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SUMÁRIO

ABSTRACT

The Minskyan approach to financial instability and its effects on the real economy have recently been revived in order to explain the exchange rate crises undergone by the so-called emergent economies. Economies of this type are characterized by repeated scarcity of foreign currency, which can be explained by using Neo-Schumpeterian theory. Based on the Minskyan approach and on the Neo-Schumpeterian literature, this study seeks to demonstrate that there is a cyclic recurrence of exchange rate crises in Latin-American (peripheral) economies. By using data on international liquidity, the balance of payments and the increase in production in the G7 economies and in thirteen Latin-American economies, it was found that the Latin-American economies mirror the cycles of international liquidity.

Key Words: Financial Instability, National Innovation System, Cycles.

JEL: F32, F33, F43, O30

1. INTRODUCTION

The aim of this paper is to show that the growth cycles of peripheral economies (specifically, Latin American economies) mirror the cycles of international liquidity. To show this, we use the Post Keynesian framework and the Neo-Schumpeterian (Evolutionary) concept of National Innovation System (NIS). The Neo-Schumpeterian literature suggests that the difference of the economies' NISs development causes different levels of competitiveness of these economies. Therefore, economies with a less developed NIS are not competitive and present a greater external vulnerability.

However, this real feature of developing economies interacts with the national and international financial sectors. According to the Post Keynesian approach it is noted that it is impossible to understand how the path of an economy is determined without a theory that takes monetary dynamics into account. The theory behind the non-neutrality of money refers to monetary economies where liquidity preference takes the leading role in the determination of the level of employment (Keynes, 1936; Carvalho, 1983-84).

This theory makes it possible to determine agents' decision-making process according to subjective and conventional aspects rather than rational expectations. In this case, banks play an important role in determining the money supply. Their willingness to create or destroy money results from their perception of the state of the economy. Banks affect the course taken by the real economy. These analyses, carried out primarily in closed economies, can also be used in open economies. In this case, it is seen that the interaction between economies structurally rather differentiated has the effect of producing cycles in the peripheral economies that mirror those in the developed ones (Mollo & Amado, 2001; Resende, 2005).

The fragility of the production and financial systems in peripheral economies (developing economies) increases the dependence of their growth cycle on their foreign exchanges revenue, whose fluctuations are directly linked to the behavior of the international financial system. This, in turn, shows itself to be typically Minskyan in its adoption of criteria for granting credit which is based on the expected relative ability of each economy to pay its external debt.

In addition to this introduction and the conclusions, this paper is divided into three other sections. The next section analyses the nature of international economic integration under a deficient NIS. In Section 3 Minsky's theory is analyzed, showing the active role played by banks in the growth paths of economies and the cycles which they go through. In addition, we analyze open economies as well as the so-called mirror cycles. In the fourth section, the cycles of the thirteen largest Latin American economies are subjected to empirical analysis in an effort to show the role played by international liquidity.

2. INTERNATIONAL INTEGRATION OF DEVELOPING ECONOMIES.

The concept of NIS is central in the Neo-Schumpeterian literature where technological progress plays a core role. It refers to an institutional artifact that fuels technological progress[11]. Nelson (2005), Freeman (2004), Fagerberg (1994), Dosi et al.(1994) highlight the positive effects of the NIS on an economy's productivity and competitiveness.[22] They also consider the impossibility of substituting the NIS by the importation of technology, given that technology has a local feature.

When Fajnzylber (1983) points out the competitiveness of the peripheral economies in the context of the Center *vs.* Periphery relationship, he draws close to the Neo-Schumpeterian School and its concept of NIS. According to this author, an industry which does not have an "endogenous nucleus of technological dynamism" cannot overcome the external vulnerability of peripheral economies. He intends the term "endogenous center for stimulating technology" to a scientific-technological infrastructure which is closely integrated and linked to the productive system, along the lines of the NIS proposed by the Neo-Schumpeterians.

Technological progress and its positive effects on the productivity and competitiveness of an economy are spatially localized.[3] In addition to this, we argue that differences in the level of development of the NIS among countries result in structural discrepancies in competitiveness and in income and price elasticity of demand to imports and exports of the economies. Besides, the low levels of technical progress and competitiveness in the economy inhibit the rates of return of the investment. These factors discourage capital inflows and Foreign Direct Investment leading to harmful effects on the external sector of the economy. Thus, countries where the NIS is relatively less developed present structural external constrained economic growth, as was first proposed by Economic Commission of Latin America and Caribbean(Eclac)[4]. The relationship between an economy's NIS, its competitiveness and its external vulnerability is analysed in more details bellow.

2.1. National System of Innovation, Competitiveness and External Vulnerability

It is argued that an economy's competitiveness depends on macroeconomic policies, particularly those to do with the real exchange rate, domestic interest rates and the government's fiscal balance. However, there is no consensus regarding the definition of the term "competitiveness of an economy". There are economies such as Italy and Sweden, where the real exchange rate evaluated in the 1990's, but which were still considered to be competitive. Israel and The United States (USA) present high interest rates and fiscal deficits respectively. However, these economies are not

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[1] "by means of the establishment of a NIS, the flow of information and scientific knowledge required for the process of innovation is made possible. These institutional arrangements involve companies, networks for the interaction of companies, governmental agencies, universities, research institutes and private laboratories, as well as the activities of scientists and engineers: institutional arrangements that articulate with the education system, the industrial and business sector and with financial institutions to form a circuit of agents who are responsible for the production, implementation and dissemination of technological innovations" (Albuquerque, 1996,p.228).

[2] Freeman (2004,p.31) points out that external economic vulnerability is related to an economy's NIS.

[3] See Fagerberg (1994, p.1156-1159), Dosi et al. (1994,p.28-29).

[4] See Prebisch (2000,p.185-189). This argument is to be found in Thirwall's model. See McCombie and Thirlwall(1994).

uncompetitive. It is also argued that competitiveness is the result of low unit labour costs and abundant natural resources but these factors are not characteristic of competitive economies such as Japan or Switzerland.

In this paper, an economy's competitiveness will be defined on the basis of its ability to compete with the rest of the economies in the world in both the international and domestic markets. Therefore, the definition of competitiveness should be related to a countries' capacity to keep on generating surpluses in its Trade Balance. However, as Resende and Torres (2008) showed, Current Account balances are a more accurate mirror of an economy's competitiveness than Trade Balance.

The competitiveness of an economy is defined as its relative capacity to generate surpluses in Current Account (CA). Thus, the size of the average CA balance over a fixed period of time is taken as the index of an economy's competitiveness. This index is not valid only for economies which are the centre of the international financial system. The net capital inflow in the country where the main international financial market is located tends to be high and persistent. Meanwhile it brings about economic policies that are associated with the occurrence of chronic CA deficits, even when the economy is competitive. This seems to be the case of the USA and the United Kingdom (UK) during the last few decades.

Once defined the concept and the index of an economy's competitiveness, we now intend to analyse the effects of technological progress on the level of competitiveness. An economy's level of competitiveness depends primarily on its export-import performance. Initially, therefore, the relationship between technical progress and exports will be explained. In this regard, the value of an economy's exports depends on three characteristics of the markets of the products exported, namely:

i. Market Structure of the export industries: The closer the exports to oligopoly, the greater the ability of the exporting company to fix the prices of its products, and, the higher the profitability and value of its exports tends to be.

ii. Dynamism of the market: The higher the rate of growth in demand in the market, the greater the value of exports to that market tends to be.

iii. Level of market protectionism: The less the market is subject to protectionist policies, the greater tends to be the value of exports to that market.

In addition, the value of exports depends on a fourth factor:

iv. Diversification of the economy's industrial structure.

Concerning the three aforementioned characteristics of a market, we argue that in international trade, the greater the level of technological sophistication of products (LTSP), the closer the structures of their markets resemble oligopoly, the more dynamic are their markets and the less they are subject to protectionist measures. Technological progress and its diffusion in an economy occur in the context of the development of that economy's NIS (Freeman, 2004;Nelson, 2005; Fagerberg, 1994). Therefore, it affects the level of technological sophistication of its production and this, in turn, affects its exports.

The positive correlation between the LTSP and the degree of oligopoly is due to the fact that a product that is in the technology frontier, or close to it, cannot be produced in countries which do not

possess a developed NIS. Production cannot just simply be transferred to other countries, given that few economies possess an NIS that is developed enough to enable them to manufacture such products. That means no heavy competition for these products in world markets and tacit or explicit agreements concerning price fixing for the goods in the international market is made possible. This situation supports an increase of the income elasticity of demand for the country's exports.

The positive correlation between the LTSP and the level of dynamism of its markets is due to the fact that a product which is in the technology frontier, or close to it, cannot be produced in a country which does not have a developed NIS. In this case, the demand for such a product can only be satisfied by means of imports from the few countries where the NIS is able to produce it, thus guaranteeing a world-wide market with increasing (dynamic) demand for this type of leading edge technology product. The higher the dynamism of the country's exports markets, the higher the income elasticity of demand for this country's exports tends to be.

The inverse correlation between the LTSP and the degree of protectionism in its domestic market is due to the fact that a product made by low level of technological content can be produced by many countries, even if the production costs are high in comparison to the world average. Domestic production is made viable by erecting barriers to importation of this type of product. However, if the technological content of the product is of a high level, it cannot immediately be produced even though barriers have been established if the country's NIS is not sufficiently developed to make it possible. In such cases, the domestic demand for the product can only be satisfied by imports and this would imply a low level of protectionism (in the domestic markets of a wide range of countries) and a high level of the income elasticity of export demand for high technology products.

Concerning the diversification of an economy's industrial structure, the more developed its NIS, the greater is the possibility of reaching the technological frontline in various areas of production. Therefore, the greater the degree of diversification of the industrial structure tends to be. Consequently, there is greater diversification in the range of its export goods, which favours growth in the value of exports, due to three factors, namely, i)domination of new markets that will be even more diversified to the extent that the range of exports becomes even more diversified; ii)stability of growth in the value of exports, since, the more diversified exports are, the greater the chance that a drop in price and/or demand for exports will be compensated for by an increase in the price and/or demand of another product in the range of exports; iii)increase in the income elasticity of export demand since the export opportunities will be greater to the extent that there is greater diversification of the range of export goods.

Therefore, the four items examined – level of oligopoly, market dynamism, level of protectionism and diversification of the industrial structure – suggest that the more developed an economy's NIS, the greater its export coefficient and the value of its exports should be. Thus, the level of development of the NIS is positively correlated with the performance of the Trade Balance and the CA balance.

The relationship between the level of a country's NIS development and imports is also associated with these four items. Countries with a low level of NIS development are not capable of producing goods with high technology content and need to import such goods from high priced markets where there is oligopoly. In addition to this, the more dynamic a market for a particular good,

the greater will be the demand in this market, thus favouring an increase in prices and making its imports more expensive – the positive correlation between LTSP and the degree of market dynamism has already been explained. Also, the lower the import barriers, the greater the value of imports. As already argued, there is an inverse correlation between the degree of a product's technological sophistication and the level of protectionism in its domestic markets.

Finally, the less developed the NIS, the less diversified an economy's industrial structure will be. Therefore, the more diversified its range of imports, the greater the proportion of internal demand that will be satisfied by means of imports. This leads to growth in both the income elasticity of import demand and the value of imports.

Therefore, in a country where the NIS is relatively less developed, the income elasticity of export demand tends to be lower than the income elasticity of import demand, leading to external structural vulnerability, as postulated initially by ECLAC-UN and Thirlwall.

It may be concluded that the more developed an economy's NIS, the greater will be the range of its sophisticated (technological) products, and that will cause an increase in the value of exports and reduce the value of imports. The opposite situation is also true. Therefore, countries whose NIS is developed tend to have a high level of competitiveness while countries that present undeveloped NIS tend to be uncompetitive.

Using data relating to science and technology indicators, Albuquerque (1999) concluded that the countries which have a developed NIS are: Germany, France, Italy, Japan, the USA, the UK, Denmark, Belgium, the Netherlands, Ireland, Austria, Switzerland, Canada, New Zealand, Australia and Israel. South Korea, Taiwan and Singapore are at the stage of catching up. All the other countries are in the category of Undeveloped NIS.

In this paper Albuquerque's (1999) classification was used to collect data on the international trade of two groups of countries: a few with a developed NIS (DIS) and others with an undeveloped NIS (UDIS). We selected Germany, France, Italy, Japan and Canada[5] to represent the DIS group. For the UDIS 16 countries were chosen: Brazil, Argentina, Bolivia, Colombia, Chile, Ecuador, Mexico, Peru, Uruguay, Venezuela, Malaysia, Thailand, India, Indonesia, The Philippines and South Africa.

We argued above that the size of the average CA balance is taken as the index of an economy's competitiveness. For the period 1966-2006 (when data was available) the DIS group had an average CA surplus of US$68.2 billion and the UDIS group had an average CA deficit of US$16.4 billion (Table 1). This result is an evidence that the economy's level of NIS development exercises a positive influence on its competitiveness.

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[5] The exclusion of this group of two countries that are important in the world scenario, the Unites States and the UK, was justified above.

Table 1 – Total and Average Current Account Balances, 1966 – 2006 (Billions of US Dollars)

	Sum of the Current Account Balances for the Period: 1966-2006	Average for the Period: 1966-2006	Standard Deviation
DIS	2,798	68.2	82.7
UDIS	-672	-16.4	33.0

Source: Produced by the authors of the article based on data from the World Development Indicators database, 2007. DIS = countries with a developed NIS: the G7 countries, minus the USA and the UK, were used as proxy. UDIS = countries with an undeveloped NIS - the following countries were used as a **proxy**: Brazil, Argentina, Bolivia, Colombia, Chile, Ecuador, Mexico, Peru, Uruguay, Venezuela, Malaysia, Thailand, India, Indonesia, the Philippines and South Africa.

The products that are at the leading edge of technology, or close to it, are capital goods and manufactured goods in general. The former materially incorporate technological progress and is an important channel for its diffusion, and the latter require more complex production processes and more aggregate value compared to primary and intermediate goods.[6] Therefore, if the development of a country's NIS is relevant in determining the competitiveness of its economy, then countries which have a more (less) developed NIS should have a capital goods and manufactured goods trade balance in surplus (deficit).

Table 2 shows the average balance of the total trade balance in capital goods (CG), manufactured goods (MG) and primary goods (PG) for the DIS and UDIS groups of countries between 1980-2005. The different results obtained by these two groups show the importance to develop an economy's NIS as regards the increase of competitiveness of an economy. In both groups, the trade balance average was in surplus but was much higher for the DIS group than for the UDIS one. In the case of the UDIS group the average CG and MG balance was in deficit, while the average PM trade balance was in surplus. In the DIS group, exactly the opposite situation was found.

Table 2 – Total Trade Balance, for Capital Goods, Manufactured Goods and Primary Goods - 1980 to 2005 (Billions of US Dollars)

Period	UDIS				DIS			
1980 - 2005	TTB	CGTB*	MGTB	PGTB	TTB	CGTB*	MGTB	PGTB
Average	14	-42.5	-55.1	38.2	148.9	137.4	337	-58.6

Source: Produced by the authors of the article based on data from the United Nations Statistics Division, World Trade Organization, 2007. DIS = see table 1. UDIS = see table 1. TTB = Total Trade Balance; CGTB = Capital Goods Trade Balance; MGTB = Manufactured Goods Trade Balance; PGTB = Primary Goods Trade Balance.
* The data for CGTB are only available for 1995 and for the years between 1998 and 2005.

In the same way, in countries which have a more (less) developed NIS, it is to be expected that the trade balance in technology intensive goods would be in surplus (deficit). Table 3 shows that the average trade balance for the UDIS group was in deficit as regards manufactures with high, medium and low skill and technology intensity and in surplus for primary commodities and labor-intensive and resource-based manufactures, while the result was exactly the opposite in the case of the DIS group, between 1980-2004.

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[6] See Fajnzylber (1983).

Table 3 – Trade Balance in Primary Commodities, Labor-intensive and Resource-based Manufactures and Manufactures with High, Medium and Low skill and Technology Intensity

Period	UDIS					DIS				
1980-2004	BC	LIRM	HTL	MTL	LTL	BC	LIRM	HTL	MTL	LTL
Average	53.1	22.9	-24.9	-42.1	-7.3	-79.6	-5.1	57.2	227.3	43.1

Source: Produced by the authors of the article based on data from the United Nations Conference on Trade and Development, 2007.
BC = Basic Commodities; LIRM = labor-intensive and resource-based manufactures; HTL, MTL and LTL are manufactures with high, medium and low skill and technology intensity. DIS = see table 1. UDIS = see table 1.

According to Bernardes and Albuquerque (2003, p.873), the country's per capita production of patents compared to the global one can be a measure of the level of development of a country's NIS. Table 4 shows the coefficients of correlation between the CA balance and the share in the world per capita production of patents in the 21 countries which make up the DIS and UDIS groups. The correlations are high and positive: 0.84 and 0.86 for the periods 1980-2005 and 1990-2005 respectively and confirm the importance of the NIS development for the performance of these economies' CA.

Tabela 4 – Correlation Coefficient between the Current Account Balance and the Share in the World per Capita Production of Patents in the 21 Countries

Period	1980-2005	1990-2005
Correlation Coefficient	0.84	0.86

Source: Produced by the authors of the article. The 21 countries are the countries that were selected to represent the DIS and the UDIS groups – see table 1.

All these results endorse the argument that the relative level of development of an economy's NIS is an important determinant of its level of competitiveness. Given that the concept of competitiveness refers to an economy's capacity to generate CA surpluses, economies with a developed NIS tend to have a relative abundance of foreign exchange, whereas in countries with a less developed NIS there is a chronic shortage of foreign exchange.

If we define an economy's level of external vulnerability as the frequency with which it runs out of foreign exchange, we find that there is a high (low) level of external vulnerability in countries where there is an undeveloped (developed) NIS. The shortage of foreign exchange in an economy frequently causes a currency crisis. Therefore, economies which have recurring exchange rate crises are precisely the ones which have a high level of external vulnerability.

The inverse relationship between level of NIS development and level of external vulnerability is backed up by empirical evidence. The economic history of the countries belonging to the UDIS group reveals a proportionately higher number of currency crises than that observed for the DIS group. The series of currency crises seen in the period 1990-2006, for example, whose results were exchange rate devaluations that, in a matter of weeks, exceeded the 30% level, only happened in UDIS countries – Mexico in 1994-95, Asia in 1997, Russia in 1998, Brazil in 1999 and 2002 and Argentina in 2001. In

those economies with a less developed NIS there is a structural external vulnerability which affects the behavior of the international financial system shaping their growth cycles. This is analyzed in the next sections.

3. FINANCIAL INNOVATION, ENDOGENOUS MONEY SUPPLY AND CYCLES

In the post Keynesian approach banks are agents which also have liquidity preference. Thus, the money supply is endogenous. Banks are able to intervene decisively in the growth path of a monetary economy (Minsky, 1982; 1986). However, the way in which financing takes place in the monetary economy is one of the main elements that make it intrinsically unstable: "The fundamental instability of a capitalist economy is upward. The tendency to transform doing well into a speculative investment boom is the basic instability in a capitalist economy." (Minsky,1982,p. 66).

The upward instability to which Minsky refers is associated with his classification of economic units according to their degree of financial fragility. He defines three categories of unit which have different financial structures and shows how the form of financing and the way the financial system operates tend to increase the share of the most vulnerable units. This weakens the economic system as a whole and, while, on the one hand, it allows an economic boom to take place, on the other, it creates the endogenous conditions that lead the economy into a crisis at a later date.

> Hedge finance takes place when the cash flows from operations are expected to be large enough to meet the payment commitments on debts. Speculative finance takes place when the cash flow from operations are not expected to be large enough to meet payment commitments, even though the present value of expected cash receipts is greater than the present value of payment commitments. Speculating units expect to fulfill obligations by raising funds by new debts (...) Ponzi finance- a situation in which cash payments commitments on debt are met by increasing the amount of debt outstanding (…) Feedbacks from revealed financial weakness of some units affect the willingness of bankers and businessmen to debt finance a wide variety of organizations. Unless offset by government spending, the decline in investment that follows from a reluctance to finance leads to a decline in profits and in the ability to sustain debt. Quite suddenly a panic can develop as pressure to lower debt rations increases (Minsky, 1982, p.67).

In Minsky's work, it may be said that the monetary/financial area, as taken from Keynes, is connected to the real economy. His explanation shows the whole cycle of an economy, since it analyzes both the upward and downward phases, and it also shows that such cycles are recurrent.

Minsky's works were associated with closed economies. However, recent works have attempted to carry out the same type of analysis on exchange rate crises in a variety of economies, especially peripheral economies (Arestis & Glickman, 2002, Paula & Alves Jr., 2000, Lopez, 1997, Resende & Amado, 2007). These studies have used Minsky`s models of development to analyze the international financial system and have taken countries to be economic units, similar to the category of "vulnerability" developed by this author.

Notice that the cyclical and repetitive nature of the crises in peripheral countries, especially in Latin America, is striking. It is intended to show how the persistent problems of financing in these countries comes about and the way in which the external solutions to the problems of financing and balance of payments constraints are linked to the development of the international financial system along lines which are very similar to those proposed by Minsky.

3.1. The Periphery and the Mirror Cycle

If we were to analyze the peripheral economies as if they were companies, it can be seen that they tend to reproduce the willingness of the international financial system (IFS) to grant loans and agree to finance projects that are more vulnerable. In the case of countries, however, there are the problems associated with projects that have been financed, which are the same as in companies but where it is also necessary to convert these cash flows into foreign currency in order to make payments abroad. This last problem is of a macroeconomic nature and goes beyond the question of analyzing the individual projects.

Thus, in these countries, while domestic companies carry out their analyzes on the basis of cash flows in the domestic currency, banks and other international financial agents take into account both the cash flow of projects and also the country's external vulnerability. Therefore, during the upward stage of the cycle, when these banks have a favorable view of the process and surplus liquidity, in large part endogenously produced by financial innovations, they agree to finance speculative units, which, as a result of fluctuations in the interest rate may turn into Ponzi. They may even agree to finance countries which already have the characteristics of speculative and Ponzi units.

Nevertheless, changes in the perception of the degree of financial fragility in these countries can lead to abrupt changes at the granting of new loans and, in this case, the majority of the Ponzi units go bankrupt and countries in the same situation default. At such moments in foreign exchange crises, there is a need for institutions that can coordinate and make the supply of credit more flexible at the international level and, if they do not exist, there is deepening of the crisis caused by the cyclical behavior of the IFS.

However, it must be asked why peripheral countries allow themselves to become involved in the type of process leading to financial vulnerability that is analyzed above. There are two reasons why this happens:

i. The relatively low level development of their NIS means that these countries have lower international competitiveness and less ability to attract capital than the leading countries (section 2.1). The result is a balance of payments constrained economic growth;

ii. The inability of the national financial system to supply the domestic economy with long-term financing. Thus, when there is favorable situation regarding international liquidity, resort is had to external capital to satisfy this need (Studart, 1995).

Empirical experience appears to confirm a combination of these two elements, i.e., balance of payments constraints and lack of long-term private domestic finance. This would explain the peripheral economies' acquisition of international financing whenever it is easy to obtain and, also, positive changes in the international reserves of these peripheral countries in moments of elastic supply of international liquidity.

However, because there is a balance of payments constraint in these peripheral economies, they tend to become vulnerable when there is an increase in the process of indebtedness. As a result of the geographical remoteness of banks and international financial agents regarding the formation of expectations concerning peripheral countries, extremely pronounced adjustments are observed when the international financing of these countries is interrupted. This is what is observed at the moment when the upward phase of the IFS turns into the downward phase. In the case of peripheral countries, the credit rationing comes into effect with great force and creates a general process that has profound effects on the real economy of these countries. Their economic cycles tend to mirror the cycles of the IFS.

4. INTERNATIONAL LIQUIDITY AND CYCLES: SOME COMMENTS ON LATIN AMERICA

According to Dow (1986-87, p.249; 1993,p.167), developing economies are constantly subject to capital outflows whereas liquidity preference is persistently high. In these economies, persistent deficits in the CA frequently appear in the upward phases (section 2).

Therefore, the relationship between the IFS and the peripheral economies has a distinctive nature to that which exists with the central economies, and this leads to unequal development. In world financial markets, the economies of the first type are placed in the category of speculative/ponzi, while the latter are categorized as hedge, due to the fact that the former are less able to generate the liquid inflow of the foreign exchange (whether it be in the trade, services or financial account of the balance of payments) which they require to pay their international debts. Moreover, because the peripheral economies are relatively less able to generate net exchange revenues, this leads to a greater degree of external vulnerability in relation to the developed economies (Section 2).

The relatively higher level of uncertainty in the IFS in respect of the net inflow of the foreign exchange to the peripheral economies means that there is a lower availability of credit for the Periphery *vis-à-vis* the center. In the upward phases of the cycles in the world financial markets this uncertainty is attenuated: the resulting widespread optimism allows the expansion of credit, Periphery included. The increase in the net capital inflows to the peripheral economy improves the supply of finance, limiting the scarcity of foreign exchange, thus preventing external constraints on its growth.[7] This mitigates the uncertainty and liquidity preference in the peripheral economy.

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[7] Dow (1986/87) demonstrates the positive relationship between increases in net supply of foreign exchange and increases in the supply of finance, whether it be in fixed or flexible exchange rates systems.

However, in the downward phases of the cycles, this optimism dissipates and credit rationing is more intensive or asymmetric for the periphery, given the relatively greater level of uncertainty as regards its capacity to honor its external financial commitments. Consequently, there is an increase in uncertainty in the periphery regarding the future availability of finance and external credit, in the context of balance of payments constraints. There is therefore an increase in liquidity preference in the peripheral economy, expressed by means of the purchase of foreign assets – capital flight –, which reinforces the perception of the international financial system regarding its speculative/ponzi position.[8] Thus, a high level of foreign exchange scarcity appears in periods when there is credit rationing in the periphery and this is a recurring phenomenon, given that the financial markets exhibit endogenous cyclical behavior in monetary economies (Minsky, 1986).

Indeed, the peripheral economies do behave in a way that reflects the cycles of international liquidity. This peculiarity has three main causes: i) the low level of development of their NIS, along with balance of payments constrained economic growth; ii) the need to attract external capital to supply the peripheral economy with long-term finance, given that its financial system does not fulfill this role because it is not sufficiently developed (Studart, 1995); iii) the typically Minskyan behavior of the IFS.

In order to examine the relationship between the international liquidity cycles and the growth cycles of the Latin American(LA) economies, we studied the rate of growth, the CA balance and the financial account of the balance of payments of the thirteen largest LA economies. The sample studied consisted of the following countries:[9] Brazil-Br, Mexico-Me, Argentina-Ar, Colombia-Co, Chile-Ch, Peru-Pe, the Dominican Republic-DR, Guatemala-Gu, Uruguay-Ur, Ecuador-Ec, Costa Rica-CR, El Salvador-ES and Panama-Pa.

The increase (fall) in net foreign liabilities – which corresponds to the deficit (surplus) in CA of the balance of payments – of several LA countries is correlated with the rise (fall) of the moving average of international liquidity (MIL), during recent decades.[10] The correlation coefficient for the MIL and the CA balance of the countries between 1971 and 2004, with the exception of the Dominican Republic and Ecuador, suggests that there is an inverse relationship between these variables. For small countries like Guatemala, Costa Rica, El Salvador and Panama, this coefficient exceeded the figure of -0.50 (Tables 5 and 6).

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[8] "There is range of currencies in the international economy (…) where the value of the domestic currency falls to a significant degree in relation to foreign currencies, due to domestic inflation or the depreciation of the exchange rate, other currencies will satisfy liquidity preference" Dow (1999,p.155).

[9] Cuba and Venezuela were excluded from this sample, since the former has negligible participation in the international credit market and the dynamics of the latter are closely linked to the world petroleum market.

[10] International liquidity corresponds to the sum, regardless negative values, of the values taken from the following sections of the Balance of Payments of the USA, the UK, Japan, Germany, Italy, France, and Canada (known as the G7): "portfolio investments (assets and liabilities)", financial derivatives (assets and liabilities)" and "other investments (assets and liabilities)". Plihon(1995) only uses the data for "portfolio investment" as a proxy for international liquidity. However, the headings "financial derivatives" and "other investments" also include short-term capital and financial instruments associated with the derivatives and futures market. The source of these data was the International Financial Statistics Yearbook-IMF. It was decided to choose the moving average for international liquidity, that is, the arithmetic average for two periods (the sum of international liquidity for the present and previous years divided by 2), this being the reason for the use of the series from 1971 onwards. This option is due to the fact that it is the average fluctuations in international liquidity that affect macroeconomic variables as a result of the presence of delays in response.

Table 5 – Correlation Coefficient between the Moving Average of International Liquidity and the Current Account Balance (1970-2004)

Br	Me	Ar	Co	Ch	Pe	RD
-0.33	-0.44	-0.22	-0.26	-0.02	-0.31	0.19

Source: Eclac (www.eclac.cl) - Badestat, Financial Statistics Yearbook (FMI)

Table 6 – Correlation Coefficient between the Moving Average of International Liquidity and the Current Account Balance (1970-2004)

Gu	Ur	Eq	CR	ES	Pa
-0.90	-0.24	0.02	-0.76	-0.67	-0.57

Source: Eclac (www.eclac.cl) - Badestat, Financial Statistics Yearbook (FMI)

The rise in the MIL leads to an increase in the net external liability of the great majority of the LA economies. Thus there is a positive statistical relationship between the fluctuations in international liquidity and the degree of external vulnerability of these countries. Although this vulnerability may possibly be hidden by balance of payments surpluses during periods of increase in international liquidity (IL), it represents the real basis for classifying peripheral economies in the speculative/ponzi categories. The high, negative correlation between the MIL and the CA surplus of the countries under study supports the argument of balance of payments constrained economic growth in these countries caused by the low level of their NISs development.

As a result of their undeveloped NISs, the growth of these peripheral economies requires an increase in the demand for imports, along with the low level of competitiveness of exports. Therefore, there is a tendency for the downfall of the trade balance and the CA balance when the periphery grows, sustained by the net capital flows.

However, positive and rising in financial account balances depend on the level of IL, mainly in economies under speculative/ponzi categories. During periods of low level of IL, the strong external credit rationing experienced by peripheral-speculative-ponzi economies imposes a balance of payments constrained economic growth, along the lines proposed by Thirlwall's Law.[11] Growth is also damped for other reasons: scarcity of foreign currency inhibits the supply of finance (Dow, 1986/87) and leads to increases in uncertainty regarding long-run growth as well as external solvency. The rise in liquidity preference that results from this process inhibits economic growth.

The fact that the growth of peripheral economies is a reflex of the liquidity cycles of the international financial system is supported by the correlation coefficients for the rate of variation of the moving average of real international liquidity (MRIL) and the rate of variation of the real GNP of LA countries and developed countries (G7) from 1971 to 2004 (Tables 7 and 8).[12] This coefficient was

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[11] About Thirlwall's Law and Brazilian experience, see Jayme Jr(2006).

[12] Real international liquidity corresponds to international liquidity deflated according to the US price index (producer prices/industrial goods). The use of rates of variation for the calculation of correlation coefficients was necessary in order to avoid problems of spurious correlation. This technique was not necessary for the calculation of correlation coefficients between MLI and the balances on CA, since these balances are stationary.

positive and higher than 0.29 for all the peripheral countries, with the exception of Chile, Ecuador, Panama and El Salvador, where the last one was in a state of civil war for many years during the period under study. Uruguay, Colombia and Brazil had high coefficents. As regards the developed countries, the coefficients were equal to or lower than 0.30 except for Japan.

Table 7 – Correlation Coefficient of the Rate of Variation of the Moving Average of Real International Liquidity and the Economic Growth Rate – 1971-2004

Br	Me	Ar	Co	Ch	Pe	RD	Gu	Ur	Eq
0.50	0.33	0.38	0.52	0.25	0.34	0.34	0.38	0.56	0.27

Source: Eclac (www.eclac.cl) - Badestat, Financial Statistics Yearbook (FMI)

Table 8 – Correlation Coefficient of the Rate of Variation of the Moving Average of Real International Liquidity and the Economic Growth Rate – 1971-2004

CR	ES	Pa	USA	UK	Al	Fr	It	Ca	Ja
0.30	0.02	0.23	0.30	0.22	0.01	0.23	0.24	0.27	0.39

Source: Eclac (www.eclac.cl) - Badestat, Financial Statistics Yearbook (FMI)
USA= United Stattes, UK = United Kingdom, GE= Germany, Fr = France It = Italy, Ca = Canada, Ja = Japan.

The positive correlation between IL and economic growth was expected for all countries. The USA are the suppliers of world liquidity and, since it is the largest economy on the world and where the main international financial market is located, the increase in finance that precedes investments in this country has significant effects on the expansion of IL. Thus, the latter is affected by the US endogenous growth cycle, which, in turn, is fed by the expansion of IL.

On the other hand, the USA economic growth leads to an increase in its CA deficits – USA presents chronic CA deficits as explained in section 2.1. The correlation coefficient between USA CA balances and the MIL between 1971 and 2004 is -0.90. It also appears that a similar phenomenon occurs in the UK, where the second most important international financial market is located (Table 9).

Table 9 – Correlation Coefficient between the Moving Average of International Liquidity and the Current Account Balance of the Balance of Payments – 1971-2004

USA	UK	Al	Fr	It	Ca	Ja
-0.90	-0.63	0.24	0.63	0.13	0.59	0.81

Source: Financial Statistics Yearbook (FMI)

For Germany, France, Italy, Canada and Japan there is a positive and, in general high, correlation for the MLI and the CA balances (Table 9). This result suggests that: i)the developed economies, with the exception of the economies that supply IL (USA and UK), increase their global

foreign exchange revenues (resulting from their net exports and their net income from interest and dividends) when there is an upward cycle in IL and this helps to explain the positive correlation between the IL and the growth of these economies; ii)the argument which holds that there are different standards of international integration and correlation between IL and the growth of developed and peripheral economies is correct.

When there is an upward cycle in IL, there are CA surpluses (a drop in their external liquid liabilities) in the developed economies (with the exception of those that supply liquidity), and deficits in the financial account of the balance of payments, which helps to expand IL. The peripheral economies, on the other hand, absorb external resources that are required for their development and there are CA deficits and financial account surpluses (Tables 10 and 11 and Picture 1 and 2). The dependence on IL and, therefore, on the absorption of external resources by the peripheral economies aimed at promoting economic growth, is reflected in their higher level of external vulnerability *vis-à-vis* the central economies. The correlation coefficients for MILR and the growth of these economies show themselves to be, in general, higher in relation to the same coefficients for the developed economies (Tables 7 and 8).

Table 10 – Correlation Coefficient between the Moving Average of International Liquidity and the Financial Account Balance of the Balance of Payments [a]

Br	Me	Ar	Co	Ch	Pe	RD	Gu	Ur	Eq
0.34	0.43	-0.06	0.41	0.18	0.52	0.34	0.83	-0.04	-0.15

Source: Eclac (www.eclac.cl) - Badestat – Produced by the authors of the article. a The Eclac database contains information about the financial accounts of several countries that is not available for the first few years of the 1970's. Thus, the start dates for the series used to calculate the coefficients for Br, Me, Ar, Co, Ch, Pe, RD, Gu, Ur and Eq, are, respectively, 1975, 1979, 1976, 1971, 1975, 1977, 1971, 19878, 1976, 1977, 1976, 1977.
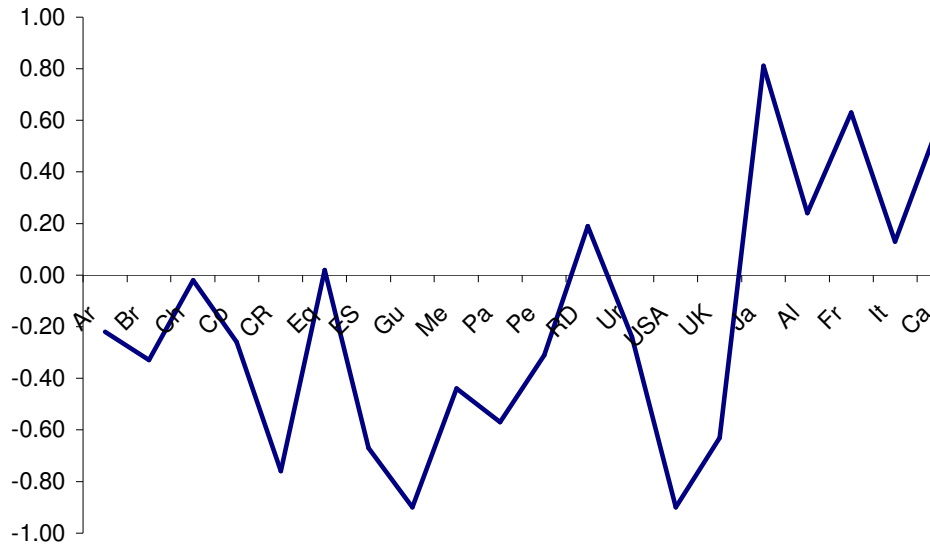
Table 11 – Correlation Coefficient between the Moving Average of International Liquidity and the Financial Account Balance of the Balance of Payments [a]

CR	ES	Pa	USA	UK	Al	Fr	It	Ca	Ja
0.53	0.65	0.55	0.91	0.49	-0.42	-0.56	-0.11	-0.68	-0.23

Source: Eclac (www.eclac.cl) – Badestat; Financial Statistics Yarbook (FMI) – Produced by the authors of the article. a The Eclac database contains information about the financial accounts of several countries that is not available for the first few years of the 1970's. Thus, the start dates for the series used to calculate the coefficients for CR, ES and Pa, are, respectively, 1977, 1976 e 1977. For the G7 countries the start date is 1971.
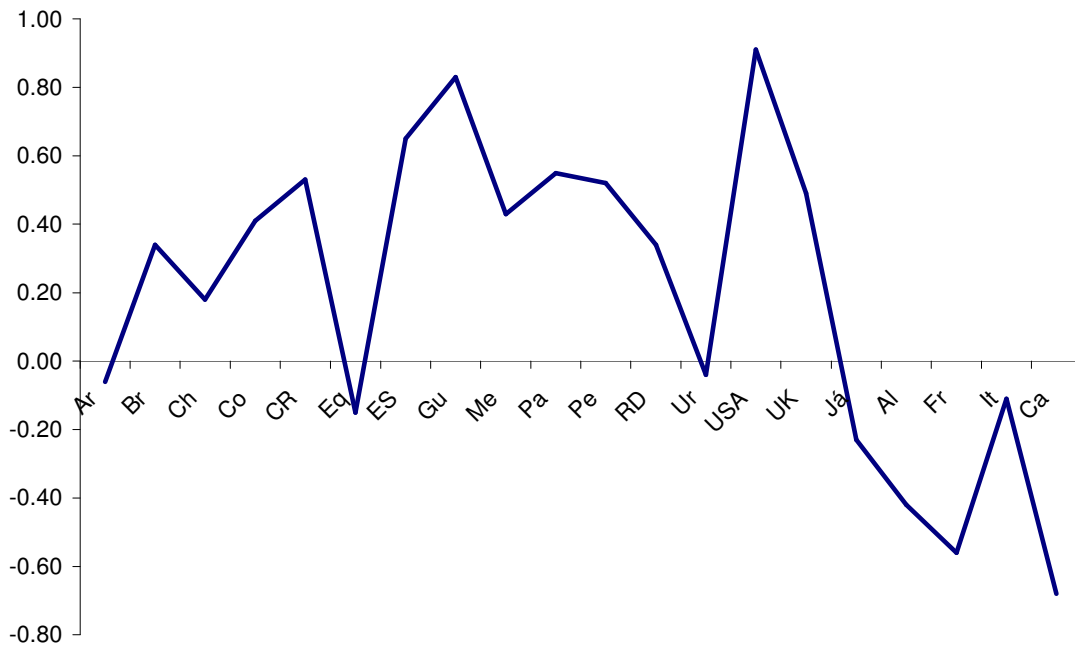
Picture 1

Correlation Coefficient between the Moving Average of International Liquidity and the Current Account Balance (1971-2004)

Source: Eclac, Financial Statistics Yarbook (FMI)

Picture 2

Correlation Coefficient between the Moving Average of International Liquidity and the Financial Account of the Balance of Payments – 1971-2004

Source: Eclac, Financial Statistics Yarbook (FMI)

Therefore, the structural lack in competitiveness and the low level of development of the financial system in LA economies (peripheral), allied with the Minskyan behavior of the international financial system explains the positive correlation between the variations in IL and fluctuations in the external liabilities in these economies. Furthermore, this correlation suggests that growth cycles in the peripheral economies are heavily dependent on the cycles of the international financial markets.

Finally, the cycles identified during the period under study demonstrate the Minskyan behavior of the international financial system and the debtor units (countries), although the characteristics of these cycles are different. The 1990s and the 2003-2007 cycles can be distinguished from previous ones. The growth and diversification of the flow of international finance, from the 1980s to the present, has been accompanied by the substitution of long-term bank credit by flows of portfolio investment, medium and short-term bank financing and capital flows associated with merger and acquisitions. This has resulted in an increase in the share of highly liquid assets in the external liability structure of economies (Ffrench-Davis, 2003; Plihon, 1995).

Financial flows in the 1990s and in the 2000-2007 periods became much more volatile in comparison to flows during previous periods and capital inflows and outflows became more sensitive to the mood of international financial markets. The predominant agents in the financial market specialized in assets with high liquidity and became more responsive to changes in the variables which affect short-term returns on assets. These characteristics in the expansion cycle of IL in the last twenty years made the Minskyan behavior of the international financial system even more evident, and this came about as a result of the lack of institutions at the international level able to coordinate and make the supply of liquidity more flexible.

5. CONCLUSIONS

This study analyzed the peculiarities in the interaction of the international financial side and the real and financial sides of developing (peripheral) economies which condition their economic growth cycles. According to the Neo-Schumpeterian literature, peripheral economies have deficiencies in their NIS *vis-à-vis* central economies. These deficiencies have damaging effects on competitiveness and on the ability of these countries to attract capital, resulting in balance of payments constrained economic growth. Still, the private financial system in the peripheral economies is also fragile and, in general, does not have long-term finance. This characteristic, allied to the scarcity of foreign exchange, leads peripheral economies to increase their external debt whenever it is possible to gain access the international financial system.

In this article we intended, once more, to understand exchange rate crises in the so-called emerging countries according to Minsky's (1982, 1986) enlightenment based on the impact that financial instability and its real consequences have on economies in general, and on peripheral economies in particular. We also drew attention to the correctness of this approach, but we also emphasized that there were many occasions when the notion of recurring cycles was not confirmed.

It was found that the peripheral economies behave in a way that mirror the cycles of international liquidity, thus creating cycles whose initial cause is the supply of liquidity in the

international market, which weakens these economies. As a result of the changes in the subjective expectations of those who supply international liquidity to the peripheral economies, the expansion phase of the cycle lead to crises. We also argue that this is a pattern that has repeated and intensified with the recent move toward financial liberalization on an international scale.

In the case of thirteen Latin American countries, the data showed that the type of theoretical approach used was able to provide an understanding of the growth cycles of their economies. It was also found that there is a Minskyan component which explains the way these economies develop and that this element is also determined by factors arising from the international financial system and not only from events within their domestic financial system. The higher degree of external vulnerability of Latin American (peripheral) economies, which results from deficiencies in their NISs and their financial systems, produces asymmetric behavior on the part of the international financial system. This situation comes into effect in the periods when there is a cyclical reduction in international liquidity and stronger credit rationing for peripheral economies *vis-à-vis* the central economies, and this conditions their growth cycles.

6. REFERENCES

Albuquerque, E.M. 1999. National systems of innovation and Non-OECD countries: notes about a rudimentary and tentative typology, *Brazilian Journal of political Economy*, 19(4), pp.45-86.

Albuquerque, E.M. 1996. Notas sobre a Contribuição de Kenneth Arrow para a Fundamentação Teórica dos Sistemas Nacionais de Inovações, *Revista Brasileira de Economia*, pp.40-59.

Amado, A.M. 1997.*Disparate Regional Development in Brazil: a monetary production approach*, London, Ashgate: Aldershot.

Arestis, P. and Glickman, M. 2002. Financial Crisis in Southeast Asia: Dispelling Illusion The Minskyan Way, *Cambridge Journal of Economics*. 26(2), pp.237-260.

Bernardes A.T. and Albuquerque,E.M. 2003. Cross-over, thresholds, and interactions between science and technology: lessons for less-developed countries, *Research Policy*, 32(5), pp.865-885.

Carvalho, F.C.J. 1983-84. On the Concept of Time in Shacklean and Sraffian Economics, *Journal of Post keynesian Economics*, Winter, 6(2),pp.265-280.

Dosi, G., Fabiani, S., and Freeman, C. 1994.The process of economic development: introducing some stylized facts and theories on technologies, firms and institutions, *Industrial and Corporate Change*, 3(1),pp.1-45.

Dow,S.C. 1986-87.Post Keynesian monetary theory for an open economy." *Journal of Post Keynesian Economics*, winter, 9(2),pp.237-257.

Dow,S.C. 1993.*Money and the economic process*. Aldershot: Edward Elgar.

Dow,S.C. 1999. International liquidity preference and endogenous credit, In Harvey, J.T., and Deprez, J.(org) *Foundations of international economics: post-Keynesian perspectives*. London: Routledge.

Fagerberg, J.E. 1994. Technology and International Differences in Growth Rates, *Journal of Economic Literature*, 32,pp.1147-75.

Fajnzylber, R.F. 1983. *La Industrializacion Trunca de América Latina*. México: Nueva Imagen.

Ffrench-Davis, R. 2003.Financial crises and national policy issues: an overview". In Ffrench-Davis, R. and Griffith-Jones, S.(orgs) *From capital surges to drought: seeking stability for emerging economies*, New York: Palgrave Macmillan.

Freeman, C. 2004. The National System of Innovation in historical perspective, *Revista Brasileira de Inovação*, 3(1),pp.5-24.

Jayme Jr., F.G. 2006. Growth Under External Constraints in Brazil: A Post Keynesian Approach". In Holt,R. and Pressman., *Empirical Post Keynesian Economics: Looking at the Real World*. New York: M.A.Sharpe.

Keynes, J.M. 1936. The General Theory of Employment, Interest and Money, *The Collected Writings of John Maynard Keynes*, Vol.VII, Cambridge: Macmillan.

Keynes, J.M. 1973. The General Theory. Part I: Preparation." *Collected Writings of John Maynard Keynes*, Vol. XIII. Cambridge: Macmillan.

Lopez,J. 1997. Mexico's Crisis: Financial Modernization and Financial Fragility, *Banca Nazionale del Lavoro Quarterly Review,* 50(201),pp.165-185.

McCombie, J. and Thirlwall A. 1994. *Economic Growth and the Balance of Payments constraint,* London: St.Martins.

Minsky, H.P. 1982. *Can "it" happen again? Essays on instability & finance*, New York: M.E.Sharpe.

Minsky, H.P. 1986. *Stabilizing and unstable economy*, New Haven: Yale University Press.

Minksy, H.P. 1982. *Inflation, Recession and Economic Policy*, New York: M.E.Sharpe.

Mollo, M.L.R. and Amado, A.M. 2001. Globalização e Blocos Regionais: Considerações Teóricas e Conclusões de Política Econômica, *Estudos Econômicos*, 31(1),pp.126-166.

Nelson, R.R. 2005. *Economic development from the perspective of evolutionary economic theory,* Manuscript.

Paula, L.F. and Alves Jr., A.J. 2000. External Financial Fragility and the 1998-1999 Brazilian Currency Crisis, *Journal of Post Keynesian Economics*, summer 24(4),pp.589-617.

Plihon, D. 1995. Ascensão das finanças especulativas, *Economia e Sociedade*, 1995,5,pp.61-78.

Prebisch, R. 2000. Problemas teóricos e práticos do crescimento econômico, In Bielschowsky, R. (org) *Cinquênta anos de pensamento na CEPAL.* São Paulo: Record.

Resende, M.F.C. 2005. O padrão dos ciclos de crescimento da economia brasileira: 1947-2003, *Economia e Sociedade*, Campinas, 14(1),pp.25-55.

Resende, M.F.C. and Amado, A.M. 2007. Liquidez Internacional e ciclo reflexo: algumas observações para a América Latina, *Brazilian Journal of Political Economy,* v. 27, n. 1(105),pp.41 59, Janeiro-março.

Resende, M.F.C. and Torres, D.A.R. 2008. National Innovation System, Competitiveness and Economic Growth. *Discussion Paper*/Cedeplar-Brazil,www.cedeplar.ufmg.br

Studart, R. 1995.*Investment Finance in Economic Development*. London: Routledge.