

The Fragility of Emerging Currencies Since the 2000s: a Minskyan Analysis

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Abstract: The currencies of a few emerging market economies (EME) have been following a specific dynamic since the early 2000s: they are strongly connected to international financial markets, appreciating in moments of tranquility and presenting sharp depreciations in peaks of uncertainty. This dynamic is more specific than what is expected from heterodox exchange-rate theories and it contradicts mainstream theories. What is the mechanism behind it? To answer this question, this article applies the Minskyan framework to the context of money managers and their portfolio allocation decisions. The approach allows the analysis of these currencies through money managers' decisions, putting forward that these might float according to their *balance-sheet constraints* - reasons not related to the currencies themselves, but to money managers' assets, liabilities, and currency mismatch. The result is a dynamic characterized by *deviation-amplifying system* - the opposite of the equilibrium-seeking mechanism needed for clearing markets - and high frequency of depreciations associated to the fickleness of international financial markets and the global extent of money managers' balance-sheets.

Keywords: Minskyan framework, financial integration, exchange rates, emerging market economies.

JEL Classification: F41, F310, B50.

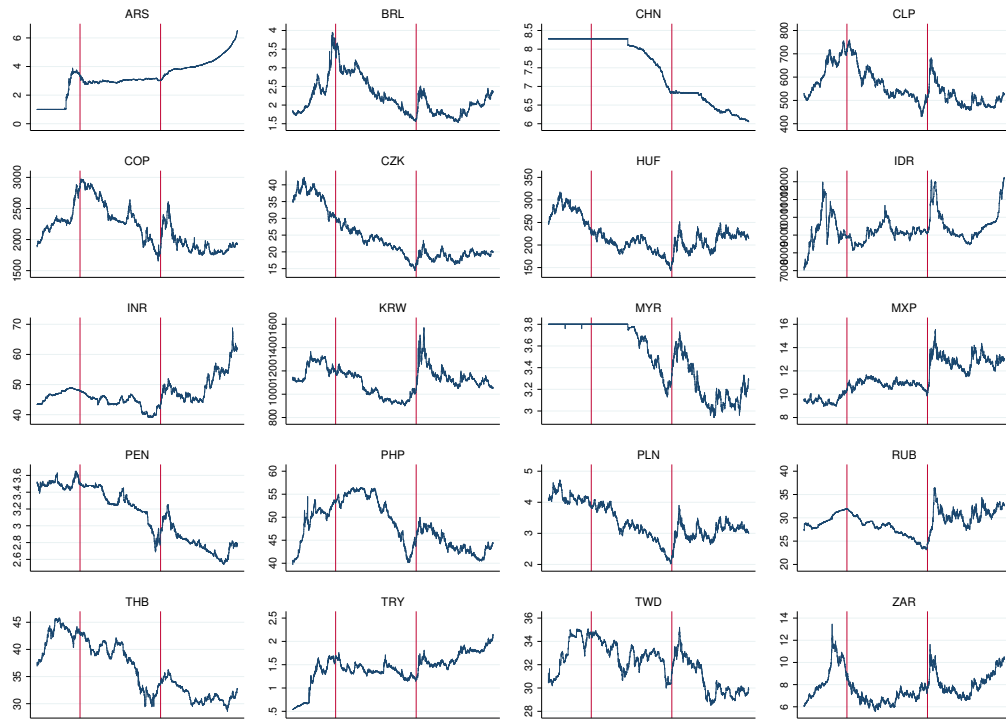
1 Introduction

The exchange rates of a group of emerging market economies¹ (EMEs) have been passing through significant turbulence since the 2000s. From the beginning of the new expansionary phase of the international liquidity cycle in 2003 (Prates, 2015) to the Global Financial Crisis (GFC) in 2008 the exchange rates of many EMEs' (hereafter emerging currencies) faced strong appreciation trends (a cross-country average appreciation of 17%, but as high as 50% for the Brazilian real, 40% for the Czech koruna and the Polish zloty, and 30% for the Colombian peso; see Figure 1). The collapse of Lehman Brothers was an immediate and immense shock, and most of these vast exchange rate appreciations disappeared within a few weeks (daily depreciation peaks as high as

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6% were seen in the South African rand, and 5% in the Polish zloty, the Brazilian real, the Colombian peso and the Chilean peso).

Figure 1: Emerging currencies, 2000 to 2013



Data source: Ecwin. The vertical lines indicate January 1st, 2003, and the collapse of the Lehman Brothers, September 15th, 2008.

These shocks were relatively short-lived. In a context of more favorable growth outlook in EMEs than in advanced countries (the ‘two-speed recovery’), as well as massive policies of quantitative easing including historically low interest rates in advanced countries, capital flew back to EMEs and their exchange rates rapidly appreciated. In 2009, exchange rates of half of the EMEs returned to their pre-GFC levels (after daily peaks of more than 4% in the Colombian peso and the Polish zloty, and more than 3% in the Brazilian real, the Mexican peso, and the South African rand). The period from 2010 to 2013 was also turbulent as the market sentiment guiding emerging currencies was tied to the Euro crisis and to the ‘fear of tapering’ related to Bernanke’s (2013) statement that the Fed could increase interest rates by 2015. In the period marked by the Euro crisis, 11 of the 20 emerging currencies depreciated, and in the six months following Bernanke’s announcement, 18 currencies depreciated. In the first case, the changes of the Argentinean peso and the South African rand accumulated about 40%

depreciation, those of the Brazilian real, the Turkish lira, and the Indian rupee, about 25-30%. In the second case, the Argentinean peso depreciated almost 60%, the Russian ruble, 35%, and the Indonesian rupiah, the Turkish lira, and the Chilean peso depreciated about 15-20%. For comparison purposes, the Euro/U.S. dollar depreciated 4% from 2010 to 2013.

When looking at the highest daily depreciations from 2003 to 2013, the Euro is also much less volatile: From the emerging currencies with a floating exchange rate (throughout the period), only the Philippine peso had a maximum depreciation (2%) lower than that of the Euro (3.1%). Also important, the *frequency* of extreme daily depreciations (2-5%) of most emerging currencies (13 of 20) is higher than the Euro's; the highest frequencies being those of the Turkish lira, the South African rand, the Brazilian real, the Polish zloty, and the Hungarian forint (Ramos, 2016).

From the post-Keynesian (PK) perspective that nominal determine real exchange rates, these synchronized exchange-rate dynamics are problematic. They indicate that these currencies are determined by the conditions of international financial markets, not being coherent with their underlying economies. The resulting exchange rate levels and lack of stability are also not favorable. Excessive appreciation of exchange rates negatively impacts growth as it strengthens the foreign exchange constraint on growth, and discourages trade and investment in tradable sectors, hindering resource reallocation from the non-tradable to the tradable sector, a locus of learning-by-doing externalities and technological spillovers. Turbulent exchange rates, on the other hand, are a shock to entrepreneurs' animal spirits for increasing uncertainty thus discouraging trade, investment and growth. This is key in the PK framework given the understanding of uncertainty as fundamental, thus the centrality of expectations in decision making (Cottani *et al*, 1990; Dollar, 1992; Eichengreen, 2007; Rodrik, 2008; Razmi *et al*, 2009; Rapetti *et al*, 2012; Rapetti, 2013; Missio *et al*, 2015). Moreover, the adoption of floating exchange-rate regimes by EMEs did not bring about monetary policy autonomy – EMEs authorities' policy trilemma is reduced to a dilemma, namely, absence of monetary policy autonomy with capital account convertibility independently of the exchange rate regime (Flassbeck, 2001; Rey, 2015). Understanding why some emerging currencies are so fragile to conditions ruling in international financial markets is therefore key for creating stable conditions that foster economic and human development.

Exchange rate crisis, as those that characterize the emerging currencies since the 2000s are not the focus of mainstream theories. This literature is marked by a dichotomy

between theories focusing on exchange-rate determination and others built for explaining crisis. Mainstream *crisis* models cannot explain emerging currencies dynamics because, in addition of being focused on fixed exchange rates, they have internal disequilibrium at their core – yet, in the GFC capital flew to the countries in crisis, which can be seen as a *no-safe-heaven puzzle*. Mainstream exchange-rate *determination* theories are focused on long-term dynamics and the exchange rate is a market-clearing price. However, as it will be shown in the article, the mechanisms determining emerging currencies’ pattern are rather marked by divergence than convergence. In addition, whether the exchange rate will be found at its PPP-predicted value after five years of ‘misalignment’ is irrelevant for not providing any information on the causes of the turbulence.

Heterodox exchange-rate literature disagrees with the view of exchange rates as market-clearing. Instead, expectations of investors’ decisions on financial investments have a key role in driving exchange rates and they are anchored in social conventions given the weight of fundamental uncertainty. Specifically, Schulmeister (2009) focus on the role of FX traders and their strategies, which result in alternating upwards and downward trends. Harvey (2009) details investors’ decision-making process under what could be seen as our current ‘financial convention’ (in Orléan’s (1999) sense): exchange rates depend on the forecasted exchange rate that fluctuates according to the expected demand of foreign portfolio investors.

Heterodox literature focused on emerging currencies agree with these broad mechanisms and explain their subordination to international financial conditions and high frequency of extreme depreciation. The latter stem from the currencies’ lower liquidity premia associated with the fact that they do not perform the three functions of money in the international scenario (occupying a subordinated place on the hierarchical international monetary and financial system (IMFS); Prates, 2005). Two main attributes of emerging currencies explain why they are massively sold in case of turbulence internationally. First, they are not used as reserve of value, a function that is appreciated during crisis (Andrade and Prates, 2013). Second, they are not used as denominator of financial liabilities, and those are the currencies needed when crises emerge and financial obligations must be met (Kaltenbrunner, 2015).

However, extreme depreciations and association with the conditions of international financial markets is not a feature of every emerging currency. Instead, there is a group of a few currencies where features as frequency of extreme exchange rate depreciation, volatility, and association with the uncertainty level of international

financial markets are more intense. These are the South African rand, the Turkish lira, the Brazilian real, the Hungarian forint and the Polish zloty. These currencies have in common a type of financial integration that is of higher magnitude relatively to GDP and trade, large FX markets (also in relative terms) and high share of FX derivatives contracts. Ramos (2016) argues that this type of integration reveals a higher use of these countries' assets (including their currencies) in the innovative strategies and products, that gained space with financialization², that have in common the weight of exchange rate returns - including derivatives and canonical carry trading, exposure to domestic currencies as through equity and other domestic currency instruments, and FX derivatives. The evidence of fragility of some emerging currencies to international financial conditions just presented is thus associated with their use by money managers – the portfolio investors funded in advanced countries.

Motivated by these empirical results, this article proposes an explanation of how this pattern of fragility of emerging currencies is built. Based on an enlargement of Minsky's framework, the analysis has at the central stage money managers' decisions and how they interact with the macro environment determining emerging currencies' dynamics. The analysis is in line with the findings of the heterodox literature and makes use of the insights brought by the literature focusing on emerging currencies' attributes. It however offers a broader framework that allows the account of larger sets of events in determining emerging currencies, further enlightening our understanding of their dynamics.

The key role of money managers in the analysis derives from the mentioned manifest role of international financial conditions in the determination of emerging currencies. These institutions have great impact in any market for being a limited number of agents who hold significant amounts of capital and tend to make similar decisions (as they are guided by the same assets' ratings and tend to simulate important indices; Plihon, 2003). For having their liabilities in these countries and assets in markets across the globe, money managers created a network where different countries' markets and currencies are interconnected through money managers' balance-sheets, making their decisions key for exchange rates. The importance of portfolio investors in exchange rates is broadly recognized by the heterodox literature as well as by the most recent mainstream frameworks (such as behavior finance, micro-structure, and carry trade³).

The centrality of money manager's balance-sheet in interconnecting markets makes the Minskyan framework, *centered on a unit's decisions and its balance-sheets*,

ideal for the analysis. In addition, Minsky's framework sheds light on *the dynamics of the expansionary phase* of the cycle, the moment when fragility is built. With this focus, it explains not only exchange rate depreciation, but also its previous appreciation. Although both might be equally undesirable, the crisis literature is devoted to depreciation episodes, the reasons behind the major appreciation being left aside.

Finally, Minsky's framework is explicit on *interactions among different agents*. Although its key role is recognized by both heterodox and mainstream (behavior finance) exchange-rate literature in explaining, respectively, exchange rates upwards and downward trends and deviations from PPP, it is not yet contemplated by the models that deal with the specificities of emerging currencies.

Following this Introduction, Section 2 analyzes Minsky's financial instability hypothesis (FIH) and its use in contexts other than its original one. Section 3 presents the enlargement of Minsky's framework to money managers' international portfolio allocation decisions and the analysis of emerging currencies. Section 4 concludes.

2 The Financial Instability Hypothesis

As 'a post-Keynesian institutionalist', Minsky provided great attention to the institutional structure of his analyses (Wolfson, 2002). In the FIH, the background is specific: "a capitalist economy with expensive capital assets and a complex, sophisticated financial system" (Minsky, 1992). As production must be financed, capitalist economies are characterized by a system of borrowing and lending based upon 'margins of safety' (Minsky, 1993) – the 'cushions' between the cash commitments and the prospective cash receipts involved in the investment decision (Kregel, 2008). According to the desired margins of safety, each firm (or, more generally, an economic unit) has a combination of cash inflows and outflows, which is at the heart of Minsky's famous hedge, speculative and Ponzi characterization.

For hedge units, "flow of funds that result from the normal functioning of the assets it owns (...) are sufficient to fulfill current and future expected payment commitments due to liabilities" (Minsky, 1993, p. 80). Speculative units, on the other hand, "expect the cash flows (...) to be less than the cash payment commitments in some, typically near-term, periods" (Minsky, 1986, p. 230). A Ponzi unit "is similar to a speculative financing unit in that, for some near-term periods, the cash payment commitments exceed the expected cash receipts on account of owned assets" and not even the interests on debt can be paid (p. 231), demanding new debt to be issued

(Minsky, 1993). But Minsky also offers us an enlarged form of seeing his framework, that broadens its potential use to different contexts. Speculative and Ponzi are differentiated from hedge units for having an additional “element of uncertainty in financial relations” (p. 80): “speculative – and Ponzi-financing units have to meet changing financial market conditions, whereas a hedge unit will be impervious to such changes” (Minsky, 1986, p. 231). The differentiation between speculative and Ponzi is subtle: in the latter margins of safety are shrunk.

The differentiation of units composes the FIH, that is divided into two theorems. The first defines the fragility of the economic system based on the relative presence of each type of unit:

If hedge finance dominates, then the economy may well be an equilibrium seeking and containing system. In contrast, the greater the weight of speculative and Ponzi finance, the greater the likelihood that the economy is a deviation amplifying system. (Minsky, 1993, p. 8)

The second theorem is the increase of fragility over periods of prolonged prosperity (Minsky, 1992): over a run of good times the structure changes as hedge loses weight to speculative and Ponzi financing (Minsky 1993). The weight of Ponzi units evolves because the choice of margins of safety depend on the stability of the economic environment: in a run of good times, expectations are constantly being confirmed, leading units to reassess their prior decisions as too conservative and to reduce margins of safety.

In a fragile situation a crisis can be triggered by any ‘not-unusual’ shock, or ‘not-abnormal’ event (Minsky, 1993, p. 81). The emphasis on the shock being ‘not-unusual’ is meaningful: it is an event that can occur at any time, but that only triggers crisis because the system is fragile when hit. Crisis are endogenous: they occur because the economy is fragile, and fragility is endogenously built, although the event itself might be exogenous⁴.

With the crisis, units are pushed into situations of lower margins of safety for reasons such as less favorable terms on which finance is available or lower than expected income flows (Papadimitriou and Wray, 1998). This spiral is such that “the net worth of Ponzi units will quickly evaporate” and units recur to “selling positions to make positions” (Minsky, 1992, p. 8), but when “everybody is a seller”, asset prices collapse, worsening the situation further (Kregel, 2004, p. 577).

2.1 Minsky’s Framework Applied to International Context

Although created for studying the fragility of a closed economy based on the behavior of firms, the FIH has also been used in other context, specially since the late-

1990s developing countries' crisis. These enlargements are a logical evolution given the current context of liberalization and free capital mobility (Wolfson, 2002). These work's methodologies consist of examining the new context from 'the lenses of Minsky's framework'. More precisely, of identifying the manifestation, in the new context, of the most important Minskyan elements – the taxonomy of units according to their margins of safety; the confirmation of expectations; the interconnection among units; the 'not-unusual' event; the debt-deflation and the spread of the crisis.

In an open economy, a common point of the *taxonomy of units* into different levels of margins of safety is the key role of units' exposition to exchange-rate risks concerning debt repayment or inflows. Studying the financial crisis in Asia in the late 1990s, Arestis and Glickman (2002) argue that with the possibility of being funded in different currencies units can simultaneously be hedge domestically (with a long-dated loan) but not internationally (if this loan is in a foreign currency). With the double source of risk – interest rates and exchange rates – the authors suggest the inclusion of a fourth type of unit: the 'super-speculative' unit, Ponzi both domestically and internationally for having *short-term* funding in *foreign* currencies. In addition, negative shocks from these usually occur together, for higher interest rates are often used to defend a weak currency (Kregel, 1998). The "sensitivity to exchange variations" is also a key point for De Paula and Alves (2000, p. 10) who, studying financial fragility in Brazil, propose to differentiate units that do not run exchange-rate risks (hedge) from those that do (with regards to their costs, importers, or revenues, exporters).

Kregel (2004) classifies developing countries' governments that borrow in foreign currency as Ponzi because *debt service payment demands external borrowing*. Actual or past current account surpluses (accumulated in the form of reserves) could be other sources of foreign exchange earnings, but these are normally not available given that net lending by developing countries is usually associated with negative current account balance. It is a structural analysis, based on both debt repayment and the pattern of inflows (foreign exchange earnings). In Kregel (2008), expected income (thus inflows) is the key factor determining margins of safety – a Ponzi mortgage-backed security depends on income from a subprime loan. The Asian crisis is therefore the only context where the taxonomy was mostly focused on debt repayment.

Another Minskyan element is the *confirmation of expectations* in a period of boom that leads to lower margins of safety. In the Asian crisis, optimistic expectations were confirmed due to the *continuity* of increasing profits, stable exchange rate, and high

foreign investors' demand (Wolfson, 2002), and due to asset-price bubbles (Dymski, 1999) and capital flows (that are "interpreted as evidence of economic health"; Arestis and Glickman, 2002). Another point is the *interconnection among units* that takes place through balance-sheets. For instance, carry trade operations created a link between the Asian developing countries and the monetary stance in Japan (Wolfson, 2002). In times of financialization, these interconnections become global and much more complex.

The '*not-unusual*' event is a major element. Wolfson's (2002) analysis mentions two events: the rumor of changes in the Japanese monetary stance affected the continuity units' inflows and the contagion of the crisis from Thailand to other countries (both of them through the interconnection of balance-sheets).

Debt-deflation explains the spread of the crisis. Wolfson (2002) suggests that in the Asian crisis the parallel was the 'debt-exchange-rate interaction': as investors fled financial markets in Asia and as exchange rates depreciated, loans defaulted, leading to further outflows and depreciation. In this case, Minsky's initial focus of decreasing values of assets is shifted to increasing values of liabilities.

The *policy recommendations* that follow from analysis of international contexts include an international lender-of-last-resort (that could be the International Monetary Fund) and capital controls for hindering fragility for being built on and dealing with sudden outflows (Arestis and Glickman, 2002; Wolfson, 2002).

3 Emerging Currencies' Fragility

In this section, the increasing fragility of emerging currencies is analyzed by transposing the elements studied above to the context of money managers' investment decisions as well as the causalities of the traditional phases of the cycle – its tranquility and trigger of the crisis, the build up of fragility with self-feeding interactions, the 'not-unusual' event, and debt-deflation, which, in this case, is an asset/exchange-rate deflation. Policy implications are also discussed.

3.1 The Economic Units: Money Managers

Minsky's original analysis focuses on productive units and their need to meet financial commitments. In the analysis proposed, central units are money managers. Money managers' survival constraint is to maximize profits (as because flows migrate to the successful fund managers; Minsky, 1990, p. 32). More than dividends distributed or interest paid, money managers are interested in asset's *total returns*, that include *capital*

gains (Minsky, 1990) – and, in an international context with floating exchange rates, include exchange rate returns (which, are indeed a common focus of the products and practices that emerged with financialization as seen in the Introduction).

The floating regime gives higher importance to the exchange rate through the impact of appreciation on money managers' returns and because through exchange rates money managers' decisions affect the value of other money managers' assets. Interest rates were key in Minsky's original analysis and in analyses of the Asian crisis, but when central decisions concern assets instead of liabilities, interest rates lose relevance to exchange rates.

3.2 Exchange Rates and Margins of Safety

Margins of safety have the crucial function of connecting assets and liabilities. In Minsky's original analysis, they represent the cushion between the expected inflows and the payment commitments. When thinking of money managers with the possibilities of allocating their assets abroad, the exchange rate is the key element in determining the margins of safety as it adds a currency mismatch to their balance-sheets.

Money managers have three general possibilities for allocating their portfolio: i) in assets of the country where they have their funding from, ii) in assets of another advanced country, or iii) in assets labeled in emerging currencies (that are an increasing part of the EMES' assets). The exchange rate is the major difference among these three options, as a return and a risk variable. The first possibility represents the hedge case, of the highest margin of safety, as money managers are not exposed to exchange-rate risk. In the other two cases, units' exposition to exchange rates is the parallel to being exposed to changes in financial markets conditions in Minsky (1993). These are speculative and Ponzi units. The third allocation possibility is the Ponzi case, with the lowest margins of safety because of the mentioned higher frequency of extreme depreciation of emerging currencies, thus higher risks of losing assets' value.

3.3 Self-Feeding Interactions, Tranquility and the Build-up of Fragility

In Minsky's original analysis, the expansionary phase of the cycle begins in a period of tranquility as "the apparent 'stability' (...) generates changes of expectations" (Papadimitriou and Wray, 1997, p. 14). The impact of tranquility in the international sphere in emerging currencies is analyzed by the studies focused on emerging currencies' attributes, specifically the role of lower uncertainty and liquidity preference. This can be

analyzed in the framework of the Keynesian equation on an asset's own rate of return, where the liquidity premium (l) is one of the attributes of a currency's returns (r), together with its expected appreciation (a), its quasi-rent or yield (q), and its carrying costs (c) (Andrade and Prates, 2013, Kaltenbrunner, 2015; De Paula *et al*, 2017). The analysis of the impact of liquidity preference is facilitated by the inclusion of a liquidity preference parameter (β) that changes how the attribute liquidity (l) is valued – as in Equations 1 and 2 that respectively present the return of emerging currencies and of currencies of advanced countries (*).

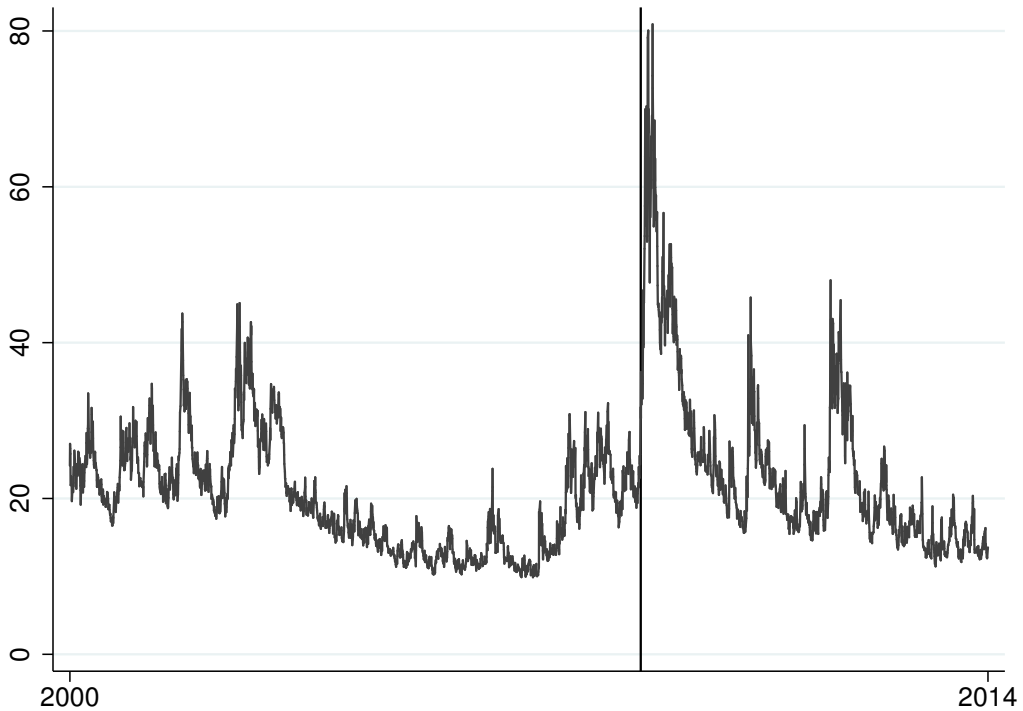
$$r = a + q - c + \beta l \quad (1)$$

$$r^* = a^* + q^* - c^* + \beta l^* \quad (2)$$

The demand for emerging assets is more clearly analyzed through the return differential ($r - r^*$), as in Equation 3. Given emerging currencies' lower liquidity premium ($l < l^*$; as mentioned in the Introduction), the liquidity premium differential ($l - l^*$) is structurally negative, negatively impacting the return differential. When liquidity preference (β) decreases, this negative weight is lowered, increasing the return differential ($r - r^*$). This is in line with Biancareli's (2011) argument that liquidity preference cycles determine capital flows to EMEs.

$$r - r^* = (a + q - c) - (a^* + q^* - c^*) + \beta(l - l^*) \quad (3)$$

Figure 2: VIX Index, 2000-2013



Data source: Chicago Board Options Exchange. September 15th, 2008 is presented as reference in a vertical line.

In the aftermath of the Dotcom bubble in the early 2000s, the return differential ($r - r^*$) increased following lower interest rates in the US (a fall of q^*) and a rise of tranquility in the international financial sphere (a decrease of β ; as seen from the fall of the VIX index⁵ since mid-2003, in Figure 2). Tranquility was also a feature of emerging currencies, whose last currency crises were in 2001 and 2002, in Turkey and Brazil (see Figure 1).

Self-feeding interactions

The special combination of higher return differential and tranquility caused an initial hike in demand for EMEs' assets, which in turn created the conditions for the expansionary phase of the cycle through spirals of increasing price and increasing demand. The higher demand for any of the country's assets (including the currency itself) put appreciation pressure on the currency, leading to an expectation of further appreciation (a) that increases the expected return differential ($r - r^*$), increasing capital flows and appreciation. If the higher demand is targeted at equity prices, the impact will be greater, for creating an expectation of higher capital gains from the appreciation (a) and the stock price (thus, q).

These self-feeding interactions might be more easily triggered in EMEs for two of these countries' attributes. The first is the bias of the money manager attracted by EMEs given the mentioned higher volatility of their currencies: they are likely to be more drawn to exchange rate returns and respond more quickly to a first exchange rate appreciation. The second is the small size of their markets *vis-à-vis* the magnitude of foreign portfolio investors associated with the monetary and financial asymmetries (Prates, 2005). With regards to FX markets, emerging currencies were involved in 8.4% of total FX transactions in 2013 and by the time of the hike of demand for EMEs' assets in the early 2000s the participation of their currencies was only half this value. With regards to the size of EMEs' assets markets, seen from the ratio of the stock of foreign equity liabilities in relation to stock market capitalization, foreign investors represented 45% of Hungary's stock market in the 2003-2011 period, and 42% of Mexico's – the share was also high in Korea, Czech Republic, Indonesia, Brazil and Peru. Because these markets are 'a small content' (as in Haldane's (2011) 'Big Fish Small Content' metaphor), the demand from a few money managers is enough for triggering self-feeding interactions.

Tranquility and the evolution of assessments

Whether a first surge of demand for EMEs' assets will be sustained depends on the extent that it changes expectations of agents. In the 2000s, the increase of demand of EMEs' assets from money managers guaranteed the stability of EMEs' FX markets, combined with the absence of crisis in EMEs' economies – in some EMEs, the boom of commodities prices also favored demand of their assets through an expected exchange rate appreciation. Thus, after the initial moment of tranquility, crisis became too far in memory and *prior investment decisions of not investing in EMEs were considered as excessively conservative and reviewed*.

Parallel to that, money managers that decided not to invest in EMEs (hedge or speculative money managers) were also propelled to do for not having lower returns than those that did (Ponzi money managers), which can decrease their funding. This pressure certainly existed in the 2000s: from 2003 to the GFC, emerging market returns as proxied by the MSCI Emerging Market index have grown 230%, far outpacing returns in advanced countries as proxied by the S&P 500, that grew 41%.

The impact of money managers' decisions in appreciating EMEs assets and currencies, and in guaranteeing the stability of their FX markets is crucial. It confirms Ponzi money managers' decisions of investing in these markets as sound and lead speculative units to reassess their decisions. As more money managers assess that not investing in EMEs is too conservative the self-feeding cycle of appreciation and tranquility is self-fulfilled.

A subsequent step to *further increase its exposure to emerging currencies is through the leveraging possibilities of FX derivatives*. Ponzi money managers are exposed to emerging currencies; to be exposed through FX derivatives could characterize another type of Ponzi, a 'super Ponzi' unit. With the rise of this practice, emerging currencies receive an additional pressure, strengthening the appreciation cycle and reaffirming money managers' decisions as sound.

The confirmation of expectations led to the rise of a convention in favor of EMEs. Evidence of this convention are varied. One is the increasing use of the BRIC acronym by the financial media throughout the boom phase of the cycle evoking excitement about investment opportunities in these countries (Fourcade, 2013). Another is the spread of the decoupling thesis, in 2007, according to which EMEs would not be affected by crisis

in advanced countries, and the continuity of capital flows to EMEs despite the signs of crisis. This continued in 2009, with the return of flows to EMEs in the context of the ‘two-speed recovery’. At this moment, Goldman Sachs’ (2010) estimated the share of EMEs’ equities in global equity portfolios to almost threefold in the following 20 years (from 13% in 2010 to 31% in 2030).

Rating agencies contributed to confirm money managers’ assessment and the new convention with the classification of several EMEs’ debt as investment grade: Russia in 2005, Brazil and Peru in 2008, India and Indonesia in 2011, Turkey in 2012, and the Philippines in 2013. Given that some funds only invest in investment grade assets, these agencies assumed the function of estimating money managers’ margins of safety (as in Kregel, 2008).

The boom phase of the cycle is thus characterized by self-feeding interactions where money managers’ expectations and decisions confirm themselves creating a convention favorable to EMEs further fueling the cycle through the appreciation of EMEs’ asset and currencies (as it will be seen next). This is a very important mechanism for resulting in exchange rates that are a deviation-amplifying system, the opposite of the convergence mechanism characteristic of when exchange rates clear markets.

The Impact on Markets

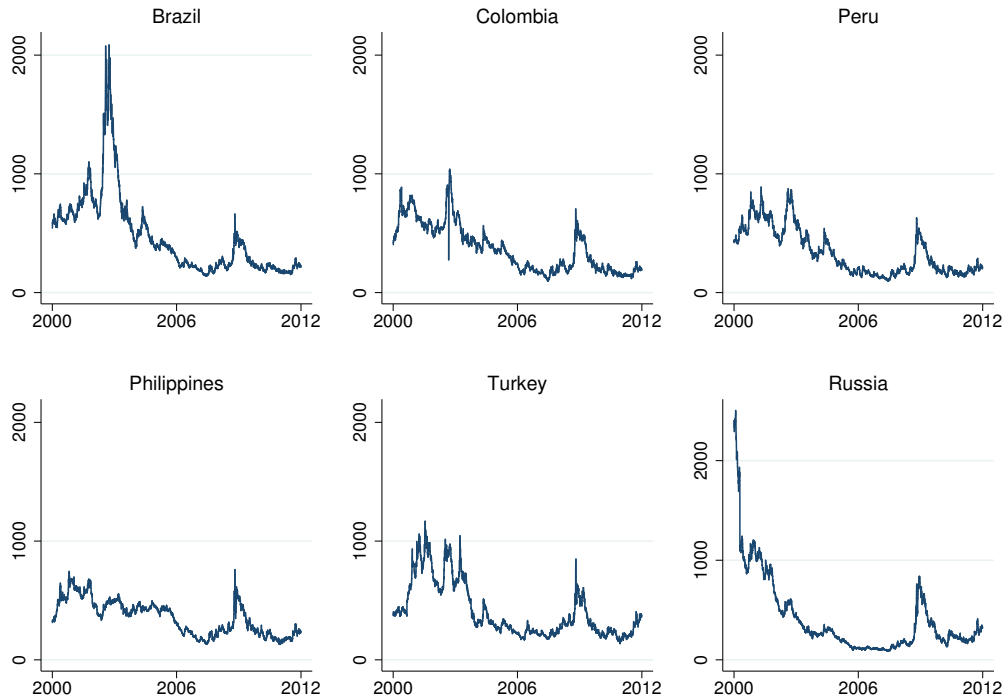
The build-up of fragility is reflected in markets. Pre-GFC low levels of the J. P. Morgan’s Emerging Market Bonds Index (EMBI; a major benchmark of the spread asked on EMEs’ government bonds) are evidence of the peak in the desirability for EMEs’ assets (Figure 3).

EMEs’ assets were not only more in-demand in this period, but their *share* in money managers’ portfolio also increased. This demonstrates the changing margins of safety, being a direct evidence of the second theorem of the FIH when applied to this article’s context. Indeed, the share of EMEs’ equities in the MSCI World Index increased from 5% in 2000 to 13% in 2010 (Goldman Sachs, 2010) and in 2012 the share of EMEs’ assets in the portfolios of U.K. pension funds nearly doubled from the 2001’s 6.5% (Bonizzi, 2013).

EMEs’ stock prices boomed with the increasing demand from foreign investors as demonstrated by the similarity of their pattern with the stock of foreign equity liabilities (Figure 4). The cross-country increasingly similar pattern of EMEs’ foreign equity

liabilities, as seen through the N- or M-shaped curves of the series, is also evidence of money managers' increasing weight in these markets.

Figure 3: EMBI, Selected EMEs, 2000-2011



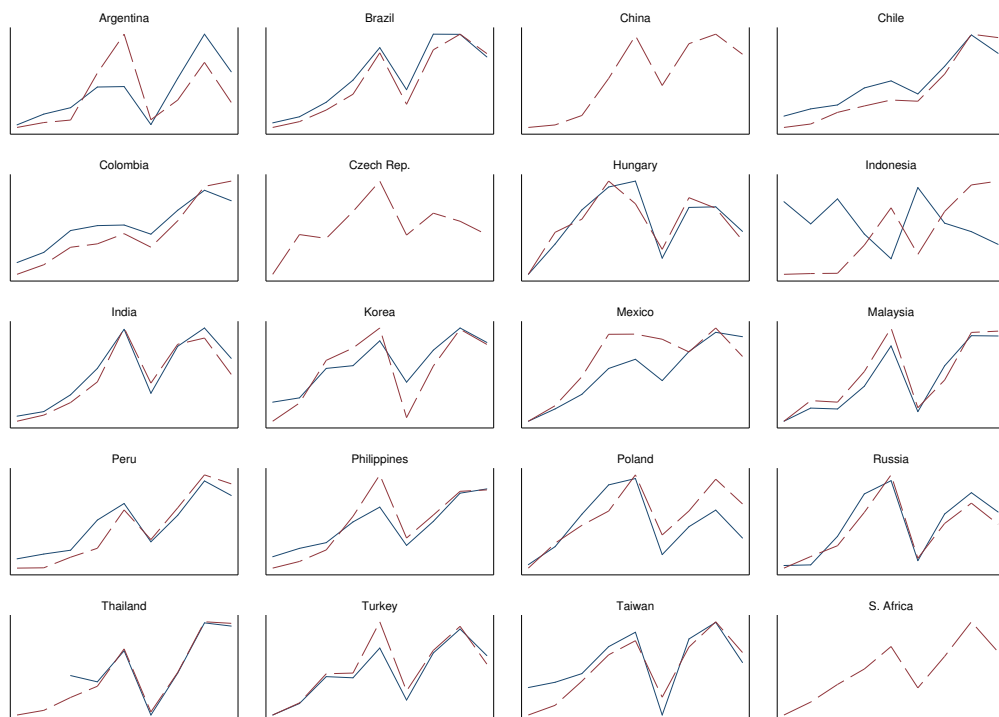
Data source: JP Morgan.

As argued, not only EMEs' assets, but also their *currencies* inflated with money managers' investment. This interaction is evident in Figure 5: in many EMEs the increase (decrease) of the stock of foreign portfolio liability is associated with exchange rate appreciation (depreciation). Indeed, a bi-directional causality of stock prices and exchange rates, that empirically supports the idea of self-feeding mechanism between stock prices and exchange rates is found in almost half of the EMEs with floating exchange rates: Brazil, Hungary, India, Korea, Peru, Russia, Taiwan, and Thailand (Ramos, 2016).

Similar to what happened with EMEs' foreign liabilities, the external determination of exchange rates resulted in the different EMEs' currencies following similar patterns – the correlation with other emerging currencies is especially noteworthy for the Brazilian real, the Hungarian forint, the Mexican peso, the Polish zloty, the South African rand, and the Turkish lira, that were highly (coefficient higher than 0.4)

correlated with at least three emerging currencies of other continents from 2003 to 2013. The fact that this correlation emerges from the high influence of international financial conditions is demonstrated through their high correlation with the VIX index. The highest correlations are the ones of the Mexican peso (0.46), the Brazil real (0.38), the Hungarian forint (0.32), the Polish zloty (0.33), the Turkish lira (0.36) and the South African rand (0.35; Ramos, 2016).

Figure 4: Stock of Foreign Equity Liabilities and Stock Exchange Index, 2003-2011



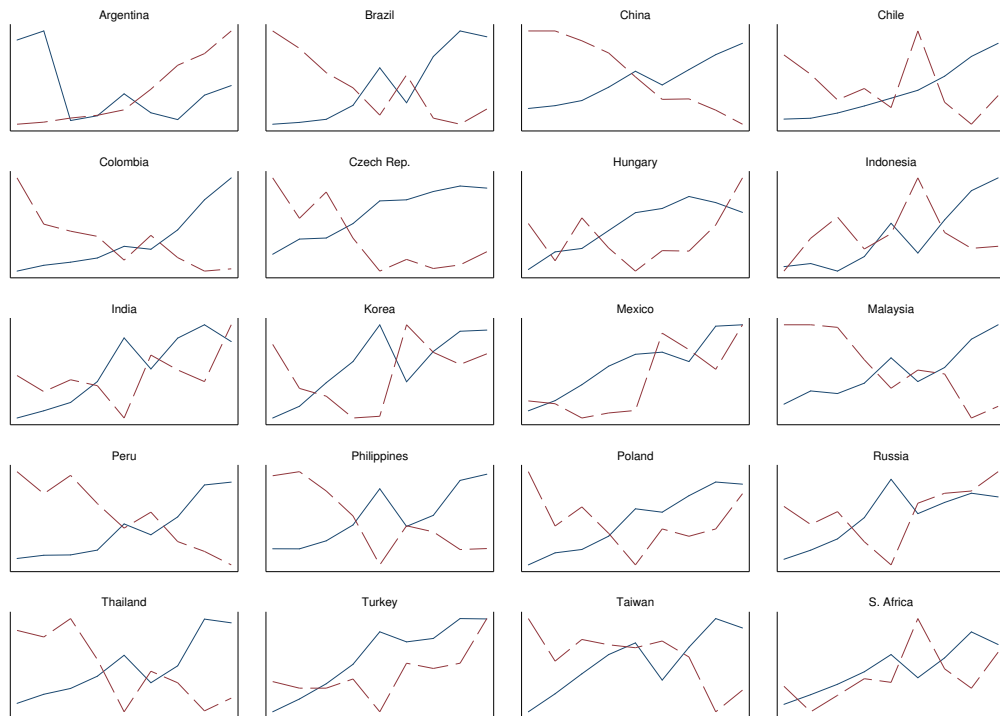
Data source: the stocks of foreign equity liabilities, updated and extended version of Lane and Milesi-Ferretti (2007); stock exchange indices, Bloomberg. The first are presented in dashed red lines, the latter, in solid blue lines.

These evidence show that by investing in EMEs, money managers put appreciation pressure in emerging currencies and increase the stock of foreign capital of these economies. This is a fragile situation, where an event that would make money managers decide to sell EMEs' assets could trigger a currency crisis.

Fragility is endogenously built, according to the discussed self-feeding interactions, the reassessments of decisions and the confirmation of these decisions. However, it is exogenous to EMEs, depending mostly on money managers' decisions

(EMEs interact to the extent that they do not pass by crises that would change the tranquil scenario). The fact that emerging currencies' fragility is endogenous to money managers' decisions and exogenous to EMEs underscores their subordination to the conditions in the international financial markets and explains why the currencies that suffered the greatest depreciations with the GFC are the same that passed through the greatest appreciations until that point, the turbulence at that moment not being related to the countries' fundamentals (Kohler, 2010; Kaltenbrunner and Paineira, 2014).

Figure 5: Stock of Foreign Portfolio Liabilities and Exchange Rates, 2003-2011



Data source: exchange rates, Bloomberg; the stock of foreign portfolio liabilities, extended and updated version of Lane and Milesi-Ferretti (2007). The first are presented in dashed lines, in the right-hand axis; the latter are presented in US\$ Billions. Both are end-of-year values.

3.4 The end of the Boom Phase: Fragility and Exchange Rate Turbulence

The end of the booming phase of the cycle is followed by a sell-off of assets in an *asset-exchange-rate deflation dynamic*. As mentioned, exchange rates interconnect money managers: when some money managers sell their assets, they push for an exchange rate

depreciation that decreases the value of other money managers' portfolios (as measured in their funding currencies) and create an expectation of further depreciation, leading other money managers to sell their EMEs' position, fueling the spiral further. This negative spiral is intensified given money managers' focus, and the reliance of their total returns, on exchange rate returns.

In the 2000s, the collapse of Lehman Brothers was a major event that caused substantial turbulence in emerging currencies as these were sold *due to money managers' balance-sheet constraints*. Concerning the assets' side, money managers preferred to hold more liquid currencies, the ones used as store of value, in order to face uncertainty (Andrade and Prates 2013). From the liabilities' side, they purchased the advanced countries' currencies needed to meet their financial obligations (Kaltenbrunner, 2015). More generally, *by selling EMEs' assets, money managers reduced the currency mismatch of their balance-sheets and, with one less element of uncertainty, increased their margins of safety*.

The reasons for selling the emerging currencies could have been others, as due to an expectation of reversal of the exchange rate appreciation trend due to assessments that this was overvalued (as in Orléan (1999) or Harvey(2009)), or because of crisis in EMEs. The specific trigger of the crisis is not the point of the Minskyan analysis, as much as *how fragility is created, allowing a crisis to take place*. Given EMEs' role in financialization as provider of financial assets, the smaller magnitude of their markets, and their currencies' attributes, they are structurally fragile to money managers' assessments, in general, and to exchange-rate crisis related to the international sphere, specifically.

3.5 Policy Responses and Implications

The analysis underscores the need for *policies to limit self-feeding interactions* in the expansionary phase, when fragility is built. Accordingly, three main policies are recommended: capital inflow controls, reserves of international assets, and derivatives management techniques⁶. The first were implemented in several EMEs in the aftermath of the GFC, including in Argentina, Brazil, Colombia, Chile, Korea, Indonesia, Peru, Taiwan and Thailand (ECLAC, 2011; Forbes *et al*, 2011; Gallagher, 2012; Ocampo, 2012; Ahmed and Zlate, 2014; Prates and Fritz, 2016). Inflow controls are commonly expected to limit exchange rate appreciation by reducing returns of foreign investors. In line with the arguments developed in this article, an important mechanism is however the impact of controls in reducing *expected exchange rate returns* as investors anticipate that

controls will discourage portfolio investment. Its importance in this context is amplified by the magnitude of exchange rate returns in EMEs and from their centrality in money managers' strategies.

The accumulation of reserves of international assets also impact expectations as central bank's interventions reverberate among financial practitioners. This policy has been implemented by most EMEs since the 2000s with goals such as halting appreciation (and inflationary) pressures and better handling crisis. Among EMEs, reserves have increased from an average 23% to 35% of the countries' GDP from 2001 to 2011. Due to sterilization costs, reserves should be used in combination with policies of capital account management, which decrease the level of reserves needed, or be combined with taxes on inflows, which reduces total costs with capital account management by raising receipts.

With the GFC, reserves were only modestly used and not sufficient for shielding EMEs from major turbulence – although they certainly absorbed part of the shock. Central Bank's reticent use of reserves (that Aizenman and Hutchison (2012) called fear of reserve loss) might hint to how valued reserves are – including for fear of losing the investment grade ratings granted based on reserves' high level (Prates, 2015).

FX derivatives are also a source of exchange rate pressure and currencies with higher derivatives (and total) FX markets relatively to their productive economy present higher fragility than others (Ramos, 2016). FX derivatives management are, therefore, a third type of policy needed in EMEs. Swap operations have been used by Brazilian authorities since the return of inflows after the GFC (Prates and Farhi, 2009) and complemented by 'derivatives management techniques' (Fritz and Prates, 2014).

4 Conclusions

Minsky's original crisis analysis is based on the indebtedness and investment decisions of firms, but applied to other situations it also resulted in in-depth analyses through the understanding of decisions of a core agent, specially of how expectations evolve creating the fragility that allows a crisis to take place. As proposed in the article, these studies are based on the analysis of how the following elements manifest in the new context: the taxonomy of core units' margins of safety according to expected inflows and outflows; the interconnection among units; the rise of tranquility; the self-feeding interactions and the confirmation of expectations; the 'not-unusual' event; and the 'debt'-deflation and the spread of the crisis.

In the dynamics defining emerging currencies' pattern since the 2000s, money managers are the core units, their portfolio allocation decisions evolve with tranquility in international financial markets and in EMEs' FX markets. Given the centrality of exchange rate returns in times of financialization and the volatility of emerging currencies, to be exposed to emerging currencies is the Ponzi investment decision, of lower margins of safety. As crises become far in memory, some speculative money managers reassess prior decisions of avoiding emerging currencies as too conservative. Accordingly, demand for EME's assets progressively increases. Given the small magnitude of EMEs' markets, a first hike of demand for their assets triggers *a self-feeding cycle of appreciating assets and currency and increasing demand*. Ponzi money managers' decisions confirm themselves, and create a convention favorable to EMEs.

Through the cycle of increasing appreciation, fragility is built: emerging currencies are subject to sharp depreciations according to money managers' decisions. As argued in the article, *their decisions can be related to balance-sheet constraints*, as in the case of the GFC, when emerging currencies were sold for eliminating the currency mismatch of money managers' balance-sheet, and/or for providing them with the advanced countries' currencies that store value (Andrade and Prates, 2013) and/or are needed to meet the financial commitments due (Kaltenbrunner, 2015) – which are, respectively assets' and liabilities' concerns. *Given that EMEs' markets are tied to each other and to those of advanced countries through money manager's balance-sheets, the impact of balance-sheet considerations might be enlarged with financialization:* when fragility is installed, crisis in markets around the globe might trigger exchange rate crisis in an EME. *Fragile currencies can also suffer crisis from a change of money managers' expectations* – if the currency is believed to be overvalued (as in Orléan's (1999) analysis) or if portfolio inflows are expected to decrease (as in Harvey's (2009) analysis). Moreover, the two cases might be rooted in external or domestic events. The focus of the Minskyan approach presented is not on the trigger of the crisis, but on the build-up of fragility that subordinates emerging currencies to money managers' decisions significantly enlarging the possibilities of crisis.

From the different potential sources of crisis, the one well depicted by the 2000s might be the most impressive: emerging currencies might suffer crisis from the simple combination of tranquility in their FX markets and in international financial markets – crisis of not only sudden depreciation, but also of major appreciation.

The analysis of emerging currencies' dynamics demonstrated a very different pattern than that of mainstream exchange-rate theories: instead of being determined by a country's fundamentals in an equilibrium-seeking mechanism that characterizes market clearing, they are marked by a deviation-amplifying system subordinated to external scenario and by constant crisis.

In comparison to heterodox exchange rate theories, this analysis denotes a shift of focus from the attributes of emerging currencies, or from expected portfolio inflows, to the decisions of money managers. It does not contradict those models: a currency's liquidity premium and exchange-rate forecasts help explaining money manager's behavior. However, the Minskyan framework and the analysis of exchange rates through money managers' decisions may be a broader framework, where balance-sheet considerations are neatly accommodated, enabling analysis of events directly related to the currencies' attributes nor the countries' fundamentals.

Endnotes

¹ EME are defined as the developing countries that are most integrated to the international financial system. In line with Chesnais' (1997) point that financial globalization is defined by the decisions of portfolio managers, the article proposes a 'financial-markets-oriented' operational definition. Specifically, it uses as benchmark the countries who are part of the MSCI index, a broadly used indicator of financial returns in EMEs. The list of countries in this index changes over time (what is in line with the theoretical definition of EMEs). For having a more structural picture of EMEs, recently-added countries as Egypt and Qatar were not included. Greece was also not considered given the obviously different issues it faces as a Euro Area country. The final list of EMEs includes: Argentina, Brazil, Chile, China, Colombia, Czech Republic, Hungary, India, Indonesia, Korea, Malaysia, Mexico, Peru, the Philippines, Poland, Russia, South Africa, Taiwan, Thailand and Turkey.

² With a focus on the international economy level, Ramos (2016) defines financialization as the increasing importance of finance internationally with the change of its logic, as revealed by its innovative products and practices. With financialization, the role of finance at the international level is decoupled from functions related to the productive economy, as financing production or trade. Instead, it follows an increasingly speculative logic, manifested by innovations of usages and products. This article follows this definition.

³ In light of the new models, the consideration of interest rates in portfolio models seems to indicate more of a concern with macro variable than with investors' decisions.

⁴ Minsky (1982) also considers possibilities in which the unfolding of the crisis is completely endogenous, the most important example of endogenous shock being the evolution of interest rates.

⁵ The VIX index measures the volatility implied in option prices of the S&P 500 Index and is broadly used as proxy for the uncertainties of financial markets.

⁶ Prudential regulation are complementary to these three and important in decreasing EMEs' vulnerabilities (Epstein *et al*, 2003; Ocampo 2003; Gallagher, 2012). For being focused on balance-sheet mismatches of domestic units these are not analyzed in this article.

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