

Currency denomination and external vulnerability in developing economies: a new picture from Brazil

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Abstract

The aim of this paper is to investigate the external vulnerability on monetary-financial sphere of Brazilian economy through the analysis of the International Investment Position in the period 2002-2014. According to the results of the VAR model, the movements of net external liabilities demonstrated relative independence from the current account balance. The reason behind this evolution seems to be related with the increase of external liabilities denominated in domestic currency, most of them negotiated in domestic markets. This share of external obligations tends to suffer a double devaluation process (exchange rates and market value) in a context of external difficulties – as the current one. The meaning of these results – a reduction or, at least, a shift in the nature of external vulnerability – are object of little discussion in face of the current difficulties of Brazilian economy and the changing international financial environment.

KEYWORDS: Developing economies; vulnerability; international financial relations; Brazil

JEL CODE: F32, F34, F36, O54

1. Introduction

One of the defining features of a “peripheral” economy is the greater vulnerability to the processes and shifts in the international environment. In financial matters, this condition is historically associated with the effects of swings in international capital flows – a stylized fact widely recognized in the international literature, with different theoretical approaches. Typically, “high tide” phases (or waves, surges, bonanzas etc.) in these flows are followed by “sudden stops”, exchange rate and financial crises, and periods with no access to international financial markets (see, among others, Calvo and Reinhart, 2000; Reinhart and Reinhart, 2008; Akyuz, 2011; Bluedorn et al., 2013).

Brazil, an important peripheral economy, was a victim of this condition many times along the history. From the difficulties associated with the Gold Standard during 19th Century to effects of the Debt Crisis of the 1980’s, passing through the 1990’s emerging market crises,

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the oscillation between prosperity and scarcity is more the rule than the exception. In a moment when the developing world in general – and Brazil in particular – is suffering the negative effects of one more shift in international financial environment, this topic gained importance again.

In difficult times like the current one, an usual transmission channel from the balance of payments to the “real side” of the affected economies – that gives rise to the “twin” nature of the crisis, as stated long time ago by Kaminsky and Reinhart (1999) – is through the external liabilities. Denominated in other currencies than those of the majority of assets and receipts, these liabilities amplify the problems of liquidity (and often solvency) after significant exchange rate devaluations.

Taking into account these “balance-sheet effects” to explain the greater external vulnerability of developing economies is neither a novelty in the mainstream literature. The concepts of “currency mismatches” (Goldstein and Turner, 2004) and, especially, “original sin”, the inability to issue external debt in its own currency (Eichengreen and Hausmann, eds., 2005) are important steps in this direction. From a Latin American, structuralist/heterodox perspective that was always the way of thinking: the vulnerability is the result of the asymmetries in international financial relations, especially the currency hierarchy (Ocampo, 2001; Prates, 2005; Carneiro, 2008).

Usually, these analyses are mainly focused on the currency denomination of the external debt – that consists of bank loans and portfolio debt securities issued in international financial markets. However, those are just part of the possibilities of external liabilities of a country.

Particularly during the second liquidity cycle of the financial globalization (from 2003, according to the periodization of Biancareli, 2007), an important characteristic of the capital flows to emerging market economies was the entry of foreign investors in domestic markets (stock exchanges and fixed income bonds). These transactions give origin to external liabilities quoted, in general, in local currencies. In the same way, the portfolio equity part of foreign direct investment (excluding intercompany loans) also is a kind of operation that increases the total external liabilities, but denominated in the hosting country money.

All the forms of external liabilities considered, and taking into account the currency denomination, a different picture of Brazilian external position emerges. Thanks to domestic factors (namely, the long term trend of domestic currency appreciation just recently reverted) and the new features of the international liquidity cycle after 2003, a “de-dollarization” of external liabilities is the historical novelty.

More important, this process seems to be an explanation to a paradox that received little attention in the present analyses of Brazilian external sector: despite the large and growing Current Account deficits between until 2014, the net external position improves since 2010. Under the current conditions, exchange rate devaluations are good (and not bad as traditionally) to the balance-sheet position of the country.

To describe and discuss this phenomenon, that seems to be essential to evaluate the actual level of external vulnerability during such a difficult context, is the goal of the present paper. Three additional sections follow this Introduction. Section 2 details the “de-dollarization” process, using the data available on Brazilian external sector statistics. Section 3 estimates a vector-autoregressive (VAR) model to assess the importance of flows and balance-sheet effects to the evolution of Brazilian net external position between 2002 and 2014. Section 4 provides additional evidence and concludes.

2. “De-dollarization” of Brazilian external liabilities

The International Investment Position (IIP), according to the fifth edition of the IMF Balance of Payments Manual (BPM5/IMF) presents the composition and evolution of the stocks of external assets and liabilities (Table 1). The Brazilian situation and evolution between 2002 and 2014 (Graph 1) can, at first sight, led to the impression of deterioration: liabilities always above assets, the former (especially after the financial crisis in 2008) growing faster than the latter (despite the increase in international reserves since 2006). The most recent numbers included in the analysis show a net position of almost US\$ -800 billions, where the obligations were approximately twice the assets. But certainly this is a rough picture, with a lot of information hidden in the big numbers.

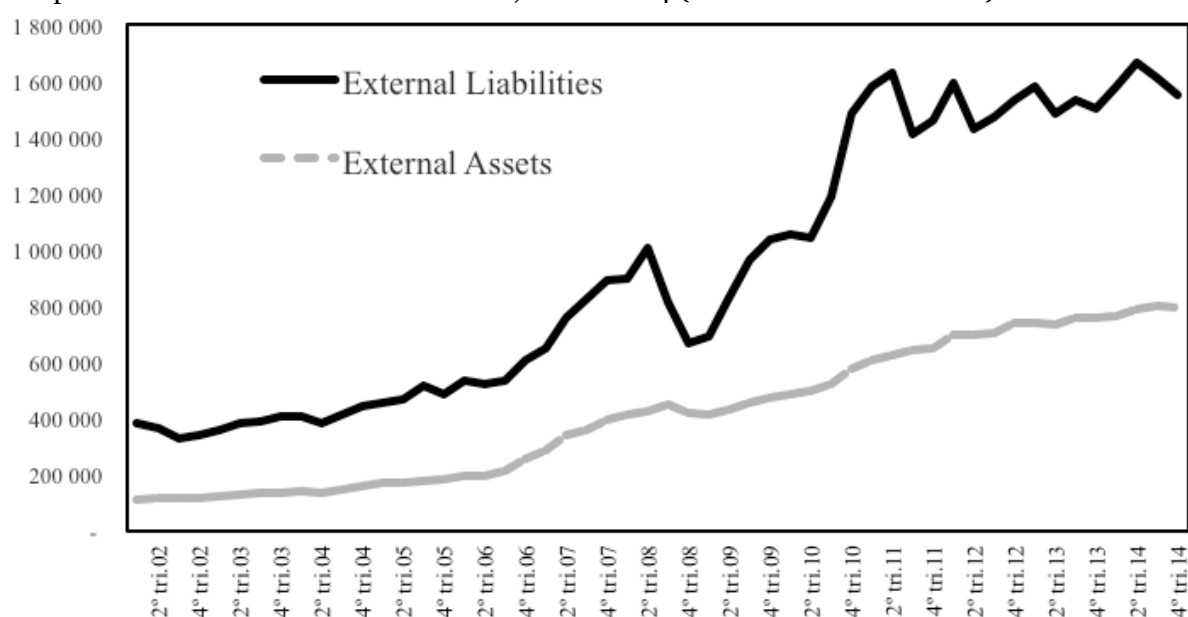
Table 1. International Investment Position

Assets	Liabilities
Direct investment	Direct investment
Equity and investment fund shares	Equity and investment fund shares
Intercompany lending	Intercompany lending
Portfolio investment	Portfolio investment
Equity and investment fund shares	Equity and investment fund shares
Equity and investment fund shares	Issued in Brazil
Financial derivatives (except reserves)	Issued abroad
Other Investment	Debt securities
Reserve assets	Issued in Brazil
	Issued abroad
	Financial derivatives (except reserves)
	Other Investment

Source: Central Bank of Brazil.

To better evaluate external vulnerability, it is necessary to investigate the currency composition of these obligations and rights. The idea of an “original sin” (presented and discussed in the chapters of Eichengreen and Haussmann, eds., 2005) originally was related to the inability of peripheral economies to issue external debt securities, or assume bank loans, in its own currency. However, the evolution of financial globalization led to a greater importance of portfolio investment and FDI and, as discussed above, to an increase in the presence of foreign investors in local equity and (public and private) bonds markets. Those instruments need to be incorporated into the assessment.

Graph 1. External Assets and Liabilities, 2002-2014 (millions of U.S. dollars)



Source: Central Bank of Brazil. Authors' calculation.

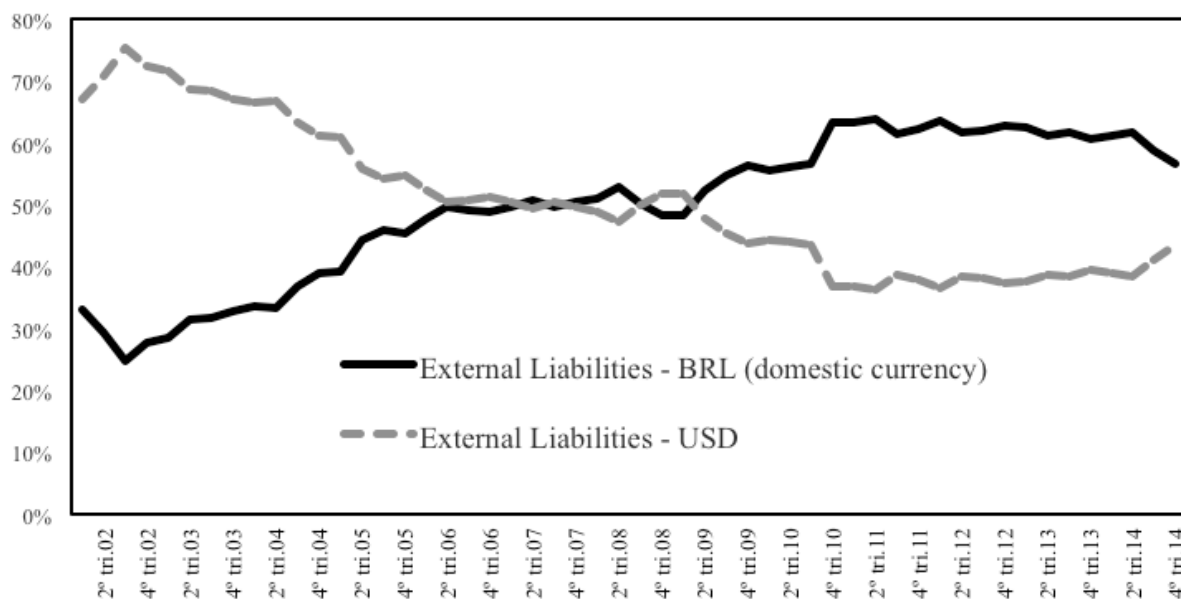
Lara (2014) and Noije (2014) identify a significant increase in the domestic currency share of Brazilian external liabilities in the last years. Firstly appointed by Biancareli (2012), this process can be termed “de-dollarization” and represents a soft, very specific form of “redemption from original sin”, unpredicted by the original proponents of the concept.

From the right column of the Table 1, the following components of external liabilities are considered here to be denominated in domestic currency, *reais*: the equity and investment fund shares of FDI; the equity and investment fund shares, issued in Brazil, of the Portfolio investment; and the Debt securities issued in Brazil. There were, especially in mid-2000s,

some international emission of bonds denominated in *reais*, but its part of the total is irrelevant.³

Following this division, Graph 2 depicts the evolution of the gross external liabilities on a quarterly basis, from 2002 (the first available data) to the last quarter of 2014. The share in *reais*, that was just 33% at the beginning, amounted 58% at the end, with a peak of 64% in Q2 2011.

Graph 2. External Liabilities - Currency Denomination (%)

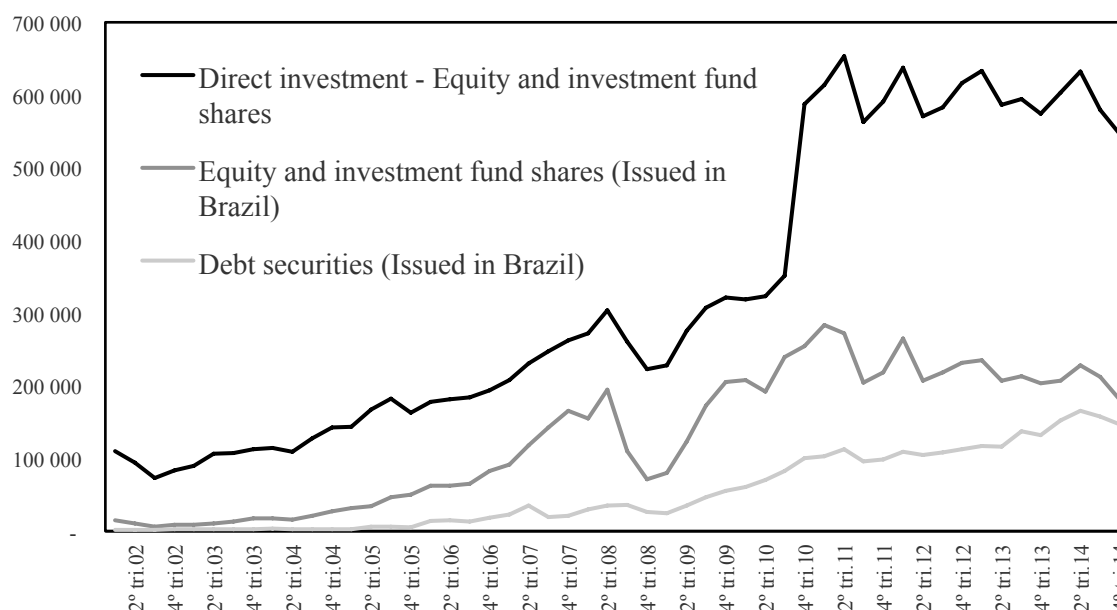


Source: Central Bank of Brazil. Authors' calculation.

On Graph 3, a detailed composition of those liabilities denominated in domestic currency is provided. The equity and investment fund shares of FDI is the major category, despite the relative decrease before the crisis in 2008. In this period, portfolio equity investments had a strong rise – and a sharp decline during the last quarter of that year. There was a “burn” of more than 60% of the previous amount in just one semester, coincident with the devaluation of Brazilian currency amid the impacts of the international financial crisis. Less sensible – to exchange rate and market variations – is the value of fixed income bonds, in an upside trend since 2005.

³ It is important to notice, also, that the breakdown of portfolio liabilities by place of issuance – essential to the assessment presented here – is a peculiarity of Brazilian external sector statistics, not available for other important economies in the region.

Graph 3. Composition of external liabilities denominated in domestic currency (millions of U.S. dollars)



Source: Central Bank of Brazil. Authors' calculation.

As already mentioned, one of the distinguishing aspects of the 2000's international liquidity cycle to developing economies was a greater presence of foreign investors in local equities and bonds markets, and a lower importance of bank loans and securities issued abroad. This global trend helps to explain the shifts here presented in Brazilian composition of external liabilities.

One of the consequences of these movements can be observed by looking to the behaviour of the Net External Liabilities (NEL) – as discussed by Noiye (2014) and Lara (2014). This indicator is defined as the difference between the total external liabilities (L) and the total external assets (A), corresponding to the IIP with the opposite sign. It can be expressed both in absolute values and variations:

$$NEL = L - A$$

$$\Delta NEL = \Delta L - \Delta A$$

Following Lara (2014), changes on assets and liabilities can be caused by: (i) *flow factors* and/or (ii) *balance-sheet factors* or *valuation mechanism*. The former group refers to external assets acquisition or new liabilities assumptions, while the latter comprises changes in the value, in international currency (normally the US dollar), of assets and liabilities.

The *flow factors* are the expression of the usual reasoning about these issues, corresponding to the simple accounting of a country's external sector, just responding to the economic transactions between residents and non-residents during a period of time. In other words,

this part of NEL variation is the mirror of the Balance of Payments (BoP) results, originated by the sum of Current Account (CA) and Capital/Financial Account, or capital movement (KM):

$$\text{BoP} = \text{CA} + \text{KM}$$

Simplifying, the result of Balance of Payments is assumed as equal to international reserves variation – what is taken as the *flow factor* related to assets variation (ΔA):

$$\text{BoP} = \Delta A$$

In turn, capital movement (KM) is the *flow factor* associated to liabilities variation, given the fact that all capital flowing into the country represents an increase in the external obligations:

$$\text{KM} = \Delta L$$

And

$$\Delta \text{NEL} = \Delta L - \Delta A = \text{KM} - \text{BoP} = -\text{CA}$$

So, the *flow factor* affecting the Net External Liabilities is the opposite of the Current Account result: by this way the NEL increases when the country presents a deficit in this rubric, and decrease when a surplus is registered. But this is not the whole story – and, in Brazilian recent case, certainly not the most important part.

Regarding the *balance-sheet factors* or the *valuation mechanism*, it is necessary to consider that assets and liabilities are stocks whose value is determined constantly according to the exchange rate (when not denominated in US dollars) and market prices (when the instruments are negotiated in secondary markets). Those two additional forces can, therefore, represent an important source of variations in the Net External Liabilities that can offset the *flow factors*.

For example, if an asset or liability is denominated in a currency different from the US dollar and this currency floats against the central money, there will be modifications in the value of the obligation or right, thanks to a *balance-sheet effect* only. The total amounts and the Net External Liabilities will change without any assumption of additional liabilities or acquisition of a new asset. Stocks, in the same way observed in the public debt, can change irrespective of flows.

Considering that a large share of Brazilian external liabilities is denominated in *reais*, fluctuations in nominal exchange rates have direct influence on NEL: depreciations of

Brazilian currency decreases the stock of obligations; and appreciations turn it bigger. Since the external assets are entirely in US dollars, there is no effect of exchange rates.

Additionally, *balance-sheet factors* are also made by market quotes oscillations: a stock market boom can led to an increase in external liabilities, and a bust can reduce it, even without any external flow or exchange rate movement.

3. Empirical assessment: evolution of NEL in Brazil and its determinants

To evaluate the relative importance of these two kinds of influence (flow and balance-sheet factors) over the Net External Liabilities, in the specific case of Brazil between 2001 and 2014, is the task of this section. The estimation of a vector autoregression (VAR) model is the tool used for it. This method, proposed by Sims (1980) allows the expression of multivariate time series models considering, in principle, all the variables as endogenous and simultaneously determined. The technic seeks to show the answer of a specific series to a structural chock.

Following Bueno (2011) presentation, one can express a p th-order autoregressive model by a vector X_t with n endogenous variable and a matrix A as:

$$AX_t = \beta_0 + \sum_{i=1}^p \beta_i X_{t-i} + \beta_{\varepsilon_t}$$

The matrix A sets the contemporary restrictions among variables of the vector X_t ; β_0 is a vector of constants; β_i are the matrices $n \times n$; β is a diagonal matrix $n \times n$ of standard deviation; ε is a vector of random disturbances, uncorrelated contemporaneously or with lags.

3.1. Data

Quarterly statistics, from 2002 Q1 to 2014 Q4 (52 quarters on total) were utilized. Data for the variation of Net External Liabilities (NEL) were obtained on the International Investment Position (IIP) statistics quarterly published by Central Bank of Brazil; data for the Current Account result (here noted as TC), associated with the *flow factor* influencing the NEL variations, were captured on the Balance of Payments statistics from the same source (series code 2516). Regarding the *balance-sheet factors*, the nominal exchange rate (TXCAM) was used as the proxy for the variation of the value (in US dollars) of the items denominated in domestic currency; and the IBOVESPA index (BVSP) was taken as the price indicator for the part of the liabilities negotiated in secondary markets.

The nominal exchange rate series used, also published by Central Bank of Brazil, was made by end-of period numbers for each quarter (code 3595); and the IBOVESPA index (published by BMF&BOVESPA) is of the last business day in each quarter. Those end-of period numbers are, in this case, the best option because IIP data are showing the asset/liabilities value also at the end of each quarter.

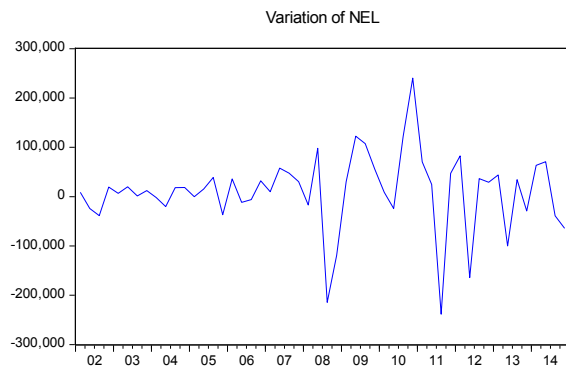
The VAR methodology requires that the series should be stationary. To check this, two unit root tests: the Augmented Dickey-Fuller (ADF) and the Phillips-Perron (PP). The results are show in Table 2.

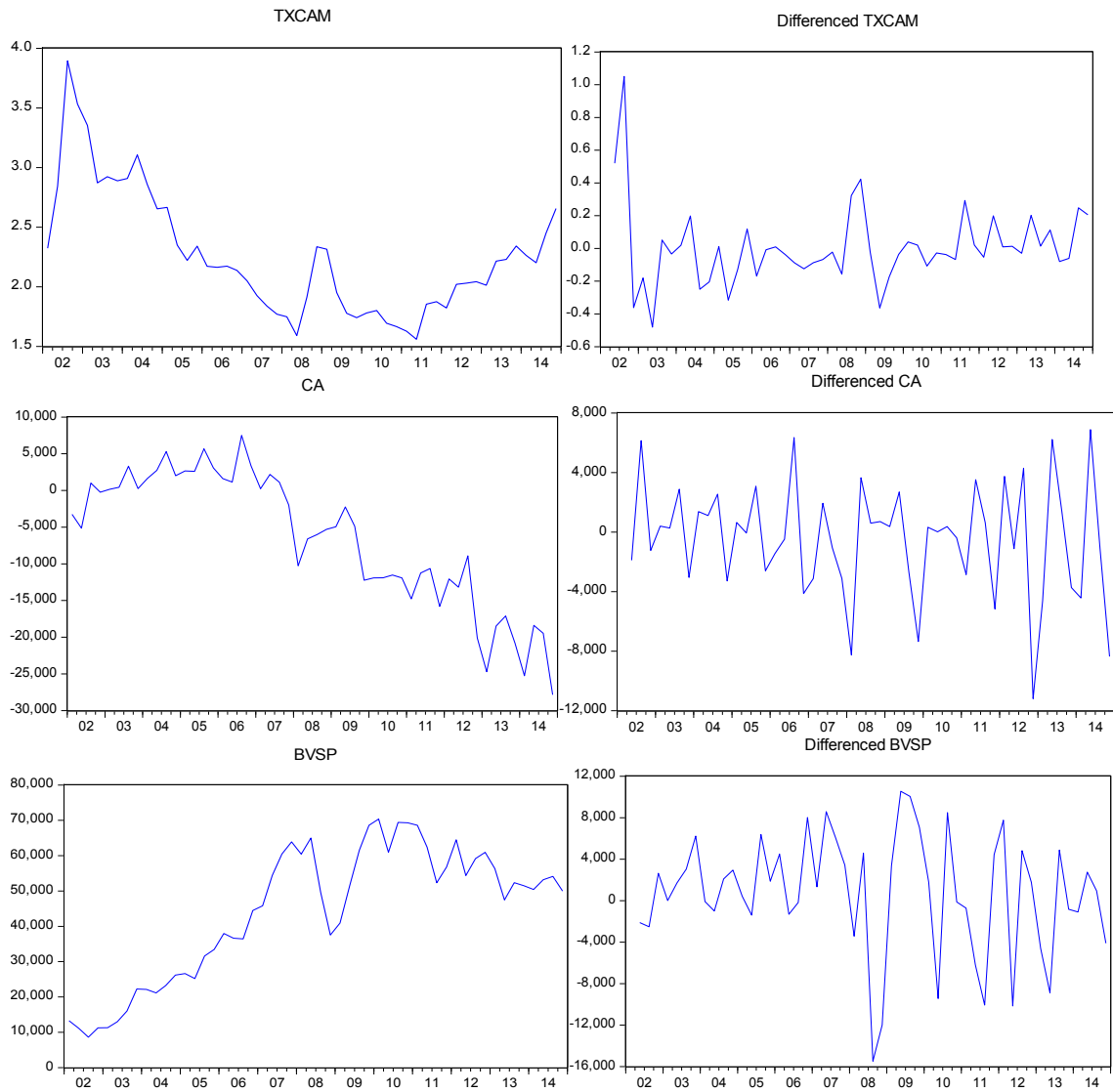
Table 2. Unit Riots Tests

		ADF			PP			Conclusion
		τ estat	critical	Prob. (%)	τ estat	critical	Prob. (%)	
Δ NEL	Intercept	-6,35	-2,92	0,00	-6,73	-2,91	0,00	I(0)
	Trend and Intercept	-6,28	-3,50	0,00	-6,62	-3,50	0,00	
	None	-6,33	-1,95	0,00	-6,32	-1,95	0,00	
TXCAM	Intercept	-1,56	-2,92	0,49	-1,60	-2,92	0,48	I(1)
	Trend and Intercept	-1,62	-3,50	0,77	-1,93	-3,50	0,62	
	None	-0,16	-1,95	0,62	-0,09	-1,95	0,65	
TC	Intercept	1,36	-2,92	0,99	0,07	-2,92	0,96	I(1)
	Trend and Intercept	-3,50	-3,50	0,05	-3,26	-3,50	0,08	
	None	2,27	-1,95	0,99	0,25	-1,95	0,76	
BVSP	Intercept	-1,71	-2,92	0,42	-1,72	-2,92	0,42	I(1)
	Trend and Intercept	-1,40	-3,50	0,85	-1,52	-3,50	0,80	
	None	0,16	-1,95	0,73	0,14	-1,95	0,72	

Except for the Net External Liabilities (NEL) variation, all the series have unit roots. So, in the VAR model estimation, they are considered in first difference, as shown in Fig. 1.

Figure 1. Selected variables in level and first difference





3.2. Estimation and verification

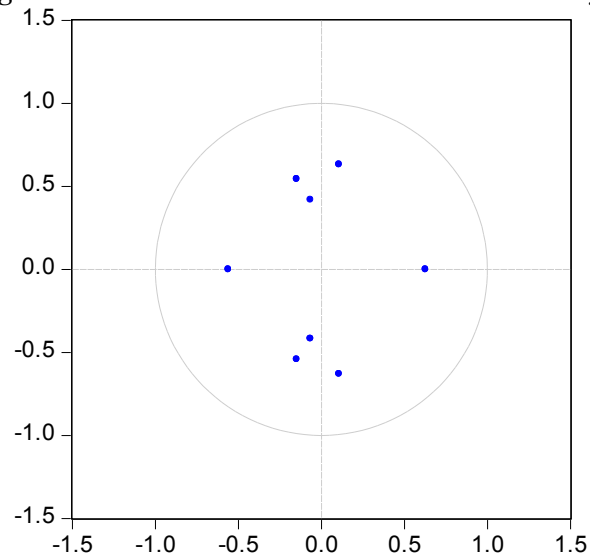
Verified the stationarity of the series, the next step is to set the order of the VAR model. The Schwarz and Hannan Quinn criteria indicated a model without the need to include lags, while LR and Akaike criteria suggest an order 5 VAR model. However, in order to obtain residuals without autocorrelation and a parsimonious model, an order 2 VAR was estimated.

Table 3. VAR Lag order selection criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-1.408.231	NA	2.13e+22	6.276.582	62.92642*	62.82569*
1	-1.392.101	2.867.505	2.13e+22*	6.276.006	6.356.302	6.305.939
2	-1.377.295	2.368.986	2.29e+22	6.281.312	6.425.845	6.335.192
3	-1.367.588	1.380.576	3.16e+22	6.309.280	6.518.050	6.387.107
4	-1.347.203	2.536.801	2.85e+22	6.289.791	6.562.798	6.391.565
5	-1.322.119	26.75568*	2.22e+22	62.49420*	6.586.664	6.375.141
6	-1.313.513	7.650.421	3.98e+22	6.282.279	6.683.760	6.431.947

After the estimation, the stability property was verified and, as shown in Fig. 2, all the roots as inside the unit circle.

Figure 2. Inverse Roots of AR Characteristic Polynomial



To check the autocorrelation of residuals, the LM test (Table 4) indicated that until lag 12 there are no reason to reject the null hypothesis of inexistence. Finally, regarding normality, the Jarque-Bera test indicated that the residuals are not normally distributed (p-value = 0,00).

Table 4. LM Test

Lags	Estat. LM	Prob.
1	15,237	0,507
2	26,038	0,053
3	14,628	0,552
4	11,294	0,791
5	25,925	0,055
6	10,128	0,859
7	17,604	0,347
8	20,836	0,184
9	23,594	0,098
10	4,224	0,998
11	14,849	0,535
12	8,543	0,931

3.3. Results

The impulse response functions and the variance decompositions are presented on the following figures. As expected (according to the reasoning of the previous section), the response to impulse of the Net External Liabilities to a shock in nominal exchange rate is negative, on short term and accumulated in 12 months (Fig.3). A devaluation of domestic currency is associated with a decrease in NEL, thanks to a reduction (in US dollars) in the value of external obligations denominated in *reais*. Inversely, an appreciation leads to an increase in NEL.

Figure 3. Impulse Response - TXCAM

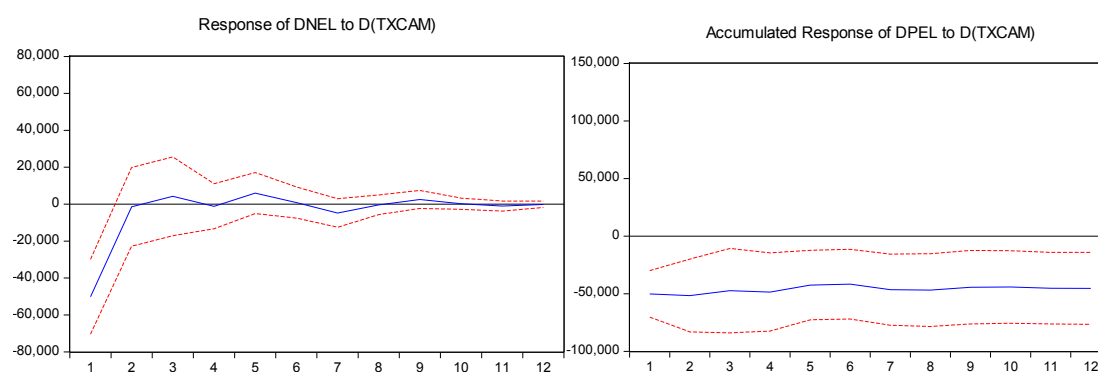
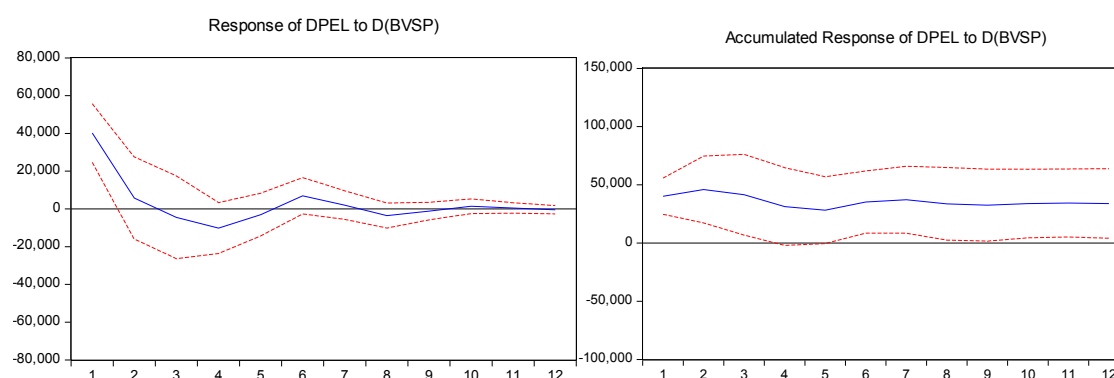


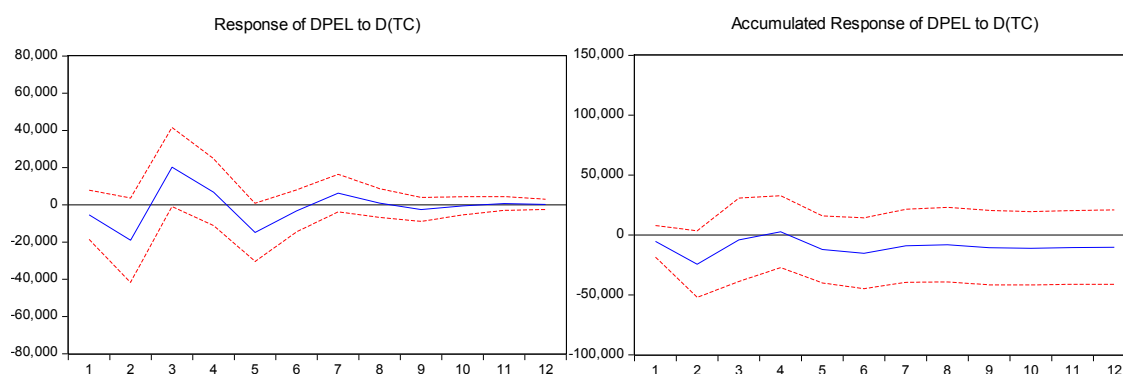
Figure 4 presents the impulse-response functions of NEL in relation to IBOVESPA index. Again, results are the expected: an increase in equity values in São Paulo Stock Exchange causes positive effects in the net external liabilities due to the *valuation mechanism*.

Figure 4. Impulse Response - BVSP



Finally, the *flow factor* influencing the external position (the Current Account result) also behaves like expected (Fig. 5): a deficit in Current Account increases NEL and a surplus reduces it.

Figure 5. Impulse Response - TC



The provisional conclusion, therefore, is that both kinds of factor, and the three variables here observed, influence the net liabilities – and, by this way, the external vulnerability – as expected. However, the relative importance of each factor is not the same. Table 5 exhibits the variance decompositions of the variables in relation to NEL.

The nominal exchange rate appears as the most important factor to influence the variations of the net liabilities, a consequence of the “de-dollarization” process previously described. The IBOVESPA behaviour also seems to have significant impact on NEL, and the Current Account clearly has a lower influence when compared to the previous two variables.

Table 4. Variance Decompositions - Δ NEL

Period	S.E.	D(TXCAM)	D(BVSP)	D(TC)	Δ NEL
1	79256	40,04	25,75	0,45	33,77
2	82323	37,14	24,35	5,76	32,75
3	85127	34,98	23,05	11,07	30,90
4	86037	34,26	23,97	11,46	30,31
5	87597	33,52	23,24	13,90	29,34
6	87999	33,22	23,65	13,91	29,21
7	88386	33,23	23,50	14,30	28,98
8	88468	33,17	23,61	14,28	28,94
9	88547	33,19	23,59	14,34	28,88
10	88562	33,18	23,60	14,34	28,88
11	88573	33,18	23,60	14,34	28,88
12	88575	33,18	23,60	14,34	28,87

4. Discussion and implications

These results suggest a predominance of *balance-sheet factors* over *flow factors* influencing the external position of Brazilian economy during the period in analysis. It is a conclusion in line with the international literature briefly summarized in Introduction; the novelty is not

the balance-sheet relevance, but the shift in Brazilian liabilities composition. The higher the share of external liabilities denominated in *reais*, the lower is the influence of traditional flow factors on the external position of the country. Consequently, the lower tends to be the vulnerability (at least through the traditional channels) to reversion in international liquidity cycles and sharp devaluations. Similar results, reached with other approaches, are presented by the few authors in Brazilian debate already mentioned (Lara, 2004; Noije, 2014; Biancareli, 2012).

The paradox commented on Introduction can now, in light of this exercise, be easier understood. Table 5 shows the accumulated results of the Net External Liabilities and Current Account, divided in four periods, marked by different trends in NEL and different relations with the flows registered in the Balance of Payments: during the first phase (from 2002 to mid-2008) the Current Account is positive, but the liabilities increase; during the second half of 2008, the small deficits have no influence in the sharp drop in the stocks; from 2009 to 2011 the relation is the expected, but the absolute values are completely different; and since 2011, Brazil presents large and growing Current Account deficits, but the external position in terms of stocks improves.

Table 5. Δ NEL e Current Account Balance (millions of U.S. dollars)

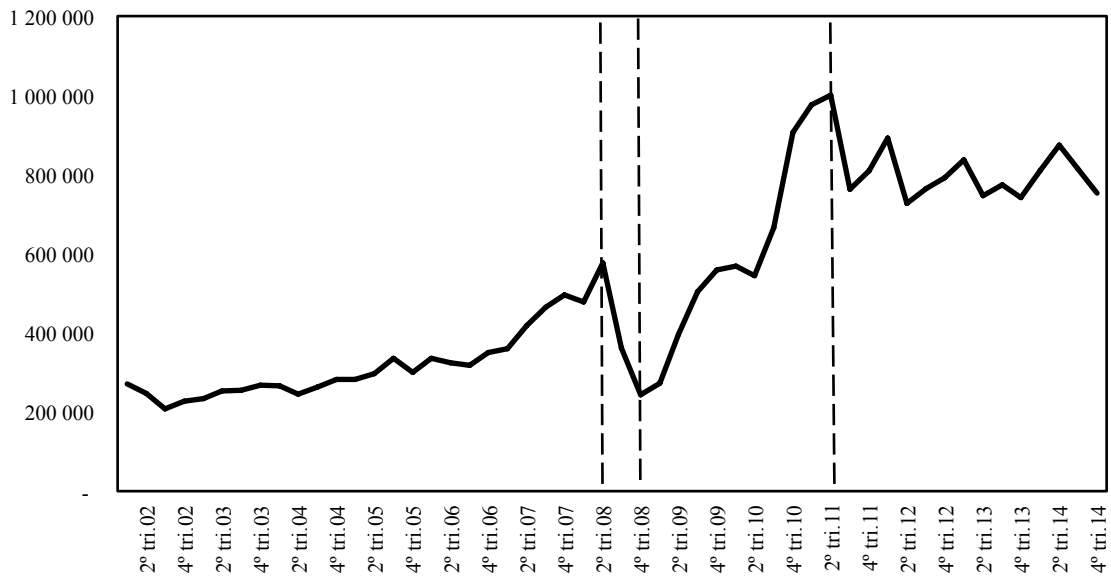
Period	Δ NEL	Current Account
1 ^o tri.02 - 2 ^o tri.08	314.968	20.527
3 ^o tri.08 - 4 ^o tri.08	-333.546	-11.321
1 ^o tri.09 - 2 ^o tri.11	757.528	-97.617
3 ^o tri.11 - 4 ^o tri.14	-247.523	-252.737

Source: Central Bank of Brazil.

The same periodization is used in Graph 4, which shows the absolute value of the external obligations and emphasises the exceptionality of this last phase: the magnitude of the variation in the Net External Liabilities is similar to the accumulated in the Current Account, but the sign is the opposite. In other words, during this period the balance-sheet channel was able not only to offset the flow factor, but also to cause an effect on the opposite direction of the same size.

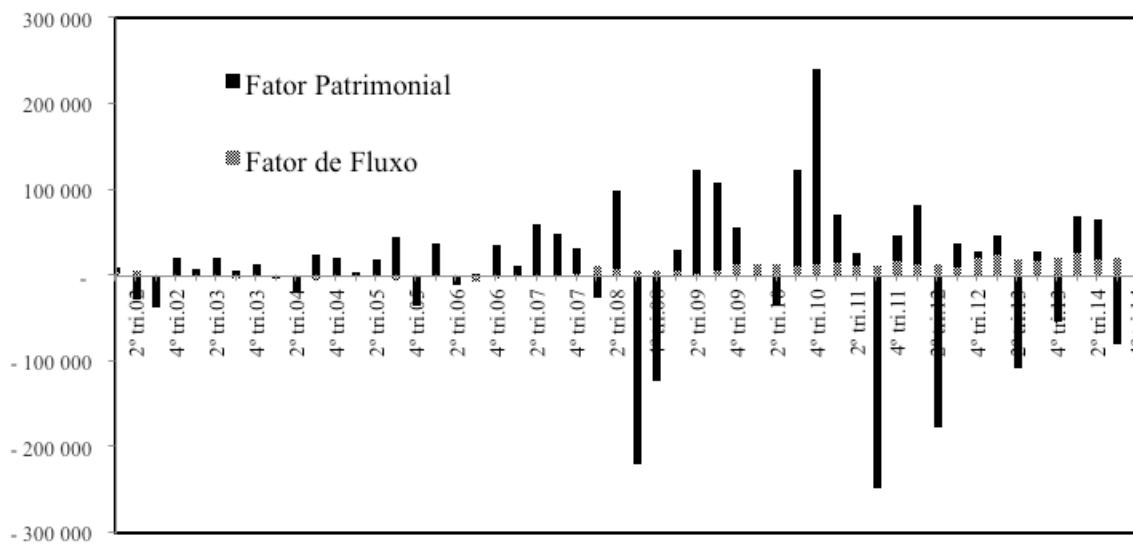
Those are additional indications that reinforce the fact already highlighted by the VAR estimated: the Brazilian external position has been much more dependent on the valuation mechanism (and so, on the composition of its external liabilities) than on the flows registered on the Current Account. The Graph 5 precisely quantifies these unequal influences on a quarterly basis.

Graph 4. Net external liabilities (millions of U.S. dollars)



Source: Central Bank of Brazil.

Graphic 5: Decomposition of Δ NEL, balance-sheet and flow factors (millions of U.S. dollars)



Source: Central Bank of Brazil. Author's calculation

This is the main message of this paper, and it raises some important questions for the assessment of the Brazilian external vulnerability and for the broader debate about international financial relations of developing countries. They are, consequently, important topics to additional research efforts in this path.

The first one is related more directly to Brazil. At first sight, the recent period, especially 2015, represents the dramatic end of a short phase when it was possible to conciliate moderate economic growth, income distribution and external soundness (not to mention other aspects). The country is, at the moment when this paper is concluded, in the middle of

a sharp external sector adjustment, with rapid reduction in Current Account deficits, maxi-devaluation of domestic currency (on a yearly basis, more than 60%) and the worst recession in three decades (GDP is expected to drop 3%). Adding to this context the significant decline in international prices of commodities and the expectations about the rise in US interest rates, the similarities with previous episodes of liquidity cycle reversions are clear.

The evidence presented in this paper suggests that at least part of usual consequences of those episodes will not repeat this time. The balance-sheet effect, specifically the traditional currency mismatch (sometimes called *peso problem*), has new features. Devaluation improves the net external position of the country; in macroeconomic grounds, it is good for the solvency situation, and not bad. Preliminary data available for 2015 (August) suggests an improvement of International Investment Position of 30% when compared with 2014; the total stock of liabilities are reduced by US\$ 200 billions, reaching a 5-year minimum of US\$ 1,3 trillion.⁴ The next months or years can show the actual importance of this change.

The second question derives from the first. The origin of this new picture in Brazilian economy is a shift in the composition of external liabilities, towards obligations issued in domestic markets and denominated in domestic currency. Despite the external motivations, obviously an important reason behind the movement is the long trend of nominal exchange rate. The share of “de-dollarized” liabilities (Graph 2, above) is clearly correlated with the appreciation of *real*, and because of the slight depreciation since 2012, the improvement in this aspect have ceased or started to be reverted. With the plummeting of *real* in 2015 probably this reversion was accelerated. An interesting question to be observed carefully is about the sensibility of this better structure of obligation to the exchange rate. Or, in more general terms, future research steps can be directed to the determinants of the “de-dollarization” process.

Lastly, the third question is about the occurrence of similar movements in other emerging or peripheral countries. There are reasons (the exchange rate trend as the first one) to believe that the improvement in external liabilities composition was more intense in Brazil, but the aggregate data on capital flows suggest a more disseminated movement towards domestic markets (equities and public/private bonds). The availability of data, especially the breakdown of portfolio liabilities by place of issuance and negotiation, is a limit to expand the exercises to international comparisons, but since a greater number of countries are

⁴ In light of this situation, the worries about excessive leverage in foreign currencies of emerging market enterprises, subject of recent IMF (2015) worries, can be seen (at least in Brazilian case) more as a micro problem. Obviously, the exposition to exchange rate movements of big companies can have systemic consequences, but the point to emphasize here is that the macro situation is much better on this ground than in previous episodes.

adopting the newest IMF standards for external accounts, this can be a promising research field in the near future.

In more general terms, the mild immediate effects of 2008 international turmoil on public and private balances of the developing world suggest a stronger position in terms of currency mismatches. Most of the explanation for this was attributed to the accumulation of international reserves, but maybe the composition of liabilities also had played an important role. The future evolution of international financial conditions, especially if the predicted difficult times ahead were confirmed, will also be an interesting test to the resilience of emerging markets, and to the importance of currency denomination of external liabilities.

5. References

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