0.4	0.6	0.0	-0.1	-0.2	-0.1	-0.2	0.6	0.3	-3.3	0.2	0.1	0.0	0.1	0.1	0.0	0.0	-0.2	0.0
Total poverty incidence[e]	-1.3	0.0	-0.3	0.4	-0.1	0.0	-1.6	0.0	0.3	-4.6	-0.2	-1.3	0.5	-0.4	0.1	0.0	-0.2	0.0	1.2	0.1	0.2
Urban	-1.2	0.0	-0.7	-1.2	0.1	-0.2	-1.4	0.0	0.0	-10.8	-0.1	0.2	0.0	-0.2	0.2	0.5	-0.2	0.0	-0.5	0.3	0.0
Rural	-1.2	0.0	0.1	1.1	-0.3	0.2	-1.8	0.0	0.6	-2.3	-0.1	-2.6	0.8	-0.6	0.0	-0.3	-0.2	0.0	1.8	0.0	0.4
Extreme poverty incidence[f]	-2.4	0.1	-1.3	1.2	-0.1	1.4	-3.0	-0.1	-0.4	-8.5	-2.5	-3.8	0.1	-0.1	-1.2	-0.5	-0.5	-0.2	4.0	0.3	1.5
Urban	-2.0	0.3	-1.8	-5.0	0.2	1.2	-2.4	-0.2	-0.5	-17.9	-4.3	0.8	-0.1	0.2	-0.8	-0.2	-0.9	0.2	-2.7	0.4	1.6
Rural	-3.5	0.0	-0.9	0.7	-0.4	1.9	-5.4	0.0	-0.4	-6.7	-0.5	-6.0	0.2	-0.4	-1.5	-0.7	0.1	-0.5	4.8	0.1	1.4

Source: CGE model simulations and microsimulations.

[a] In this simulation, the current account balance with the rest of the world is balanced through foreign savings, leaving the exchange rate fixed.
[b] In this simulation, the current account balance with the rest of the world is balanced through the exchange rate, leaving foreign savings fixed.
[c] The direct effect of remittances on household income is not taken into consideration for the inequality and poverty results.
[d] For these variables, the results represent changes in volume.
[e] Percentage of the population below the national poverty line.
[f] Percentage of the population below the national indigence line.

policy shocks involved was set deliberately high to simulate a bold trade policy reform.[9] These policy shocks were also made to affect all tradable (importable and exportable) sectors uniformly to avoid reforming protection for some sectors more than others. Since the model's "rest of the world" sector does not distinguish trade flows by origin and destination, the simulated import liberalization and export promotion policies do not discriminate between trading partners. As these considerations clearly show, the objective of the simulations was to generate comparative static results rather than simulate an actual trade agreement.

The results from this trade policy reform simulation are fairly consistent with what Costa Rica has experienced in reality. Domestic final demand initially increases in that country as import liberalization is simulated, but subsequently resources are shifted rapidly away from domestic market production into export sectors in response to the export promotion measure. The reduction in supply for the domestic market translates into lower domestic absorption. Non-tradable production does not contract, however, but actually rises more or less in tandem with tradable production owing to strong linkages with the export sector.[10] The simulated export promotion measure likewise reduces production for the domestic market in El Salvador and Honduras, but in these countries, unlike Costa Rica, this does not fully offset the benefits from lower tariffs. These results accord with the paradoxical fact, referred to above, that economic activity in non-tradable sectors has been a crucial factor in overall growth during the trade policy reforms in El Salvador and Honduras. Output increases by 0.6%, 0.2% and 0.8% in Costa Rica, El Salvador and Honduras, respectively; yet, again in accordance with the actual facts, it is only in Costa Rica that production increases more steadily in the tradable and non-tradable sectors and that export growth is sufficient to reduce the trade deficit. In the other two countries, output rises more strongly in non-tradable sectors and imports increase by more than exports.

Employment increases slightly faster than output, especially in Costa Rica, essentially because no endogenous linkage between trade policy and productivity is modelled. Again, the shift in employment is spread more evenly across tradable and non-tradable sectors in Costa Rica, and this is partly explained by the fact that the export promotion measure encourages agricultural employment too. More of the newly employed labour in El Salvador and Honduras goes into non-tradable than tradable sectors, essentially owing to the prevalent effect of the tariff cut. This seems to determine the final position of wages in the two countries, where they rise above their base-year values, especially in El Salvador. The wage effect of the export promotion measure offsets that of import liberalization, partially in Honduras and fully in Costa Rica, where there is a small reduction overall. The simulated import tariff reduction unambiguously widens the wage gaps between wage earners and self-employed workers, and between skilled and unskilled workers, in all three countries (not shown in table 3). Labour income distribution as measured by the Gini coefficient worsens in Costa Rica and El Salvador. In Honduras, by contrast, the employment adjustment leads to a reduction in labour income inequality. The export promotion measure reinforces the disequalizing effect in Costa Rica because of its impact upon the structure of employment by worker type. The opposite effect is observed in El Salvador, where the labour income gap between skilled and unskilled workers narrows when exports are promoted. No major change is observed in Honduras in this respect. Taken all together, the simulated trade policy reforms worsen the distribution of wages in Costa Rica just slightly and bring about a small improvement in Honduras, while in El Salvador there is little change. These distributive effects are broadly reproduced at the per capita household income level.

The combination of increased household labour incomes and a small drop in basic consumption costs leads to a reduction in the incidence of poverty, especially in Costa Rica. Had income distribution not deteriorated, the poverty reduction in the simulation would have been more substantial for Costa Rica. The improvement in income distribution helps to reduce poverty in Honduras. The incidence of poverty remains basically unchanged in El Salvador, however, where a very slight increase in wage inequality seems to weigh disproportionately upon that in extreme poverty in urban areas. The incidence of poverty falls the most in Costa Rica because those living in extreme poverty in rural areas are much better off than in the other two countries.

[9] Despite the relatively large magnitude of the simulated change to trade policy instruments, the models for the three countries remained stable after these were applied, and they were feasibly solved.

[10] Sánchez (2007) argues that export diversification in Costa Rica opened the way to changes in the production structure that have ultimately led to the creation of production linkages between sectors.

As indicated earlier, income inequality in Costa Rica rose in 1997-2002 while, by and large, the incidence of poverty fell, especially in rural areas (table 2). These facts accord with the simulation results.[11] Honduras undertook trade policy reforms similar to those of Costa Rica in the same period, only less rapidly, and it witnessed a reduction in the incidence of poverty overall, although income inequality worsened between 1999 and 2002. According to the simulation results, the trade policy reforms must have helped to reduce extreme poverty in Honduras by way of higher employment and wages. However, worsening income distribution must have been fully offset by the distributive effect of remittance inflows. Trade policy reforms have not been leading determinants of income inequality and poverty in El Salvador, where inflows of remittances have had a more predominant influence. In summary, the combination of simulation results and actual events suggests that it is in Costa Rica that trade policy reforms have most clearly influenced the evolution of poverty and income inequality. In what follows, an attempt will be made to explain why.

2. Trade policy reform, exchange rates and export competitiveness

As noted earlier, trade policy reforms have been aimed at increasing the relative profitability of exports. Various external factors have, however, exerted pressure on the real exchange rate (RER) to appreciate, thus pushing down the relative profitability of exports. These include growing inflows of remittances (table 1), but also other private capital flows and FDI, which began to be attracted in substantial volumes in the early 1990s as capital controls were dismantled, greater economic and political stability was achieved and various incentives for foreign investors were instituted (table 4). Furthermore, recurring episodes of global price declines for key export goods and services, such as coffee and sugar, and skyrocketing oil prices worsened the terms of trade for these countries at the beginning of the new millennium, thus exerting further pressure on the RER (table 4). There is no obvious prospect of a sustained reversal in this trend. Some of the Central American countries' key export goods and services recently rose in value, but they have been falling back again as the world economy slowed down. The prices of oil and some imported food staples have continued to increase on the whole, despite the slowdown in the global economy.

The CGE model was also used to simulate a 25% increase in capital inflows, a 25% increase in remittances, and a 5% drop in the world price of major exports (a terms-of-trade shock).[12] These are considered external shocks for the purposes of the analysis presented in this section. The increase in capital inflows was simulated by changes to foreign savings, showing them as fixed and exogenous, while the current account with the

[11] It is worth recalling at this point that the CGE model's base year is 1997 for Costa Rica and Honduras and 1999 for El Salvador.

[12] To simulate the terms-of-trade shock, the world export price was changed in the CGE models for goods and services accounting for about 30% of each country's total exports ("non-traditional agricultural commodities" in Costa Rica, "other services" in El Salvador and "food, beverages and tobacco" in Honduras).

TABLE 4

Costa Rica, El Salvador and Honduras: gross private capital and FDI inflows and net terms of trade, 1990-2003
(Annual averages for the period)

Indicator	Country	1990-1994	1995-1999	2000-2003
Gross private capital inflows (percentage of GDP)	Costa Rica	5.3	8.7	9.2
	El Salvador	1.3	6.2	15.2
	Honduras	6.8	7.5	7.6
Net FDI (percentage of GDP)	Costa Rica	2.7	3.6	3.1
	El Salvador	1.3	2.5	3.5
	Honduras	0.2	2.4	1.9
Net terms of trade (2000 = 100)	Costa Rica	84.9	105.1	100.3
	El Salvador	83.5	113.0	94.5
	Honduras	83.4	103.3	95.1

Source: World Bank, World Development Indicators [online database] http://devdata.worldbank.org/dataonline/.

rest of the world cleared through the exchange rate in accordance with the alternative to the original model closure. This alternative rule was used to simulate the increase in remittances too, since the expectation is that they may also have a large effect on the exchange rate. The increase in remittances was simulated by scaling up transfers from abroad to households in the CGE model, but the effect on income distribution and poverty was analysed in two stages. In the first stage, the rise in household income derived from remittances was omitted from the microsimulations. In other words, the initial analysis of income distribution and poverty in the remittances simulation only deals with the "pure" relative price effect of remittances flowing through the labour market. The "full" effect of remittances on income distribution and poverty was then analysed in a second stage in which the increase in household incomes was included in the microsimulations.

The three external shocks that were simulated lead to a large appreciation of the RER (table 3). Resources are allocated away from tradable sectors into non-tradable ones because of the relative price effect. Domestic absorption rises as a result, but production barely increases because the trade balance deteriorates and tradable production is adversely affected relative to non-tradable production, the exception being the terms-of-trade shock in Honduras.[13]

Employment shrinks most in tradable sectors, especially agriculture, although some of the simulations also show lower employment in non-tradable sectors in Costa Rica and Honduras. Increased recruitment in non-tradable sectors in El Salvador offsets lower employment in tradable sectors, so that total employment either increases slightly or remains virtually unchanged. The fall in domestic prices triggered by RER appreciation pushes wages down, except in Costa Rica in all three simulations and El Salvador when higher capital inflows are simulated, since these are situations where higher demand for skilled wage earners in non-tradable sectors ultimately pushes wages up. The upsurge in non-tradable sectors translates into larger wage gaps between wage earners and the self-employed, and between skilled and unskilled workers, except in the case of the El Salvador terms-of-trade shock. As a result, income distribution as measured by the Gini coefficient worsens very slightly. The effect on poverty is more ambiguous. The total incidence of poverty rises in Costa Rica overall as labour incomes drop in rural areas, except when remittances are increased, as these reduce the numbers living in extreme poverty, particularly in rural areas. The upsurge in non-tradable sectors unambiguously reduces extreme poverty in Costa Rica's urban areas. In El Salvador, raising capital inflows, including remittances, leads to a modest reduction in total and extreme poverty as a consequence of the redistributive impact of labour market changes in non-tradable sectors. There is a reduction in extreme poverty in Honduras too, particularly in rural areas, but this is explained by the downward pressure on food prices. The terms-of-trade shock proves somewhat detrimental in terms of the incidence of poverty in El Salvador and Honduras owing to its effects on household income, which tend to be most severe for the poorest.

The simulation results indicate that, on the whole, inequality and poverty are weakly explained by the simulated increase in capital inflows, including remittances, and the unfavourable terms-of-trade shock. However, the effect of remittances deserves more in-depth examination since, as indicated earlier, only the "partial" impact arising through the operation of the labour market alone has been analysed. When transfers to households are also taken into consideration in the microsimulations, the impact on income inequality and poverty is much more noticeable in El Salvador and Honduras, where remittances account for a large share of the trade balance (table 1). As figure 2 shows, the distribution of per capita household income improves markedly in El Salvador, where the bulk of remittances flow to rural areas, but deteriorates in Honduras, where most remittances go to urban households. The numbers of people living in moderate and extreme poverty fall sharply, but this effect is much more marked in El Salvador on account of the improvement in income distribution. The results for Costa Rica are not reported here because they were very close to zero, the reason being that the scale of remittances was substantially smaller there than in the other two countries in the model base year.[14]

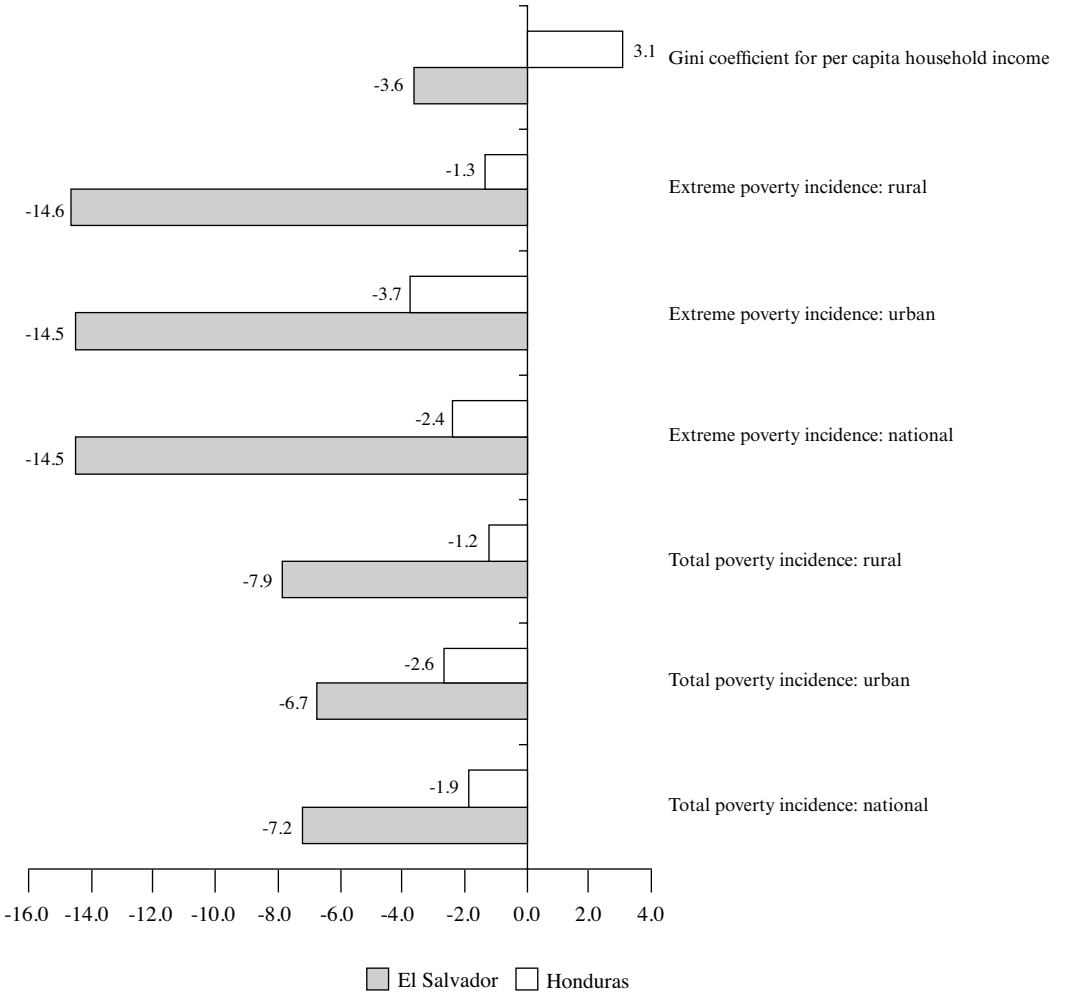
[13] More atypically, the simulated terms-of-trade shock reduces non-tradable production in Honduras by almost 1%. This is because the simulated increase in the world price of food, beverages, and tobacco discourages production of those goods for the domestic market, and domestic demand for domestically produced goods and imports falls as a result.

[14] Even today, the scale of remittances remains much smaller in Costa Rica. According to the World Bank, *World Development Indicators 2006*, net worker remittances from abroad were equivalent to 19.1%, 93.8% and 96.3% of the goods and services trade balance in Costa Rica, El Salvador and Honduras, respectively.

FIGURE 2

El Salvador and Honduras: "full" effect of a 25% increase in remittances on inequality and poverty[a]

(Percentage deviation from base-year value)



Source: CGE models and microsimulations.

[a] Estimates take account of the direct effect of remittances on household income in the microsimulations.

The relative price effect of remittances on production is found to be negligible and the impact on income distribution and poverty is essentially explained by the boost to household incomes from direct transfers.[15] This result may indicate that El Salvador and Honduras lack the capacity to absorb remittance inflows productively and that the export sector in those countries is seriously affected by the resulting appreciation of the RER. Should these circumstances persist over time in El Salvador and Honduras, where remittances are still growing systematically, those countries may end up suffering from what Sánchez (2005) calls "remittance disease".

The implications of RER appreciation are important for the relative success of trade policy reforms, as is indicated by the results of a new simulation combining

[15] This conclusion still holds if the initial model closure rule (fixed exchange rate and current account with the rest of the world balanced through foreign savings) is maintained.

these reforms with external shocks.[16] The appreciation of the exchange rate, basically triggered by the external shocks, boosts consumption, investment and imports in comparison with the situation in which trade policy reforms are unaccompanied by other external shocks. The exception is Honduras, where agricultural production for domestic consumption suffers severely as a result of declining economic activity in export manufacturing, all of which translates into lower output. In this case, rural household consumption falls, government consumption expands only slightly, and the effect upon production discourages imports as compared to the scenario of trade policy reforms alone. Exports, particularly agricultural ones, are discouraged in all three countries and the trade deficit deteriorates. Production does not plummet in Costa Rica or El Salvador, however, as resources withdrawn from export sectors are promptly reallocated to non-tradable production.

The favourable labour market effects of the trade policy reforms are offset by the external shocks, partially in Costa Rica and El Salvador, fully in Honduras. Both employment and wages decline in Honduras, particularly in tradable sectors. Total employment increases by less in Costa Rica than in the situation in which external shocks are absent, but wages end up rising because skilled workers are in greater demand in non-agricultural sectors. By contrast, there is new employment for workers of all types in non-tradable sectors in El Salvador, but the reduction in domestic prices brought about by the appreciating exchange rate lowers the average wage by comparison with the scenario in which external shocks are absent. Exchange-rate appreciation also somewhat magnifies the effect of tariff reductions upon income distribution in the three countries, and generally cancels out the reduction of poverty recorded in Costa Rica and Honduras in the absence of external shocks. In contrast, poverty now diminishes somewhat in El Salvador as a result of the upsurge in non-tradable sectors.

RER appreciation has actually taken place in Honduras and El Salvador (figure 3) and, if the simulation results are to be believed, this must have offset the expected effects of the trade policy reforms. El Salvador opted for a fixed exchange-rate regime in 1993 and dollarized its economy in 2001, during which time its RER appreciated substantially. It is unsurprising, therefore, that El Salvador has been transformed from an agro-export economy into a services economy (Segovia, 1998). Non-tradable sectors have driven economic growth in El Salvador, especially in the 1990s. In the case of Honduras, daily interventions in the currency market since 1994 have proved insufficient to prevent RER appreciation. The country's unimpressive economic performance has been underpinned by temporary increases in investment and government consumption since the 1990s (Cuesta and Sánchez, 2004). In Costa Rica, by contrast, a managed regime of periodic mini-devaluations of the local currency against the dollar has allowed a relatively stable and competitive real exchange rate to be maintained (figure 3).[17] Thus, only in Costa Rica has exchange-rate policy proved consistent with the objectives of the trade policy reforms, since the country's mini-devaluations have helped to raise the relative profitability of exports.

Devaluation reinforces the effects of the trade policy reforms. The relative profitability of exports is found to rise sharply when the simulated trade policy reforms are combined with a 2.5% devaluation of the exchange rate (table 3).[18] Exports increase significantly at the cost of lower investment in non-tradable sectors, but only in Costa Rica do they boost GDP substantially by comparison with the scenario of trade policy reforms alone (table 3). GDP falls in Honduras, not only because non-tradable production contracts but also because the devaluation increases production costs in a poorly diversified and unproductive export sector. Cuesta and Sánchez (2004) identify other CGE transmission mechanisms whereby devaluation has contractionary effects in Honduras.

The simulated devaluation reinforces the employment effect of the trade policy reforms in Costa Rica and El Salvador, as tradable sectors hire more workers, albeit at the cost of lower recruitment in non-tradable sectors. In Honduras, employment falls across all sectors as a result of the contractionary

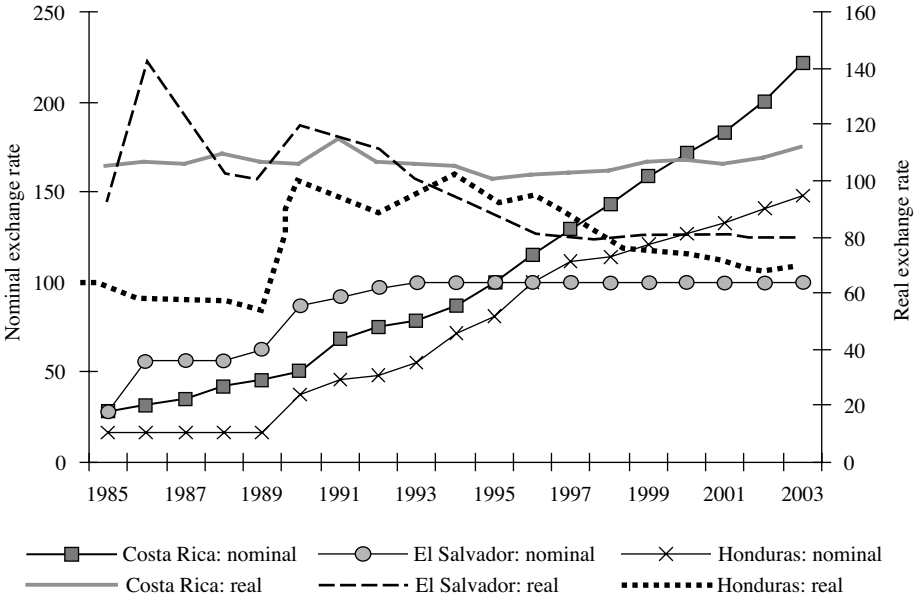
[16] The exchange rate was assumed to be flexible (and foreign savings fixed) for this new simulation, even though the contrary had been assumed initially when simulating the trade policy reforms alone. In an experimental simulation using a flexible exchange rate that is not reported here, the trade policy reforms resulted in only a very marginal exchange-rate appreciation, and the resource allocation and income distribution and poverty effects remained essentially the same as when the exchange rate was assumed to be fixed (and foreign savings flexible).

[17] A new managed regime with upper and lower bands was put in place in Costa Rica in 2007.

[18] This simulation was performed using the initial closure rule whereby the exchange rate is fixed and the current account with the rest of the world is balanced through foreign savings.

FIGURE 3

Costa Rica, El Salvador and Honduras: nominal and real exchange rates, 1985-2005
(Indices 1995 = 100)



Source: Economic Commission for Latin America and the Caribbean (ECLAC).

effect of the devaluation. The devaluation pushes up domestic prices, leading to lower real wages in most cases. Nonetheless, the employment effect reinforces the poverty reduction observed in Costa Rica and El Salvador following the application of the trade policy reforms alone, although the effect is only marginal given that the prices of basic consumption goods and services rise. The poverty effect of devaluation is contrary to that of the trade policy reforms in Honduras on account of the contractionary effect referred to and the reduction of real wages. The disequalizing effect of the trade policy reforms is more than offset by the devaluation in Costa Rica and El Salvador, as the relative demand for skilled labour declines. In Honduras, the additional income distribution effect from devaluation as compared to trade policy reforms alone is virtually nil.

The simulation results and actual developments discussed so far indicate that only in Costa Rica has exchange-rate policy had the effect of reinforcing the benign effects of the trade policy reforms and offsetting the harmful effects of external shocks on export growth and poverty reduction. In the other two countries just the opposite has occurred, with exchange rate appreciation offsetting the effects of trade policy reforms on export growth and poverty.

3. Trade policy reform and productivity

The success of the trade policy reforms must also have been determined by the extent to which they have been accompanied by productivity growth. According to a decomposition of labour productivity changes presented in Sánchez (2005), Costa Rican workers became more productive in the economy generally during the 1990s and in agriculture, in particular, in 1990-2003. The same decomposition indicates that the evolution of labour productivity growth has been less satisfactory in El Salvador and Honduras, with the possible exception of El Salvador's industrial sector. Labour productivity has of course depended on the availability of human capital. The percentage of the economically active population aged 15 or over with more than 10 years of instruction is considerably higher in Costa Rica than in El Salvador and Honduras, particularly in rural areas, as it stood at 19.6% there around 2002, for example, compared with 8.9% and 4%, respectively, in the other two countries (ECLAC, 2004). Imports of raw materials and capital goods have led to the absorption of improved technologies and better use of skilled labour in Costa Rica, even in agriculture (Sánchez, 2004). In El Salvador and Honduras, on the other hand, production in

non-tradable sectors and in the maquila industry has been dominated by low-paid, low-skilled employment, hampering the achievement of sustained productivity growth through technological change.

Dynamic gains from trade are not endogenized in the CGE models, and total factor productivity (TFP) growth is exogenous. There is little empirical evidence regarding the drivers of trade-induced efficiency gains in the three countries. However, the final simulation in this paper is designed to achieve a better understanding of the effect of the trade policy reforms when accompanied by productivity growth. The trade policy reforms were also simulated in tandem with a productivity shock consisting of a 5% increase in TFP that is hypothetically driven by a matching 5% increase in FDI and the relative supply of skilled labour.

The simulated productivity shock causes little variation in domestic prices but does give a remarkable boost to output, to which domestic absorption responds rapidly. On the whole, it reinforces the favourable allocative effects of the trade policy reforms and offsets the unfavourable ones (table 3). The modest employment growth that is triggered by the trade policy reforms alone becomes fairly substantial, especially in El Salvador and Honduras, where production dynamics lag farther behind. There is a much larger decline in poverty as a result, especially in Costa Rica, where extreme poverty falls dramatically. The reduction in poverty is far more modest in the other two countries, but the results and actual trends suggest that it is productivity and human capital shortfalls that have prevented those countries from experiencing poverty alleviation during the implementation of the trade policy reforms. There are also some undesirable effects from the productivity shock. Real wages decrease in Honduras as a result of a more atypical increase in the price of non-tradable goods (relative to exportables). In addition, the productivity shock magnifies the disequalizing effect of the simulated trade policy reforms in Costa Rica and El Salvador, something that does not happen in Honduras owing to the impact of labour force recomposition. This last result suggests that a reduction of income inequality in Honduras will necessarily require substantially increased human capital investment. By contrast, the relatively large and growing stock of skilled labour in Costa Rica has helped that country offset part of the negative distribution effects of the trade policy reforms and productivity growth.

V

Conclusions and policy implications

This paper's main conclusions have been drawn by combining simulation results from a computable general equilibrium model with actual data for the period 1990-2003. It has been found that trade policy reforms in Costa Rica, El Salvador and Honduras have unquestionably favoured the relative profitability of export sectors. Export-led growth and its trickle-down effects on the poor have been experienced only in Costa Rica, however, essentially for three reasons.

Firstly, Costa Rica's export sector has modernized and diversified to a remarkable degree, enabling the country to build up its capacity to generate foreign exchange and to absorb unfavourable price shocks more successfully. El Salvador and Honduras, on the other hand, have opted for greater specialization in maquila production, which adds little value to the economy owing to its extremely large import content.

Secondly, the inflows of remittances and private capital, and to a lesser extent the recurrent drops in world prices for key exports, have led to an appreciation of the real exchange rate in El Salvador and Honduras, offsetting the effect of the trade policy reforms on the relative profitability of export sectors. In Costa Rica, where remittances are less of a factor but inflows of private capital and FDI have exerted pressure on the real exchange rate, managed devaluations were successfully used to maintain a stable and competitive real exchange rate, and this has proved crucial when it comes to capitalizing upon the expected effects of the trade policy reforms.

Thirdly, Costa Rica has taken advantage of FDI and its increased capacity to generate foreign exchange in order to absorb technologies that, combined with a relatively large stock of skilled labour, have

boosted labour productivity, even in agriculture. In El Salvador and Honduras, by contrast, a lack of dynamism in tradable sectors, very little diversification in agriculture and increased reliance on maquila production employing traditional technologies have all translated into higher demand for unskilled labour and low generation of value added.

Trade policy reforms have worsened the distribution of income in Costa Rica but poverty has fallen because the rural population, in particular, has benefited from stronger export growth. These trade policy reforms alone go only a little way towards explaining the poverty and income inequality trends observed in El Salvador and Honduras. Remittance inflows have unambiguously reduced poverty in those two countries, but income distribution has improved substantially only in El Salvador, where most recipients of remittances live in rural areas. In Honduras, by contrast, remittances mainly flow into urban areas, leaving the rural population relatively worse off.

Remittances have increased the consumption capacity of households in El Salvador and Honduras and have caused resources to be reallocated from tradable to non-tradable sectors, but they have barely boosted total production. This inertia in terms of production capacity and further appreciation of the real exchange rate may persist in the longer run, since remittances will probably continue to flow into these countries. This "remittance disease" may further constrain the creation of production capacity to generate employment over time, particularly in export sectors.

These conclusions call for policy action if these countries, especially El Salvador and Honduras, are to be able to increase the relative profitability of exports during trade liberalization under the aegis of CAFTA-DR and other trade agreements. Export diversification, technological change, human capital investment and productivity growth are preconditions for reaping the welfare gains from further trade liberalization. Export diversification, in particular, should be considered a priority because it reduces exposure to export price shocks that undermine the intended effects of trade liberalization. Policies will be needed to offset upward pressure on the real exchange rate from rising remittance inflows and the terms-of-trade deterioration that is expected to occur as demand for export goods and services declines in a slowing world economy marked by stubbornly high oil prices. The challenge will be to devise export promotion policies that are allowable under WTO rules and do not put public finances at risk. Costa Rica and Honduras can still resort to exchange-rate policy, but El Salvador cannot so long as its economy remains dollarized. The development of profitable remittance investment schemes will be crucial in countries like El Salvador and Honduras, particularly if such schemes are successful in boosting export production and employment.

(Original: English)

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KEYWORDS

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The impact of remittances on macroeconomic stability: the cases of Mexico and Central America

Eliseo Díaz González

The present study uses the monetary approach to the balance of payments and a macroeconomic model of the Mundell-Fleming type to analyse the effects of family remittances on economic growth in Mexico and the countries making up the Central America region. The methodology employed is based on the application of a panel data model to quarterly balance-of-payments series for the 1990-2005 period. The study findings suggest that the repercussions of inward remittances are different in each country and depend on monetary policy. The econometric estimates also indicate that, when an upsurge in remittances occurs, its contribution to economic growth is smaller in countries where remittances tend to produce an overvalued exchange rate, reinforcing macroeconomic stability in the context of an open economy.

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I
Analytical framework

Remittances represent a capital inflow whose contribution to economic growth in the countries depends on how they align with other macroeconomic variables driving the autonomous factors of aggregate demand. As with any type of outside capital, there are a variety of mechanisms available for channelling these resources towards growth, and it is upon the interaction of these, i.e., upon economic policy, that their economic effects will depend.

Remittances are recorded in the transfers sub-account of the balance-of-payments current account. The balance of the latter is a consolidation of the trade balance (including the transfers sub-account) and the capital account, and this goes to make up international reserves.

When the balance-of-payments model is followed, analysis of the relationship between remittances and economic growth is limited to two aspects: the link between remittances and the exchange rate, and the relationship between remittances and international reserves, the money supply and domestic credit.

There is no one factor in this set of variables that can be pointed to, hypothetically and theoretically, as a driver of economic growth. In an open economy with free capital movement, the exchange rate acts as a regulator of external competitiveness and thus has a direct link to net exports. In an equilibrium situation, these rise or fall depending on the behaviour of economic activity, since imports depend on the level of output. Thus, exchange-rate appreciation may lead to a drop in exports because the country loses external competitiveness, but the decline in output causes imports to fall, re-establishing the earlier level of net exports.

It is possible that remittance inflows may lead to an autonomous increase in aggregate demand. As is explained later on, however, standard macroeconomic theory states that it is only in closed economy conditions that higher demand can lead to economic growth via the multiplier effect. In an open economy, the autonomous shift in demand may lead to higher interest rates, counteracting or reducing its expansionary effects on economic growth.

1. Objectives of the study

The present study analyses the effects of family remittances on economic growth in Mexico and the countries making up the Central America region, where they have increased dynamically over the past decade because of the steady emigration of workers, particularly to the United States.

The working hypothesis we seek to demonstrate is that the effects of remittance income in these countries differ depending on the size and economic importance of currency inflows of this type and on the monetary policy regime followed in each. It is also argued that these repercussions are highly sensitive to monetary and exchange-rate policy because of the mechanisms whereby nominal variables are transmitted to the real sector of the economy.

The starting point is that remittances have made a major contribution to the balance-of-payments current account, helping to mitigate or remove external constraints on economic growth as postulated by structuralist theory, even if this improvement has not translated into greater economic dynamism. External constraints on growth are a subject from the Keynesian tradition, which attributes a pivotal role in economic activity to effective demand. The main constraint on the growth of any economy at an intermediate level of development is the trade deficit, which post-Keynesian studies treat as structural in character (Loría, 2001). According to the structuralist approach derived from the works of Prebisch (1949), Myrdal (1957) and Pinto (1991), among others, the currency balance limits economic growth by provoking recurrent balance-of-payments crises. The empirical demonstration of this regularity is what has come to be called Thirlwall's Law, which relates to external constraints on growth in developing countries. Moreno-Brid and Pérez (1999) discuss these constraints in the case of the Central American countries.

2. An income determination model covering trade in goods, market equilibrium and the balance of payments

The present study is based on a simple model of aggregate demand encompassing trade in goods, market equilibrium and the balance of payments. The behaviour of external trade is framed by the IS/LM model, with a given price level and elastic supply; later on the assumption of fixed prices can be removed without the model terms changing much.

As in any open economy, some domestic production is sold abroad and some consumer spending goes on imports. Consequently, domestic output depends on the proportion of consumer spending taken by domestically produced goods plus the export demand generated by external markets.

Spending by residents abroad is:

$$A \equiv C + I + G \quad (1)$$

where consumption is C, investment I, public spending G and spending on domestically produced goods

$$A + XN = (C + I + G) + X - Q = (C + I + G) + XN \quad (2)$$

where X represents the level of exports, Q the level of imports and XN the surplus of the goods and services trade balance.

It is assumed that domestic spending depends on interest rate i and income Y, so that $A = A\,(i, Y)$, and that export demand is given by $\bar{X}$ and import demand depends only on income, so that $Q = Q\,(Y)$.

If income increases, some goes on imports and the rest is spent on domestic goods or saved. Thus, the trade balance is:

$$XN \equiv X - Q = \bar{X} - Q(Y) \quad (3)$$

Given these assumptions, the trade balance is only a function of the income level, so that if it is in equilibrium, a further rise in income will lead to a trade deficit.

If prices and the exchange rate are kept constant and the open economy model is limited to trade in goods, the trade balance will depend only on the given level of exports and the level of income.

$$XN = XN\left(Y, \bar{X}, \ldots\right) \quad (4)$$

Equilibrium is attained in the market for goods when the quantity produced matches demand and output is equal to income, which is given by:

$$Y = A(Y,i) + XN\left(Y, \bar{X}\right) \quad (5)$$

Any autonomous increase in spending ought to lead to an increase in equilibrium income and output. But when income increases, the trade balance will deteriorate because imports grow in line with income. Now, let us assume that exports and thus domestic income increase. This further increase in income will raise imports once again, making the trade balance uncertain. It is possible to predict that the result will be an improvement, since the increase in imports will offset the rise in the trade surplus, but not cancel it out completely.

According to the monetary approach to the balance of payments, international reserves constitute the balance of the monetary authority (the central bank), which uses them to expand or contract the monetary base (B) or domestic credit (DC), in accordance with the following equation:

$$\Delta AFN = \Delta B - \Delta DC \quad (6)$$

International reserves are represented here as the variation in foreign assets (FN). The monetary base directly affects the interest rate, and domestic credit can be used to finance the public-sector deficit or for private lending. The effects on economic growth, in whatever proportion net external assets are allocated, will depend on the use they are put to. If the public-sector deficit is due to excessive public spending, it is possible that they may have fewer repercussions on economic growth if this spending is not applied to the production of goods and services and that the rise in the deficit may ultimately drive up prices because of the expanding money supply. At the same time, the growth effects of higher spending driven by private credit that is underpinned by a large build-up of net foreign assets will depend on whether private lending is used to make viable productive investments that have a high impact on productivity and employment or to support private consumption growth. If this were the case, the repercussions on economic growth could be expected to be modest if consumption were oriented towards domestic goods and smaller still if it were oriented towards imports.

The goal of macroeconomic stability implies that the balance of payments must be compatible with monetary policy and domestic credit growth. If it is, the external account balance is coordinated with the amount of money in circulation (i.e., the monetary base) and the fiscal discipline needed to achieve stable economic growth.

3. The balance of payments

Family remittances are recorded in the transfers section of the balance-of-payments current account.

Although this includes transfers of other kinds, such as pensions paid in other countries to people resident in Mexico, the importance of remittances has increased in recent years: from 79.6% of all transfers received in 1980, their share rose to 97% in 2004.

A necessary step towards clarifying the role of remittances in economic growth is to understand the function they perform in the countries' monetary circuit. Being unilateral transfers from abroad, remittances form part of national income, but not of national product. In a closed economy, it is easy to understand that the latter is equivalent to the former, but this equivalence does not hold in an open economy that receives unilateral transfers from other countries.

Let us consider three sub-accounts of the current account: the trade balance, consisting of exports (X) minus imports (M), the factor services balance ($Fs^{rm}i$) and the transfers balance ($T^{rm}i$). Whether the current account is in deficit or surplus will then depend on the debit or credit position of these sub-accounts:

$$C_i = (X-M) - (Fs_i^{rm} - Fs_{rm}^i) - (T_i^{rm} - T_{rm}^i) \quad (7)$$

To balance its current account, a remittance-receiving country that records a trade deficit and a factor services deficit will depend on transfers from abroad. If we make $Td = (X\text{-}M)$, when $M > X$, and if we have $DFs = (Fs^i_{rm}\text{-}Fs^{rm}{}_i)$, when $Fs^{rm}{}_i > Fs^i_{rm}$, then:

$$CA = Td + DFs + T \quad (8)$$

Whether the current account is in deficit or surplus will depend solely on the amount of transfers. Since these are composed primarily of remittances, when the trade and factor balances are in deficit the deficit or surplus of the balance-of-payments current account will depend on the remittance flows entering the country.

The balance-of-payments current account reflects variations in a particular country's consolidated external wealth. A current-account deficit can only be sustained by receiving external loans, as it means that the country concerned is obtaining more goods than it produces; conversely, a position of surplus means that the country is financing other countries, as it is not using up the whole of its domestic production.

II

Remittances and economic growth

The economic stagnation of the Central America region over recent decades has led to a prolonged period of temporary, transitory and sometimes permanent emigration, as a result of which family transfers or remittances recorded in the balance of payments have grown exponentially. Countries whose economic growth since the 1980s has been low or unstable, such as El Salvador, Guatemala, Honduras, Mexico and Nicaragua, have experienced an explosive increase in inward remittances. Conversely, those like Belize, Costa Rica and Panama that have seen more stable economic growth have recorded only a moderate rise in remittances (table 1).

In Mexico, for example, the amount of remittances sent by emigrants doubled in the decade from the early 1980s to the early 1990s. The same happened in other countries such as Costa Rica, from a substantially lower starting point, but growth was even greater in the remaining Central American countries. A decade on, from the early 1990s to the early 2000s, the growth in remittances became explosive. From this evidence, it is possible to establish a link between migration due to the closing off of opportunities resulting from the region's low economic growth[1] and the volume of remittances to family members. As Desruelle and Schipke (2007) recognize, the Central America region has now made substantial progress with macroeconomic stability and with the globalization and regional integration

[1] According to data from the International Monetary Fund (IMF), Belize was the region's best-performing economy in the 1980-2005 period, followed by Panama and Costa Rica, which averaged growth of 3.5% over the period. The results for the other countries in the area were poorer, with Guatemala and Mexico averaging the lowest growth (2.5%). Where per capita output is concerned, however, taking the average from the first half of the 1980s to the first half of the 2000s, only three of these countries succeeded in trebling it (Costa Rica, Belize and Mexico). Other than El Salvador, where per capita output was 2.5 times as great as in the 1980s, all the remaining countries showed signs of economic stagnation. In Honduras, for example, per capita GDP in the early part of the 2000s was just 32% of its early 1980s level.

TABLE 1

Mexico and Central America: average transfers, 1980-2005
(Millions of constant dollars, 2000)

Years	Mexico	Costa Rica	Nicaragua	Honduras	Guatemala	El Salvador	Panama	Belize
1980-1985	1 989.0	70.7	–	8.1	10.0	220.9	143.1	33.7
1986-1990	3 204.8	156.7	10.3	30.4	61.8	494.6	183.9	32.8
1991-1995	3 984.8	173.9	71.1	74.7	264.8	1 162.0	224.8	35.9
1996-2000	6 002.4	202.6	283.7	332.4	656.5	1 563.2	197.9	44.2
2000-2005	13 176.1	329.7	694.8	1 504.9	2 936.0	2 284.1	290.7	54.9
Gross domestic product *(Millions of each country's monetary unit)*								
1980-1985	3 451 158.7	2 269 550.6	–	52 388.5	88 936.1	52 229.6	6 575.2	527.8
1986-1990	3 632 688.9	2 727 762.5	–	61 278.1	93 410.6	54 850.0	6 734.1	827.3
1991-1995	4 256 032.6	3 492 780.6	36 663.4	72 663.0	113 264.7	85 252.3	8 464.3	1 189.0
1996-2000	4 953 020.5	4 443 204.4	45 513.4	84 721.8	138 601.4	108 371.6	10 697.9	1 412.1
2000-2005	5 696 519.7	5 436 267.2	54 062.7	98 481.4	160 797.6	121 411.9	12 369.2	1 909.8

Source: prepared by the author on the basis of data from the International Monetary Fund (IMF), *International Financial Statistics*.

process. However, the challenge of raising growth to reduce poverty and vulnerabilities, particularly those associated with the integration process, still remains. Other than Costa Rica, the Central American countries have yet to surpass the per capita output levels of the 1970s. If we treat low economic growth and general impoverishment as determinants of migration, then remittance growth can be attributed primarily to family ties in the form of mutual caring, as described by Johnson and Whitelaw (1974) and Lucas and Stark (1985), a precept established in studies of remittance economics even before the new economics of labour migration arose.

Although a number of studies have touched on the countercyclical character of remittances (Chami, Fullenkamp and Jahjah, 2005; World Bank, 2006), in order to establish the specific situation of the countries in the central part of the American continent, table 2 shows the relationship between the problem of emigration and the transfer of money to families in the home country and the economic behaviour of the latter. The expansion of remittances is linked to cycles of low growth or economic crisis. In Mexico, for example, annual remittance growth averaged 21.7% in the 1986-1990 period after the economy had grown by an average of 1.9% a year in the early part of the 1980s; in 1996-2000, remittance growth was 12.75% following a period in which economic growth had averaged 0.9% in the wake of the near-6% decline in output experienced in 1995.

A similar situation was seen in Costa Rica in the second half of the 1980s following the economic decline of the first half, and the same happened in Nicaragua in the 1996-2000 period. In Honduras, low economic growth has led to a steady rise in remittances, while in Guatemala they increased by an annual average of 47.1% in the second part of the 1980s, following negative GDP growth of –1.1% in the 1985-1990 period. El Salvador presents a fluctuating pattern of high and low remittances, but Panama and Belize do not seem to fit this pattern of economic stagnation followed by rising remittances.

In Central America and Mexico, there is a clear relationship between declining per capita output and rising remittances.[2] Table 3 shows the annual change in remittances, per capita output and GDP in the countries studied. Looking at what has happened with per capita output, we can understand why emigration and remittances have behaved as they have. Per capita GDP in Mexico fell between 1980 and 1995, for example, as GDP growth averaged less than 2% a year while the population grew more quickly than that.

As a result of this general impoverishment, remittances increased by 13 times as much as per capita output. Mexico is obviously an emblematic case here, but if we look at the multiplication of

[2] Applying tests of this correlation to the series referred to did not, however, yield significant results concerning the possible link between GDP growth and migrants' remittances. This can be explained by the fact that emigration and the ensuing transfer of money back to family members left behind in the home country are variables that lag economic dynamism.

TABLE 2

Mexico and Central America: average annual rates of inward remittance and gross domestic product growth
(Percentages)

Country		1980-1985	1986-1990	1991-1995	1996-2000	2000-2005
Mexico	Transfers	12.2	21.7	7.3	12.7	21.1
	GDP	1.9	3.1	0.9	6.9	1.8
Costa Rica	Transfers	8.2	7.6	5.8	3.3	15.4
	GDP	0.3	4.4	6.3	6.2	4.1
Nicaragua	Transfers	–	–	5.1	44.9	18.3
	GDP	–	–	2.3	6.3	3.1
Honduras	Transfers	13.1	32.3	27.9	53.6	29.4
	GDP	1.7	3.7	3.6	3.8	3.6
Guatemala	Transfers	-27.9	47.1	26.3	24.3	38.3
	GDP	-1.1	3.6	4.4	5.0	2.5
El Salvador	Transfers	22.3	16.1	19.4	4.9	7.3
	GDP	-1.9	2.2	9.2	3.8	1.8
Panama	Transfers	15.4	9.6	-7.5	2.8	8.7
	GDP	3.4	-1.7	5.7	5.8	3.6
Belize	Transfers	–	-1.0	7.7	10.1	-100.0
	GDP	–	14.8	3.8	7.6	5.8

Source: prepared by the author on the basis of data from the International Monetary Fund (IMF), *International Financial Statistics*.

TABLE 3

Mexico and Central America: relationship between transfers, per capita GDP and total GDP, 1980-2005
(Average annual percentage changes)

Year	Mexico	Costa Rica	Nicaragua	Honduras	Guatemala	El Salvador	Panama	Belize
Per capita transfers								
1980-1985	10.7	5.6	–	10.2	-34.0	34.4	13.0	17.6
1986-1990	11.3	9.6	–	17.8	77.4	18.1	8.7	-4.9
1991-1995	-2.4	1.9	150.7	4.4	14.4	16.6	-7.9	2.9
1996-2000	8.4	0.3	34.9	24.9	8.2	2.2	0.4	6.7
2000-2005	19.8	13.7	16.0	17.5	29.0	6.2	7.4	-4.2
1980-2005	9.6	6.2	67.2	15.0	19.0	15.5	4.2	1.2
Per capita gross domestic product								
1980-1985	-0.24	-2.34	–	-1.43	-3.51	-2.53	1.29	-0.86
1986-1990	-0.22	1.88	–	0.08	0.59	0.48	-2.42	10.46
1991-1995	-0.27	2.95	-0.17	0.62	1.93	9.36	4.29	0.68
1996-2000	3.82	2.43	2.91	0.36	1.62	0.97	2.59	3.49
2000-2005	0.47	2.10	1.01	1.23	0.08	-0.08	1.75	3.50
1980-2005	0.7	1.4	1.3	0.2	0.1	1.6	1.5	3.5
Gross domestic product								
1980-1985	2.0	0.4	–	1.8	-1.1	-1.8	3.5	1.7
1986-1990	1.8	4.6	–	3.2	2.9	1.9	-0.4	13.4
1991-1995	1.6	5.5	2.3	-0.2	4.3	11.6	6.4	3.6
1996-2000	5.5	5.0	5.0	2.9	4.0	3.1	4.6	6.1
2000-2005	1.8	4.1	3.1	1.0	2.5	1.8	3.6	5.8
1980-2005	2.6	3.9	3.6	3.0	2.5	3.3	3.6	6.1

Source: prepared by the author on the basis of data from the International Monetary Fund (IMF), *International Financial Statistics*.

remittances and the growth of per capita GDP in the other countries over the 1980-2005 period, there is a marked disproportion between the two variables: remittances increased by 49 times as much as per capita output in Nicaragua, 134 times in Guatemala and 87 times in Honduras. Figure 1 shows the relationship between the multiplication of remittances and the rise in per capita output.

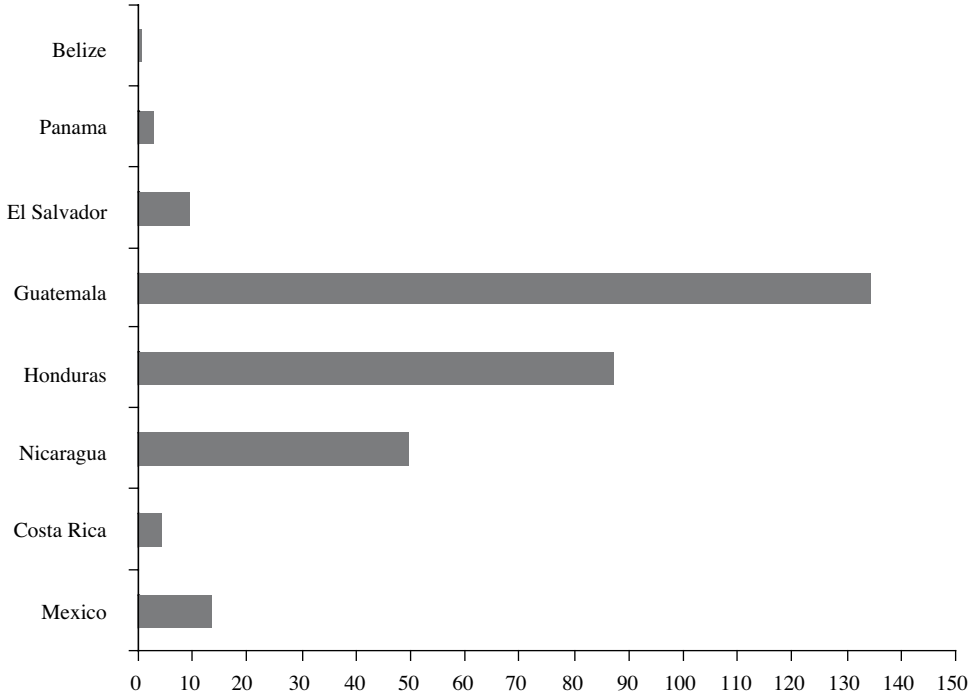
The ratio between annual remittance growth and GDP is presented in the charts of diagram 1, where we can see once again that poor economic performance leads to higher remittances. When this situation is reversed, remittances stabilize or decline.

This happened in Mexico in the early 1980s and again in 1985, causing remittances to rise in the following years; also in Costa Rica in the 1980s, although the volume of remittances later stabilized thanks to the country's good economic performance, and in Nicaragua, where the costs of a war economy and the ensuing instability led to an enormous rise in remittances. The situation of Honduras better illustrates the inverse relationship in the oscillatory behaviour of the two variables, as does that of Guatemala and El Salvador. The 1988 crisis in Panama led to a rise in remittances in 1990, while the economic difficulties of the mid-1990s in Belize spurred remittance growth in 2000.

Over all the countries analysed, remittance growth averaged 21.7% a year in the 1980-2005 period and the median was lower than this (10.9%), indicating rapid expansion, while GDP growth averaged 3.55%, with a median close to the mean (3.59%).

FIGURE 1

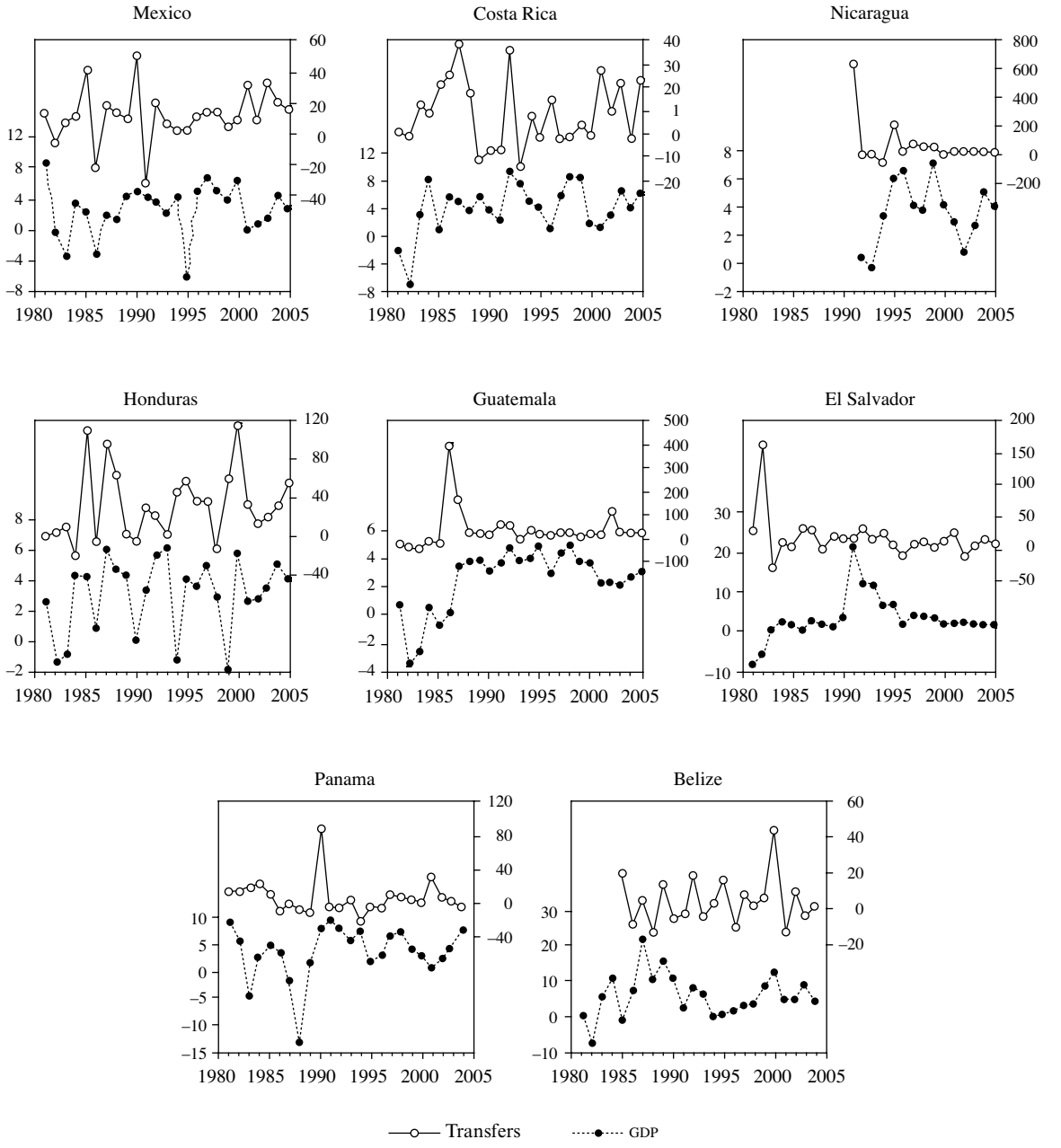
Mexico and Central America: ratio between annual per capita remittance growth and per capita GDP, 1980-2005



Source: prepared by the author on the basis of data from the International Monetary Fund (IMF), *International Financial Statistics.*

DIAGRAM 1

Mexico and Central America: relationship between GDP growth and transfer growth, 1980-2005
(Percentages)



Source: prepared by the author on the basis of data from the International Monetary Fund (IMF), *International Financial Statistics*.

III

Remittances and the exchange rate

Just as low economic growth has stimulated migration in Mexico and the countries of the Central America region, many recent studies have shown that family remittances do not seem to be promoting short- and medium-term economic growth, considering that one of their effects arises in the currency market, where they are associated with exchange-rate appreciation and thus with lost competitiveness and trade deficits in recipient countries.

To analyse this aspect, we used the real terms of trade (RTT), representing the exchange rate (e) weighted by the price ratio between each country (i) and its main trading partner (i*), in this case the United States, in each year of the period studied (t).

$$RTT = e\left(p_{i^*t} \Big/ p_{it}\right) \qquad (9)$$

The real terms of trade depreciate when the exchange rate does so because of a devaluation, for example, or when relative prices in the country concerned increase and the exchange rate remains stable. Conversely, they appreciate when the exchange rate does so and relative prices do not restore it to parity with its equilibrium level. In the first case, the country's competitiveness increases because its exports become cheaper abroad, while in the second case it declines because exports become dearer and imports become cheaper in the domestic market (Dornbusch, 1980; Krugman and Obstfeld, 2005).

The results are presented in diagram 2, which shows each country's real terms of trade on the left-hand vertical axis of the charts and the annual remittances total on the right-hand vertical axis, in thousands of constant 2000 dollars.

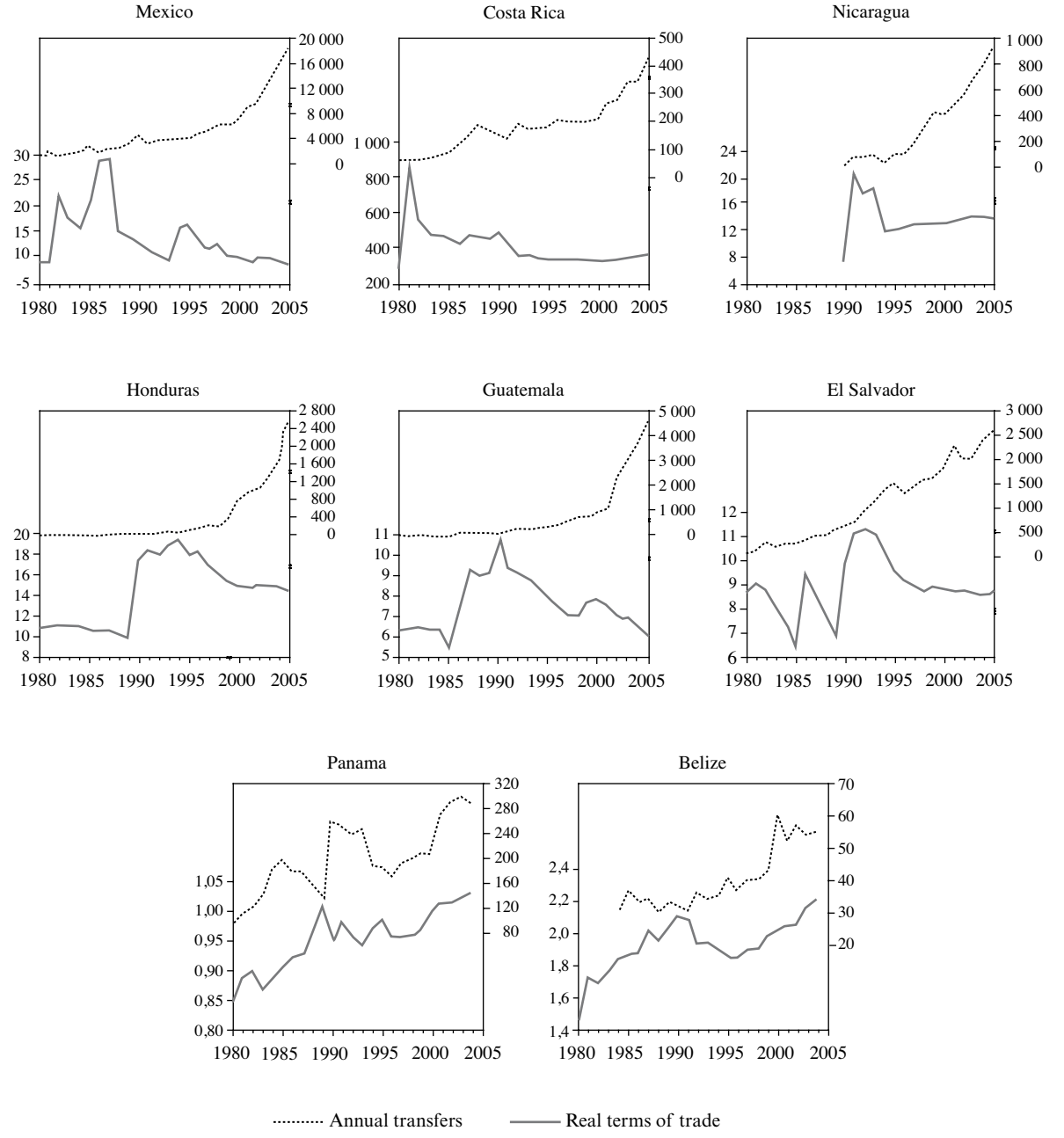
It can be observed that the real terms of trade tend to appreciate in countries where remittance income rises strongly, leading to a loss of international competitiveness. This can be seen most clearly in the cases of Mexico, Honduras, Guatemala and El Salvador. The contrast between countries in receipt of substantial volumes of remittances and others such as Panama and Belize, where the remittance figures are measured dynamically or as a share of GDP, shows their effects on the behaviour of the exchange rate. In Panama and Belize, remittance inflows do not affect the exchange rate because their economies are tied to the dollar and have restricted monetary sovereignty.[3]

A given country's nominal exchange rate is adjusted for its real terms of trade by considering the price ratio between it and another country of reference in a particular base year (the year taken for this analysis is 2000). The result depends not just on the exchange-rate regime, whose main element will be the currency market when a policy of free flotation is followed, but also on the determinants of inflation which, supply or demand shocks aside, will be essentially monetary and nominal. This means that the real terms of trade will depend on the determinants of the money supply, including the fiscal policy of the country concerned (particularly the public-sector deficit), the domestic interest rate and the relationship between this and the international interest rate, which have not been incorporated into the present study. To sum up, the aim is not to show that there is a deterministic link between the terms of trade and cash remittances, since the former are influenced by a range of factors omitted from the analysis; nonetheless, the relationship between these variables is divergent in the medium term.

[3] Panama has a completely dollarized economy, with no central bank; it has its own coinage and unrestricted circulation of the dollar. Belize uses the Belize dollar, with an exchange rate of 2 to 1 against the United States dollar.

DIAGRAM 2

Mexico and Central America: real terms of trade and annual transfers, 1980-2005
(Constant 2000 dollars)



Source: prepared by the author on the basis of data from the International Monetary Fund (IMF), *International Financial Statistics*.

IV
Methodology

For the panel data analysis, we used a functional form incorporating the equations of the macroeconomic model employed in the earlier sections, expressed as follows:

$$e = \beta_0 i + \beta_1 T_{ct} + \beta_2 Y_{ct} + \beta_3 i_{ct} + \beta_4 I + \beta_5 \chi + \mu_{ct} \quad (10)$$

For $c = 1, 2, 3, \ldots, 8$ and $t = 1, 2, 3, \ldots, 26$

where e is a given country's exchange rate, which is dependent upon or related to T, representing remittances or monetary transfers in the balance of payments of country c in period t; Y is gross domestic product, i the difference between each country's interest rate and that of the United States, I foreign direct investment and χ net exports or the difference between exports and imports.

The purpose of this model is to establish the main forces of supply and demand influencing the countries' currency markets. Remittance income is a flow of currency that increases the supply of dollars in the currency market and thus contributes to local currency appreciation. It is assumed that GDP does not have a specific relationship with the exchange rate, as the economic dynamic alters the latter's equilibrium level. It is also assumed that interest rate differentials in an open economy with free capital movement influence currency inflows and outflows, likewise affecting the exchange rate and exports. Foreign direct and portfolio investment also influence the currency market, the former because it increases the supply of currency and thus tends to cause exchange-rate appreciation, the latter because its greater volatility makes the exchange rate more unstable. Lastly, the trade balance represents a currency balance, as exports presumably bring foreign currency into the foreign exchange market and imports entail a demand for currency in the local market among producers and importers.

The estimates were obtained using a dynamic panel data model. The fixed effects regression method was used, on the assumption that the intersection of the different countries varies since exchange rates differ between themselves. The model also assumes that the slope coefficient is constant in all the countries analysed. It is here that the model seeks to capture the effect of remittances on the exchange rate and the fact that, in simplified form, it is common to all the countries. It is also assumed that while the intersection may change in each country, it is invariable over time.

The functional form taken by the macroeconomic model presented earlier will now be described:

$$RTT = RTT_{ct}(-1) + Tr_{ct} + Tr_{ct}(-1) + ii_{ct} + tb_{ct} + \varepsilon_{ct} \quad (11)$$

For $t = 1990, \ldots.2005$ and $c = 1, \ldots.8$

The exchange rate is presented as the real terms of trade, corresponding to the exchange rate of country c adjusted by that country's price ratio vis-à-vis the United States and calculated from its lagged value ($RTT\ (-1)$), remittances recorded in the balance of payments as transfers ((Tr) and $Tr\ (-1)$) with a lagged value, the difference between each country's interest rate and that of the United States (ii), the trade balance (tb) calculated as exports minus imports and, lastly, an error term.

The monetary approach to the balance of payments is used and, with the help of a Mundell-Fleming type macroeconomic model, the methodology we follow is based upon a panel data model applied to the time series of the variables forming part of the balance of payments and other macroeconomic variables for the period between 1980 and 2005. The advantage of the monetary approach to the balance of payments is that it allows internal imbalances to be analysed using nominal variables of economic activity, but without restricting or assuming any particular behaviour in the other macroeconomic variables, such as the employment level. There are certainly no grounds for assuming full utilization of productive resources in the Central American economies or Mexico, particularly in an article analysing the problem of international labour migration driven principally by lack of jobs, concealed unemployment and the informal economy.

The balance-of-payments series of the International Monetary Fund (IMF) were used for this study.

V
Results of the estimates

We shall first present the estimates obtained for the exchange-rate determination model, using a panel data model estimated by means of ordinary least squares and a two-stage panel data model with instrumental variables. The two alternatives are shown in annex 1. As was to be expected, the dependent variable proved to be of low statistical significance, as it presented a high coefficient of determination and signs of correlation between the residuals, a characteristic of models in which mutually determining variables are combined, as in the particular case of the relationship between the interest rate and the trade balance and exchange rate. The most important feature of this estimate is the negative relationship between remittances and the exchange rate: the first arrangement shows that the percentage variation in remittances affects over 6% of the appreciation in the terms of trade, although this effect disappears when remittances are considered with an annual lag. In the second alternative, the lagged variable also has a negative effect on the real exchange rate, although it is possible that this might be due to the higher weighting of the lagged variables. In both estimates, however, the remittances variable maintains a negative relationship with the dependent variable, although this determination is of low statistical significance.

The preliminary findings indicate that in countries with large inflows of remittances, there is a positive relationship between these and the deterioration in the terms of trade, which are used as an indicator of the real exchange rate. Another convergent condition in this analysis is that countries displaying these results are characterized by having a flexible exchange-rate regime, allowing the exchange rate to adjust instantly to any sudden increase in the supply of dollars.

Confirming the results expected, neither GDP nor net export coefficients were significant. Conversely, the difference between the local interest rate and that prevailing in international markets proved highly significant for the evolution of the real exchange rate in the countries analysed, as did total foreign investment. The fragility of financial markets (particularly in Belize, El Salvador, Guatemala and Honduras) and the frequent appearance of negative real interest rates because of weak control over inflationary pressures produce contrasting results as regards the true coefficient of determination of the exchange rate. However, countries whose economies are closely linked to the dollar, such as Belize and Panama, appear to be armoured against the effects of remittances on the exchange rate. It would thus seem that the outcomes of the two conditions, i.e., a flexible exchange-rate regime and a fixed exchange rate against the dollar, are decisive when it comes to isolating the repercussions of remittances on export behaviour.

The effects of remittances on each country's exchange rates do not become apparent immediately, since currency transactions take time to work their way through. This delay between the arrival of currency remittances and their effects on the exchange rate varies depending on the exchange-rate regime and the solidity of monetary sovereignty in the country concerned. For example, it is possible that in countries where the United States dollar normally circulates, such as Belize, El Salvador and Panama, currency inflows of this type may swell the volume of money in circulation rather than directly affecting the exchange rate. In countries like Mexico where the circulation of foreign currency is very restricted, however, dollars remitted by migrants will be absorbed more immediately and will enter the currency supply once they have completed the journey from the foreign exchange bureaux and commercial banks to the central bank. In all likelihood, the situation in the other Central American countries varies between the two extremes.

This is why a lag in the effects of remittances on the exchange rate was considered. Now, however many regressors are used, models of this type are hard to specify properly because, like many nominal variables, the current exchange rate depends on its level in the previous period. In other words, it is an autoregressive variable. The model to be estimated is thus a dynamic panel data model, since it includes a distribution of lags for the delayed-effect remittances variable $Tr(-1)$, but is also an autoregressive model because it includes the dependent variable itself, lagged one period, as an explanatory variable.

First of all, the model was estimated using an ordinary least squares method for panel data with White cross-section standard errors and covariance,

thus avoiding potential problems of heteroskedasticity in the cross-sectional dimension of the model (see annex 1, column (a)).

The results are not very consistent, but the differences can be minimized by taking only the Central American countries, despite the wide disparities between some economies like those of Costa Rica and Belize. In any event, the differences between this group of countries and Mexico are enormous, beginning with population size.

According to these results, the exchange rate does in fact have an autoregressive bias, in the sense that the current value relates positively to that of the previous year, and remittances have a negative effect on the exchange rate, although the coefficient has a statistical significance level of 90%. A year later, remittance inflows continue to act negatively on the exchange rate, although with a still lesser statistical significance, and their lagged value is within the margin of rejection. The annual percentage change in remittances negatively affects the exchange rate.

As for the difference between local interest rates and that of the United States, the exchange rate showed a positive and significant pattern of behaviour, although it must be realized that when measured by the real terms of trade it includes the United States price index, which is positively related to interest rates. The trade balance, meanwhile, does not seem to have a significant link with the real terms of trade, something that may be due to the gap between the surplus or deficit position of the trade balance and the real terms of trade, for which it is not possible to establish an immediate causal relationship. In other words, it is possible that situations of balanced trade and those of surplus or small, temporary deficits may both be compatible with an appreciation of the real terms of trade, depending on the price relationship between each country and the United States. The results are presented in annex 1, column (b).

This specification was also supplemented by a sensitivity analysis, involving estimation of a two-stage ordinary least squares model to take account of the effect of the time factor in determining the exchange rate. It is possible that this might vary over time because of historical events or circumstances that may affect its evolution, such as supply or demand shocks, runs on the currency, inflationary spikes, devaluations and so on, which have occurred in all the countries analysed over the past decade.

When the time aspect is taken into account, the effects of remittances on the exchange-rate parity become less significant, but still continue to operate as a factor for exchange-rate appreciation. Likewise, incorporating the time aspect resulted in a diminution of the serial correlation presented by the model prior to this change.

Nonetheless, the remittances coefficient is not significant, being in fact unlikely to differ from zero. Conversely, the Durbin-Watson (DW) statistic is higher and R^2 lower than in the other alternative. Although this finding is less consistent than the previous one, it does illustrate the difficulty of assessing the structural importance of a variable, remittances, that has a temporary character as compared to other determinants of the exchange rate with a markedly structural component. What this finding does not reveal, quite apart from its degree of significance, is that while remittances may be a factor in exchange-rate appreciation in the countries studied, they are not responsible for macroeconomic instability or the recurrent crises that have arisen in the past 15 years. What these indicate is that, together with other concurrent factors, a permanently appreciated exchange rate will lead at some point to severe economic difficulties.

Lastly, after analysing the inconsistencies in the parameters that prevented us from reaching a more robust conclusion, we decided to reformulate the model and directly link the real terms of trade (autoregressively again) to the remittances variable, this time taking the logarithmic first difference of all the variables and the 2000-2005 subperiod, when remittances grew most rapidly, or at least were most reliably recorded. We used logarithms for all the variables to calculate elasticities. As well as estimating the fixed effects in the cross-sections (i.e., in each of the countries) to assess their reaction to the general parameter obtained, we differentiated the equations in time to eliminate the unobservable effect on the real terms of trade. This allowed us to form an appreciation of events such as sudden exchange-rate shocks, alterations in relative price levels and so on that might be influencing the variation in the real terms of trade. The findings are shown in annex 2, column (a).

In summary, taking the group of dummy variables for each country (cross-section) and a set period (years) made it possible to control for national trends in exchange-rate variations and for the passage of time.

By using dummies to evaluate the specific results for the different countries, it was possible to differentiate the fundamental conclusions of the estimation. Remittances were found to have a significant

influence on exchange-rate appreciation in countries receiving large volumes of them, such as Mexico, Guatemala and El Salvador. However, in those that have a long tradition of migration, receive a smaller proportion of family transfers and, most importantly, have exchange rates tied to the dollar (principally Belize, Costa Rica and Panama, and to a lesser extent Honduras and Nicaragua), remittances appear to have less influence on exchange-rate appreciation and may even have no effect at all, particularly in the first three countries. This conclusion, which seems obvious, tends to reaffirm the validity of the hypothesis with which the present investigation began and indicates that labour migration and remittances to families have become increasingly important as determinants of the currency market in these countries. As will now be seen, the effects can vary depending on the exchange-rate regime adopted in each.

Given that the series is positive to the White test for heteroskedasticity, the model was estimated once again to correct for standard errors and covariance. The result was an increase in the confidence interval of the remittances coefficient, with the same value being retained for the regressor controlled for. This confirmed the previously estimated magnitude of the influence of remittances on the real exchange rate, but this time with a 95% confidence interval, reaffirming the hypothesis that the value of the remittance quotient is other than zero (see annex 2, column (b)).

Setting out from this result, we wished to estimate whether remittances would have long-term effects on the terms of trade, and to this end we formulated a distributed lags model to include the remittances variable with one lag.

The estimates proved compatible with the behaviour expected. The self-lagged variable is the most useful for forecasting the current exchange rate, but the remittances coefficient also predicts that with a 1% rise in remittances, the real terms of trade or real exchange rate will appreciate by 0.04%. This finding is significant at a confidence level of just over 85%. Certainly, the model is incomplete when R2 is low, but then again the value of the DW statistic allows the hypothesis of serial correlation between the residuals to be statistically rejected.

It was also found that remittances did not have a cumulative effect on the exchange rate, since when a lag was used in the previous model the coefficient was no different from zero. The new coefficient has the opposite sign, which means that remittances do not result in currency appreciation, but the confidence interval is too weak for us to discard the hypothesis that its value is different from zero (see annex 2, column (c)).

This indicates that remittances do not affect the exchange rate in the long run, suggesting that in future the greatest pressures on the stability of the real terms of trade in the countries studied will come from increases in the volumes of money sent, and not from the events of the past. The effects on the dummies represented by the countries are the same as in the previous result.

To evaluate the effects of time on the result obtained, the countries' dummy variables were replaced by variables representing the periods considered in the analysis (see annex 2, column (d)). The time aspect is important because these countries have been through stages of great macroeconomic instability, sometimes as the effect and sometimes as the cause of acute exchange-rate volatility.

Although the DW statistic of this model was lower, the results indicate that the negative effects of remittances on the exchange rate have intensified in recent years, particularly in the 2004-2005 period. In this variant incorporating the time factor, the value of the remittances coefficient is even higher and its consistency, measured by the value of the t-statistic, more robust. If we control for time, the negative effects of remittances on the real terms of trade are more conclusive. When the percentage of remittance income increases, the terms of trade appreciate by 0.063%.

VI

Conclusions

The present study analyses the effects of remittances on the exchange rate, output and external trade in Mexico and the Central American countries on the basis of a macroeconomic income determination and external trade equilibrium model for a small, open economy with free capital movement. The econometric

analysis was undertaken using a panel data model applied to these countries' statistical series.

The findings indicate that the exchange rate is affected by inward remittances, which are exogenously generated resources in the economies of the countries analysed. It is also concluded that exchange-rate regimes or monetary policy are crucial in determining not just the scale of the effects of remittances on the exchange rate but also the way they feed through to the real sector of the economy.

The current economic performance of the Central American countries, whose economic growth is still below potential, suggests that their tendency to expel population is unlikely to be halted, let alone reversed. Given that conditions in these countries' economies are still conducive to the creation of surplus labour as discussed by Lewis (1954), the likelihood is that the migration flows originating there will continue.

In the case of Mexico, exchange-rate flexibility was adopted as a formula to reconcile economic opening with control of inflation by way of an inflation targeting monetary policy, and the same policy is followed, with certain variations, in the other countries that receive large volumes of remittances. If the countries analysed continue to expel labour and the proportion of remittances in the exogenous variables of this model increases, it is possible that exchange-rate regimes might have to adapt to a future situation in which currency flows are dominated by migrants' remittances to their families rather than inflows of foreign investment.

In the past two decades, Mexico and the Central American countries have experienced a sharp rise in labour emigration to the United States, first as a result of economic crises and warfare and, more recently, because of a macroeconomic adjustment process oriented towards trade liberalization and economic opening that has resulted in a growth rate too low to absorb an expanding workforce.

These are countries where the process of economic and political change has given rise to an unanticipated movement of workers to other countries and the emergence of remittances as a no less unexpected source of external financing. The issue of remittances is absent from the economic transformation agenda and the policies applied.

Given the far-reaching process of economic opening embarked upon by these countries, the exchange rate has become one of the fundamental variables upon which the new economic architecture is being constructed. However, this architecture is based on a management approach which, while conducive to macroeconomic stability (compatible with balanced public finances, control of the money supply and high interest rates), was not designed for migration economies sustained by external financing in the form of remittances. The difference in results between countries with fixed exchange rates against the dollar and those with free-floating exchange rates indicates that the right exchange-rate regime can allow better use to be made of funds sent by migrant workers, since in practice they help to reduce external constraints on growth. In open economies, however, it is too risky to maintain a fixed exchange rate, at least over a long period, owing to the macroeconomic imbalances that tend to build up as a result, leading to large devaluations.

The results obtained by analysing the behaviour of exchange rates led us to two contradictory conclusions about the economic model, with one indicating a tendency to strengthen its workings and the other to weaken it or call it into question. The effects on the economics of migration are also different.

According to the theory of interest rate equivalence as a determinant of exchange-rate parity in open economies (Krugman and Obstfeld, 2005), exchange-rate appreciation leads to a rise in interest rates and this in turn produces an increase in portfolio investment. Countries with a better economic performance will have larger or growing foreign investment flows, although their effects on the economy will be subject to the Marshall-Lerner condition.[4] In this case, the macroeconomic contribution of remittances will apparently be confined to improving profitability conditions for foreign investment and the outcome will be a build-up of international reserves.

The other effect is more immediate. Exchange-rate appreciation causes relative prices to rise and makes exports dearer and imports cheaper, i.e., it undermines the exporting capacity of these countries at a time when they have yet to complete their transition to an open economy whose development is based on exports. In this case, the contribution of remittances is manifested in an increased capacity to consume imported goods and in a constraint on the export economy which, in the long run, may diminish these economies' production capacity.

[4] Applying the Marshall-Lerner condition to foreign investment suggests that exchange-rate appreciation leads to a rise in foreign capital flows, but convertibility of these currencies into the local currency will cause the contribution of foreign investment to the financing of gross investment to decline, something that has been seen in Mexico over the last five years.

Lastly, the limitations of this study should be noted. Remittances in Mexico and the Central American countries are too recent an economic phenomenon for their interaction with nominal variables to be analysed. Although there are systematic statistical records going back a couple of decades, the effects on the major monetary aggregates only become apparent from early 2000. This means that research has to be confined to this period if mutually important relationships are to be identified, which in turn limits the scope for drawing long-term conclusions. The passage of years and improvements in accounting records on these monetary transfers will help to improve future studies on the subject.

A subsequent analysis will have to approach the model with a vector regression method to test the hypothesis of the effects of exchange-rate behaviour on external trade, something that could not be developed in this study but has been intuitively and theoretically touched upon

ANNEX 1

Dependent variable: real terms of trade (rtt)
Sample: 1990-2005

Variable	Ordinary least squares panel	Two-stage ordinary least squares panel
		Instruments: C RTT (-2) DLOG(TR) DLOG(TR (-2)) II TB
	Coefficient (a)	Coefficient (b)
RTT (-1)	0.752754	0.949171
Standard error	0.048082	0.021605
t-statistic	15.65568	43.93214
p-value	0	0.0000
DLOG (TR)	-6.43599	-5.352284
Standard error	3.873639	7.220646
t-statistic	-1.661484	-0.741247
p-value	0.0994	0.4602
DLOG (TR(-1))	-2.047644	-51.72577
Standard error	2.93291	61.08807
t-statistic	-0.698161	-0.846741
p-value	0.4865	0.3991
II	0.331905	0.307396
Standard error	0.099148	0.169867
t-statistic	3.347552	1.809633
p-value	0.0011	0.0733
TB	-1.06E-08	2.11E-07
Standard error	2.56E-07	3.86E-07
t-statistic	-0.041575	0.54726
p-value	0.9669	0.5854
C 12.76444	9.053761	
Standard error	2.899724	9.943136
t-statistic	4.401948	0.910554
p-value	0	0.3647
R^2	0.995316	0.984727
Adjusted R^2	0.99481	0.981733
Durbin-Watson statistic	1.730978	1.903043

CROSSID	Effects	Time weighting	Effects	Effects
Mexico	-9.935486	01-01-90	5.476935	2.679366
Costa Rica	63.90299	01-01-91	-6.91579	-2.596104
Nicaragua	-5.296154	01-01-92	-9.41384	1.565508
Honduras	-5.202476	01-01-93	3.734615	3.334237
Guatemala	-7.266488	01-01-94	-4.92468	4.307524
El Salvador	-11.0064	01-01-95	-7.21474	2.526217
Panama	-14.23802	01-01-96	5.493353	0.830112
Belize	-13.34384	01-01-97	-3.49645	4.342867

Source: prepared by the author on the basis of data from the International Monetary Fund (IMF), *International Financial Statistics*.

ANNEX 2

Sample: 2000-2005

Number of cross-sections: 8
Total panel observations (unbalanced): 46
Dependent variable: real terms of trade (rtt)

Variable	Ordinary least squares panel	Ordinary least squares panel with White cross-section standard errors and covariance		Ordinary least squares panel with White cross-section standard errors and covariance	
	(a)	(b)	(c)	(d)	
DLOG (RTT(-1))	0.282	0.282	0.307	0.379	
Standard error	0.111	0.117	0.050	0.040	
t-statistic	2.551	2.404	6.122	9.423	
p-value	0.015	0.022	0.000	0.000	
DLOG (REM)	-0.043	-0.043	-0.038	-0.063	
Standard error	0.028	0.018	0.014	0.024	
t-statistic	-1.528	-2.453	-2.721	-2.655	
p-value	0.135	0.019	0.010	0.012	
DLOG (REM(-1))			0.027		
Standard error			0.020		
t-statistic			1.359		
p-value			0.183		
C 0.003	0.003	-0.002	0.007		
Standard error	0.006	0.008	0.004	0.004	
t-statistic	0.554	0.423	-0.414	1.844	
p-value	0.583	0.675	0.682	0.073	
		Country dummies (cross-section)		Dummies for specific years (time series)	
Mexico	-0.0131	-0.0131	-0.0119	2000	0.00052
Costa Rica	0.0174	0.0174	0.0192	2001	-0.00142
Nicaragua	0.0054	0.0054	0.0050	2002	0.01861
Honduras	0.0042	0.0042	-0.0016	2003	0.01319
Guatemala	-0.0302	-0.0302	-0.0340	2004	-0.01554
El Salvador	-0.0025	-0.0025	0.0005	2005	-0.02045
Panama	0.0088	0.0088	0.0111		
Belize	0.0138	0.0138	0.0164		
R^2	0.505353	0.505353	0.518816	0.51289	
Adjusted R^2	0.382	0.382	0.381	0.42316	
Durbin-Watson statistic	2.030	2.030	2.052	1.73305	

Source: prepared by the author on the basis of data from the International Monetary Fund (IMF), *International Financial Statistics*.

(Original: Spanish)

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KEYWORDS

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Determinants of world manufacturing exports to China, 1990-2006

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This paper studies the determinants of manufacturing exports to China. Data from 79 countries for the 1990-2006 period and estimates of gravity equations are used to analyse the effects of countries' factor endowment, geographical characteristics and degree of economic openness. The results are consistent with the factor abundance model and reveal that economies with a larger human capital endowment export a greater volume of manufactures to China. Having a large economy and being geographically close to China also make a country more likely to export manufactures to it. The results do not indicate that other characteristics of countries, such as openness to trade or an outlet to the sea, play an important role; nor does the endowment per worker of land or capital. The implications of this study should be of interest to economies seeking to benefit from the remarkable dynamism of the Chinese economy by diversifying their exports into manufactures.

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I
Introduction

The strong economic growth experienced by China over the past 20 years has led to a large rise in demand for foreign goods and services. In contrast to its low level of economic integration in the past, the country has now become one of the leading actors in global economic development, accounting for some 15% of international trade in manufactures (Lehmann, Moreno and Jaramillo, 2007). If this dynamism is sustained, there will be a substantial rise in exports from the rest of the world to China, particularly of goods for which its economy lacks comparative advantages or the prospect of developing them.

Exports from developing countries to China currently consist mainly of raw materials, but the great size of the Chinese economy and the scale of the growth expected there could make it a very attractive market for manufactured goods exports. In view of this, the purpose of the present study is to analyse the determinants of manufacturing exports to China. Using data from 79 countries over the 1990-2006 period, it first describes the main stylized facts about manufacturing exports to the country and then uses a gravity model to examine their determinants. In particular, it analyses the role played by factor endowment, geographic variables, openness to international trade and economy size. This provides a basis for identifying which countries, especially among the less developed, might have the best chance of becoming substantial suppliers of Chinese manufacturing imports.

Although there are a number of studies on the consequences of China's entry into world trade,[1] few address the question of how other developing nations might take advantage of this opportunity to shift their specialization structure towards manufactures. This is particularly important for commodity exporters, which tend to be affected by fluctuations in the global economy and could reduce this vulnerability if they had a more diversified export structure. To an extent, then, our study has a similar purpose to that of Mesquita Moreira (2007), who identified China as a strong competitor to Latin America in manufacturing trade. In contrast to the analysis performed by that author, however, we explore whether China can become a major destination market for manufacturing exports, and we study a larger sample of countries.

This paper is divided into five sections. Following this introduction, it analyses the evolution of manufacturing exports to China. The third section describes information sources and specifications, the fourth presents and discusses the results of the gravity model estimates and the last offers conclusions.

II
Exporting to China

China's dramatic entry into world markets has been an event of great importance because of the country's economic dynamism, reflected in growth rates of over 9% a year for the past 17 years. Following a long period of commercial isolation, Deng Xiaoping began an economic reform process that culminated in a significant lowering of trade barriers. Chinese trade with the rest of the world has grown substantially as a result.

As figure 1 shows, Chinese imports rose from US$ 53 billion to just over US$ 790 billion between 1990 and 2006, with manufacturing imports rising from US$ 41 billion to just over US$ 570 billion in the same period (figure 2).

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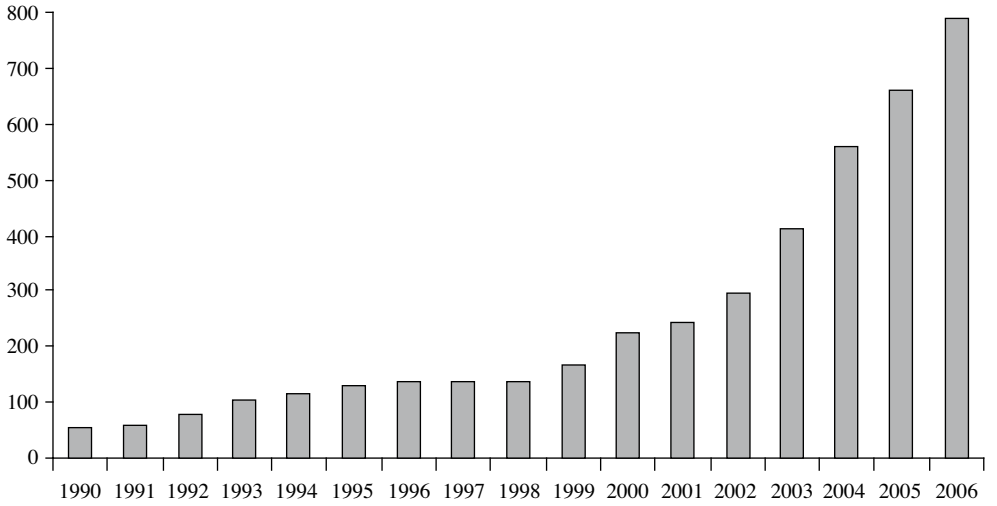
[1] See the recent studies by Blázquez-Lidoy, Rodríguez and Santiso (2006), Claro (2006), Devlin, Estevadeordal and Rodríguez-Clare (2006) and Rosales and Kuwayama (2007).

FIGURE 1

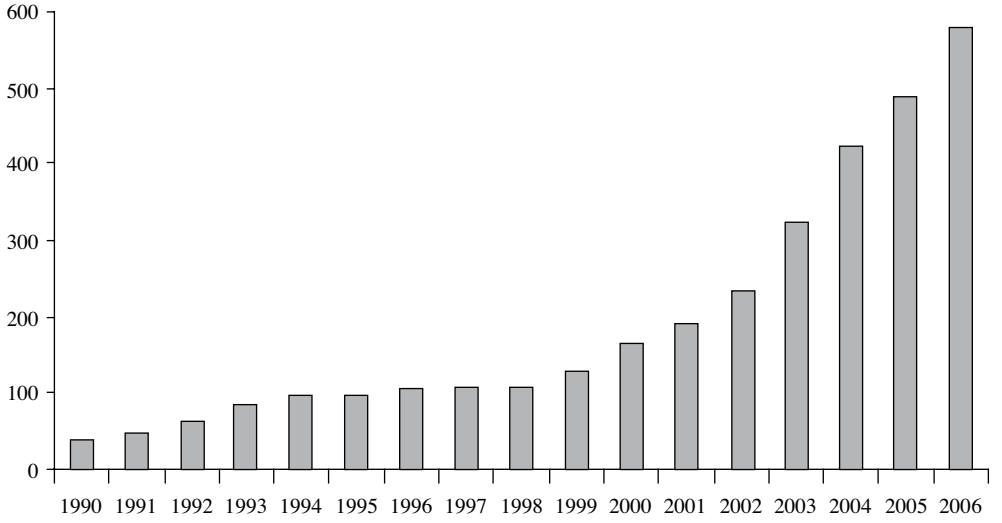
China: total imports by value, 1990-2006
(Billions of dollars)



Source: prepared by the authors on the basis of figures from the United Nations Commodity Trade Database (COMTRADE).

FIGURE 2

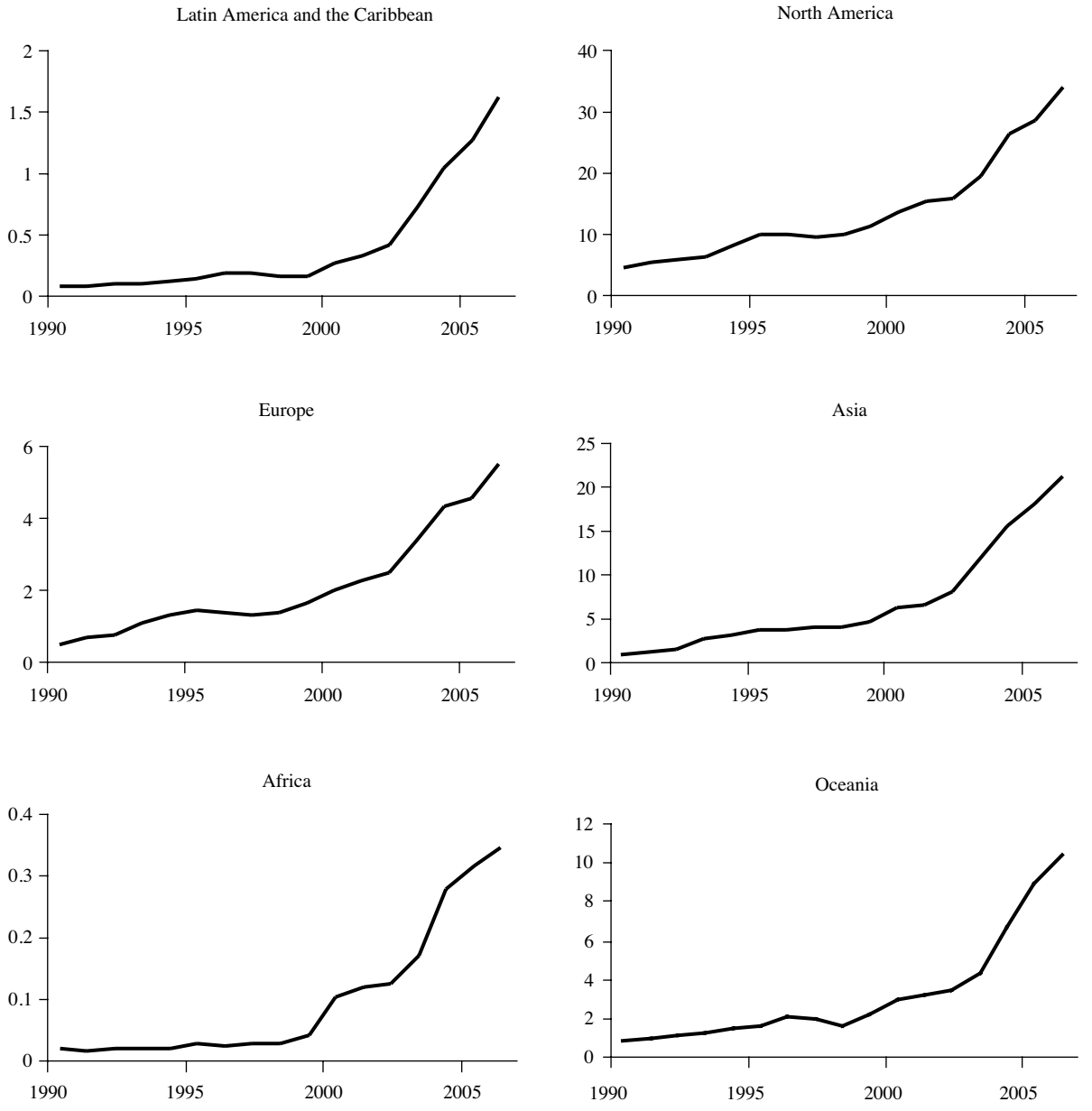
China: manufacturing imports by value, 1990-2006
(Billions of dollars)



Source: prepared by the authors on the basis of figures from the United Nations Commodity Trade Database (COMTRADE).

FIGURE 3

Total exports to China, by region, 1990-2006
(Billions of dollars)



Source: prepared by the authors on the basis of figures from the United Nations Commodity Trade Database (COMTRADE).

The question arises as to how this increase in Chinese trade has been distributed among the various regions of the world. Figure 3 shows that, broadly speaking, they have all taken advantage of the opportunities of the Chinese market and considerably increased the value of their exports to that country. Exports from North America rose from US$ 8.03 billion to US$ 66.96 billion; those of Asia from US$ 11.54 billion to US$ 315.84 billion; those of Oceania from US$ 1.48 billion to US$ 20.61 billion; those of Europe from US$ 6.63 billion to US$ 88.43 billion; those of Africa from US$ 240 million to US$ 6.53 billion; and those of Latin America and the Caribbean from US$ 1.17 billion to US$ 33.52 billion. Table 1 summarizes these results.

It is interesting to note the composition of exports to China and the relative importance of manufactured goods.[2] Figure 4 shows the share of manufactures in each region's total exports. As can be seen, this share is highest in Europe, averaging 82% in the 1990-2006 period. Substantial growth can also be seen in the case of Asia, where manufacturing exports to China increased from 41% of the total in 1990 to 67% in 2006, while for North America they rose to 61% in 2006. The share of manufactured goods in the total exports of Oceania, Africa and Latin America and the Caribbean does not exceed 41%, with the difference that this share has been increasing in Oceania and falling in Africa and Latin America and the Caribbean.

Broadly speaking, the evolution of manufacturing exports to China seems to be consistent with the idea that wealthier countries (i.e., those with more abundant physical and human capital) tend to have comparative advantages in the production of manufactured goods, as predicted by the traditional Heckscher-Ohlin model (Leamer, 1995). It would also seem to indicate that large countries like those of Europe and North America specialize in exporting manufactures (Perkins and Syrquin, 1989).

Table 2 gives a more detailed breakdown of the shares of the Latin American and Caribbean countries in Chinese imports of manufactures. The figures clearly show that, taken together, the region's economies account for a fairly small and declining proportion of the total. This includes the larger economies, whose share of Chinese manufactured goods imports also fell over the 1990s. The share of Brazil declined from 0.74% to 0.43%, that of Argentina from 0.36% to 0.09% and that of Mexico from 0.34% to 0.31%, before climbing back to 0.53% in 2006.

[2] The classification of manufactured goods used in this section and the rest of the paper is the one devised by Leamer (1984) and is detailed in the annex.

TABLE 1

Exports to China, 1990-2006

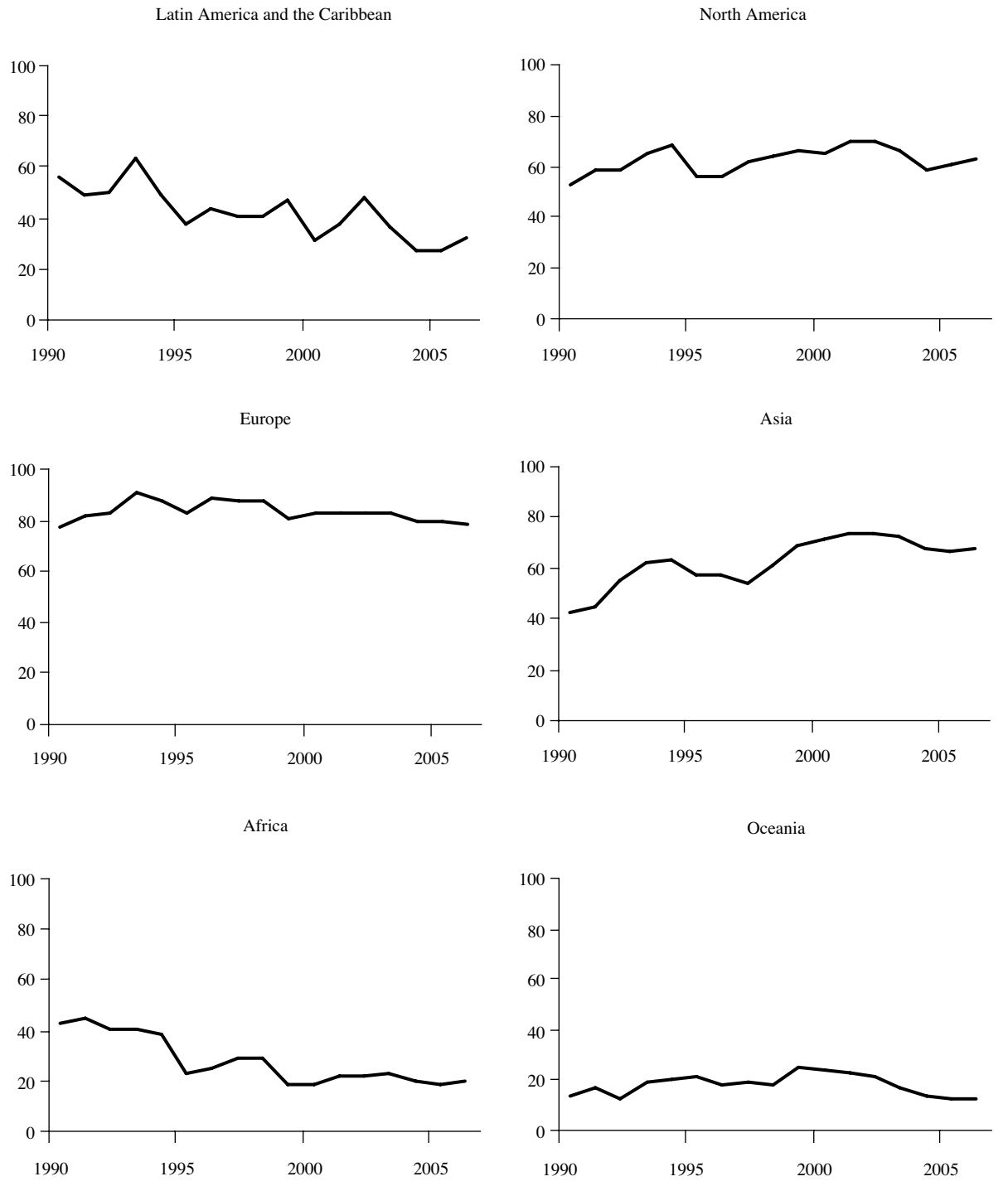
Region	1990 *(billions of dollars)*		2006 *(billions of dollars)*		Change 1990-2006 *(percentages)*		Annual growth rate[a] *(percentages)*	
North America	8.03		66.96		734		13.89072	
Asia	11.54		315.84		2 637		20.38544	
Oceania	1.48		20.61		1 293		19.31248	
Europe	6.63		88.43		1 234		17.77355	
Africa	0.24		6.53		2 621		24.75957	
Latin America and the Caribbean	1.17		33.52		2 765		19.61709	
	Total	Manufactures	Total	Manufactures	Total	Manufactures	Total	Manufactures
All countries	*53.3*	*41.5*	*791*	*576*	*1 384*	*1 288*	*16.36*	*15.59*

Source: prepared by the authors on the basis of figures from the United Nations Commodity Trade Database (COMTRADE).

[a] Geometric mean of annual growth rates during the 1990-2006 period.

FIGURE 4

Manufacturing exports to China, by region, 1990-2006
(Percentages of the total)



Source: prepared by the authors on the basis of figures from the United Nations Commodity Trade Database (COMTRADE).

TABLE 2

Latin America and the Caribbean (selected countries): share of Chinese manufacturing imports, 1990-2006
(Average percentages for the period)

Country	Period					
	1990-1992	1993-1995	1966-1998	1999-2001	2002-2004	2005-2006
Argentina	0.36	0.18	0.15	0.13	0.14	0.09
Bolivia, Pl. State of	0.00	0.00	0.00	0.00	0.00	0.00
Brazil	0.74	0.68	0.28	0.29	0.58	0.43
Chile	0.02	0.01	0.03	0.03	0.03	0.05
Colombia	0.00	0.00	0.00	0.01	0.02	0.05
Costa Rica	0.00	0.00	0.00	0.01	0.19	0.35
Ecuador	0.00	0.00	0.00	0.00	0.00	0.00
El Salvador	0.00	0.00	0.00	0.00	0.00	0.00
Guatemala	0.00	0.00	0.00	0.00	0.00	0.00
Guyana	0.00	0.00	0.00	0.00	0.00	0.00
Honduras	0.00	0.00	0.00	0.00	0.00	0.00
Jamaica	0.00	0.00	0.00	0.00	0.00	0.00
Mexico	0.34	0.11	0.14	0.31	0.59	0.53
Nicaragua	0.00	0.00	0.00	0.00	0.00	0.00
Panama	0.00	0.01	0.00	0.00	0.00	0.00
Paraguay	0.00	0.00	0.00	0.00	0.00	0.00
Peru	0.01	0.00	0.01	0.00	0.00	0.01
Dominican Rep.	0.00	0.00	0.00	0.00	0.00	0.01
Trinidad and Tobago	0.01	0.00	0.00	0.00	0.00	0.00
Uruguay	0.27	0.08	0.07	0.06	0.03	0.02
Venezuela, Bol. R. of	0.05	0.01	0.01	0.01	0.05	0.04
Total	*1.80*	*1.08*	*0.69*	*0.85*	*1.63*	*1.58*

Source: prepared by the authors on the basis of figures from the United Nations Commodity Trade Database (COMTRADE).

III
Empirical analysis

1. Model specification

One of the most widely used and successful methodologies for studying the factors that determine trade in goods and its quantitative importance is the so-called gravity model. Originally proposed by Tinbergen (1962), this model has been extensively applied in the effort to answer questions about the effects of preferential agreements on bilateral trade (Baier and Bergstrand, 2007), the repercussions of countries' entry to the World Trade Organization (Rose, 2004) and the determinants of electronic commerce (Blum and Goldfarb, 2006), among other things.

The basic equation to be estimated is given by:

$$X_{ij} = a_0 \ (GDP_i)^{a_1} (GDP_j)^{a_2} (DIST_{ij})^{a_3} e^{a_4 BORD_{ij} + a_5 LANG_{ij}} \varepsilon_{ij} \qquad (1)$$

where X_{ij} are exports from country i to country j, GDP_i is the output of country i, $DIST$ is the distance between the two countries and $BORD$ and $LANG$ are categorical variables for countries that have a common border and language.

Taking the logarithm of both sides of equation (1), we get:

$$\ln(X_{ij}) = a_0 + a_1 \ln (GDP_i) + a_2 \ln(GDP_j) + a_3 \ln(DIST_{ij}) + a_4 BORD + a_5 LANG + \varepsilon_{ij} \qquad (2)$$

This study analyses the trade with China of 79 countries for which information on the 1990-2006 period is available (see annex 2 for the list of countries). The gravity model can be extended to determine the degree to which manufacturing exports to China

are attributable to geographical factors that are unchanging over time (e.g., distance and a common border) and to other characteristics that do change (size of the country concerned, factor endowment and trade policy).

To analyse the effects of other geographic variables, factor endowments and tariff barriers to trade, equation (2) was extended by the addition of a categorical variable for exporting countries with an outlet to the sea. With regard to factor endowment, an estimate for human capital, physical capital and natural resources was included. The first two of these were measured by the education level of the over-15 population and the capital ratio per worker, respectively, in the exporting country. Following Leamer (1987) and Schott (2003), the arable land area per worker was used as a measure of natural resource abundance. Trade barriers were represented by the average import tariff of each exporting country,[3] a variable that does not reflect the barriers imposed by China on exports from other countries but rather the openness to trade of the country concerned.

The education, capital per worker and natural resource abundance variables were included in accordance with the implications of the Heckscher-Ohlin model, namely that a particular country has comparative advantages in the products that make intensive use of its most abundant factor of production. According to Rybczynski's theorem, assuming that manufactures are capital-intensive, differences in human and physical capital ought to be reflected in the volume of manufacturing exports going to China. In other words, countries with more capital ought to export more manufactures to the country. Extending the basic model, Leamer (1987) showed that an abundance of natural resources affected the development path of economies, making it less likely that they would have comparative advantages in the production of manufactured goods. In view of this, the land area per worker variable was included as a control.

The expected signs of all the explanatory variables are positive, with the exception of distance, average tariff and natural resource abundance. This is because a higher GDP, a common language and border, an outlet to the sea, a more highly educated workforce and a higher level of physical capital per worker are expected to result in a country exporting more manufactures.

Out of a total of 1,343 possible observations in the 79 countries, the results of 123 of them as regards exports to China were equal to zero. Given that these observations would be omitted if logarithms were applied, and relevant information thus lost, we adopted the commonly used alternative of defining the independent variable as ln (1+X).

2. Data sources

The trade data come from the United Nations Commodity Trade Database (COMTRADE),[4] which contains detailed information on bilateral trade (exports and imports) by industry in four-digit subgroups that follow the Standard International Trade Classification (SITC) (Rev. 2). Given that our study concentrates on manufacturing exports during the 1990-2006 period,[5] the classification of manufactured products developed by Leamer (1984) was used. Trade flows expressed in nominal dollars, following Rose (2004), were deflated by the United States wholesale price index.

Different information sources were used for the factor endowments of the various countries. Data on language, distance, access to the sea and contiguity came from the Research Centre for International Economics (CEPII).[6] Figures for GDP and agricultural land were taken from the World Bank *World Development Indicators*, while the information on education and capital per worker is from Bosworth and Collins (2003). The data on import tariffs, used as a measure of openness to trade, come from the World Bank.

The descriptive statistics for all the variables used in the estimates are shown in table 3.

[3] All the variables mentioned were measured in logarithms.

[4] See [online] COMTRADE.un.org.

[5] Data are available from 1962, but analysis of the period prior to 1990 is less productive because of the small scale of trade flows with China.

[6] See [online] http://www.cepii.org/anglaisgraph/bdd/bdd.htm.

TABLE 3

Descriptive statistics of the explanatory variables

Variable	Observations	Mean	Stand. dev.	Minimum	Maximum
Ln (1+exports)	1 343	8.77	5.00	0	18.17
Ln (distance)	1 343	9.11	0.54	6.91	9.86
Sea	1 343	0.86	0.35	0	1
Contiguity	1 343	0.03	0.16	0	1
Common language	1 343	0.03	0.16	0	1
Ln (arable land)	1 343	-0.9	1.12	-7.68	2.06
Ln (GDP)	1 264	24.52	2.01	19.91	30.03
Education	1 343	6.62	2.83	0.79	12.12
Ln (capital per worker)	1 343	-5.07	2.77	-13.82	-1.2
Average tariff	1 343	13.02	10.28	0	94

Source: World Bank; Research Centre for International Economics (CEPII); B. Bosworth and S.M. Collins, "The empirics of growth: an update", *Brookings Papers on Economic Activity*, vol. 34, No. 2, Washington, D.C., The Brookings Institution, 2003; United Nations Commodity Trade Database (COMTRADE).

IV

Results of the estimates

This section describes the results of the gravity model estimates. The cross-sectional estimates for different time periods are presented in table 4. Three-year intervals were used to reduce the effects of annual fluctuations (e.g., changes in certain product prices or temporary shocks) on the quality of the estimates. The option of producing the estimates from a data panel was discarded because some variables of interest, such as distance and common language, do not vary over time and would be absorbed by a fixed effect for the exporting country.

The variable that measures the distance between the exporter and China is negative and statistically significant in all the specifications, and the parameter value ranges from -1.98 to -1.47. As was to be expected, a greater distance from China increases trading costs, which translates into lower exports to that economy. To gain a quantitative idea of the importance of distance according to these estimates, the difference between the exports of a Latin American country and an Asian one was calculated using the average distance of each group from China and the parameter corresponding to the last period estimated. In this case, the difference in exports is given by:

$$\partial Ln(X) = -1.47[\ln D_{LA} - \ln D_{ASIA}] = 1.91 \qquad (3)$$

This means that if the average Latin American country were the same distance from China as the average Asian country, it could increase its exports by over 190%.

As expected, the fact of having a common language with China exercises a positive influence and its contribution is significantly different from zero from the second period of analysis onward. These results are compatible with the findings of earlier studies that countries with a common language trade more with one another (Rose, 2004).

The contiguity variable is not significant in any of the years studied. The expected sign was positive, since the lower costs of doing business between neighbouring countries tends to favour reciprocal trade. However, only two of the 79 countries in the sample have a border with China: India and Pakistan. Another geographic factor that appears to have no effect on manufacturing exports is whether the exporting country has an outlet to the sea.

The results indicate that the abundance of natural resources, measured in this case by the land to capital ratio, does not appear to have a significant effect on manufacturing exports to China in any of the years studied. Although it is possible that there may be more suitable variables for measuring natural resource

TABLE 4

Cross-sectional estimates, 1990-2006

Variable	1990-1992	1993-1995	1996-1998	1999-2001	2002-2004	2005-2006
Ln (distance)	-1.781[a]	-1.980[a]	-1.981[a]	-1.876[a]	-1.511[a]	-1.469[a]
	(0.529)	(0.430)	(0.409)	(0.417)	(0.481)	(0.535)
Common language	2.083	2.104[b]	2.764[a]	3.310[a]	3.571[a]	3.557[a]
	(1.279)	(0.997)	(0.829)	(0.493)	(0.474)	(0.511)
Contiguity	0.734	1.425	2.812[c]	0.908	0.817	0.00422
	(1.454)	(1.135)	(1.416)	(1.600)	(1.476)	(1.406)
Sea	-0.135	0.392	-0.259	-0.455	-0.774	-0.650
	(1.053)	(0.758)	(0.723)	(0.693)	(0.704)	(0.686)
Ln (arable land per worker)	0.163	0.218	0.211	0.365	0.282	0.155
	(0.260)	(0.215)	(0.208)	(0.360)	(0.388)	(0.410)
Ln (GDP)	1.288[a]	1.339[a]	1.289[a]	1.581[a]	1.528[a]	1.618[a]
	(0.175)	(0.153)	(0.164)	(0.150)	(0.148)	(0.154)
Ln (education)	0.302	1.731[b]	2.308[a]	2.098[a]	2.274[a]	1.264[b]
	(1.165)	(0.793)	(0.712)	(0.751)	(0.717)	(0.540)
Ln (capital per worker)	0.253	0.0499	0.0577	-0.0218	-0.0282	-0.0453
	(0.221)	(0.149)	(0.150)	(0.132)	(0.174)	(0.162)
Ln (average tariff)	0.0182	-0.372	-0.444	0.326	0.389	0.313
	(0.567)	(0.387)	(0.347)	(0.456)	(0.397)	(0.418)
Constant	-5.890	-8.099	-7.590	-16.81[a]	-18.17[a]	-18.68[a]
	(8.942)	(7.239)	(7.072)	(6.122)	(6.255)	(6.262)
Observations	79	79	78	77	77	77
R^2	0.687	0.810	0.817	0.777	0.754	0.730

Source: prepared by the authors.
N.B.: Robust standard errors in parentheses.

[a] $p < 0.01$, [b] $p < 0.05$, [c] $p < 0.1$.

endowments, there was no sample of countries for which any were available over the time period analysed in this study.

The size of the exporting country, as measured by GDP, is positive and statistically significant in all the periods studied. This size effect could be due to the presence of economies of scale in the production of manufactures (Perkins and Syrquin, 1989), but it could also be explained by the fact that larger countries tend to export a greater volume of goods of every kind (Hanson and Xiang, 2004). To place the economy size results in context, we may consider two countries like Trinidad and Tobago and Brazil, which are among the smallest 10% and the largest 10% of the sample, respectively. Using the estimates for the last period, the percentage difference between the two countries' manufacturing exports can be calculated as:

$$\partial Ln(X) = -1.618[\ln(GDP_{Brazil}) - Ln(GDP_{T\&T})]=6.53 \qquad (4)$$

These figures indicate that economy size translates into marked differences in manufacturing export capacity.

On the whole, the results seem to be fairly consistent with traditional international trade theory. The variable measuring human capital abundance is positively related with manufacturing exports. Workforce education is positive and significant in all but the first period studied. In this case, exporting differences can be illustrated by looking at the average education level of Latin American and European countries. Given that the parameters tend to vary from one period to another and in some cases are not significant, we used the mean of the four periods analysed. The results indicate that if the average Latin American country had the same level of education as the average European country, its exports would be almost 35% greater. The capital per worker variable, meanwhile, proved non-significant in all the periods studied.

Lastly, the results for openness to trade as measured by average import tariffs do not indicate a tendency for more open economies to export a greater volume of manufactured goods to China. These results obviously need to be analysed with care. For one thing, the estimates did not consider other trade barriers such as non-tariff restrictions, as information on these was not available for the country sample used.

However, given that most countries have opened up their economies over recent decades, this result could be consistent with the idea that tariff barriers are no longer a significant impediment to manufacturing exports. Indeed, Wacziarg and Horn-Welch (2003) show that between 1990 and 2000 the percentage of economies that can be described as open to international trade rose from just over 40% to 73%.

V
Conclusions

The economic growth of China, and the significant role the country has come to play as a major consumer of raw materials and more highly processed goods such as manufactures, has opened up great opportunities for exporting countries everywhere. This large and growing economy represents an increasingly important source of potential demand for developing countries with growth strategies based on exploiting comparative advantages and participating in international markets.

The purpose of this study has been to identify the determinants of manufacturing exports to China by means of a gravity model incorporating variables related to countries' geographical conditions, factor endowment and trade policies.

The findings reveal the importance of three fundamental elements: the distance from the exporting country to China, its factor endowment and the size of its economy. Given that this last component is relatively exogenous to the policies the economic authorities can apply, discussion of the results centres mainly on aspects relating to distance and factor endowment.

Although the distance factor is also exogenous to the economy, there are policies that can reduce its negative effects on trade, and specifically on manufacturing exports. Indeed, the negative repercussions of transport costs on trade mean that the countries furthest from China and other centres of global trade have a natural disadvantage that needs to be offset by improvements to the relevant infrastructure. The challenge here is even greater for the Latin American economies than for those more favourably located. Public policies to improve highway infrastructure, particularly in the case of roads connecting manufacturing centres to the ports from which exports are shipped, and to upgrade equipment and modernize and mechanize ports and airports, could have a substantial impact. Again, a policy of awarding concessions to build the necessary public infrastructure would circumvent constraints on investment capital, which is in particularly short supply in some of the region's countries. Also beneficial would be policies to improve efficiency and remove corruption in customs systems and export certification mechanisms, which sometimes represent an additional cost for exporters. Accordingly, policies and programmes that pursue transparency in public services, the training of State officials and the promotion and creation of professionalized public services, with careers based on qualifications and merit and independent of political influence, would go a long way towards solving many of the problems of inefficiency that translate into high costs for exporters. In countries where the transportation of products and merchandise has become increasingly insecure because of a rise in robberies and hold-ups of transporters, adopting policies to improve controls and strengthen security and the police could bring down the costs incurred by exporters, especially for manufactures, since it is these that are most frequently targeted by this type of crime.

Lastly, the findings relating to the effects of factor endowments on manufactured goods exports reveal the challenges that less developed economies will have to meet if they are to change their specialization patterns. To become exporters of manufactures, they need to increase their human capital endowment. For many developing nations, this means formulating policies to improve access to all levels of education and training. In most cases, it also means increasing the incomes of the poorest quintiles and designing and implementing public policies to create the infrastructure and child-care and nursery facilities needed for mothers in the more disadvantaged quintiles to enter the workforce and for children to have access from an early age to a stimulating environment that nurtures their learning skills. Looking ahead, however, it is education quality that seems to have become the most critical variable for the region, particularly in countries that have already made progress in this area. This represents a major public policy challenge, since improving education has proven to be a particularly testing task even in developed

countries where resources are far less constrained than in Latin America. There are similar challenges in the area of training, and especially on-the-job training. Here it would be advisable for the public and private sectors to formulate joint policies with a view to designing and implementing programmes that can bring real improvements to countries' competitive advantages, as these can be enhanced by providing tax credits to firms and production sectors that expend effort and resources on worker training and specialization.

(Original: Spanish)

ANNEX 1

Leamer's aggregates

Manufacturing aggregate	SITC
Labour-intensive	
Non-metal minerals	66
Furniture	82
Travel goods, handbags	83
Articles of apparel	84
Footwear	85
Miscellaneous manufactured articles	89
Postal packaging, not classified	91
Special transactions, not classified	93
Coins (non-gold)	96
Capital-intensive	
Leather	61
Rubber	62
Textile yarn, fabric	65
Iron and steel	67
Manufactured metal n.e.s.	69
Sanitary fixtures and fittings	81
Machinery	
Power generating	71
Specialized	72
Metalworking	73
General industrial	74
Office and data-processing	75
Telecommunications and sound	76
Electrical	77
Road vehicles	78
Other transportation vehicles	79
Professional and scientific instruments	87
Photographic apparatus	88
Firearms and ammunition	95
Chemicals	
Organic	51
Inorganic	52
Dyeing and tanning	53
Medicinal, pharmaceutical products	54
Essences and perfumes	55
Fertilizers	56
Explosives and pyrotechnics	57
Artificial resins and plastics	58
Chemical materials n.e.s.	59

Source: E.E. Leamer, "The Heckscher-Ohlin model in theory and practice", *Princeton Studies in International Finance*, No. 77, Princeton, Princeton University, 1995.

ANNEX 2

Country name	Country code	Country name	Country code
Algeria	DZA	Madagascar	MDG
Argentina	ARG	Mali	MLI
Australia	AUS	Malawi	MWI
Austria	AUT	Malaysia	MYS
Bangladesh	BGD	Mauritius	MUS
Belgium	BEL	Mexico	MEX
Bolivia (Plurinational State of)	BOL	Morocco	MAR
Brazil	BRA	Mozambique	MOZ
Cameroon	CMR	Netherlands	NLD
Canada	CAN	New Zealand	NZL
Chile	CHL	Nicaragua	NIC
Colombia	COL	Nigeria	NGA
Costa Rica	CRI	Norway	NOR
Côte d'Ivoire	CIV	Panama	PAN
Cyprus	CYP	Pakistan	PAK
Denmark	DNK	Paraguay	PRY
Dominican Republic	DOM	Peru	PER
Ecuador	ECU	Philippines	PHL
Egypt	EGY	Portugal	PRT
El Salvador	SLV	Rwanda	RWA
Ethiopia	ETH	Senegal	SEN
Finland	FIN	Singapore	SGP
France	FRA	South Africa	ZAF
Germany	GER	Spain	ESP
Ghana	GHA	Sri Lanka	LKA
Greece	GRC	Sweden	SWE
Guatemala	GTM	Switzerland	CHE
Guyana	GUY	Tanzania (United Rep. of)	TZA
Honduras	HND	Thailand	THA
Indonesia	IDN	Trinidad and Tobago	TTO
India	IND	Tunisia	TUN
Iran (Islamic Rep. of)	IRN	Turkey	TUR
Ireland	IRL	Uganda	UGA
Israel	ISR	United Kingdom	GBR
Italy	ITA	United States	USA
Jamaica	JAM	Uruguay	URY
Japan	JPN	Venezuela (Bolivarian Rep. of)	VEN
Jordan	JOR	Zambia	ZMB
Kenya	KEN	Zimbabwe	ZWE
Korea, Rep. of	KOR		

Source: prepared by the authors.

ANNEX 3

Main variables used

Variable	Description	Primary data source
X	Exports	COMTRADE
DIST	Distance	CEPII
SEA	Outlet to sea	CEPII
BORD	Contiguity	CEPII
LANG	Language	CEPII
LAND	Arable land	World Bank, *World Development Indicators*
WFORCE	Workforce	World Bank, *World Development Indicators*
R	Arable land per worker	World Bank, *World Development Indicators*
EDU	Years of education	Bosworth and Collins (2003)
KL	Capital per worker	Bosworth and Collins (2003)
OPEN	Import tariffs	World Bank[a]

Source: World Bank; Research Centre for International Economics (CEPII); B. Bosworth and S.M. Collins, "The empirics of growth: an update", *Brookings Papers on Economic Activity*, vol. 34, No. 2, Washington, D.C., The Brookings Institution, 2003; United Nations Commodity Trade Database (COMTRADE).
N.B.: The variables in the model regressions are expressed in natural logarithms.

[a] Data available [online] http://go.worldbank.org/LGOXFTV550.

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KEYWORDS

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Latin America: highlights from the implementation of the System of National Accounts 1993

Roberto Olinto Ramos, Gonzalo Pastor and Lisbeth Rivas

This paper reviews the Latin American experience with the implementation of the 1993 System of National Accounts and the updating of the national accounts' base year. It also makes a preliminary assessment of the possible measurement biases in nominal GDP estimates stemming from the use of outdated national accounts base years, downward biases in household final consumption estimates, and an overestimation of gross fixed capital formation in construction activities.

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I
Introduction

Evidence-based policy design and execution has become a key topic of discussion in international forums in recent years. There is broad consensus about the consequences (in terms of economic and financial costs) that tend to arise when policymakers either do not have reliable evidence on which to base and assess the outcomes of their decisions or do not take full advantage of the available data when making policy. For all countries, evidence-based economic policy design helps identify factors and/or sectors of production where they may have comparative advantages in a globalizing world economy.

The search for more and better evidence about how national economies work has brought to the fore the need to produce reliable national accounts statistics, particularly for the production and income accounts. The best known indicator is Gross Domestic Product (GDP), which is the key metric in the statistical system for measuring countries' economic performance. For Latin America, the recent emphasis on evidence-based policymaking has coincided with a period of high growth and macroeconomic stability. This has given scope within fiscal budgets to support multi-year programmes aimed at significantly improving the national accounts. These statistical development programmes have produced consistent annual and quarterly national accounts data that incorporate best international statistical practices —as recommended in the United Nations' *System of National Accounts* (henceforth the 1993 SNA)— and which are now regularly used for policymaking and economic debate.

This paper reviews the evidence from the recent revisions made to national accounts series in Latin America in the context of the implementation of the 1993 SNA and the governments' efforts to produce more comprehensive and robust national accounts. Section II provides background on the implementation of the 1993 SNA in Latin America, while emphasizing the evidence for those countries that have simultaneously implemented the 1993 SNA and changed the base year of their national accounts. Section III elaborates on the countries' gains from the compilation of new national accounts in terms of: (i) convergence towards best international accounting practices and (ii) the measurement of key macroeconomic aggregates and economic indicators. Section IV looks forward. It reviews the remaining source data limitations facing 33 countries in the Latin American and the Caribbean region and develops a preliminary estimate of the possible estimation bias contained in current GDP estimates. Section V sums up the main findings of the cross-country analysis.

II
Background

Since the 1940s, countries in Latin America have been engaged in compiling integrated systems of national accounts consistent with the methodological manuals produced by the United Nations. Economic diagnosis and policy design in the region has focused on key macroeconomic variables such as GDP, total final consumption, investment (gross capital formation) and saving aggregates. These national accounts aggregates have become critical indicators of policy effectiveness as countries implemented a variety of economic development programmes to raise living standards and address poverty.

Best practices on the compilation of national accounts have changed over the years to respond to the transformation of the world economy. An extensive expert consultation process during the 1980s led to the revision of the *1968 System of National Accounts* manual (1968 SNA) and the issuing of the 1993 SNA manual. The voluminous 1993 SNA manual sought to

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add conceptual and methodological clarity to the earlier manual, while pursuing leadership and harmonization with statistical manuals in the areas of government finance, monetary and financial statistics and balance of payments. On the latter, the publication of the *Fifth Edition of the Balance of Payments Manual* (BPM5) by the International Monetary Fund (IMF) in 1993 was an important complement to the methodological work on national accounts by the Inter-Secretariat Working Group on National Accounts (United Nations, IMF, the Organisation for Economic Co-operation and Development, the Statistical Office of the European Communities and the World Bank).

For the countries, the task from 1993 onwards has been to design and implement working plans to upgrade their national accounts and balance-of-payments statistics in line with the recommendations of the *1993 SNA* manual and BPM5, respectively. To date, as many as 23 (out of a total of 33) countries in Latin America and the Caribbean have, to various degrees, implemented these methodological guidelines. A narrower set of countries has not only implemented the system's guidelines, but also changed the base year for their national accounts (see box 1).

The financial and human resources allocated to the production of the new national accounts statistics have been substantial and have included multi-year efforts by a number of public and private institutions —including technical and financial support from bilateral and international financial institutions. On average, it has taken about five or six years for the country authorities to complete a national accounts revision project and issue new time series. IMF has contributed to this work by fielding technical assistance and multisector missions and by providing training and making assessments of macroeconomic statistics under the Data Module of the Report on the Observance of Standards and Codes (data ROSC). The data ROSC have been structured according to the IMF Data Quality Assessment Framework (DQAF), which covers six data quality dimensions: (i) prerequisites of data quality, including the legal and institutional environment and resources that are commensurate with the needs of statistical programs; (ii) assurances of integrity, including professionalism, transparency and ethical standards regarding statistical data; (iii) methodological soundness, including data concepts and definitions, scope, classification/sectorization and basis for recording; (iv) accuracy and reliability, including source data, assessment of source data, statistical techniques, assessment and validation of intermediate data and statistical outputs and revision studies; (v) serviceability, including periodicity and timeliness in data publication, consistency, revision policy and practice; and (vi) accessibility, including data and metadata accessibility and assistance to data users.

Overall, the data ROSC, by comprehensively assessing the economic statistical system, have reportedly invigorated the country authorities' efforts and responsibility to promote and pay special attention to this complex multi-year data collection exercise. Other leading technical agencies of the United

Box 1
CHANGING THE BASE YEAR: WHAT DOES IT IMPLY?

In many Latin American countries, the core of the national accounts is the size and composition of GDP calculated from the production approach. GDP of the various activities and sectors of the economy is commonly calculated on the basis of censuses, administrative records and surveys. Regularly conducting a comprehensive census of all registered companies and establishments would allow the authorities to keep good track of changes in the size and structure of the economy. However, because of the high cost and complexity of the exercise, comprehensive censuses are only carried out for certain "base years." The results of annual surveys completed for a representative sample of enterprises and establishments are used to compile the national accounts for the following years.

Base year estimates tend to become obsolete with the passage of time. The appearance of new economic activities and the disappearance of others, due in part to technological and institutional developments, lead to changes in values and relative prices of goods and services. Updating the base year thus becomes imperative. This includes revising the coverage, structure and relative prices of national accounts. The 1993 SNA manual recommends updating the base year every five years.

Nations, such as ECLAC, have hosted active forums for discussion, training and monitoring of the 1993 SNA implementation programme in the region.

Countries in the region have undertaken work in two main areas since 1993. First, they have used more comprehensive and robust source data for compiling new national accounts' base years. This included, inter alia, launching new household income and expenditure surveys, updating businesses registries and developing relevant price indices for assessing national accounts in volume terms. Second, there have been changes or improvements in the national accounts' compilation methodology following the 1993 SNA recommendations and technical advice stemming from IMF technical assistance and multisector missions, as well as the data ROSC.[1] According to the evidence, the combined implementation of changes in the national accounts' base year and the 1993 SNA statistical methodologies (which includes 16 country cases to date; see box 2) has generally resulted in increases in nominal GDP levels (for the base year assessed under the old and new methodology) with a median increase of 8.8% (in other words, an average 6.5% increase on a GDP-weighted basis).[2] Reductions in nominal GDP levels from the simultaneous implementation of the 1993 SNA and the rebasing of the national accounts happened in less than 31% of cases (5 country cases out of a total of 16 cases).

In all cases, analysts and policymakers have welcomed the incorporation of new source data and the updating of the base years, as the old national accounts and their corresponding base years —which usually dated from the 1980s or were some 15 years old— were considered too outdated to adequately capture the changes in sectoral values of production, volumes and prices that had taken place in the domestic economy. The revised national accounts data have also strengthened the production of robust high-frequency economic indicators, such as the production, price and employment series.

III

Updating National Accounts in Latin America: A Preliminary Assessment

This section elaborates on the main results achieved by updating the national accounts' base year and implementing the 1993 SNA in Latin American countries. It stresses the gains achieved in terms of applying best international accounting practices and discusses the implications of these data revisions for economic analysis. Regarding the latter, it assesses the impact of the national accounts revisions on nominal GDP levels, real GDP growth rates and the composition of GDP in the production, expenditure and income approaches. The section concludes with an overview of the remaining data puzzles, which include a reported coexistence of higher economic growth and an important reduction in total consumption as a share of GDP in the majority of the countries that revised their national accounts estimates. Also, the ratios of gross capital formation and their implicit incremental capital output ratios (ICORs) have remained somewhat high by international standards (at an average value of 5.6), suggesting relatively low productivity of capital.[3]

[1] A detailed description of the main methodological changes between the 1968 SNA and the 1993 SNA can be found in Olinto Ramos, Pastor and Rivas (2008).

[2] The extreme case of Nicaragua's March 2003 revision of the national accounts, which raised the level of nominal GDP of 2000 by 70%, is excluded from this calculation. Revisions to the national accounts statistics addressed major deficiencies in the coverage of economic activities and an outdated base year.

[3] The incremental Capital-Output Ratio (ICOR) is the ratio of the ratio of investment in nominal GDP to the economy's real growth rate. In the standard Harrod-Domar economic growth model, the ICOR is equal to 1 divided by the marginal productivity of capital. The higher the ICOR is, the lower the productivity of capital. The ICOR can be thought of as a measure of the inefficiency with which capital is used. In most industrialized countries the ICOR is in the neighborhood of 3-3.5. The World Bank Statistical Manual (available on the Internet, as well as Wikipedia, the Free Encyclopedia (http://en.wikipedia.org/wiki/Incremental_Capital-Output_Ratio)) provides a basic description of the ICOR concept.

Box 2
LATIN AMERICA: IMPACT ON NOMINAL GDP LEVELS OF CHANGES IN THE BASE YEAR AND THE IMPLEMENTATION OF THE 1993 SNA

	Base Year		Level difference in nominal GDP vs. old base year GDP (Percentages)
	Old	New	
A. Countries that changed their base year and implemented the 1993 SNA			
Argentina	1986	1993	-8.2
Brazil	1985	2000	7.0
Chile	1986	1996	9.9
Chile	1996	2003	0.2
Colombia	1975	1994	16.5
Colombia	1994	2000	12.0
Ecuador	1975	1993	-3.1
Ecuador[a]	1993	2000	16.7
Guatemala	1958	2001	-10.7
Honduras	1978	2000	19.2
Mexico	1980	1993	9.7
Mexico	1993	2003	9.6
Nicaragua	1980	1994	70.0
Paraguay	1982	1994	-11.6
Uruguay	1983	1997	8.8
Venezuela (Bolivarian Republic of)	1984	1997	-3.2
Memo items:			
Average, all countries excluding Nicaragua			4.9
Weighted average, all countries excluding Nicaragua[b]			6.5
Median, all countries excluding Nicaragua			8.8
B. Countries that changed their base year with impending full 1993 SNA implementation			
Bolivia (Plurinational State of)	1980	1990	-12.2
Costa Rica	1966	1991	28.0
El Salvador	1974	1990	-11.1
Guyana	1977	1988	-2.0
Jamaica	1974	1986	3.7
Panama	1970	1996	9.5
Peru	1979	1994	-10.7

Source: national authorities' official websites and IMF staff estimates.

[a] National accounts in 2000 are in dollars; earlier estimates are in sucres.
[b] Refers to the United States dollar GDP-weighted average of the changes in nominal GDP for the sample of countries. There are no GDP estimates available on a PPP basis for Central America, thus precluding an alternative analysis of the GDP changes.

1. Quality Gaps vis-à-vis Best Practices

As noted above, the IMF staff, in the context of the data ROSC conducted on the basis of the DQAF, has sought to identify strengths and weaknesses in six data quality dimensions (e.g., prerequisites of quality, assurances of integrity, methodological soundness, accuracy and reliability, serviceability and accessibility by users) for five data sets: national accounts, prices, balance of payments, government finance and monetary and financial statistics. To date, some 114 data ROSC (including updates) have been conducted by the IMF staff, including for 10 out of the 13 Latin American countries that have changed their national accounts base year along with the 1993 SNA implementation. The Data Module of the ROSC missions in Latin America has generally been carried out before or while the new national accounts were still under preparation, with the missions' results and recommendations supporting host countries' efforts to improve the quality of the national accounts statistics.

In assessing the relevance of these issues, the IMF staff has used as benchmarks the methodological recommendations included in the 1993 SNA, as well as information and practices from countries around the world in national accounts compilation. The latter, in particular, has allowed the staff to qualify whether an existing practice falls within or below the international standard. Activities have been ranked into four categories depending on whether: a practice is observed (O), meaning that the statistical routine meets international best practices; a practice is largely observed (LO); a practice is largely not observed (LNO); or a practice is not observed (NO) (see table 1).

The data quality assessments/ratings granted to Latin American countries can be further analysed by comparing them against those granted to the six G-8 countries that have participated in the Data Module of the ROSC. The following observations emerge from this comparative analysis (see table 2):

— Latin American countries lagged behind the G-8 countries in all 6 data quality dimensions assessed, although the gaps varied significantly across them.
— In terms of prerequisites of quality and assurances of integrity, the Latin American countries compared relatively well on account of strong and growing inter-institutional coordination among data producers and compilers. The ROSC assessments also suggest adequate emphasis by data producers regarding the production of "quality" statistics, although a pending challenge refers to the allocation of commensurate resources to run the statistical programmes (i.e., problems obtaining adequate funding for staff training, physical capital upgrades, updating business directories, launching regular data collection surveys and censuses, the use of the International Standard Industrial Classification of All Economic Activities (ISIC) Revision 3 and the Central Product Classification (CPC) for purposes of national accounts' compilation, and changing the national accounts' base year every five years, as recommended by the 1993 SNA).
— By contrast, data dimensions regarding accuracy and reliability and methodological soundness show the greatest need for improvement.
— Latin American countries show relatively poor source data as well as weaknesses in the statistical techniques employed and the assessment of intermediate data results. On statistical techniques, countries tend to use supply and use tables with outdated fixed technical coefficients and lack data revision policies to track data reliability over time. In this context, a recurrent recommendation from the data ROSC has been the need to implement more comprehensive source data collection programmes for rapidly-growing industries in the manufacturing and services sectors, as well as to improve estimates for the non-observed and informal sectors of the economy. The revision of fixed technical coefficients used in the countries' input-output tables has been another avenue for prospective data quality improvement.
— Metadata accessibility to users and assistance to data users are quality dimensions that also need further improvement in Latin American countries.

2. Economic dimensions of the data revisions

(a) *Higher nominal and real GDP estimates*

National accounts revisions in Latin American countries (excluding Nicaragua) have generally resulted in level-changes in nominal GDP values within a range of -8.2% to 19.2%, with an unweighted median increase of 8.8% compared with the old base year estimates.[4] From the GDP expenditure approach, there were significant increases, albeit with variances across

[4] The GDP-weighted average is 6.5% (see box 2).

TABLE 1

Latin America and the Caribbean: Data ROSC: summary of results - national accounts

DQAF data quality dimensions	Plurinational State of Bolivia[a]	Chile[bc]	Colombia[b]	Costa Rica[a]	Ecuador[b]	Guatemala[b]	El Salvador[a]	Honduras[b]	Mexico[b]	Nicaragua[b]	Panama[b]	Paraguay[b]	Peru[a]	Dominican Republic[b]
0. Prerequisites of quality														
0.1 Legal and institutional environment	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO	LO
0.2 Resources	LO	O	LNO	O	LO	LO	LNO	LO	O	O	LO	LNO	LNO	LO
0.3 Relevance	LO	LO	LO	LO	O	LO	LO	LO	O	LO	O	LO	LO	LO
0.4 Other quality management	O	O	O	LO	O	LO	…	LO	O	LO	LO	O	LO	O
1. Assurances of integrity														
1.1 Professionalism	O	O	O	O	O	LO	O	O	O	O	O	O	O	O
1.2 Transparency	LO	O	O	LO	O	LO	LO	LO	O	O	LO	O	LNO	LO
1.3 Ethical standards	O	O	O	O	O	O	O	O	O	O	O	O	O	O
2. Methodological soundness														
2.1 Concepts and definitions	LO	O	O	O	O	LNO	LO	LNO	O	O	O	O	LO	O
2.2 Scope	LO	LO	LO	O	O	LNO	LNO	LO	O	O	O	LO	LO	O
2.3 Classification/sectorization	LO	LO	O	LO	LO	LNO	LNO	LNO	LO	O	O	LO	LO	LO
2.4 Basis for recording	O	LO	O	O	LO	LO	LO	LO	O	LO	LO	LO	LO	O
3. Accuracy and reliability														
3.1 Source data	LNO	LO	LO	LNO	LO	LNO	LNO	LO	LO	LO	LO	LO	LNO	LNO
3.2 Assessment of source data	LO	LO	O		O	LNO	LNO	LO	O	O	LO	O	LNO	LO
3.3 Statistical techniques	LNO	LO	LO	LNO	O	LNO	LO	LNO	LNO	LO	LNO	LNO	LNO	LNO
3.4 Assessment and validation of intermediate data and statistical outputs	O	LO	LO	LO	O	LNO	O	LO	LO	O	LO	O	LO	O
3.5 Revision studies	LO	O	NO	LNO	LO	LNO	LO	LNO	LO	LNO	LNO	LO	LO	LNO
4. Serviceability														
4.1 Periodicity and timeliness	O	O	LO	O	O	O	O	O	O	O	O	LO	LO	O
4.2 Consistency	LO	O	O	LO	O	LNO	LO	LO	O	O	LO	LO	LO	LO
4.3 Revision policy and practice	LO	O	LO	LO	LO	LNO	LO	LO	O	LO	LO	LO	LO	LO
5. Accessibility														
5.1 Data accessibility	LO	LO	O	O	O	LO	O	LNO	O	LO	LO	LO	O	LO
5.2 Metadata accessibility	O	O	O	LNO	LO	LNO	LO	LNO	O	LO	O	LO	LO	LNO
5.3 Assistance to users	O	O	O	LO	O	LO	LO	LO	O	O	LO	LO	O	LO

Source: data ROSC reports, [online] www.imf.org.
Note: O = Observed, LO = Largely observed, LNO = Largely not observed, NO = Not observed.

[a] Refers to countries that undertook and published a Data Module of the ROSC, but either did not change their base year and/or implement the 1993 SNA.
[b] Refers to countries that have implemented the 1993 SNA, along with a change in their national accounts' base year, and published the Data ROSC.
[c] Data ROSC update conducted in April/May 2007.

TABLE 2

G-8 Countries: Data ROSC: summary of results - national accounts

DQAF data quality dimensions	Canada	Germany	Japan	Italy	France	Russian Federation
0. Prerequisites of quality						
0.1 Legal and institutional environment	O	O	O	O	O	LNO
0.2 Resources	O	O	LNO	LO	LO	LNO
0.3 Relevance	O	O	O	O	O	LO
0.4 Other quality management	O	O	O	O	O	O
1. Assurances of integrity						
1.1 Professionalism	O	O	O	O	O	O
1.2 Transparency	O	O	O	O	O	O
1.3 Ethical standards	O	O	O	O	O	O
2. Methodological soundness						
2.1 Concepts and definitions	O	O	O	O	O	O
2.2 Scope	O	O	O	O	O	O
2.3 Classification/sectorization	O	O	O	O	O	LNO
2.4 Basis for recording	LO	O	O	O	O	O
3. Accuracy and reliability						
3.1 Source data	O	LO	LO	O	O	LO
3.2 Assessment of source data	O	O	LO	O	LO	LO
3.3 Statistical techniques	O	O	O	LO	O	O
3.4 Assessment and validation of intermediate data and statistical outputs	O	O	O	O	O	O
3.5 Revision studies	O	O	LNO	O	O	O
4. Serviceability						
4.1 Periodicity and timeliness	O	O	O	O	O	O
4.2 Consistency	O	O	O	O	O	O
4.3 Revision policy and practice	O	O	O	O	LO	O
5. Accessibility						
5.1 Data accessibility	O	O	O	O	O	LO
5.2 Metadata accessibility	O	O	O	O	O	LO
5.3 Assistance to users	O	O	O	O	O	O

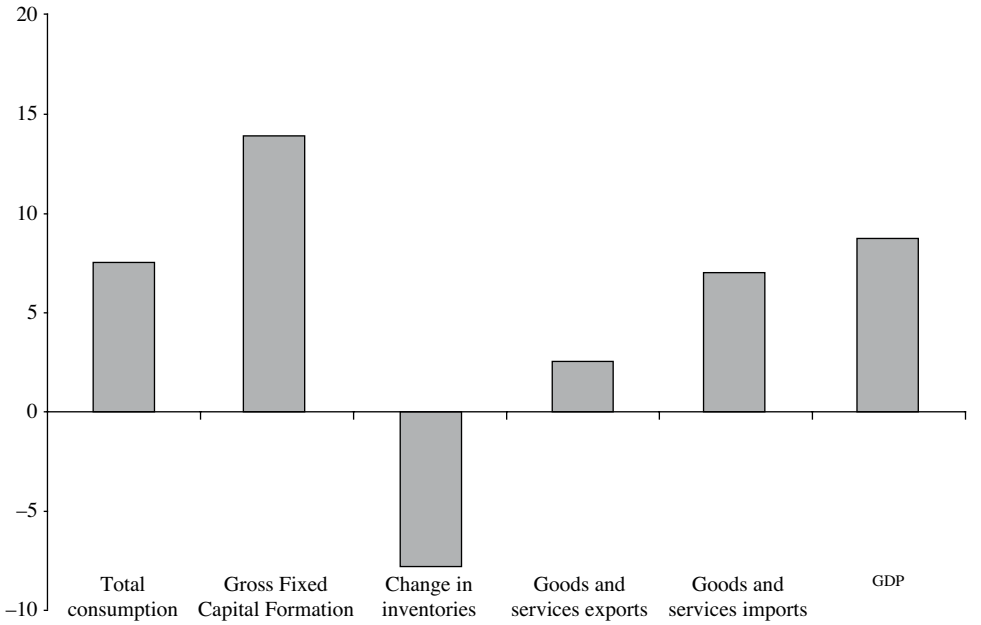
Source: data ROSC reports, [online] www.imf.org.
Note: O = Observed, LO = Largely observed, LNO = Largely not observed.

countries, in gross fixed capital formation, although total final consumption was also adjusted upwards in the context of the national accounts revisions. From the GDP production approach, there was a notable decline in the estimated value added of agriculture, hunting, forestry and fishing, while nominal value added estimates for other sectors, including, in particular, construction and services, were revised upwards (see figures 1 and 2). The resulting data revisions have led to changes in the ratios to GDP of economic variables, such as the fiscal deficit, the current account balance, external debt and tax revenues, which are widely used in financial programming and policy decision-making.

National accounts statistics revisions have also resulted in changes in per capita GDP ratios which, at times, resulted in reassessments of the relative ranking of countries within the region and of the administrative classifications of countries on the lists of Low-Income Member Countries and Heavily Indebted Poor Countries (HIPC). Real economic growth rates were also revised as a result of the updating of national accounts statistics, with real GDP growth rates being on average 0.2 percentage points higher than with the old national accounts base year, albeit with significant variations across countries (see table 3). On a real GDP per-capita basis, the revisions to the national

FIGURE 1

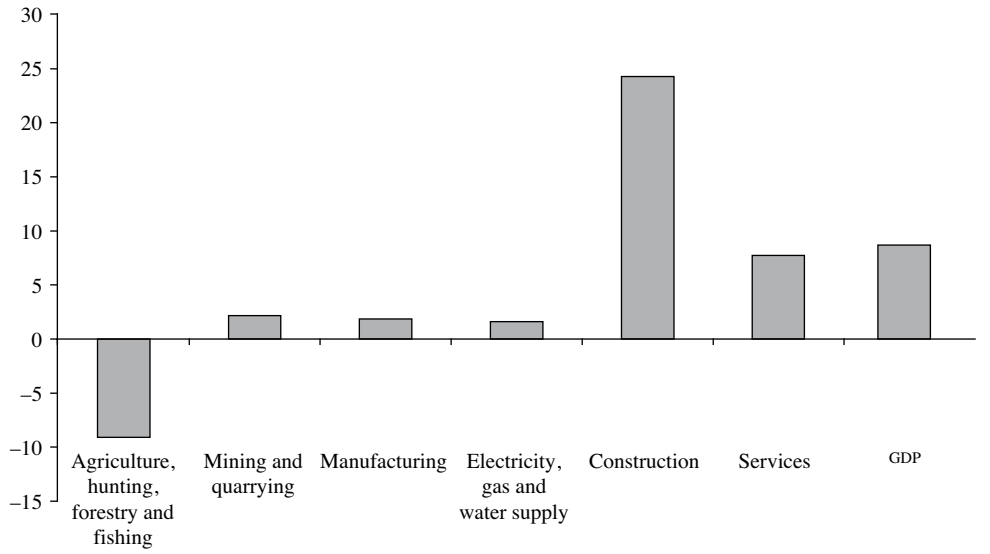
Median Changes in Base Year Nominal GDP Levels: Expenditure Approach
(Percentages)



Source: country authorities' official websites.

FIGURE 2

Median Changes in Base Year Nominal GDP Levels: Production Approach
(Percentages)



Source: country authorities' official websites.

TABLE 3

Latin America: difference in real GDP growth rates under new and old national accounts statistics[a]

	Base year		Increase in real GDP growth rates			Average increase in real GDP growth rates[b]	
	Old	New	T + 1	T + 2	T + 3	First 2 years	First 3 years
Argentina	1986	1993	-2.2	1.2	0.75	-0.5	-0.1
Brazil	1985	2000	0.0	0.8	0.6	0.4	0.5
Chile	1986	1996	-0.8	-0.7	0.3	-0.8	-0.4
Chile	1996	2003	-0.2	-0.6	…	-0.4	-0.4
Colombia	1975	1994	-0.6	…	…	-0.6	-0.6
Colombia	1994	2000	0.7	…	…	0.7	0.7
Ecuador	1993	2000	-0.3	-0.6	…	-0.5	-0.5
Guatemala	1958	2001	1.7	0.4	0.5	1.1	0.9
Honduras	1978	2000	0.1	0.9	1	0.5	0.7
Mexico	1980	1993	0.8	…	…	0.8	0.8
Mexico	1993	2003	-0.2	0.4	0.0	0.1	0.1
Nicaragua	1980	1994	1.6	1.5	-1.1	1.6	0.7
Paraguay	1982	1994	0.7	-0.9	0.4	-0.1	0.1
Uruguay[c]	1983	1997	-0.04	…	…	0.0	0.0
Venezuela (Bol. Rep. of)	1984	1997	0.4	…	…	0.4	0.4
Memorandum items:							
Average all countries[b]			0.1	0.2	0.3	0.2	0.2
Median all countries			0.0	0.4	0.5	0.1	0.1

Source: country authorities' official websites.

[a] For the period after the new benchmark year (e.g. T + 3 refers to 3 years after the new base year). In general, countries produced national accounts with the old and new methodology for an overlapping period of three years.

[b] Unweighted averages.

[c] Data refer to 1997.

accounts statistics have generally emphasized a much better (or less negative) economic growth performance than previously assessed (see figure 3).

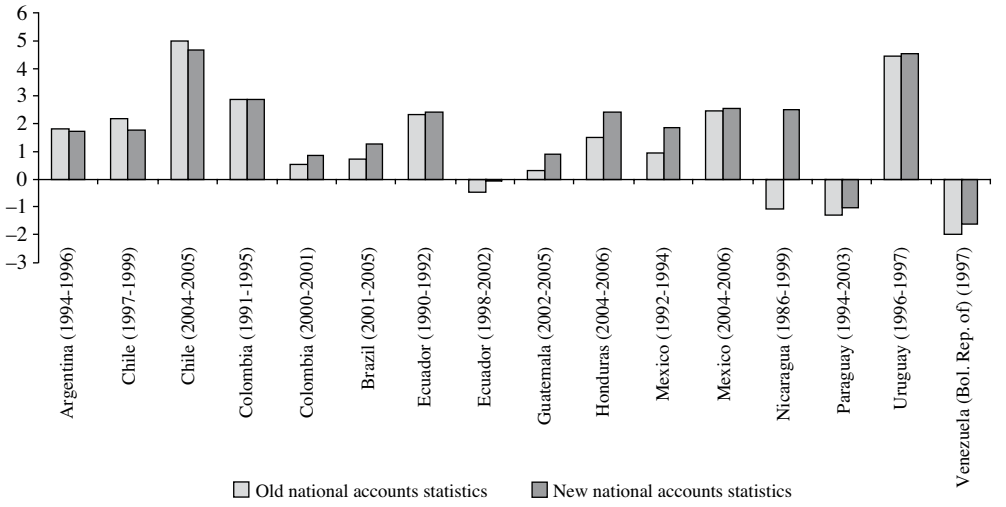
The gap between the price and quantity effect in GDP in the context of national accounts revisions hints at a number of pending challenges for compilers. As noted above, the sizeable changes in nominal GDP figures (in a range of -8.2% to 19.2%, excluding Nicaragua) mirror current-price data reclassifications in keeping with the 1993 SNA and significant improvements in source information stemming from more regular data collection surveys of key sectors in the economy. Yet the authors' view is that much remains to be done in terms of the development of robust volume and price indices —especially for output produced for own final use (see box 3), illegal and informal sector activities and the growing telecom, financial and other services sectors— that meet analytical/theoretical requirements and compensate for data limitations facing the national accounts compilers.

To date, for example, the 1993 SNA recommendation to compile supply and use tables at current and constant prices at the same time, and balanced simultaneously, is gradually being implemented among Latin American countries.[5] Yet, as noted by Sake de Boer and others (1999), while the simultaneous balancing at current and constant prices has many advantages, an important weakness is the possible neglect of the difference between deflated data (derived by compilers using current price information and available price indices) and actually measured (independently collected) volume data. Best practice is to validate the deflated data of the supply and use table with independent estimated volume data.

[5] Brazil, for example, has been a leader in the production of Supply and Use Tables at constant prices (i.e., at prices of the previous year) since the late 1990s.

FIGURE 3

Real per capita GDP growth rates under alternative National Accounts series
(Percentages)



Source: country authorities' official websites.

Another main methodological weakness in assessing volume growth of GDP series is the lack of new source data in a times series format. Revisions of national accounts statistics, including changes in the base year, often use new source data that are only available for the base year; i.e., countries base revisions on one-off censuses and surveys, which are not followed up with regular new statistical surveys. Although such revisions may improve the estimates of the levels of GDP in current prices, they are not likely to produce improved quarterly or annual volume growth estimates.

(b) *Changes in countries' recorded economic structures*

Revisions to the national accounts have also led to changes in the statistics on the countries' underlying economic structure (see table 4). On the one hand, in Central America, the share of agriculture and forestry, as well as that of services, in GDP declined, while the share of civil construction and manufacturing increased. The increase in the share of manufacturing reflects changes in the accounting of the activities of national and multinational companies operating in the Central American textile sector (maquila) in the context of free trade agreements with the United States. The declining share of services reflects mainly the 1968 SNA (rather than 1993 SNA) accounting treatment of financial intermediation services indirectly measured (FISIM) in Honduras' new national accounts (allocated to intermediate consumption of a notional industry)[6] and a reassessment of value added for trade, transportation and financial intermediation activities in Guatemala.

On the other hand, for the rest of the Latin American countries, and in line with international trends, an increase in the share of services —particularly modern services such as information and communication services, and informal services provided by unincorporated enterprises owned by households— has been accompanied by a simultaneous decline in the share of agriculture, hunting, forestry and fishery in total value added. A singular decline in the share of manufacturing value added for these countries largely reflects the expanded coverage and the reclassification of oil-related activities into a separate petroleum sector (included as part of mining and quarrying in table 4) for the Bolivarian Republic

[6] FISIM is defined in the 1993 SNA as the total property income receivable by financial intermediaries minus their total interest payable, excluding any property income receivable from the investment of their own funds.

TABLE 4

Latin America: Changes in nominal GDP structure due to revisions in national accounts statistics

(Percentage points of GDP)

	Countries			
	All[a]	Central America[b]	All less Central America	Oil Producers[c]
Agriculture, hunting, forestry and fishing	-3.1	-4.6	-2.8	-1.9
Mining and quarrying[d]	0.8	-0.2	1.0	2.1
Manufacturing	-0.2	4.6	-1.2	-3.2
Electricity, gas and water supply	-0.3	-1.3	-0.1	0.6
Construction	0.6	2.1	0.3	1.1
Services	2.7	-0.5	3.3	1.4
Trade services, restaurant and hotel services	-1.4	-2.2	-1.3	-2.5
Transport, storage and commercial services	0.1	-1.1	0.4	0.2
Financial intermediation	-1.2	-1.7	-1.0	0.0
FISIM[e]	1.3	0.0	1.3	0.0
Other services[f]	5.0	5.6	3.9	0.7

Source: countries' national accounts statistics.

[a] Includes Argentina, Bolivarian Republic of Venezuela, Brazil, Chile, Colombia, Ecuador, Guatemala, Honduras, Mexico, Nicaragua, Paraguay and Uruguay.

[b] Includes Guatemala and Honduras. Increases in the share of manufacturing reflect the revised treatment of the maquila, with these companies' profits now included as part of value added and their exports as part of gross output. Declines in the share of trade services reflects a reclassification of accounts and the inclusion of owners' occupied rents in Guatemala's revised national accounts.

[c] Includes the Bolivarian Republic of Venezuela, Ecuador and Mexico.

[d] Includes oil extraction.

[e] Reflects revised statistical treatment of FISIM under SNA93, which allocates FISIM as intermediate consumption of the various institutional sectors.

[f] Includes value added from imputed rental of owner-occupied housing, public administration, defence, social security, health and education services.

of Venezuela. If Ecuador, Mexico and the Bolivarian Republic of Venezuela are not taken into consideration, the share of manufacturing in total GDP increases for the sample of countries.

(c) *Changes in income distribution*

The revisions to national accounts statistics resulted also in new estimates of income distribution in Latin America. In general, compared to the old base year, the revised national accounts statistics show a reduced share of "compensation to employees" in the calculation of the GDP by the income side (see figure 4). The reduced share of GDP accruing to employees reflects, in part, the way the 1993 SNA broadens income measures for households to include a new concept, called "mixed income," so as to record the income perceived by owners for their work in an unincorporated enterprise and their earnings as entrepreneurs. Over time, the decline in the income share accruing to employees compares with a somewhat gradual increase in the share of the operating surplus and mixed income, especially as we move away from the new national accounts' base year.[7] This trend may reflect, in part, the countries' rapidly changing underlying economic structure and relative prices, which tend to diminish the representativeness of the base year over time. It is in this regard that the 1993 SNA recommends a revision of the national accounts base year every five years, if possible.

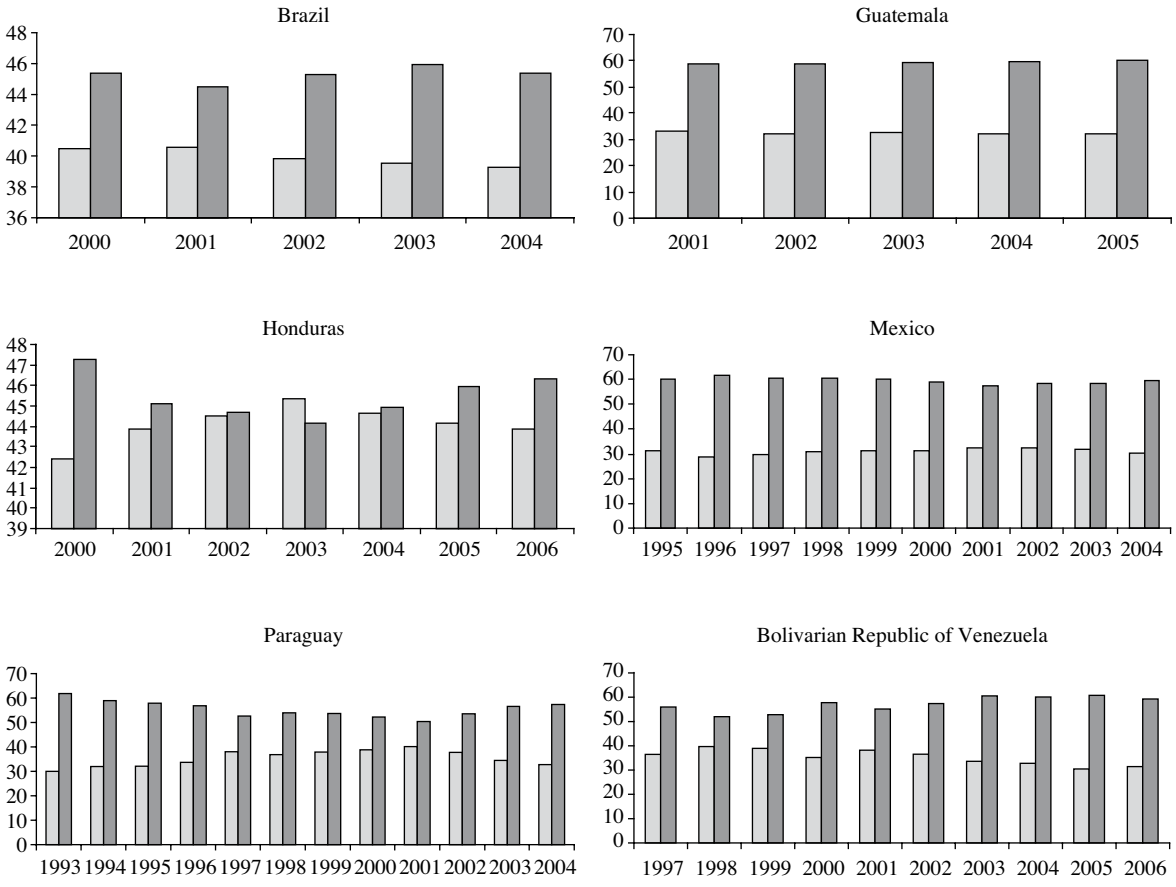
3. Remaining Data Puzzles

As noted above, an important analytical tool recommended by the 1993 SNA is the development of supply and use tables to secure the basic balance between supply and demand of production by checking the consistency of estimates and filling data gaps. At the same time, Latin American statistical agencies have been moving away from indirect estimates of key

[7] The remaining income share accrues to taxes on production and imports.

FIGURE 4

Selected countries: Share of compensation to employees and mixed income plus operating surplus in nominal GDP
(Percentages)



Source: country authorities' official websites.

[a] Left-hand side bar is compensation to employees. Right-hand side bar is mixed income plus operating surplus.

source national accounts data (that include mainly volume and price extrapolations from base years) to the use of direct sampling processes founded on regular household consumption surveys and surveys of main industries. Information from these surveys is usually scrutinized by applying supply and use tables at the detailed product level for the various institutional sectors (households, businesses and government) and using intermediate indicators and/or data validation routines, such as standard ratios of household consumption spending by income thresholds, as well as information derived from income tax and other tax declarations by enterprises, when assessing overall production and uses (e.g., consumption, gross fixed capital formation, net exports) levels and trends.

(a) *Lower consumption/GDP ratios*

Despite the aforementioned methodological advances, a notable feature contained in the national accounts data revisions is that the new GDP series, including their upward revisions in real GDP growth rates, has coincided with a decline in the unweighted average share of total consumption in nominal GDP (see table 5). Relatively large countries like Brazil (base year 2000), Mexico (base year 1993) and Colombia (base year 2000) —with rather good source data

TABLE 5

Latin America: Changes in the composition of aggregate demand under new national accounts statistics[a]

(Percentage points of GDP)

	Base year		Impact of revision on GDP shares over time					ICOR[b]	
	Old	New	Consumption	GFKF	Change in inventories	Gross capital Formation[c]	Trade balance	Old data	New data
Brazil	1985	2000	4.3	-2.8	-1.0	-3.8	-0.6	9.6	6.1
Chile	1986	1996	-0.7	1.2	-0.9	0.2	0.5	5.0	6.1
Chile	1996	2003	0.8	-1.2	0.4	-0.9	0.1	4.3	3.4
Colombia	1975	1994	-0.4	3.1	-0.1	2.9	-2.5	3.5	4.6
Colombia	1994	2000	1.5	0.5	1.6	2.1	-3.7	4.6	5.5
Ecuador	1993	2000	1.5	0.3	1.5	1.8	-3.2	6.5	6.7
Guatemala	1958	2001	0.3	3.6	-2.3	1.3	-1.6	5.3	5.5
Honduras	1978	2000	-4.9	0.0	2.4	2.4	2.4	7.0	4.7
Mexico	1980	1993	1.6	-1.3	-0.6	-1.9	-0.2	7.3	6.9
Mexico	1993	2003	-2.8	0.3	2.4	2.7	0.1	5.3	5.2
Nicaragua	1980	1994	-15.1	-3.7	2.9	-0.8	17.6	6.0	6.7
Paraguay	1982	1994	-5.3	-1.1	1.9	0.8	4.4	7.1	5.8
Uruguay	1983	1997	-2.7	2.3	0.2	2.6	-0.1	2.3	2.7
Venezuela (Bol. Rep. of)	1984	1997	-8.0	8.1	0.0	8.1	-0.1	2.0	1.6
Memorandum items:									
Average all countries			-2.1	0.7	0.6	1.3	0.9	5.4	5.1
Median all countries			-0.6	0.3	0.3	1.5	-0.1	5.3	5.5
Average all countries excluding Nicaragua			-1.1	1.0	0.4	1.4	-0.3	5.4	5.0
Median all countries excluding Nicaragua			-0.4	0.3	0.2	1.8	-0.1	5.3	5.5

Source: national authorities' official websites.

[a] Data for Argentina are not presented in this table as changes in inventories are included in final consumption in the official Argentine data.

[b] Incremental Capital Output Ratio (ICOR) is defined as the ratio of (GFKF/GDP) to the real GDP growth rate. Where GFKF is gross fixed capital formation and GDP is nominal GDP.

[c] Defined to include GFKF plus change in inventories.

according to the assessments under the data ROSC—show a positive correlation between higher nominal GDP values, stronger economic growth and a rising share of total consumption in GDP in the context of national accounts revisions.

Brazil's increase in the ratio of final consumption/GDP, in the context of the recent re-basing of its national accounts, confirmed earlier econometric analysis that pointed to a possible underestimation of the growth rate of households' real income, although the data revisions reflected data coverage issues (i.e., activities carried out by unincorporated household enterprises and self-employed workers) rather than problems with the measurement of inflation as it had been assumed by the econometricians.[8] Brazil's revisions in its consumption data reflected the implementation of the 1993 SNA methodological recommendations and the availability of better source data, including a new household budget survey (implemented between July 2002 and June 2003) that was used for updating the representative family consumption basket and a survey on the urban informal sector used for including informal activities in production estimates.

[8] See Carvalho Filho and Chamon (2006) who use household survey data for Brazil to estimate Engel curves capturing the statistical correlation between households' real income and the share of food expenditure in the households' consumption basket. The authors assume, a priori, that nominal income in Brazil's national accounts is measured accurately. Accordingly, they postulate that any difference between the real income growth consistent with the estimated Engel curves and the real income growth derived from Brazil's national accounts reflects an overestimation of domestic inflation. In the event, the Brazilian authorities revised the original national income series from 2000-2005, while keeping the inflation estimates unchanged for the period. The CPI consumption basket was, however, updated using the latest household survey.

According to the revised national accounts (published in May 2007), Brazil's household final consumption expenditure in volume terms had been around 1.25% per year higher than assessed earlier (see figure 5). This underestimation of household consumption expenditure in the old national accounts statistics is roughly consistent with the gap of between 0.06% and 2.91% per year estimated by Carvalho Filho and Chamon (2006) when comparing per capita real income growth (derived using empirical/econometric Engel curves) and "headline" real household income growth (obtained by deflating nominal per capita household income by the consumer price index).[9] The factors reconciling these two numbers are: (i) the required adjustments to the household survey data (which cover mainly out-of-pocket expenditure) to put these data on a conceptual basis similar to that of the national accounts (see box 3), and (ii) a working assumption that the correction to real household expenditure identified by Carvalho Filho and Chamon (2006) applies only to out-of pocket expenditure which is estimated at 40% of household final consumption expenditure in the national accounts.[10]

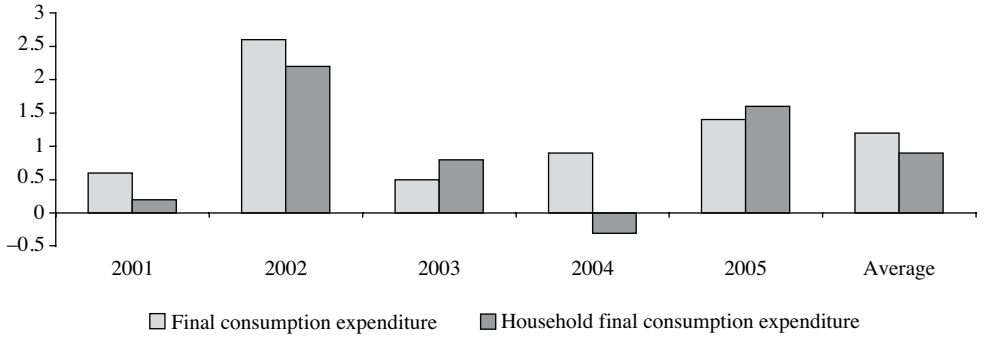
Besides Carvalho, Filho, and Chamon (2006), the analytical work by Lebow and Rudd (2003) and Deaton (2005) also points at methodological areas that may add to a possible estimation error of final consumption expenditure in the national accounts. These authors refer to the difficult-to-measure concepts of owners' equivalent rent (i.e., imputed rent of owner-occupied housing) and FISIM, in addition to the final consumption expenditure by non-profit institutions serving households (NPISH). In the case of Latin America and the Caribbean only 10 out of 33 countries calculate owners' equivalent rent as part of their national accounts' definition of household final consumption expenditure; FISIM is imputed only as part of household consumption for an even smaller group of countries in the region. Correcting final consumption and nominal GDP figures for

[9] The authors' estimated gap of 0.06% per year applies to expenditure data covering tenants' rents only. The gap of 2.91% applies to expenditure data that include tenants' rents and the rental equivalent value of owner-occupied housing.

[10] The weighted average of household consumption expenditure bias would be: the upper bound (0.4)*(2.91) + (0.6)* 1= 1.716; the lower bound: (0.4)*(0.06) + (0.6)* 1 = 0.624. The mid-point would be 1.194, which is around Brazil's 1% increase in the national accounts' consumption levels in volume terms.

FIGURE 5

Brazil: Changes in real consumption growth rates resulting from comparing old and new national accounts statistics
(Percentage points)



Source: country authorities' official websites.

Box 3
RECONCILIATION OF DATA ON HOUSEHOLD FINAL CONSUMPTION EXPENDITURE IN HOUSEHOLD SURVEYS AND NATIONAL ACCOUNTS

A number of adjustments are made to construct national accounts data on household final consumption that are consistent with data from household budget surveys. Most importantly, the survey data covers mainly out-of-pocket expenditure by households, whereas the national accounts data have considerably broader scope, representing all goods and services purchased by individuals and non-profit institutions that serve them.

For example, the national accounts data include all expenditures on medical care whether paid by households, employers or governments, whereas the survey data only cover the portion of expenditures paid by households out of their own pockets. In the United States, roughly one quarter of the personal consumption expenditure bundle in the national accounts is outside the scope of the household budget survey data.[11]

The most common adjustments made to household survey data for national accounts compilation purposes are the following:

Goods. Include food produced and consumed on farms and food furnished to employees (including military), fuel produced and consumed on farms, and apparel provided to military personnel. Exclude monetary and in-kind transfers among households (to avoid double counting within the household institutional sector). Exclude taxes on products.

Medical care. Add government transfers to persons for medical care, employer contributions for employees' health insurance and workers' compensation. Adjust medical care plans to include both the plan's premium paid by affiliates and the expenses incurred by the plans on the provision of medical care. Only the insurance service should be included in consumption expenditure; that is, premiums minus claims plus premium supplements.

Education services. Include foundations and non-profit research organizations.

Other services. Include owners' equivalent rent (i.e., imputed rental of owner-occupied housing), rental value of farm housing, domestic services provided to families, imputed financial service charges and expenses for handling life insurance.

these amounts should be an important step towards improving the calculation of the consumption level of households in line with 1993 SNA methodology.

A further downward estimation bias in a number of countries in Latin America and the Caribbean arises from estimating household consumption as a residual by using the commodity flow method. As noted by Deaton (2005), there are many opportunities for errors along this chain of calculations, with the added complication of assessing intermediate consumption using technical coefficients from outdated input-output tables.

[11] See Lebow and Rudd (2003).

(b) *Higher gross fixed capital formation/GDP and incremental capital output ratios*

National accounts data revisions have produced higher ratios of gross fixed capital formation to GDP than under the old series. This has been the result of better source data being available to the national accounts compilers and methodological changes in the definition of gross capital formation (for example, expenses in mineral exploration activities and military expenses are now included in specific fixed assets). While higher gross fixed capital formation ratios should be good for growth over the long run, a remaining puzzle is the rather high incremental capital output ratios (ICORs) for the sample countries. Indeed, in the context of the data revisions, the average ICOR has

declined marginally from 5.4 to 5.0, on average, for all countries excluding Nicaragua (see table 5), but remain significantly above the international norm of between 3 and 3.5. Converging to the international norm is thought to secure faster economic growth and/or an efficient use of capital.

A review of the data ROSC conducted for countries in the region, as well as of the data sources and analyses performed by ECLAC (2007) and by international experts (Easterly and Kraay (2000) and Winters and Martins (2004)), points to a number of factors that may help explain the recorded average levels of gross fixed capital formation (and ICORs) in Latin America and the Caribbean:

- **Source data on gross fixed capital formation in construction activities have serious limitations.** The review of the evidence indicates that gross fixed capital formation in construction (representing about 50%-55% of gross capital formation across countries) is subject to statistical estimation errors that are more pronounced than for machinery and equipment. Statistical agencies tend to lack either direct sampling techniques for construction activities and/or access to tax records of the various institutional sectors (households and corporations) from which to derive robust estimates of these types of expenditures. For example, data and methodological weaknesses stressed in the Data Module of the ROSC for Peru (dated October 2003), refer to limited source data on private-sector construction activities and the lack of robust sample frameworks that could be used to assess the coverage of the sample and determine reliable grossing up factors for estimating aggregates for total construction activity. In Peru, construction is mainly estimated on the basis of cement production.
- **By contrast, estimates of gross fixed capital formation in machinery and equipment have tended to be more robust,** largely reflecting a very high correlation of these data with those of imports of capital goods used in the compilation of balance of payments statistics. The consistency of the balance-of-payments statistics with the national accounts is a data quality dimension assessed in the Data Module of the ROSC; the consistency between these two data frameworks has been confirmed by the data ROSC conducted in Latin America.
- **Investment to GDP ratios are substantially higher in small countries (with populations of less than a million people like the Caribbean countries) than larger countries** (see table 6). This is an international cross-country regularity that holds independently on whether or not the national accounts statistics are measured along the 1968 SNA or 1993 SNA methodological guidelines.[12] The data for Latin America and the Caribbean confirm this regularity, with the larger countries in the region showing some convergence towards international ICOR levels of between 3 and 3.5.

(c) *Estimation issues with changes in inventories*

The value of changes in inventories, which is equivalent to a high of 3.5 to 7.0 percentage points of GDP in some countries in the LAC region (depending if we use an average or peak value of the series (see figures 6 to 9)) increased as a share of GDP in the context of the recent national accounts revisions. This regularity is at odds with the worldwide trend towards economizing on inventories in the context of improved inventory management. In general, there seems to be an overestimation of this variable for some countries as the sum of total changes in inventories and total private final consumption expenditures (including final consumption expenditures of non-profit institutions serving households) is usually assessed as a residual between the GDP calculated by the production approach and the sum of the other components of domestic expenditure and the trade balance. Estimates on household final consumption expenditures and changes in inventories are often separated by using population and wages data and the CPI developments —a method that departs from best practices. Other factors affecting the calculation of changes in inventories include country-specific accounting (or lack of accounting) of work in progress (such as growing crops, standing timber, stocks of fish and large construction projects), which should be recorded as inventories according to the 1993 SNA. Furthermore, for some countries, the reported steady increase of changes in inventories for several consecutive years warrants some caution as it would seem unduly costly for enterprises to operate in such a manner.

[12] See Easterly and Kraay (2000) for a comparison of macroeconomic data and performance in small States and larger ones around the world.

TABLE 6

Latin America and the Caribbean: Gross fixed capital formation ratios to GDP and alternative ICOR estimates, 1995-2005
(Percentages)

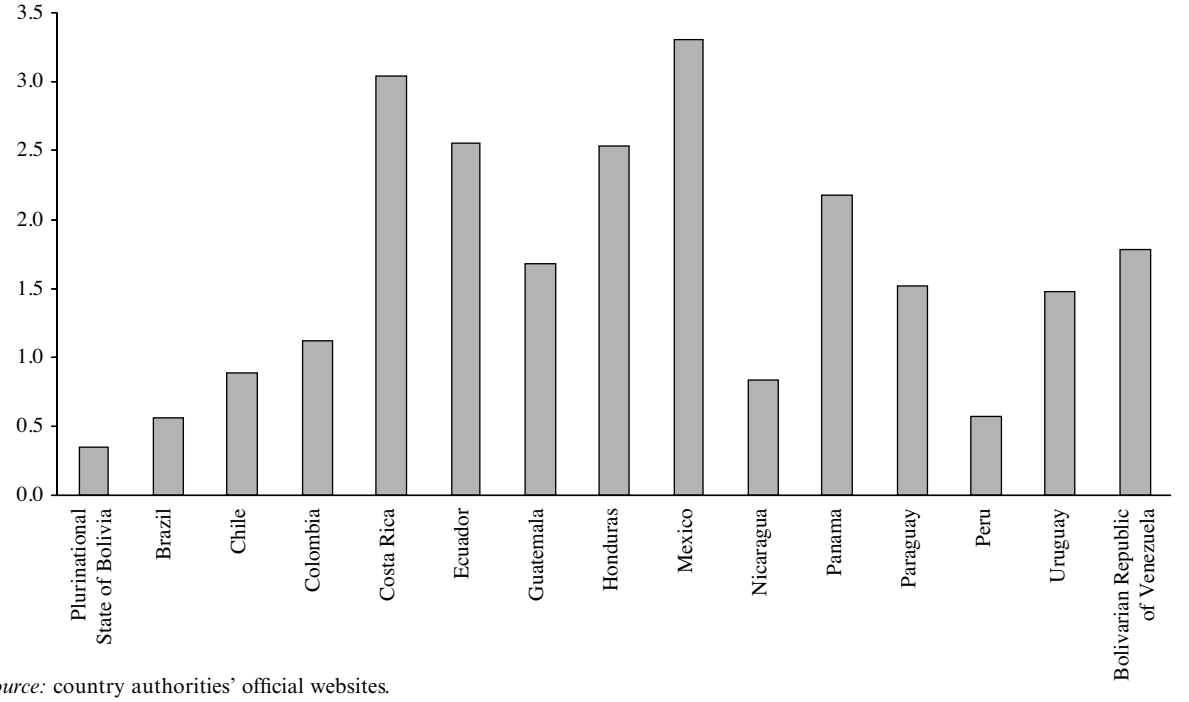
	1995	2000	2002	2003	2004	2005	Average ICOR 2003-2005
I. Latin America and the Caribbean (all countries)							
Gross fixed capital formation/GDP ratio	23.8	25.2	22.3	23.0	23.7	22.9	
ICOR (a)[a]	5.0	7.6	8.5	8.4	5.4	5.1	6.3
ICOR (b)[b]	4.3	9.9	7.4	5.2	5.5	5.3	5.3
II. The Caribbean[c]							
Gross fixed capital formation/GDP ratio	28.7	31.5	27.6	29.3	30.2	27.6	
ICOR (a)[a]	9.5	13.1	9.5	11.5	7.4	6.4	8.4
ICOR (b)[b]	6.1	11.4	9.3	7.0	7.3	7.3	7.2
III. Latin America[d]							
Gross fixed capital formation/GDP ratio	19.6	19.6	17.7	17.5	18.3	19.0	
ICOR (a)[a]	3.0	3.1	7.5	5.7	3.7	4.1	4.5
ICOR (b)[b]	2.8	8.6	5.7	3.6	4.0	3.7	3.7

Source: ECLAC database and authors' estimates.

[a] ICOR (a) is defined as the GFKF/GDP ratio (year t) divided by the annual real GDP growth rates (year t).
[b] ICOR (b) is defined as the GFKF/GDP ratio (year t) divided by the annual real GDP growth rates (year t+1).
[c] Country sample includes data for Antigua and Barbuda, Bahamas, Barbados, Belize, Dominica, Dominican Republic, Grenada, Haiti, Jamaica, Saint. Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines and Trinidad and Tobago.
[d] Country sample includes data for Argentina, Bolivarian Republic of Venezuela, Bolivia, Brazil, Chile, Colombia, Costa Rica, Ecuador, El Salvador, Guatemala, Mexico, Nicaragua, Panama, Paraguay, Peru and Uruguay.

FIGURE 6

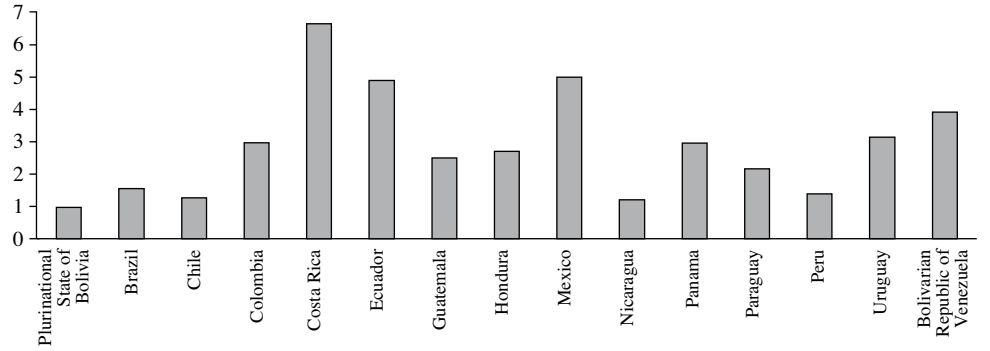
Latin America: Average changes in inventories, 2000-2005
(Percentages of GDP)



Source: country authorities' official websites.

FIGURE 7

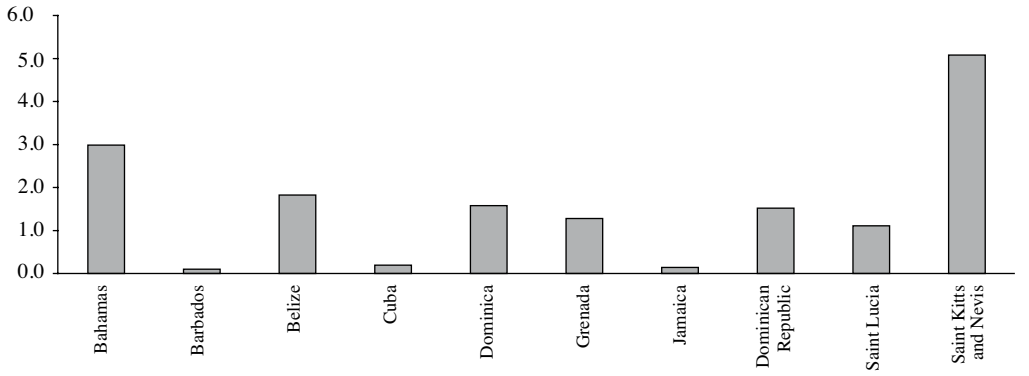
Latin America: Peak value of changes in inventories, 2000-2005
(Percentages of GDP)



Source: country authorities' official websites.

FIGURE 8

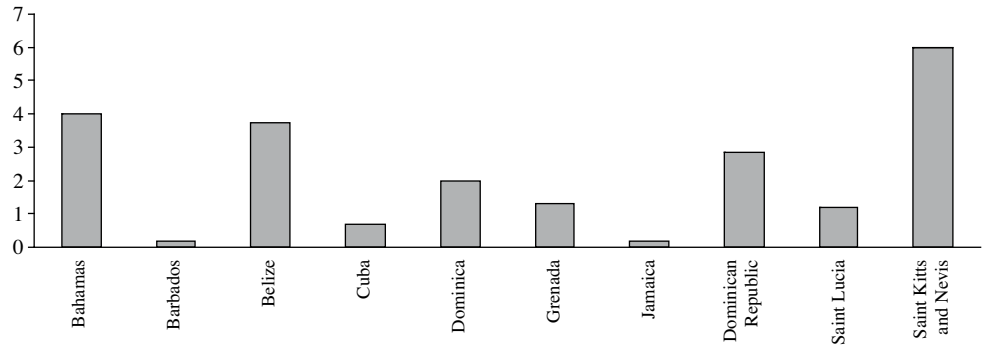
The Caribbean: Average changes in inventories, 2000-2005
(Percentages of GDP)



Source: country authorities' official websites.

FIGURE 9

The Caribbean: Peak value of changes in inventories, 2000-2005
(Percentages of GDP)



Source: country authorities' official websites.

IV

Estimation bias in the Compilation of Nominal GDP Figures: A First Approximation

The revisions of national accounts statistics in Latin American countries that simultaneously updated the base year of their GDP estimates and implemented the 1993 SNA provide a broad indication of the estimation bias for national accounts in countries which currently use an outdated base year and lag behind in the implementation of the 1993 SNA. According to the information compiled by ECLAC, as of June 2007, some 23 countries (out of a total of 33 countries in Latin America and the Caribbean) implemented the 1993 SNA methodology, although only eight countries[13] (out of a total of 33 countries in the region) had national accounts' base years that were less than 10 years old. The remaining 25 countries either have plans for rebasing national accounts statistics or have started the process in the recent past.

What can we expect from the prospective national accounts data revisions in the region? Could we anticipate, with the information at hand, the size of the potential GDP revisions? This section uses the trends in recent data revisions to address these questions (see section III above).

Table 7 lists our estimates of three sources of possible biases in the nominal GDP estimates in the region: (i) underestimations of nominal GDP due to an outdated base year, data coverage issues and lagging implementation of the 1993 SNA, (ii) downwards biases in the measurement of household final consumption expenditure, and (iii) a possible overestimation of gross fixed capital formation in construction activities. Table 7 does not include possible estimation biases regarding the value of changes in inventories; a task that would entail an estimation effort beyond the scope of this paper.

From the experience of the last 15 years in Latin America, we conclude that the largest estimation bias —chiefly understating the level of GDP estimates in the region— is due to the use of an outdated base year and the lagging implementation the 1993 SNA. The estimation biases resulting from measurement problems with household final consumption expenditure and gross capital formation in construction activities are smaller, although they could affect the composition of GDP from the expenditure side. The remainder of this section elaborates on the aforementioned sources of nominal GDP estimation biases.

TABLE 7

Latin America and the Caribbean: Biases in nominal GDP calculations[a]

(Percentage points of nominal GDP, by year)

Nature of bias	Range of bias and median point estimates
I. Factors affecting nominal GDP levels	
GDP underestimation due to outdated benchmark year and weak SNA93 implementation	-8.2 to 19.2 [8.8]
II. Factors affecting nominal GDP composition	
Under-estimation of household final consumption expenditure[b]	0.47 to 1.3 [0.896]
Overestimation of gross fixed capital formation in construction[c]	-1.0 to -1.5 [-1.25]

Source: authors' estimates.

[a] Numbers is brackets are the median estimates.
[b] Range and median point estimate applies to total actual final consumption level equivalent to 75% of GDP.
[c] Range and median point estimate applies to a gross fixed capital formation in construction level equivalent to 10% of GDP.

1. Nominal GDP underestimation due to outdated base year and lagging implementation of 1993 SNA

The experience in Latin America shows that, in general, a change in the national accounts' base year along with the implementation of the 1993 System of National Accounts leads to increases in nominal GDP levels, although there have also been cases in which the revisions led to lower GDP figures (see box 2) owing

[13] Belize, Brazil, Chile, Colombia, Guatemala, Honduras, Mexico and Trinidad and Tobago.

to an obsolete previous base year and a generalized use of fixed technical ratios in extrapolations at the aggregate level.

The experience to date is likely to replicate in the future as countries update their national accounts base years and implement the 1993 SNA methodology. Except for Chile and Mexico, whose national accounts base years date from 2003, base years in the other 31 countries in Latin America and the Caribbean are much older than the five-year maximum lapse for updating recommended by the 1993 SNA.[14] Also, country-specific information compiled by IMF confirms that the main improvements to national accounts' source data should include updates of business directories/registers and agriculture and livestock censuses to improve coverage and statistical sampling techniques in the context of revising the national accounts' base year. Information gaps in the services sector are likely to remain a challenge given the importance of the small- and medium-size enterprises in this sector that are not usually captured in the economic surveys, as well as the relevance of informal service activities, which are not investigated and recorded in official statistics.

2. Underestimation of Household Final Consumption Expenditure

As noted above, when national accounts are rebased, the new data tend to show a lower share of final consumption in GDP. However, this is not always the case as large Latin American countries —particularly those with relatively robust source data such as Brazil, Chile and Colombia, for example— have reported higher ratios of final consumption expenditure to GDP in the context of updating their national accounts and implementing the 1993 SNA.

While only a detailed analysis could identify the measurement of consumption bias in the GDP calculations for each country, a number of factors warrant some reservations regarding the lower share of total consumption in GDP reported in recent national accounts revisions. These factors include, on the one hand, downward biases from the pending inclusion of imputed rental of owner-occupied housing, FISIM and consumption of NPISH in total final consumption expenditure figures and, on the other, inconsistencies between (i) Engel curve econometric estimations that confirm strong economic growth and changing household spending patterns —see, for example, Carvalho Filho and Chamon (2006) estimates for Brazil, and Dávila and Levy (2003) and INEGI (2000) for a review of consumption patterns in Mexico— and (ii) the reduced poverty rates, low inflation, expanding credit and gradual trade liberalization reported in the region.[15] Estimation of national accounts consumption as a residual adds yet another source of potential error in the computation of household final consumption expenditure. All in all, our assessment of the downward nominal consumption bias is within a range of 0.624% to 1.764% per year (see footnote number 10 for the detailed calculation). Assuming that consumption represents around 75% of GDP, the median point estimate would be about 0.896% per year.

3. Overestimation of gross fixed capital formation in construction

We approximate the bias in the measurement of gross fixed capital formation in construction activities by inferring/deducting the level of this type of spending that would yield ICOR levels close to the international norm of between 3 and 3.5. We acknowledge, however, that the use of the ICOR should only be considered a first step towards assessing a possible estimation bias in construction activities.

The sensitivity analysis indicates that a 10%-15% reduction per year in fixed gross capital formation in construction would significantly approximate average ICOR levels in Latin America and the Caribbean to the international norm (see centre and bottom panels of table 8). With average ratios of gross fixed capital formation in construction activities to GDP equivalent to about 10%, a 10%-15% reduction in these ratios would be equivalent to a 1-1.5 percentage point reduction of GDP. Our view is that, except for a few Latin American countries that are leading the way in terms of the implementation of the 1993 SNA, a 10%-15% potential overstatement in gross fixed capital formation in construction is a realistic assessment

[14] The main countries (in terms of relative GDP size) in Latin America and the Caribbean that have yet to rebase their national accounts and fully implement the 1993 SNA include Argentina, Bolivarian Republic of Venezuela, Dominican Republic, Ecuador and Peru, which together represent some 25% of the region's nominal GDP. In all cases, the current national accounts base year dates from the mid-1990s and is unlikely to represent the countries' current economic structure and relative price spectrum.

[15] As reported in Singh and others (2005), for example.

given the current source data shortages facing many national statistical institutes in the region. Leading countries like Colombia, for example, have invested significant human and financial resources to address these statistical challenges, especially when measuring construction activities undertaken by households for the purpose of their own gross capital formation and/or in the informal sector of the economy.[16] The Colombian authorities' efforts include focussing on the assessment of new production, stalled production, production in course, quality of dwellings, the amount and type of manpower used in construction activities and the market value per square metre of dwellings sold in the market. These efforts have complemented the more traditional censuses of finalized dwellings offered to the market, i.e., construction activities that are usually undertaken by corporations rather than households for their own final use.

The Bolivarian Republic of Venezuela and Brazil are yet other examples of significant statistical efforts to produce robust estimates of gross capital formation in construction.[17] The experience of the Bolivarian Republic of Venezuela, Brazil and Colombia, however, are considered notable exceptions to the more general statistical weakness facing national accounts compilers when assessing construction activities in the formal and informal sectors of the economy, as well as household construction activities for own final use.

[16] See Colombia, National Administrative Department of Statistics (2007).

[17] See IBGE (2007) and Central Bank of Venezuela (2003).

TABLE 8

Latin America: Sensitivity analysis under alternative ratios between GDP and gross capital formation in construction, 1995-2005[a]
(Percentages)

	1995	2000	2002	2003	2004	2005	Average ICOR 2003-2005
I. Baseline							
Total GFKF/GDP ratio	19.6	19.6	17.7	17.5	18.3	19.0	
of which: GFKF in construction/GDP ratio	9.6	10.1	9.4	9.4	9.6	10.2	
ICOR (a)[b]	3.0	3.1	7.5	5.7	3.7	4.1	4.5
ICOR (b)[c]	3.0	8.4	5.7	3.5	4.0	3.6	3.7
II. 10% decline in GFKF in construction							
Total GFKF/GDP ratio	18.6	18.6	16.7	16.5	17.3	18.0	
of which: GFKF in construction/GDP ratio	8.6	9.1	8.4	8.5	8.6	9.1	
ICOR (a)[b]	2.8	2.9	7.1	5.3	3.5	3.9	4.2
ICOR (b)[c]	2.9	7.9	5.4	3.3	3.7	3.4	3.5
III. 15% decline in GFKF in construction							
Total GFKF/GDP ratio	18.2	18.1	16.2	16.0	16.8	17.5	
of which: GFKF in construction/GDP ratio	8.1	8.6	8.0	8.0	8.2	8.6	
ICOR (a)[b]	2.8	2.8	6.9	5.2	3.4	3.8	4.1
ICOR (b)[c]	2.8	7.7	5.3	3.2	3.6	3.3	3.4

Source: database of the Economic Commission for Latin America and the Caribbean (ECLAC) and authors' calculations.

[a] Country sample includes data for Argentina, Bolivarian Republic of Venezuela, Brazil, Chile, Colombia, Costa Rica, Ecuador, El Salvador, Guatemala, Mexico, Nicaragua, Panama, Paraguay, Peru, Plurinational State of Bolivia and Uruguay.
[b] ICOR (a) is defined as the GFKF/GDP ratio (year t) divided by the annual real GDP growth rates (year t).
[c] ICOR (b) is defined as the GFKF/GDP ratio (year t) divided by the annual real GDP growth rates (year t+1).

V
Concluding Remarks

This paper has reviewed the Latin American experience with the implementation of the 1993 SNA and the update of the national accounts' base year. It has also made a preliminary assessment of the possible bias in nominal GDP estimates for the Latin American and Caribbean region.

Our analysis points to a number of preliminary conclusions:

— Data revisions stemming from the implementation of the 1993 SNA and the update of the national accounts base year have been projects implemented with the participation of numerous institutions over a span of about 5 to 6 years. The IMF contribution towards this endeavour has been the fielding of technical assistance and multisector missions, as well as the performance of data ROSC. These have supported country authorities in their efforts to fulfil their responsibility regarding the improvement of the collection of basic data and the implementation of best international practices for the compilation of national accounts. Economic policymakers have generally agreed that the implementation of national development strategies requires basic knowledge about the size and structure of the national economy. This is also consistent with evidence-based policymaking, which has been a key topic of discussion in international forums in recent years.

— Data ROSC in Latin America have pointed out a number of data quality issues. Common weaknesses/challenges across countries include the need to: allocate commensurate human and financial resources to run statistical programmes; improve the collection of basic source data for national accounts compilation (especially improve data collection routines for the service sectors, output produced for own final use and informal sector activities); and foster stronger inter-institutional coordination among data producers and compilers in countries across the region.

— Revisions to national accounts data in the context of implementing the 1993 SNA and rebasing the accounts have led to changes for nominal GDP levels within a range of -8.2% to 19.2% (excluding Nicaragua) with a median point estimate of 8.8%, as most of the national accounts revisions led to higher nominal GDP levels compared with earlier estimates.

— Revisions to national accounts statistics have led to reassessments of countries' per-capita incomes, the leading sectors in the local economy and the primary distribution of income. Regarding the latter, Latin American countries have shown higher income shares in the total income of the economy accruing to corporations and unincorporated enterprises owned by households (mixed income in the 1993 SNA taxonomy) at the expense of the income share accruing to employees.

— The data revisions have also yielded estimates of real GDP growth rates that are somewhat higher for a number of consecutive years than those assessed under the old national accounts series. While the jury is still out on how to split increases in price and volume indices, expert opinion is that the price-quantity split warrants some caution as, in the absence of robust source data, compilers may tend to exaggerate the stability of volume trends at the expense of added variability to price indices. Also, a number of Latin American statistical agencies are lagging behind in the compilation of data related to producer price indices and the simultaneous construction of supply and use tables at current and constant prices which are useful for filling data gaps, assessing the consistency of (value, volume and price) estimates and meeting a number of analytical requirements for price and volume index numbers recommended by the 1993 SNA.

— Policymakers and the public in general have welcomed revisions to national accounts statistics, although a number of data puzzles remain. In particular, higher economic growth estimates have coincided with lower total consumption as a share of GDP in the majority of the countries that revised their national accounts statistics. Also, gross fixed capital formation to GDP ratios and their implied incremental capital output ratios (ICORs) have remained high by international standards. Our preliminary analysis suggests that the referred data puzzles reflect a likely underestimation of household final consumption

and an overestimation of gross fixed capital formation in construction activities, especially in countries with significantly outdated national accounts base years and/or limited funding for statistical offices to address the problem of measuring construction activities for own final use and in the informal sector. Estimation issues with the value of changes in inventories were also seen to be a remaining challenge for statistical agencies in the region.

— All in all, a tentative conclusion from the paper is that nominal GDP figures for Latin America and the Caribbean may be underestimated typically by about 8.8% due to pending updates in the national accounts' base year, including improvements in the coverage of services and informal activities, and efforts to fully implement the 1993 SNA methodology. Currently, there are only two countries in the whole region whose national accounts' base years are within the 1993 SNA recommended five-year timeframe for updating. Meanwhile, important source data shortfalls in the compilation of national accounts statistics persist. The estimation biases stemming from problems measuring household final consumption and gross fixed capital formation in construction activities are smaller than those resulting from the use of obsolete base years, although they could affect the composition of GDP from the expenditure side.

(Original: English)

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KEYWORDS

Households
Family income
Social welfare
Programmes of action
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Econometric models
Statistical data
Uruguay

Social benefits in Uruguay: why do some potential beneficiaries not apply?

Gabriel Burdín and Gioia de Melo

Cash transfer programmes have become very important in Latin America. Concerns about proper targeting have centred on excluding people who do not meet eligibility requirements. Less attention has been paid to the failure of programmes to reach the whole of their target population, partly because there are people who do not even apply. The present article analyses the determinants of non-take-up of social benefits. The case studied is the National Social Emergency Plan, an income transfer programme implemented in Uruguay between 2005 and 2007. It is calculated that over a fifth of eligible households have never enrolled in the programme. A probit model is used to estimate the determinants of the decision to apply. The evidence obtained is highly consistent with theoretical and empirical research into the subject.

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I
Introduction

Why might households that meet the eligibility requirements for particular social benefits not apply for them? This unresponsiveness on the part of potential beneficiaries is what social programme evaluation studies have called the "non-take-up" problem. The purpose of the present document is to offer some preliminary explanations, with reference to the National Social Emergency Plan (Plan de Atención Nacional a la Emergencia Social—PANES) implemented in Uruguay.

Hernanz, Malherbert and Pellizzari (2004) argue that there are at least three reasons for studying non-take-up of social benefits. First, a social programme that reaches only a part of its target population is bound to be less effective than originally intended. Second, better knowledge of the main factors influencing the decision to apply allows a more accurate estimate to be formed of the fiscal consequences of changing policies, and means they can be better designed. Third, if the decision not to apply for a benefit is partially involuntary (being due to poor information, administrative problems or stigmatizing procedures, for instance), there will be disparities in the treatment of individuals, even though the social protection system ought to be the same for everyone. In other words, some people will have difficulty exercising certain social rights.

Most of the studies available on non-take-up have been conducted in the countries of the Organisation for Economic Co-operation and Development (OECD), particularly the United Kingdom and the United States, which have a longer tradition of targeted social programmes.[1] However, the issue has become increasingly important in the countries of Latin America as numerous selective cash transfer programmes have been implemented there.[2] Beneficiaries are selected using mechanisms based on households' resources and socio-economic situation (proxy means tests) that inevitably lead to targeting errors (Cornia and Stewart, 1995). These can be of two types: the inclusion of people who are not part of the target population, and the non-inclusion of people who do meet programme eligibility conditions. As Coady, Grosh and Hoddinott (2004) point out, the emphasis has been on minimizing the former by improving the statistical formulas used to identify participants who do not meet the relevant requirements, but the scale of the latter has been underestimated, which in practice means that a segment of the most vulnerable population is being denied access to social benefits.

This being so, new evidence on the factors determining take-up decisions could be helpful in clarifying certain problematic aspects of the design of targeted social programmes. This is particularly important for Uruguay, as the issue has not been addressed in other studies. Nor has it been much considered in the social programme evaluations conducted in the region. Another reason for improving our understanding of this phenomenon is that the targeting instrument employed in PANES has been used (with some modifications) in other recently implemented programmes such as the new legal regime of family allowances, the *Objetivo Empleo* initiative and the elderly assistance law.

Lastly, we believe that an explanatory model of households' or individuals' decisions to apply to social programmes may be an important resource for ex ante policy evaluation studies based on microsimulations. The purpose of studies of this type, of which increasing use is being made in Uruguay and elsewhere in the region, is to analyse the scale and sign of the consequences of different policy alternatives for certain variables of interest (usually indigence, poverty and income distribution) prior to implementation. One limitation, however, is that they usually assume

[1] Most research into non-take-up has been done in the United Kingdom (Atkinson, 1989; Craig, 1991; Corden, 1995; Currie, 2004, among others) and the United States (Ashenfelter, 1983; Moffitt, 1983; Blank and Ruggles, 1996; Anderson and Meyer, 1997; Bollinger and David, 2001), although the issue has gained greater prominence in European countries over the past decade.

[2] Mention may be made of those applied in Mexico (*Progresa-Oportunidades*), Colombia (Families in Action), Honduras (Family Allowance Programme), Nicaragua (Social Protection Network), Bolivia (*Beca Futuro*), Ecuador (Human Development Bond), Chile (Unitary Family Subsidy) and Brazil (Programme for the Eradication of Child Labour (PETI), *Bolsa Escola*, *Bolsa Familia*). These programmes usually have a twofold objective: first, to support incomes in situations of extreme deprivation, and second, to promote the accumulation of human capital, particularly among households' younger members, by stipulating conditions relating to nutrition, medical check-ups and school attendance in return for payments. See ECLAC (2006).

programmes are perfectly targeted, which can mean the effects of policies being measured inappropriately. Knowledge of household decision-making may allow results to be calibrated more accurately.

The present study estimates a probit model for take-up of the National Social Emergency Plan, with a view to identifying the main factors behind this decision. In specifying the model, it seeks to capture the most important causes identified in theoretical and empirical studies: monetary factors, information costs and social and psychological costs. The data used come from the 2006 Extended National Household Survey (ENHA) and the 2007 Continuous Household Survey.

The document is organized as follows. Following this introduction, section II gives a more precise definition of the research problem to be addressed. Section III discusses theoretical studies on the determinants of the decision to apply to social programmes and reviews the empirical research background. Section IV specifies the model of analysis and section V summarizes the characteristics of PANES. Section VI details the information sources used, identifies the relative size of the group of households concerned and presents descriptive statistics. Section VII describes the results of the estimates and section VIII contains some concluding remarks.

II

Definition of the research problem

Van Oorschot (1996) identified three possible approaches to analysing the problem of non-take-up of social benefits. This typology can be used to establish the object of study of the present document with greater precision.

(a) ***Primary or secondary non-take-up.*** Primary non-take up means that eligible persons do not apply for the benefit concerned, while secondary non-take-up occurs when eligible individuals who do so apply are rejected by the programme administrators.

(b) ***Partial or total non-take-up.*** Partial non-take-up is where a person applies for a particular benefit but receives only part of it.[3] This may happen because the applicant supplies inaccurate information or because of an evaluation error by the programme management.

(c) ***Permanent or temporary non-take-up.*** It is possible that eligible persons may require a certain period of time to become aware of the existence of the programme, decide they are eligible, apply for the benefit and finally receive it, and this gives rise to a situation of temporary non-take-up.

The present study centres on the determinants of primary and total non-take-up of social programmes. It does not address the problem of secondary non-take-up associated with errors or discretionary behaviour by programme managers when using targeting mechanisms to select beneficiaries.

Partial non-take-up does not seem to be relevant in the case of panes, as this consists in a uniform cash transfer. Lastly, while we believe it is important to distinguish between permanent and temporary non-take-up, panel data showing the behaviour of eligible individuals over time would be needed to address the issue.

[3] In Europe there are programmes whose benefits vary by the difference between household income and the poverty line. It is thus possible that, because of an administrative oversight or targeting error, an applicant accepted for one of them may receive an amount of money that does not match the sum required to bring the household up to the poverty line.

III

Review of the theoretical and empirical literature

The factors determining non-take-up of social benefits are usually modelled as a ratio between the benefits and costs of applying, with an emphasis on the size of the direct and indirect costs of enrolling in programmes of this type. These costs are usually substantial for households, as the process involves travelling to public offices, submitting the documentation required, filling in forms and making an income declaration, among other things. Thus, it is assumed that households will decide to come forward only if the amount and duration of the benefit amply compensate them for the costs incurred, including non-monetary costs.

According to Fuchs (2007), the factors influencing take-up of social programmes can be classified into four major groups.

(a) ***Monetary factors.*** The larger the benefit in relation to the income of the household, the greater will be the incentive to apply. If it varies by the characteristics of the applicant, the expectation is that the incentive to apply will depend on the amount each household calculates it will receive. People's expectations about their future financial situation are an extremely important factor in the decision to enrol in social programmes. If people have little expectation of being able to escape from their situation of need by their own actions, the time period over which they expect to receive the benefit will be longer, justifying an application. However, there are financial costs involved in travelling, obtaining the necessary documents, etc., that people may assess when they are considering whether to apply to a programme.

(b) ***Information processing costs*** associated with social programmes and the complexity of application procedures. People may lack information to differing degrees, even to the extent of being unaware of the very existence of a particular benefit. The knowledge people have of the programme may affect how they rate their chances of receiving the benefits concerned, and their expectations of receiving it in relation to the cost of applying.

(c) ***Waiting costs*** associated with the duration of the application process and uncertainty about its outcome.

(d) ***Social and psychological costs.*** In Western countries, social norms hold that people ought to provide for themselves. Thus, applying for a social benefit may be seen as a departure from the rules of work and a sign of failure. Lindbeck, Nyberg and Weibull (1999) argue that the stigma involved in receiving a benefit could be defined as the punishment due for the breach of a social norm requiring people to support themselves by their own labour. As Elster (1989) points out, violations of social norms trigger strong negative emotions in both the person violating them and others.

In small communities where contacts are more personalized and individuals' actions thus easily observable, it is possible that fear of social sanctions may discourage people from applying to social programmes. Even in more impersonal contexts like large cities, however, the internalization of norms could generate a similar effect in individuals' own minds. In other words, people will refrain from applying for a benefit if they see this as a failure that affects their self-esteem (Moffitt, 1983; Atkinson, 1995; Sen, 1995). Again, individuals could decide not to apply for a benefit because of the loss of integrity that having to submit to an eligibility assessment would entail (Mood, 2005).

At the same time, social interactions and the effects of people's environment generally are particularly significant insofar as they affect information and stigma costs. Different studies have documented the importance of social interaction, and peer group effects in particular, in situations of poverty. If the constraints or sanctions associated with particular kinds of behaviour are reciprocal between individuals, the personal cost to each will depend on how widespread this behaviour is in the rest of the group (Durlauf, 2002). This being so, the likelihood of a benefit being taken up may be affected by the number of recipients within the community to which the individual belongs (geographical area, ethnic group). If take-up of the benefit is widespread, the stigma attached to applying for it is considerably reduced. It also means that information about the programme concerned will be spread through networks of personal contacts,

reducing the cost to individuals of obtaining and processing this.[4]

Since there is no way of directly observing how households or individuals assess benefits and the costs associated with them, empirical analyses use proxies. We shall now describe the main variables used in the empirical studies available and the determinants to which they relate.

(a) ***Education level of the household head.*** The expectation is that the more educated a household head is, the more easily he or she will be able to process information about the application procedure, and thus the lower the transaction costs will be. However, more highly educated people have greater future opportunities of increasing their income, and the shorter expected duration of a particular benefit will affect programme take-up negatively. Education could therefore work both ways. Some authors have found a negative relationship between education levels and take-up (Blank and Ruggles, 1996; Riphahn, 2001), while others have found no significant relationship (Kayser and Frick, 2001; Terracol, 2002).

(b) ***Home ownership.*** As with education, people who own the homes they live in can look forward to higher potential incomes on average. The expectation is therefore that they will require assistance for shorter periods of time and will be less likely to apply for social benefits, given the costs this entails.

(c) ***Household type.*** A number of studies have shown that single-parent households, which are usually headed by women, are more likely to apply to social programmes. This could be because they have fewer opportunities to find a sufficiently well-paid job, as the one adult has to look after the children alone and thus needs short, flexible working hours, failing which child-care services will be required, with the high opportunity cost these entail. It has also been shown that female household heads tend to apply for social benefits more often than men. Riphahn (2001) argues that the level of social stigma depends on the age and sex of the household head. In other words, it is seen as more stigmatizing for a mature man to be unable to provide an adequate income for his household than for a woman.

(d) ***Presence of minors in the household.*** In much the same way, the presence of children in the household usually makes people more likely to apply to social programmes, as this can mitigate feelings of guilt and stigma (Duclos, 1995).

(e) ***Ethnic origin.*** People belonging to ethnic minorities are expected to be more likely to apply for social benefits. For one thing, it is possible that their expectations of paid employment in the labour market may be low because of the discriminatory practices they face, reflected as they are in high specific unemployment rates and lower pay. For another, stigma costs could be lower because claimants represent a large proportion of the peer group.[5]

(f) ***Age.*** When a social programme is open to all age groups, young people are expected to have a higher participation rate then others. It is possible that older adults may face higher costs if the application process is relatively complex. Members of this group might also be more independent-minded and less willing to accept benefits that do not derive from their own labour.

(g) ***Geographical area.*** Another factor that could account for non-take-up of social programmes is the size of the community to which potential beneficiaries belong. There is likely to be more stigma in small communities where people receiving benefits find it harder to conceal this.

(h) ***Receipt of other benefits.*** If a particular household is already in receipt of some kind of transfer, it will be more likely to enrol in new programmes. Previous experience with similar application processes will reduce its information requirements and other associated costs. The stigma cost is also less significant for a household that is already in receipt of social benefits (Kayser and Frick, 2001).

(i) ***Percentage of beneficiaries in the local area.*** According to Mood (2005), most of the determinants mentioned can be attributed in part to certain specific group norms. If large numbers of people are in receipt of social benefits, and if the members of a group identify and interact more with one another than with other individuals, willingness to apply ought to be high. One of the proxies most often used is the percentage of households receiving the benefit in the neighbourhood where

[4] When the factors are considered all together, it must be realized that transaction and stigma costs are greatest when the benefit is being applied for, so that potential beneficiaries who expect to receive it for only a short period of time might judge that the costs of applying exceed the benefits associated with it.

[5] Kayser and Frick (2001) argued that immigrants were less likely to apply for social benefits because they faced a higher level of stigma, as well as language barriers and lack of familiarity with the social protection system. All these factors are heightened when the household does not have a legal residence permit.

they live. This has been established after thorough controls by Bertrand, Luttmer and Mullainathan (2000) in the United States, Terracol (2002) in France and Mood (2004) in Sweden.

Regarding the method of estimation used, studies generally employ probit models (Riphahn, 2001; Kayser and Frick, 2001; Fuchs, 2007) or logit models (Mood, 2005) to calculate the likelihood of eligible households applying for a particular social benefit.

Table 1 summarizes the main variables employed in the studies described, the determinants to which they relate and the sign of the estimate concerned.

IV

Model of analysis

Following Blundell, Fry and Walker (1988), we take a simplified model in which people evaluate the monetary and non-monetary costs and benefits of applying to the programme.

$$U\left[\, y + B(y,z^*),\, z \,\right] - C(y,z) > U(y,z) \qquad (1)$$

where y represents the household's original income and $B = B(y,z^*)$ the benefit to which the household is entitled on the basis of its income y and of z^*, which represents the vector of observable characteristics determining whether the benefit is granted.

Meanwhile, z represents the vector of characteristics determining the decision to apply and $C(.)$ the costs of applying, also a function of y and z.

If a linear specification is chosen for functions U and C, we get

$$U\left[y + B(y,z^*),\, z\right] = a_0 + a_1(y+B) + a'_2 z + e_T = U_T \qquad (2a)$$

$$U\left[y,z\right] = a_0 + a_1\, y + a'_2 z + e_0 = U_0 \qquad (2b)$$

$$-C\,(y,z) = b_0 + b_1\, y + b'_2 z + \mu \qquad (2c)$$

where e_T, e_0, and μ are the unobservable factors specific to each household.

Making the difference, and assuming linear specifications, between the right- and left-hand sides of equation (1) we get

$$U_T - C - U_0 = b_0 + a_1 B + b_1 y + b'_2 z + v \qquad (3)$$
$$\text{where } v = e_T + \mu - e_0$$

The probability of take-up is thus:

$$P(U_T - C - U_0 > 0) = P\left[v > -(b_0 + a_1 B + b_1 y + b'_2 z)\right] \qquad (4)$$

In the case of the "ith" household, consequently, this probability can be expressed as the cumulative distribution function such that

$$P_i = F(B_i,\, y_i,\, z_i) \qquad (5)$$

where the choice of $F(.)$ depends on the assumption about the distribution of v among households.

It should be stressed that C is independent of B, which implies that there are fixed costs to applying (effort, stigma) that vary by household depending on the characteristics of z and income y. $C(.)$ depends positively on y, as it is assumed that higher-income households will feel more stigmatized at applying for a means-tested programme. There will be a decreasing likelihood of take-up at y, given B, both because the relative benefit expected is less and because the stigma costs of applying are higher. For a given level of y, the higher B is then the greater will be the likelihood of the benefits amply compensating for the costs. Consequently, there will be an increasing likelihood of take-up at B given y and z.

The household characteristics reflected in the z vector that were considered in this study are as follows (see appendix):

- Department/local area
- Wealth
- Roofing materials of the home
- Ratio between the benefit amount and total household income
- Receipt of other benefits from the Social Security Bank (BPS)[6]
- Geographical zone
- Household head over 65

[6] Agency responsible for managing all social benefits (contributory and non-contributory) in Uruguay.

TABLE 1

Variables used in different empirical studies on social programme take-up

Variables used	Associated determinants	Sign of the estimate	Studies
Amount of the benefit Poverty gap (in some European countries this is the same as the benefit)	Cash benefits	(+)	Fuchs (2007); Riphahn (2001); Blank and Ruggles (1996); Blundell, Fry and Walker (1988); Anderson and Meyer (1997)
Household income	Cash benefits	(-)	Kayser and Frick (2001)
Extraordinary income	Access to alternative financial support	(-)	Mood (2005)
Perception of future	Future financial expectations (duration of the benefit)	(+)	Kayser and Frick (2001)
Education level	Future financial expectations (duration of the benefit), effects of the milieu and group norms: stigma and information costs	(-)	Blank and Ruggles (1996); Riphahn (2001); Mood (2005)
		Not significant	Kayser and Frick (2001); Terracol, (2002)
Urban areas	Effects of the milieu and group norms: stigma and information costs	(+)	Riphahn (2001), Kayser and Frick (2001); Mood (2004); Fuchs (2007)
Single-parent households	Effects of the milieu and group norms: stigma and information costs	(+)	Blank and Ruggles (1996); Riphahn (2001); Mood (2004); Fuchs (2007)
		Not significant	Kayser and Frick (2001)
Number of minors in household	Future financial expectations (duration of the benefit), effects of the milieu and group norms: stigma and information costs	(+)	Kayser and Frick (2001); Blank and Ruggles (1996); Terracol (2002); Riphahn (2001)
Race, ethnic origin	Effects of the milieu and group norms: stigma and information costs, future financial expectations (duration of the benefit)	(+)	Blank and Ruggles (1996); Mood (2004); Fuchs (2007)
Foreigners	Language barriers, stigmas and fear of losing residence permit	(-)	Kayser and Frick (2001); Mood (2005)
Age	Effects of the milieu and group norms: stigma and information costs	(-)	Blank and Ruggles (1996); Riphahn (2001); Fuchs (2007)
		(+)	Kayser and Frick (2001)a
Percentage of beneficiaries in local area	Effects of the milieu and group norms: stigma and information costs	(+)	Bertrand, Luttmer and Mullainathan (2000), Terracol (2002), Mood (2005)
Belief that behaviour does not affect people's destiny	Psychological costs	(+)	Kayser and Frick (2001)
Close ties to local area	Effects of the milieu and group norms: stigma and information costs	(-)	Kayser and Frick (2001)
Religion	Effects of the milieu and group norms: stigma and information costs	(-)	Kayser and Frick (2001)
Home ownership	Future financial expectations (duration of the benefit)	(-)	Riphahn (2001); Mood (2004); Fuchs (2007)

Source: prepared by the authors.

[a] Kayser and Frick (2001) established that social programme take-up increased in direct proportion as the age of the household head approached 49, and then decreased.

- Race
- Single-parent household
- Number of minors in household
- Education level of household
- Home ownership
- Unemployed or inactive household head

V

The National Social Emergency Plan: institutional aspects, eligibility criteria and application procedure

Following Amarante, Burdín and Vigorito (2008), this section summarizes the main characteristics of PANES, its institutional and administrative framework and most particularly its eligibility requirements and the application procedure required of households.

1. Overview

The National Social Emergency Plan (PANES) in Uruguay was created to put into effect a set of social policies aimed at very low-income households. The target population of the programme was the first quintile of people below the poverty line (8%) and included all those living in indigence (4.2%). The plan was created by law 17869, enacted in May 2005.

The official PANES documentation established two basic objectives for the plan:[7] first, to provide contingent assistance in the form of a cash transfer (known as Citizen Income) and subsidies for food consumption; and second, to produce longer-term effects through the provision of training, education and literacy programmes and social and occupational participation activities, although these were more restricted in scope.

2. Eligibility criteria

To apply to the programme, households had to complete a standard form provided by the Ministry of Social Development (MIDES), which included an income declaration and a list of household members and their respective identity card numbers.

Officials from MIDES would then visit the household to collect detailed information on its characteristics. When the programme began in May 2005, some particularly deprived areas were chosen to carry out a census at the same time as registration and inspection forms were completed. This procedure encompassed 12,000 households and was dubbed *desembarcos* ("landings"). The data were entered at MIDES and transferred to the Social Security Bank, where the information in the forms was collated with that in the social security records. Article 6 of law 17869 provides that: "Benefits will be provided to households whose income from every source other than family allowances and old-age and disability benefits in the month of March 2005 does not exceed $ 1,300 (one thousand three hundred Uruguayan pesos) per person, and which present critical needs in their living conditions."

Out of the pool of households whose monthly income, whether declared or as ascertained from Social Security Bank records, did not exceed a maximum of 1,300 pesos per capita, beneficiaries were chosen on the basis of a score arrived at by a linear combination of the set of household characteristics measured by the critical needs index. Those scoring above a certain cut-off point (varying by region) were admitted into the programme.[8]

Some 131,000 households applied for PANES and about 80,000 of these were accepted.[9]

[7] For further details, see Ministry of Social Development [online] www.mides.gub.uy.

[8] The methodology used to calculate the critical needs index (*índice de carencias críticas*) is described in Amarante, Arim and Vigorito (2006).

[9] The number of households approved was about twice as great as originally planned.

VI

Information sources and descriptive statistics

The information sources used in this study were the 2006 Extended National Household Survey (ENHA) and the 2007 Continuous Household Survey. Both are representative of the national total and contain socioeconomic information on households and individuals.

Two criteria were used to determine household eligibility:

(i) Households in the first quintile below the poverty line, as the target population was originally defined. This criterion is applicable to urban areas only.[10]

(ii) Households whose critical needs score is above the cut-off point and whose per capita income, following the criteria laid down by the relevant law, is less than 1,300 pesos. In this case, the estimate was carried out for the whole country.

Table A-1 presents the descriptive statistics of the variables used. As table 2 shows, the proportion of eligible households that did not apply to the programme was somewhere between 17% and 22%, depending on the criterion used, or about 9,500 households. The percentage estimated using the second criterion was higher because it included rural areas, where take-up of programmes of this type tends to be less substantial.

These levels of non-take-up look relatively low when compared with information from the OECD countries.[11] However, the estimates available for other countries are usually for the percentage of eligible households or individuals not receiving the benefits rather than for the percentage not applying, as with the present study. This means that in determining the non-take-up level they include errors made in the administration process and in the application of the targeting instrument, i.e., the number of eligible households that apply for the benefit and are wrongly rejected.

As Amarante and others (2007) point out, using the Extended National Household Survey to identify eligible households is not without its methodological drawbacks. In the first place, there is no information available on households prior to programme implementation, meaning that income declared in the survey may differ from the amount they were receiving at the time of the PANES application. The same considerations hold good for the critical needs score, as household living conditions could have changed between the application date and the survey date. In the second place, it is also possible that income may have been underdeclared to varying degrees, both in the survey and at the time the benefit was applied for, since households were aware of the PANES eligibility conditions. Lastly, it is assumed that households receiving PANES benefits would not have changed their working behaviour had they not been beneficiaries, so that their income would have been equal to what they received without the Citizen Income transfer.[12]

Despite these difficulties, we consider that the information available in the 2006 ENHA does allow a reasonable idea to be formed of the eligibility conditions for the programme. The survey also distinguishes between enrolled households and households that actually receive the benefit, meaning that the determinants of the decision to apply can be analysed directly. This offers an advantage over other studies of this type where, as already mentioned, it is modelled indirectly and the only distinction is between those who do and do not receive the benefit. In accordance with the typology defined in section II, the present study deals with the determinants of primary non-take-up, having been able to isolate the problems of secondary non-take-up.

[10] This is because poverty is calculated only in urban areas, since rental value is not included in household income in rural areas and incomes are thus not strictly comparable between the two.

[11] See Hernanz, Malherbert and Pellizzari (2004) for a systematic analysis of these estimates.

[12] There is no conclusive evidence about the possible effects of PANES on working behaviour. Amarante, Burdín and Vigorito (2008) evaluated the repercussions of the programme on the labour supply (activity and hours worked) using a discontinuous design methodology prepared on the basis of a survey of beneficiary households (treatment group) and households not receiving benefits (control group) in a small area of the algorithm cut-off point. The authors found no evidence that applying to PANES affected working behaviour. Borraz and González (2008) did not find any effects on working activity either, although they did find some reduction in hours worked. These authors did not use a specific survey design to evaluate the programme, but applied propensity score matching with the household survey.

TABLE 2

Distribution of eligible households by eligibility criteria, 2006
(Percentages)

	Enrolled	Unenrolled	Total
First quintile below the poverty line	83.1	16.9	100.0
Critical needs score and per capita income below 1,300 pesos	78.4	21.6	100.0

Source: prepared by the authors on the basis of the 2006 Extended National Household Survey.

Given how important it is to be able to estimate the determinants of PANES non-take-up for the whole country, i.e., including rural areas, the eligibility criterion adopted to estimate take-up was the one that took account of both the critical needs index and the upper income limit.

Table 3 shows the proportion of eligible households that did not enrol in PANES. Some 22% of those which met the eligibility requirements did not apply for these benefits; the percentage was significantly lower in Montevideo.

Households with a lower non-take-up rate included those already in receipt of a benefit from the Social Security Bank (allowances, pensions), those headed by a black person,[13] those in large cities and those containing a larger number of minors. Rural areas presented extremely high non-take-up rates, amounting to 46% of eligible households. Likewise, a larger proportion of households headed by elderly people did not enrol in the programme, except in Montevideo.

In the single-parent households category, PANES non-enrolment rates were low and in no case exceeded 10% of eligible households. They were higher in home-owning and more educated households. Households with an unemployed or inactive head had slightly higher non-application rates, except in Montevideo.

VII

Preliminary findings

Table 4 presents the results of the probit model based on the 2006 ENHA that was used to estimate the likelihood of an eligible household applying for Citizen Income.[14] The benefit was provided to households, so the estimates were also carried out at this level.

Following Fuchs (2007), two estimates were carried out: one that included the activity status of the household head, and one that did not, in view of the possibility of selection biases. Both models were estimated for the whole country, Montevideo and the interior.

The whole country estimates included dummy variables by department to control for possible idiosyncratic effects on take-up associated with place of residence. Local area variables were used in Montevideo for the same purpose. Controls were also included for wealth, measured by the availability of durable goods (*wealth*), and for the building materials used in the home (*makeshiftroof*).[15]

Generally speaking, the variables affect PANES take-up significantly and with the expected sign, and are consistent with the results obtained in other studies.

The ratio between the amount of the benefit and the household's total income (*benefit*) positively affects the likelihood of enrolment. Thus, households where the benefit on offer from the programme was large in relative terms presented more applications than the rest, in line with the findings of other research (Anderson and Meyer, 1997; Blundell, Fry and Walker, 1988).

[13] Households whose heads perceive themselves as being of African descent.

[14] Table A-2 shows the model estimates for 2007. By and large, the coefficients estimated did not present any significant variation over 2006.

[15] The number of durable goods in a household was captured by constructing a wealth index in which the two variables were added together, using weights obtained by a factor analysis. See the appendix for further methodological details.

TABLE 3

Proportion of households not enrolled in the National Social Emergency Plan in Uruguay, by characteristics, 2006
(Percentages of eligible households)

	National total	Montevideo	Rest of country
Total	*21.64*	*12.74*	*24.13*
Receiving other benefits from the Social Security Bank			
No	28.58	18.37	32.27
Yes	19.91	10.95	22.25
Head of household is black			
No	23.16	14.13	25.49
Yes	15.51	8.48	18.11
Locality			
5,000 inhabitants or over	12.95	–	13.05
Less than 5,000 inhabitants	33.11	–	33.11
Rural	46.35	–	46.35
Number of minors			
Households without minors	54.23	33.33	54.33
One minor	23.73	12.07	25.27
Two minors	20.53	16.14	21.67
Three minors	19.24	12.69	21.22
Four minors or more	17.26	11.95	19.49
Household head over 65			
No	19.26	12.83	21.24
Yes	47.15	6.61	48.55
Single-parent household			
No	24.65	14.33	27.38
Yes	9.36	7.48	10.00
Owner-occupied household			
No	17.58	12.52	19.49
Yes	32.11	14.88	33.52
Household head unemployed/inactive			
No	21.00	14.15	23.09
Yes	22.95	9.20	26.12
Education			
Less than nine years	20.66	11.13	23.38
Nine years or more	28.92	26.52	29.50

Source: prepared by the authors on the basis of the 2006 Extended National Household Survey.
N.B.: Does not include the wealth and roofing material variables, as they lack any particular theoretical interpretation and are used merely as control variables in the model. See table A-1 for further details.

TABLE 4

Probit model for take-up of the National Social Emergency Plan in Uruguay, 2006
(Marginal effects)

Explanatory variable	Whole country		Montevideo		Interior	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Benefit	0.119 (0.007)***	0.12 (0.007)***	0.126 (0.017)***	0.13 (0.017)***	0.124 (0.008)***	0.124 (0.008)***
Benefbps	0.111 (0.006)***	0.112 (0.006)***	0.115 (0.010)***	0.117 (0.011)***	0.1 (0.007)***	0.101 (0.007)***
Below5000	-0.094 (0.006)***	-0.093 (0.006)***			-0.09 (0.006)***	-0.09 (0.006)***
Rural	-0.264 (0.008)***	-0.264 (0.008)***			-0.262 (0.008)***	-0.262 (0.008)***
Under18	0.04 (0.001)***	0.04 (0.001)***	0.023 (0.002)***	0.022 (0.002)***	0.048 (0.002)***	0.048 (0.002)***
Over65	-0.126 (0.010)***	-0.119 (0.009)***	0.046 (0.020)**	0.054 (0.018)***	-0.119 (0.010)***	-0.117 (0.010)***
Edclimate	-0.004 (0.001)***	-0.004 (0.001)***	-0.008 (0.002)***	-0.008 (0.002)***	-0.002 (0.001)*	-0.002 (0.001)**
Black	0.014 (0.005)***	0.014 (0.005)***	0.047 (0.007)***	0.048 (0.007)***	-0.004 -0.006	-0.004 -0.006
Singleparent	0.086 (0.005)***	0.088 (0.004)***	0.031 (0.008)***	0.037 (0.008)***	0.106 (0.005)***	0.107 (0.005)***
Unemp/inact	0.012 (0.005)**		0.03 (0.007)***		0.004 -0.006	
Owner	-0.058 (0.005)***	-0.058 (0.005)***	-0.016 -0.011	-0.012 -0.011	-0.063 (0.005)***	-0.063 (0.005)***
Wealth	-0.103 (0.003)***	-0.103 (0.003)***	-0.077 (0.006)***	-0.077 (0.006)***	-0.115 (0.003)***	-0.115 (0.003)***
Makeshiftroof	0.066 (0.004)***	0.066 (0.004)***	0.048 (0.007)***	0.046 (0.007)***	0.073 (0.005)***	0.073 (0.005)***
No. of observations	41 974	41 974	8 293	8 293	32 754	32 754
Pseudo R^2	0.213	0.2129	0.1562	0.154	0.2294	0.2294

Source: prepared by the authors on the basis of the 2006 Extended National Household Survey.
N.B.: Robust standard errors in parentheses; * significant at 10%, ** significant at 5%, *** significant at 1%.
Explanatory variables: Benefit = ratio between benefit amount and total household income; Benefbps = other Social Security Bank benefits; Below5000 = small urban localities; Rural = rural areas; Under18 = number of under-18s; Over65 = household head over 65; Edclimate = household education level; Black = household with black head; Singleparent = single-parent household; Unemp/inact = unemployed or inactive household head; Owner = owner-occupied household; Wealth = availability of durable goods; Makeshiftroof = building materials used in the home.

Again, households already in receipt of some type of benefit from the Social Security Bank (*benefbps*) were more likely to apply, supporting the idea that previous experience with similar application procedures reduced the costs of processing PANES information.

Households living in small urban areas[16] (*below5000*), and most particularly those living in rural areas (*rural*), were less likely to enrol than those in large cities. In small towns, the impossibility of going unobserved may heighten the stigma usually associated with applications to means-tested programmes. In rural localities, information access difficulties and higher travel costs make it more expensive to apply for benefits. The effects encountered were similar to the findings of the studies reviewed.

Meanwhile, the age of the household head was observed to have a negative effect on take-up, particularly when it was over 65 (*over65*). This could indicate that social and psychological costs are higher in the more elderly population, and that the difficulty of processing the necessary information is greater. This finding was reversed in Montevideo, where the coefficient was positive. This may have been due to mitigation of the stigma effect in this age group in a situation of more impersonal social interactions like that prevailing in the country's capital.

Households headed by a black person (*black*) were more likely to enrol in PANES. This effect was observed in the country as a whole and Montevideo, being less noticeable in the estimate for the country's interior.[17] The relatively high proportion of applicants from this ethnic group appears to be a result of information spreading through networks of personal contacts, reducing the stigma effect and encouraging take-up of the programme.

Single-parent households (*singleparent*) and households containing under-18s (*under18*) were more likely to apply for the benefit. In the first case, the fact of there being just one potential breadwinner probably reduces employment expectations and encourages programme take-up. In the second, the larger number of minors in the household probably increases the chances of success in the application process. Stigmatizing mechanisms, meanwhile, do not seem to affect households of this type much by comparison with those where the benefit is paid to adults capable of generating income for themselves. The results obtained for different programmes and countries by Blank and Ruggles (1996), Riphahn (2001) and Kayser and Frick (2001) were similar.[18]

On the other hand, take-up of the benefit is inversely related to the level of education in the household (*edclimate*), although the scale of the effect is not significant. A similar result was obtained by Riphahn (2001) in Germany. It is possible that the sign may be due to the fact that households with more educational capital have greater expectations of improving their financial situation in future. The negative effect on take-up produced by home ownership (*owner*) might be interpreted in the same way.

Again, for a household to have an unemployed or inactive head (*unemp/inact*) increases the likelihood of enrolment. The findings of Fuchs (2007) suggest that the lack of significant variation in the coefficients when the variable identifying the employment and activity status of the household head is excluded or included indicates that the variables selected are not highly endogenous to this characteristic.

[16] Urban centres with less than 5,000 inhabitants.

[17] This could be because there are more people of African descent in Montevideo.

[18] In this last case, the authors did not find significant effects arising from single-parent household status.

VIII
Concluding remarks

This document has addressed the issue of non-take-up of PANES by households meeting the eligibility requirements of the programme.

On the basis of the 2006 Extended National Household Survey, it was estimated that some 22% of potentially eligible households had not applied to enter the programme. Striking though this figure may be, it is not particularly high when compared to data from the OECD countries. In any event, the proportion was considerably higher in urban communities of less than 5,000 inhabitants (33%) and most particularly in rural areas (46%).

According to the probit model estimates, take-up was positively affected by the size of the transfer in relation to household income. Households containing more under-18s, receiving other benefits from the Social Security Bank or headed by a black person or single parent were also more likely to apply to PANES. Conversely, rural households were significantly less likely to enrol, as were households headed by over-65s. Thus, the evidence largely appears to confirm the determinants discussed in the theoretical literature (monetary factors, information costs, social and psychological costs). The findings are also consistent with those of similar studies in OECD countries.

Since this was a preliminary survey, we should draw attention to some limitations of the present article and indicate some future lines of inquiry. First, lack of information meant that it was not possible to analyse the effect of the "landings" on take-up. This information should be examined as and when it becomes available, as it was a design element clearly oriented towards reducing non-take-up rates.

Second, the solidity of the findings needs to be analysed using other estimation methods that take more systematic account of possible selection biases. This is particularly important when it comes to analysing the effect of the economic activity status of the household head. It is possible that some people may be changing their working behaviour to meet the income eligibility requirements laid down by means-tested social programmes. This could produce a bias in the estimates and result in overestimation of the effects of unemployment as a determinant of social programme participation. It should be pointed out, however, that other studies which have introduced corrections of this type have not found any significant differences (Fuchs, 2007).

Third, it would be particularly helpful if the effects of social interactions on the decision to apply to PANES were incorporated systematically into the model. The sign encountered for many of the variables used could be reflecting some consequences of this kind, one example being the larger number of applications presented by black household heads. Nonetheless, this preliminary approach did not allow us to ascertain with any accuracy how social interactions might be affecting household take-up. In particular, it was impossible to measure the specific weight of the information effect and the stigma effect. The distinction is not unimportant from the point of view of policy implications (Cohen-Cole and Zanella, 2008). Considering social interactions in a decision-making model like the one used in the present study gives rise to complexities that need to be addressed in future stages of this research (Manski, 1993; Brock and Durlauf, 2001).

Lastly, it would be desirable for take-up decisions to be internalized to a greater degree in prior evaluations of social programmes in Uruguay. Studies of this type generally assume that policies are perfectly targeted, and this can result in a faulty appreciation of their distributive and fiscal effects. This seems to be very much the case, for example, with the application of the new family allowance system in Uruguay.

In any event, the foregoing analysis raises some interesting social policy implications. As already mentioned, concern about proper targeting of social programmes has focused too much on denying benefits to people who exceed predetermined income and wealth limits. Less attention has been paid, however, to the fact that many programmes do not reach the whole of their target population, partly because there is a segment of potential beneficiaries who never even apply for the benefits. In this respect they could be at a disadvantage to more universal schemes, and this should be set against the higher fiscal costs associated with the latter.

Meanwhile, as Van Oorschot (1991) points out, it is crucial to analyse the structure, design and administration of social programmes, including the

methods used to publicize them and make known the requirements and procedures for obtaining their benefits. Better information systems, simplified application procedures and careful choice of the mechanisms determining programme "launch" are examples of concrete measures that could be applied (Fuchs, 2007). The characteristics of eligible households that do not apply for benefits offer pointers to such measures.

APPENDIX

Definition of the variables used in the model[19]

Benefit	Ratio between the benefit amount and total household income.
Benefbps	Binary variable indicating whether the household receives other benefits from the Social Security Bank.
Below5000	Binary variable indicating whether the household is in an urban area of less than 5,000 inhabitants (omitted).
Urban	Binary variable indicating whether the household is in an urban area of 5,000 inhabitants or more.
Rural	Binary variable indicating whether the household is in a rural area.
Over65	Binary variable indicating whether the household head is over 65.
Black	Binary variable indicating whether the household head considers himself or herself to be of African descent.
Singleparent	Binary variable indicating whether the household comprises a single head plus children.
Under18	Number of under-18s in the household.
Edclimate	Average years of formal education completed by the adults in the household.[20]
Owner	Binary variable indicating whether the household owns its own home.
Unemp/inact	Binary variable indicating whether the household head is unemployed or inactive.
Wealth	Variable constructed using a factor analysis that provides a proxy for household wealth.
Makeshiftroof	Binary variable indicating whether the dwelling roof is made of mainly lightweight materials, mud and rushes or waste products, or there is no ceiling.

Methodology of the composite wealth index

To obtain a proxy for the wealth of households in the whole country, we constructed a wealth index based on the availability of certain durable goods. The coefficients of this index were obtained using the principal components method.

Weights	
Water heater	0.6665
Cable television connection	0.5392
Fixed-line telephone	0.6367
Video or dvd player	0.6504
Washing machine	0.7232
Microwave	0.7329
Microcomputer	0.6489
Automobile	0.5421

Source: prepared by the authors on the basis of the 2006 Extended National Household Survey.

TABLE A-1

Descriptive statistics, 2006

	Total population		Eligible population	
	Mean	Deviation	Mean	Deviation
Benefit	0.180	0.246	0.458	0.496
Benefbps	0.602	0.490	0.800	0.400
Black	0.075	0.264	0.198	0.399
Montevideo	0.869	0.337	0.656	0.475
Urban	0.065	0.247	0.211	0.408
Rural	0.066	0.247	0.133	0.340
Under18	0.838	1.228	2.932	1.911
Over65	0.276	0.447	0.085	0.279
Edclimate	8.710	3.782	6.029	2.060
Singleparent	0.116	0.321	0.197	0.398
Unemp/inact	0.354	0.478	0.331	0.470
Owner	0.514	0.500	0.279	0.449
Wealth	2.432	1.574	0.476	0.712
Makeshiftroof	0.111	0.314	0.478	0.500

Source: prepared by the authors on the basis of the 2006 Extended National Household Survey.

[19] Use was made of binary variables for the 19 departments in the case of the whole country estimates and for local districts in the case of Montevideo.

[20] In households with no members over 18, the years of education of the household head are taken.

TABLE A-2

Probit model of National Social Emergency Plan take-up, 2007
(Marginal effects)

Explanatory variable	Country total		Montevideo		Interior	
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Benefit	0.019	0.021	0.165	0.168	0.013	0.015
	(0.005)***	(0.006)***	(0.017)***	(0.017)***	(0.004)***	(0.005)***
Benefbps	0.1	0.102	0.13	0.128	0.085	0.09
	(0.006)***	(0.006)***	(0.012)***	(0.012)***	(0.007)***	(0.008)***
Urban	-0.038	-0.042				
	(0.011)***	(0.011)***				
Rural	-0.177	-0.186			-0.106	-0.106
	(0.026)***	(0.027)***			(0.009)***	(0.009)***
Under18	0.023	0.024	0.027	0.027	0.022	0.024
	(0.001)***	(0.001)***	(0.002)***	(0.002)***	(0.001)***	(0.001)***
Over65	-0.152	-0.121	-0.082	-0.065	-0.176	-0.142
	(0.015)***	(0.014)***	(0.029)***	(0.027)**	(0.019)***	(0.017)***
Edclimate	-0.01	-0.011	-0.001	-0.001	-0.011	-0.012
	(0.001)***	(0.001)***	-0.002	-0.002	(0.001)***	(0.001)***
Black	0.013	0.013	0.013	0.013	0.022	0.023
	(0.004)***	(0.004)***	-0.008	(0.008)*	(0.004)***	(0.004)***
Singleparent	0.042	0.049	0.098	0.1	0.025	0.033
	(0.003)***	(0.003)***	(0.007)***	(0.006)***	(0.004)***	(0.004)***
Unemp/inact	0.038		0.018		0.042	
	(0.003)***		(0.008)**		(0.004)***	
Owner	-0.01	-0.007	0.028	0.032	-0.017	-0.013
	(0.003)***	(0.003)*	(0.008)***	(0.008)***	(0.004)***	(0.004)***
Wealth	-0.037	-0.039	-0.004	-0.003	-0.04	-0.044
	(0.002)***	(0.002)***	-0.005	-0.005	(0.003)***	(0.003)***
Makeshiftroof	0.012	0.011	0.055	0.054	0	-0.001
	(0.003)***	(0.003)***	(0.007)***	(0.007)***	-0.004	-0.004

Source: prepared by the authors on the basis of the 2007 Continuous Household Survey.
N.B.: Robust standard errors in parentheses; * significant at 10%, ** significant at 5%, *** significant at 1%.
Explanatory variables: Benefit = ratio between benefit amount and total household income; Benefbps = other Social Security Bank benefits; Urban = urban areas; Rural = rural areas; Under18 = number of under-18s; Over65 = household head over 65; Edclimate = household education level; Black = household with black head; Singleparent = single-parent household; Unemp/inact = unemployed or inactive household head; Owner = owner-occupied household; Wealth = availability of durable goods; Makeshiftroof = building materials used in the home.

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KEYWORDS

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Socio-economic and geographic profiling of crime in Chile

Mauro Gutiérrez, Javier Núñez and Jorge Rivera

Many empirical studies of crime assume that victims and perpetrators live in a single geographical unit, the implication being that the socio-economic characteristics of victims' places of residence can be treated as determinants of crime. This study offers an alternative approach which consists in measuring crime by the proportion of alleged offenders in the whole population and treating the characteristics of their home communes as socio-economic causes of criminal behaviour. The conclusion is that those charged with crimes present a high degree of geographic mobility. In the case of economically motivated crimes, the evidence partly supports Becker's propositions. Lastly, we show that the number of people charged with crimes tends to be greater in communes that have low incomes, a larger police presence, a predominance of urban areas with higher levels of education and a geographical location in the north of the country, which to some degree bears out the findings of other studies on Chile.

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I
Introduction

Crime has increased in Chile over the past decade, becoming one of the foremost concerns for the public. Robbery and theft, for example, have increased by 12% and 13% a year, respectively, while homicides and drug offences have risen by 2% and 33%.[1] This upward trend in crime has naturally aroused concern among citizens, who see it as one of the most important problems facing Chilean society today.[2] Notwithstanding this, research into and knowledge of the determinants of crime in the country are still in short supply.

Ever since the pioneering work of Ehrlich (1973), empirical and econometric studies of crime have allowed considerable progress to be made in understanding some of its fundamental causes.[3] In most of these publications, crime is measured by the number of reported offences, and the socio-economic characteristics of the geographical areas concerned are treated as variables determining it, the tacit assumption being that the perpetrators come from the same place as their victims. Although this approach seems reasonable when large geographical areas are being considered, its explanatory power diminishes when these are heterogeneous or the perpetrator is not from the place where the crime was reported.[4]

This paper will attempt to deal with the limitations referred to by considering the geographical origin of alleged offenders instead of the place where the crime is reported by the victim. As far as we know, this is the first exercise of its kind in Chile and Latin America. The conceptual justification for this approach is that if the propensity to commit crimes depends on the physical, social and economic environment of individuals, an analysis based on the alleged perpetrators' places of origin and the relevant characteristics could shed new light on the determinants of crime in the country.

For this purpose, we used information from the criminal charges database of the Chilean Public Defender's Office (DPP) for 2005 and 2006. The geographical unit of analysis was the commune and the figure taken was the number of people charged with crimes for every 100,000 inhabitants, divided by the types of crime recorded.[5]

Although people charged with crimes are not necessarily their perpetrators, the analysis was based on the idea that this was an imperfect but close measure given that a large and fairly constant proportion of them are found guilty of the crimes for which they are tried.

One of the findings of the study is that, for most crimes, there are communes which are not home to any suspects at all. This made it necessary to develop a procedure that could deal separately with the issue of the number of suspects from each commune and with the situation where there were none at all, and this was done using a Heckit model calculated by maximum likelihood. Estimates were made for different types of crime, the explanatory variables used being

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[1] See *Anuario de estadísticas criminales 2008*, published by the Paz Ciudadana Foundation. The annual growth rates are for reported crime.

[2] According to the 2005 National Citizen Security Survey, 29% said that crime and drug trafficking were the greatest problems currently facing the country. Londoño, Gaviria and Guerrero (2000) put the cost of violent crime in Latin America at between 5% and 13% of GDP.

[3] Other early and influential econometric contributions were those of Wolpin (1980) and Dryden Witte (1980).

[4] This type of approach could imply a proportional relationship between income level and criminality. See Rivera, Núñez and Villavicencio (2004) for a more detailed discussion.

[5] The DPP database contains data on practically all criminal proceedings conducted in the country in recent years. The information on each individual charged includes, among other things, age, sex, declared income, crime charged with, duration of the proceedings and penalty handed down by the judge. In particular, it records the individual's domicile and commune of origin and the place where the crime was alleged to have been committed. Chile is divided for administrative purposes into 15 regions, 51 provinces and 342 communes. Communes contain an average of about 50,000 inhabitants, with a high degree of geographical dispersion. All the socio-economic data on communes used in this study are from the National Socio-economic Survey (CASEN), which has been conducted nationwide every two years since the late 1980s. These surveys are used to gather certain significant data about the population in each commune, such as age structure, income level and household characteristics and composition. The present study used the findings of CASEN 2006. For further details see [online] www.mideplan.cl.

legal or illegal income, the likelihood of punishment and the characteristics of the home communes of those charged. This is the so-called selection model described further on.

To complement this, a crime participation model was developed and estimated in this study to establish the factors determining the likelihood of a person being charged with a crime, considering the variables normally employed in studies of the subject and the communes suspects come from. The latter consideration is one of the innovations that set this study apart from earlier work. The conclusions thus arrived at agree with the findings of other research carried out in Chile using regional data on reported crime (Rivera, Núñez and Villavicencio, 2004).

The paper is structured as follows. After this introduction, section II presents some stylized facts on the behaviour of reported crime by offence type that arise when the geographical origin of suspects is taken as the unit of analysis. Section III describes the theoretical and econometric model applied in this study and the data used in the estimates. Lastly, sections IV and V present the findings and conclusions of the study, respectively. The annex contains tables setting out the econometric results discussed in the body of the text, together with a more detailed discussion of the relationship between crime and its attribution that supports our decision to evaluate crime at the communal level with reference to the numbers charged with but not necessarily guilty of offences.

II
Stylized facts

This section offers and discusses a number of stylized facts concerning the communes of origin of those charged with crimes in Chile, touching on some issues that will be dealt with in the sections that follow. Table 1 shows the number of communes where residents were charged with the offences named and the percentage they represent out of the total of 335 communes with information available for 2006. The data reveal that there are crimes for which the "commune non-participation" rate is as high as 31% (homicide), while others (larceny and assault) are more widespread geographically.

This information is new, since although earlier studies concluded that crime patterns differed substantially by geographical area,[6] in Chile at least the existence and proportion of communes where residents were charged with virtually no crimes in certain categories had not come to light. This raises the question of what factors may account for the presence or otherwise in a particular community of people who are charged with and perhaps guilty of crimes, a subject that will be addressed later on using the so-called participation equation.

[6] See, for example, Fundación Paz Ciudadana (2008), Benavente and Melo (2006), Defensoría Penal Pública (2007), Núñez and others (2003) and Rivera, Núñez and Villavicencio (2004).

TABLE 1

Communes where residents have and have not been charged with crimes, by type of offence

(Number of communes and percentages of the total)

	Robbery		Non-violent robbery		Larceny		Assault		Homicide		Sex offences		Drug offences	
No	67	20.0	32	10.0	18	5.0	10	3.0	104	31.0	44	13.0	74	22.0
Yes	268	80.0	303	90.0	317	95.0	325	97.0	231	69.0	291	87.0	261	78.0

Source: criminal charges database 2006, Public Defender's Office (DPP).

Owing no doubt to a lack of detailed information, studies on the subject tend to infer that criminals live in the geographical area examined. The charge data call this assumption into question, however, as they reveal that the numbers depend greatly on the size of the area considered. As table 2 shows, only about half of all charges brought in a given commune are against residents of that commune. Nonetheless, large percentages of those charged are from the same province or region, implying that the mobility of possible perpetrators is constrained by geographical distance.

As regards the age composition of alleged offenders, table 3 shows that a large proportion are minors, particularly in the case of property crimes (robbery, non-violent robbery and larceny).

The data also reveal an apparent inverse correlation between age and the likelihood of being charged. As figures 1 and 2 show, the indicator of net participation by age (defined as the percentage of people aged *x* who are charged minus the percentage of the population of that age) is higher for young people than for other age segments of the population.[7]

[7] Various authors have found evidence that young people are more likely to take part in criminal activities. The reasons for this behaviour range from the psychological aspects of adolescence to a gloomy view of future legal earning potential because of the low wages earned by this age group, with its lack of experience and training. See Buonanno (2003a), Freeman (1996) and Freeman (1991).

TABLE 2

Mobility of alleged offenders between communes, provinces and regions

(Percentages resident in the geographical area concerned)

Type of offence	Communes	Provinces	Regions
Robbery	51	87	93
Non-violent robbery	58	88	93
Larceny	43	79	88
Assault	64	91	94
Homicide	58	87	93
Sex offences	61	87	91
Drug offences	51	82	86

Source: criminal charges database 2006, Public Defender's Office (DPP).

TABLE 3

Crimes with which minors are charged

(Percentages)

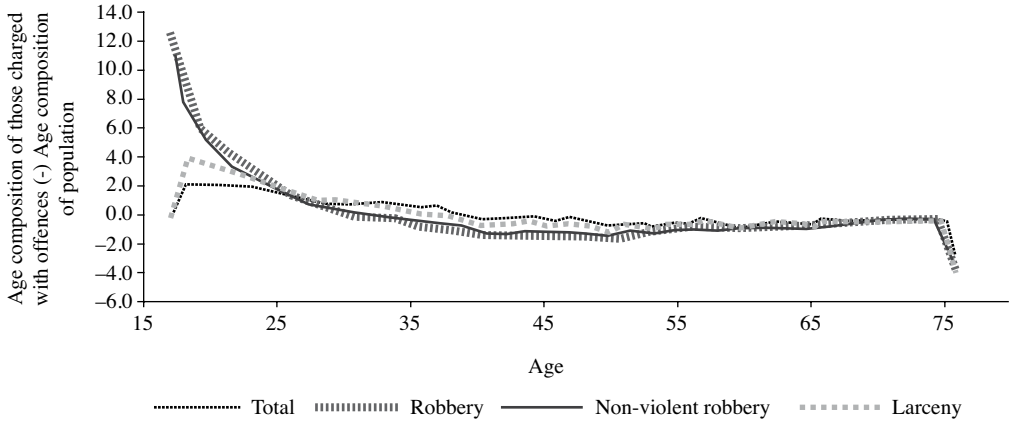
Type of offence	Proportion charged who are minors
Robbery	24.03
Non-violent robbery	22.10
Larceny	11.39
Assault	7.97
Homicide	10.48
Sex offences	9.48
Drug offences	6.36

Source: criminal charges database 2006, Public Defender's Office (DPP).

FIGURE 1

Net alleged participation in robbery, non-violent robbery and larceny, by age

(Percentages)



Source: prepared by the authors on the basis of data from the Public Defender's Office.

To complement this information, a preliminary inference can be drawn from figure 3 that there is an inverse relationship between education level and the number of people charged by type of offence: as education levels rise, the indicator of criminal participation (defined as the percentage of people charged who have an education level *x* minus the percentage of the population with that level of education) diminishes. This relationship has been identified by a number of authors (Lochner, 1999; Lochner and Moretti, 2001; Buonanno, 2003a; Buonanno, 2003b; Buonanno and Leonida, 2005), although other studies contain findings that show the opposite (Ehrlich, 1973; Núñez and others, 2003; Rivera, Núñez and Villavicencio, 2004).[8]

[8] Ehrlich (1973) put forward three possible explanations: (i) that education may increase the returns on illegal activities, (ii) that this relationship may be due to more educated victims being more likely to report crimes and (iii) that more educated people are more likely to be victims of crime because they have higher incomes. The last two hypotheses are linked to the way crime is defined (i.e., by reported crime statistics), which does not allow the perpetrator's place of origin to be identified.

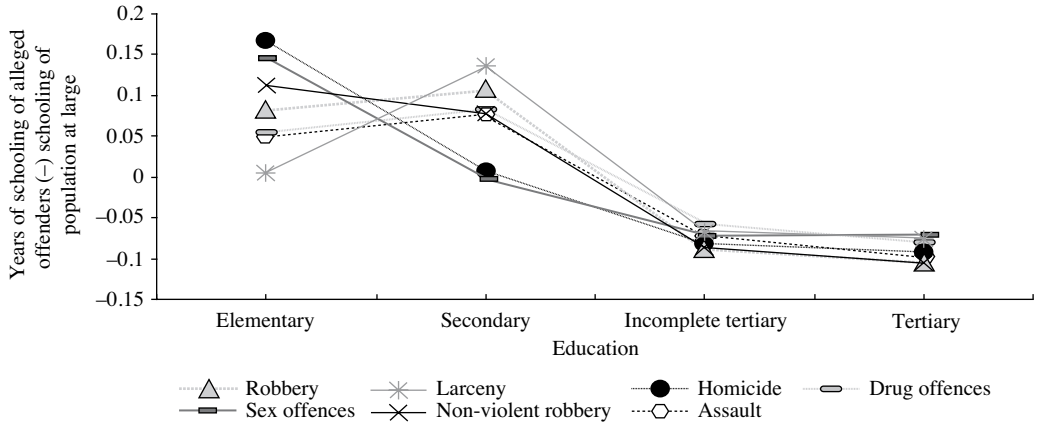
FIGURE 2

Net alleged participation in assault, homicide and sex and drug offences, by age
(Percentages)

Source: prepared by the authors on the basis of data from the Public Defender's Office.

FIGURE 3

Relationship between alleged crime and education level, by type of offence



Source: prepared by the authors on the basis of data from the Public Defender's Office.

Lastly, the data show a positive correlation between the number of people charged with offences and the different types of offence. Table 4 allows us to establish that the highest correlations are for economically motivated crimes (robbery, larceny, drugs), suggesting the presence of a number of common determinants that do not play a very important role in offences with non-economic motives (homicide, sex offences). These last usually have a low level of correlation with the other types of crime, suggesting that their causes are different from those of economically motivated offences.

The subject will be looked at later, since one of the major conclusions of this study is that the determinants of crime differ by the type of offence. The same conclusion has been arrived at in other studies on Chile conducted using reported crime data (Rivera, Núñez and Villavicencio, 2004).

TABLE 4

Correlation between the number of people charged with offences per 100,000 inhabitants, by commune and offence type

Offence	Homicide	Sex offences	Economic crimes	Assault	Robbery	Larceny	Drug offences
Homicide	1.000	0.372	0.080	0.193	0.119	0.137	0.202
Sex offences		1.000	0.148	0.478	0.097	0.093	0.150
Economic crimes			1.000	0.403	0.669	0.650	0.546
Assault				1.000	0.295	0.419	0.312
Robbery					1.000	0.803	0.492
Larceny						1.000	0.521
Drug offences							1.000

Source: criminal charges database 2006, Public Defender's Office (DPP).
N.B.: Includes only communes where residents were charged with these crimes in 2006.

III

Description of the model and the data used

This section describes the general model developed to identify the determinants of crime. Following the static model proposed by Ehrlich (1973), we take an individual representative of the commune concerned, hereinafter $i = 1,2,\ldots,335$, who spends his or her time carrying out legal $\left(t_L^{ij}\right)$ or illegal $\left(t_{NL}^{ij}\right)$ activities related to a particular offence, hereinafter j = robbery, non-violent robbery, larceny, assault, homicide, sex offences and drug offences.[9]

It will be assumed that no entry or training costs have to be incurred prior to carrying out these activities[10] and that the returns to them increase constantly in proportion to the time spent on them. However, the returns to illegal activities are uncertain as they depend on penalties and the likelihood of being caught. Thus, given the logic of the individual concerned and considering a utility function $U(.)$, that individual's optimization problem consists in maximizing the expected utility given by:

[9] All the information on criminal charges brought comes from the DPP criminal charges database for 2006, which gives a classification of 236 crimes grouped into 17 categories. The present study takes what we consider to be the main categories of offence, given their social implications; their exact composition is given in Defensoría Penal Pública (2007). The 2006 database contains records of 202,328 cases handled by the DPP. Commune-level socio-economic and demographic information, meanwhile, comes from the CASEN 2006 survey.

[10] This assumption has been widely discussed, as it implies that a person can move between criminal and legal activities without cost, yet a criminal record is often a barrier to obtaining legal work and this can have an inertial effect that causes people to persist in criminal activities. According to Buonanno (2003a), it has been shown that a very high percentage of criminals carried on legal activities before turning to illegal ones.

$$EU\left(t_L^{ij}, t_{NL}^{ij}\right) = p^{ij}U\left(X_a^{ij}\right) + \left(1 - p^{ij}\right)U\left(X_b^{ij}\right)\ldots \quad (1)$$

subject to $t_o^i = t_L^{ij} + t_{NL}^{ij}$, where $W_L^{ij}\left(t_L^{ij}\right)$ is the total income obtained by spending t_L^{ij} units of time on legal activities and $W_{NL}^{ij}\left(t_{NL}^{ij}\right)$ is the corresponding illegal income; $X_a^{ij} = W_L^{ij}\left(t_L^{ij}\right) + W_{NL}^{ij}\left(t_{NL}^{ij}\right) - F_{NL}^{ij}\left(t_{NL}^{ij}\right)$ is the total income received by the individual if caught, which happens with probability p^{ij} involving punishment of F_{NL}^{ij}, while $X_b^{ij} = W_{NL}^{ij}\left(t_{NL}^{ij}\right) + W_{NL}^{ij}\left(t_{NL}^{ij}\right)$ represents the income received by the individual if not captured, for which the likelihood is 1 - p^{ij}. On the basis of this optimization problem, the relationship between illegal and legal activities is defined by the following equation:

$$-\frac{\dfrac{dW_{NL}^{ij}}{dt_{NL}^{ij}} - \dfrac{dW_L^{ij}}{dt_L^{ij}}}{\dfrac{dW_{NL}^{ij}}{dt_{NL}^{ij}} - \dfrac{dW_L^{ij}}{dt_L^{ij}} - \dfrac{dF_{NL}^{ij}}{dt_{NL}^{ij}}} = \frac{p^{ij}U'\left(X_a^{ij}\right)}{\left(1 - p^{ij}\right)U'\left(X_b^{ij}\right)}\ldots \quad (2)$$

If the payoff for illicit activities involving the likelihood of punishment is lower than that for legal activities, the person will not spend time on the former. For a crime to take place, therefore, the marginal income expected from a particular illegal activity minus the possible punishment for committing the crime must be greater than the marginal income from a legal activity, i.e.:

$$w_{NL}^{ij} > w_{NL}^{ij} - f_{NL}^{ij}p^{ij}\ldots \quad (3)$$

For the purposes of the estimation it is assumed that, first, individuals must decide whether to commit crimes (participation decision), for which they evaluate equation 3. If they do so decide, they take a second decision which consists in determining how much time they will spend on the criminal activity (charge rate equation) in accordance with equation 2. Accordingly, to take account of the possible selection bias that the presence of a correlation between the two decisions would entail, the charge rate and participation econometric estimates were calculated using Heckit models, by maximum likelihood, assuming that the errors presented a bivariate normal distribution.

The participation decision, taken using equation 3, will be positive if illegal income net of possible penalties exceeds legal income. Given that no information is available on the illegal income received by agents, however, let alone that yielded by crimes of type *j*, a proxy variable was used in the form of per capita income Y_{reg}^i in the region to which the alleged perpetrator's commune of origin belonged. It is feasible to use a proxy of this sort because the opportunities for obtaining illegal income are related to the wealth that might be available to victims, most of whom (as shown in the previous section) are from the region containing the alleged perpetrator's own commune. We thus get:

$$w_{NL}^{ij} = w_{NL}^{ij}\left(Y_{reg}^i\right) = X_{w_{NL}}^i\alpha_1^j\ldots \quad (4)$$

where $X_{w_{NL}}^i = \left[Y_{reg}^i\right]$.

The proxy for legal income was average income in the commune $\left(Y_{commune}^i\right)$; to capture possible disparities in its distribution, however, the percentage of poor people in the commune ($poor^i$) was included as an additional variable.[11] The model considered unemployment in the population aged 18 to 40 as a variable ($unemployment^i$) to take account of actual opportunities for obtaining legal income.[12] Given the above considerations, legal income is defined as follows:

$$\begin{aligned} w_L^{ij} &= w_L^{ij}\left(Y_{commune}^i, poor^i, unemployment^i\right) \\ &= X_{w_L}^i\alpha_2^j\ldots \end{aligned} \quad (5)$$

where $X_{w_L}^i = \left[Y_{commune}^i, poor^i, unemployment^i\right]$.

Meanwhile, it is assumed that the punishment function f_{ij} is equivalent to the penalty imposed by law on crimes of type *j*, i.e. (c_{law}^j), which would be the same in all communes depending on the type of crime involved. Its effects cannot be determined for

[11] Fajnzylber, Lederman and Loayza (2002) studied aggregate crime in various countries and found the influence of income disparities to be significant, which is why it was considered important to include it here.

[12] As indicated earlier, however, it has been shown that a majority of individuals who commit crimes are in work. Imrohoroglu, Merlo and Rupert (2001) estimated that about 70% of criminals in the United States were in work at the time they committed their crimes.

the purposes of our estimate, as they will be included in the constant term of the equations.

In the light of the criticisms of Block and Heineke (1975) and William and Sickles (2002) (see also Buonanno, 2003c), we included the following sociodemographic variables, which are considered to be determinants of crime and are routinely employed in studies of the subject: (i) the percentage of the population aged between 13 and 17 ($pop^{i}_{13\text{-}17}$), (ii) the percentage of the population aged between 18 and 40 ($pop^{i}_{18\text{-}40}$), (iii) the percentage of single-parent households headed by the mother ($house^{i}_{fem}$), (iv) the percentage of households containing minors aged 13 to 18 in which both parents work ($house^{i}_{parents\text{-}work}$)[13] and, lastly, (v) average years of education of over-13s in the commune ($educ^{i}$).

Given the above, the punishment applied in commune *i* for type *j* crimes can be expressed by the following equation:

$$f^{ij} = f^{ij}\left(c^{j}_{law}, CS\left(pop^{i}_{13-17}, pop^{i}_{18-40}, house^{i}_{fem}, house^{i}_{parents-work}, educ^{i}\right)\right) = X^{i}_{f}\,\alpha^{j}_{3}\ldots \tag{6}$$

where $X^{i}_{f} = \left[\overline{c^{j}_{law}}, pop^{i}_{13-17}, pop^{i}_{18-40}, house^{i}_{fem}, house^{i}_{parents-work}, educ^{i}\right]$ and $\overline{c^{j}_{law}}$ is the constant already mentioned.

Following the hypotheses put forward by Becker (1968), the variable p^{ij} representing the possibility of being punished depends on the likelihood of capture $p^{ij}_{capture} = \dfrac{crim - captured^{ij}}{crim - reported^{ij}}$, the level of crime that goes unreported $underreport^{ij} = \dfrac{crim - reported^{ij}}{crim - total^{ij}}$ and the possibility of being found guilty, which is conditional on being captured $p^{ij}_{responsibility} = \dfrac{crim - punished^{ij}}{crim - captured^{ij}}$.

For the purposes of the estimate, it was assumed that the likelihood of capture was a function of the number of police stations in the commune $p^{ij}_{capture} = p^{ij}_{capture}(station^{i}) =$ [14] and that the number of offences that went unreported in the different communes was constant. The likelihood of being punished once captured ($p^{ij}_{responsibility}$) was estimated from the ratio between the number of those charged who were found guilty and the total number charged in the region, both for 2005.[15] Accordingly, the likelihood of being punished is represented by the following equation:

$$p^{ij} = \frac{crim - punished^{ij}}{crim - total^{ij}} = p^{ij}_{capture}(station^{i}) \times underreport^{ij} \times p^{ij}_{responsibility} = X^{i}_{p}\alpha_{4}\ldots \tag{7}$$

where $X^{i}_{p} = \left[station^{i}, \overline{underreport}, p^{ij}_{responsibility}\right]$ and $\overline{underreport}$ is the constant indicated.

When rewritten and supplemented by a random shock term, equation 3 of the participation model is expressed as follows:

$$S^{ij} = w^{ij}_{NL}(.) - f^{ij}(.)\,p^{ij} - w^{ij}_{L}(.) + \varepsilon^{i}_{participation} = X^{i}\Gamma^{j} + \varepsilon^{i}_{participation}\ldots \tag{8}$$

where $\Gamma = \left[\alpha_1, \alpha_2, \alpha_3, \alpha_4\right]$ and $X^{i} = \left[X^{i}_{W_{NL}}, X^{i}_{W_{L}}, X^{i}_{f}, X^{i}_{p}\right]$.

It should be pointed out that in the above equation a commune *i* will present positive charge rates always provided that $S^{ij} > 0$. Generally, for any type of crime,

[13] William and Sickles (2002) show that the family and local environment play a major role in driving criminal behaviour.

[14] Police information is taken from the official statistics of the Chilean national police service (Carabineros de Chile) published on the web page of the Chilean National Institute of Statistics, police statistics section [online] www.ine.cl.

[15] In point of fact, the lack of national information for 2005 meant that the variable was constructed using data from the second half of that year. They were lagged on the assumption that they could be observed by individuals in the following period.

let us define the dichotomous variable H^i whose value is 1 if commune *i* presents charges for the crime analysed and 0 otherwise. The participation equation for the offence concerned can be estimated using a probit model, assuming variable ε^i_{part} is normal, with a mean of 0 and a variance of $\sigma_{\varepsilon^i_{participation}}$:

$$prob\left(H^i=1\right)=prob\left(\varepsilon^i_{part}>-X^i\Gamma\right)=\Phi\left(\frac{X^i\Gamma}{\sigma_{\varepsilon^i_{participation}}}\right)\ldots \quad (9)$$

As for those charged with offences, criminal activity levels are determined using equation 2 and by the time constraints on the representative individual. This equation shows that the number of people charged with each type of offence is a function of the same variables as the participation equation. For the purposes of the estimation, however, it was considered appropriate to express the number of people charged in log form using equation 10, whose variables have a linear relationship plus a random term. To properly identify the participation equation, some variables were excluded from the charge rate equation (a topic that is discussed in the following section), so that this was expressed as follows:

$$Ln\left(t^{ij}_{NL}\right)=\Pi^j X^i+\varepsilon^i_o\ldots \quad (10)$$

where $\Pi^j=\left[\pi_1,\pi_2,\pi_3,\pi_4\right]$. Nonetheless, given that crime is only observable when S^{ij} is greater than 0, the existence of a possible correlation between the random $\left(\varepsilon^i_o\right)$ and error terms of the participation equation means that the conditional error term cannot be equal to 0, which tends to bias the least squares estimate. Thus, to control for any idiosyncratic differences between communes, we included the following variables,[16] which were also included in the participation equation: (i) the dichotomous variable *small – community*^{i}, which takes the value 1 if commune *i* has less than 7,000 inhabitants; (ii) the dummy variable *rural*^{i}, which takes the value 1 if the rural population of commune i is greater than 50% of the total; (iii) *density*^{i}, which represents the number of inhabitants per square kilometre in commune *i*; (iv) the dichotomous variable *north*, which takes the value 1 if commune *i* is in the country's north (region I, II, III or IV); and (v) *centre*, which takes the value 1 if commune *i* is in region V or VI or the Metropolitan Region. The participation equation also included the *distance*^{i} variable, which measures the distance between commune *i* and the main urban centre of the region concerned.

Following Sah (1991), we also included the number of people charged with crimes in the province, expressed in logarithms (*Lncrimprov*), on the hypothesis that certain areas may have higher levels of crime because there is a lower probability of capture, so that the inhabitants of the communes concerned will revise their expectations and show a more significant propensity to engage in illicit activities. Thus, the final equation to be estimated is expressed as follows:

$$E\left(Ln\left(t^{ij}_{NL}\right)\mid S^{ij}>0\right)=\Pi^j X^i+\text{Idiosyncratic}+\mathrm{E}\left(\varepsilon^{\mathrm{i}}_{\mathrm{o}}\mid S^{ij}>0\right)\ldots \quad (11)$$

Assuming that the error terms of the two equations $\left(\varepsilon^i_o \text{ and } \varepsilon^i_{participation}\right)$ come from a normal distribution of means 0, with variances $\sigma_{\varepsilon^i_o}$ $\sigma_{\varepsilon^i_{participation}}$ and covariance $\sigma_{\varepsilon^i_{(o,participation)}}$, the conditional error can be calculated using the following equation:

$$E\left(\varepsilon^i_o\mid S^{ij}>0\right)=\rho\sigma_{\varepsilon^i_o}\lambda\left(\frac{\Gamma X^i}{\sigma_{\varepsilon^i_{participation}}}\right)\ldots \quad (12)$$

where ρ is the correlation coefficient of the participation and charge rate equations, while $\lambda(.)$ is the inverse Mills ratio. The coefficients of the two equations were estimated using the maximum likelihood method to ensure consistency of the estimators.[17]

[16] Various studies have shown that small communities tend to have lower rates of crime because criminals would find it harder to go unnoticed there (Rivera, Núñez and Villavicencio, 2004; Glaeser and Sacerdote, 1999).

[17] Purely by way of explanation, it should be pointed out that the analysis was not undertaken by estimating an unbalanced panel for the following reasons: (i) lack of information prior to 2006 on the communes of origin of many of those charged with offences; (ii) lack of annual data on the explanatory variables during the relevant period, since these come from the CASEN surveys held every two years or so; (iii) possible undercounting of offenders in some communes because potential criminals moved from their region of origin to areas where the criminal law reform had yet to be implemented. Implementation of this was gradual: the last region to be incorporated into the new system was the Metropolitan Region (Santiago) in 2005. See Defensoría Penal Pública (2007) for further information.

IV
Results

Because the charge rate equation by offence category is the one that offers the most interesting results, the main findings from this will now be presented and commented upon (the results of the other estimates are detailed in annex 2).

The results concerned were obtained using two econometric specifications for each type of offence: one that included all the variables presented previously and one that only included variables which were significant at 90% (reduced model), retaining however the most important economic variables $\left(Y^{t}_{commune}, Y^{t}_{reg}\right.$ and $\left.p^{ij}_{responsibility}\right)$ irrespective of statistical significance.

Notwithstanding this, while the theoretical analysis undertaken indicates that the determinants of participation in criminal acts are also those that account for the level of crime (charge rate equation), the distance variable was included only in the participation equation so that it could be correctly identified (Heckman estimate). For the same purpose, other variables from the charge rate equation were omitted from the reduced models to improve the identification of the equations.[18]

Using the test of independence between the charge rate equation and the participation equation (the Wald test, at 90%), it was not possible to reject the hypothesis of independence, except in the cases of homicide and sex crimes, which is tantamount to stating that the charge rate equation could be estimated on the basis of the observed crime level. The results of the two equations are presented in the annex.[19]

To validate the foregoing result, the correlation between the Mills ratio and the explanatory variables of the charge rate equation was analysed to discard high correlations that might affect the validity of the test and the consistency of the coefficients estimated. As described in annex 2, R^2 levels below 57% were found in all the reduced models, indicating that the correlation between the Mills ratio and the explanatory variables of the charge rate equation is low.[20]

The results of the charge rate equation by category of offence could be interesting. First, they indicate that while there are some cross-sectional determinants, there is a high degree of heterogeneity between those charged with the different offences, suggesting that different causes and motivations are at work.

Communal income levels, meanwhile, show an inversely proportional relationship to crime, with a coefficient significant at 99% for all offences (except homicide, which does however have the expected sign). This finding agrees with the theoretical model predictions and indicates that it is in the poorest communes that people are most likely to be charged with a wide range of offences. The elasticities associated with communal income levels (see annex 2) range from –0.25 in the case of assault to –0.65 in that of non-violent robbery.

In the case of offences whose motivation is clearly economic (robbery, non-violent robbery and larceny), the relationship between regional income and the number of people charged is positive and significant, by contrast with other offences that may not be economically motivated. This is consistent with the hypothesis about the opportunities for illegal earnings represented by economically motivated offences. According to the result of the estimates, the elasticities associated with the latter range from 0.52 (larceny) to 0.97 (non-violent robbery).

The effects of the *deterrence* variable are only significant for crimes associated with the drugs law. Unemployment in the commune is statistically significant only in the case of robbery, which agrees with the theoretical model, and has an elasticity of 0.23. There is a positive relationship, meanwhile, between education and the number of people charged

[18] The variables omitted for identification purposes in the participation equations for the different offences were as follows. For robbery: *distance*, *centre*, *small-community*, *rural* and *poor*; for non-violent robbery: *distance*, *pop 13-17*, *poor*, *house-parents-work* and *unemployment*; for larceny: *distance* and *educ*; for homicide: *distance*, *pop 18-40*, *north* and *educ*; for sex offences: *distance*, *pop 13-17*, *rural* and *unemployment*, and for offences classified in the drugs law: *distance*, *north*, *small-community* and *unemployment*.

[19] The crime of assault was not studied in the participation equation as it is present in 97% of the communes analysed.

[20] The procedure implemented is similar to that used by Elias and Okseniuk (2002), who applied the recommendation of Nawata and Nagase (1996). See [online] http://www.aaep.org.ar/espa/anales/PDF_02/elias_okseniuk.pdf.

with the offences of robbery and larceny, a result that appears to bear out the findings of other studies in Chile and around the world.

People are more likely to be charged with a wide range of offences in the communes of the north of Chile, a finding that bears out previous studies (Núñez and others, 2003; Rivera, Núñez and Villavicencio, 2004).

The proportion of young people in a commune does not significantly affect the number of people charged by category of offence, except in the case of assault, which has an elasticity of 0.48. Fewer people tend to be charged for a variety of offences in rural communes. Lastly, the number of police stations in a commune has a large and significant effect on the number of people charged for all offences other than homicide, although the sign is positive for this as well. The meaning of this finding is ambiguous. It may reflect the success of police efforts to apprehend criminals, but it could also be because police stations are more likely to be situated in communes whose populations are particularly likely to offend. The true meaning of this sign remains an open question.

V
Conclusions

This study represents an effort to examine the determinants of crime from the perspective of the places of origin of those charged with offences, rather than following the traditional approach of employing data based on reported crime and treating the place where the offence was recorded as the suspect's place of origin. Thus, the present study recognizes the geographical dissociation between victims' and perpetrators' home areas, so that the characteristics of the former's places of residence become a determining factor in the propensity to commit crime (illegal income).

This study shows that about half of all reported crime is notified outside the commune of residence of the perpetrator, albeit in the same region in the great majority of cases, which indicates that it would be inappropriate to base the analysis on reported crime at the communal level. Again, studies based on data for criminal charges brought at the regional level could have limitations if social and economic heterogeneity within regions is high, as it is in Chile and the other countries of Latin America.

Another striking finding of this study is the high level of correlation between the communes of residence of those charged with different types of crimes, raising the question of why so many people are charged in these. The study notes that while the causes of criminal acts differ, some are transversal. In particular, other things being equal, the number of people charged with offences tends to be greater in poorer communes, those in urban areas, those in the north of the country and those with higher levels of education. This last finding has come up in other studies on Chile and other parts of the world, although there is still debate as to its interpretation.

Unemployment, meanwhile, does not greatly influence the number of people charged with offences, and nor does the deterrence variable (the likelihood of being captured in a given commune in earlier periods). Police presence, measured by the number of police stations in the commune, markedly increases the number of people charged in the various communes for almost all types of crime.

Another finding of interest is that opportunities for obtaining illegal income, for which regional income is used as a proxy, tend to increase the number of people charged in each commune only in the case of crimes for which these are relevant, i.e., those whose motivation is mainly economic (robbery, non-violent robbery and larceny), and not for other types of offence (homicide, assault, sex offences). These findings agree with those of earlier studies on Chile[21] and suggest that when crimes are not economically motivated, it is necessary to seek explanations and determinants in other approaches and disciplines, such as sociology and psychology.

There are all sorts of areas in which future research could be done on the determinants of crime with regard to the places of origin of suspects and perpetrators. In particular, it would be well worth studying the persistence

[21] See, for example, Rivera, Núñez and Villavicencio (2004) and Núñez and others (2003), where it is likewise observed that economic factors play an important role, chiefly in economically motivated crimes.

of criminal behaviour over time, a subject which this study, as a cross-sectional analysis, could not address. It would also be interesting to differentiate between first-time and repeat offenders, on the assumption that the latter could have embarked upon a career of crime. Again, there is scope for analysing a wide range of crime determinants at the regional level where adequate conceptual or theoretical support exists, in addition to the determinants included in this paper.

Lastly, it should be added that non-rejection of the hypothesis of independence between the participation and selection equations is not necessarily due to any identification problems with the latter. Although the decision to participate might depend on socio-economic variables, the empirical evidence indicates that it is not linked to the level of crime, contrary to what the theoretical approach applied in this study would suggest.

ANNEX 1

Relationships between crime and its attribution

Ideally, the charge rate indicator in a given geographical area should be the ratio between the percentage of people who have participated in criminal activities and the percentage residing in that area. One of the problems with analysing crime, however, is the existence of components that are not observable and rule this out as a direct approach.

As was pointed out in the introduction, studies of crime generally use reported crime databases, so that the place of origin of alleged offenders cannot be determined. Another problem with this approach is the number of crimes that go unreported, an issue we attempted to solve by using panel data techniques or assuming it was random.

While the approach followed in this document obviates the first of these problems, it is affected by underreporting, since a person cannot be charged with a particular crime unless accused of it by the victim or public prosecutor. In addition to the points made in the previous paragraph, however, use of the charge ratio is open to objections from a legal point of view, in that those charged are implicitly being treated as responsible for crimes without having been found guilty by a judge, and there is the possibility that an innocent person may be apprehended, found guilty or both.

As can be appreciated in equation 1A, however, using the charge ratio is valid if the $\frac{cri_{rprtd\text{-}uncaptd} - inoc_{captd}}{pop}$ ratio is random or can be captured by one of the observable variables, such as police effort or socio-economic characteristics. For the present study, we took it that this factor did not depend on socio-economic causes, and accordingly proceeded to correlate the degree of criminal liability with per capita income levels, finding very low values. Nonetheless, the effect of police presence was controlled for by including a dummy identifying the existence of a police station in the commune analysed.

$$\begin{aligned}\frac{cri}{pop} &= \frac{cri_{rprtd} + cri_{unrprtd}}{pop} = \frac{cri_{rprtd\text{-}captd} + cri_{rprtd\text{-}uncaptd} + cri_{unrprtd}}{pop} \\ &= \frac{cri_{rprtd\text{-}captd} + cri_{rprtd\text{-}uncaptd} + inoc_{captd} - inoc_{captd} + cri_{unrprtd}}{pop} \\ &= \frac{charged}{pop} + \frac{cri_{rprtd\text{-}uncaptd} - inoc_{captd}}{pop} + \frac{cri_{unrprtd}}{pop}\end{aligned} \tag{1A}$$

where:
cri = number of people involved in a particular criminal activity.
cri_{rprtd} = number of people involved in a criminal activity who are reported, whether identified or not.
$cri_{unrprtd}$ = number of people involved in a criminal activity who are not reported.
$cri_{rprtd\text{-}captd}$ = number of criminals reported and captured.
$cri_{rprtd\text{-}uncaptd}$ = number of criminals reported and not captured.
$inoc_{captd}$ = number of innocent people captured and charged.

ANNEX 2

Estimation of the charge rate equations

	Robbery		Non-violent robbery		Larceny		Assault		Homicide		Sex offences		Drugs law offences	
	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)
Ycommune	-0.00000447 0.000	-0.00000428 0.000	-0.00000467 0.000	-0.00000473 0.000	-0.00000314 0.000	-0.00000214 0.000	-0.00000178 0.000	-0.00000185 0.000	-0.00000053 0.748	-0.00000179 0.138	-0.00000270 0.005	-0.00000275 0.000	-0.00000299 0.000	-0.00000287 0.000
Yreg	0.00000690 0.001	0.00000584 0.001	0.00000663 0.000	0.00000624 0.000	0.00000424 0.003	0.00000332 0.012	0.00000203 0.237	0.00000186 0.232	-0.00000092 0.686	-0.00000040 0.859	-0.00000131 0.483	-0.00000125 0.402	0.00000115 0.532	0.00000147 0.396
Pop 13-17	0.0207156 0.506	0.0367582 0.201	0.037954 0.122		0.0169947 0.391		0.0364721 0.071	0.0394906 0.024	0.0077868 0.830	0.0331546 0.317	-0.0106576 0.732		-0.0159746 0.549	
Pop 18-40	0.0064443 0.693		-0.0153074 0.217		0.0049361 0.627		0.0030036 0.780		0.0023408 0.902		0.0122723 0.376		0.0030293 0.841	
North	0.2786917 0.127	0.3086892 0.061	0.486412 0.000	0.534519 0.000	0.3725706 0.001	0.4409929 0.000	-0.0230857 0.848		0.1212323 0.559		0.3244853 0.025	0.3094532 0.006	1.113147 0.000	1.151187 -
Centre	-0.1072758 0.467		-0.0367552 0.731		-0.1620505 0.073		-0.0337157 0.695		-0.0102334 0.955	-0.0734292 0.647	0.0013666 0.991		0.2805883 0.035	0.3063811 0.013
Small-community	-0.0327023 0.880		-0.2367204 0.026	-0.2465319 0.022	-0.0508082 0.536	-0.1258466 0.126	-0.0451135 0.543		0.591111 0.002	0.5656653 0.002	0.4745701 0.000	0.437404 0.000	0.0578213 0.747	
Rural	-0.0464646 0.826		-0.447295 0.001	-0.4522725 0.000	-0.1906745 0.070	-0.2869428 0.002	-0.2428457 0.016	-0.2556397 0.002	-0.0761384 0.718	0.1005056 0.598	0.0055062 0.970		0.1754967 0.408	
Density	0.0000481 0.058	0.0000432 0.081	-0.0000503 0.014	-0.0000517 0.011	0.0000223 0.218	0.0000222 0.234	-0.0000387 0.022	-0.0000366 0.031	0.0000136 0.593	0.0000168 0.514	-0.0000524 0.018	-0.0000454 0.021	0.0000339 0.139	0.0000286 0.196
Educ	0.2289716 0.046	0.1959734 0.057	0.2078743 0.017	0.1659508 0.030	0.1682314 0.022		-0.0205584 0.761		-0.2556365 0.070		-0.0423491 0.658		0.1011784 0.335	0.0926236 0.272
Poor	0.0097841 0.350		0.0070681 0.381		0.0028853 0.654		0.0032845 0.559		-0.0107669 0.369		-0.0173505 0.036	-0.0181656 0.003	-0.0076298 0.439	
Station	0.2983196 0.001	0.3170384 0.000	0.2135252 0.003	0.2121611 0.002	0.2258829 0.000	0.2506295 0.000	0.1550473 0.002	0.1876787 0.000	0.0998236 0.313	0.0995098 0.324	0.1078832 0.163	0.1157943 0.071	0.1998855 0.009	0.1971645 0.007
House-fem	-0.0108982 0.337		0.0001179 0.989		-0.003415 0.645		0.0052529 0.511		0.0074227 0.583		0.0165629 0.078	0.0126862 0.095	-0.0064274 0.533	
House-parents-work	0.0113753 0.076	0.0089568 0.125	0.0032525 0.489		0.007498 0.062	0.0087668 0.019	0.0033702 0.335		-0.005348 0.460		-0.0008947 0.861		0.0075459 0.151	0.0086522 0.083
Unemployment	0.0426948 0.060	0.0511822 0.013	-0.0022514 0.897		0.0111198 0.450		0.0014045 0.918		-0.0093764 0.716		-0.0163843 0.380		0.0143481 0.476	
Lncrimprov	-0.0139217 0.781	-0.0034423 0.943	0.061957 0.132	0.0665054 0.094	0.0448431 0.165	0.0470775 0.200	0.0747338 0.047	0.0806785 0.026	0.0826125 0.192	0.0650951 0.298	-0.0170994 0.713	-0.053442 0.215	0.0699987 0.124	0.0793248 0.072
Deterrence	0.0025696 0.184	0.0027822 0.144	0.00000726 0.997	-0.0005544 0.750	-0.0003163 0.833	-0.0002074 0.890	0.0013453 0.384	0.0012696 0.389	-0.0014061 0.387	-0.0009256 0.557	-0.0009876 0.383	-0.0010545 0.310	0.003641 0.022	0.0034547 0.026
Distance							0.002006 0.0008042	0.0018979 0.0004451						
Constant	-0.5649357 0.707	-0.2212857 0.854	1.278315 0.259	1.872988 0.024	1.623571 0.099	3.872609 -	4.092927 0.000	4.231916 0.000	5.170165 0.012	1.793187 0.003	3.903068 0.002	3.891872 -	1.77506 0.195	1.471467 0.111

(a) General model.
(b) Model with coefficients significant at 90%; also includes economic and deterrence variables, irrespective of statistical significance.
The figures below the model coefficients represent the p-values.

ANNEX 2

Estimation of the participation equations

	Robbery		Non-violent robbery		Larceny		Homicide		Sex offences		Drugs law offences	
	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)
Lncrimprov	-0.0002535 0.999	0.05444800 0.699	0.38260320 0.050	0.20476630 0.195	0.57932530 0.012	0.09450950 0.430	0.11707270 0.425	0.14755600 0.292		0.57077740 0.001	0.25484970 0.084	0.18780430 0.177
Ycommune	-0.00000120 0.819	-0.00000147 0.749	-0.00000095 0.888	-0.00000334 0.362	-0.00000941 0.065	0.00000135 0.692	-0.00000921 0.002	-0.00000965 0.001	-0.00000545 0.072	-0.00000675 0.001	-0.00000263 0.420	-0.00000304 0.265
Yreg	0.00000929 0.244	0.00000669 0.356	0.00001800 0.197	0.00000278 0.743	0.00003840 0.056	0.00000099 0.885	0.00001140 0.023	0.00001010 0.039	0.00001080 0.202	0.00000896 0.202	0.00000657 0.360	0.00000481 0.454
Pop 13-17	0.1462928 0.076	0.095168 0.189	0.1641899 0.079	0.2265013 0.004	0.0116173 0.930		0.1955962 0.009	0.1969403 0.004	0.3417962 0.000	0.2894021 0.000	-0.0690647 0.409	
Pop 18-40	-0.0217452 0.579		-0.0076276 0.851		0.0344552 0.540		0.1043037 0.007	0.105129 0.004	0.0313606 0.403		0.0295569 0.501	
North	-0.276419 0.500		-0.4127183 0.369		-0.9748585 0.064	-0.5977859 0.076	-0.799653 0.066	-0.817654 0.054	-0.3555414 0.345	-0.4491146 0.174	1.168022 0.005	1.166955 0.002
Centre	0.4533725 0.250	0.5162114 0.139	0.078283 0.853		-0.1475275 0.815		-0.7498508 0.025	-0.7358388 0.022	-0.0212373 0.950		0.6622045 0.057	0.7944762 0.012
Small- community	-1.994767 0.000	-1.938995 0.000	-1.211041 0.058	-1.119569 0.035	-0.0579991 0.938				-0.8062825 0.029	-0.7461597 0.034	-1.417913 0.000	-1.421839 0.000
Rural	-0.6360799 0.048	-0.6613137 0.011	-0.7181044 0.064		-0.9629715 0.098		0.4934632 0.150	0.4102274 0.197	-0.5703053 0.070	-0.6517036 0.019	-1.142415 0.001	-0.9159514 0.001
Density	-0.0001062 0.608		-0.0001735 0.451		-0.0002255 0.543		0.0005392 0.334	0.0005852 0.345	0.0004913 0.388		-0.0000365 0.922	
Distance	-0.0035344 0.108	-0.0029038 0.159	-0.0006958 0.804	-0.0024298 0.286	-0.0039341 0.222	-0.0049873 0.011	-0.0028386 0.166	-0.0028365 0.161	0.0006587 0.736	0.0026798 0.186	-0.0020735 0.375	-0.0022733 0.303
Educ	0.06969 0.813		-0.2448184 0.499		0.1845425 0.708	0.3179201 0.089	0.7359402 0.008	0.5872488 0.019	-0.0075288 0.979		-0.3264098 0.275	
Poor	-0.007749 0.749	-0.0039706 0.856	-0.0460973 0.076	-0.0621189 0.006	-0.0326194 0.291		0.0168205 0.437		-0.0409692 0.052	-0.0410199 0.031	-0.0166032 0.486	
Station	1.217119 0.013	1.229399 0.008	1.363373 0.048	1.791086 0.019	1.26485 0.095		1.666057 0.000	1.653629 0.000	0.6372622 0.073	1.019399 0.008	1.119842 0.010	1.01939 0.014
House-fem	0.0355155 0.174		-0.0336653 0.249		-0.0720699 0.082		-0.0165623 0.523		-0.0016697 0.950		-0.009347 0.728	
House- parents-work	-0.0163943 0.222	-0.01639 0.190	-0.0202836 0.193	-0.0143462 0.294	-0.0463831 0.041	-0.0220976 0.114	-0.0066766 0.622		-0.0241181 0.054		0.0027372 0.821	
Unemployment	-0.0050508 0.931		0.0199777 0.765	0.0478168 0.420	-0.0935486 0.318		-0.0270045 0.643		0.0750328 0.203	0.0303431 0.579	0.0363505 0.527	0.0068442 0.894
Constant	-0.6566284 0.860	0.6744739 0.637	1.555463 0.723	-0.2909929 0.854	-3.114075 0.626	-1.178189 0.557	-15.43562 0.000	-14.19154 0.000	-3.401666 0.343	-3.932027 0.005	3.536611 0.362	0.4754747 0.671
Mills Lambda	0.2098581 0.506	0.212048 0.212	0.2060069 0.486	0.2282041 0.360	0.099254 0.703	0.3608824 0.402	0.1970658 0.372	0.3792285 0.059	-0.6330605 0.032	-0.4407759 0.009	-0.1425871 0.615	-0.0013444 0.993
R^2 of the Mills ratio in relation to the explanatory variables of the charge rate equation												
	0.7940	0.3260	0.6244	0.4786	0.3810	0.5644	0.6100	0.5673	0.4205	0.4163	0.7705	0.3573

a) General model.
(b) Model with coefficients significant at 90%; also includes economic and deterrence variables, irrespective of statistical significance.
The figures below the model coefficients represent their respective p-values.

ANNEX 2

Marginal effects estimation

	Robbery		Non-violent robbery		Larceny		Assault		Homicide		Sex offences		Drugs law offences	
	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)
Ycommune	-0.61437310 0.000	-0.58870880 0.000	-0.63947990 0.000	-0.64851960 0.000	-0.43122980 0.000	-0.29700810 0.000	-0.23869580 0.000	-0.24870010 0.000	-0.07162260 0.748	-0.24629110 0.138	-0.37142480 0.005	-0.38008030 0.000	-0.40903690 0.000	-0.39366450 0.000
Yreg	1.07972800 0.001	0.91460350 0.001	1.03154500 0.000	0.97078120 0.000	0.65877320 0.003	0.51799850 0.012	0.31465960 0.237	0.28756040 0.232	-0.14593810 0.686	-0.06409150 0.859	-0.20392570 0.483	-0.19463090 0.402	0.17907640 0.532	0.23061170 0.396
Pop 13-17	0.2521327 0.506	0.4474879 0.201	0.4623723 0.122		0.2071571 0.391		0.4451609 0.071	0.4820033 0.024	0.0949039 0.830	0.4035298 0.317	-0.1296449 0.732		-0.1943264 0.549	
Pop 18-40	0.2684279 0.693		-0.6373282 0.217		0.2052156 0.627		0.1249768 0.780		0.0976248 0.902		0.5109857 0.376		0.1262479 0.841	
North	0.0362199 0.127	0.0398309 0.061	0.0603934 0.000	0.065924 0.000	0.050248 0.001	0.0587036 0.000	-0.0027587 0.848		0.0146315 0.559		0.0465171 0.025	0.0421982 0.006	0.1532593 0.000	0.1567925 0.000
Centre	-0.0410514 0.467		-0.013814 0.731		-0.061302 0.073		-0.0128289 0.695		-0.0042345 0.955	-0.0301248 0.647	0.0004874 0.991		0.1138619 0.035	0.1229917 0.013
Small-community	-0.0138129 0.880		-0.1064447 0.026	-0.1117611 0.022	-0.0233985 0.536	-0.0588374 0.126	-0.0219893 0.543		0.2675287 0.002	0.2586589 0.002	0.2140544 0.000	0.1972906 0.000	0.0257682 0.747	
Rural	-0.0093936 0.826		-0.0885584 0.001	-0.0904545 0.000	-0.0407692 0.070	-0.063351 0.002	-0.0542203 0.016	-0.0570768 0.002	-0.0164091 0.718	0.0223346 0.598	0.0012514 0.970		0.0381515 0.408	
Density	0.0480476 0.058	0.0431291 0.081	-0.0468458 0.014	-0.048092 0.011	0.0203719 0.218	0.0201428 0.234	-0.0337388 0.022	-0.0318926 0.031	0.0146598 0.593	0.017878 0.514	-0.0488548 0.018	-0.0426306 0.021	0.0340077 0.139	0.0285508 0.196
Educ	2645325 0.046	2263668 0.057	2396393 0.017	1912788 0.030	1935989 0.022		-0.2359911 0.761		-2946266 0.070		-0.4873192 0.658		116798 0.335	1069059 0.272
Poor	0.1418193 0.350		0.1007866 0.381		0.0409435 0.654		0.0468233 0.559		-0.1491325 0.369		-0.2473101 0.036	-0.2596646 0.003	-0.1074786 0.439	
Station	0.1615449 0.001	0.1704507 0.000	0.1132113 0.003	0.1117382 0.002	0.1188858 0.000	0.1301971 0.000	0.0775237 0.002	0.0938394 0.000	0.0563659 0.313	0.0557085 0.324	0.058091 0.163	0.0619459 0.071	0.1042881 0.009	0.1017623 0.007
House-fem	-0.3004415 0.337		0.0032167 0.989		-0.0932207 0.645		0.1415489 0.511		0.2048335 0.583		0.4541889 0.078	0.3469578 0.095	-0.1757268 0.533	
House-parents-work	0.4345207 0.076	0.3419393 0.125	0.12435 0.489		0.2861049 0.062	0.3369466 0.019	0.126871 0.335		-0.2080422 0.460		-0.0345105 0.861		0.2920265 0.151	0.335519 0.083
Unemployment	0.2514523 0.060	0.3016061 0.013	-0.0129602 0.897		0.0637625 0.450		0.0079956 0.918		-0.0524721 0.716		-0.0933643 0.380		0.0821104 0.476	
Lncrimprov	-0.0139217 0.781	-0.0034423 0.943	0.061957 0.132	0.0665054 0.094	0.0448431 0.165	0.0470775 0.200	0.0747338 0.047	0.0806785 0.026	0.0826125 0.192	0.0650951 0.298	-0.0170994 0.713	-0.053442 0.215	0.0699987 0.124	0.0793248 0.072
Deterrence	0.1718136 0.184	0.1860304 0.144	0.0005319 0.997	-0.0406145 0.750	-0.0246572 0.833	-0.0161872 0.890	0.1053711 0.384	0.0994406 0.389	-0.0895938 0.387	-0.0591907 0.557	-0.0633107 0.383	-0.0675956 0.310	0.2521995 0.022	0.2392959 0.026
Distance							0.1483887 0.0008042	0.1403877 0.0004451						

(a) General model.
(b) Model with significant coefficients; also includes economic and deterrence variables, irrespective of statistical significance.
Given the functional form, the marginal effect of *lncrimprov* is the coefficient of the supply of crime.

(Original: Spanish)

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Latin American structuralism and economic theory

Armando Di Filippo

This essay suggests that there is a body of Latin American structuralist economic theory which possesses distinctive characteristics while having a family resemblance to other institutionalist schools of thought, and which is based on an original approach to economic value. The founders of structuralism conceived a systemic, multidimensional and dynamic approach. They applied it to the study of improvements in, and the social distribution of, labour productivity generated in the central economies and the effects of these on the societies of the periphery. This outlook challenges the notion of markets as self-regulating systems that return to stable equilibrium positions, presenting them rather as a quantitative expression of the national or international power status of contracting parties. Different development styles and processes progressively alter the power structure of social systems and these changes are reflected in the dynamic of relative market prices.

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I

Latin American structuralism: economic theory and political economy

At the heart of any economic theory about the capitalist system is the study of economic values, the market and prices. These are the leitmotiv and central focus of this essay. The broader context for these reflections is the process of structural change that has developed in capitalist societies as a consequence of the successive technological revolutions which have expanded the productive power of human labour. Accordingly, the analysis carried out here does not deal with market prices under conditions of stable equilibrium, but with the changes in the structure of markets and prices that accompany development. This essay offers a reading of some pioneers of Latin American structuralist economics, and we believe that their key writings contain a theory of economic value, the market and prices that is radically different from the one established in academia.

Unlike static theories, which tend to isolate and "compartmentalize" the activities of the market in the formation of the price system, Latin American structuralist economics sets out from a systemic,[1] multidimensional and historically dynamic view of human societies.

To begin with, two basic limitations of this study need to be clarified.

First, it does not examine the institutional thinking of the Economic Commission for Latin America and the Caribbean (ECLAC). To avoid misunderstandings, this essay will distinguish between the idea of political economy and that of economic theory. We conceive of political economy as a discipline intended to support the legislator and statesman (Smith, 2007, p. 275), while economic theory includes, first, a value-rich underlying approach and, second, the theory as such. It is a system of hypotheses about the behaviour of reality that can be verified with the help of the scientific method.[2]

This notion of political economy (which differs from that of the other classical economists and Marx, who make it a synonym for economic science) is very well suited to showing the kind of tasks that have to be performed by an intergovernmental body like ECLAC. For example, in his studies on the evolution of the institution's thinking, Bielschowsky (1998 and 2009) refers to the action strategies and key ideas proposed to Latin American governments. According to Adam Smith's characterization, this belongs to the realm of political economy and only tacitly or tangentially to structuralist economic theory.

Secondly, and for the same reasons, this paper does not analyse neo-structuralist thinking about economic values, markets and prices. As Bielschowsky (2009) observes in relation to the structuralist period of ECLAC thinking, "the texts published in the first 30 years studied in this article were mostly authored by the leading ECLAC intellectuals of that period, while those chosen to represent the institution's thinking over the three most recent decades tend to be its official documents" (Bielschowsky, 2009, p. 172). These documents reveal an outlook heavily influenced by the political demands of member governments.[3] Examining the personal theoretical contributions of the neo-structuralist authors is not an impossible task, but it is beyond the scope of the writer of this essay.

☐ The opinions expressed in this paper are the exclusive responsibility of the author and commit no other person or institution.

[1] Following the Argentinean philosopher Mario Bunge, we understand by system any complex thing whose parts are bonded by various stable ties constituting its structure. A concrete system (as opposed to a theoretical system) exists objectively and has a physical basis, so that the central feature of any system of this kind is that it is in a permanent process of change. A given human society can be envisaged as an intrinsically dynamic concrete social system composed of individuals (or associations and organizations formed of individuals), with the ties that constitute its structure being the technical and social rules actually operating there (Bunge, 1998, p. 310-311).

[2] This essay will not examine the theoretical and epistemological links between Latin American structuralism and other institutionalist schools of thought. Osvaldo Sunkel (1989) is essential reading for those interested in comparing Latin American structuralism with United States institutionalism. See also Mallorquín (2006).

[3] Thus, Bielschowsky goes on to say: "The neo-structuralist formulation made it possible to build bridges with those Latin American and Caribbean governments that had persevered with the reforms [a reference to "the liberalization guided by the Washington Consensus"], without abandoning the original structuralist analytical edifice,

II

Structuralist economic theory between two fires

Of the two great schools of economic thought in the twentieth century, one followed the marginalist and the other the Marxist-Ricardian theory of economic value. Against both of them and their orthodox and influential proponents arose a heterodoxy that would include many scientists from the United States institutionalist school and others imbued with the ideas of the Keynesian revolution. In the post-war period, decolonization and European reconstruction led to concern about development and underdevelopment. From different standpoints, all these currents of thought challenged academically established theories of economic value. Structuralist economic theory formed part of that heterodoxy.

The market and price theory of Latin American structuralism has been challenged from two sides. These challenges have come, on the one hand, from Marxist theorists and, on the other, from neoclassical marginalists arguing from the paradigm of perfect competition or, more broadly, from the static logic of marginal calculus applied to "free" markets. For Marxists, market prices are an expression of social labour embodied in the products traded (see box 1), while for neoclassical economists they are a manifestation of marginal utility and the scarcity of goods (see box 2). The approach taken by Latin American structuralism to economic value and the price formation process has never fitted neatly into either of these theoretical approaches.

III

A synthesis of structuralist market and price theory

The theoretical view of prices and the market in the Latin American structuralist school, sometimes implicit and sometimes explicit, is that at any given time the existence of the market reflects the power positions of social actors in relation to the different spheres of each society. Consequently, market prices can be understood as a measure of power positions and of the specific strategies and tactics of contracting parties, while the variations they undergo over time reveal the changes progressively arising in this situation. This thesis does not deny that prices also measure utility and scarcity, or that they are connected to the work embodied in the goods traded, but what underlies these measurements is that, in the final analysis, the power positions and the strategies and tactics of contracting parties are still what determine prices. In the marketplace, power is calculated by units of purchasing power in general, i.e., monetary units divided by price indices. What is adopted here is the broadest conception of prices, encompassing those of production inputs, final goods and services and, above all, the primary factors of production, which constitute the remuneration for their owners. Also included, of course, is the price of money—both international exchange rates and interest rates set locally and internationally.[4]

while insisting on the urgent need to implement policies for radical social and economic change to overcome underdevelopment, going beyond the functioning of the free market. For some, this meant surrendering to neoliberalism, but for others it was an alternative that would make it possible to continue influencing the region's destinies from ECLAC's traditional theoretical and methodological perspective. A reading of the key texts published in the decades of 1990 and 2000 strengthen the latter interpretation" (Bielschowsky, 2009, p. 177).

[4] Here we should recall the thinking of Polanyi (2001), who argues that natural resources, human labour and money cannot be included in an ordinary theory of markets since they are not by nature goods and are not produced as such. In this context, we might add that it is largely price formation for these basic factors that introduces the institutional conditions affecting the structure of the market and prices on the aggregate supply side. None of the prices for

Box 1

MARX'S THEORY OF VALUE AND ITS STRUCTURAL UNDERPINNINGS

The view of the social process upheld by Marx (1967) is evidently historical, structural and multidimensional and includes a core analysis of property institutions (production relationships). His theory of economic value is one-dimensional, however. Under conditions of stable equilibrium, prices equate to value, which for Marx is a measure of the working time that is socially necessary given the average technical conditions in a particular period. His theory of value is not designed to record the effects of major institutional changes directly, except when these affect average technical conditions. The stability of the equilibrium presupposed by this theory implicitly requires that all the factors (environmental, political and cultural) underlying this equilibrium be immobile. The theory of value adopted by Marx is a Ricardian transplant unconnected with the historical dialectic characterizing his overall view of society.

When Marx introduced his notion of production prices associated with the equalization of rates of profit in all markets (in volume III of *Capital*, published by Engels), he established the combination of a market-driven mechanism (intersectoral mobility of capital) and a valorization process that depends on the sphere of production. Since production prices are also abstractions, however, these are really values that, in Marx's sense, should not properly be called prices since they are not calculated as monetary units paid in specific markets (Di Filippo, 1981a and 1981b).

Production prices as conceived by Marx come under a logic similar to the classical concept of natural prices, implying a stable equilibrium towards which markets tend. For Adam Smith (2007, chapter 7), this framework of stability largely depends on the general conditions of society, while for Marx it is based in a more limited way on average technical conditions. Furthermore, Adam Smith, like Robert Malthus, understands the value of goods as the amount of human labour required to buy them and not the labour embodied in their production. Consequently, the former takes direct account of social market relationships in the very formulation of his theory of value. The idea of effective demand, introduced by Adam Smith himself, continued by Malthus and elaborated in depth by Keynes, assumes the involvement of the market in setting the value of goods. The concept of effective demand is the bridge whereby Latin American structuralism links the functional and personal distribution of income to the pricing of final goods.

Another fundamental difference between Marxism and Latin American structuralism lies in their philosophies of history. The starting point or ultimate cause of Marx's historical approach is the economic structure. This is the basic underpinning of the labour theory of value, which is assumed to be valid only under the average technical conditions and production (property) relationships of a given historical period. Against this background, cultural and political aspects are seen as superstructural epiphenomena of this central fact.

For the Latin American structuralists, on the other hand, as for the institutionalists, the cultural system is the central fact. Technical progress, which is now the basis of capitalist societies, originated as a manifestation of cultural creativity, an issue that has been examined in some depth by Celso Furtado and will be returned to later on.

Source: prepared by the author on the basis of K. Marx, Capital, New York, International Publishers, 1967; A. Di Filippo, "Desarrollo y desigualdad social en la América Latina", *Lecturas*, No. 44, Mexico City, Fondo de Cultura Económica, 1981 and "La tesis del excedente y la realización de la plusvalía en Marx" (appendix citing authorship), *Capitalismo periférico: crisis y transformación*, R. Prebisch, Mexico City, Fondo de Cultura Económica, 1981; and A. Smith, *The Wealth of Nations*, Petersfield, Harriman House, 2007.

Box 2

THE EPISTEMOLOGICAL FOUNDATIONS OF NEOCLASSICAL THEORIES OF VALUE AND GROWTH

It is necessary to make the same distinction here as was touched upon at the beginning of this article between economic theory (and the preanalytical cognitive outlook associated with it) and political economy. The theoretical outlook of neoclassical economics gives a central place to the dogma of self-regulating markets, which means that neoclassical economic theory is based essentially on microeconomic logic and assumes a long-run macroeconomy and full employment, ignoring the issue of effective demand. Neoclassical political economy as applied to globalized capitalism is what this essay will call neoliberalism, of which the criteria and principles of the Washington Consensus are an example. Consequently, not all the excesses of neoliberalism ought to be attributed to the neoclassical theoretical outlook.

It must be realized that political economy in the Smithian sense was meant for statesmen in a national economy, but the neoclassical political economy we here call "neoliberalism" was a specific strategy of transnational firms that tried (for a time successfully) to change the ground rules of the global economy (Washington Consensus) to favour their microeconomic policies. Lastly, as we shall see further on, some neoclassical economists use the term "new political economy" in a manner wholly incompatible with what this essay understands by political economy.

Marginal analysis, developed by Marshall for a partial equilibrium approach and by Walras for general equilibrium, was heavily based on mathematical formalization using differential and integral calculus. Thus, taking an epistemological approach and following the fathers of classical mechanics of the late eighteenth century, the early neoclassical economists sought to establish the natural laws of economics. Marginal analysis was a crucial instrument for the original neoclassical formulations relating to theories of consumption and production, to determine the stable equilibrium points of microeconomic markets and uphold their theories of functional income distribution based on equality of marginal productivity and factor remuneration. Personal income distribution and the concept of the subsistence wage have always been excluded from core neoclassical economic theory.

Unlike the classical economists and Marx, whose basic economic categories were tied to historically identifiable actors (rentier landowners, wage workers, industrial entrepreneurs, etc.), neoclassical theory completely depersonalized economic categories and turned them into abstract, ahistorical variables.

Subsequently, however, and especially since the end of the Second World War, undeniable historical evidence has been brought to light in the most widely circulated neoclassical academic texts. Both game theory and existing studies of imperfect markets (monopoly, oligopoly, monopolistic competition) entailed a limited but explicit recognition of the power asymmetries affecting market prices. These theories and studies were incorporated into the reference works most commonly employed in Western academia.

Academic centres gradually consolidated a "conservative institutionalism" or "new neoclassical institutionalism" that was invariably based on defence of the market and private property as basic microeconomic underpinnings of the social order (Von Hayek, Nozik and North, among others) but that abandoned or at least softened the concern with retaining the premises of welfare and perfect competition theory. The frictions arising in markets with imperfect information were recognized, with acceptance for example of externalities and transaction costs (Ronald Coase, Kenneth Arrow, Douglass North, Oliver Williamson, Stiglitz and others).

What is now known as "new neoclassical economics" is not political economy in the sense accepted by the present essay but is in fact an expanded and enhanced version of neoclassical economic theory as relating to the different forms of micro-rationality (rational choice) and its effects in the economic, political and cultural spheres. The only difference is that some members of this school have tried to "export" it to other social disciplines. For example, Olson (1965) considered the problem of the "free rider" and introduced the idea of targeted regulation, based on rewards or punishments, to confer social rationality on this behaviour. Becker (1964) tried to extend the principles of instrumental or strategic rationality to the sphere of interpersonal, family and amorous relationships, among other things.

The neoclassical economists also recognized and allowed for the role of the State in the sphere of regulation and the role of government in that of public policies (fiscal, monetary and so on) under the influence of the Keynesian revolution, but effective demand theory continued to be relegated to the short term and to the study of economic cycles.

By introducing an essentially logical or theoretical notion of time, meanwhile, they defined the "long run" as the stage in economic growth processes where full employment and self-regulating markets operate (dynamic of potential equilibrium output). This brings us on to the evolution of neoclassical economic growth theory.

(Continues overleaf)

Box 2 (concluded)

In 1956, as a first polemical response to the neo-Keynesian views of growth theory that had originated in Cambridge, United Kingdom, Solow prepared an alternative theoretical proposal based on the main premises of neoclassical theory: a static approach rooted in perfect competition, remuneration of primary factors in accordance with their marginal productivity, a tendency for the model to reach stable equilibrium positions, production functions based on factor substitution, etc. In particular, technical progress, absent from the original foundations of neoclassical theory, was treated by Solow as an exogenous variable affecting overall productivity. For his purposes he used a macroeconomic production function of decreasing returns to each production factor and constant returns to scale for the whole group. In this way he was able to preserve the characteristic distribution theory of this school, which links factor remuneration to the relevant marginal productivity under conditions of perfect competition.

From the standpoint of price theory, neoclassical growth theory, in Solow's version, simply ignores the problem. In his Prize Lecture after receiving the Nobel Prize for Economics, he observed: "The idea is to imagine that the economy is populated by a single immortal consumer, or a number of identical immortal consumers. (…) [S]he, or the dynasty, is supposed to solve an infinite-time utility-maximization problem. (…) [A]ny kind of market failure is ruled out from the beginning, by assumption. There are no strategic complementarities, no coordination failures, no prisoners' dilemmas. (…) Inseparable from this habit of thought is the automatic presumption that observed paths are equilibrium paths. So we are asked to regard the construction I have just described as a model of the actual capitalist world" (Solow, 1988).

Once again, as in the post-war period, the historical evidence made this neoclassical theory of growth unsustainable, leading to the recognition of new theoretical premises. Following on from the original neoclassical theory, what then began to gain ground was the idea of endogenous growth, led by Romer (1986 and 1990) and Lucas (1988).

Endogenous growth theory abandons the notion of constant returns to scale and accepts that of growing returns to scale for all production factors represented in the production function. Economies of scale were widely recognized in earlier economic thought; ECLAC, for example, had used the concept in the 1960s to advocate Latin American integration with a view to stimulating industrial development.

From this new perspective, Grossman and Helpman (1991) suggested that the unpatentable basic technological knowledge which was one of the general products of science manifested itself on the one hand as a public good (technical standards or instructions are not exhausted by use but remain available for others) and on the other as a private good via research and development (R&D). This entails huge fixed costs that can only be recovered by operating on the scale of major transnational corporations in global markets.

Neoclassical theory was thus modified from its original Walrasian and Marshallian premises as a result of three interdependent historical factors. First, there was the recognition of the asymmetries of economic power that arise between firms interacting in "imperfect" markets (monopoly, oligopoly, monopolistic competition and the use of game theory). Second, there was the emergence of information and communication technologies (ICTs), which have provided the principal historical examples of increasing returns to scale in knowledge production under conditions of technological monopoly—one need only think of Microsoft and the successive versions of the Windows software. Third, there is the huge influence of lobbying by transnational corporations to institutionalize their positions of power by designing new ground rules for global capitalism (World Trade Organization, International Monetary Fund), particularly since the so-called Washington Consensus.

Endogenous growth theory, expressed in the use of production functions, has not yielded good empirical estimates. The alternatives explored, like adding, redefining or removing variables in aggregate production functions, have not been successful. For example, the data available have not borne out the specific prediction of relative or absolute convergence of living standards proposed, or assumed, in the early neoclassical approaches. Estimates are becoming ever more devoid of theory, while the "theories" are becoming increasingly disconnected from the information handled (Martin and Sunley, 1998).

Source: prepared by the author on the basis of M. Olson, *The Logic of Collective Action*, Cambridge, Massachusetts, Harvard University Press, 1965; G. Becker, *Human Capital*, New York, Columbia University Press, 1964; R. Solow, "Growth theory and after", *American Economic Review*, vol. 78, No. 3, Nashville, Tennessee, American Economic Association, 1988; J. Katz, "Structural reforms, productivity and technological change in Latin America", *Libros de la CEPAL* series, No. 64 (LC/G.2129-P), Santiago, Chile. United Nations publication, Sales No. E.01.II.G.22, 2001; P. Romer, "Endogenous technological change", *Journal of Political Economy*, vol. 98, No. 5, Chicago, University of Chicago Press, 1990, and "Increasing returns and long run growth", *Journal of Political Economy*, vol. 94, No. 5, Chicago, University of Chicago Press, 1986; and R. Lucas, "On the mechanics of economic development", *Journal of Monetary Economics*, No. 22, Amsterdam, Elsevier, 1988.

In the more specifically distributive sphere, the structuralists consider three basic structural influences. First, they associate functional income distribution with the institutional and industrial power status of those who own the primary factors of production (the notion of distribution surplus that we touch on later comes into play here), and secondly, they include personal or family income distribution, derived from the above, which directly affects the composition of aggregate demand for consumer goods and personal saving and investment behaviour.[5] In the third place, they stress the role of the State as the "maker of official rules" and that of the government (conceptually different from the State) as a strategic economic actor in advanced capitalist societies. In particular, the original distribution of income is modified in the short term by the redistributive effects of fiscal policy (on both the tax and spending sides). In the long run, government actions affect the distribution of fundamental public goods such as health care, education and justice.

Where values, markets and prices are concerned, the most distinctive theoretical feature of Latin American structuralism is its multidimensional character. The power positions that directly or indirectly affect prices and the market are the places occupied by actors (individuals or groupings) in the economic, political, biologico-environmental and cultural structure of human societies. The economic structure determines the situation of individuals in production and ownership regimes, and the political structure determines the place occupied by actors (including the government itself) in the regimes that regulate citizens' rights, freedoms and obligations, including access to the legislative, executive and judicial powers of the State. The biologico-environmental structure, meanwhile, establishes the situation of actors in the regimes that regulate access to the "natural biophysical environment and its successive artificial transformations, as likewise its spatial extent" (Sunkel, 1980), while the cultural structure determines the place occupied by actors in the regimes that regulate information, communication and knowledge systems. However, there are also informal structures that fix the type of symbols or codes used, starting with language, and the kind of values, be they substantive (ultimate goals such as truth, good, beauty and justice) or instrumental (utility, effectiveness, efficiency), that legitimize social behaviour and delimit the mechanisms whereby cultural stratifications are produced.

The power thus held by individuals and organizations is considered to be institutionalized or structured if it is incorporated into the reciprocal expectations of normal conduct in social interactions, obviously including market transactions. These structural positions, which we have characterized schematically, set all kinds of limits to the exercise of human freedom and ultimately determine both the quantity of labour and the utility and scarcity of the goods traded.[6]

The concept of institutionalized (or structured) power can be used to overcome or transcend the holism-individualism dilemma underlying many epistemological debates. According to the holistic outlook, human behaviour largely depends on social structures, while from an individualistic perspective it is actors or agents (natural or legal persons) who determine the dynamic of historical change by their decisions and behaviour. Considered from one side only, the first approach may lead to deterministic

these strategic factors derives from a specific production process; they are generated rather by the structural conditions that sustain the power of actors, alterations to these or changes in the power tactics and strategies adopted. From the standpoint of demand, furthermore, there are also structural situations, strategies and tactics that determine the transition from functional distribution to family or personal distribution of income.

[5] For those who like graphic representations, the position and slope of the demand curve in the chart of coordinates for any consumption good will depend directly on the level of incomes and on their personal and family distribution. It is enough to know the consumption basket of each income stratum to make an approximate calculation of the number of people who will be able to afford a particular good as its price falls. When we examine movements along the demand curve as a consequence of shifts in the supply curve or function, we find that when the price of a particular good falls (downward shift in the supply curve), this good comes to form part of the composition of spending by the lower income strata and demand for it increases, whereas when prices rise for the good concerned (upward shift in the supply function), the opposite happens. Thus, from the demand perspective both the utility and the scarcity of goods depend on the purchasing power of those creating the demand for them. Seen in this graphic way, changes in personal income distribution entail a shift in the demand function. Lastly, the composition of aggregate demand as a whole largely depends on the level and distribution of personal and family income. In this case too, changes in the distribution entail an alteration in the composition of aggregate demand.

[6] In the ECLAC tradition, the multidimensional idea of power and institutions derives substantially from the work of José Medina Echavarría (1963 and 1973). The so-called Latin American school of development (Di Filippo, 2007), whose economic facet is expressed in Latin American structuralism, has its firmest basis in Medina's studies.

conclusions and the second to voluntaristic ones, but neither of the two exhausts the scope for analysis of a social system. Consequently, in an exhaustive application of the systemic view of human societies it is necessary to pass from the actors to the power structure and then from the power structure to the actors (Bunge, 1998).

This systemic incorporation of the concept of power into explanations of market mechanisms is reminiscent of the conditions Thomas Kuhn (1969) sees as necessary for the structure of scientific revolutions when new, emerging theories expand the worldview of existing theories and incorporate them into a new explanatory paradigm.

IV

Philosophical underpinnings of the structuralist outlook: creativity, development and power

The concept of creativity, understood as the use of human freedom to intervene in the usual order of human social processes and irreversibly recreate them, is at the root of the structuralist view of the economy and was developed in particular depth by Celso Furtado (1978).

Aristotle anticipated the impact of technology on the structure of human societies over two millennia ago. Information and communication technologies (ICTs) seem to have begun to turn his predictions into reality: "For if every instrument could accomplish its own work, obeying or anticipating the will of others, like the statues of Daedalus, or the tripods of Hephaestus, which, says the poet, 'of their own accord entered the assembly of the Gods'; if, in like manner, the shuttle would weave and the plectrum touch the lyre without a hand to guide them, chief workmen would not want servants, nor masters slaves" (Aristotle, 2009, p. 15).[7]

The importance of technical progress and the way it ties in with the social structure is quite well summarized in this "prophetic" passage, which is particularly applicable to the current advent of ICTs.

The most direct connection between Aristotle's epistemological outlook and that of the Latin American structuralist school is identified by Furtado himself as he delves into the depths of Aristotle's causal approach.

Furtado says: "The concepts of *structure* (form) and *process* (causality) are fundamental ingredients in cognitive work. Our view of the world is underpinned by them. The structural approach reduces the cognitive horizon because it remains on the plane of morphological description and excludes the notion of causality. At the same time, the analytical approach leads to a localized determinism and conceals the qualitative aspect. Aristotle sought to integrate these two concepts using the principle of *finality*. The methodology of the social sciences has sought to attain this integration using the notion of *creativity*, understood as the human faculty of interfering with causal determinism and enriching any social process with new elements. When some degree of preponderance is attained, or when the action of several of these elements converges, innovative acts lead to structural discontinuity. The innovative faculty (creativity), for which there is ample evidence on the sociological plane, thus acquires a status on the logical plane" (Furtado, 1978).

It is worth clarifying the links between this paragraph of Furtado's and the famous four causes (or four explanations) of Aristotelian epistemology to which it implicitly refers. For Aristotle, what Furtado calls structure is associated with the idea of form or formal cause. In turn, the notion of process, as used by contemporary science in the realm of physics and nature, corresponds to the concept of efficient cause understood as the dynamic that generates and transforms structure. According to Furtado, when this process takes place in the social sphere and also entails a structural change (a "trans-formation" or modification of the Aristotelian form), its origin is to be sought in human creativity. The idea of creativity

[7] Daedalus was a legendary artist, architect and inventor. Haephestus was the blacksmith and craftsman god par excellence, creating extraordinary work such as Achilles' shield. The tripods he made ran on self-propelling wheels.

tied to human freedom here replaces the idea of final cause which was fundamental to Aristotle's teleology. Again, what Furtado terms an analytical approach leading to a localized determinism concerns the components of the structure, considered statically and in isolation, and comes close to the analysis and decomposition of matter (the material cause, in Aristotelian language). However, this concept does allow for change, understood as a transition from potential (what the material can become) to the act (when the material becomes in reality what it only was potentially), while localized determinism does not necessarily incorporate this dynamic outlook (Bunge, 1961, pp. 44 and 45).

The static notion of equality of conditions (*ceteribus paribus*) characteristic of the method of neoclassical microeconomics, which still dominates Western economic thinking, is one of the most prototypical examples of the analytical approach leading to the localized determinism to which Furtado critically refers. These considerations serve to highlight the limiting, one-dimensional character of this analytical perspective.

Furtado's concept of creativity chimes with the "Aristotelian prophesy" that, if the progress of technology allowed it, "the shuttle would weave and the plectrum touch the lyre without a hand to guide them, chief workmen would not want servants, nor masters slaves". Without a doubt, technical progress, which Furtado sees as one of the two ways whereby human creativity is realized, has been the great transformer of the causal process underpinning social structures and has gradually been approaching (now more than ever with ICTs) that vision formulated over 2,000 years ago by the illustrious Greek philosopher.

The relationship established by Furtado between the concepts of creativity and development is summarized in the following words: "In its twofold aspect as a force that generates a new surplus and an impulse that creates new cultural values, this process, by liberating human energies, *constitutes the ultimate source of what we understand by development*. The marvellous array of cultures that have arisen upon the earth bears witness to the astonishing inventive potential of mankind. If we know anything about the process of cultural creativity, it is precisely that man's potential is bottomless" (Furtado, 1978, my italics).

Thus, Furtado goes back to Aristotle to introduce his own philosophical concept of creativity, in which the Aristotelian "final cause" is no longer dictated by the nature of things but by the (creative) use of human freedom. In other words, technical progress as it operates in today's world is the great dynamizer of capitalist societies. For better or for worse, it is also a phenomenon whose ultimate cultural roots lie within Western civilization.

The most important feature of this creative process is the ability to confer power upon those who control it scientifically, in the contemporary sense of the word "science" as derived from the tradition established by Galileo, Newton and Bacon, among others.

Furtado goes on: "The intention signalled by Marx in one of his theses about Feuerbach – the philosophers have interpreted the world, now the time has come to transform it – has been abundantly accomplished. The *demarcation* line between what is and is not science, in Popper's happy expression, is laid down by the testing to which theories are subjected. Knowledge has tended increasingly to be of the type that enhances our ability to foresee, to act. The fabulous wealth of resources now *invested* in science and its applications is justified by that *effectiveness*. And the central goal of this is, *hélas*, military power and accumulation" (Furtado, 1978).

This linkage between cultural power, technological power, military power and economic power is the foundation of the centre-periphery outlook of structuralist economic theory as applied to the evolution of the capitalist system and its specific peripheral characteristics.

V

The epistemological foundations of Latin American structuralist economics

The concept of a system, on the one hand, and the idea of power, on the other, form part of the theoretical approach to development that gave rise to Latin American structuralism and underlie its theoretical understanding of economic value, prices and the market. While this systemic language and the idea of power it incorporates are present, implicitly or explicitly, in all the formulations of this school, it is brought out more clearly in certain studies (Furtado, 1965; Pinto, 1968; Sunkel, 1970; Sunkel and Paz, 1970; Prebisch, 1981; Di Filippo, 1981a).

This systemic approach went beyond the bounds of economic theory and required a multidimensional study that could link strictly economic issues with those pertaining to other areas of human society, such as sociocultural, political and environmental considerations (Bunge, 1997 and 1998; Di Filippo, 2007).

Latin American structuralist theory highlights the importance of changes in technical rules embodied in instruments and personified in human qualifications. Structuralism takes as its subject not the average technical conditions in a given period but rather the local and international institutional effects of technological change imported from the centre.

The technical rules operating in today's economy allow human beings and their organizations to relate to the instruments of consumption and production through specific qualifications that form part of the cultural sphere, while current social rules link human beings and their organizations with one another through transactions effected from institutionalized positions of power.

The idea of structures essentially concerns the stability of the technical or institutional rules internalized by actors (be they individuals or organizations), while the idea of structural change is historically dynamic and refers to the modification of rules or their internalization.

The issue of technology is more difficult for structuralists[8] than for the institutionalists of the developed world, since technological change was not generated internally in Latin America but came from the centre along with the institutions and organizations imported as a result of it. When these external effects are reformulated or reconfigured, the result is specific heterogeneities, dependencies and vulnerabilities that are the central theme of structuralist economic theory.

After the end of the Second World War, the reconstruction of Europe and the decolonization process, a debate about the nature and causes of development and underdevelopment began. Major contributions were then made in the field of development economics, including Latin American structuralism.[9]

The centre-periphery outlook of structuralist theory combined two interwoven systemic outlooks: that of the international economic system and that of national economic systems. By emphasizing the asymmetrical character of technical progress arriving from the centre and the concentrated distribution of its benefits, it opened up a field of theory whose analyses centred on the concepts of system and asymmetrical positions of power.

[8] It may be asked why this school should be called "structuralist" and not "systemist", given that its overall reading of the social process is systemic in character. The answer might be that its focus of interest is on historical change in structures within systems like capitalism and democracy that are transhistorical in nature. The economic development process studied by this school is the dynamic of global capitalism and the type of interdependent interactions that take place between two economic subsystems: central capitalism and peripheral capitalism.

[9] Ragnar Nurkse, Rosenstein Rodan, Gunnar Myrdal and Arthur Lewis, among others, did important work as interpreters of development and underdevelopment. Other scholars such as Simón Kuznets, Colin Clark, Wasily Leontief and Hollis Chenery contributed sound methodologies and empirical foundations to the approaches mentioned. Many of these authors influenced, or interacted with, the founders of the Latin American structuralist tradition. These lines of inquiry should strictly be termed economic theories of development and underdevelopment, and one of them is the Latin American school of development based on the seminal contribution of Latin American structuralism. Most of the major contributions of these thinkers, such as the idea of forwards and backwards production linkages and cumulative circular causes, have little in common with the idea of perfect competition and the supposed tendency for the market to self-regulate towards positions of stable equilibrium. As will be seen later, so-called economic growth theory, particularly in its neoclassical form, has been gradually distancing itself from the original overarching theoretical interpretations of development economics. See Nixson (2006), among others.

The structuralist theory of development and underdevelopment is more comprehensible and empirically more fruitful because it uses an intersectoral relationship approach, something that has been contributed to, from different theoretical standpoints, by authors of the stature of Marx, Sraffa, Leontief, Chenery and Passineti, among others.

With the vogue of neoclassical growth theories (see box 2), the subject of intersectoral relationships was abandoned just when the influence of Keynesian economics was weakening (Los, 2001).[10]

The systemic approach in economics, clearly adopted by Latin American structuralism in its 1960s and 1970s versions, led to formalizations based on matrix algebra and on the definition of structural[11] input-output relationships and coefficients. These conceptual tools were vital for the ECLAC contribution to the study of national accounts and for Latin American growth projections (Balboa, 1961). The first elementary economics manual prepared by the institution and the Latin American Institute for Economic and Social Planning (ILPES) to provide Latin American students with a structuralism-oriented training was also based on a systemic reading of the economic process that gave pride of place to qualitative and institutional analysis of intersectoral relationships (Castro and Lessa, 1973). In this way, conceptual and theoretical frameworks that were systemic in character prepared the ground for the study of structural change required to understand development and underdevelopment processes.

In a broader and more abstract sense, the first text prepared at ECLAC and ILPES on underdevelopment in Latin America and development theory also adopted a clearly systemic approach to the subject (Sunkel and Paz, 1970). A system can be represented, whether quantitatively or qualitatively, in matricial language. In the matrix of a system it is possible to distinguish the actors who dynamize it, the structures that define it, the spheres or spaces occupied by the system (with an "inside" and an "outside") and the mechanisms used by actors to implement their strategies within the framework of these structures.

In particular, matricial input-output language can be used to establish a consistent and fluid relationship between Keynesian effective demand theory and the study of structures specific to underdeveloped or peripheral regions, as well as the structuralist theory of economic power positions implicit in the study of markets. In effect, the composition of aggregate demand, in both the short and the long run, depends on income distribution, which in turn depends on the positions of power (in production and institutions) of the contracting parties in factor, input and product markets. In Latin America, the concentrated distribution of exogenously generated technical progress translates into a situation of structural heterogeneity. In today's global capitalism, the repositories of this technical progress are, to a large extent, transnational enterprises.

The input-output logic serves, by contrast with today's neoclassical theory (see box 2), to highlight the fact that growth is "endogenous" to major firms, but not necessarily to small and medium-sized enterprises in the peripheral societies where they operate. The saving and investment process largely depends on major corporations, which may be from the centres or the peripheries themselves (Latin American business groups that have transnationalized, for example). In consequence, the accumulation process is overdependent on the microeconomic considerations arising from private-sector corporate planning interests.

In summary, the intersectoral analysis associated with matricial input-output logic can be used to describe and interpret the structural conditions of the Latin American economy. Unfortunately, matrices are hardly produced any longer in Latin America. Nonetheless, some efforts have been made to restore this approach (Infante and Sunkel, 2009).[12]

[10] This agrees with a recent study that notes: "Since the mid-1980s, input-output (IO) analyses have been excluded from the leading currents of economic thought. Periodical publications like *Econometrica*, *Review of Economics* and *Statistics and Quarterly Journal of Economics* ceased to publish IO studies, while few leading economists seem to show any interest in progress within the field of IO analysis." In that essay, the author quoted explores the links between the idea of endogenous growth and structural change in a dynamic input-output model (Los, 2001, introduction, paragraph 1).

[11] We use the idea of structural coefficients rather than technical coefficients because matrices need to be expressed in units of value if they are to provide a quantitative representation of an economic system. Chenery, quoting Klein, says: "A further question arises as to whether the input coefficients in the Leontief system should be interpreted as physical constants, as Leontief does, or as value ratios which combine the effects of both changes in relative prices and in quantities. Klein (1953, pp. 205-210) has suggested that the latter interpretation is more in keeping with economic theory and that there may be greater stability in value ratios than in physical input-output ratios, reflecting an elasticity of substitution between inputs close to unity" (Chenery and Clark, 1959). This idea agrees with the hypothesis of the present paper that prices express positions of power, in respect both of production (with a technological basis) and institutions (markets where there is monopolistic competition, for example).

[12] "The heterogeneity of the Chilean economy is clearly revealed when we examine the different productivity levels of the various production strata, the types of intersectoral relationships, the value added generated and primary income distribution, together with the contribution of each production stratum to the dynamic of the economic structure" (Infante and Sunkel, 2009, p. 137).

VI

The concept of surplus in structuralist economic theory

Anthropologists and economists have used the concept of surplus to interpret changes of historical epoch. The transition from primitive societies to the earliest urban civilizations of the ancient world was due to the introduction of agricultural technologies that created a food surplus.

Marx's concept of the development of productive forces highlights the critical importance of the successive technological revolutions and the appropriation of surpluses by the dominant social classes that have accompanied the growth of civilization. His historical idea of surplus differs, however, from his theoretical idea of surplus value.

In his theory of value, Marx freezes the historical notion of productive forces and surplus and formulates the idea of surplus value associated with the labour theory of value and his law of value, under conditions of stable equilibrium within a particular period. This idea of surplus, as applied to the capitalist system, could be termed the exploitation surplus if measured in abstract units of labour (surplus value) or, more neutrally, distribution surplus when measured in units of general purchasing power (i.e., nominal income flows divided by the price index for a subsistence consumption basket). The distribution surplus concept coincides with the structuralist approach, but structural heterogeneity (a characteristic feature of Latin American underdevelopment) invalidates the idea of average technical conditions on which Marx's theory is based.

Rather than centring their theories of value on a particular structural situation defined by average technical conditions, structuralists are concerned with the structural change associated with the development process. This notion of surplus due to structural change could be termed the innovation surplus or development surplus and is a direct product of human creativity in the sense proposed in the previous section. Economists generally use the term "productivity gains", while Prebisch spoke of the fruits of technical progress.

In Marx, the exploitation surplus (surplus value) assumes that productive forces have reached a given level of development and describes an appropriation mechanism compatible with his labour theory of value. Conversely, the innovation or development surplus idea formulated by the structuralists naturally assumes positions of power or dominance that are precisely the "social substance" measured by prices, but they conceive this surplus as the historical expression of productive forces in action. This is a new flow, measured in units of historical time, that is added to the distribution surplus already accumulated.

An innovation surplus arises from the distribution of productivity gains between the labour force that helped to generate it and the other agents in the production process. This distribution of productivity gains or the fruits of technical progress is one of the distributive struggles inherent in the dynamic of capitalism, whether peripheral or central.

The innovation surplus is measured on a macroeconomic scale and requires a calculation in units of power (general purchasing power) both of productivity gains and of their social distribution. This raises methodological and econometric challenges that have been neglected by structuralist economists, who are more comfortable with theoretical reflection than detailed measurement. There is no room in this paper to speculate about the primary appropriation mechanisms whereby this surplus accrues to firms, in a macroeconomic process that was studied both by Furtado (1964) and by Prebisch (1981, pp. 107-124), so we have confined ourselves to describing the essential substance of the concept in its structuralist version.

VII

The concepts of power and surplus in the dynamic of the market

The concept of power is omnipresent in structuralist theories of development. Reflecting on the links between the idea of the nation State and the structuralist conception of development, Sunkel is unequivocal: "At the same time, this way of understanding development lays the stress on action, on the instruments of political power and on power structures themselves; and it is these, ultimately, that explain the orientation, effectiveness, strength and nature of the internal and external social manipulation of culture, productive resources, technology and socio-political groups" (Sunkel and Paz, 1970, p. 38).

The political power of the State sets the ground rules for all power structures in every area. Consequently, the concept of institutionalized power is not just a matter for political science to study. The ground rules of the political system also determine the political, economic, cultural and even biologico-environmental power positions of individuals. From a systemic standpoint, furthermore, the intrinsic mechanism of the exercise of power includes another two interrelated concepts: human needs and situations of dependency.

The concepts of need and dependency are not understood in a purely economic sense either, but are approached in a multidimensional fashion. Situations of need and dependency can also be encountered in political, cultural and biologico-environmental subsystems.

We suggest that at the heart of the structuralist concept of a distribution surplus, in relation to a given structural situation, stand the relationships between needs, situations of dependency and positions of power. To capture these and their distributive effects it is necessary to study the specific mechanisms of historically existing markets, and this examination cannot be confined to the production structure. An illustrious philosophical precedent for this conceptual linkage can be sought in the Aristotelian idea that the interdependence of human needs is the essential bond of social life and the basis for all economic transactions, which require money as a measure of the terms of trade. In turn, Aristotle conceives of money not in relation to its form as merchandise (gold, silver, etc.) but directly as an institutional expression deriving from the existence of political society (polis or State). Thus, the Aristotelian approach to economics is clearly institutional.[13]

The rate of surplus value and the Marxist concept of exploitation have no direct relationship to the scale of the needs experienced by people or their degree of dependency upon those who hold economic power (owners of the power of production). Thus, in an automated firm with the highest level of productivity, the rate of surplus value (in Marx's sense) "extracted" from a highly qualified engineer may be very great. However, this "exploitation" will be compatible with an excellent standard of living for him and his family and an institutional context that allows him to terminate his contractual relationship without serious consequences. Alternatively, the rate of surplus value for an illiterate peasant may be much lower in terms of abstract working time, but could entail a situation of extreme need and dependency in a context of structured domination mechanisms.

In his book *Criatividade e dependência*, Furtado makes the following point: "Market operations are, as a rule, *transactions between agents of unequal power*. In effect, the reason why trade – an expression of the division of labour – exists in the first place is to create a surplus, the appropriation of which is not based on any natural law. The 'imperfect' markets discussed by economists are nothing more than a euphemism to describe the ex post result *of the imposition of the will of particular agents upon this appropriation*. Since

[13] This claim is reinforced if we remember that for Aristotle virtues are habits of behaviour and that human needs arise on a daily or periodic basis, requiring habits of individual and social behaviour (operative institutions) conducive to their satisfaction. "There must, therefore, be (as was said above) one standard by which all commodities are measured. This standard is in fact demand, which holds everything together (for if people had no needs, or needs on a different scale, there could be no exchange, or else it must be on different lines); but by a convention demand has come to be represented by money. This is why money (*nomisma*) is so called, because it exists not by nature but by custom, and it is in our power to change its value or render it useless" (Aristotle, 2003, pp. 125-126).

all markets are 'imperfect' in one way or another, trading activities will necessarily engender *a process of concentration of wealth and power*, whence the structural tendency, observed from the beginnings of industrial capitalism, towards the formation of large enterprises. Many observers will wrongly infer from this that small firms tend to disappear, but experience shows that they are irreplaceable in the exercise of important functions: without small firms, the capitalist system would be very much the loser, in terms not only of flexibility but also of enterprise and inventiveness" (Furtado, 1978, my italics).

Conveniently for a short essay like this one, the above paragraph provides a useful summary of two very important ideas in the development-underdevelopment diagnosis implicit in structuralist thinking. The first is that of the distribution surplus, as distinct from the idea of the innovation surplus (which is not considered here), and the second is the issue of structural heterogeneity in economic systems, which acquires critical importance in peripheral forms of capitalism.

Let us examine the situation of a small firm that coexists and competes with a large one. This obviously implies the presence of profoundly asymmetrical market structures, which predominate in most economic sectors. It also implies a technological heterogeneity that is obscured to some degree both by the concept of average technical conditions in a given period, assumed in Marx's theory of value, and by the idea of marginal labour productivity in neoclassical production and distribution theory.

The role played by the small firm, apart from its characteristics of flexibility, initiative and inventiveness, is to help determine the total distribution surplus, macroeconomically considered. By setting an upper limit for the minimum wage, in consequence of their lower productivity (both mean and marginal), small firms enhance the profits of the large firms they coexist with, since these can afford far higher wages than are paid to low-skilled workers in small firms. In inflationary situations, furthermore, when workers demand an increase in the purchasing power of their pay, small firms are not productive and financially sound enough to raise wages so that, without meaning to, they "hold back" a majority of less skilled and unionized workers by capping their pay. All this is conducive not only to the growth of the distribution surplus vis-à-vis social output, but also to the tendency for it to accumulate in higher-productivity firms controlled by high-income groups. This happens in the form both of profits for large, often transnational firms and of high and rising pay for skilled workers in technical and managerial positions.

When markets are allowed to follow their own dynamic, the result, in both the centre and the periphery, is an intensification of structural heterogeneity (Pinto, 1965; Pinto and Di Filippo, 1991a and 1991b; Di Filippo, 1981a and 1981b) and income concentration. The average wage in small firms is therefore a subsistence line from which the pay of lower-skilled workers is calculated. Thus it is that the concept of needs is linked to that of surplus through the idea of institutionalized power.

VIII

Centre-periphery: the transhistorical approach and specific historical periods

The centre-periphery outlook, which is the characteristic framework of the historical and structural approach, has always been the starting point for Latin American structuralist economics. The power of hegemonic centres over peripheral societies in the world order is ultimately based on control of the scientific and technological processes that ensure their predominance in the cultural, economic and politico-military spheres. We have already examined the abstract links between culture (science and technology), creativity and power that have characterized the evolution of Western civilization. The point that needs to be emphasized, as it is essential for an understanding of the key features of structuralist economic theory, is that Latin American societies have always been recipients of the waves of technological change that have reached the continent since the days of conquest and colonization.

The "intangible power" (Ferrer, 1996, p. 14) of the centre's scientific and technological knowledge is the starting point for understanding the historical

formation of Latin American societies. The phases in which the centre-periphery outlook became established were determined by the successive waves of technology that swept these societies. What concerns us here is the time these events began in Latin America rather than the time the technological revolutions were actually happening in the centre itself.

The first wave of technology (fifteenth century) came from the Iberian powers, which used their knowledge of navigation, warlike equipment (armour, mounts, firearms), production processes (mining and farming techniques) and instruments of consumption and production to transform the basis of pre-Hispanic society. The second wave (nineteenth century) arrived after the British Industrial Revolution, when the emerging international capitalism established itself in the coal, iron, steel and steamship and railway industries just as the Latin American countries were becoming politically independent. The third (twentieth century) derived from the second industrial revolution in the United States, which led to increasing use of energy from oil and, to a lesser extent, from electricity, along with procedures for rationalizing work (Taylorism, Fordism, etc.) and new durable products such as the automobile and household electrical appliances. The fourth and most recent (twenty-first century), which had already begun by the late twentieth century, has been the introduction of information and communication technologies and advances in biotechnology. Its consequences have given rise to a new era which we call global, or globalized.

While what Aldo Ferrer says is broadly accurate and the history of globalization began during the conquest and colonization of America, the current technological revolution has transnationalized production in new ways that have given a leading role to transnational enterprises and are requiring a transformation of domestic institutions, while structurally affecting the basis of the centre-periphery relationship (Sunkel, 1970; Di Filippo, 1998).

IX

Centre-periphery, economic value and the terms of trade

Structuralist theories of economic value try to find the links between structural change, both technological and institutional, and the dynamic of prices. This is a feature both of global markets and of the societies of the periphery themselves.

Prebisch's version of the deteriorating terms of trade theory, formulated in the late 1940s and early 1950s, illustrates this structural dynamic. Prebisch was not interested in equilibrium prices at a given point in time, but concerned himself with certain specific international markets (commodities versus manufactures), subjecting them to a sustained examination of the terms of trade deriving from the international division of labour between centre and periphery. The conditions in which this deterioration took place were dynamic and structural (technological and institutional).

The income elasticity of demand is only the empirical expression of an explanation whose structural basis lies deeper. According to Engel's laws, in the sphere of consumption the elasticity of demand increases more quickly for manufactures than for primary commodities. The study of these baskets of goods provides, furthermore, an empirical basis for the idea of basic needs and for the poverty line from which subsistence wages can be calculated to provide a reference framework for establishing the needs-dependency-power nexus on which the concept of surplus is based.

The cyclical character of capitalist development in the centre determines the instability of prices for both manufactures and commodities. Empirical measurements immediately show that commodity prices are far more variable than those of manufactures and that, in the long run, global demand for the latter (inputs or final products) grows more quickly than demand for commodities.

This tendency lies at the root of the chronic debts and deficits weighing on the external accounts of Latin America. The last cyclical boom associated with the rise of commodity-consuming emerging economies, most of them in Asia, seemed to indicate that it had been reversed as these economies decoupled from the cycles of the developed world. At the present

juncture, however, the deep recession affecting the Western centres has also hit the Asian countries hard and commodity prices have dropped back from levels that were unprecedentedly high by the standards of earlier cycles. Time will tell how global commodity prices evolve in the longer run.

From the standpoint of the international supply of both commodities and manufactures, meanwhile, the terms-of-trade deterioration appears to be due to positions of institutionalized power. Prebisch notes that the expansion of productive power (productivity gains) is not appropriated to any significant extent in the periphery, because workers lack the cultural and political influence and union power needed to ensure that their incomes keep pace with the improvement. Conversely, wage earners in the central societies, particularly since the end of the Second World War, hold positions of institutionalized power (unionization, political participation) that enable them to increase their incomes in line with their productivity. In this sphere too the historical conditions of the terms of trade are changing because of the participation of emerging Asia. There, large productivity gains in manufacturing are being transferred to transnational enterprises operating in export processing zones even as they create unfavourable terms of trade for Asian societies, since their political and social systems, especially in China, do not provide the conditions for pay to keep pace with these gains.

In any event, alterations in historical conditions and empirical trends do not mean the theory is faulty, but are a consequence of new structural conditions in the societies participating in the global marketplace. The explanation for the deterioration in the terms of trade for commodities as against manufactures forms part of a theory of economic value according to which the power positions of contracting parties in the production and social structure, and the changes in these positions, determine fluctuations in relative prices for these goods.

X

The structuralist theory of inflation

Latin American structuralism does not study the general equilibrium conditions of markets, but rather the long-term structural forces that are constantly destabilizing them in the dynamic of economic development. Nor does it see the market as possessing self-regulatory forces that return it to positions of stable equilibrium. A practical application of this outlook was provided by the formulation of the structuralist theory of inflation.

Structuralism studied inflation in the light of the factors tending to unbalance sectoral or specific markets as a result of the structural changes that accompanied the economic development process in the post-war period and approximately up to the end of the 1970s. On the one hand, this examination had an international focus, in accordance with the centre-periphery view of the cyclical oscillations caused in the central economies by changes in the quantity and prices of tradable goods, giving rise to situations of external imbalance or alterations in the terms of trade (Prebisch, 1963, appendix).

In the national economies of the periphery, inflation was caused by a combination of external constraints and domestic supply bottlenecks caused by institutional or industrial rigidities. In all cases, relative price changes were the immediate driving force behind inflation and its effects on absolute prices.

Between the late 1950s and early 1960s, a number of Latin American authors proposed and developed an interpretation of inflation that helped to justify and consolidate the appellation of "structuralist" by which this school of theory has been known (Noyola, 1957; Sunkel, 1958; Prebisch, 1963 and 1981; Pinto, 1968).

Particularly with regard to inflation, the distinction between structure and system was highlighted. Assuming the existence and historical continuity of the latter, what can change or stay the same is its structure. In this context, it is not only the structure that needs to be considered but also the actors operating within it and the system mechanisms, understood as processes driven by these actors either to preserve its existing workings or in an attempt to change them. Given the preoccupation of Latin American structuralist economics with development, structural change is a matter of fundamental interest to it.

Setting out from the systemic approach of which structuralist economics may be considered part, it is

possible to identify the structural heterogeneity of economic systems, the actors occupying leading positions of power within them, the areas of operation of the system and the institutionalized power mechanisms whereby these actors affect and are affected by inflationary processes.

The pioneers of the structuralist approach to inflation were, without question, Noyola (1957) and Sunkel (1958). Noyola established a fertile conceptual distinction between basic (structural) inflationary pressures and the propagation mechanisms operated by structurally conditioned actors.

Sunkel, for his part, distinguished between basic, circumstantial and cumulative inflationary pressures. The first of these include structural rigidities that not only affect costs associated with factor endowments and the production structure, but also positions of institutionalized power (agricultural property rights, for example, or import capacity) that conflict with the new dynamic demands of development. The idea of circumstantial inflationary pressures allows for consideration of specific historical situations (environmental issues, wars, etc.) that are unpredictable and affect structures sporadically. Lastly, the concept of cumulative inflationary pressures assumes that, since inflation is obviously a structural disequilibrium, it is not necessarily corrected by the free play of market forces or through restriction of the money supply, but can give rise to cumulative circular tendencies (Myrdal, 1967) that maintain or exacerbate the original imbalances.

In turn, the propagation mechanisms identified by Sunkel may be interpreted as the concrete forms taken on by the distributive struggle between the different agents affected by the inflationary process, depending on their positions of institutionalized power and their specific action strategies. Pressures of this type are manifested when the different social groups try to recover their positions in the income distribution.

Subsequently, building upon the foundational contributions of Noyola and Sunkel, Pinto (1968) and Prebisch (1981) directly and forthrightly introduced the social structure concept to explain the positions of institutionalized power underlying the relative price changes that translate, synthetically, into inflation.

In his last book, Prebisch (1981) also made an effort to tie in structuralist "social" inflation theory with a theory of power and surplus, in which the inflationary mechanism was associated with the distributive struggle through the logic of peripheral capitalism. According to Prebisch, this mechanism militated against the development of peripheral democracy. Leaving aside the actual merits or demerits of his arguments, which there is no room to discuss in this paper, what Prebisch was expressing once again was a theory of economic value that explained the dynamic of prices and the market with reference to the positions of institutionalized power held by actors in the social structure.

XI

Values, markets and prices in the twenty-first century

The structuralist approach always gave central importance to the level and distribution of real income as a determining factor in the behaviour of the effective demand that drives the economic system. Today's globalization process has altered both the causes and the effects of income distribution.

Structuralism rejects the idea of functional income distribution in the neoclassical sense of remuneration for the factors of production expressing their marginal productivity as calculated on the assumption of perfect competition in the markets concerned. In fact, the ownership structure of the factors of production and the markets where these are traded largely reflects the network of other institutions that regulate the positions of cultural, political and biologico-environmental power of the individuals and families who control the factors of production.

Underlying the distribution of income has always been the structure of ownership of the strategic resources, both real and financial, traded in markets. In fact, the analysis of social classes carried out by the classical economists and Marx was based on the

position occupied in that structure by landowners, peasants, financiers, industrialists and workers, among other segments of society.

In today's globalized world, this basic, transhistorical observation acquires specific characteristics. The real resources whose prices are largely determined by their ownership include what are known as natural resources (cultivable land, woodland, springs, ecosystems, mineral wealth, non-renewable energy sources), the supply of which is increasingly dependent on environmental and technological factors. Furthermore, the ownership of "human capital" based on education has also come to form part of the privatization of knowledge associated with the stratification of labour markets. This factor has increased the importance of cultural power in the functioning of markets and prices. Meanwhile, political power is manifested in new ground rules that are increasingly "transnationalizing" property rights.

The key players in this new era are transnational enterprises and their ownership rights (which we might perhaps term "transnational rights" owing to the ease with which they are transferred through stock market mechanisms), the direct access they have to global financial capital and their control of leading-edge technologies developed in their own research and development departments, which allow them to further enhance their productivity gains.

Many of these transnationals' productivity gains are generated in their subsidiaries in peripheral societies (Di Filippo, 1998). Their ability to capture economic surplus derives precisely from the fact that they achieve "central" productivity levels with "peripheral" wages.

In the modern era, the centre-periphery idea as it relates to the global power structure has become associated with the mechanisms for creating and controlling technological power. This "intangible power" (Ferrer, 1996, p. 14) is generated in politically unified national societies, as a product of their internal cultural dynamic.

The idea that the globalization process has made it possible for transnational enterprises to operate independently of the political and cultural power of their home countries is a mirage, firstly because the great technological revolutions are a cultural product of hegemonic countries, and secondly because these firms still require institutionalized ground rules to enable them to operate on a global scale. The investment, services, intellectual property and other codes approved by the World Trade Organization (WTO) are all examples of such institutional frameworks.

For example, events such as the 1998 failure of negotiations over the adoption of the Multilateral Agreement on Investment (MAI) by the Organisation for Economic Co-operation and Development (OECD) created an institutional vacuum that may have contributed to the current disastrous collapse (2009) of investment banks in the United States and its contagion to the rest of the world's fragile financial architecture.

Indeed, the growth processes that have operated in Latin America since the 1990s are essentially a transplant of globally evolved market institutions that are not always compatible with the political institutions of democracy. The frequent crises experienced in the last 20 years have been due to the absence of a "financial architecture" capable of regulating the behaviour of major transnational actors.

In the first place, the need to have specific institutions that are adapted to transnational agents and markets and transcend the political and cultural frameworks of nation States has led to a proliferation of rules laying down quality standards not only in procedural, sanitary and environmental matters, such as the rules of the International Organization for Standardization (ISO), but also in the political and economic spheres, as with the classification established by risk rating agencies such as Moody's.

The quality standards required by international investors are set by intergovernmental agencies or globally active private organizations for every kind of issue: competitiveness, legal security, macroeconomic policy stability, etc. Although such standards are reasonable given the need to compete in a globalized world, there has always been a case for questioning standardized prescriptions that do not take account of national or regional peculiarities.

With regard to the resolution of disputes between global investors and governmental authorities, both multilateral and regional agreements often contain clauses giving jurisdiction over these to panels of experts who pronounce on environmental, sanitary and even employment matters, overriding national and local standards (Di Filippo, 2008).

In the sphere of technology and production, there can be no denying that these standards are underpinned by the tremendous effectiveness of the pragmatic methods of Western science in the terms analysed by Furtado and examined in earlier sections. These form part of the "intangible power" projected by the great universities of the developed world, and upon them the technological future of humanity instrumentally depends.

However, an attempt is being made to transfer similar "objective" standards to the economic, social and political sphere, confusing neoliberal market dogmas with the theoretical foundations of economics, politics and culture.

Education is tending to become, wholly or in part, a commodity. The same is happening with other public goods such as security (segregated residential neighbourhoods) and the administration of justice (the high cost of legal advice), along with the privatization of parks, beaches, motorways and even citizen security. The characteristic ground rules of the growth style that is part and parcel of global capitalism have been introduced in all political, economic and cultural institutions, fixing new positions of institutionalized power that have ultimately affected the distribution of personal and family income, the geographical location of the social classes and strata in different areas of great metropolises and the distribution of educational opportunities in these same areas, among other things.

As a consequence of these shifts, markets and prices have undergone profound structural alterations, principally in response to changes in the institutions that regulate the supply and cost of the primary production factors (labour and natural resources) and money.

XII

The global financial crisis of the neoliberal order

In a systemic analysis of the current global economic order, it is possible to establish a difference between actors, technical and social structures, spheres or spaces occupied by the system and processes or mechanisms employed by the actors that drive it. Here we shall examine the global economic system, distinguishing three main actors: (i) the hegemonic centres, basically the United States and the European Union, which since the post-war period have been the "makers" of international technical and social structures (rules), (ii) the intergovernmental negotiating and lending agencies that administer and propagate these ground rules and (iii) transnational corporations, which are the main beneficiaries of the new type of global transactions that have proliferated following the introduction of information and communication technologies.

Considered multidimensionally, of course, the globalization process includes other important transnational actors, starting with the great monotheistic churches, transnational networks of universities and other cultural establishments and numerous non-governmental organizations of various types and orientations. To understand the current economic crisis of the global order, however, even the most cursory review must make mention of at least the three actors mentioned.

The actors concerned interact within the framework of institutional structures monitored by multilateral agencies —the WTO, the International Monetary Fund (IMF), the World Bank— and technological structures peculiar to the current era of information and communications. The economic sphere in which the international system operates has expanded considerably following the inclusion of China, India and the countries of eastern Europe that were formerly members of the Council for Mutual Economic Assistance (Comecon). All these are developing strategies and tactics to increase their control over global markets. However, the pacesetters in the global era are transnational enterprises (Di Filippo, 1998).

After the failure of the MAI negotiations, transnational agents in the global system, United States investment banks in particular, fostered and benefited from the creation of successive speculative "bubbles".

The predominant neoliberal outlook, rooted in an individualism that is not only methodological (the whole is the sum of its parts) but also ethical (executives with pay directly linked to firms' short-term earnings) opened the way to the creation of inadequately coordinated and supervised worldwide networks of transnational production and finance.

Up to a point, this neoliberal approach is also responsible for the huge financial crisis the world economy is experiencing now (2009), known colloquially

as the subprime crisis. This was at least partly due to credit creation by investment banks (money supply) that was driven by a private or sectoral rationale, without taking account of the institutionalized positions of power of the contracting parties.

Information technologies have facilitated the creation of "plastic money" (debit and credit cards) and the spread of consumer lending, providing individuals and families with liquidity against as yet unearned wages to purchase consumer durables. Lending of this type has recently been extended to all kinds of consumer goods, including the perishables bought on a daily basis in supermarkets. A gulf accordingly began to open up between the liquidity or immediate purchasing power of borrowers and their solvency over different repayment periods.

Under conditions of what we might call "consumerist overborrowing", investment bank executives overestimated the solvency of mortgage borrowers and thus their ability to service the transactions they were carrying out. The ability of monetary policy (interest rates and money creation) to restore balance in the monetary and financial markets was also overestimated. The subject cannot be gone into here, but there can be no doubt that the monetary instrument, applied with a neoliberal mentality, has begun to fail.

Among other explanations for the financial collapse of global capitalism (2009), there is the fact that the monetary-financial sphere is not independent of the real economy and that money creation is not neutral, i.e., that it will create winners and losers depending on the structural power conditions under which it is carried out and the mechanisms used, acting through relative output prices and wealth to be reflected ultimately in activity levels and income distribution.

In the context of this unprecedented financial permissiveness, the "invisible hand" of the financial market was subjected to the microeconomic business model of the investment banks. Hyman Minsky (1992), whose strongly Keynesian thinking developed in the 1980s and is now in vogue because of the global crisis, considered three types of firms (financial and otherwise) from the standpoint of their behaviour in credit markets: (i) hedge units, capable of paying down not just the interest but also the principal on their debts, (ii) speculative units, capable of paying interest but not principal and (iii) Ponzi units, whose profitability depends on "bubbles" or markets artificially driven up by speculative feedback.

According to Minsky, the first theorem of the financial instability hypothesis is that the economy has financing regimes under which it is stable and financing regimes in which it is unstable. The second theorem of the financial instability hypothesis is that 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, pp. 8 and 9).

This behaviour of individual actors in the context of a financial system with regimes and institutions that are highly permissive and culturally legitimated on the basis of an individualistic neoliberal ethos has facilitated financial frauds based on "Ponzi models" such as the Madoff scandal, whose cost is put at US$ 50 billion on initial estimates.

We cannot go further into the subject here, but the systemic examination that is part of the structuralist approach suggests that when the regulatory institutions, structures and regimes of global capitalism are relaxed, or their design depends on firms' microeconomic rationality, transnational operators overstep their powers and responsibilities and try to maximize earnings to the "limit" of what their positions of institutionalized power allow. This limit was exceeded in late 2008 and early 2009, leading to the collapse of the United States financial system and a global crisis that is now spreading to the real economy, with unpredictable long-term consequences.

(Original: Spanish)

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  Insert table 1

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Recent ECLAC publications

Flagship publications

Social Panorama of Latin America 2008, LC/G.2402-P. United Nations publication, Sales No. E.08.II.G.89, ECLAC, Santiago, Chile, June 2009, 252 pages.

A constant in the *Social Panorama of Latin America* is the chapter on poverty dynamics in Latin America. The 2008 edition is no exception. Three other chapters focus on the specific topics of the new employment-related target which has been incorporated into the Millennium Development Goals, the demographic dividend as an opportunity for expanding secondary education coverage and the issue of youth violence and family violence as viewed from a perspective of social inclusion. In the first chapter, the most recent estimates available for the countries of Latin America indicate that, in 2007, 34.1% of the region's population was living in poverty and 12.6% in extreme poverty. The total number of poor people stood at 184 million, of whom 68 million were indigent.

The chapter on employment shows that joblessness in Latin America remains high and that, as of 2006, the rate was still 2.4 percentage points higher than in 1990. However, since 2002, unemployment rates have fallen in most urban areas in the countries of the region. Notwithstanding this reduction, sharp inequities persist and take the form of higher rates of unemployment among the poor, women and youth. This is due, in part, to the continued rise in female participation rates, especially among very young women (to 54.2% in 2006), while the male participation rate has remained stable (78.9%) and has even declined slightly among the youngest age group. The precarious labour situation is most apparent in the region's low-productivity sectors, where jobs are generally of poor quality and pay low wages and do not offer job security or access to social security coverage. This situation is often referred to as "labour informality". In 2006, informal workers in urban areas of Latin America accounted for 44.9% of all workers. Of particular concern is the high percentage of urban women employed in low-productivity sectors (50.7%), well above the figure for men (40.5%). This chapter also closely examines the new target of the first Millennium Development Goal: achieving full and productive employment and decent work for all, including women and young people.

Lastly, a chapter is included that evaluates the advantages posed by the stage known as the "demographic bonus" or "demographic dividend", which benefits all of the countries of Latin America. During this stage, the proportion of people in the potentially productive age bracket grows steadily relative to the number of people of potentially inactive ages (children and older persons). This dividend runs out when the population older persons increases considerably. Owing to the unevenness of demographic change, this window of opportunity is beginning to close for some countries whereas in others it has just begun to open up. A positive demographic impact on the education sector is already apparent in most of the countries. In the coming decades, not only will demand for primary education continue to decline, but so will demand for secondary education, relatively at first, but subsequently in absolute terms. During this period, governments will have the opportunity to pursue ambitious goals for increasing coverage and quality in secondary education. Nevertheless, as noted in this section of the report, the benefits associated with this period do not accrue automatically. They are subject to the adoption of macroeconomic policies that will encourage productive investment, increase employment opportunities and promote a stable social and economic environment conducive to sustained development. They also depend on a special effort in education policies and on investment in this sector in anticipation of the virtuous effects of the demographic dividend, especially in order to expand enrolment in secondary schools, improve the quality of the supply of public services and support sectors of the population that have less educational capital in order to improve their effective learning, their advancement within the school system and their graduation from the secondary cycle.

Foreign Direct Investment in Latin America and the Caribbean 2008, LC/G.2406-P. United Nations publication, Sales No. E.09.II.G.24, ECLAC, Santiago, Chile, May 2009, 197 pages.

In 2008, inward foreign direct investment (FDI) in Latin America and the Caribbean rose to a new record high despite slowing with respect to the previous year, and the region's outward foreign direct investment (OFDI) reached its second highest level ever. Considering the economic and financial turmoil of the times, these results are surprisingly positive, but caution needs to be exercised in their interpretation. Many of the investments carried out in 2008 reflected the inertia effects of pre-crisis market trends, and capital flows in 2009 are in fact expected to fall, as discussed in chapter I of this document. Focusing on the impact of the global economic and financial crisis on FDI flows is unavoidable in the present circumstances, but the analysis of the short-term situation should not relegate the issue of long-term development. Chapter II examines investment in offshore business services in the region, a sector that holds promising prospects in the medium and long runs, not only in quantitative, but also in qualitative terms, and which may even be able to thrive in times of crisis. Chapter III analyses investment in large coastal hotel and real estate complexes in tropical countries, a segment whose growth had been fuelled by the United States real estate boom and which has consequently been hit hard by the current crisis. Despite the difficulties they are facing now, these types of investment projects are an interesting example of a new model for tourism development that could be adopted by many countries in the region.

Other publications

The Information Society in Latin America and the Caribbean. Development of technologies and technologies for development, Libro de la CEPAL, No. 98, LC/G. 2363-P, United Nations publication, Sales No. S.08.II.G.72, ECLAC, Santiago, Chile, February 2009, forthcoming.

By examining the development of information societies in the countries of Latin America and the Caribbean, this book serves as a tool for formulating public policies on information and communications technologies (ICTs). Part one of the book outlines its guiding theoretical concepts, which are based on the use of an evolutionary view of technical progress and development; examines the international and internal digital gaps and the variables that produce those gaps; and reports the results of quantitative exercises that gauge the impact of ICTs on growth and productivity in the region.

In keeping with this analytical focus, particular importance is placed on technological variables and the complementarities

resulting from the co-evolution of technological, economic, social and institutional structures.

Part two focuses specifically on the production of ICT goods and services: hardware, software and telecommunications operators. This analysis is complemented by an examination of such issues as the regulation of telecommunications and the debate on intellectual property as it relates to ICTs. Part three studies the spread of ICTs in various areas of application, such as education, public administration, business, health and disaster management. Part four addresses public policies relating to ICTs in the region and makes recommendations on behalf of ECLAC.

These recommendations take the form of seven messages regarding, *inter alia*, the need to: develop the essential complementarities for transferring the impact of ICTs to economic and social development; better coordinate the use of resources and initiatives to generate synergies; move forward with and strengthen intraregional cooperation experiences; transfer leadership in policymaking from actors interested in ICTs per se to the parties responsible for the areas in which these technologies are used; and strengthen the institutions responsible for implementing policies, thereby narrowing the gap between the formulation of these policies and their effective implementation.

Economía y territorio en América Latina y el Caribe. Desigualdades y políticas, Libro de la CEPAL, No. 99, LC/G. 2385-P, United Nations publication, Sales No. S.09.II.G.16, ECLAC, Santiago, Chile, February 2009, 206 pages [Spanish only].

Unequal levels of economic and social development in different geographical areas in Latin America are a central theme on the public policy agenda in the region. In recent decades, the population has continued to concentrate in smaller areas, economic structures have tended to polarize in some areas and economic convergence in subnational areas has stalled. On the basis of rising per capita GDP, and beginning with the globalizing reforms of the 1990s, national territories with high levels of development in primary export sectors have benefited the most. Some less wealthy areas have managed to achieve convergence thanks to new developments in the fields of agro-industry and mining or in the export assembly industries. While some areas with relatively high levels of development suffered a decline owing to recent de-industrialization processes, others remain in poverty and stagnation. The performance of the major economic centres has been uneven and has depended on the development of services sectors, the ability to attract new population and the growth rates of manufacturing sectors.

Decentralization was the dominant view of development policy in Latin America, together with growth in fiscal resources and the democratization of local power structures. These measures, although necessary, proved insufficient to bring about autonomous development processes that could overcome basic inequalities. Policies at the urban and subnational levels are moving towards a view of multiple opportunities through the exploitation of their own resources, rules for improved regulation of relations between the various levels of government and the integration of a family of territorial policies for a dynamic combination of sectoral interests, civic rights, varied political aspirations and environmental sustainability, at both the national and the subnational levels. Changes at the subnational level to broaden or reduce differences make it necessary to study and implement specific policies focusing on spatial centres of innovation as well as to examine the ways in which changes are disseminated economically and spatially, spillover effects and the modalities of exclusion.

Envejecimiento, derechos humanos y políticas públicas, Libro de la CEPAL, N° 100, LC/G. 2389-P, United Nations publication, Sales No.: S.08.II.G.94, ECLAC, Santiago, Chile, February 2009, 225 pages [Spanish only].

The Latin American and Caribbean region is witnessing a slow but inexorable ageing of its population. Two features of this phenomenon are arousing great concern: first, the population in the region is ageing more rapidly than it did in what are today's developed countries; second, it is taking place within a context of persistent inequality, weak institution-building, social protection systems characterized by low coverage and poor quality, and an overburdened family structure. This new book by ECLAC analyses population ageing as it relates to demographics, the guarantee of human rights in old age and the public-policy options that the countries of the region are putting into practice as a result of the agreements signed at the first and second Regional Intergovernmental Conference on Ageing in Latin America and the Caribbean (2003 and 2007). The book describes the framework for rights-based social-protection policies and their application specifically to the elderly population and examines the situation of elderly persons in terms of income protection, health care and the creation of inclusive environments. It also looks at the impact of population ageing on social-protection systems —social security, health services and other social services— and provides an overview of the rights won for elderly persons in national laws, as well as the public policies being implemented in the region. The book concludes by summarizing the main challenges that an ageing population pose for the construction of democratic, inclusive societies and stresses the need for progress in tailoring public responses to the demographic scenario expected in the coming decades.

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