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A FINANCIALLY DRIVEN BUSINESS CYCLE FOR LATIN AMERICA AND THE CARIBBEAN*

ABSTRACT

Three stylized facts characterize the international insertion of Latin America and the Caribbean: (i) the increasing outward orientation in trade and finance with increased indebtedness in international capital markets; (ii) the move towards more flexible exchange rates and (iii) the predominance of the United States dollar as the international reserve currency. The combination of these three stylized facts largely shapes the transmission mechanisms of the economic policy stance followed by developed (center) countries to developing (periphery) economies. This paper identifies and analyzes five transmission channels: (i) the positive and significant statistical association between variations in the nominal exchange rate and country risk; (ii) the existence of a positive correlation between the valuation of sovereign debt issued in foreign currency and that issued in local currency; (iii) the existence of a one way causality between sovereign risk and non-financial corporate sector risk; (iv) the existence of a non-linear relation between non-financial corporate sector leverage and gross fixed investment; and (v) the existence of a negative relation between movements in the real exchange rates and gross fixed investment. The analysis provides the building blocks of a non-neutral financially driven business cycle for Latin America, and more generally, for the periphery.

Keywords: Center-Periphery; Financial Cycle; Latin America; Transmission Mechanisms; Unit of Account

JEL Classification: E42; E58; F41

* The opinions here expressed are the authors' own and may not coincide with the institutions with which they are affiliated.

RIASSUNTO

Un ciclo economico a guida finanziaria per l'America Latina e i Caraibi

Tre fatti stilizzati caratterizzano l'inclusione dell'America Latina e Caraibi nell'economia internazionale: (i) il crescente orientamento verso l'estero del commercio e della finanza con aumento dell'indebitamento sui mercati di capitale internazionali; (ii) l'adozione di tassi di cambio maggiormente flessibili e (iii) la predominanza del dollaro USA quale riserva valutaria. La compresenza di questi tre fattori favorisce in larga misura la trasmissione della stance di politica economica dai paesi sviluppati (il centro) verso le economie in via di sviluppo (la periferia). In questo articolo vengono identificati ed analizzati 5 canali di trasmissione: (i) la relazione positiva e statisticamente significativa tra le variazioni del tasso di cambio e il rischio paese; (ii) l'esistenza di una relazione positiva tra la valutazione del debito sovrano emesso in valuta estera e quello emesso in valuta nazionale; (iii) l'esistenza di una causalità univoca tra rischio sovrano e rischio del settore non finanziario; (iv) l'esistenza di una relazione non lineare tra il leverage del settore non finanziario e gli investimenti fissi lordi; (v) l'esistenza di una relazione negativa tra le variazioni del tasso di cambio e gli investimenti fissi lordi. L'analisi fornisce gli elementi costitutivi di un ciclo economico determinato in modo non neutrale dalla finanza per l'America Latina e, più in generale, per le economie periferiche.

1. INTRODUCTION

Three stylized facts characterize the international insertion of Latin America and the Caribbean. The first is the increasing outward orientation in trade and external financial liberalization (capital account liberalization) that began with the adoption of Washington Consensus policies in the 1990s. External financial openness has been accompanied by rising indebtedness in international capital markets especially since the Global Financial Crisis (2008-2009).

The second is the move towards more flexible exchange rates. Between 1990 and 2022, the percentage of LA countries that adopted more flexible exchange rates increased from 37% to 43%. The third is the predominance of the United States dollar as the international reserve currency. The dollar dominates international banking and capital markets, and global trade as a medium of exchange but most importantly as a unit of account, with 88% of global foreign

exchange transactions denominated in this currency. This implies that the dollar is not only the ‘premier funding currency’ but also the ‘main leverage currency’¹.

The combination of these three stylized facts largely shapes the transmission mechanisms of the economic policy stance followed by developed (center) countries, particularly the United States, to Latin America and the Caribbean (periphery) economies. As a result, they are central to explain the latter’s business cycle and economic performance².

Building on empirical evidence and previous work this paper analyzes and details five transmission channels: (i) the positive and significant statistical association between variations in the nominal exchange rate and country risk; (ii) the existence of a positive correlation between the valuation of sovereign debt issued in foreign currency and that issued in local currency; (iii) the existence of a one way causality between sovereign risk and non-financial corporate sector risk; (iv) the existence of a non-linear relation between non-financial corporate sector leverage and gross fixed investment; and (v) the existence of a negative relation between movements in the real exchange rates and gross fixed investment³.

This paper is divided into ten sections. The second section presents a set of stylized facts that illustrate Latin America’s outward orientation in trade and external finance. It also discusses the arguments underpinning external financial liberalization and shows empirical evidence of the accompanying rise in external indebtedness. It then derives the implications for the analysis of the transmission mechanisms.

The third section illustrates the shift towards more flexible nominal exchange rates in the region. It argues that the arguments for nominal exchange rate flexibility are misguided.

¹ These are the type of expressions found in Alloway and Weisenthal (2022).

² The concept of center-periphery was coined by the Argentinian economist Raúl Prebisch. Center and periphery are analytical and dynamic categories. Center countries are those whose economic policy decisions determine the expansion and contraction of global economic activity. As explained by Prebisch (1993 (1946) pp.224-231): “*Why do I call the United States the cyclic centre? Because that country, because of its size and economic characteristics, is the starting point of the impulses resulting in the expansion and contraction of world economic activity, and especially that of the Latin American periphery. I believe that the cyclic movement is universal, that there is only a single movement which spreads from country to country but with markedly different characteristics, depending on whether it is a question of the cyclic centre or the periphery*”. Although we identify center and periphery countries with developed and developing countries, some large developing countries whose policies affect other developing countries can be classified as center countries. This can be exemplified with the case of China whose demand for raw materials can dictate, in part, the movement in the terms-of-trade for Latin American economies. Currently the United States dollar is also the predominant international means of exchange, standard of value and most importantly the primary international unit of account.

³ See Pérez Caldentey (2023); Abeles *et al.* (2020); Nalín *et al.* (2021); Pérez Caldentey and Vernengo (2021).

Exchange rates do not act as a financial buffer stock instrument, nor do they necessarily move via their effects on the real exchange rate to equilibrate the current account of the balance of payments. Instead, nominal exchange rate movements can be a powerful propagation mechanism of the economic impulses of developed countries that are felt in developing countries⁴. A depreciation of the nominal and real exchange rate may not improve the exports of goods and services, while at the same time may have a negative effect on balance sheets and discourage investment.

The fourth section analyzes and presents evidence on the primacy of the United States dollar as the international unit of account. This implies that United States fiscal and, most importantly, the orientation of its monetary policy define the terms upon which the dollar, and, also other international reserve currencies, are available for domestically issued currencies.

Sections five to nine centre on the workings of the transmission mechanisms described above taking as a reference point the example of an economy with flexible exchange rates. The nominal exchange plays a pivotal role in the transmission mechanisms.

The analysis focusses on two sectors: the government and the non-financial corporate sector. It postulates that both sectors issue debt denominated in foreign currency in the international capital markets. It also assumes that a large share of gross fixed capital investment, mainly machinery and equipment, are imported. The narrative is based on a tightening of international financial conditions. The final thoughts are found in the conclusion.

2. LAC'S OUTWARD ORIENTATION STRATEGY AND INCREASE RELIANCE ON THE INTERNATIONAL CAPITAL MARKET

Following the implementation of Washington Consensus policies in the 1990s Latin America and the Caribbean (LAC) became an increasingly open region to external trade and international financial flows.

In the 1990s LAC countries completed their adhesion to the GATT and World Trade Organization (WTO), significantly reduced their tariff rates and opened-up their economies⁵.

⁴ See Carstens (2019).

⁵ The regional average tariff rate fell from roughly 37% in the 1980s to 12% at the beginning of the 1990s. See Moreno-Brid and Pérez Caldentey (2010).

Between 1995 and 1997 all Latin American countries excepting Cuba adhered to the WTO. Around the same time, Latin American countries began to implement financial liberalization policies.

The arguments underpinning the latter are framed in real terms and follow the same logic as those put forward to justify the adoption of free trade. They are both based on the concept of allocative efficiency⁶. As explained by Henry (2007, pp.887-888):

“In the neoclassical model, liberalizing the capital account facilitates a more efficient allocation of resources and produces all kinds of salubrious effects. Resources flow from capital abundant developed countries, where the return to capital is high. The flow of resources in developing countries reduces their cost of capital, triggering a temporary increase in investment and growth that permanently raises their standard of living”.

Within this view free trade and external financial (i.e. capital account) liberalization are considered complements⁷.

An important consequence of greater external financial openness is the increased reliance on foreign currency borrowing in the international capital market. Between March 1990 and September 2023, the amounts outstanding of debt securities issued in international markets by residents of Developing Latin America and the Caribbean increased from US\$ 43,614 to 978,188 million dollars (Table 1).

The sectors that have made most use of the international capital market as a source of funding are the government and the non-financial corporate sector. Between March 1990 and September 2023, these represented on average 58% and 29% of the total amounts outstanding of debt

⁶ The conditions for allocative efficiency are stringent. According to Balassa (1969, p. 67, footnote 23), these must fulfill under static conditions the following requirements: “*The marginal conditions for an optimum (efficient) allocation in a static situation are: (1) the marginal rates of substitution of any two commodities should be the same for all consumers; (2) the marginal rates of transformation in the production of any two products should be the same for all producers; (3) the marginal physical productivity of a given factor for a given product should be the same for any two producers; (4) the marginal rates of equal-product substitution should be the same for any pair of producers; (5) the marginal rate of substitution of any consumer for any pair of commodities should be equal to the marginal rate of transformation of these commodities in production; (6) the marginal reward of a factor should equal the marginal rate of substitution of reward for use*”.

⁷ This marks a deviation from the standard mainstream free trade model, the Heckscher-Ohlin-Samuelson (H-O-S) model which assumes free trade in goods and autarky (immobility) of factors of production. The extension of the model to consider factor mobility (Mundell, 1957) concluded that mobility in goods is a substitute for mobility in factors of production. More recent analyses sustain that factor mobility, including capital mobility, is necessary for allocative efficiency. See for example Balassa, 1969, p. 83-84 and Antràs and Caballero (2009).

securities. Over the same period the rate of growth on non-financial corporate sector debt largely exceeded that of the government. By comparison the financial sector represents a smaller share of the total outstanding debt (13%, 6% and 5% of the total for financial corporations, private banks and other private financial institutions).

TABLE 1 - *Comparative View of Amounts Outstanding of Debt Securities Issued in International Markets by Residents of Developing Latin America and the Caribbean 1990-2023 (US\$ millions of dollars)*

	March 1990	December 1995	December 2000	December 2005	December 2010	December 2020	September 2023
All issuers	43,614	199,883	315,780	307,407	424,686	968,332	978,188
General government	38,224	146,783	230,077	234,113	241,000	477,573	518,524
Non-financial corporations	2,192	26,765	54,565	48,534	106,343	355,255	334,962
Financial corporations	2,911	26,334	31,138	24,759	77,342	135,504	124,702
Private banks	1,979	17,722	15,835	10,820	39,684	62,450	55,336
Private other financial institutions	190	1,991	6,158	8,351	30,283	50,262	49,268
Public other financial institutions	293	1,809	1,150	932	723	14,497	14,664
Public banks	436	2,901	6,570	4,638	6,652	8,295	5,433

Source: BIS (2024).

The rise in foreign currency debt has been accompanied by widening currency mismatches since the late 2000s. Increased liabilities in foreign denominated currency debt have not been matched by increasing foreign exchange assets/revenues⁸. The non-financial corporate sector accounts for the bulk of the currency mismatches⁹.

This has three major implications for our analysis of the transmission mechanisms. For one thing, it emphasizes the centrality of balance sheet effects. Balance sheet effects can

⁸ See Chui *et al.* (2016, 2018); Borio (2019); Carstens (2019). Note that this is not only characteristic of Latin American countries, but it is also found in most developing economies.

⁹ Chui *et al.* (2018).

predominate over effects dealing with flow magnitudes. It also pinpoints to the need of identifying the interlinkages between the balance sheet of different agents, and in our case between that of the government and of the non-financial corporate sector.

Moreover, not all foreign funding sources have the same effects. Global econometric information for a set of 49 countries for the period 1995-2018 shows that, as is to be expected, the federal funds rate has an inverse relationship with credit flows and debt securities. However, the impact tends to be greater when considering only debt securities¹⁰.

More specifically, a 25-basis-point rise in the rate results in an 80-basis-point reduction in credit flows to banking institutions. Furthermore, the impact is more significant for debt securities, which fall by 100 and 66 basis points in case of financial and non-financial corporations, respectively. This causation is replicated in the countries of Latin America and the Caribbean and in emerging economies. In the case of Latin America, the results indicate that a 25-basis-point hike in the federal funds rate results in an 86-basis-point drop in credit flows, and a worse situation for debt securities issued by financial corporations, whose growth rates plunge 794 basis points¹¹.

Finally, the importance of the government and non-financial corporate sectors in bond issuance provides, in part, a rationale for our focus on these two sectors in the discussion of the transmission mechanisms.

3. THE MOVE TOWARDS MORE FLEXIBLE EXCHANGE RATES

Greater trade and financial openness led governments to adopt more flexible exchange rate regimes¹². These regimes were defended on the basis that they provided an important shock

¹⁰ Other variables that can hamper credit flows are the level of volatility, as measured by the Chicago Board Options Exchange (CBOE) Volatility Index (VIX), and sovereign risk.

¹¹ See ECLAC (2019).

¹² The combination capital mobility/immobility and exchange rate arrangement is usually framed within the notion of macro policy 'trilemma'. It argues that countries can sustain over time only two of these three policy choices: (i) full capital mobility, (ii) fixed exchange rate and an (iii) independent monetary and fiscal policy. However, the concept lacks usefulness: it's unclear what is meant by an independent monetary and fiscal policy. See Eatwell and Taylor (2000) pp. 82-83.

absorber to external shocks preventing the transmission of their effects to the domestic economy¹³.

External financial liberalization which implied reliance on financial inflows, especially on short-term flows, could be disruptive to an economy. It could lead, as exemplified by the East Asian Crisis (1997-1998), the Brazilian-Russian Crisis (1999), the Argentine Crisis (2002-2003) and the Global Financial Crisis (2008-2009) to increasing nominal and real volatility, cause unwanted contractions in the real economy through declines (Figure 1) and, more importantly ‘sudden stops’ in financial inflows and be a source of financial bubbles¹⁴. Also, as illustrated by the experience of Mexico (1995) and Thailand (1996) adhering to a fixed exchange rate/hard peg regime within a context of financial liberalization was unsustainable and led to economic and social crises. More flexible exchange rate arrangements could mitigate the impact of these effects and lessen the possibility of crises.

This, in turn, strengthened the case for external financial liberalization. Latin America did not experience financial crises between 2010-2019 when it registered the most significant level of financial inflows (Figure 1) which contradicted the view that increased financial inflows could be destabilizing¹⁵. The decline in financial flows experienced by Latin America after 2014 is not explained by financial factors but rather by the fall in commodity prices and, also responds to the trend decline in GDP growth and investment that the region experienced after 2010. The decline was further aggravated by the Pandemic (2020) but with a sharp recovery in 2021 and 2022.

The signature of free trade and investment agreements by several countries of the region solidified these views. This has severely limited the capacity of countries, if not banned, the institutional and legal capabilities of the State to implement capital controls. At most, some countries imposed temporary capital controls¹⁶.

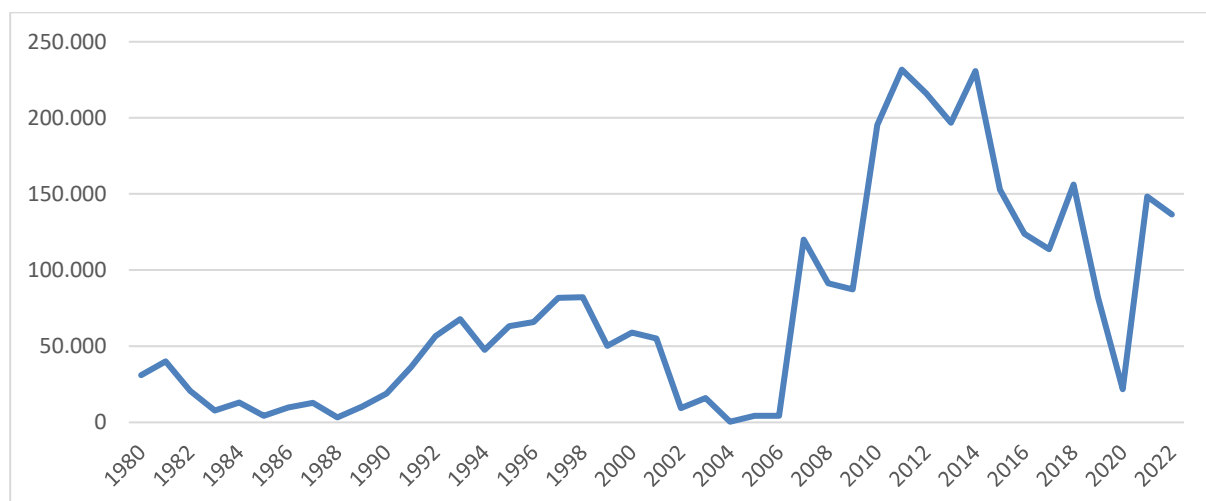
¹³ The move towards more flexible exchange rate regimes is also true for the many emerging market economies in the past two and half decades (see Isard, 1995; Obstfeld, 2016) More flexible exchange rates is not synonymous with freely floating exchange rates. Dirty floating is the common denominator of the flexible exchange rate regime category in Table 1. The Latin American countries that are included under floating exchange rate regimes intervene through different instruments (including spot and swap interventions and through regulatory changes) in the foreign exchange market.

¹⁴ See Calvo (1998 and 2016).

¹⁵ Between 2010 and 2019 the rate of growth of regional GDP and gross formation of fixed capital fell from 6.4% to 0.7% and from 12.8% to -1.1% respectively.

¹⁶ Between 1991 and 1998 Chile imposed an unremunerated reserve requirement on short-term capital inflows. The objectives included retaining the control of monetary policy, reducing external vulnerability (by penalizing short-

FIGURE 1 - *Latin America: Evolution of Net Autonomous Financial Inflows 1980-2022*
in US\$ Billion Dollars



Note: Net autonomous financial inflows include the balance on the financial account (including errors and omissions), use of credit and loans by the IMF and exceptional financing.

Source: On the basis of ECLAC (2023b).

In consonance with this economic logic the classification of Latin American economies by exchange rate regime for the period 1980-2022 shows a permanent decline in the number of countries with fixed exchange rate regimes (or hard pegs) and an increasing number of countries with floating exchange rate regimes¹⁷. In 2022 El Salvador, Ecuador, Haiti, and Panama had a fixed exchange rate regimes/hard peg (representing 22% of the total). At the opposite end, more than 40% of the countries of Latin America have flexible exchange rate regimes and 33% are classified as having intermediate exchange rate regimes (Table 2).

term financial inflows), and to maintain external competitiveness (by reducing the gap between the level of the actual and the long-run equilibrium real exchange rate).

¹⁷ We are not including in this study the English-speaking Caribbean countries.

TABLE 2 - *Classification of Latin American Countries by Exchange Rate Regimes 1980, 1990, 1995, 2004, 2010, 2022*

Year	Fixed exchange rate or “hard peg”	Intermediate regimes	Floating exchange rates
1980	Chile, Dominican Republic, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Nicaragua, Panama, Paraguay, Venezuela	Mexico, Peru, Uruguay	Bolivia, Brazil
1995	Argentina, El Salvador, Haiti, Panama, Venezuela	Bolivia, Brazil, Chile, Colombia, Costa Rica, Ecuador, Honduras, Nicaragua, Uruguay	Dominican Republic, Guatemala, Mexico, Paraguay, Peru
2000	Argentina, Ecuador, Haiti, Panama, El Salvador	Bolivia, Costa Rica, Honduras, Nicaragua, Uruguay, Venezuela	Brazil, Chile, Colombia, Dominican Republic, Guatemala, Mexico, Paraguay, Peru, Uruguay
2010	El Salvador, Ecuador, Haiti, Panama, Honduras, Venezuela	Argentina, Bolivia, Costa Rica, Nicaragua,	Brazil, Chile, Colombia, Dominican Republic, Guatemala, Mexico, Paraguay, Peru, Uruguay
2022	El Salvador, Ecuador, Haiti, Panama	Argentina, Bolivia, Costa Rica, Honduras, Dominican Republic, Nicaragua	Brazil, Chile, Colombia, Guatemala, Mexico, Paraguay, Peru, Uruguay

Note: Intermediate regimes include crawling pegs, crawling bands, and stabilization arrangements.

Source: Prepared by the authors, on the basis of MF (2022) and on the basis of official data.

4. THE IMPORTANCE OF THE UNITED STATES DOLLAR AS THE INTERNATIONAL UNIT OF ACCOUNT

A third factor that characterizes the international integration of Latin America are the terms upon which reserve currencies are available for the domestically issued currencies of the region which are determined by the Federal Reserve Bank of the United States.

The Federal Reserve acts as the world’s central bank. It guides monetary policy and determines, to a large extent, global liquidity and international monetary policy, through its different financial instruments at its disposal including mainly the rate that accrues on the reserves that commercial banks hold at the Federal Reserve and the rate that pays for the operations of

reverse repurchase agreements which guide the evolution of the federal reserve funds rate, and also the central bank liquidity swaps¹⁸.

The dollar is not only the main international medium of exchange but most important the major international unit of account and reserve currency¹⁹. As the dollar is the ‘funding currency for global banking and capital markets’ it is also ‘the leverage currency’²⁰. Data for 2020 and 2021 indicate that 60% of the world’s international reserves are held in dollars. By comparison, 21% of the world’s total international reserves are denominated in euros, 6% in yen and 2% in renminbi (See Figure 2) while 5% are denominated in pounds sterling²¹. These figures have not changed significantly since the end of the Bretton Woods system in the early 1970s (Fields and Vernengo, 2013).

The bulk of international reserves held outside the United States are denominated in United States Treasury bonds. In fact, the available empirical information indicates that 33% of Treasury bond holdings (equivalent to US\$ 7 trillion) are in the hands of government or private foreign investors. The Federal Reserve holds some 25% of outstanding Treasury bonds. Along the same lines, half of all dollar bills and coins, the equivalent of approximately US\$ 950 billion, are held by non-residents.

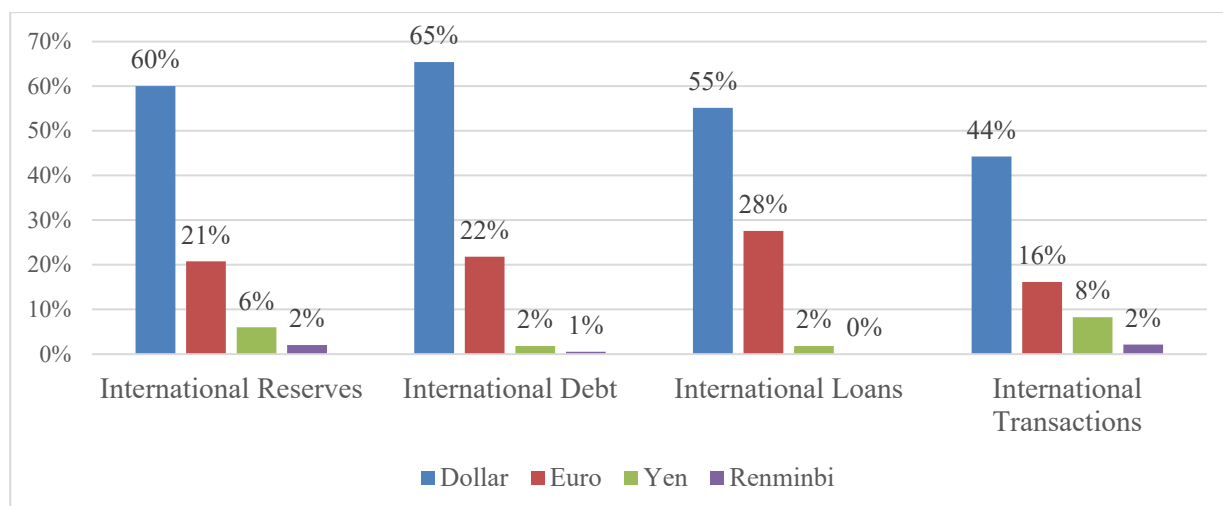
¹⁸ Central bank liquidity swaps seek in part to prevent excess demand for dollars outside the United States from leading central banks in other countries to sell some of their holdings of United States Treasury bonds (which are the most liquid asset in the money market) to avoid potential liquidity strains and obstacles to the implementation of monetary policy by the Federal Reserve Board.

¹⁹ The analyses on the unit of account property (overshadowed by those dealing with the store of value and medium of exchange properties. See Doepke and Schneider, 2017) of money have centered on issues such as devaluation and money illusion (Fisher, 1928; Mundell, 1997). More recently the invoicing and funding dimensions of the unit of account property have taken center stage (Gopinath *et al.*, 2020; Alloway and Wiesenthal, 2022). As explained in our analysis these become highly relevant in an international context dominated by a single reserve currency.

²⁰ See H.S. Shin’s remarks in Alloway and Wiesenthal (2022). These are in line with Minsky’s observation that “...*the Federal Reserve is the essential operator in a system characterized by a vast structure of indebtedness denominated in dollars...*” Minsky, 1983, p. 2) when discussing the extension of the financial instability hypothesis to the international context. Minsky (1986, p. 10) explained the extension of the financial fragility hypothesis to international financial relations as follows: “*The same consideration (that applies to the domestic economy) that cash flows must support asset values holds for international indebtedness. The only special difference is that the supporting cash flows may be derived from income denominated in one currency while payments are denominated in another. The peso denominated income of a Mexican entity may need to be exchanged into dollars for a commitment to be validated. The terms upon which dollars are available for pesos then determines whether commitments can be fulfilled*”.

²¹ The figures cited in this section are based on Bertaut *et al.* (2021).

FIGURE 2 - *Shares of International Reserves, International Debt, International Lending and International Transactions Denominated in Dollars, Euros, Yen and Renminbi in 2020–2021 (Percentages)*



Source: On the basis of Bertaut *et al.* (2021).

The available information also indicates that half of the world's GDP corresponds to countries that use the dollar as an anchor for their currencies. By comparison, just 5% of global GDP is generated by countries for which the euro acts as an anchor currency. The dollar is also the chief means of exchange in international trade and international finance. According to estimates based on international trade invoicing data, between 1999 and 2019 the dollar accounted for 96% of international trade invoicing in Latin America and the Caribbean, 74% in the Asia-Pacific region and 79% in the rest of the world.

According to Shin²² 88% of all foreign exchange transactions have the dollar on one side of them; whereas 31%, 17%, 13% and 7% have the euro, the yen, the pound sterling and the renminbi on one side respectively²³. In financial markets, about 60% of foreign-currency deposits and claims (loans) are denominated in dollars, whereas no more than 15% are denominated in euros. Approximately 60% of all foreign-currency debt issued in the world's capital markets is denominated in dollars as well (Bertaut *et al.*, 2021).

²² In Alloway and Weisenthal (2022).

²³ See also Hofmann *et al.* (2022).

5. THE TRANSMISSION MECHANISMS AND THE ROLE OF THE NOMINAL EXCHANGE RATE

The three stylized facts analyzed in the previous sections (greater trade and financial outward orientation, greater flexibility in exchange rates and the international predominance of the US dollar) and their interaction jointly determines the transmission mechanisms to Latin America and the Caribbean (periphery) of the economic policies and, especially, of the monetary stance followed by developed (center) countries and particularly by the United States. They are thus, central to explain the former's business cycle and economic performance.

On the basis of previous empirical work and some of the most recent literature on the identification of the financial linkages between developed (center) and developing (periphery) countries, we focus on five transmission channels. These include relationships and interlinkages both between nominal variables and between nominal and real variables. At the sector level the focus is placed on the government and non-financial corporations.

The transmission mechanisms include: (i) the positive and significant statistical association between variations in the nominal exchange rate and country risk; (ii) the existence of a positive correlation between the valuation of sovereign debt issued in foreign currency and that issued in local currency; (iii) the existence of a one way causality between sovereign risk and non-financial corporate sector risk; (iv) the existence of a non-linear relation between non-financial corporate sector leverage and gross fixed investment; and (v) the existence of a negative relation between movements in the real exchange rates and gross fixed investment.

Since the nominal exchange rate is a central piece to all three stylized facts, it also plays a pivotal role in these transmission channels. Rather than equilibrating the external accounts or mitigating the impact of external financial shocks on the domestic economy (two of the main arguments that led Latin America economies to adopt more flexible exchange rates as explained in the second section) movements in the nominal exchange rate act as a propagation and amplifier mechanism from the former to the latter²⁴.

²⁴ The view of exchange rate as a buffer stock is core component of a full-fledged inflation targeting regime. We are postulating that variations in the nominal exchange rate tend to determine variations in the real exchange to a greater extent than domestic or external prices. The equilibrating role of the exchange rate is not only emphasized by mainstream economists but also by some proponents of Modern Money Theory (MMT), and some New Developmentalist economists.

In the short-run exports and imports are invoiced in foreign currency, and mostly in United States dollars. This implies that exports may be unresponsive to exchange rate variations. At the same time, imports invoiced in dollar terms will vary with exchange rate variations when expressed in domestic currency. In this sense a depreciation in nominal and in the real exchange rate will not alter exports but will constrain aggregate through reductions in consumption (as prices of imported goods and services expressed in domestic currency will increase) and, most important as we show below, in investment. As explained by Borio (2019, p. 36), the impact of an exchange rate depreciation does not work along established lines of thought:

“The conventional trade channel rests on the assumption that export prices adjust in response to a change in the country’s exchange rate. Over short horizons, however, this may not be the case. This is particularly so in EMEs (Emerging Market Economies) because their trade is almost entirely invoiced in foreign currency, primarily in US dollars. If the invoice price is sticky in US dollar terms, swings in a country’s exchange rate against the US dollar would impact imports but would in the short term have little effect on export competitiveness. Instead, export volumes would be affected by changes in import demand from other countries. Thus, a broad-based depreciation of currencies against the US dollar could even reduce EME export volumes, as demand would contract”²⁵.

From a longer-term perspective there is no consensus view on the elasticity effect of changes in the real exchange rate on imports and exports (expressed in real terms) with respect to the real exchange. An important part of the literature (the balance-of-payments-constrained growth approach) shows for a variety of countries and different time periods that, changes in imports and exports (expressed in real terms) are inelastic with respect to variations in the real exchange. Variations in imports and exports respond to income rather than substitution effects²⁶. Other approaches, such as for example the New Developmentalism (Bresser-Pereira *et al.*, 2015) sustain an opposite view²⁷.

²⁵ Borio (2019), p. 36; see also, Alloway and Wiesenthal (2022).

²⁶ This is one of the main empirical findings of the balance-of-payments constraint approach to economic growth validating a key theoretical principle of Post Keynesian economics. Variations in income provide the mechanism that brings about the adjustment between internal and external economic conditions. For a given ratio of income elasticities, an increase in the rate of growth of the rest of the world translates into a rise in exports over imports and thus generates the space for the expansion of aggregate demand. The consequent increase in income and thus imports restore the balance of payments equilibrium. See Thirlwall (1979, 2013); McCombie and Thirlwall (1994).

²⁷ See Blecker (2023) for a very comprehensive and complete survey on the importance of the real exchange rate for exports and growth.

6. THE POSITIVE ASSOCIATION BETWEEN EXCHANGE RATE VARIATIONS AND SOVEREIGN COUNTRY RISK

The first transmission mechanism is the positive association between exchange rate variations and sovereign country risk as measured by the Emerging Markets Bond Index (EMBI)²⁸. A depreciation (expected or effective) of the local currency (say caused by a tightening of international financial conditions) is associated with a higher risk perception and can cause capital flight. The available evidence for the period running from January 2001 to October 2023 show that the correlation coefficient between the rates of variation of the EMBI and those of the nominal exchange rate are statistically significant at the 1% level of significance in the cases of Argentina, Brazil, Chile, Colombia, Mexico, and Peru (0.74, 0.59, 0.58, 0.39, 0.52 and 0.50) (Figure 3).

The evidence also shows that the correlation coefficients remain significant when the period is subdivided into 2001-2009 and 2010-2023. And that moreover, in all cases, except for Argentina, the statistical relationship between both variables is stronger in the subperiod 2010-2023 relative to the period 2001-2009 which may indicate that the Global Financial Crisis and the policies implemented to counteract its effects have reinforced this relationship (Table 3).

The correlation between both variables may reflect a causality running from the nominal exchange rate to the EMBI. This may be explained by the weakening of external balance sheets leading to exchange rate depreciation and increasing the value of the government external liabilities, adding to the service debt costs and overall debt burden when expressed in domestic currency. This increases risk perceptions.

Alternatively, an increase in risk perception can result in an exchange rate depreciation as investors to avoid capital losses, take refuge in liquid assets denominated in foreign currency. The available evidence for the larger countries of Latin America shows the presence of causality in both directions but with a predominance running from the nominal exchange rate to sovereign risk²⁹.

²⁸ The Emerging Market Bond Index is the key emerging economy risk indicator. It is calculated as the spread between the interest rate that countries pay on dollar-denominated bonds issued by those economies and United States Treasury bonds, which are considered risk-free. The index is based on the behaviour of external debt issued by each country. The less certainty there is that a country will meet its obligations, the higher its EMBI, and vice versa. The minimum rate that an investor would require to invest in a certain country would be equal to the rate on United States Treasury bonds (risk-free) plus the EMBI. See Borio (2019).

²⁹ See Nalín *et al.* (2021).

FIGURE 3 - *Rate of Change of Emerging Market Bond Index (EMBI) and the Nominal Exchange Rate
for Selected Latin American Countries
January 2001– October 2023 (Monthly Data)*

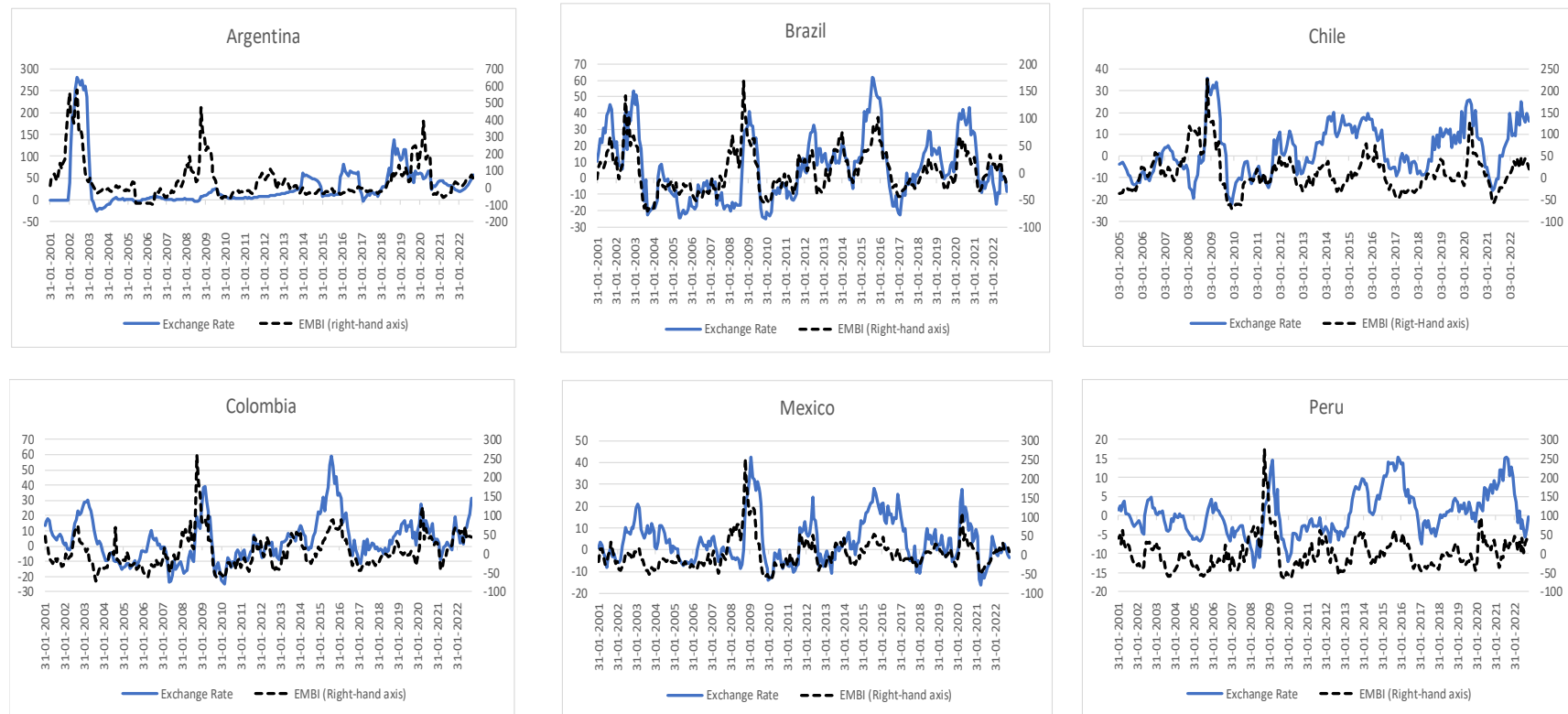


TABLE 3 - *Simple Correlation Coefficients between Rate of Change of Emerging Market Bond Index (EMBI) and the Nominal Exchange Rate*

Time period	Brazil	Colombia	Mexico	Peru	Chile	Argentina
2001-2023	0.74**	0.59**	0.58**	0.39*	0.52**	0.50**
2001-2009	0.71**	0.43**	0.51**	0.35*	0.55**	0.56**
2010-2023	0.79**	0.77**	0.75**	0.56**	0.67**	0.38*

Note: The right scale in figure 3 measures basis points. The statistical significance of the correlation coefficient was determined on the basis of the

formula: $\rho = \frac{r(\sqrt{n-2})}{\sqrt{1-r^2}}$ where r is the simple correlation coefficient and n the number of observations. ρ follows a student-t distribution with n -

2 degrees of freedom. ** denotes significant at the 1% level of significance.

Source: J.P. Morgan, “EMBI Spreads” (2023) and ECLAC (2023b).

7. THE RELATIONSHIP BETWEEN FOREIGN DENOMINATED AND LOCAL CURRENCY DENOMINATED DEBT

The impact of nominal currency depreciation and rising risk perceptions on foreign currency denominated debt can spillover to debt denominated in domestic currency.

Eichengreen and Hausman (1999) and Eichengreen *et al.* (2005) have suggested that a way to reduce the dependence of developing economies on the conditions of international financial markets is the development of local currency bond markets. According to the logic of the argument when the residents of a country issue debt in their own currency, they can avoid the balance sheet vulnerabilities and aggregate currency mismatches due to increased debt stock and debt service payments that can result from an exchange rate depreciation³⁰. In this sense, debt denominated in local currency can increase the stability of output and capital flows and avoid the credit rating down-grades.

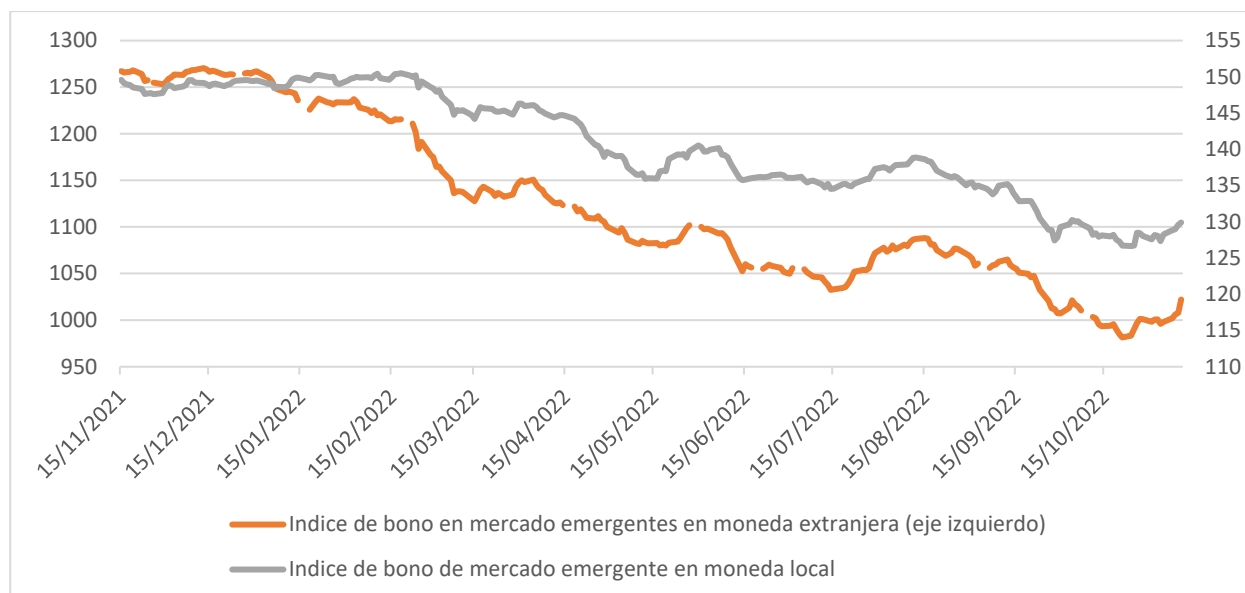
The available evidence suggests that in an open financial environment debt in domestic currency can also be affected by international financial conditions. The contractionary stance of monetary policy is shown to affect not only international financing conditions in emerging markets but also domestic financing conditions. Empirical evidence for emerging and developing economies shows that the dollar index is not only associated with a higher spread of foreign currency yields but also with that of local currency yields.

This stylized fact is explained by the important role that foreign investors have acquired in local debt markets³¹. Even if the government is not indebted in foreign currency, the mechanism described above still holds. The issue does not revolve around the currency in which the debt is denominated *per se*. It is rather a question of who owns the debt. Global liquidity conditions reflected in nominal exchange rate changes affect the profitability of foreign investors holding securities in local currency. If debt is issued in local currency but it is owned by foreign investors, an effective or expected depreciation may have a similar effect, as in the case where the debt is issued in foreign currency. The available evidence indicates that, in some countries of Latin America, an important part of government debt is owned by foreign investors.

³⁰ Borrowing only in foreign currency is captured by the term ‘original sin’ (Eichengreen and Hausman, 1999).

³¹ See Carsten (2019). He argues (p. 6) that foreign investors large holdings of emerging market and developing economies sovereign debt denominated in local currency is on the factors that exposes emerging market economies to the financial channels of the exchange rate.

FIGURE 4 - Trends in the Public Dollar-Denominated Debt Index and the Public Local-Currency Debt Index for Emerging Markets, 15 November 2021–10 November 2022



Source: Bloomberg Finance L.P. (2022).

Note: The dollar-denominated public debt index for emerging markets measures the yield in dollars (calculated on the basis of bond prices) of investment-grade and high-yield securities issued by national and regional governments, government-sponsored institutions and domiciled companies in over 60 emerging markets. The local-currency public debt index for emerging markets measures the yield (calculated on the basis of bond prices) of local-currency emerging sovereign debt markets for securities having terms of between 2 and 30 years.

An expected or *de facto* depreciation can lead to expected capital losses of the foreign investors who own the debt denominated in domestic currency. This increases risk of foreign investors exposed to holdings of securities in local currency (a rise in EMBI in case of government and thus in CEMBI) and may result in capital outflows. If risk perceptions affect in turn the exchange rate this mechanism can provide the basis for a cumulative process. In this way a depreciation of the nominal exchange rate has an amplifying effect on the risk conditions of the securities markets in local currency. This explains to co-movement between the government dollar-denominated debt index and the government local-currency debt index (Figure 4)³².

³² Carsten and Shin (2019) and Bertaut *et al.* (2023) also argue that while the issuance of local denominated debt can overcome the consequences associated with the 'Original Sin', it does not overcome what they call the 'Original Sin Redux'. The latter is due to the amplification of gains and losses caused by a depreciation of the currency due to longer maturities. According to both authors "*local sovereign bonds in many emerging markets have higher durations in dollar terms than in local currency terms*". Ibid. p. 5.

Most central banks of the periphery have limited firing power and are market followers. The extent to which they can intervene in the domestic bond market is limited by the degree to which the local currency is expected to depreciate and by the floor set by the international interest rate. The extent to which they can intervene in the foreign exchange market is limited by the stock of international reserves.

8. THE TRANSFER OF RISK PERCEPTIONS FROM THE GOVERNMENT TO THE NON-FINANCIAL CORPORATE SECTOR³³

The perceptions and variations in sovereign risk tend to spill over to the productive sector. Empirical evidence shows that the sovereign risk index (EMBI) tends to determine the evolution of the corporate risk index (CEMBI). Granger causality test results for the cases of Brazil, Chile, Colombia, Mexico, and Peru for the period 1995-2020 show that EMBI largely Granger causes CEMBI and not the other way around³⁴. To this transmission channel must be added the impact that exchange rate variations have on the balance sheets of the non-financial corporate sector and the financial sector as their financial position is characterized by the fact that foreign currency liabilities are often not fully hedged by foreign currency assets (especially in the case of the non-financial sector)³⁵.

An exchange rate depreciation worsens the balance sheet of those firms that are externally indebted. If companies in a mismatch decide to purchase foreign currency to meet their foreign exchange obligations, the increased demand for foreign exchange may aggravate exchange rate depreciation. This in turn may increase the debt burden thereby heightening credit risk and tightening financing conditions³⁶. Data for a range of countries in different developing regions suggest that currency mismatches have become more accentuated since the global financial crisis (2008-2009). Available data for a sample of 12 selected emerging and developing economies for the period 2007-2014 show that the net foreign-currency assets relative to exports in the private corporate sector has trended up, owing to the behaviour of the non-financial corporate sector (Chui *et al.*, 2018).

³³ This section is largely based on Pérez Caldentey *et al.* (2019).

³⁴ See Nalín *et al.* (2021).

³⁵ See Borio (2019).

³⁶ This may also be due to the fact that expected exchange rate depreciations may result in financial outflows.

An additional and fundamental balance sheet effect derives from the observed relationship between firm leverage and gross capital formation. Overleveraging can result in a negative relationship between debt and investment. The factors that can account for this negative relationship include, higher interest payments, which subtract resources from being used for investment; a higher risk profile, which increases the difficulty of obtaining funding; and the desire to repair weak balance sheets and to build a buffer against illiquidity or possible default.

Firms finance their capital expenditure and investment from internal (retained earnings) and external funds. To the extent that firms use external sources of funding, debt and leverage should expand with higher levels of capital expenditure and funding. If firms do not face constraints on their external financing there should not be a relationship between their cash flow, liquid holdings (determined in part by retained earnings), and investment³⁷. However, when firms pass a certain debt threshold they may feel more financially constrained and as a result may increase their retained earnings and cash holdings to protect themselves against illiquidity and ultimately insolvency. As a result, beyond a certain leverage threshold the relation between cash flow and investment should be negative.

Changes in external interest rates can also affect investment plans. When international interest rates rise, thus increasing the differential with domestic rates, the local monetary authorities will feel tempted, and in fact may be forced, to increase the cost of borrowing for firms that obtain mainly local funding.

The firms that borrow in the international capital markets (i.e., bond-issuing firms) may also see their external funding options curtailed. Due to the inverse relationship between interest rates and the present value of a bond, an increase in interest rates translates into a fall in the price of a bond. Thus, any expectation of an increase in interest rates will lead to a reduction in the holdings of bonds to avoid a capital loss. This can translate into a reduction of lending via the bond market. Both transmission mechanisms may be at work to contract firms' expenditures on long-term fixed assets and capital investment.

³⁷ See Fazzari *et al.* (1988).

TABLE 4 - *Bond-Issuing Firm's Share of Total Assets, Share of Expenditure on Short-term Investment, and on Fixed Assets and Long-term Investment (2016)*

Country	Bond-issuing firms				Total number of firms and number of firms issuing and not issuing bonds		
	Share of total assets (percent)	Share of expenditure of short-term investment (percent)	Share of expenditure on fixed assets and long-term investment (percent)	Share of total number (percent)	Number of bond-issuing firms	Number of non-issuing firms	Total number of firms
Argentina	38.8	30.5	47.7	8.9	14	142	156
Brazil	35.0	21.9	42.2	2.1	28	1,253	1,281
Chile	30.9	9.7	43.7	7.9	22	257	279
Colombia	39.6	62.6	45.2	7.6	7	85	92
Mexico	34.4	13.4	43.1	10.5	24	204	228
Peru	24.5	71.9	23.0	7.3	15	190	205
Average/total	33.9	35.0	40.8	4.9	110	2,131	2,241

Source: Pérez Caldentey *et al.* (2019).

This will affect aggregate investment in so far as the firms that use the international capital market account for an important share of assets and investment. The data provided in Table 4 are thus consistent with the observed fact that growing indebtedness in the non-financial corporate sector is accompanied by lower growth in gross capital formation.

9. THE DIRECT EFFECT OF EXCHANGE RATE VARIATIONS ON AGGREGATE INVESTMENT

Besides its impact on firms' balance sheets and through this means on investment and thus eventually on growth (if, as in the case of Latin America, companies that are indebted in international capital markets own an important share of fixed assets), movements in the exchange rate also impact more directly on the gross formation of fixed capital through a cost channel. In so far as, explained above, exchange rate movements affect the cost of imports

expressed in domestic currency, a depreciation of the exchange rate will increase the cost of imported capital goods and thus of machinery and equipment. This disincentivizes not only imports but also investment plans. As a result, a depreciating nominal exchange rate that translates into a depreciation of the real exchange rate acts as a drag on aggregate demand and thus on economic growth.

TABLE 5 - *Simple Correlation Coefficient between the Rate of Variation of the Real Exchange Rate and of the Gross Formation of Fixed Capital for Selected Latin America Countries for Selected Latin American Economies*

Country	Simple Correlation Coefficient	Time Period	Number of Observations	Statistical Significance
Brazil	-0.59	2004-2019	60	5.7**
Chile	-0.42	2004-2019	60	5.7**
Colombia	-0.34	2006-2019	52	5.3**
México	-0.68	2004-2019	60	5.7**
Peru	-0.35	2004-2019	60	5.7**

Note: The statistical significance of the correlation coefficient was determined on the basis of the formula: $\rho = \frac{r(\sqrt{n-2})}{\sqrt{1-r^2}}$ where r is the simple correlation coefficient and n the number of observations. ρ follows a student-t distribution with $n-2$ degrees of freedom. ** denotes significant at the 1% level of significance.

Source: On the basis of ECLAC (2023a and 2023b).

FIGURE 5 - *Rate of Change of Imports of Goods and Services and the Gross Formation of Fixed Capital (GFFC) for Selected Latin American Countries 1971-2022 (Annual Data)*

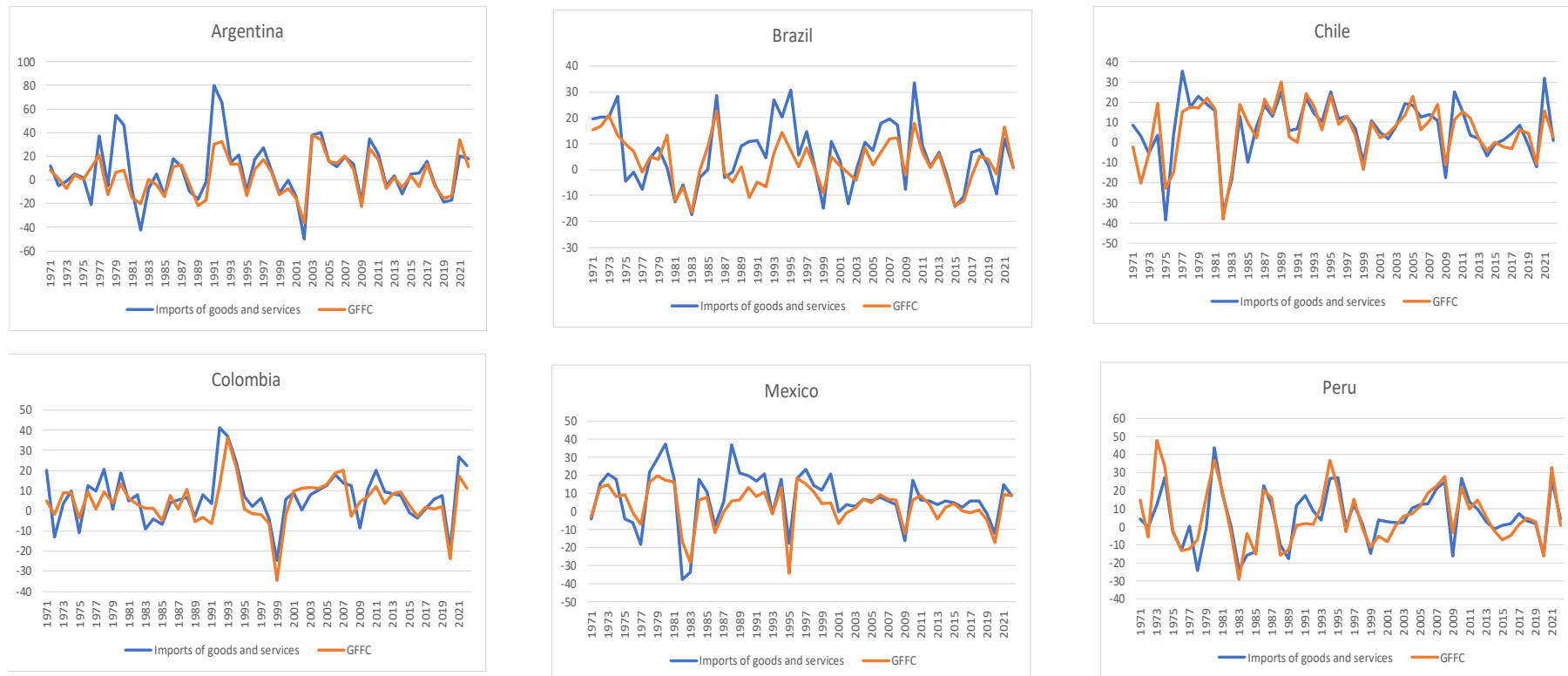


TABLE 3 - *Simple Correlation Coefficients between the Rate of Change of Imports of Goods and Services and the Gross Formation of Fixed Capital (GFFC) for Selected Latin American Countries 1971-2022*

Periods	Argentina	Brazil	Colombia	Chile	México	Peru
1971-1980	0.47	0.71*	0.78*	0.73*	0.91*	0.77*
1980-1990	0.77*	0.72*	0.65	0.94*	0.90*	0.95*
1990-2000	0.91*	0.66	0.91*	0.97*	0.93*	0.82*
2000-2010	0.98*	0.92*	0.39	0.82*	0.76*	0.85*
2010-2022	0.92*	0.88*	0.93*	0.83*	0.88*	0.94*

Note: * indicates significant at the 95% level of coincidence. See note to Table 3 for an explanation of the methodology for the calculation of the statistical significance of the correlation coefficient.

Source: On the basis of World Bank Development Indicators (2024).

Capital goods are a major component of total imports representing in the case of South America 62% of the total value, in the case of Central America and the Dominican Republic together 55% and in the case of Mexico 69%. By contrast, the share of consumer goods is much lower. The share of imported capital goods began to increase with the adoption of trade and financial liberalization policies.

By contrast, the share of imports of consumer goods in these subregions averages 13.1%, 18.3% and 10.2% of the total, respectively. Machinery and equipment which is the most dynamic component of investment and with greater technological content, which can contribute the most to productivity growth, represents 43.3% of the gross formation of fixed capital for Latin America and the Caribbean³⁸.

The evidence provided for six of the bigger economies of Latin America, using quarterly data, including Brazil, Chile, Colombia, Mexico, and Peru for the period 2004-2019, show there is a negative relationship between the rate of variation in the real exchange rate and that of gross fixed capital formation (Table 3)³⁹. Accompanying evidence also indicates co-movement between the rate of growth of the gross formation of fixed capital and the rate of growth of imports of goods and services (both expressed in real terms) over time (Figure 5). The simple correlation coefficients for both series for different periods of time (1971-1980; 1980-1990; 1990-2000; 2000-2010; 2010-2022) show, with one exception, that all correlation coefficients are statistically significant at the 95% level of confidence (Table 6).

10. CONCLUSION

The analysis provides the building blocks of a financially driven business cycle for Latin America, and more generally, for the periphery. The financial cycle is not neutral in the long run with respect to real variables. Note that that the transmission mechanisms examined need not

³⁸ This result is obtained with a sample of 18 Latin American countries for the period 2010-22. Note that we adopt Kaldor's viewpoint that the accumulation of factors, in this case capital goods and, more precisely machinery and equipment, embody greater technical progress and thus result in increased productivity. This questions the dichotomy between factor accumulation and productivity which is found in mainstream economics and reflected in the specification of the traditional production function.

³⁹ Additional evidence of a negative relationship between the variations in the gross formation of fixed capital and in the real exchange rate is provided by Ahumada and Aromi (2018), Villar *et al.* (2018) and Moreno-Brid (2018) for the specific cases of Argentina, Colombia and Mexico.

lead to a financial or external crisis. They may indeed just characterize the normal workings of current international financial linkages⁴⁰.

Also, the way we view, understand, and trace the impact of these transmission mechanisms is central to building an open economy macroeconomics for the countries of the periphery that considers their subordinate role in the world economy. Among others, the existing open economy narrative found in neoclassical and heterodox approaches pays insufficient, and at times, scant attention to the dual (real and financial) nature of the exchange rate, the binding financial constraints that developing economies face (issuing a local currency is not equivalent to having an international reserve currency), and the linkages between financial and real variables⁴¹. Because of its generality the analysis presented could also help overcome the existing lack of consensus in heterodox economics circles on the open economy⁴².

⁴⁰ Nalín *et al.* (2021) argue that these linkages can explain the decline in the rate of growth of Latin America as a region in the aftermath of the Global Financial Crisis (2008-2009).

⁴¹ Also, the productive structure of developing countries determines the choice of variables to gauge economic performance. As an example, most narratives of the open-economy including for developing countries work with GDP as the fundamental measure of economic activity and ignore the use of the Gross National Disposable Income which included the terms-of-trade effect and remittances. These two variables are not included in GDP. They should be an important component in any analysis of the external sector since they reflect the productive structure of most Latin American economies. In this sense using GDP as the main indicator for economic performance largely overlooks some of the main transmission mechanisms present within an open economy setting.

⁴² See Lavoie (2022).

REFERENCES

- Abeles, M., E. Pérez Caldentey and G. Porcile, (2020), “The COVID-19 Crisis and the Structural Problems of Latin America and the Caribbean: Responding to the Emergency with a Long-Term Perspective”, *ECLAC Review*, 132(December), 143-170.
- Ahumada, H. and D. Aromí (2018), “Determinants of Investment in Argentina. Descriptive analysis and an econometric estimation”, in Spanish, Mimeo.
- Alloway, T. and J. Weisenthal (2022), “Transcript: Hyun Song Shin Explains Why This Dollar Shock Is So Unique”, *Bloomberg*, November 2nd.
- Antràs, P. and R.J. Caballero (2009), “Trade and Capital Flows: A Financial Frictions Perspective”, *Journal of Political Economy*, 117(4), 701-744.
- Balassa, B. (1969) *The Theory of Economic Integration*, George Allen & Unwin Ltd.: London.
- Bertaut, C., V. Bruno and H.S. Shin (2023), “Original Sin Redux: Role of Duration Risk”, BIS Working Paper No. 1109.
- Bertaut, C., B. Von Beschwitz and C.S. Curcuru (2021), “The International Role of the U.S. Dollar”, FEDS Notes October 6, available at: <https://www.federalreserve.gov/econres/notes/feds-notes/the-international-role-of-the-u-s-dollar-20211006.html>.
- BIS (2024), Debt Securities Statistics, Bank for International Settlements Data Portal, available at: <https://data.bis.org/topics/DSS>.
- Blecker, R.A. (2023), “How Important is the Real Exchange Rate for Exports and Growth?”, *European Journal Economics and Economic Policies: Intervention*, 20(2), 250-265.
- Bloomberg (2022), Bloomberg Finance L.P. 2022.
- Borio, C. (2019), Monetary Policy Frameworks in EMEs: Inflation Targeting, the Exchange Rate and Financial Stability, BIS Annual Economic Report 2019, BIS: Ginebra, available at: <https://www.bis.org/publ/arpdf/ar2019e2.pdf>.
- Bresser-Pereira, L.C., J.L. Oreiro and N. Marconi (2015), *Developmental Macroeconomics: New Developmentalism as a Growth Strategy*, Routledge: London and New York.
- Calvo, G.A. (1998), “Capital Flows and Capital-Market Crises: The Simple Economics of Sudden Stops”, *Journal of Applied Economics*, 1(1), 35–54.
- Calvo, G.A. (2016), *Macroeconomics in Times of Liquidity Crisis*, MIT Press: Cambridge, MA.

- Carstens, A. (2019), Exchange Rates and Monetary Policy Frameworks in Emerging Market Economies, BIS Speech, delivered at the London School of Economics, May 2nd.
- Carstens, A. and H.S. Shin (2019), “Emerging Markets Aren’t Out of the Woods Yet”, *Foreign Affairs*, March 15th, available at: <<https://www.foreignaffairs.com/world/emerging-markets-arent-out-woods-yet>>.
- Chui, M., E. Kuruc and P. Turner (2016), “A New Dimension to Currency Mismatches in the Emerging Markets: Non-Financial Companies”, BIS Working Paper No. 550.
- Chui, M., E. Kuruc and P. Turner (2018), “Leverage and Currency Mismatches: Non-Financial Companies in the Emerging Markets”, *The World Economy*, 41(12), 3269-3287.
- Doepke, M. and M. Schneider (2017), “Money as Unit of Account”, *Econometrica*, 85(5), 1537-1574.
- Eatwell, J. and L. Taylor (2000), *Global Finance at Risk*, The New Press: New York.
- ECLAC (2019), *Economic Survey of Latin America and the Caribbean 2019*, Economic Commission for Latin America and the Caribbean: Santiago, Chile.
- ECLAC (2023a), *Economic Survey of Latin America and the Caribbean 2023*, Economic Commission for Latin America and the Caribbean: Santiago, Chile.
- ECLAC (2023b), Statistical Database for Internal Use.
- Eichengreen, B. and R. Hausmann (1999), *Exchange Rates and Financial Fragility*, in: “New Challenges for Monetary Policy”, Proceedings of the Economic Policy Symposium sponsored by the Federal Reserve Bank of Kansas City in Jackson Hole, pp. 319-367.
- Eichengreen, B., R. Hausmann and U. Panizza (2005), *The Pain of Original Sin*, in: B. Eichengreen, R. Hausmann (Eds): “Other People’s Money: Debt Denomination and Financial Instability in Emerging-Market Economies”, University of Chicago Press, pp. 13-47.
- Fazzari, S.M., R.G. Hubbard, B.C. Petersen, A.S. Blinder and J.M. Poterba (1988), “Financing Constraints and Corporate Investment”, *Brookings Papers on Economic Activity*, No. 1, 141-206, Brookings Institution: Washington, DC.
- Fisher, I. (1928), *The Money Illusion*, Adelphi Company: New York.
- Gopinath, G., E. Boz, C. Casas, F.J. Díez, P-O. Gourinchas and M. Plagborg-Møller (2020), “Dominant Currency Paradigm”, *American Economic Review*, 110(3), 677-719.
- Henry, P.B. (2007), “Capital Account Liberalization: Theory, Evidence and Speculation”, *Journal of Economic Literature*, 45(4), 887-935.

- Hofman, B., A. Mehrtotra and D. Sandri (2022), “Global Exchange Rate Adjustments: Drivers, Impacts and Policy Implications”, BIS Bulletin No. 62.
- IMF (2023), Annual Report on Exchange Arrangements and Exchange Restrictions 2022, International Monetary Fund: Washington, DC.
- Isard, P. (1995), *Exchange Rate Economics*, Cambridge University Press: New York.
- J.P. Morgan (2023), EMBI Spreads.
- Lavoie, M. (2022), *Post-Keynesian Economics: New Foundations*, Edward Elgar: Northampton.
- McCombie, J. and A.P. Thirlwall (1994), *Economic Growth and the Balance of Payments Constraint*, Macmillan: New York.
- Minsky, H.P. (1983), “Monetary Policies and the International Financial Environment”, Hyman P. Minsky Archive 377, available at: <https://digitalcommons.bard.edu/hm_archive/377>.
- Minsky, H.P. (1986), “Global Consequences of Financial Deregulation”, Hyman P. Minsky Archive 378, available at: <https://digitalcommons.bard.edu/hm_archive/378>.
- Moreno-Brid, J.C. (2018), *Gross Fixed Capital Formation in Mexico and Economic Growth: Empirical Research from Different Methodological Perspectives*, in Spanish, Mimeo.
- Moreno-Brid, J.C. and E. Pérez Caldentey (2010), *Trade and Economic Growth: A Latin American Perspective on Rhetoric and Reality*, in: Mark Setterfield (Ed.), “Handbook of Alternative Theories of Economic Growth”, Edward Elgar Publishing: Northampton.
- Mundell, R.A. (1957), “International Trade and Factor Mobility”, *The American Economic Review*, 47(3), 321-335.
- Mundell, R.A. (1997), *Updating the Agenda for Monetary Union*, in: L. Leiderman (Ed.): “Optimum Currency Areas: New Analytical and Policy Developments”, IMF: Washington, DC, pp. 29-48.
- Nalín, L., L. Rojas and E. Pérez Caldentey (2021), “The External Financial Constraint in Latin America and the Caribbean. A Stock-Flow Approach”, DA COVID-19 Project Paper 17/21, <https://mobilizingdevfinance.org/sites/mobilizedevresources/files/2021-11/DA_COVID_FFD_ECLAC_StockFlowApproach.pdf>.
- Obstfeld, M. (2016), *Floating Exchange Rates, Self-Oriented Policies, and Limits to Economic Integration*, in: O.J. Blanchard, R.G. Rajan, K.S. Rogoff and L.H. Summers (Eds): “Progress and Confusion. The State of Macroeconomic Policy”, MIT Press: Cambridge.
- Prebisch, R. (1993), Raúl Prebisch. Obras Vol IV, Fundación Raúl Prebisch: Buenos Aires.

- Pérez Caldentey, E. (Ed.) (2023), Financial Openness, Financial Fragility and Policies for Economic Stability, Project Documents LC/TS.2022/139, ECLAC: Santiago.
- Pérez Caldentey, E., N. Favreau Negront and L. Méndez Lobos (2019), “Corporate Debt in Latin America and its Macroeconomic Implications”, *Journal of Post Keynesian Economics*, 42(3), 335-362, DOI: [10.1080/01603477.2019.1616563](https://doi.org/10.1080/01603477.2019.1616563).
- Pérez Caldentey, E. and M. Vernengo (2021), “Financialization, Premature Deindustrialization, and Instability in Latin America”, *Review of Keynesian Economics*, 9(4), 493-511.
- Thirlwall, A.P. (1979), “The Balance of Payments Constraint as an Explanation of International Growth Rates Differences”, *Banca Nazionale del Lavoro Quarterly Review*, 32(128), 45-53.
- Thirlwall, A.P. (2013), *Economic Growth in an Open Developing Economy: The Role of Structure and Demand*, Edward Elgar: Northampton.
- Villar, L., C. Pérez and C. Durana (2018), *Investment Cycles and their Determinants for Colombia (1975-2017)*, in Spanish, Mimeo.
- World Bank (2024), *World Bank Development Indicators*, World Bank: Washington, DC.

