

**Currency hierarchy, liquidity preference and exchange rates:  
a Keynesian/minskyan approach**

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Abstract:

This paper proposes a theoretical analysis on exchange rates determination based on Keynes and Minsky, and aims at highlighting the role of finance, monetary hierarchy and the international liquidity cycle on exchange rate determination, especially on peripheral currencies. The International Monetary System is hierarchical and the international liquidity of the peripheral currencies depends not so much on the domestic fundamentals but instead depend primarily on the expectations of international agents. Hence, the alternation of moments of higher and lower liquidity preference sets the liquidity cycles and moreover determines moments of "search for yield", with strong demand for assets in peripheral currencies, and moments of "flight to quality", with a return to the central currencies. Additionally, it is argued that a liquidity cycle is not restricted to a Keynesian process of asset allocation but also assumes a Minskyan dynamic of liabilities formation. At the upward phase of the cycle, borrowing in credit markets or leveraging in derivatives markets allow the creation of new liquidity in the system. Meantime, in the downward phase, settlement of debts and deleveraging generates a destruction of liquidity in the system. In this context, it is argued that the carry trade is a major mechanism of transmission from liquidity cycle to exchange rates. With these elements, the paper describes a process where carry trade tends to appreciate the peripheral currency - associated with a high interest rates - during the upward phase of the cycle of liquidity and depreciate them in the reversal phase.

Keywords: international finance, currency hierarchy, liquidity cycles, carry trade, exchange rates.

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# **Currency hierarchy, liquidity preference and exchange rates: a Keynesian/minskyan approach**

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## **1. Introduction**

Theoretical formulations concerning exchange rates have been always induced by challenges imposed by history and by failure of current theories in the explanation of reality. Considering these aspects, this paper aims at proposing some elements to contribute to the understanding of exchange rate movements in the current historical-institutional context.

The reasoning line is anchored in the studies concerning the financial globalization by Aglietta (2001), Chesnais (2005), Plihon (2004), Epstein (2002) e Guttmann (2008) and by authors of the University of Campinas, as Belluzzo (1997 e 2000), Tavares (1998), Carneiro (2002) e Braga (1993)<sup>3</sup>. As presented by those authors, financial globalization meant important changes in the allocation of social wealth, increasing the shares of financial assets in private wealth (Coutinho & Belluzzo, 1998). As a part of these changes, financial agents modify the way they operate in the markets, managing their assets in order to keep them in liquid forms and earn short term returns. This process involved also a transformation in the importance and the strategies of agents, with the institutional investors assuming a central role and the commercial banks metamorphosing into universal banks.

The interaction of these agents constituted liquid and deep financial markets and, among them, the international market for currencies – a “world currencies mega-market” (Plihon, 2001)<sup>4</sup>. This liquidity is not an intrinsic characteristic of the assets, but rather the expression of the financial community confidence. It depends on the transactions volume (the turnover) and on the diversity of the markets’ participants: the more diversified are the motivations for the agents to operate on this market, the more

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<sup>3</sup> In this literature, the emphasis in the financial globalization appears also under the name of financial domination, finance led capitalism or financialization.

<sup>4</sup> There is a direct rapport between liquidity and speculation. Aglietta (2001) proposes that liquidity in financial markets is promoted by speculation. Moreover, it a truism to state that speculation requires liquidity.

probable is to find a counterpart for the orders of buying and selling. On the other hand, the market deepness refers to its capacity to absorbing shocks caused by large buy or sell operations; that is, deep markets are not impacted by the entrance of a big player in the market (Aglietta, 2001: 57-58).

The rise of financial markets liquidity and deepness was enforced by two movements that characterize financial globalization: the financial liberalization at the domestic level and the increasing capital mobility at the international level (Chesnais, 1994). This process promoted the equalization of the operational conditions for financial agents, approximating domestic monetary spaces that, mediated by the foreign exchange market, may transact different assets<sup>5</sup>. Additionally, derivative markets intensify foreign exchange markets' integration – among them and with other financial markets:

“The derivatives market seeks to transform economic uncertainty into a measurable probabilistic risk; price it; and turn into an interchangeable instrument. These tools enable different financial assets to be measured under the same unit of measure, “commoditizing” risks and integrating various markets. Thus, the derivatives market leads capital mobility to its limit and enables the exchange of profit on stocks of global wealth. (...) in the derivatives market, one can change the profitability of a share by the interest rate variation in a country, bet on the appreciation of an exchange rate, on the sovereign debt default of another country etc..” (CARNEIRO, ROSSI, MELLO e CHILIATO-LEITE, 2013: 9)

In the financial globalization, therefore, currencies are financial assets associated to the trade-off returns/risks, like commodities, bonds, securities etc. Considering currencies as financial assets is not so evident for some branches of economic theory, but is more than obvious for financial market operators. The wealth stock dynamics and the logic used by financial market players for the portfolio allocation are essential for the exchange rate determination; they are even more important than macroeconomic real variable flows, such as foreign trade, economic growth and so on. At the end, there is a process of “exchange rate financialization” that may be defined as the process in which exchange rate movements are completely subordinated to financial agents' portfolio decision. This process makes exchange rate variations more and more decoupled from macroeconomic fundamentals.

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<sup>5</sup> Helleiner (1997) states that this process results in a loss of autonomy for National States.



Economic theory needs therefore to go ahead on the comprehension of the channels by which international finance interferes in exchange rate dynamics. Aiming to contribute to these discussions, this paper presents three issues that are interconnected and are crucial for the understanding of exchange rate dynamics in the financial globalization: the currency hierarchy, the international liquidity cycles and the carry trade operations.

## 2. Currency hierarchy

According to Aglietta (1986)'s analysis, the world has never had an international money, defined by the author as a money issued and administrated by a supranational institution, to be used in the whole globe. However, even if one cannot talk about international money, global exchanges have always induced the use of national currencies at the international level. The same way money facilitates exchanges at the national level, in the world scenario the choice of one (or some) reference currency(ies) have always been essential for the development of global exchanges. According to Krugman (1991, 165) "international economic activity, like domestic activity, requires the use of money, and the same forces that lead to convergence on a single domestic money lead the world to converge on a limited number of international monies"<sup>6</sup>.

In a national economy, money is generally imposed by the State, following the logic of *fiat money*<sup>7</sup>. Being sovereign over the national territory, the State issues the money, determines by law its acceptance and the rules of its currency, makes payments and collects taxes on this money. In the international scenario, on the other hand, the reasons behind the choice of the money used for the international business are not so evident and many different attempts to explain this determination may be found in the literature (e.g. Hayek, 1976; Krugman, 1991; Bourguinat, 1987).

In this paper, it is supposed that this monetary choice is made mainly according to issues that come from International Political Economics. Principally, the economic dimension of the money's issuer country, its (commercial and financial) integration to

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<sup>6</sup> Actually, these forces that lead to convergence on a single money are not exactly the same in the domestic or in the international arena. The main difference is that in the domestic sphere, National State has the prerogative to impose its money, while in the international sphere it does not happen. Anyway, the point stressed by Krugman is that the positive externalities generated by the use of one money are also verified at the international level.

<sup>7</sup> Although this is the most accepted proposition among economists, it is not consensual. Orléan (2002) raises questions about the role of the State as the money creator, suggesting that it can contribute to the consolidation of money, but its action is neither necessary, nor sufficient for this monetary creation.

world's economy, its geopolitical power<sup>8</sup> and its will to internationalize its currency (for details, see De Conti, 2011).

According therefore to these geoeconomic and geopolitical rapports, the International Monetary System (IMS) is configured. The important point is that these configurations of the IMS have always been asymmetric, with currencies which occupy a central position, some others which have a secondary importance and finally those which are completely ignored at the international scenario. In this paper, we adopt the line of reasoning proposed by Carneiro (1999) and Prates (2002), suggesting that it is according to the international use of money that the different levels on the IMS hierarchy may be determined<sup>9</sup>.

During a long time, Sterling pound has been the IMS' central currency, thanks to the British economic domination over the world. The international use of a money has a strong inertial component, allowing Sterling pound to keep its centrality in the system, even after the United States have become the main economy in the world, in the 1920's. It was only after the two World Wars and the institution of the Bretton Woods Agreement that the dollar assumed its role as the base of the fixed exchange rate regime that was instituted and longed for nearly thirty years. Although the 1970's crises and the end of the Bretton Woods system, the dollar has kept (even increased) its role as the IMS' central currency. There are some differences with reference to the previous system<sup>10</sup> and doubts concerning the future, but its central role in the world economy is still incontestable. The American "financial hegemony", determined by the dimension of US domestic financial market and the importance of its financial institutions allowed dollar to keep its role as the internationally most used money, in any of the three functions (Strange, 1986; Helleiner, 1994). This hegemony has been even reinforced by the policy of the "strong dollar", conducted by Paul Volcker since 1979 and by the raise of the twin deficits in US during the 1980's, that continued to inundate the world with

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<sup>8</sup> Strange (1996, p. 17) defines power as "the ability of a person or a group of persons to influence on the state of the things in a way where its preferences have a priority over else one's priorities".

<sup>9</sup> These authors propose the division of the IMS in three groups, according to the ability of each national money to fulfill its classical functions in the international level. The dollar is in the center; the currencies that fulfill some of the functions of money internationally, but with a minor importance, are on a second level (currencies named "convertibles" by the authors); finally, the named "inconvertible currencies" don't fulfill any of money functions in the international level. In order to avoid any kind of ambiguity, the terms "convertibility"/"inconvertibility" will not be used in this paper, although the general idea is the same, that is, the monetary hierarchy is determined by the ability of each domestic money to fulfill its functions at the international level. Furthermore, the three groups defined above will not be treated, because the paper's focus is on the IMS' center and periphery.

<sup>10</sup> Aglietta & Berrebi (2007) name the present system the "dollar semi-standard".

liquidity. It is undeniable that European monetary unification began to slowly change international economic configuration, but in this moment there is no doubt concerning the role kept by the dollar as the system's central currency<sup>11</sup>.

In a second level, there is the euro, whose international use increased since its creation, mainly in the financial sphere<sup>12</sup>; the effects of the Eurozone crisis over the international usage of this currency is still not clear, but its role as the second most used currency is kept. Japanese yen, Sterling pound and Swiss franc have also a considerable importance in the international level, even if in a minor proportion. All these currencies that are used as currencies in the international arena – that is, that fulfill money classical functions at this level – may be named *central currencies*.

Finally, there are the currencies that don't have any use in the international level, named here as *peripheral currencies*. It means they are money in the countries they are issued, but they are not money in a global scale. Among these peripheral countries, one may still establish some distinctions, concerning mainly its ability to integrally fulfill, in the national sphere, the three functions of money, but these details are beyond the scope of this paper<sup>13</sup>. The present International Monetary System is hence configured in the way showed in Figure 1.

As presented above, central currencies may be demanded at the international level to fulfill any of money classical functions. It is evident that some of these central currencies are more used than others, but they are all perceived at the international arena as currencies. On the other hand, the peripheral currencies, since they do not fulfill money classical functions at the international level, they are demanded at that level only as financial assets.

If peripheral currencies are demanded only as financial assets at the international level, it is convenient to use assets choice theories for the understanding of this demand. According to the classical theory of "portfolio choice" (e.g. Hicks, 1962), the traditional trade-off agents face for the possession of an asset is between *liquidity* and *yield*. Since peripheral currencies are not as liquid as central ones (the same reasoning being valid for the assets denominated in each of these currencies), international agents will demand them only in the quest of high yields.

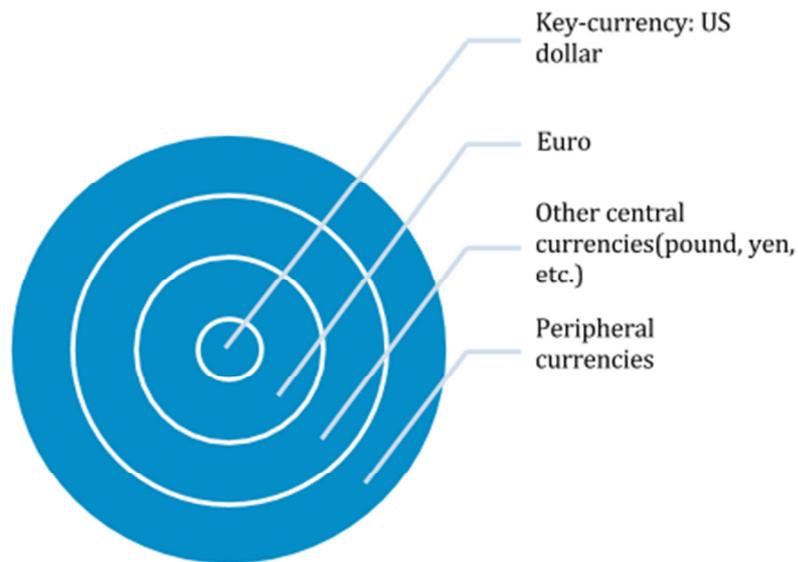
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<sup>11</sup> Even the European Central Bank refers to the dollar as "the leading international currency" (ECB, 2002).

<sup>12</sup> To analyze the increasing international importance of the euro, see Miotti, Quenan & Plihon (2008).

<sup>13</sup> For an alternative and more detailed division of the different groups of currencies (which also considers this ability to nationally fulfill the three functions of money), see Cohen (1998).

**Figure 1: International Monetary System and its hierarchy**



Source: authors' elaboration, based in Carneiro (1999) and Prates (2002).

Both yield and liquidity may be aggregated into Keynes theory of portfolio choice. In the famous chapter 17 of his *General Theory*, Keynes proposes that asset choices may be based in its expected returns<sup>14</sup>, that may be calculated through the following equation:  $q - c + l + a$ . Given that:  $q$  = the expected quasi-rent (or “yield”);  $c$  = the carrying cost;  $l$  = the liquidity premium;  $a$  = the expected appreciation.

As proposed by Prates & Andrade (2013), this equation may be also used to evaluate agents' incitation to detain a currency in their portfolio (or an asset denominated in this currency).

The variable “ $q$ ” represents the asset's quasi-rent, that is, the ordinary remuneration of the asset (for instance, the interest rate, the dividends, etc.). The variable “ $c$ ” represents the costs associated to the maintenance of this asset in the portfolio and will be explained in details in next section. The variable “ $l$ ” is not the monetary remuneration an agent earns due to the possession of an asset, but the monetary value this agent gives to the fact of possessing a liquid asset. The variable “ $a$ ” corresponds to the expected appreciation of the asset (when the asset is denominated in a foreign currency, the expected exchange rate variations must be comprehended in this variable)<sup>15</sup>.

<sup>14</sup> Keynes (1936) name it the “own interest rate”.

<sup>15</sup> If it is a Treasury Bill denominated in Brazilian real, for instance,  $q$  will represent this bill interest rates; and Brazilian currency appreciation would configure the variable “ $a$ ”.

For the purposes of this paper, it is important to deepen the analysis of the variable “ $l$ ”, because its dynamics all over time is crucial for the understanding of agents’ investment choices, the direction of capital flows and finally the exchange rate movements.

First of all, it is important to remind that the variable “ $l$ ” is not an objective value. It is rather the monetary value agents attribute to the possession of a liquid asset. It means that this value must be added to other assets’ expected yield (“ $q$ ”) or appreciation (“ $a$ ”), in order to incite agents to abandon the most liquid assets and invest in these other assets. In other words, the variable “ $l$ ” is equal to the premium agents require to accept the abandonment of the most liquid assets.

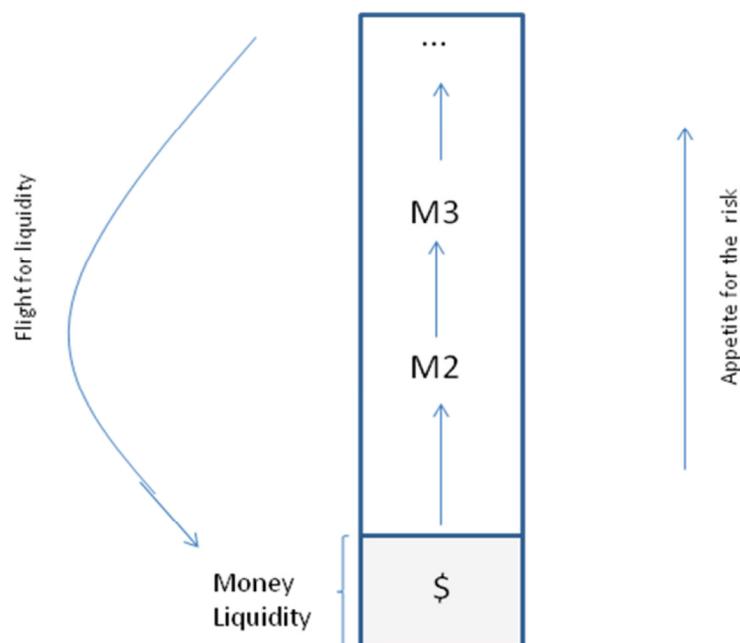
The variable “ $l$ ” results therefore from the uncertainty that characterizes any monetary economy. Being completely based in expectations and perceptions associated to an uncertain world, it is susceptible to a great volatility. Nevertheless, it is not the result of individual’s expectations and perceptions, but rather to collective conventions. Given that such conventions affect the decisions of most part of world investors, these movements in the variable “ $l$ ” generally have systemic effects, as it will be discussed below.

Keeping Keynes’ widespread terminology, the variable “ $l$ ” reflects actually the liquidity preference. The important point however is that, in spite of the fact that Keynes (1936) has properly developed the issue of liquidity and its relevance for agents in a monetary economy, at the international level this issue of liquidity is not so developed. When analyzing the economic dynamics in the financial globalization, however, it is necessary to analyze different currencies, so it is not possible to deal with liquidity only at the national level.

In this sense, it is acceptable to start the analysis observing a national economy, but in a second moment it is crucial to displace the reasoning to the international scenario. Inside a national territory, it is possible to hierarchize different assets according to their degree of liquidity. The state money will be in the base of this ordination and, departing from it, we can then arrange the spot deposits, the forward ones, the short term and long term securities, etc. To make it simple, the Schema 1 uses the monetary aggregates  $M2$ ,  $M3$  etc., instead of each type of asset. In the moments of economic optimism, national agents’ “appetite for the risk” increases, encouraging them to gradually move their investments in the direction of less liquid assets. Nevertheless, in the moments where there is a change in the so called market psychology and a rise in

the liquidity preference – increasing the variable “I” of the above presented equation –, it can be observed a sudden return of the private capital towards the more liquid assets and mainly towards money, the most liquid asset.

**Schema 1: National dimension**

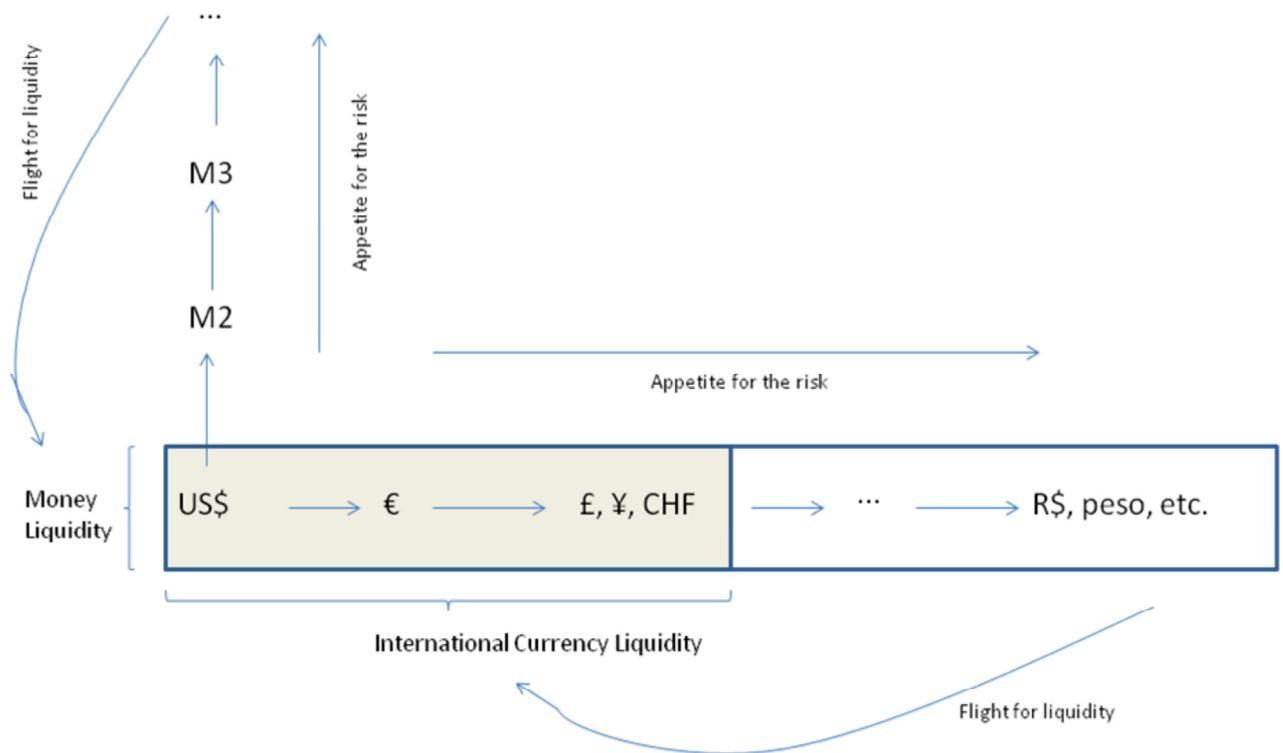


Source: De Conti (2011)

In the world scenario, the hierarchy of assets inside each national territory is kept, but the alternative of investing in other countries arises to the international investor, originating another hierarchal dimension, concerning the national currencies in question. The Schema 2 shows the dollar as the world economy’s liquid asset *par excellence* and, departing from it: i) in the vertical direction (from the bottom to the top): assets in dollar, with a decreasing liquidity; ii) in the horizontal direction (from the left to the right): other national currencies, with a decreasing liquidity. Above each national currency, one can also organize an array of assets denominated in the regarded currency, with decreasing liquidity. Hence, a matrix is established, in which the most liquid asset is below and in the left (the dollar), and the liquidity is reduced when one moves upwards and towards the right of the matrix. The line in the bottom of the matrix contains the different national currencies that possess, by definition, the liquidity proper of money inside the national territory where they are issued. However, at the international level peripheral currencies are less liquid than the central ones. The same

way it happens in the national extent, the rise of the international agents' "appetite for the risk" induces the investment in assets further and further from the "origin", or from the point of maximal liquidity. Though, since it concerns now the world economy, these resources will move towards assets in the top and/or in the right of the matrix, searching exceptional yields. However, in the moment of reversion of the optimistic expectations (characterized by the augmentation of the liquidity preference), there is also a sudden return towards the most liquid assets of the array and, mainly, those that are liquid at the international scenario, the central currencies.

**Schema 2: International dimension**



Source: De Conti (2011)

This behavior presented in schema 2 is not individual, but collective; following conventions, agents act in a same way in their "search for yield" or "flight for quality". Moreover, as seen above, in the financial globalization it is not national, but international. This portfolio re-configuration results hence in massive capital flows moving all over the world and going to peripheral countries or running away from these countries. They configure therefore the international liquidity cycles, that will be discussed in section 3.



### 3. International liquidity cycles

Even when not defined as "cycles of international liquidity", the oscillation of external financing availability to developing countries is an undeniable, stylized fact. Nevertheless, on theoretical grounds, there are few integrated explanations to this evidence – at least inside the so-called mainstream economics. In fact, if one would follow strictly the classical benefits of financial opening (international risk-sharing; inter-temporal trade; macroeconomic discipline<sup>16</sup>), this would be a non-question: the capital should flow, in a continuous fashion, to where it is scarce, to where the interest rate is higher and investment opportunities are better and, of course, to where the macroeconomic policy is "correct".

Such an abstract prediction has been changed in recent years, mainly in response to the sequence of crises that affected the major emerging markets since the last half of 1990's. The historical evidence that the "capital doesn't flow from rich to poor countries"<sup>17</sup> is also a catalyst to theoretical revisions. New generations of exchange and financial crises models succeeded, and some unusual elements in conventional literature (self-fulfilling prophecies, herd behaviour etc.) were introduced.<sup>18</sup> But these were, in general, discussions more closely related to episodes of crises, and not to the succession of bad and good times of financing to developing countries.

At the beginning of the 1990's, when private capital flows "suddenly" started to flow back to Latin American countries, after a long decade of almost complete absence, a brief debate occurred inside the mainstream, regarding the causes of the radical change. There were basically two positions. On one hand those (such as El-Erian, 1992 and Schadler *et al.*, 1993) who explained that trend by *internal factors* – namely, monetary and fiscal policies leading to macroeconomic stabilization, the liberalizing reforms according to the Washington Consensus codification, and external debt renegotiations following the Brady Plan guidelines. On the other hand those (the best reference is Calvo, Leiderman & Reinhart, 1993) who emphasized the dominance of *external factors*, specially the low levels of growth and interest rates in developed

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<sup>16</sup> The intertemporal trade has two complementary meanings: to smooth out the effects of income fluctuations and to exploit the investment potential without the need of a drastic raise in domestic savings. See, *inter alia*, Obstfeld & Taylor (2004, 1.1) and Fischer (1998).

<sup>17</sup> This is an old (but sometimes forgotten) puzzle of international finance, known as "Lucas paradox", in reference to his article on the subject (Lucas, 1990). See also Obstfeld & Taylor (2004, ch. 7) and, to a critical assessment, UNCTAD (2008, ch. III).

<sup>18</sup> For a brief survey of this literature, see Burnside et al. (2008).

economies, without which the appetite for those countries wouldn't have been revived. This is an important division – also named “pull versus push factors debate” – that will remain important in good or bad phases: who are the villains (or the heroes) and who are the victims (or the blessed) in each time?

Afterwards, several very interesting concepts were introduced by some of these economists. Also under the impact of 1990's crises, Calvo (1998) and Calvo & Reinhart (2000) identified the occurrence of *sudden stops* in capital flows to developing countries, mainly after a period of persistent current account deficits, leading to bankruptcies, human capital and financial domestic channels destruction, and so on. Kaminsky, Reinhart & Vegh (2004) proposed that the absorption of capital inflows by developing countries is "pro-cyclical", as well as are, in general, the monetary and fiscal policies adopted by host countries in times of abundance. More recently, amid the deepening of US-originated financial crisis, and thinking about its possible impacts on developing economies' external financing, Reinhart & Reinhart (2008) used the term "capital flow bonanzas" to designate phases of large capital inflows, identified in a large sample of developed and developing countries from 1980 to 2006.

However, except in this last case – in which some factors explaining the cycle are clearly discussed (commodity prices, international interest rates, and growth in largest economies) – the conventional literature neither focuses on the forces behind the oscillation, nor tries to draw conclusions from the evidence, thinking about the future. The same could be said of some richly detailed reports by IMF (2007), World Bank (2008) and BIS (2009) – which deal with the same phenomena and also identified, more or less explicitly, the sequence of good and bad phases. Important exceptions, among multilateral agencies' assessments of this topic, are UNCTAD's analyses (1999; 2006) – where the emphasis on the cyclical nature of external finance leads to a more cautious attitude (regarding financial opening) recommendation.

In a critical or heterodox approach to the question, such cyclical nature can be seen as a result of at least two structural – and associated – features of international financial relations during the globalization era: its instability and its asymmetries. Both affect adversely the peripheral world.

First of all, contemporary international capital flows are considered to be intrinsically volatile and moved by the search for short-term yield. As discussed in the Introduction, financial globalization era is understood here not just as a period of increased financial flows and external assets/liabilities stocks. More than that, it is

characterized by some important qualitative shifts in financial relations: the emergence of institutional investors as major sources of “funding”; the growing importance of “market finance” (i.e., the predominance of financial relations through the issuing of stocks, bonds and other securities, a trend also called “securitization”) *vis-à-vis* “bank finance”; the dissemination of derivatives instruments in these relations; and the broad liberalizing reforms that result in a greater capital mobility around the world.

Mainly in response to securitization and institutionalization of savings, the speculative pattern of behaviour – in a Keynesian sense: the attempt to anticipate the market tendency – was disseminated throughout the spectrum of economic agents (banks, firms, families). Regarding international financial relations, the broader possibilities of portfolio diversification, ensured by abolition of capital controls, gave rise to large speculative cross border capital movements – in the form of bank flows, equity flows (directly or through an investment, pension or hedge fund) and even FDI flows. The logic is always the same: the search for short-term capital gains, at different economies<sup>19</sup>. If the contemporary international monetary system is taken into account, the volatile nature of typical capital flows in the globalization era is reinforced: both the absence of clear rules and the fiduciary basis of US dollar dominance magnify the risks and possibilities of sudden expectation reversion. The greater the uncertainty, the more speculative and volatile are financial relations, in an amplified space.

Hence, to this view, the recurrent financial crises are not consequences of *ad hoc* market failures: the instability is intrinsic to contemporary international financial and monetary system. Furthermore, the assumption is that the situation of the peripheral countries in that unstable environment is even worse, aggravated by three reinforcing handicaps or asymmetries. This is the second level of analysis, specific to peripheral world.<sup>20</sup>

The first asymmetry is a financial one. Developing economies, each one and as a group, represent a small share in global portfolios: to the leading international investors, those destinations are always seen as exotics and just a fraction of the total is allocated there. As a result, not just one of the biggest inconsistencies of conventional wisdom (the capital doesn't flow as expected), but also a fragile position: being minor parts of total wealth, the assets allocated in developing countries are the first sell alternative in moments of risk aversion and/or huge losses in other markets.

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<sup>19</sup> The carry trade operations are a good example and will be treated in details in section 4.

<sup>20</sup> The concept of asymmetries is proposed by Prates (2005), based mainly on ideas of Ocampo (2001).

At the same time, a macroeconomic asymmetry exists, i.e., there are fewer degrees of freedom in macroeconomic management in the developing world as compared to the developed one. Specifically, economies are subject to a draconian rule regarding interest rate setting: even with floating exchange rates, the monetary policy is not totally freed from external influence (the “impossible trinity” theory does not apply perfectly in this case). A floor is determined by the cost of money in the major financial centres, plus the global investors’ risk evaluation, plus the expected exchange rate depreciation.

But the third handicap, the monetary asymmetry, is the most important one. The idea is that the huge qualitative differences among national currencies, presented in section 2, represent the main factor causing the financial and macroeconomic asymmetries. Because peripheral currencies are not able to perform any of the three basic functions of money (unit of account; medium of exchange and, specially, store of value) in international transactions, they are not liquid at this international arena. In Keynesian terms, they are not monies which “lulls the disquietude” of global investors.

To sum up, in a global financial environment which is intrinsically unstable, the inferior position of some economies is worsened by these three disadvantages – that marks the contemporary world and typify a peripheral country: the financial, the macroeconomic and (above all) the monetary asymmetries. As a result of these structural characteristics, the movement of private capital flows to peripheral countries, issuers of currencies that are not internationally liquid, is always a consequence of a reduction in liquidity preference in the international level (or a decrease in risk aversion).

As in a stylized Minskyan financial cycle (an optimistic period, when the expectation on future yields shore up financial transactions involving more and more risky agents), a confidence phase also occurs in international liquidity directed to peripheral countries, based on some common beliefs about those host economies, their risks and future opportunities. In the original formulation, the increasing financial fragility turns into financial crisis in the aftermath of an expectation shock – a drastic reversion of optimism about future and a sudden increase in liquidity preference (Minsky, 1982). Regarding international liquidity, any event that induces a re-evaluation of the risk/return combination of assets denominated in peripheral currencies (vis-à-vis the central economies) is able to trigger a “flight to quality” – an increasing in

risk aversion or in liquidity preference in this international sense –, as seen above, in Schema 2.

Both in the optimistic and in the pessimistic moments, these convention shifts can give rise to a more long term movement – the “high” and “low tide” phases in external financial environment – or can be just a brief up or down (the “mini-cycles”), which are unable to offset the broad trend.<sup>21</sup> Because international capital flows are, as discussed, intrinsically unstable nowadays (more than before), not just the two big phases in recent time seem to be shorter, but also the mini-cycles are more frequent.

An additional dimension of this discussion is related to the economic processes that, further than psychological factors, lead these changes in expectation, liquidity preference and risk aversion – the same dispute between pull and push factors already commented. The assumption here is that the economic situation in central economies (issuers of central currencies) is the major determinant of the big movements, despite the interaction with internal conditions. In normal times, variables like global and central economies’ growth rates and the monetary conditions of those countries (firstly in the US) are the most important in determining the general trend of capital flows to developing countries. But these “real” bases to the attitude toward riskier assets can always be surpassed by exceptional events.

The main implication of this relation between internal and external factors driving the cycle needs to be emphasized: the level and conditions by which the private capital is available to peripheral countries are set by processes beyond their control, or even their influence. Hence, the power of domestic “fundamentals” – which can, of course, reinforce a trend already in progress or compensate its effects – are clearly subordinated to more important forces. In a nutshell, peripheral countries are much more victims than protagonists in international liquidity cycles’ dynamics.

Victims, because these cycles have important impacts over peripheral economies. One of the most explicit impacts is on the exchange rates, and section 4 will discuss one of the main mechanisms for the transmission of the liquidity cycles to the exchange rate movements: carry trade operations.

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<sup>21</sup> *Boom and burst, feast and famine*, or the already mentioned *sudden stops* are other terms used in the literature to title the cycles’ phases.

#### 4. Carry trade and exchange rate dynamics

Carry trade is a leveraged trading strategy involving two currencies that can be operated through the banking system or by bets in derivatives market. In its first form it consists basically in borrowing funds from economies with low interest rates like the US, Japan and Switzerland and applying them in high interest countries such as Brazil, Turkey and Australia. As it is going to be shown, this operation leads to a financial flow that tends to depreciate the “funding currency” and appreciate the “target currency”.

In derivatives markets there is no need to take out a loan to perform a carry trade neither applying in any asset that yields interest. An instrument such as foreign exchange swap generates the same effect in a more efficient way and the investor does not assume a debt, nor acquires an asset. In this kind of swap, the price of a future exchange rate brings along the interest rate differential between two currencies<sup>22</sup>. The position is measured by the agent’s exposure: *short* when he is betting against a currency and *long* when he is betting for a particular currency.

An arbitrage gain overcomes from interest rate differentials but the final gain depends on an unknown exchange rate behavior. The speculator bets on a stable exchange rate or a depreciation of the funding currency and an appreciation of the target currency. The latter form is even more advantageous for the speculator since it depreciates the loan and appreciates his yield<sup>23</sup>.

The carry trade often fulfills the speculator's expectations as the magnitude of the flow tends, *per-se*, to cause exchange rate variations. In other words, the intensity of the flow tends to further reinforce the expectation that it was created. In addition, this operation weakens the borrowed currency and appreciates the target currency of this operation, as investors sell the former and convert it into the latter one. The higher the interest rate differential, the more attractive the carry trade is.

The carry trade is increasingly more recurrent in economic literature. Some UNCTAD documents highlight this speculation strategy as a cause of global imbalances in works as Flassbeck e La Marca (2007) e UNCTAD (2007 e 2010):

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<sup>22</sup> Covered interest rate parity implies that the forward exchange rate is the spot rate added by an interest rate differential (Isard, 2008).

<sup>23</sup> A theoretical specificity of the carry trade is that this strategy is a bet against the uncovered interest rate theory (UIP). That is, the carry trade is unprofitable if the UIP is valid. The logic is simple; the parity condition states that the currency with a higher interest rate tends to depreciate against the currency with lower interest rate. In other words, the interest differential is as a way of rewarding the investor for future devaluations of the higher interest rate currency, making null the carry trade return. Thus, the foreign exchange market is in equilibrium when the expected returns of similar applications in all currencies are equal when measured in the same currency.

*“Flows moving from low-yielding, low-inflation countries to high-yielding, high-inflation countries would cause the currencies of the latter to appreciate, and provoke the paradoxical and dangerous combination of surplus economies experiencing pressures to depreciate, and deficit countries facing a similar pressure to appreciate.” (UNCTAD, 2007)*

Hence, the carry trade can reasonably explain why countries can have the same exchange rate trajectories despite few common aspects beyond the interest rate level. Similarly, this speculative strategy could have been the cause of continuous appreciation of several exchange rates against the dollar before September 2008, which looked like dissociated from economic fundamentals and the subsequent depreciation during the crisis.

It can also explain the apparent paradox in which the epicenter of the crisis became the safe haven of financial flows since the leverage assumed in carry trade operations induces quick reversals of those flows to their origin, aiming to re-pay loans and avoid losses. Therefore, the unwinding of carry trade operations added to others financial flows caused reversals in exchange rate trends.

When carry trade is analyzed from a Minskyan perspective, it is possible to notice interesting aspects concerning the transmission of the liquidity cycles to the exchange rate movements.

As discussed above, carry-trade consists in an inter-currency investment, where the agent creates a liability (or a short position) in a low interest rate currency and an asset (or a long position) in a currency with higher interest rate. The financial wealth portfolio allocation is hence not only a process of financial assets allocation, but also of liabilities creation. The consequences of this operation may be observed inside Minsky (1986) framework, where investors are balance sheets unities whose asset/liability creation process is extremely relevant for economic cycles.

Going into the details and bringing again the discussion for the terms used in previous sections, Minsky proposes any investment engenders: i) a reduction in the investors' portfolio liquidity; or ii) a liability assumption. If an international investor uses its own assets to invest in a peripheral currency (whose interest rates are normally high), he will incur in the first of the two-abovementioned consequences, that is, a reduction in his portfolio liquidity degree. Nevertheless, this same agent may decide to raise funds in the market, in order to invest in a peripheral currency (even because assets denominated in peripheral currencies may have huge expected quasi-rents); in this case,

he would increase his liabilities to make this investment. Would these liabilities be in the same currency of the investment? No. As seen above, using different currencies to raise funds and to make the investment is the main responsible for the aggregated expected returns of the investment. It happens, because the basic interest rates of some currencies are extremely different. This is the asymmetry that turns possible the carry trade. The important point here is that the investment in peripheral currencies may be financed by loans obtained in low interest rate currencies. Working over Keynes' abovementioned equation, Minsky proposes that the "carrying cost" (variable "c" of the equation) may be considered as the costs associated to the liabilities created to fund the investment. In this sense, the interest rates of the loans contracted to fund the investment in peripheral currencies may be considered as the "carrying cost" of these assets. The interest rates of the acquired assets (generally denominated in peripheral currencies) are the "expected quasi-rents", "q".

Going on with the variables that conform Keynes' chapter 17 equation (adapted by Minsky), it is necessary to identify variable "a". Since it is the expected asset price variation, in the case of carry trade operations, it means the expected exchange rate variation between the target and the funding currencies.

To finish with Keynes' equation, it lasts variable "l". The important point is that this variable "l" is not an attribute of the asset. It is rather a manifestation of international liquidity preference, that changes all over time and has reasons that are external to the country where the assets are issued.

When world economy faces a phase of abundant international liquidity, variable "l" is low, stimulating the carry trade operations and hence making a pressure for target currencies appreciation. When this appreciation is expected to continue, the movement is self-reinforced by the fact that variable "a" of the equation is higher. It means that, expecting target currencies to appreciate, international agents make this bet, contributing to the appreciation (self-fulfilling prophecy).

In the reversal of the international liquidity cycles however, the variable "l" suddenly increases, determining a flight for quality and an abandonment of the target currencies. In carry trade therefore, its leverage structure and the intrinsic currency mismatch among assets and liabilities give to this kind of investment a speculative and unstable character. If this instability were restrained to financial assets prices, the problems would not be so widespread. Nevertheless, this dynamics has immediate impacts over the exchange rates of the currencies of denomination of assets and

liabilities. Whenever there is a rise in international liquidity preference, the target currencies – that are generally the peripheral currencies – depreciate intensively. In this moments, agents engaged in carry trade operations accumulate losses deriving from the depreciation of their assets (investments in peripheral currencies) and the appreciation of their liabilities (loans in low interest rate – central – currencies) and make a big effort to equilibrate their positions, corroborating to the intense depreciation of the target currency compared to the finance currency.

At the end, the liquidity cycles creates a “exchange rate cycle”, since the carry trade tends to appreciate peripheral currencies during the ascendant phase of the liquidity cycle and depreciate it the reversion phase. The important detail is that this exchange rate movement occurs in an asymmetric manner, following the temporality of the liquidity cycles: the optimistic conventions that characterize international liquidity expansion happen in a gradual rhythm, determining a slow and sustained peripheral currencies appreciation; the reversion in “markets humor” is generally abrupt, determining rapid elevation in peripheral currencies exchange rates.

Although counting on more liquid and deep markets, central currencies also suffer the effects of this so-called “exchange rate cycle”. In the reversion phase of the international liquidity cycles, these currencies face a huge demand, for two reasons: i) they are “the natural refuge of financial wealth, after its adventures in exotic places” (Belluzzo, 2000); and ii) agent’s liabilities are denominated in these currencies, so they run for it. Hence, independently of the reasons of the liquidity cycle reversion, these currencies face an appreciation trend.

## 5. Final Remarks

This paper proposed a theoretical analysis on exchange rates determination based on Keynes and Minsky, highlighting the role of finance, monetary hierarchy and the international liquidity cycle on exchange rate determination, especially on peripheral currencies.

The International Monetary System is hierarchical according to the ability of each national currency to fulfill money functions internationally. Peripheral currencies do not perform none of the classic functions of money at the international level, thereby being demanded solely as short term financial assets, subject to valuation. According to Keynes, the demand for different assets is determined by the equation  $q + l - c + a$ , ie for its yield ( $q$ ), carrying cost ( $c$ ), liquidity ( $l$ ) and expected price variation ( $a$ ). The

central point is that the international liquidity of these peripheral currencies depends not so much on the domestic fundamentals but instead depend primarily on the expectations of international agents, more precisely: the "liquidity preference in the international plan". The alternation of moments of higher and lower liquidity preference sets the liquidity cycles and moreover determines moments of "search for yield", with strong demand for assets in peripheral currencies, and moments of "flight to quality", with a return to the central currencies.

Additionally, a liquidity cycle is not restricted to a Keynesian process of asset allocation but also assumes a Minskyan dynamic of liabilities formation. At the upward phase of the cycle borrowing in credit markets or leveraging in derivatives markets allow the creation of new liquidity in the system. Meantime, in the downward phase, settlement of debts and deleveraging generates a destruction of liquidity in the system. In this context, it is argued that the carry trade is a major mechanism of transmission from liquidity cycle to exchange rates. This operation involves a debt (or a short position) in currencies with a low interest rates and an asset (or a long position) in currencies with a high interest rate, and thus provides specific characteristics to the exchange rates dynamics. This dynamics engenders a process where carry trade tend to appreciate the peripheral currencies – associated with high interest rates – during the upward phase of the cycle of liquidity and depreciate them suddenly in the reversal phase.

## 6. References

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