



# TEXTO PARA DISCUSSÃO

ISSN 0103-9466

354

**Financialization, different types of financial  
integration and its impacts on emerging  
market currencies**

**Raquel Ramos**

**Maio 2019**



**ie** Instituto de  
economia

# Financialization, different types of financial integration and its impacts on emerging market currencies

Raquel Ramos<sup>1</sup>

## Abstract

*The article analyzes the implications of financialization on emerging currencies. The emergence of financialization is associated with the rise of institutional investors and the diversification of their practices and financial products used. In what regards investment in some EMEs, financialization allowed the emergence of a tendency towards a higher focus on exchange rate returns, changing the logic of finance at the international level. With the different use made by investors of a country's assets (including its currency), different types of financial integration emerged, leading to specific exchange rate patterns. By suggesting an indicator of the type of integration and comparing it to exchange rate features, the article demonstrates that EMEs whose integration are more marked by financialization-related developments have exchange rates that are i) more volatile due to more frequent extreme exchange rate depreciations; and ii) more associated with international financial conditions in turbulent periods. The type of financial integration is found to be a better predictor of these features than proxies of integration based on its magnitude. The article contributes to the financialization literature by demonstrating its impacts at the international level and implications on exchange rates. It contributes to the exchange rate literature by confirming the hypotheses of high volatility and subordination of some emerging market currencies to international financial conditions, while indicating why these issues affect some currencies but not others.*

**Keywords:** Exchange rates; Financialization; Financial integration; Emerging market economies.

JEL Classification F3, F62, F65, G15.

## 1 Introduction

The implications of financialization in domestic economies have been broadly studied (Lazonick, and O'sullivan, 2000; Stockhammer, 2004; Orhangazi, 2008), the ones on the international sphere having received considerably less attention by scholars. These two aspects are however clearly associated: the motive of finance at the international level is closely related to phenomena as the innovations seen inside financial systems, the concentration of wealth, and the rise of institutional investors (Dodd, 2005; Guttman, 2008; Goda and Lysandrou, 2014; Bonizzi, 2017). With these changes, finance, as manifested at the international level, would no longer be associated with financing trade and production, but follow an increasingly speculative logic associated with institutional investors' motives (Ramos, 2017). In this process, as the article shows, a new type of financial integration has emerged, that is associated with specific and problematic exchange rate dynamics among Emerging Market Economies<sup>2</sup> (EMEs). In this sense, the article points to a specific type of vulnerability brought by financial integration in the context of

---

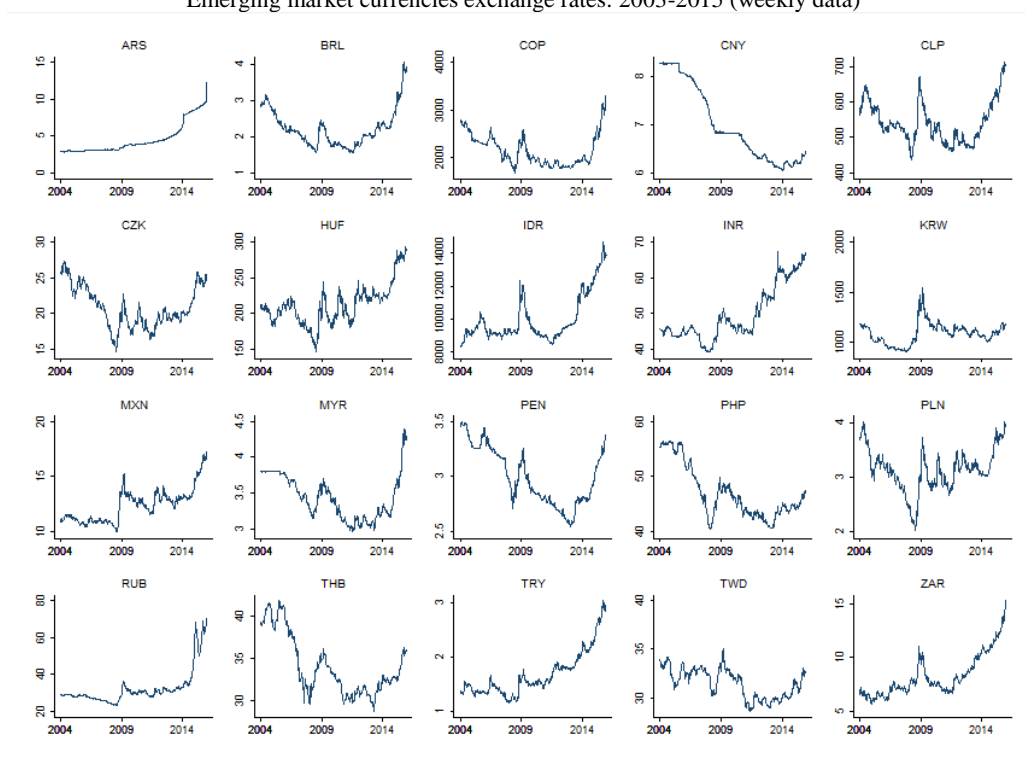
(1) Post-doctoral researcher at Instituto de Economia, University of Campinas, Brazil. Contact: [raquelalmeidaramos@yahoo.com.br](mailto:raquelalmeidaramos@yahoo.com.br).

(2) Emerging market economies (EMEs) 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 uses 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 20 countries: Argentina, Brazil, Chile, China, Colombia, Czech Republic, Hungary, India, Indonesia, South Korean, Malaysian, Mexico, Peru, Poland, Russia, Thailand, Turkey, Taiwan, and South Africa. As developing countries, EMEs are opposed to advanced economies and in a center-periphery framework, the first are peripheral countries, as opposed to central ones.

financialization, contributing to a broad literature that studies the vulnerabilities of developing countries' financial integration (Kregel, 1998; Palma, 1998; De Paula and Alves, 2000; Wolfson, 2002; Kregel, 2004; Kaltenbrunner and Páncera, 2014), but with a focus on portraying its manifestations in terms of exchange rate features – and on identifying to which countries these are a concern and why these countries and not others.

EMEs currencies (hereafter emerging market currencies) have been characterized by a constant upheaval since the return of capital flows to these countries after the late-1990s crises. From 2004 to the collapse of Lehman Brothers, several emerging market currencies faced a constant appreciation trend – achieving 40-50% in the case of the Brazilian real, the Czech koruna and the Polish zloty. With the collapse of the Lehman Brothers, these vast appreciations disappeared within a few weeks as several currencies saw daily depreciation peaks higher than 5% – the Brazilian real, the Hungarian forint, the Indonesian rupiah, the Korean won, the Mexican peso, the Turkish lira, the Polish zloty and the South African rand. In what followed, this synchronized pattern continued, first with a major appreciation, then with peaks of depreciation related to the Euro crisis (when European emerging market currencies suffered the most). The latest period was marked by the fear that the Fed could increase interest rates and important depreciations across many emerging market currencies (see Figure 1; Fed funds increased for the first time after 2008 in December 2015, at the very end of the analyzed period).

Figure 1  
Emerging market currencies exchange rates: 2003-2015 (weekly data)



As it will be detailed, heterodox analyses of emerging market currencies suggest that their determination is associated with international financial conditions. From the Post-Keynesian perspective, this is however problematic because exchange rates that are disconnected from the countries' productive structure and highly volatile can have adverse effects on the economy. First, volatile exchange rates can be a shock to entrepreneurs' animal spirits for increasing uncertainty thus discouraging production, investment

and foreign trade, with negative effects on growth. This causality is key given the understanding of uncertainty as fundamental and its impact on planning capacity. Secondly, nominal exchange rates determine real exchange rates, which is a key relative price. Pervading an economy in several forms, its effects on growth through trade and investments enjoy good empirical support: real exchange-rate ‘undervaluation’ positively impacts growth as it favors foreign trade and investment in tradable sectors, relaxes the foreign exchange constraint on growth, and promotes resource reallocation from the non-tradable to the tradable sector, a locus of learning-by-doing externalities and technological spillovers. ‘Overvaluation’ has the opposite effect (Cottani *et al.*, 1990; Dollar, 1992; Araújo, 2011; Blecker, 2007; Eichengreen, 2007; Rodrik, 2008; Razmi *et al.*, 2009; Rapetti *et al.*, 2012; Missio *et al.*, 2015).

Post-Keynesian exchange rate literature calls attention to the importance of portfolio investors’ expectations: volatility steams from the change of expectations and from the behavior of chartist traders. The result is an exchange rate pattern that alternates cycles of ups and downs (Schulmeister, 2008; Harvey, 2009). Works focused on emerging market currencies argue, however, that those follow a more specific pattern, marked by subordination to international liquidity conditions and sudden depreciations in moments of higher uncertainty or crisis internationally. The explanations are varied and complementary. Due to these currencies’ peripheral position in the international monetary system (Andrade and Prates, 2013), they offer low liquidity premiums; with the establishment of tranquility and low liquidity preference internationally, their demand progressively increases, but it decreases when uncertainty peaks and investors prefer holding the most liquid assets. When uncertainty is at high levels, investors sell emerging market currencies’ denominated assets, decreasing their balance-sheets’ mismatch – an important element of uncertainty. In addition, investors prefer holding central economies’ currencies in moments of crisis because these are the ones used to denominate financial commitments and are needed to meet the crisis’ related financial obligations (Biancareli, 2011; Andrade and Prates, 2013; De Conti *et al.*, 2014; Kaltenbrunner, 2015; Bonizzi, 2017; De Paula *et al.*, 2017; see Ramos and Prates (2018) for a detailed analysis).

The peripheral position and lower liquidity premium of a currency cannot however be the sole explanation of exchange rate features given that it is a common feature to every developing country currency, while subordination to international financial conditions and frequent major depreciations do not characterize all of them (see Figure 1). What makes this specific pattern stronger in some EMEs than in others? This is the gap in the knowledge this article aims at enlightening. It argues that, given financialization, aside of a currency’s position in the IMS the use that institutional investors make of a country’s assets (including its currency), determine its dynamics. Financialization has created innovative practices and products that, when used by institutional investors with respect to a country’ assets, change the characteristics of its integration and its exchange rate pattern. By identifying the different uses of a country’s assets through the characteristics of its integration and of its FX markets, the article suggests an indicator to differentiate the types of integration of EMEs and compares it to the countries’ exchange rate features. It finds an important association between an integration that is more marked by financialization and exchange rates that are i) more volatile due to more frequent extreme depreciations, and ii) more influenced by the state of uncertainty in international financial markets.

The analyses contribute to the economic literature on financialization, exchange rates, and financial integration. First, they contribute to the financialization literature for calling attention to its manifestations at the international level and its implications on exchange rates. Second, the article contributes to the financial integration literature for indicating the need of considering its implications in terms of exchange rate dynamics and demonstrating that the type of integration must be considered in empirical analyses; the ones solely based on the magnitude not being able to capture all its potential impacts. Thirdly, the article provides an empirical assessment of the validity of the theoretical claims made by the literature on emerging

market currencies and specifies in what extent their dynamics differ from that of advanced countries' currencies. It also contributes to this literature for stressing the importance of the different use made by international investors of a country's assets: it is their use that generates and deepens the problems related to their structural peripheral insertion in the IMS. In this sense it complements the work of Kaltenbrunner and Paineira (2014) for indicating to what extent the case studied by these authors, that of the Brazilian real, is representative of EMEs vulnerabilities in general.

Apart of this introduction, the article is divided as follows. Section two discusses how financialization changed the logic of finance at the international level creating different types of financial integration that can potentially change exchange rate patterns. This section also presents the indicator of the different types of integration that will be used throughout the empirical analyses. Section three discusses forms of empirically assessing emerging market currencies' features and analyzes their association with different types of integration. Section four presents concluding remarks.

## **2 Financialization and financialized integration**

### **2.1 Financialization and different types of financial integration**

Capitalism is not an immutable system and its changes are broadly studied by heterodox scholars. After Minsky's (1986) term "Money manager capitalism" and the ones used by the French Régulationists (Boyer's (2000) "Finance-led growth regime", Chesnais' (2001) "Financialized growth regime", Plihon's (2003) "Shareholder capitalism" or Gutmann's (2008) "Finance-led capitalism"), the term "financialization" has recently gained considerable space in this research agenda. Broadly put, it denotes "the increasing role of financial motives, financial markets, financial actors and financial institutions in the operation of the domestic and international economies" (Epstein, 2005, p. 3). In order to more concretely grasp the changes of capitalism, the analysis that follows refers to the classification and analysis done in Ramos (2017), that is based not only on the strict financialization literature (where analyses of the international sphere are relatively scarce), but also on studies related to finance at the domestic and international level. The changes in capitalism can be seen as grouped in three interconnected and interdependent areas: i) the changing relationship between finance and other economic sectors, with the increasing importance of the first and its associated class group, the rentiers; ii) the changes within the financial system, with the sophistication of finance through innovations of products and usages, the increasing importance of markets, and the evolution of banks; iii) the increasing importance of finance at the international level with the decoupling from its earlier functions and logic (Ramos, 2017).

These changes have relevant implications to EMEs integration to the international financial system and to the determination of their exchange rates. From the first of the abovementioned developments, a key point is the rise of institutional investors that accompanied the increasing profit-making in the financial sphere (Stockhammer, 2004). Their rise is associated with the increasing use of equities as companies' financing form, with the rise of liquidity stemming from the monetary tightening of the late 1970s and with the demographic change that favored the accumulation of savings for retirement of the baby boomers (Plihon, 2003; Bonizzi, 2017; Ramos, 2017). With the rise of institutional investors and the possibilities of investing in different countries brought by financial liberalization, financial markets around the globe are interlinked by the balance-sheets of these few institutions, that have their liabilities in advanced countries and assets in advanced and emerging market economies. This change is key in understanding assets' price formation in EMEs. For being part of this network and given their smaller size relative to investors' portfolios (Haldane, 2011), EMEs asset prices and exchange rates are especially vulnerable to changes in investors' decisions.

A second set of changes in capitalism took place within the financial system. One aspect are the changes in risk management (Aglietta and Breton, 2001; Brunnemeier, 2008) and the broader changes in banking, including the emergence of a market-based banking system, where bank institutions have capital markets as source of income in addition to the traditional functions of commercial banks (Plihon, 1995; Prates and Farhi, 2015). A second aspect are investors' innovations of product and practices. In terms of products, derivatives have been increasingly used (more recently also regarding emerging country currencies (BIS, 2016)) as their leveraging possibilities make them excellent tools of speculation (Prates and Fritz, 2016). This is important for exchange rates given that the volatility of the forward rate passes to the spot one through arbitrage (Farhi, 1999). In terms of practices, carry trading stands out (Galati and Melvin, 2004; Gagnon and Chaboud, 2007) and investors are increasingly willing to be exposed to EMEs assets as through investment in equities (Kaltenbrunner and Paineira, 2014; Bonizzi, 2017). These practices and products have in common a dependence on exchange rate returns, what, seen from Kaldor's (1937) definition, can be labeled as speculative.

These two developments frame the third one, the changing face of finance at the international level. The most analyzed of this phenomenon is the rapid growth of financial integration and of FX markets. Those have been observed in both absolute and relative terms – portfolio investments have grown much faster than other components of international transactions (Chesnais (1997); Baker et al (1998)), and financial integration have grown faster than production and trade (Plihon, 2010). In light of the changes of capitalism presented above, the changes seen at the international sphere cannot be considered a simple matter of magnitude, but rather a reflect of financial investors' changing practices and products used. In other words, though mostly referred to as financial globalization, the observed greater importance of financial integration does not seem to reflect only the fact that more countries are integrated to the global financial network, but that the very characteristics of the network changed. It had already been noticed that financial integration is not the same as in other phases of capitalism, being no longer associated with financing trade and production (Chesnais et al., 1996)) and it has now only indirect links with these functions, following its own logic (Plihon and Ponsard, 2002). It is however the analyses of other changes of capitalism that allows us to better understand this new logic; and how its strengthened speculative character was built. Specifically with regards to EMEs, the main manifestation might be the focus on exchange rate returns as an additional form of capital gain – whose intensity is defined by the extent of the presence of the practices and products mentioned above.

If exchange rate returns are a main component of total returns, investors will more frequently buy and sell an asset according to expectations concerning changes in the rate, resulting in more volatile capital flows and exchange rates. As mentioned, the broad use of derivatives also has an impact on exchange rates as it creates an additional source of volatility to the spot segment. With these practices, financialization has created the possibility of different types of integration, more or less speculative, with different potential impacts on exchange rates. This urges studies on the impact of financial integration to consider not only its magnitude, as done across empirical studies, but also its characteristics. The article assumes that the extent of the decoupling of the function of a country's integration from financing trade and production and of the use of its assets (including its currency) in the most speculative form can be identified in the characteristics of the country's integration, and proposes an indicator to measure it.

## **2.2 From financial to financialized integration**

The analysis proposed in this article contrasts with the empirical literature on the impacts of financial integration in different aspects. While most of those empirical studies are focused on the magnitude of integration and on its impact on the amount of GDP growth seen in the period (See Edison et al, 2002)

the analysis done in this article, for arguing that financial integration might have different nuances in different places, analyzes the impact of a type of integration and is focused on its specific impact on exchange rates. In what follows, this subsection presents how the indicator of financialized integration is built.

Financial integration is commonly measured either through the sum of gross capital flows over GDP (following Kraay, 1998), or the sum of the gross stock of capital, assets plus liabilities, over GDP (following Lane and Milesi-Ferretti, 2001). The later suits our purpose better for pointing to a more structural picture (especially given the turbulence seen in the analyzed period) and because of the limitations related to net-flows measures as most financial transactions yield zero-net flows (Borio and Dysaiat, 2011, 2015). However, the identification of the changing logic of financial integration away from financing trade and production demands considering financial integration not only relatively to GDP, but also to trade – as done by Baker et al. (1998) and Plihon (2003).

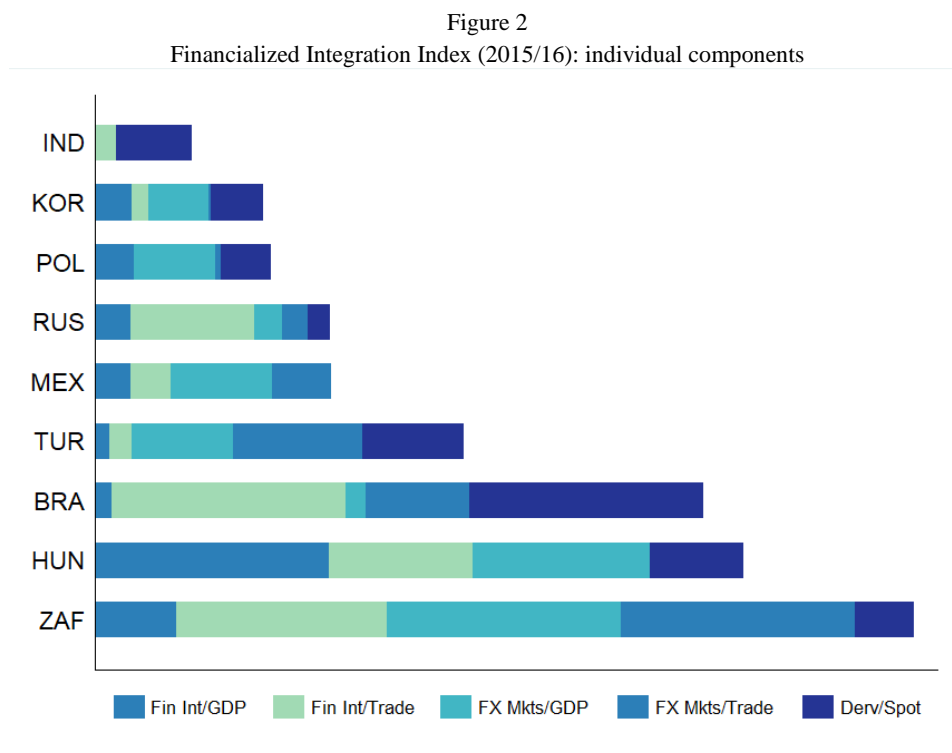
Another point is that the use of institutional investors' most innovative practices, for differentiating their focus on exchange rate returns and rapid reaction to markets, cannot be captured by the magnitude of integration in a given moment. Instead, it demands considerations on the magnitude of FX markets, what better indicates the extent of investors strategy of entering and leaving countries in an attempt to profit from exchange rate movements, and on the extent of derivatives operations. The rapid growth of FX transactions is for instance observed by Chesnais (1997) as indicator of the changing logic of finance, and is seen by Galati and Melvin (2004) as indicator of the growth of carry trading operations. Taken relatively to GDP or trade can be more specific, for hinting to the extent of transactions that are not related to production or trade – or to whether “trading has become more financial”, as put by McCauley and Scatigna (2011, p. 68). Concerns over the sophistication of products and practices of derivative carry trading can be accounted for by adding indicators on the relative size of FX derivatives, or the derivatives-to-spot ratio, that hints to the use of FX derivatives in excess of what could be related to spot transactions and their hedging needs. This indicator also hints to domestic financial markets' sophistication level.

The article therefore proposes to analyze a financialized type of integration based on a combination of the five mentioned indicators: the total stock of assets and liabilities in relation i) to GDP and ii) to foreign trade (sum of exports and imports), FX markets relative iii) to GDP and iv) to foreign trade, and v) the amount of derivatives FX contracts relative to spot contracts. Data on financial integration is taken from the updated and extended version of the dataset constructed by Lane and Milesi-Ferretti (2007). FX-markets data are based on the Bank of International Settlements (BIS; Triennial Survey for OTC data, and BIS data on exchange-traded derivatives). Data on countries' GDP and foreign trade are taken from World Bank's World Development Indicators. Given data availability, countries' integration is estimated with 2015 data, and FX markets information with 2016 (April) data.

The index on the impact of financialization on a country's integration is presented in Figure 2: South Africa, Hungary, Brazil, Turkey and Mexico are the five EMEs to present the most financialized type of integration. South Africa's high index is due to high FX markets and high financial integration relatively to trade. In the case of Hungary, it is high financial integration relatively to GDP that results in a high index. Brazil's ratio of derivative to spot FX contracts is the highest among the nine EME, as well as its financial integration relatively to trade. In what follows, exchange rate features will be analyzed and compared to the countries' type of financial integration<sup>3</sup>.

---

(3) As a min-max index, that is based on the relative position of a country inside a group, the indicator of financialized integration is estimated only for the group of interest, whose exchange rate features will be analyzed – in this case, the nine countries (for which FX data is available and) that have floating currencies from the 20 EMEs considered (see Footnote 1).



### 3 Exchange rate features and financialized integration

This section's analyses of exchange rate features are focused on the mentioned concerns raised by the Post-keynesian exchange rate literature – volatility and subordination to international liquidity conditions. For a more detailed perspective and better differentiation of volatility in emerging market currencies and in central currencies (proxied by the euro/dollar pair), volatility is studied through the standard deviation and the frequency of extreme depreciation. As discussed, the PK literature claims that volatility and subordination to international financial conditions would characterize exchange rates of peripheral countries in general, while this article raises the hypothesis that it is the way these currencies are traded, what is revealed by the type of integration, that determines the extent of these characteristics. In order to test this hypothesis, the study of exchange rate features is followed by an analysis of their association with the countries' type of integration (in Section 3.1). The second exchange rate feature to be analyzed is the subordination to international conditions, that is studied by the co-movement of the currencies with the VIX. Next, the extent of the subordination is compared to the type of financial integration (in Section 3.2). Finally, the power of the indicator of the type of integration to explain exchange rate features is evaluated by comparing the association between exchange rate features and alternative measures, focused on the size of integration or of capital account openness (in Section 3.3).

Before presenting the empirical studies, a methodological note should be added. Although EMEs do not compose a strictly coherent group of countries (having economies of very different magnitudes, and attracting different types of capital), the core of the article's empirical assessments is undertaken for a smaller and more homogeneous sub-set of EMEs: the ones with floating exchange rates and the largest FX markets (for which BIS statistics are estimated and individually published, not included into the "others" category). These two features allow these countries' assets to be traded with similar – speculative – strategy: for being of the emerging class (Kaltenbrunner, 2017), they provide risky assets; their floating exchange



rates allow speculation; and the higher liquidity of their FX markets allow investors to leave the country whenever wanted.

The decision of empirically analyzing only the most similar EMEs and the methods used reflect a concern over the fact that the phenomena under study are highly context and time specific. First, the interactions result from investors' decisions, which reflect a given convention in financial markets (in the sense of Orléan, 1999), which is to consider these specific countries as of the emerging class. Second, these interactions could not have taken place before the 2000s given that these countries did not have floating exchange rates. In a broader sense, the analyses do not argue that the dynamics studied would be immutable over time, but subscribed in the broader context of financialization and significant integration of some developing countries to sophisticated financial markets where a few institutions hold important amounts of liquidity. Given these methodological considerations and a praise for simplicity and transparency, the empirical studies are based on graphical analyses quantified by correlation coefficients<sup>4</sup>. Due to potential bias related to the small number of observations, the significance levels of the correlation coefficients are presented.

### 3.1 Volatility

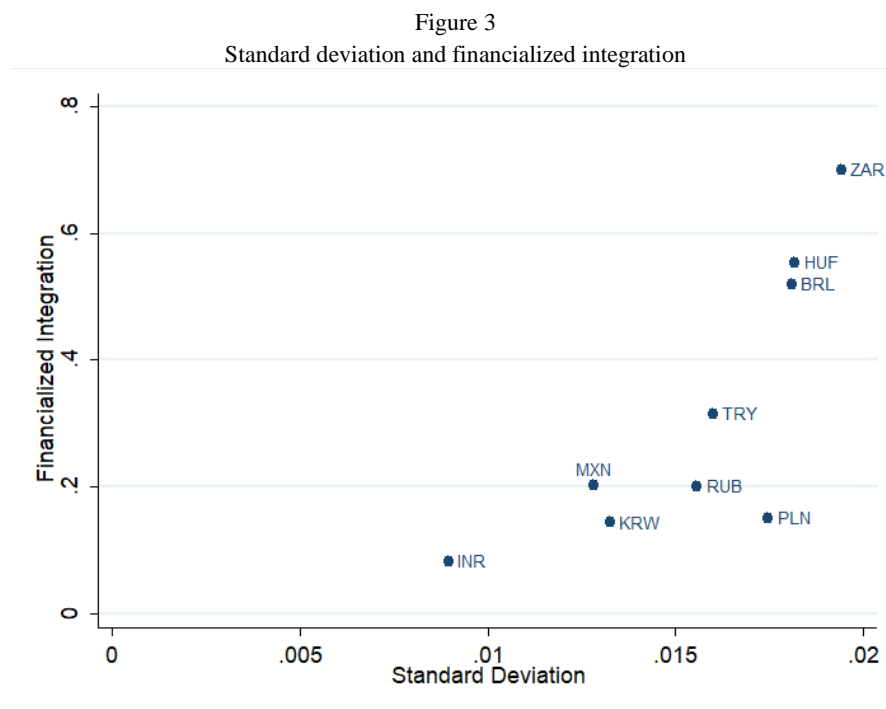
The standard deviation of the exchange rate change, the most broadly used indicator of volatility, informs the variability of the exchange rate change *vis-a-vis* of its own trend. According to this measure, eight emerging market currencies had, in the 2004-2015 period, exchange rates that were less volatile than the Euro/US dollar pair: the Taiwanese dollar (TWD), the Peruvian nuevo sol (PEN), the Philippine peso (PHP), the Thai baht (TBH), the Indian rupee (INR), and the Indonesian rupiah (IDR) – apart from the Malaysian ringgit (MYR) and the Chinese yuan (CNY) that are not floating currencies. The other twelve currencies presented higher volatility than the Euro: the Mexican peso (MXN), the Argentinean peso (ARS), the Russian ruble (RUB), the Chilean peso (CHP), the Korean won (KRW), the Colombian peso (COP), the Czech Republic koruna (CZK), the Russian ruble (RUB), the Turkish lira (TRY), the Polish zloty (PLN), the Brazilian real (BRL), the Hungarian forint (HUF), and the South African rand (ZAR) – see Figure 4. The average standard deviation of the floating emerging market currencies (all except ARS, CNY and MYR) is 0.129, higher than the Euro's 0.116<sup>5</sup>.

In line with the article's hypothesis, exchange rate volatility (as proxied by the standard deviation) is positively associated with the type of integration. The countries with the most financialized integration, South Africa, Hungary, and Brazil also present the highest exchange rate volatility (Figure 3). This association is confirmed by a correlation coefficient of 0.79, significant at the 5% level<sup>5</sup>.

---

(4) Although the limited amount of observations does not allow the use of regressions, it is worth recalling that the square of the correlation coefficient is the same as the coefficient of determination ( $r^2$ ) in a simple linear regression analysis, and both these methods inform us only about correlation, not about the direction of causality.

(5) The standard deviation of the exchange rate changes is estimated based on weekly exchange rate changes (against the US dollar). The statistics about exchange rate features are given for the group of 17 emerging currencies that had exchange rate regimes other than peg arrangements in the analyzed period – all except the Argentinean peso, the Chinese yuan, the Malaysian ringgit (IMF, 2004, 2014).



The standard deviation is estimated based on daily data for the period of 2004-2015.

Post-keynesian analyses are however rather focused on the recurrence of major exchange rate depreciations (Andrade and Prates 201; Kaltenbrunner, 2015) than on relative important changes every day. In this sense, the standard deviation might not be the most appropriate for analyzing emerging market currencies' volatility. In fact, this measure is limited even when compared to definitions of volatility in general, that point to three aspects: velocity, predictability and direction (the oxford dictionary defines volatile as something "liable to change rapidly and unpredictably, especially for the worse"; "Volatile", 2015). The aspect of velocity is captured by the standard deviation: it refers to how rapidly the deviation takes place, or its magnitude, and the standard deviation is formed by the average of the magnitudes. However, because the standard deviation is based on averages, it does not reflect distribution, not capturing the aspect of predictability. The aspect of direction of the deviation can also not be captured by the standard deviation, that it is based on absolute changes.

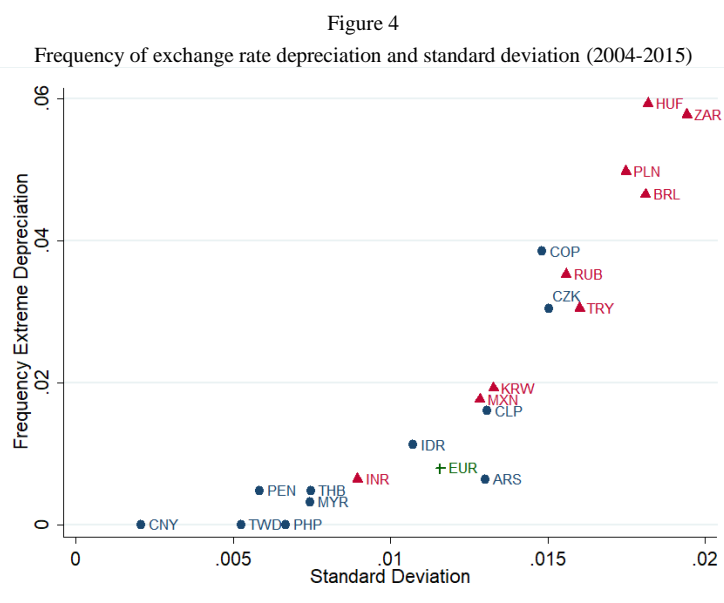
Predictability and direction are however very relevant to the context of exchange rates. First, the presence of "jumps" (or discontinuities in prices) is often seen as the most prominent feature of exchange rates (Erdemlioglu *et al.*, 2012), its identification being a major trigger of the shift, inside the mainstream literature, of models based on macroeconomic variables to models focused on the microstructure of FX markets (Lux and Marchesi, 2000). Second, as mentioned, the Post-keynesian literature argues that sudden exchange rate *depreciations* are a major characteristic of emerging market currencies.

Third, major exchange rate depreciations are most relevant for portfolio allocation decisions of institutional investors for influencing expectations concerning possible losses. Even if infrequent, major depreciations can put an investment's total return at risk (exchange rates are of the realm of what Taleb (2007) called Extremistan) – being a key concern for investors. Apart from the immediate impact of creating uncertainty, extreme exchange rate changes also impact the memory of agents: given the workings of associative memory in our intuitive thinking, the process of constructing a coherent interpretation of such event will create an association of the currency in question with risk. Once such association is created it is

considered by investors in their decisions, even if unconsciously. This is in line with the representativeness principle, according to which the more available something is in our memory, the more frequent or likely that event is deemed to be, resulting in agents overrating the importance of dramatic events (Kahneman, 2011).

Fourth, there are also problems related to the specific application of the standard deviation to time series, where the definition of normality, or of a reference value, is not trivial. When the volatility of different currencies is compared, the standard deviation of exchange rate changes to the period's average might result in biased indicators given that their deviations would not be compared to the same "norm" (not compared to zero or another reference value, but to the currency's own trend in the period).

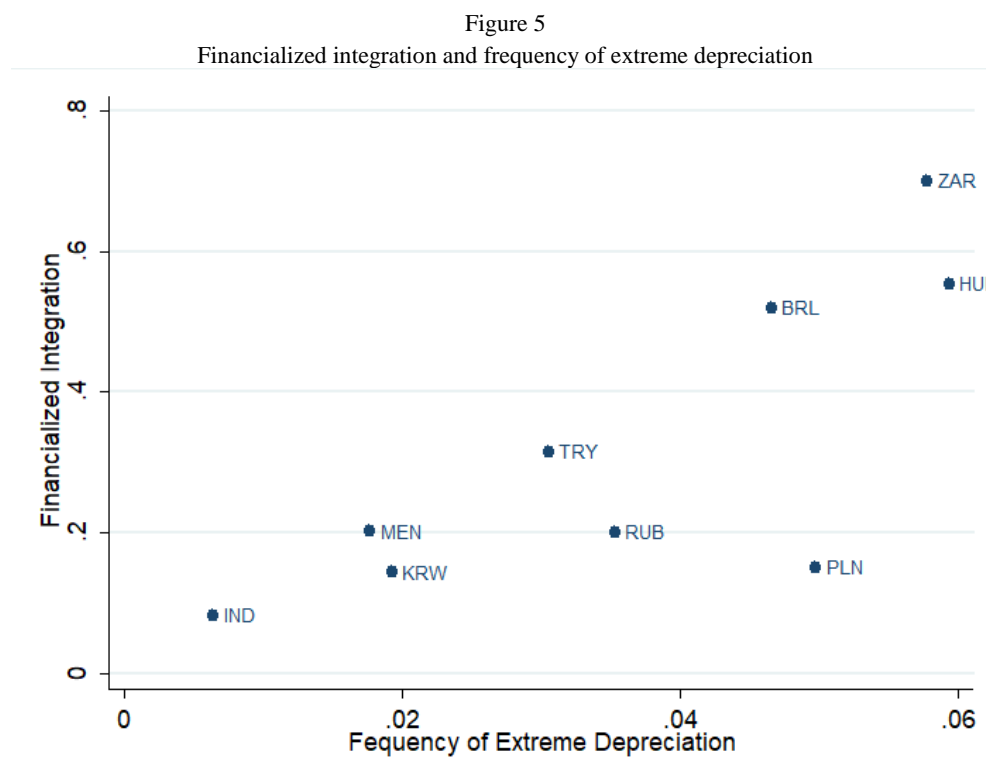
To account for features of predictability and direction, the article proposes the characterization of volatility based on the frequency of exchange rate depreciations higher than 3% in a week. The probabilities are presented in Figure 4, for the 2004-2015 period for the 20 emerging market currencies and the Euro (the currencies for which the index of financialized integration is estimated are presented in red). Two main features can be seen in the graph. The first is that the use of the standard deviation as a measure of volatility veils extreme values, partially hiding the existence of crises of floating exchange rates (what is confirmed by the fact that the relationship between the two variables is better explained by a quadratic than a linear fit<sup>6</sup>). The second feature is that the group of currencies for which FX data is available presents much higher extreme depreciations than the other emerging market currencies – and than the euro. Looking at the values, we see that while the average standard deviation of emerging currencies (0,129) is not very different to that of the Euro (0.116), the average frequency of extreme depreciation of emerging currencies (2.5%) is three times higher than that of the Euro (0.08%), due to a very high frequency of extreme depreciation among the currencies for which FX data is available (3.6%).



The frequency of extreme depreciation represents the frequency of weekly depreciations higher than 3%, the standard deviation is estimated based on daily exchange rate changes. Values for emerging market currencies for which FX data is available is presented in red, with triangles as markers; the Euro is presented in green, with a cross as marker.

(6) The linear regression of the frequency of extreme depreciation over standard deviation results yields an adjusted R-square of 0.80, while the R-square of the quadratic fit is 0.93.

The frequency of extreme depreciations is closely associated with a more financialized integration (Figure 5). The countries with the highest frequencies of extreme depreciations are the same to present the most financialized levels of integration: South Africa, Hungary, and Brazil. The relationship between these two variables is positive and strong – the correlation coefficient is very high, 0.78, and significant at the 5% level.



### 3.2 Subordination to international financial conditions

As mentioned, Post-keynesian analyses on the determination of capital flows to developing countries and of the demand for their currencies put forward their association with international financial conditions, specifically with the prevailing uncertainty level. In empirical analyses, uncertainty is often proxied by the VIX index, a volatility indicator that although based on the U.S. equity market (the S&P500 index), reflects conditions of financial markets in all major financial centers due to their interconnectedness and the particular depth and central role of US markets. Heterodox analyses point to an important association between the VIX and capital flows to developing countries (Baumann and Gallagher, 2013; Bonizzi, 2013; Hoffmann, 2013; Kaltenbrunner and Paineira 2014; Da Silva and Da Fonseca, 2015). This relationship is also found by mainstream authors, although the explanation of the causality is different. According to the ‘risk-taking channel’ approach, a lower VIX enables Value-at-Risk constrained banks to take on a greater leverage and invest in EMEs, leading to an appreciation of their currencies and a decline in measured risks that allows a second round of capital flows (Basu and Bundick, 2012; Forbes and Warnock, 2012; Bekaert *et al.*, 2013; Bruno and Shin, 2015; Rey, 2015).

This section analyzes the relationship between liquidity preference (proxied by the VIX) and the demand for emerging market currencies. According to the heterodox view presented in the introduction, it

is expected that a moment of low liquidity preference, marked by a low and stable VIX leads to higher demand for these currencies and their appreciation, while a hike in liquidity preference leads to depreciation (Andrade and Prates, 2013; Kaltenbrunner, 2015). While most empirical studies are focused on the impacts of uncertainty on capital flows, the article assesses its impacts on the exchange rate directly, avoiding the loss of information associated with monthly or triennial averages of the VIX (given the low frequency of capital flow data). The analysis based on weekly data is especially important given the rapid changing conditions of financial markets.

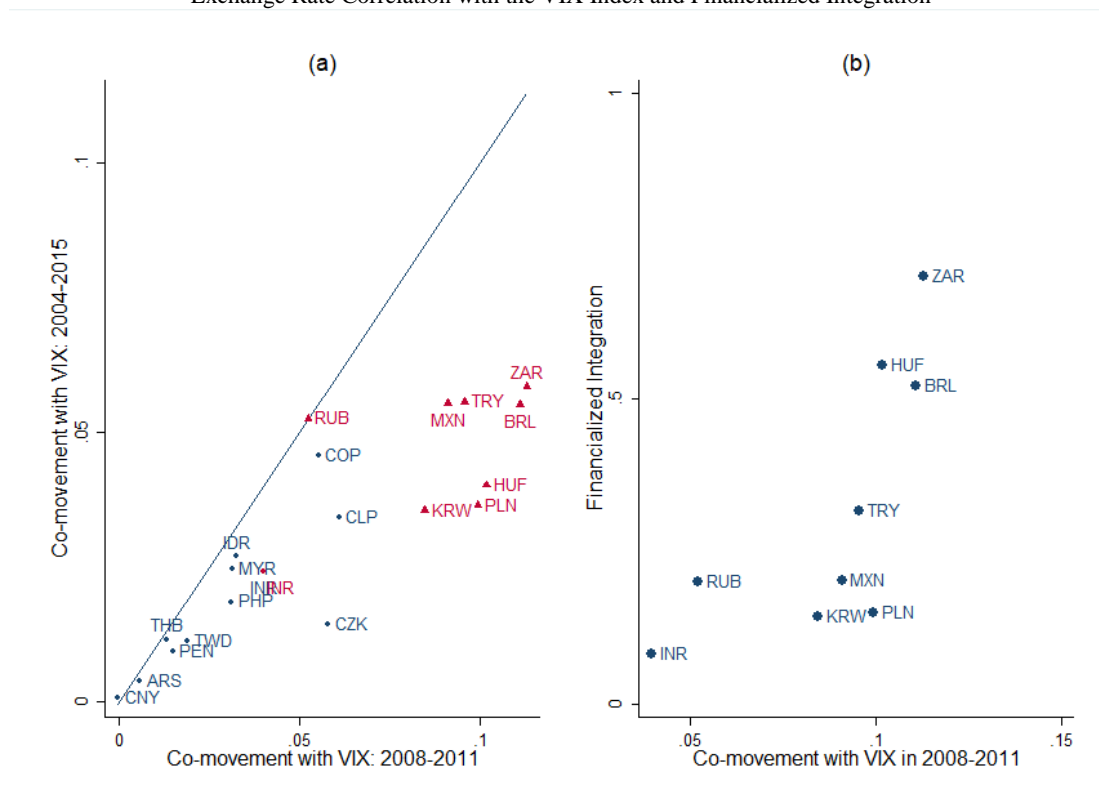
To examine the association between the VIX and emerging market currencies, the correlation between the changes of the two was calculated for the 2004-2015 period, based on 20 weeks moving average (as in European Central Bank, 2006). For the extent period analyzed in this article, the average correlation coefficients vary significantly across countries – from 0.05 in the case of the Chinese yuan to 0.48 in the case of the Mexican peso. The currencies to present the highest correlations with the VIX index are: the Mexican peso (0.49), the Turkish lira (0.38), the Brazilian real and the South African rand (0.33)<sup>7</sup> – see Figure 6 (a). The high co-movement of these currencies with the VIX indicates that these countries are the mostly used by international investors in their – speculative – investment options, or that their currencies are the ones that are mostly affected by such investments.

It is also known that moments of turbulence provide good profit possibilities for traders willing to speculate with currencies, given the higher amplitude of exchange rate changes – this would be especially important for emerging market currencies, that are seen as “risky” (Kaltenbrunner, 2017). If those currencies were more traded in this period, their subordination to international conditions, in the aspect of co-movement with the markets feeling, might have been greater. In a medium-term perspective, one of such moments is the period between the start of the Global Financial Crisis and the Euro crisis. The co-movement of emerging market currencies and the VIX was estimated for this sub-period (2008-2011) and indeed, it is greater than in the 2004-2015 period (see Figure 6 (a))<sup>7</sup>. Another interesting result is that the increase in co-movement was not the same across currencies (as can be seen by the distance of the markers to the 45 degrees line). Indeed, the graph also shows that the currencies for which the indicator of financialized integration is estimated, the ones with more important FX markets, were not only the ones to have a higher co-movement with the VIX, but were also the ones to face a higher increase of this external influence in the turbulent period. The co-movement of currencies with the VIX and the indicator of financialized integration are highly associated – as shown in Figure 7 (b) – yielding a correlation coefficient of 0.7, significant at the 5% level. The higher influence of international markets is in line with Kaltenbrunner’s (2017) finding that the stronger relationship between the Brazilian real and the Australian dollar during 2007-2009 than 1999-2010 and 2003-2010.

---

(7) The higher correlation between international stock markets’ returns in times of turbulence is found by several authors in the financial literature (see Knif et al, 2005).

Figure 6  
Exchange Rate Correlation with the VIX Index and Financialized Integration



### 3.3 Comparing the explanatory power of the type of integration

As mentioned above, most analyses on the impacts of financial integration study it through its magnitude and rarely consider the potential adverse economic effect through the impacts on exchange rate dynamics. When mentioned, exchange rate turbulence has been seen as a potential consequence of the financial integration in general (Obstfeld, 2015) or said to be determined by a country's financial markets size and openness (Eichengreen and Gupta, 2015), respectively indicating concerns over the magnitude of financial integration and over capital account liberalization (which are, respectively, broadly used indicators of *de facto* and *de jure* integration). In order to compare the explanatory power of the index of financialized integration with those two aspects, their correlation with the exchange rate features were estimated, but they are not statistically different than zero (at the 5% level)<sup>8</sup>. We can therefore conclude that the type of integration is a better predictor of exchange rate features than its magnitude or the capital account openness level. These different results point to the importance of the characteristics of a country's integration, as manifested by the analyses of FX markets, in explaining floating exchange rate issues.

(8) The proxy for the magnitude of integration was the one used in building the index of financialized integration (based on 2015 data, from the updated database presented in Milesi-Ferreti (2007) and the proxy for capital account openness was the 2016 index of the updated database proposed by Chinn and Ito (2006). For a better comparison, the correlation of these index with exchange rate features was estimated considering the nine floating currencies for which data on the size of FX markets, thus the indicator of the type of integration, are available. At the 10% level, the correlation between financial integration and the frequency of extreme depreciation is statistically different from 0, with a correlation coefficient of 0.62.

## 4 Conclusions

The emergence of financialization is associated with the rise of institutional investors and the diversification of their practices and financial products used, with a tendency towards a higher focus on exchange rate returns in what regards investment in some EMEs. With these practices, financialization changed the logic of finance at the international level from one related to financing trade and production to that of institutional investors' decisions and speculative motives. As analyzed in the article, the extent of this change can be identified in the characteristics of EMEs financial integration – what is done through the construction of an indicator of the type of integration that includes information on the relative size of financial integration and of FX markets, specially of derivative contracts. The analyses concluded that countries whose integration is more marked by financialization-related developments and reveal a more speculative use of their currencies, have exchange rates that are more volatile due to more frequent extreme exchange rate depreciations, more subordinated to international financial conditions and that this subordination increases more in periods of turbulence. In addition, it is shown that the indicator of the *type* of integration was a better predictor of the mentioned exchange rate issues than proxies of the *magnitude* of financial integration, pointing to the importance of considering information from FX markets in assessing exchange rate features.

Whether financial integration has positive or negative outcomes for developing countries is a major debate in economics, among scholars and policy makers. The article analyzed a mostly neglected aspect of integration, i.e. its impacts on floating exchange rates. Exchange rate crises were a major concern when developing countries had fixed exchange rate regimes. Floating regimes are however not free of challenges: compared to pegged regime crises, floating rates can have smaller but frequent crises and lead to exchange rates that do not reflect a country's economic structure – both with adverse effects on the economy. The article contributes to the financial integration literature by calling attention to the potential impact of EMEs integration on their exchange rates and by demonstrating that financial integration does not have the same characteristics across countries, nor the same impacts. Analyses solely focused on the magnitude of integration neglect innovations brought by financialization, especially the fact that investors have different aims when investing in a country's assets or currency, what leads to different patterns of integration and different impacts on exchange rates. This questions the results of panel data studies that include countries whose financial integration might not have the same motives. With regards to the financialization literature, the article contributes by calling attention to how the developments studied in a closed economy context manifest at the international level and to how financialization impacts exchange rates.

Finally, the article has important contributions to the exchange rate literature. Post-keynesian analyses of developing countries' exchange rates have claimed that their peripheral insertion in the IMS make them more volatile than central currencies. The article has however shown that emerging market currencies differ more from central ones due to their much higher frequency of extreme depreciations than due to their everyday change. It has also shown that although a peripheral insertion in the IMS is important for explaining exchange rate features, the use made by institutional investors of the country's assets might be decisive. For instance, while Kaltenbrunner and Páncera (2014) have showed the new forms of vulnerabilities faced by developing countries based on the deep study of the Brazilian case, the analyses done in this article have demonstrated that the problematic exchange rate dynamics faced by this country is not common to every EME, but shared with a few others whose financial insertion have similar characteristics. These are important gaps in the literature that the article enlightens.

The evidence presented have clear policy implications on how to avoid the subordination of an emerging market currency to international financial conditions and its frequent sudden depreciations.

Given that not only the magnitude of financial integration, but also its type (including the sophistication of FX markets) has an impact on exchange rate patterns, not only traditional capital controls, but also “derivatives management techniques” (Fritz and Prates, 2014) should be used to control the transmission of volatility from the derivatives to the spot segments.

## References

- AGLIETTA, M.; BRETON, R. (2001). Financial systems, corporate control and capital accumulation. *Economy and Society*, v. 30, n. 4, 433-466.
- ANDRADE, R. P.; PRATES, D. M. (2013). Exchange rate dynamics in a peripheral monetary economy: A Keynesian perspective. *Journal of Post-Keynesian Economics*, v. 35, n. 3, 399-416.
- ARAÚJO, E. D. (2011). Volatilidade cambial e crescimento econômico: teorias e evidências para economias em desenvolvimento e emergentes (1980 e 2007). *Revista EconomiA*, v. 12, n. 2, 187-213.
- BAKER, D.; EPSTEIN, G.; POLLIN, R. (1998). *Globalization and progressive economic policy*. Cambridge University Press.
- BASU, S.; BUNDICK, B. (2012). Uncertainty shocks in a model of effective demand. NBER. (Working Paper, n. 18420).
- BAUMANN, B. A.; GALLAGHER, K. P. (2013). Post-crisis capital account regulation in South Korea and South Africa. PERI. (Working Paper. n. 230).
- BEKAERT, G.; HOEROVA, M.; DUCA, M. L. (2013). Risk, uncertainty and monetary policy. *Journal of Monetary Economics*, v. 60, n. 7, 771-788.
- BLECKER, R. A. (2007). The economic consequences of dollar appreciation for US manufacturing investment: a time-series analysis. *International Review of Applied Economics*, v. 21, n. 4, 491-517.
- BIANCARELI, A. M. (2011). *Brazil, developing economies and private international capital flows: the (new) challenges in the post-crisis scenario*. Paper presented at the 15th Conference of the Forum for Macroeconomics and Macroeconomic Policies, Berlin, 28-29 October.
- BIS (2013). *Triennial central bank survey of foreign exchange and derivatives market activity 2013*. Bank of International Settlements.
- BIS (2016). *Triennial central bank survey of foreign exchange and derivatives market activity 2016*. Bank of International Settlements.
- BONIZZI, B. (2013). *Capital flows to emerging markets: Institutional investors and the post-crisis environment*. Paper presented at the 17th FMM Conference of the Forum for Macroeconomics and Macroeconomic Policies, Berlin, 24-26 October.
- BONIZZI, B. (2017). An alternative post-Keynesian framework for understanding capital flows to emerging markets. *Journal of Economic Issues*, v. 51, n. 1, p. 137-162.
- BORIO, C.; DISYATAT, P. (2011). Global imbalances and the financial crisis: Link or no link? BIS. (Working Papers, n. 346).
- BORIO, C.; DISYATAT, P. (2015). Capital flows and the current account: taking financing (more) seriously. BIS. (Working Paper, n. 525).



BOYER, R. (2000). Is a finance-led growth regime a viable alternative to Fordism? A preliminary analysis. *Economy and Society*, v. 29, n. 1, p. 111-145.

BRUNO, V.; SHIN, H. S. (2015). Capital flows and the risk-taking channel of monetary policy. *Journal of Monetary Economics*, v. 71, p. 119-132.

CHESNAIS, F. (1997). *La mondialisation du capital*. Paris: Syros.

CHESNAIS, F. (2001). La théorie du régime d'accumulation financiarisé: contenu, portée et interrogations. Paper presented at the Forum de la Régulation, Paris, 11-12 October.

CHESNAIS, F.; de BRUNHOFF, S.; PLIHON, D. (1996). *La mondialisation financière, cout et enjeux*. Paris: Syros.

CHICAGO Board Options Exchange, C. (2015). White Paper: The CBOE Volatility Index – VIX. Online. Retrieved from: <https://www.cboe.com/micro/vix/vixwhite.pdf>.

COTTANI, J. A.; CAVALLO, D. F.; KHAN, M. S. (1990). Real exchange rate behavior and economic performance in LDCs. *Economic Development and Cultural Change*, v. 39, n. 1, p. 61-76.

DA SILVA, P. P.; DA FONSECA, M. R. R. (2015). A liberalização financeira *de facto* da economia brasileira: um estudo de seus impactos através do modelo MS-VAR. Paper presented at the 8<sup>th</sup> International Meeting of the Brazilian Keynesian Association, Uberlandia, 19-21 August.

DE CONTI, B. M.; PRATES, D. M.; PLIHON, D. (2014). A hierarquia monetária e suas implicações para as taxas de câmbio e de juros e a política econômica dos países periféricos. *Economia e Sociedade*, v. 23, n. 2, p. 341-372.

DE PAULA, L. F.; ALVES JR, A. J. (2000). External financial fragility and the 1998-1999 Brazilian currency crisis. *Journal of Post Keynesian Economics*, v. 22, n. 4, p. 589-617.

DE PAULA, L. F.; FRITZ, B.; PRATES, D. M. (2017). Keynes at the periphery: currency hierarchy and challenges for economic policy in emerging economies. *Journal of Post Keynesian Economics*, v. 40, n. 2, p. 183-202.

DOLLAR, D. (1992). Outward-oriented developing economies really do grow more rapidly: evidence from 95 LDCs, 1976-1985. *Economic Development and Cultural Change*, v. 40, n. 3, p. 523-544.

DODD, R. (2005). Derivatives markets: sources of vulnerability in US financial markets. In: EPSTEIN, G. (Ed.). *Financialization and the world economy*. Edward Elgar Publishing. p. 149-180.

EICHENGREEN, B. (2007). *The real exchange rate and economic growth*. Commission on Growth and Development. (Papers, n. 4).

EICHENGREEN, B.; GUPTA, P. (2015). Tapering talk: the impact of expectations of reduced Federal Reserve security purchases on emerging markets. *Emerging Markets Review*, v. 25, p. 1-15.

EUROPEAN Central Bank (2006). *Monthly Bulletin*, April.

EDISON, H. J.; LEVINE, R.; RICCI, L.; SLØK, T. (2002). International financial integration and economic growth. *Journal of International Money and Finance*, v. 21, n. 6, p. 749-776.

EPSTEIN, G. (2005). *Financialization and The World Economy*. Massachusetts: Edward Elgar Publishing.

ERDEMLIOGLU, D.; LAURENT, S.; NEELY, C. J. (2012). Econometric modeling of exchange rate volatility and jumps. Federal Reserve Bank of St. Louis. (Working Paper, n. 8).

FORBES, K. J.; WARNOCK, F. E. (2012). Capital flow waves: Surges, stops, flight, and retrenchment. *Journal of International Economics*, v. 88, n. 2, p. 235-251.

FARHI, M. (1999). Derivativos financeiros: hedge, especulação e arbitragem. *Economia e Sociedade*, n. 13, p. 93-114.

FRITZ, B.; PRATES, D. M. (2014). The new IMF approach to capital account management and its blind spots: lessons from Brazil and South Korea. *International Review of Applied Economics*, v. 28, n. 2, p. 21-239.

GAGNON, J.; CHABOUD, A. (2007). What can the data tell us about carry trades in Japanese yen? FRB International Finance. (Discussion Paper, n. 899).

GALATI, G.; MELVIN, M. (2004). Why has FX trading surged? Explaining the 2004 triennial survey. *BIS Quarterly Review*, December.

GUTTMANN, R. (2008). A primer on finance-led capitalism and its crisis. *Revue de la Régulation*, v. 3, n. 4.

GODA, T.; LYSANDROU, P. (2014). The contribution of wealth concentration to the subprime crisis: a quantitative estimation. *Cambridge Journal of Economics*, v. 38, n. 2, p. 301-327.

HALDANE, A. (2011). The big fish small pond problem. In: Institute for New Economic Thinking Annual Conference, v. 9, Bretton Woods, New Hampshire.

HARVEY, J. T. (2009). *Currencies, capital flows and crises: A post Keynesian analysis of exchange rate determination*. Routledge.

HOFFMANN, A. (2013). Carry trades and speculative manias: evidence from central and eastern Europe. *Journal of Post Keynesian Economics*, v. 36, n. 1, p. 15-30.

IMF. International Monetary Fund (2004). *Classification of exchange rate arrangements and monetary policy frameworks*. Washington, DC: IMF.

IMF. International Monetary Fund (2014). *Annual Report on Exchange Arrangements and Exchange Restriction*. Washington, DC: IMF.

KAHNEMAN, D. (2011). *Thinking, fast and slow*. New York: Macmillan.

KALTENBRUNNER, A. (2015). A post Keynesian framework of exchange rate determination: a Minskyan approach. *Journal of Post Keynesian Economics*, v. 38, n. 3, p. 426-448.

KALTENBRUNNER, A. (2017). Financialised internationalisation and structural hierarchies: a mixed-method study of exchange rate determination in emerging economies. *Cambridge Journal of Economics*, v. 42, n. 5, p. 1315-1341.

KALTENBRUNNER, A.; PAINCEIRA, J. P. (2014). Developing countries' changing nature of financial integration and new forms of external vulnerability: the Brazilian experience. *Cambridge Journal of Economics*, v. 39, n. 5, p. 1281-1306.

KALDOR, N. (1939). Speculation and economic stability. *The Review of Economic Studies*, v. 7, n. 1, p. 1-27.

KNIF, J.; KOLARI, J.; PYNNONEN, S. (2005). *What drives correlation between stock market returns? International evidence*. NBER. (Working Paper, n. 8109).

- KRAAY, A. (1998). *In search of the macroeconomic effects of capital account liberalization*. Unpublished manuscript. World Bank. Retrieved from: [http://siteresources.worldbank.org/DEC/Resources/22237\\_CALMacroEffects\\_Manuscript.pdf](http://siteresources.worldbank.org/DEC/Resources/22237_CALMacroEffects_Manuscript.pdf).
- KREGEL, J. (1998). Derivatives and global capital flows: application to Asia, *Cambridge Journal of Economics*, v. 22, n. 6, p. 677-692.
- KREGEL, J. (2004). Can we create a stable international financial environment that ensures net resource transfers to developing countries? *Journal of Post Keynesian Economics*, v. 26, n. 4, p. 573-590.
- LANE, P. R.; MILESI-FERRETTI, G. M. (2001). The external wealth of nations: measures of foreign assets and liabilities for industrial and developing countries. *Journal of international Economics*, v. 55, n. 2, p. 263-294.
- LANE, P. R.; MILESI-FERRETTI, G. M. (2007). The external wealth of nations mark II: revised and extended estimates of foreign assets and liabilities, 1970-2004. *Journal of International Economics*, v. 73, n. 2, p. 223-250.
- LAZONICK, W.; O'SULLIVAN, M. (2000). Maximizing shareholder value: a new ideology for corporate governance. *Economy and Society*, v. 29, n. 1, p. 13-35.
- LUX, T.; MARCHESI, M. (2000). Volatility clustering in financial markets: a microsimulation of interacting agents. *International Journal of Theoretical and Applied Finance*, v. 3, n. 4, p. 675-702.
- McCAULEY, R. N.; SCATIGNA, M. (2011). Foreign exchange trading in emerging currencies: more financial, more offshore. *BIS Quarterly Review*, March.
- MINSKY, H. P. [1986] (2008). *Stabilizing an unstable economy*. McGraw Hill Professional.
- MISSIO, F. J.; JAYME JÚNIOR, F. G.; BRITTO, G.; OREIRO, L. J. (2015). Real exchange rate and economic growth: new empirical evidence. *Metroeconomica*, v. 66, n. 4, p. 686-714.
- OBSTFELD, M. (2015). *Trilemmas and trade-offs: living with financial globalization*. BIS. (Working Papers, n. 480).
- ORHANGAZI, O. (2008). Financialisation and capital accumulation in the non-financial corporate sector: a theoretical and empirical investigation on the US economy: 1973-2003. *Cambridge Journal of Economics*, v. 32, n. 6, p. 863-886.
- ORLÉAN, A. (1999). *Le pouvoir de la finance*. Paris: Odile Jacob.
- PALMA, G. (1998). Three and a half cycles of 'mania, panic, and [asymmetric] crash: East Asia and Latin America compared. *Cambridge Journal of Economics*, v. 22, n. 6, p. 789-909.
- PLIHON, D. (1995). Liquidité et investissement : une lecture Keynesienne des mutations financières récentes et de leurs conséquences. *Economies et Sociétés*, v. 29, n. 11, p. 57-91.
- PLIHON, D. (2010). *Les taux de change*. Paris: La Découverte.
- PLIHON, D. [2003] (2010). *Le nouveau capitalisme*. 3<sup>rd</sup> ed. Paris: La Découverte.
- PLIHON, D.; PONSSARD, J. P. 2002. 'La montée en puissance des fonds d'investissement: quels enjeux pour les entreprises?' Documentation française
- PRATES, D. M.; FARHI, M. (2015). The shadow banking system and the new phase of the money manager capitalism. *Journal of Post Keynesian Economics*, v. 37, n. 4, p. 568-589.

PRATES, D. M.; FRITZ, B. (2016). Beyond capital controls: regulation of foreign currency derivatives markets in the Republic of Korea and Brazil after the Global Financial Crisis. *CEPAL Review*, n. 118.

RAPETTI, M.; SKOTT, P.; RAZMI, A. (2012). The real exchange rate and economic growth: are developing countries different? *International Review of Applied Economics*, v. 26, n. 6, p. 735-753.

RAZMI, A.; RAPETTI, M.; SKOTT, P. (2009). *The real exchange rate as an instrument of development policy*. PERI. (Working Paper, n. 7).

RAMOS, R. A. (2017). Financialization at the international level: evidence from emerging market economies. *Economia e Sociedade*, v. 26, n. spe, p. 959-990.

RAMOS, R. A.; PRATES, D. M. (2018). *The post-Keynesian view on exchange rates: towards the consolidation of the different contributions in the ABM and SFC frameworks*. Campinas: Unicamp. Instituto de Economia. (Texto para Discussão, n. 352).

REY, H. (2015). *Dilemma not trilemma: the global financial cycle and monetary policy independence*. NBER. (Working Paper, n. 21162).

RODRIK, D. (2008). The real exchange rate and economic growth. *Brookings Papers on Economic Activity*, n. 2, p. 365-412.

SCHULMEISTER, S. (2008). On the manic-depressive fluctuations of speculative prices. In: HEIN, E.; NIECHOJ, T.; SPAHN, P.; TRUGER, A. (Ed.). *Finance-led capitalism*. 2<sup>nd</sup> ed. Metropolis-Verlag, Marburg. p. 309-335.

STOCKHAMMER, E. (2004). Financialisation and the slowdown of accumulation. *Cambridge Journal of Economics*, v. 28, n. 5, p. 719-741.

TALEB, N. N. (2007). *The black swan: the impact of the highly improbable*. Random House “Volatile” 2015. Oxford Dictionaries. Retrieved from: <http://www.oxforddictionaries.com>.

WOLFSON, M. H. (2002). Minsky’s theory of financial crises in a global context. *Journal of Economic Issues*, v. 36, n. 2, p. 393-400.