

‘Original Sin’ in Latin America (2000-2015): Theory, Empirical Assessment and Alternatives

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Abstract: The matter of the ‘original sin’, the inability to borrow abroad in domestic currency, came to the centre of the academic discussion after the dramatic episodes in Asia, Russia and Latin America. According to this international framework, this paper is an empirical analysis of ‘original sin’ for six Latin American countries based on the index (OSIN3) developed by Hausmann and Panizza (2003). This paper finds that the situation for some countries have been improving reflecting a reduction of the index. This fact could be related to recent economic policies related to an ‘abstinence’ rather than ‘redemption’, an attitude seen as a response to the debt crisis. Finally, the paper focuses on possible policy alternatives that could be adopted to overcome the ‘original sin’ phenomenon it includes North-South and South-South cooperation and a multilateral arrangement. However, such alternatives are limited to feasibility mainly due to the turbulent political and economic scenario in the region.

Keywords: Original Sin; Currency mismatches; Debt; Latin America

JEL Code: F34; F41; G15; O54

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1. Introduction

The matter of the ‘original sin’ came to the centre of the academic discussion after the dramatic episodes in Asia, Russia and Latin America (Mexican crisis in 1994, the Asian crisis in 1997, the Russian crisis in 1998, the Brazilian crisis in 1999, the Argentinean crisis in 2002), when the depreciation of local currency together with the denomination of debt in foreign currency – the dollar – resulted in currency, banking and financial crisis.

In this context, Eichengreen and Hausmann (1999) define ‘original sin’ as the “inability to borrow abroad in terms of domestic currency and to borrow domestically long-term”. That implies, as stated by Panizza (2006), that ‘original sin’ is a two-dimensional phenomenon, characterized by an international component (the local currency of countries affected by ‘original sin’ cannot be used to borrow abroad) and by a domestic component (the local currency is not used domestically for long-term borrowing). In this sense and in line with the literature, we acknowledge that the need of obtaining foreign exchange reserves is intrinsically related with internal productive structures of countries suffering from original sin. However, we decide to stress solely effects and strategies needed to deal with the external borrowing constraint in a short term analysis. Accordingly, we focus on the international component of ‘original sin’ and how it affected economic stability and borrowing conditions of Latin American countries.

According to this international framework, our empirical analysis is based on the index (OSIN3) developed by Hausmann and Panizza (2003). The index will be calculated for Argentina, Brazil, Chile, Colombia, Mexico, Venezuela; later, we will analyse how the data fit the ‘original sin hypothesis’ throughout the time framework chosen (2000-2015).

Our approach will, therefore, be based on a theoretical discussion of the phenomenon, by reviewing the academic literature, and a data analysis of ‘original sin’ in six relevant Latin American countries; in particular, we chose them because of their economic prominence in the area (Argentina and Brazil) and their different political peculiarities (Chile, Colombia, Mexico and Venezuela).

Regarding the Latin American context, our first research goal is to analyse to what extent the Index (OSIN3) dynamics emphasize the ‘original sin’ and whether these dynamics shows signs of ‘redemption’ in the terms of Eichengreen, Hausmann and Panizza (2002). Secondly, we will focus on how the phenomenon

could be overcome through the alternatives presented in the literature, assessing them and taking into account the current Latin American scenario.

We suppose that, in line with the literature, there might have been improvements in the country group analysed in terms of reduction of the index. Nevertheless, this reduction may have been mainly related to an ‘abstinence’ response to a crisis aftermath rather than ‘redemption’.

The literature points some alternatives to reach ‘redemption’ including North-South and South-South cooperation and a multilateral arrangement. However, we argue that the feasibility of them is rather complex, especially considering the turbulent state of affairs, both economic and political in the developed and developing world.

In Section 2, we deal with ‘original sin’ from a theoretical perspective, reviewing the effects on economic stability and analysing possible causes underlying the phenomenon. In Section 3, we deal with an empirical exercise, analysing a group of Latin American countries, namely Argentina, Brazil, Chile, Colombia, Mexico and Venezuela (2000-2015). In the fourth section, we will present the alternatives able to overcome the phenomenon discussed and assess them under a critical perspective. Finally, we will conclude, summarizing our findings.

2. Theoretical background: ‘Original Sin’

2.1 What is ‘Original Sin’?

As originally defined in Eichengreen and Hausmann (1999), ‘original sin’ is the “inability to borrow abroad in terms of domestic currency and to borrow domestically long-term”. That implies, as stated by Panizza (2006), that ‘original sin’ is a two-dimensional phenomenon, characterized by:

- an international component: the local currency of countries affected by original sin cannot be used to borrow abroad. As a consequence, foreign debt will be mainly denominated in foreign currency, generating currency mismatches for countries that are net debtor;

- a domestic component: the local currency is not used domestically for long-term borrowing (i.e., local private borrowers prefer to denominate their liabilities in more stable currencies in order to hedge the risk of currency

depreciation). Consequently, maturities in domestic currency can be only either of short or medium term.

Eichengreen, Hausmann and Panizza (2002) demonstrated as the ‘original sin’ is a widespread phenomenon, that affects “almost all countries aside from the issuers of the 5 major currencies – the US dollar, the euro, the yen, the pound sterling and the Swiss franc”².

The *original sin hypothesis* was first developed in order to explain the problems that most developing countries face in borrowing in international capital markets (ICMs henceforth). Therefore, the focus on external debt (the international component of original sin) tries to describe the distortions that affect the flows of capital from capital-rich advanced countries to capital-poor developing countries (EICHENGREEN; HAUSMANN; PANIZZA, 2007)³. As a tool to explain development problems and dependence relations, the theory of international original sin shows as the deficiencies in borrowing in ICMs undermine the possibility for developing countries to stabilize the domestic economy when faced with shocks.

2.2 ‘Internacional Original Sin’ as a threat to economic stability

The balance sheet of countries suffering from original sin will be characterized by liabilities mainly denominated in foreign currency. If the country is a net debtor, it will then face a currency mismatch on the balance sheet; in this case, movements in the real exchange rate will generate wealth effects that may lead to higher volatility of output and capital flows, lower credit ratings and less effective monetary policies (EICHENGREEN; HAUSMANN; PANIZZA, 2002). All these factors undermine the domestic economic stability of countries affected by original sin, thus posing a threat to economic growth and development. As summarized in Fritz and Metzger (2006), the relation between ‘original sin’ and

² Nowadays, the international monetary system is a “non-order” (BIBOW, 2008) characterized by a declining importance of British Pound (in particular after *Brexit*), as well as of Swiss Franc and Japanese Yen. While China’s renminbi has officially become a reserve currency (joining the IMF’s special drawing rights basket the 1 October 2016), US dollar is losing its unopposed *hegemony* in the international monetary system. If China will proceed on the path of capital account liberalization, a *tripartite World scenario* is likely to take shape, where reserves will be denominated into three main currencies: US dollar, Euro and Renminbi. Further discussion can be found in Bergstern (2014), Campanella (2014) and Kruger (2016).

³ Critical remarks about the conventional idea that capital flows from advanced to developing countries are provided by the famous “Lucas Paradox (LUCAS, 1990) and the allocation puzzle (GOURINCHAS JEANNE, 2013).

increasing economic volatility is due to three main reasons, namely currency mismatch, restricted lender-of-last-resort function and costs of original sin in terms of output reduction and uncertainty.

First and foremost, the currency mismatch implies that any devaluation of the domestic currency would cause an increase in the real value of foreign debt stock, making more difficult its service. In this scenario, negative expectations on future repayments would create feedbacks resulting in capital flights, thus generating a spiral of worsening expectations and new capital flights. In other words, the capital outflows would behave in a pro-cyclical way, constituting a “loose cannon” for monetary authorities and their space to react. According to Panizza (2006), there are two ways to avoid the mismatches:

i. Preventing foreign borrowing (both public and private); in other words, a country can overcome original sin following the extreme decision not to accumulate foreign debt⁴.

ii. Accumulating foreign reserves matching the foreign debt. This solution seems to be the preferred for most countries suffering from original sin: Eichengreen, Hausmann and Panizza (2003a) demonstrated indeed that these countries tend to accumulate more foreign reserves than countries not affected by the phenomenon.

Nevertheless, Panizza argues that both measures are costly. On the one hand, in situations of financial autarky countries are unable to overcome or to alleviate shocks through international borrowing; in other words, abdicating or preventing foreign borrowing would mean abdicating additional investment finance and consumption smoothing through international financial integration. On the other hand, an increase in the accumulation of foreign reserves would imply an increasing negative spread between lower yield on reserves and the opportunity costs of funds⁵. This has been exactly the case in the recent years (especially from

⁴ As stated by Eichengreen, Hausmann and Panizza (2003a, p. 2): “A financially autarchic country will have no currency mismatch because it has no external debt, even though it still suffers from original sin as we define it”.

⁵ In this regard it is important to highlight the emergence of a quasi-fiscal deficit. For instance, let us consider the case of Brazil. Since the accumulation of foreign reserves is performed through open market operations, rising bonds yields (attached to the *Selic*) are required in order to make government bonds accepted in the markets. In doing so, the government is committed to pay a high interest on bonds in order to obtain foreign reserves that it then holds on US American bonds with a lower yield. The spread between the yields paid on national short-term bonds and on the bonds in which the reserves are held creates what is called quasi-fiscal deficit.

the beginning of the 2000's until the outbreak of the financial crisis) when the countries adopted such measures as a response to the turbulence of the 1990's.

Second, the function of “lender-of-last-resort” would be restricted. Considering the case of banks having liabilities in foreign currency, the Central Bank cannot supply liquidity to the domestic financial sector, since the country does not issue the currency that the debt is denominated in. In this case, the higher the ‘original sin’, the greater the liquidity risk that the financial sector is exposed to.

Third, the short and long run costs of the ‘original sin’. In the short run the costs of the ‘original sin’ could be related to the costs of the currency mismatch and in the long run, it would be creating both uncertainty and reduction of output as feedback of the volatility itself.

In Section 4, we discuss more in detail what are possible solutions to stabilize Latin American economies affected by ‘international original sin’.

2.3 At the roof of ‘Original Sin’: main causes

As argued in Eichengreen, Hausmann and Panizza (2003b) – and schematized by Panizza (2006) in the Table 1 reproduced here – there are six main causes that can explain the existence of ‘original sin’: economic development and institutional quality⁶, lack of monetary credibility, weak fiscal position, trade links, political economy and international causes linked with country size. Eichengreen et al. (2003b) conducted a multiple regression analysis to evaluate the correlation between these six explanatory variables and three different independent variables, namely three different indicators of original sin; in this paragraph, we focus on the significance of each determinant in respect of OSIN3, the measure that best indicates the international component of ‘original sin’⁷.

⁶ The most common indicator to measure economic development is GDP per capita. However, the choice of the indicator is not uncontroversial. Accordingly, an early critique of the idea that economic development can be expressed in terms of GDP per capita can be found in Sen (1988). More generally, as shown by the literature on original sin, institutions matter. In this sense, Panizza (2006, p. 31) stresses that “original sin is merely miner’s canary, signalling the presence of weak institutions and low level of development”. In this sense, an alternative measure of institutional weakness for countries suffering from original sin could be the five-dimensions Institutional Quality Index (IQI) proposed by Nifo and Vecchione (2015), encompassing regulatory quality, government effectiveness, rule of law, corruption, voice and accountability.

⁷ We will come back on this way to measure ‘original sin’ in Section 3.

Contrary to what might be expected, the analysis showed that there is no significant correlation between ‘original sin’ and the level of economic development; the explanatory variable, expressed in log of per capita GDP, results slightly significant by dropping the regional dummies in the regression, but the result is not robust when we try to make inference on the correlation between original sin and economic development *within* country groups.

The absence of a robust correlation between ‘original sin’ and the level of development implies that other determinants linked with specific countries characteristics are also unlikely to explain the phenomenon; the regression analysis confirms this intuition, demonstrating a weak or absent correlation between OSIN3 and trade links, characteristics of the domestic financial system, monetary credibility and fiscal policy-making. These results are of crucial importance because they contradict the common idea according to which inabilities and difficulties to borrow in ICMs of developing countries are a result of bad policies; in other words, credible monetary and fiscal policies cannot overcome a problem that is linked more closely with international causes.

Table 1 – Theories of Original Sin and their empirical relevance

Explanation	Link with original sin	Empirical relevance
Economic development and institutional quality	Original sin is merely the miner’s canary, signalling the presence of weak institutions and low level of economic development.	GDP per capita and institutional quality can explain differences in original sin across country groups but not within country groups.
Lack of monetary credibility	Borrowers prefer to denominate their obligations in dollars and go bankrupt in the event of large depreciation, rather than borrow in pesos and go bankrupt because of high-interest rates. Foreign lenders take account of the fact that the government has less of an incentive to protect their property rights and may choose to inflate away their claims if they denominate them in a unit that they can manipulate and hence they lend only in foreign currency.	Original sin is weakly correlated with past inflation but this weak correlation is due to the presence of few high inflation countries. At best, one can say that having credible monetary policies is a necessary but not sufficient condition for redemption from original sin.

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Table 1 – Theories of Original Sin and their empirical relevance*continued*

Weak fiscal position	A government that has weak fiscal accounts will have an incentive to debase the currency in order to erode the real value of its obligations. The solution is to index the debt to some real price or to issue short-term debt so as to increase the cost of eroding the debt with inflation.	No statistically significant correlation between fiscal ratios and original sin.
Trade links	Countries that trade heavily with their creditors have an incentive to meet their contractual obligations because failing to do so will provoke a commercial retaliation or, at the minimum, interrupt the supply of trade credits.	No statistically significant correlation between trade openness and original sin.
Political economy	If foreigners are the main holders of public and private debts, then there is likely to be a larger domestic political constituency in favour of weakening the value of their claims and foreign creditors will be reluctant to lend in local currency unless protected by a large constituency of local savers.	No statistically significant correlation between the size of the domestic financial system and original sin.
International causes	In a world with transaction costs, the optimal portfolio will have a finite number of currencies. These few currencies are the ones that offer better opportunities for diversification, i.e. the currencies of large countries.	There is a strong and robust negative correlation between country size and original sin.

Source: Panizza (2006).

The authors demonstrated that the only significant variable is the country size: regression analysis shows indeed a strong negative correlation between this variable and original sin, both if we control for single countries and for country groups. As stated in the paper, “ability to borrow abroad in one’s own currency seems to be heavily concentrated among large countries” (Eichengreen et al. 2003b: 5). Three relevant dimensions of country size are taken into account in the respective variable (SIZE) in the regression model: log of total GDP, log of total domestic credit valued in US dollars and log of total trade. A possible explanation of the robust correlation between country size and original sin can be found focusing on the role played by economies of scale or network externalities in shaping the structure of international finance. Furthermore, these findings suggest

that the “redemption” from original sin can only be regional or international, aiming to a modification of the structure of the international monetary and financial system. This point will be crucial in the discussion of possible alternatives for Latin America in Section 4, after having evaluated the dimension of the phenomenon in the area.

2.4 The ‘Original Sin hypothesis’ in Latin America

Latin American markets, particularly since late 1980’s, were subjected to a great influx of capital – so-called *money chasing yield* – motivated by low growth and low-interest rates in developed countries (external perspective) and by the implementation of political reforms inspired by the *Washington Consensus* (domestic perspective). Despite this good behaviour and the adoption of IMF recommendation, Latin American countries have been strongly hit by the reversion movement of the capital flows. Subject to the condition of ‘original sin’, the economy of these countries has faced extreme volatility of output and capital flows.

A first answer to ‘original sin’ in Latin American countries during last decades was to abandon the national currency, adopting the currency in which debt is denominated (i.e. dollarization); that is still the case of countries like Ecuador, El Salvador and Argentina. As highlighted by Fritz and Metzger, when the option is the unilateral dollarization, the function of lender of last resort simply disappears and all debt is transformed into foreign currency. An alternative to dollarization – discussed in Section 4 – is monetary cooperation in form of an Optimal Currency Area (OCA)⁸.

Facing such a big constraint to stabilization and, in its turn, development, in next sections our main aim is to ask the question of whether, after the turbulence of the 1990s, Latin American countries have reached any kind of ‘redemption to original sin’ (Hausmann and Panizza 2011). In Section 3, our empirical analysis will be based on the index OSIN3, as developed by Hausmann and Panizza (2003), that focuses on the international component of the original sin, as pointed

⁸ The difference between the two alternatives is highlighted by Cardim de Carvalho (2006, p. 104): “Dollarization, by contrast to the creation of an OCA, is the unilateral acceptance of the US dollar as the national currency by another country. It is not really monetary unification, since the rules of the game as to issuance of money, seigniorage gains, lender-of-last-resort facilities, etc., do not change with dollarization, since the United States does not in fact accept any responsibility for the decisions of other countries.”

out in Panizza (2006). The index will be calculated for the following countries: Argentina, Brazil, Chile, Colombia, Mexico, Venezuela; later on, we will analyse how the data behave throughout the time framework chosen.

3. Empirical assessment on ‘Original Sin’ in Latin America

3.1 Methodology and measures of ‘Original Sin’

As commented above, Eichengreen, Hausmann and Panizza (2002) created some indicators in order to investigate whatever a country is affected by ‘original sin’ or not. The authors present a vast literature about this topic, including several other indexes and forms of calculations and interpretations of ‘original sin’. For sake of simplicity, we opted to choose what is known in the literature as the best index for ‘original sin’. Additionally, we have chosen just to analyse the international side of ‘original sin’. Thus, the authors start by the indicator below:

$$INDEXB_i = 1 - \frac{\text{Securities in currency } i}{\text{Securities issued by country } i} \quad (1)$$

$INDEXB_i$ is composed by one minus the ratio between all securities issued in currency i , no matter the nationality of the issuer, and all securities issued by country i , regardless of the currency issued. The literature states the advantages of using $INDEXB_i$ as an indicator to measure ‘original sin’ because it is capable to incorporate the possibility of hedging currency exposure via the swap market. The drawback of $INDEXB_i$ is that it can generate negative values, which means the total amount of securities in currency i is greater than the amount of total securities issued by country i . In order to solve this problem, a range limit is established, setting the index variation from zero to one:

$$OSIN3_i = \max\left(1 - \frac{\text{Securities issued by country } i}{\text{Securities issued by country } i}, 0\right) \quad (2)$$

$OSIN3_i$ becomes the best indicator according to the literature for two reasons. First, it captures the possibility of hedging exchange risks, as commented above. Second, it provides an aggregate and comparable measure of currency mismatches (EICHENGREEN; HAUSSMAN; PANIZZA, 2002; HAUSSMAN; PANIZZA, 2003; HAUSSMAN; PANIZZA, 2011).

When the index is equal to one, it indicates the country i doesn't have any outstanding debt in currency i ; therefore, this country is affected by 'original sin'. In contrast, when the value of the indicator is zero, the country only has debts issued in its own currency, so there is no 'original sin'.

3.2 Empirical evidence

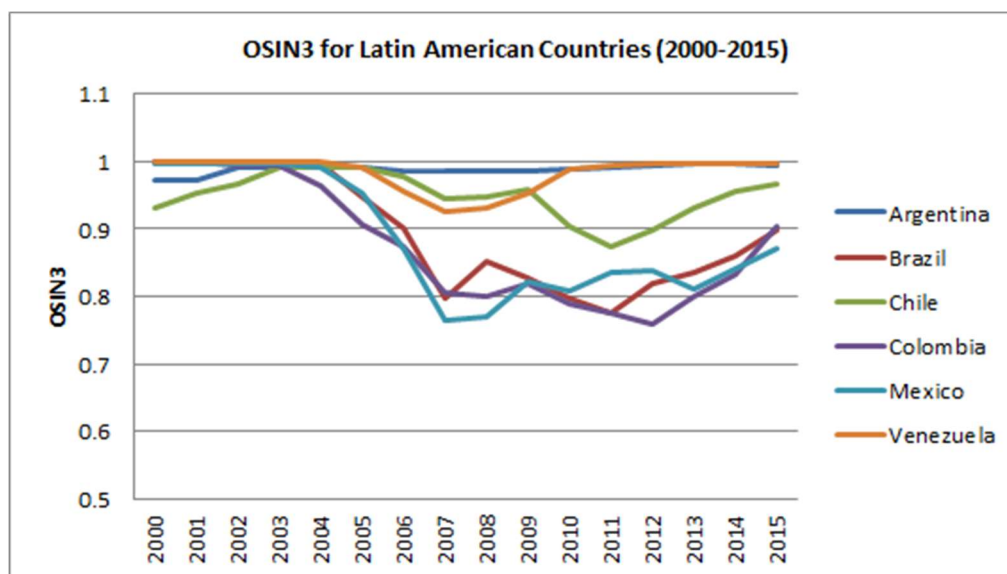
In order to calculate $OSIN3_i$, we collected data from the Bank of International Settlements (BIS). The period and the countries were chosen based on data consistency and availability (2000-2015). The database provides quarterly data, but as we are interested in annual analysis, the fourth quarter was used as the yearly value⁹. For the nominator, we took from BIS the total amount of outstanding debt in currency i in the international market. For the denominator, it was taken the total amount of debt securities issued by the nationals I denominated in all currencies. In Table 1, we have a summary of our findings. Also, we plot the index in Figure 1. Due to formatting purposes, the vertical axis starts on '0.5', but it is important to remember the OSIN3 index can vary between 0 and 1.

Table 2 – 'Original Sin' index for Latin American countries (OSIN3i)

Original Sin Index for Latin American Countries (OSIN3i)							
-	Argentina	Brazil	Chile	Colombia	Mexico	Venezuela	Mean
2000	0.973	1.000	0.930	1.000	0.997	1.000	0.983
2001	0.972	1.000	0.953	1.000	0.997	1.000	0.987
2002	0.992	1.000	0.967	0.994	0.996	1.000	0.991
2003	0.991	1.000	0.991	0.994	0.998	1.000	0.995
2004	0.992	0.996	0.991	0.963	0.991	1.000	0.989
2005	0.991	0.947	0.993	0.906	0.953	0.991	0.963
2006	0.987	0.902	0.977	0.873	0.871	0.956	0.928
2007	0.985	0.798	0.944	0.805	0.764	0.926	0.870
2008	0.986	0.852	0.948	0.799	0.769	0.932	0.881
2009	0.985	0.827	0.959	0.819	0.823	0.952	0.894
2010	0.988	0.798	0.903	0.790	0.810	0.989	0.880
2011	0.991	0.775	0.875	0.775	0.835	0.995	0.874
2012	0.994	0.818	0.898	0.759	0.838	0.996	0.884
2013	0.996	0.837	0.932	0.800	0.811	0.997	0.895
2014	0.997	0.860	0.956	0.833	0.840	0.997	0.914
2015	0.994	0.897	0.966	0.904	0.872	0.997	0.938
Mean	0.988	0.894	0.949	0.876	0.885	0.983	

Source: Authors' calculation based on BIS database.

⁹ In the appendix, all data are available for consultation.

Figure 1 – OSIN3 for Latin American countries (2000-2015)

Source: Authors' compilation based on BIS database.

Our findings explicitly show that all the countries analysed – although in different ways – are trapped in the ‘original sin’ condition. The average OSIN3 result for the region in 2015 is 0.990, clearly indicating the presence of ‘original sin’. More important, it is not only a current situation, but also a historical situation, since 2000 in our findings and much earlier (HAUSSMAN; PANIZZA, 2003). Interestingly, Mexico shows a better scenario in 2007 and 2008 (0.764 and 0.769 respectively), but it is followed by increases in the ‘original sin’ index. The same happens to Brazil and Colombia in 2011 (0.775 for both). These three countries show signs of “redemption” (Brazil 2007-2013; Colombia 2007-2013; and Mexico 2007-2014); in other words, the respective index result is lower or equal to 0.85 (HAUSMANN, 2010). Although, the “redemption” signs are reversed after the 2008 crisis, indicating it was more due to “abstinence” than a proper “redemption”.

When we take a closer look at each country’s index evolution, it becomes clearer how the index felt since 2001 for the majority of the cases. Only Argentina and Venezuela present higher levels of ‘original sin’ through the whole period of analysis. As said before, Brazil, Colombia and Mexico could reach better levels of ‘original sin’ by 2006, but in all three cases, this scenario was reverted to what looks like a new convergence of the index in high levels.

The reduction of the level of the index in the countries analysed (except for Argentina) could be explained by movements towards the reduction of ‘currency

mismatches', both for the accumulation of foreign exchange reserves matching their foreign debt and for the abstinence from acquiring and accumulating foreign debt (public and private). Ocampo (2009) shows how Latin American countries tried to strengthen their external balance sheet from adverse shocks by building up reserves and lowering its levels of debt securities. Brazil and Colombia, for example, went from having 18.1% and 78.8% of reserves as a percentage of liabilities in 2001 to 35.4% and 114.6% respectively. Furthermore, these two countries lowered significantly their liabilities to GDP ratio in their external balance sheets (34.9% to 28.9% for Brazil; 13.8% to 0.9% for Colombia). Both these actors heavily impacted on the OSIN3 index, after all, these countries showed the lowest level of 'original sin' according to our data. This argument reinforces the idea of "abstinence" rather than "redemption", as said before.

Also, Liberato, Holland and Vieira (2012) state this downward trend to the OSIN3 index might be due to higher levels of liquidity after the 2001 crisis in the U.S. The authors explain the phenomena relating it to new financial instruments created in response to the low levels of interest rates, both in the U.S. and globally. This scenario enabled emerging countries to issue debt in their own currencies in the international market, which moves through the logic of "money chasing yield".

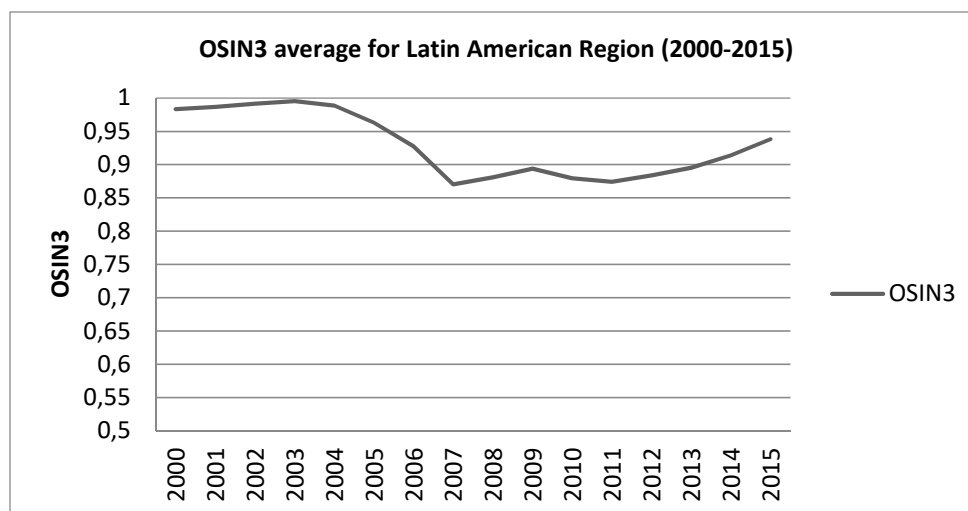
Looking deeply at Argentina, for being the most extreme case in our analysis, Ocampo (2009) also shows how the reverse situation contributed to a stagnation of the Argentinian index. Its liabilities to GDP ratio increased from -0.3% to 29% (2001-2007). The Argentinean case, in particular, due to the crisis that has hit the country in 2001-2002 (the exact period when the liabilities to GDP ratio presented the biggest increase: from -0.3% in 2001, 19.8% 2002 and 20.1% in 2003).

The crisis in Argentina ended up being more severe than the ones in Mexico (1994) and Brazil (1999), developing into banking, financial and currency crisis, which is associated in the literature (Prates 2002) to the strategy of stabilization adopted there. The Convertibility Law of 1991 established a fixed exchange rate regime with currency convertibility (i.e. a currency board), which authorized monetary and financial contracts in any foreign currency. The capital flows were in great part deposits of non-residents at local banks, which, in their turn, provided funding for the expansion of loans and also implied an increase of foreign exchange reserves and bank reserves. The capital flows management strategy

adopted was the non-sterilizing intervention, which resulted - according to Prates - in a high degree of receptivity of the economy to these flows. This framework culminated in a credit expansion (with the key role of the “argendollars”) that was backed up by the demand of firms and households. All these movements were not followed by a recovery of the stabilization of the Argentinean peso, but it rather deepened the dollarization, which has been even more encouraged in 1995 (after the Mexican crisis – the “Tequila effect”) and 1997, 1998, 1999 (after the Asian, Russian and Brazilian crises). Having to raise the interest rates and being hit by a reversal movement of the flows, Argentina faced the contraction of domestic liquidity, directly convertible into dollars, which resulted in a banking crisis. This development pointed out the lack of a lender-of-last-resort of the strong currency, exactly as described by Fritz and Metzger (2006) when a country unilaterally adopts a foreign currency. What postponed the collapse of the model was the fiscal imbalance through the external indebtedness of the public sector (which impacts the index). Different than in Brazil, the public debt was not related to the sterilization operations nor to the dollarization of public debt, as in Mexico.

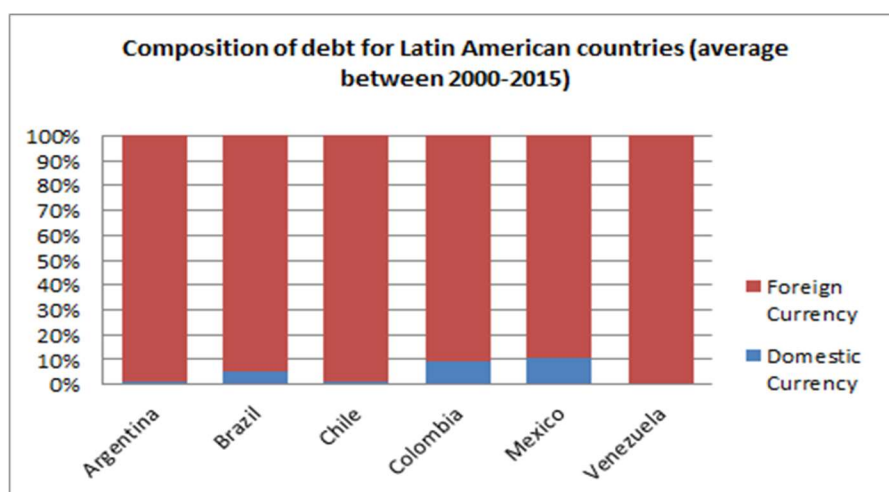
In order to look at the region as a whole, it was taken the simple mean of our calculation of OSIN3 and put into a graph. We can see how the index developed throughout time. The objective of this exercise is to compare our findings with Haussman and Panizza (2011) and check for new trends in the updated data.

We notice in Figure 2 that, prior to the crisis of 2008, countries were able to issue more debt in their own currency, making the index value, therefore, smaller. However, after the crisis this tendency is reverted, implicating in a higher proportion of debts being issued in foreign currency; on average, this has led to higher values of OSIN3. These results are similar to those presented by Haussman and Panizza (2011) and Liberato, Holland and Vieira (2012).

Figure 2 – OSIN3 average for Latin American region (2000-2015)

Source: Authors' compilation based on BIS database.

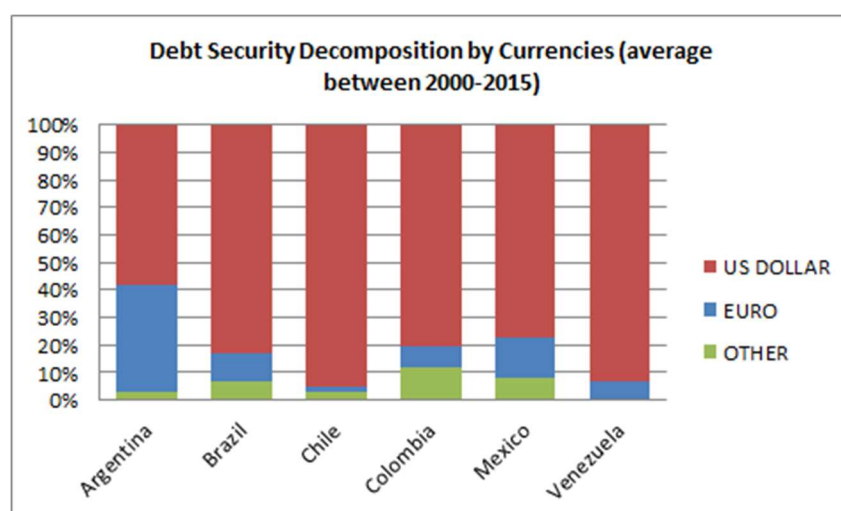
As a third exercise, we are interested in understanding the composition of debts securities in those countries. First, we divided the outstanding debt amount into two ones, denominated in domestic currency and denominated in foreign currency on average throughout our timeframe. As result, we can see that all analysed countries issue their respective debts mainly in foreign currency. In Figure 3 we can see that Argentina, Chile and Venezuela have an extreme scenario, with 99% of their securities in foreign currency, on average. Brazil, Colombia and Mexico present a slightly better scenario, issuing 95%, 91% and 89% of their respective debts in foreign currency. The result is shown in the graph below:

Figure 3 – Composition of debt for Latin American countries (average between 2000-2015)

Source: Authors' compilation based on BIS database.

In order to see more in-depth the composition of debt securities, we now want to investigate in which currencies these liabilities are denominated. For that, we took the outstanding amount of debts issued by country i and decomposed into three parts. The first is debt securities in U.S. dollars, the second debt in Euro and the third would be the residual (the difference between total debt and debt denominated in U.S dollar and Euro) representing debt securities issued in other currencies, including domestic. The reason for not showing a higher level of disaggregation in our data is due to the lack of information provided by our database. Just as the exercise above, it was taken the average composition between 2000 and 2015.

Figure 4 – Debt security decomposition by currencies



Source: Authors' compilation based on BIS database.

Both Figures 3 and 4 reaffirm our first finding, whereby Latin American countries mostly issue their debts in foreign currency, being, therefore, affected by 'original sin'. It is visually clear how the main countries of Latin America are deeply dependent on debt issued either in euros or in U.S. Furthermore, it is important to emphasize Argentina being a singularity by the high percentage of its debts issued in euros (39%), compared to other countries investigated. In addition, Venezuela also represents an extreme scenario with 93% of its debts securities in international markets being issued in U.S. dollars. It clearly emphasizes dollar dependence and 'original sin', representing harmful effects to the economy.

Considering the fact that the Latin American countries are far from reaching ‘redemption’ and that the falling trend of the OSIN3 in the period of 2000-2008 in the majority of countries analysed has already been partly reverted, in the next section we investigate possible alternatives for ‘redemption’.

4. Is there a way to halt ‘Original Sin’?

4.1 Unilateral strategy

Before presenting the alternatives proposed on the literature concerning the ‘redemption’ towards ‘original sin’, it is important to point out, once more, that the strategy adopted in most of emerging market countries has been the unilateral approach. This was especially true in Latin American countries, including the ones analysed in the empirical Section¹⁰ through the channel of accumulation of foreign reserves, which implies in some costs¹¹ on the one hand, but, on the other, it functions as a safeguard to the currency mismatch.

This unilateral strategy has been taken as a response to the lesson learned during the crises in Asia, Russia and Latin America and has, indeed, functioned in matters of reducing the exposure of the emerging market economies (in this case, the Latin American ones) in the course of the crisis of 2008. Nonetheless, this unilateral strategy is reversible and is rather a sign of ‘abstinence’ than ‘redemption’. We will expose in this chapter the alternatives that could answer the question of what could bring ‘redemption’ to the ‘original sin’ and in the end we will evaluate the alternatives presented having the global and regional political and economic scenarios as a background.

4.2 Bonds denominated in a basket of emerging market currencies

Panizza (2006) argues that one possible ‘redemption’ to the ‘original sin’ would be, as proposed in Eichengreen and Hausmann (2003), an international financial institution creating “markets for local currency emerging market debt by issuing bonds denominated in a basket of different emerging market currencies”. According to Panizza (2006), the international initiative would work as a hedge (swap for their currency obligation) for emerging market countries. Furthermore,

¹⁰ The unilateral strategy and respective reduction of the index is discussed on Section 3.2, being related to accumulation of foreign exchange reserves matching the foreign debt and to the abstinence from acquiring and accumulating foreign debt (public and private).

¹¹ The costs of the accumulation of foreign reserves matching foreign debt are discussed in Section 2.2.

this strategy would be in line with the finds exposed in Eichengreen, Hausmann and Panizza (2002), namely the fact that the issuers of bonds in exotic currencies are mostly non-residents (due to the worthiness given by the market to bonds that separate currency and credit risk). In more practical terms, Eichengreen et. al (2002) argue that the issuance of the bonds should be done in four main steps.

The first step would be the development of an appropriate currency basket index. According to the authors, this step would require the “creation of a unit of account that would include a well-diversified set of emerging-market and developing-country currencies.” This unit would then “represent claims on a more diversified economy”. Resulting in an increasing instability, given that while for some countries the shocks are positive, for others they are negative.

The second would be having the World Bank and other international financial institutions issuing debt denominated in the EM index. As already mentioned above, “the experience of countries escaping original sin has been led not by residents but by foreigners issuing in exotic currencies, the international financial institutions in particular” (EICHENGREEN; HAUSSMAN; PANIZZA, 2002). For this reason, the authors argue that “the World Bank and other international financial institutions should start issuing debt in the index” and their AAA rating would make them reach institutional investors.

The third would be having the G-10 countries issuing debt denominated in the index. If the first 2 steps succeed, then the high-grade non-residents would play the role of developing the market. At this point, the governments of the countries that issue the five major currencies could play a role (U.S., Euroland, Japan, the UK and Switzerland).

The fourth and last step would be further developing the EM index market. Such market would require the participation of institutional investors and mutual funds creating products that would add credit risk to the index.

4.3 Monetary cooperation (North-South and South-South cooperation)

Another alternative being debated in the literature is monetary cooperation. As explained in Panizza (2006), a monetary cooperation could be described as a “situation in which a set of countries follow similar monetary policies and hence do not allow large swings of their bilateral exchange reserves”, “fix their exchange reserves” or “adopt a single currency”. According to Panizza, there would be two

different options of monetary cooperation: the first would be the North-South-Cooperation (NSC henceforth) and, in this case a developing country would be integrated with a developed country; the second would be the South-South-Cooperation (SSC henceforth), between two developing countries.

However, as stated by Fritz and Metzger (2006), an NSC with a “bilateral entry to the US dollar or the eurozone does not seem feasible” for the developing (South) countries. Kregel (2006) highlights one good example of NSC, the ‘Chiang Mai Initiative’, launched by the ASEAN+3 in 2000 as an expansion of the ASEAN Swap arrangement. But for the Latin American countries, the NSC keeps being less likely to happen, especially considering that the interaction that the Asian countries have with Japan and other huge players as China and Korea does not have a counterpart in Latin America. This posed the authors to argue that the SSC would be the only viable alternative.

The SSC could result, according to Fritz and Metzger (2006) in “a collective protection against domestic pressures through a regional exchange rate arrangement”. However, according to Panizza (2006), the viability and effectiveness of this type of arrangement would depend on the size of the country, as already mentioned in Section 2.3, being the only variable robustly related to ‘original sin’. As a result, this would imply that “international investors might be interested in holding assets denominated in a currency issued by the monetary union that encompasses large and well-diversified economies”, that’s why monetary unions among larger countries might have a bigger chance of being part of the international portfolio.

Focusing on the Latin American perspective, Kregel (2006) stresses the fact that the Mercosur could be one example of regional coordination in order to reduce dependence on external borrowing, and thus, in our case, the ‘original sin’. Nevertheless, the agreement never crossed the level of setting a common external tariff and, as reminded by the author, has not reached any “means of monetary cooperation or coordination, although exchange rate volatility between the two major member states has been a continued source of friction since its creation in 1991” (Kregel, 2006, :46).

Touching upon these two major economies of the South American agreement, Carvalho (2006) comments the proposal of setting a monetary union

between Argentina and Brazil¹², that has been first raised by the former Argentinean president Carlos Menem in 1999. According to Carvalho (2006), a scheme with fixed exchange rates (or some kind of monetary coordination) could contribute to reduce price uncertainty and stimulate trade. The author argues in favour of “a stronger effort at macroeconomic policy coordination” together with the adoption of “common protective devices” (i.e. capital controls) in order to minimize external vulnerability related to the capital flows and to strengthen both countries’ economy. However, going to the direction of a common currency would be still an uncertain path. If we consider the Eurozone experience and all the political and economic constraints involving such an ambitious project and we compare with the little coordination reached so far by the Mercosur, the currency union becomes an even further option.

4.4 Assessing the alternatives in the current political and economic scenarios

The international initiative would be very effective in terms of ‘redemption’ of the ‘original sin’, being consistent with the findings in the literature. As stated by Eichengreen, Hausmann and Panizza (2002), the international initiative would incorporate a large group of countries representing over 90% of the population and the GDP of the developing world through the new EM index. Since the size is the only variable robustly correlated with the ‘original sin’ (PANIZZA, 2006), this broad approach would be one important strategy to be considered. Moreover, the EM index would meet the existing demand of non-residents for bonds emitted in exotic currencies. The South-South cooperation, especially the one involving Argentina and Brazil, could also fit the argument of country size and somehow the demand of non-residents.

Nonetheless, the current state of affairs leads us to doubt the feasibility of the alternatives. In the international scenario, we can highlight the weak economic recovery of the developed countries and the political turmoil involving the elections of nationalist conservative parties in the political sphere that push even further away from any project of integration and coordination. The international

¹² The monetary union between Argentina and Brazil has been supported, in the Brazilian case, by part of the conservative economists as a matter of imposing fiscal and monetary constraints (parallel to the ones of the Maastricht Treaty). Cardim de Carvalho highlights that, in this case, importance was given to the independence of the Central Bank and to the imposition of limits to fiscal deficits.

initiative, on the one hand, would require the commitment of international financial institutions, of the G-10 and so on, what is hardly achievable in the current context. The SSC in the Mercosur, on the other hand, would require a more bidding group. At the moment, the integration process in the block suffers even a step back, with the temporary exclusion of Venezuela. Furthermore, the big players of the block, Brazil and Argentina (that could also set some kind of coordination among themselves) face turbulence, both challenged by high inflation and rather low growth or even deflation. In the Brazilian case, a complex political and economic crisis which involved the impeachment of the former President Dilma Rousseff gave rise for the extreme-right Jair Bolsonaro's election, who promises a great distance from the Latin American block. As for Argentina, recently the country has been suffering from the deterioration of Macri's government and reputation alongside the turbulent economic scenario. Because of the current status of both countries, it makes the cooperation dream away from becoming true.

5. Conclusion

In this paper, we have discussed 'original sin' in Latin America firstly from a theoretical perspective and then by measuring the phenomenon with the most common indicator (OSIN3). In the theoretical section, we described the two dimensions of 'original sin' - domestic and international - and we have opted to focus on the latter. From the empirical analysis conducted on the selected Latin American countries (Argentina, Brazil, Chile, Colombia, Mexico and Venezuela), we could verify, through the estimation of the index OSIN3, how countries were affected by 'original sin' in the last 15 years. We have noticed possible signs of 'redemption' for some countries, while others had no signs of improvement whatsoever (Argentina for example). However, the situation is reversed, indicating that it was not 'redemption', but countries pursued abstaining themselves in the ICM while building up reserves in a favourable economic scenario. We reaffirm the dependency of the countries analysed to debts in foreign currencies by looking at the composition of debts securities issued.

Since international causes play a key role in Latin America, only measures that aim to modify the international monetary and financial system towards better coordination could be credible alternatives. The international initiative would be very effective in terms of 'redemption', being consistent with the findings in the

literature, but its feasibility can be questioned; it requires indeed the commitment of international financial institutions, of the G-10 and so on.

Other approaches such as NSC and SSC (more specifically within the Mercosur or even a monetary arrangement between Argentina and Brazil) ought to be considered. However, they are also subjected to feasibility constraints, especially regarding the current state of affairs, both internationally, within the Mercosur and domestically. Ultimately, a profound reform of the international monetary system seems to be needed. In this regard, the role played recently by the BRICS with the creation of the New Development Bank could be seen as a step forward in such a direction, as an alternative to the post-Bretton Woods institutions.

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Appendix

Table 1 – Debt Securities issued by Argentina and debt securities issued in Argentinian Pesos from 2000-2015

SECURITIES ISSUED BY ARGENTINA			TOTAL SECURITIES ISSUED IN ARGENTINIAN PESOS		
Measure	C:Gross issues	I:Amounts outstanding	Measure	C:Gross issues	I:Amounts outstanding
2000-Q4	448	87,053	2000-Q4	102	2,349
2001-Q4	1,391	90,161	2001-Q4	0	2,528
2002-Q4	155	91,233	2002-Q4	0	761
2003-Q4	0	94,799	2003-Q4	0	859
2004-Q4	329	93,175	2004-Q4	0	760
2005-Q4	440	57,743	2005-Q4	0	545
2006-Q4	1,085	60,769	2006-Q4	1	792
2007-Q4	695	63,371	2007-Q4	0	924
2008-Q4	15	51,313	2008-Q4	0	704
2009-Q4	500	50,527	2009-Q4	0	745
2010-Q4	1,906	51,041	2010-Q4	0	623
2011-Q4	85	51,136	2011-Q4	44	478
2012-Q4	0	50,774	2012-Q4	0	313
2013-Q4	675	52,538	2013-Q4	0	199
2014-Q4	121	50,145	2014-Q4	0	129
2015-Q4	310	49,572	2015-Q4	95	306

Table 2 – Argentina’s debt securities decomposed into Euro and U.S dollar from 2000-2015

Measure	EURO		US DOLLAR		Composition		
	C:Gross issues	I:Amounts outstanding	C:Gross issues	I:Amounts outstanding	EURO	US DOLLARS	OTHER
2000-Q4	196	26,113	250	54,538	30%	63%	7%
2001-Q4	30	23,646	1361	61,018	26%	68%	6%
2002-Q4	0	27,678	155	59,225	30%	65%	5%
2003-Q4	0	32,894	0	57,057	35%	60%	5%
2004-Q4	14	34,934	315	53,323	37%	57%	5%
2005-Q4	0	23,482	440	33,198	41%	57%	2%
2006-Q4	0	25,508	1085	34,205	42%	56%	2%
2007-Q4	0	27,498	695	34,888	43%	55%	2%
2008-Q4	0	23,792	15	26,736	46%	52%	2%
2009-Q4	0	23,979	500	25,664	47%	51%	2%
2010-Q4	0	21,760	1896	28,343	43%	56%	2%
2011-Q4	0	20,642	85	29,354	40%	57%	2%
2012-Q4	0	21,049	0	28,598	41%	56%	2%
2013-Q4	0	21,823	675	29,691	42%	57%	2%
2014-Q4	0	19,212	121	30,031	38%	60%	2%
2015-Q4	0	17,228	310	31,408	35%	63%	2%
				MEAN	39%	58%	3%

Table 3 – Argentina’s debt securities divided by domestic and foreign currency from 2000-2015 (Total and percentage)

Measure	A:All currencies	D:Domestic currency	F:Foreign currency	Domestic %	Foreign %
2000-Q4	87053	2012	85041	2%	98%
2001-Q4	90161	2153	88007	2%	98%
2002-Q4	91233	648	90585	1%	99%
2003-Q4	94799	730	94069	1%	99%
2004-Q4	93175	633	92542	1%	99%
2005-Q4	57743	444	57299	1%	99%
2006-Q4	60769	440	60329	1%	99%
2007-Q4	63371	407	62964	1%	99%
2008-Q4	51313	210	51102	0%	100%
2009-Q4	50527	297	50231	1%	99%
2010-Q4	51041	293	50747	1%	99%
2011-Q4	51136	272	50865	1%	99%
2012-Q4	50774	157	50617	0%	100%
2013-Q4	52538	120	52418	0%	100%
2014-Q4	50145	423	49721	1%	99%
2015-Q4	49572	543	49029	1%	99%

Table 4 – Debt Securities issued by Brazil and debt securities issued in Brazilian Real from 2000-2015

SECURITIES ISSUED BY BRAZIL			TOTAL SECURITIES ISSUED IN REAL		
Measure	C:Gross issues	I:Amounts outstanding	Measure	C:Gross issues	I:Amounts outstanding
2000-Q4	2,558	87,253	2000-Q4	0	15
2001-Q4	2,726	82,388	2001-Q4	0	0
2002-Q4	2,549	89,823	2002-Q4	0	0
2003-Q4	6,647	105,554	2003-Q4	0	0
2004-Q4	3,254	106,638	2004-Q4	269	414
2005-Q4	5,667	108,772	2005-Q4	1,139	5,768
2006-Q4	9,028	111,735	2006-Q4	2,144	10,954
2007-Q4	5,894	120,796	2007-Q4	1,537	24,398
2008-Q4	2,017	119,463	2008-Q4	515	17,649
2009-Q4	15,327	141,774	2009-Q4	2,053	24,586
2010-Q4	10,824	175,215	2010-Q4	5,715	35,390
2011-Q4	12,065	207,374	2011-Q4	1,605	46,611
2012-Q4	21,910	263,731	2012-Q4	3,557	47,900
2013-Q4	15,265	294,334	2013-Q4	2,206	48,033
2014-Q4	8,353	321,362	2014-Q4	1,860	45,091
2015-Q4	2,366	293,158	2015-Q4	2,475	30,050

Table 5 – Brazil’s debt securities decomposed into Euro and U.S dollar from 2000-2015

Measure	EURO		US DOLLARS		EURO	US DOLLARS	OTHER
	C:Gross issues	I:Amounts outstanding	C:Gross issues	I:Amounts outstanding			
2000-Q4	735	11,031	1183	72,974	13%	84%	4%
2001-Q4	183	11,918	2495	65,195	14%	79%	6%
2002-Q4	1,079	16,340	1470	67,650	18%	75%	6%
2003-Q4	19	17,816	6399	83,753	17%	79%	4%
2004-Q4	2	19,306	3110	83,527	18%	78%	4%
2005-Q4	132	15,125	5006	87,356	14%	80%	6%
2006-Q4	4	15,228	8317	88,257	14%	79%	7%
2007-Q4	18	10,280	5483	95,481	9%	79%	12%
2008-Q4	40	9,297	1937	99,353	8%	83%	9%
2009-Q4	99	7,686	14996	120,353	5%	85%	10%
2010-Q4	1,018	9,445	8261	151,304	5%	86%	8%
2011-Q4	2,523	10,932	8435	179,272	5%	86%	8%
2012-Q4	2,712	13,544	17920	231,930	5%	88%	7%
2013-Q4	376	16,416	14569	260,786	6%	89%	6%
2014-Q4	163	21,011	7787	282,930	7%	88%	5%
2015-Q4	58	17,606	1947	262,387	6%	90%	4%
				MEAN	10%	83%	7%

Table 6 – Brazil’s debt securities divided by domestic and foreign currency from 2000-2015 (Total and percentage)

Measure	A:All currencies	D:Domestic currency	F:Foreign currency	Domestic %	Foreign %
2000-Q4	87253	1196	86057	1%	99%
2001-Q4	82388	1164	81224	1%	99%
2002-Q4	89823	1535	88288	2%	98%
2003-Q4	105554	2077	103477	2%	98%
2004-Q4	106638	2454	104184	2%	98%
2005-Q4	108772	3554	105218	3%	97%
2006-Q4	111735	5476	106259	5%	95%
2007-Q4	120796	10125	110671	8%	92%
2008-Q4	119463	8085	111378	7%	93%
2009-Q4	141774	10818	130956	8%	92%
2010-Q4	175215	11134	164080	6%	94%
2011-Q4	207374	12943	194431	6%	94%
2012-Q4	263731	16527	247204	6%	94%
2013-Q4	294334	15498	278836	5%	95%
2014-Q4	321362	23758	297604	7%	93%
2015-Q4	293158	19433	273725	7%	93%
			MEAN	5%	95%

Table 7 – Debt Securities issued by Chile and debt securities issued in Chilean Pesos from 2000-2015

SECURITIES ISSUED BY CHILE			TOTAL SECURITIES ISSUED IN CHILEAN PESOS		
Measure	C:Gross issues	I:Amounts outstanding	Measure	C:Gross issues	I:Amounts outstanding
2000-Q4	0	5,313	2001-Q1	142	370
2001-Q4	650	6,989	2002-Q1	0	330
2002-Q4	825	9,026	2003-Q1	0	301
2003-Q4	500	9,948	2004-Q1	0	91
2004-Q4	500	10,660	2005-Q1	0	96
2005-Q4	0	10,707	2006-Q1	8	79
2006-Q4	500	10,790	2007-Q1	0	245
2007-Q4	65	10,322	2008-Q1	54	581
2008-Q4	0	10,024	2009-Q1	37	517
2009-Q4	1,051	11,190	2010-Q1	0	464
2010-Q4	1,500	15,843	2011-Q1	31	1,529
2011-Q4	1,650	20,161	2012-Q1	188	2,521
2012-Q4	3,755	25,861	2013-Q1	595	2,631
2013-Q4	4,244	35,553	2014-Q1	212	2,434
2014-Q4	4,909	45,977	2015-Q1	52	2,012
2015-Q4	180	52,859	2016-Q1	5	1,792

Table 8 – Chile’s debt securities decomposed into Euro and U.S dollar from 2000-2015

Measure	EURO		US DOLLARS		Composition		
	C:Gross issues	I:Amounts outstanding	C:Gross issues	I:Amounts outstanding	EURO	US DOLLARS	OTHER
2000-Q4	0	288	0	5,025	5%	95%	0%
2001-Q4	0	273	650	6,716	4%	96%	0%
2002-Q4	0	524	825	8,502	6%	94%	0%
2003-Q4	0	631	500	9,317	6%	94%	0%
2004-Q4	0	409	500	10,252	4%	96%	0%
2005-Q4	0	0	0	10,707	0%	100%	0%
2006-Q4	0	0	500	10,790	0%	100%	0%
2007-Q4	0	0	65	10,322	0%	100%	0%
2008-Q4	0	0	0	9,900	0%	99%	1%
2009-Q4	0	0	1000	11,001	0%	98%	2%
2010-Q4	0	0	1500	14,961	0%	94%	6%
2011-Q4	0	0	1650	18,984	0%	94%	6%
2012-Q4	0	0	3500	24,394	0%	94%	6%
2013-Q4	0	0	3425	31,962	0%	90%	10%
2014-Q4	995	1,700	3615	40,146	4%	87%	9%
2015-Q4	51	3,146	50	45,194	6%	85%	9%
				MEAN	2%	95%	3%

Table 9 – Chile’s debt securities divided by domestic and foreign currency from 2000-2015 (Total and percentage)

Measure	A:All currencies	D:Domestic currency	F:Foreign currency	Domestic %	Foreign %
Quarter					
2000-Q4	5313	0	5313	0%	100%
2001-Q4	6989	0	6989	0%	100%
2002-Q4	9026	0	9026	0%	100%
2003-Q4	9948	0	9948	0%	100%
2004-Q4	10660	0	10660	0%	100%
2005-Q4	10707	0	10707	0%	100%
2006-Q4	10790	0	10790	0%	100%
2007-Q4	10322	0	10322	0%	100%
2008-Q4	10024	0	10024	0%	100%
2009-Q4	11190	0	11190	0%	100%
2010-Q4	15843	581	15262	4%	96%
2011-Q4	20161	833	19328	4%	96%
2012-Q4	25861	908	24953	4%	96%
2013-Q4	35553	1010	34543	3%	97%
2014-Q4	45977	1107	44870	2%	98%
2015-Q4	52859	984	51875	1%	99%

Table 10 – Debt Securities issued by Colombia and debt securities issued in Colombian Pesos from 2000-2015

SECURITIES ISSUED BY COLOMBIA			TOTAL SECURITIES ISSUED IN COLOMBIAN PESOS		
Measure	C:Gross issues	I:Amounts outstanding	Measure	C:Gross issues	I:Amounts outstanding
2000-Q4	348	8,692	2000-Q4		1
2001-Q4	1,000	11,839	2001-Q4		1
2002-Q4	500	12,243	2002-Q4	0	79
2003-Q4	0	12,642	2003-Q4	0	82
2004-Q4	544	13,367	2004-Q4	374	490
2005-Q4	843	13,790	2005-Q4	320	1,297
2006-Q4	468	15,665	2006-Q4	0	1,994
2007-Q4	1,460	18,821	2007-Q4	214	3,661
2008-Q4	0	17,918	2008-Q4	150	3,604
2009-Q4	1,903	23,155	2009-Q4	47	4,186
2010-Q4	21	24,434	2010-Q4	287	5,135
2011-Q4	1,512	28,969	2011-Q4	37	6,507
2012-Q4	33	33,408	2012-Q4	59	8,038
2013-Q4	1,758	41,262	2013-Q4	91	8,251
2014-Q4	1,076	46,711	2014-Q4	182	7,813
2015-Q4	30	50,845	2015-Q4	138	4,889

Table 11 – Colombia’s debt securities decomposed into Euro and U.S dollar from 2000-2015

Measure	EURO		US DOLLARS		Composition		
	C:Gross issues	I:Amounts outstanding	C:Gross issues	I:Amounts outstanding	EURO	US DOLLARS	OTHER
2000-Q4	348	1,254	0	6,819	14%	78%	7%
2001-Q4	0	2,165	1000	9,059	18%	77%	5%
2002-Q4	0	2,360	500	9,305	19%	76%	5%
2003-Q4	0	2,273	0	10,003	18%	79%	3%
2004-Q4	0	2,452	170	10,135	18%	76%	6%
2005-Q4	0	1,416	400	10,884	10%	79%	11%
2006-Q4	0	1,580	468	11,979	10%	76%	13%
2007-Q4	0	1,767	1460	13,472	9%	72%	19%
2008-Q4	0	557	0	14,233	3%	79%	17%
2009-Q4	0	576	1400	18,748	2%	81%	17%
2010-Q4	0	534	21	19,276	2%	79%	19%
2011-Q4	0	0	1512	23,571	0%	81%	19%
2012-Q4	0	0	33	27,356	0%	82%	18%
2013-Q4	0	0	1758	35,461	0%	86%	14%
2014-Q4	0	0	1076	41,221	0%	88%	12%
2015-Q4	0	0	30	47,403	0%	93%	7%
				MEAN	8%	80%	12%

Table 12 – Colombia’s debt securities divided by domestic and foreign currency from 2000-2015 (Total and percentage)

Measure	A:All currencies	D:Domestic currency	F:Foreign currency	Domestic %	Foreign %
2000-Q4	8692		8692	0%	100%
2001-Q4	11839		11839	0%	100%
2002-Q4	12243		12243	0%	100%
2003-Q4	12642		12642	0%	100%
2004-Q4	13367	396	12972	3%	97%
2005-Q4	13790	1127	12663	8%	92%
2006-Q4	15665	1720	13945	11%	89%
2007-Q4	18821	3185	15636	17%	83%
2008-Q4	17918	2880	15038	16%	84%
2009-Q4	23155	3097	20058	13%	87%
2010-Q4	24434	3795	20639	16%	84%
2011-Q4	28969	4530	24439	16%	84%
2012-Q4	33408	5532	27876	17%	83%
2013-Q4	41262	5374	35889	13%	87%
2014-Q4	46711	5117	41594	11%	89%
2015-Q4	50845	3068	47777	9%	91%

Table 13 – Debt Securities issued by Mexico and debt securities issued in Mexican Pesos from 2000-2015

SECURITIES ISSUED BY MEXICO			TOTAL SECURITIES ISSUED IN MEXICAN PESOS		
Measure	C:Gross issues	I:Amounts outstanding	Measure	C:Gross issues	I:Amounts outstanding
2000-Q4	2,393	85,533	2000-Q4	0	220
2001-Q4	2,142	81,030	2001-Q4	0	230
2002-Q4	2,263	80,591	2002-Q4	195	289
2003-Q4	3,448	71,899	2003-Q4	0	178
2004-Q4	2,632	79,623	2004-Q4	2	702
2005-Q4	1,899	82,648	2005-Q4	1,875	3,870
2006-Q4	3,896	84,724	2006-Q4	3,609	10,927
2007-Q4	4,048	88,886	2007-Q4	2,345	20,949
2008-Q4	2,803	82,274	2008-Q4	549	19,024
2009-Q4	9,603	93,011	2009-Q4	771	16,489
2010-Q4	3,899	102,203	2010-Q4	596	19,465
2011-Q4	5,772	119,193	2011-Q4	1,917	19,622
2012-Q4	8,922	144,940	2012-Q4	3,327	23,428
2013-Q4	13,829	173,263	2013-Q4	1,620	32,692
2014-Q4	9,385	192,850	2014-Q4	440	30,862
2015-Q4	4,716	209,041	2015-Q4	266	26,822

Table 14 – Mexico’s debt securities decomposed into Euro and U.S dollar from 2000-2015

Measure	EURO		US DOLLARS		Composition		
	C:Gross issues	I:Amounts outstanding	C:Gross issues	I:Amounts outstanding	EURO	US DOLLARS	OTHER
2000-Q4	7	10,495	2386	69,113	12%	81%	7%
2001-Q4	9	9,694	2134	66,042	12%	82%	7%
2002-Q4	0	10,727	2068	66,242	13%	82%	4%
2003-Q4	0	11,380	2936	56,812	16%	79%	5%
2004-Q4	971	12,265	1662	63,771	15%	80%	5%
2005-Q4	54	12,757	1380	66,634	15%	81%	4%
2006-Q4	0	13,455	3158	67,567	16%	80%	4%
2007-Q4	70	15,824	3906	67,953	18%	76%	6%
2008-Q4	79	14,338	2597	63,504	17%	77%	5%
2009-Q4	2,070	16,049	5202	69,258	17%	74%	8%
2010-Q4	88	14,229	1962	75,450	14%	74%	12%
2011-Q4	1,389	14,989	2174	89,672	13%	75%	12%
2012-Q4	0	16,653	6993	108,883	11%	75%	13%
2013-Q4	3,522	23,892	9662	126,278	14%	73%	13%
2014-Q4	37	23,934	9346	144,295	12%	75%	13%
2015-Q4	11	32,238	4115	152,605	15%	73%	12%
				MEAN	15%	77%	8%

Table 15 – Mexico’s debt securities divided by domestic and foreign currency from 2000-2015 (Total and percentage)

Measure	A:All currencies	D:Domestic currency	F:Foreign currency	Domestic %	Foreign %
Quarter					
2000-Q4	85533	2043	83489	2%	98%
2001-Q4	81030	2206	78824	3%	97%
2002-Q4	80591	5169	75421	6%	94%
2003-Q4	71899	6426	65472	9%	91%
2004-Q4	79623	9685	69937	12%	88%
2005-Q4	82648	11195	71453	14%	86%
2006-Q4	84724	11558	73166	14%	86%
2007-Q4	88886	13842	75045	16%	84%
2008-Q4	82274	14008	68266	17%	83%
2009-Q4	93011	13455	79556	14%	86%
2010-Q4	102203	11948	90255	12%	88%
2011-Q4	119193	12591	106602	11%	89%
2012-Q4	144940	15907	129033	11%	89%
2013-Q4	173263	18398	154865	11%	89%
2014-Q4	192850	18486	174363	10%	90%
2015-Q4	209041	21452	187589	11%	89%

Table 16 – Debt Securities issued by Venezuela and debt securities issued in Bolivar Fuerte from 2000-2015

SECURITIES ISSUED BY VENEZUELA			TOTAL SECURITIES ISSUED IN BOLIVAR FUERTE		
Measure	C:Gross issues	I:Amounts outstanding	Measure	C:Gross issues	I:Amounts outstanding
2000-Q4	0	19,167	2000-Q4	0	0
2001-Q4	724	19,998	2001-Q4	0	0
2002-Q4	0	19,169	2002-Q4	0	0
2003-Q4	1,470	19,821	2003-Q4	0	0
2004-Q4	2,000	21,020	2004-Q4	0	0
2005-Q4	3,000	25,400	2005-Q4	220	220
2006-Q4	1	22,217	2006-Q4	492	977
2007-Q4	1,250	30,303	2007-Q4	786	2,250
2008-Q4	0	32,754	2008-Q4	0	2,215
2009-Q4	8,148	42,399	2009-Q4	0	2,033
2010-Q4	3,216	47,800	2010-Q4	48	530
2011-Q4	5,394	56,581	2011-Q4	0	271
2012-Q4	0	56,433	2012-Q4	0	236
2013-Q4	0	55,299	2013-Q4	0	161
2014-Q4	0	52,257	2014-Q4	0	161
2015-Q4	0	49,743	2015-Q4	0	161

Table 17 – Venezuela’s debt securities decomposed into Euro and U.S dollar from 2000-2015

Measure	EURO		US DOLLARS		Composition		
	C:Gross issues	I:Amounts outstanding	C:Gross issues	I:Amounts outstanding	EURO	US DOLLARS	OTHER
2000-Q4	0	1,046	0	18,121	5%	95%	0%
2001-Q4	224	2,049	500	17,813	10%	89%	1%
2002-Q4	0	2,438	0	16,582	13%	87%	1%
2003-Q4	0	2,091	1470	17,563	11%	89%	1%
2004-Q4	0	2,102	2000	18,746	10%	89%	1%
2005-Q4	0	2,410	3000	22,838	9%	90%	1%
2006-Q4	0	2,689	1	19,377	12%	87%	1%
2007-Q4	0	3,006	1250	27,140	10%	90%	1%
2008-Q4	0	1,740	0	31,014	5%	95%	0%
2009-Q4	0	1,801	8148	40,599	4%	96%	0%
2010-Q4	0	1,670	3216	46,130	3%	97%	0%
2011-Q4	0	1,294	5394	55,287	2%	98%	0%
2012-Q4	0	1,319	0	55,113	2%	98%	0%
2013-Q4	0	1,379	0	53,919	2%	98%	0%
2014-Q4	0	1,214	0	51,043	2%	98%	0%
2015-Q4	0	0	0	49,743	0%	100%	0%
				MEAN	6%	93%	0%

Table 18 – Venezuela’s debt securities divided by domestic and foreign currency from 2000-2015 (Total and percentage)

Measure	A:All currencies	D:Domestic currency	F:Foreign currency	Domestic %	Foreign %
2000-Q4	19167	500	18667	3%	97%
2001-Q4	19998	500	19498	3%	97%
2002-Q4	19169	500	18669	3%	97%
2003-Q4	19821	0	19821	0%	100%
2004-Q4	21020	0	21020	0%	100%
2005-Q4	25400	0	25400	0%	100%
2006-Q4	22217	0	22217	0%	100%
2007-Q4	30303	0	30303	0%	100%
2008-Q4	32754	0	32754	0%	100%
2009-Q4	42399	0	42399	0%	100%
2010-Q4	47800	300	47500	1%	99%
2011-Q4	56581	300	56281	1%	99%
2012-Q4	56433	300	56133	1%	99%
2013-Q4	55299	300	54999	1%	99%
2014-Q4	52257	650	51607	1%	99%
2015-Q4	49743	650	49093	1%	99%