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Managing Brazil's Public Debt under the Original-Sin Hypothesis

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ABSTRACT: Since public bond debt became a central element in the dynamic of public sector indebtedness in Brazil, its composition has played an important role in the conduction of macroeconomic policy. This article discusses the original-sin hypothesis formulated by Eichengreen and Hausman (1999) to evaluate the composition of Brazilian federal public debt. According to this hypothesis, the choice between indexation and duration takes the form of a trade-off, since the long-term, fixed-rate debt alternative that characterizes developed countries is not available to emerging countries. We present empirical evidence for Brazil, observing the 40-year evolution of federal bond debt since the creation of that market, which took place through the introduction of the instrument known as the ORTN in 1964.

Key-words: managing, public bond debt

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I. BIRTH AND CONSOLIDATION: A REVIEW OF THE FORTY-YEAR EVOLUTION OF THE BRAZILIAN INTERNAL PUBLIC BOND DEBT (1964-2004)

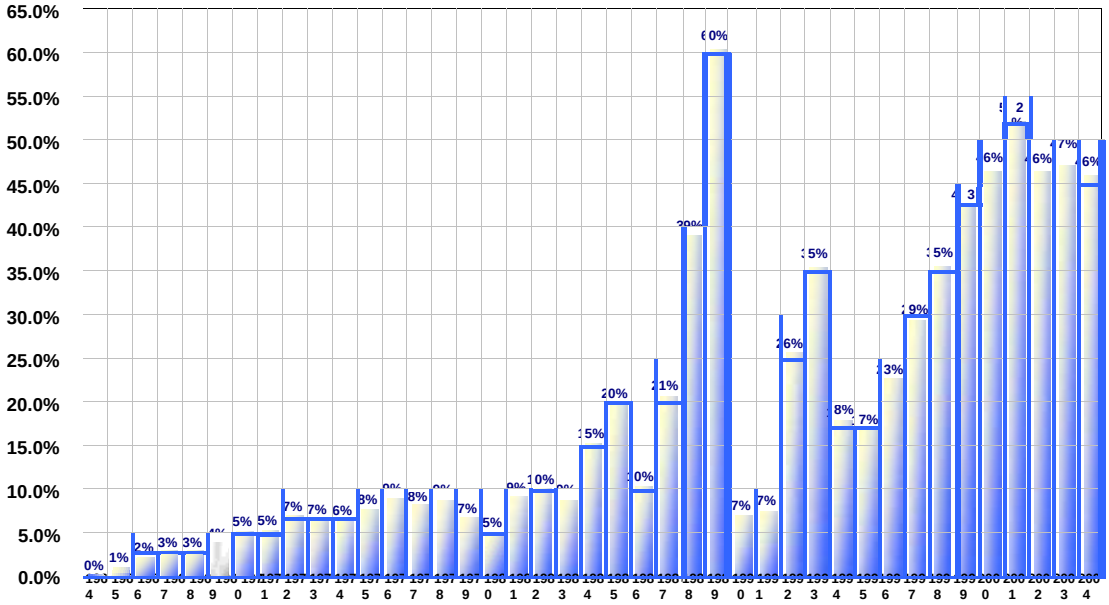
The impulse for the development of a public bond market in Brazil came with Law 4357, enacted on July 16, 1964, which created an instrument called *Obrigações Reajustáveis do Tesouro Nacional*, or ORTN ("Adjustable National Treasury Bonds") and institutionalized indexing (dubbed *correção monetária*, or "monetary correction"). Before creation of the ORTN, there was practically no market for public bonds, due to their low liquidity and small yield, the latter held in check by the longstanding legal prohibition on usury. This became untenable in an environment of rising inflation. Public securities until then consisted of a set of nominative and non-standardized instruments that had low credibility and attractiveness, formed mostly of papers issued for diverse purposes, mainly carried compulsorily by banks.

The introduction of the ORTN provided the market with a new mechanism that protected the acquirer from monetary depreciation. The ORTN was initially created to finance expenses of the National Treasury (hence the name). It was a long-term public bond (3 to 20 years), whose principal was adjusted quarterly by an inflation index [Note: According to the BNDES site, the ORTN was "adjusted on a monthly basis depending on the moving average of the wholesale price index"], placed in the market through auctions held by the Brazilian Central Bank (BCB), and exclusively marketed to financial institutions. The objective was first to create conditions to expand the market for federal bonds as an alternative to finance public deficits, and gradually to promote the development of open market operations.

Hence, aiming to stimulate the emergence of a market for these papers, even though this process was still embryonic, the government resorted to some mechanisms to encourage their acquisition, such as the possibility of using the ORTN to pay federal taxes and to compose part of the reserve requirements of commercial banks with the BCB, among other measures. Later, another method used by the government to spur acquisition of these bonds was their issuance with a substantial part of their maturity already elapsed. In other words, bonds formally maturing in one year, for example, were issued with only 15 of 30 days remaining before falling due, thus reducing the effective maturity and making them more attractive to the market. In this way, the ORTN gradually gained public confidence, both because the indexing mechanism made them attractive in an uncertain inflationary environment and because there were still few alternatives in the market.

The internal public bond debt in the first years of the ORTN grew at a fast clip, due not only to the very small starting base, but also to the success of the government mechanisms to attract demand during the period. Figure 1 shows the evolution of the federal internal bond debt.

Figure 1
Evolution of Federal Internal Bond Debt at a Percentage of GDP (1964-2004)



Source: Brazilian Central Bank, IBGE, prepared by the authors.

Even with increasing public acceptance, open market operations did not manage to take off, since the ORTN was still essentially a long-term instrument. Nevertheless, during the 1960s the ORTN was the only instrument of both monetary and fiscal policy. There was hence a need to create a shorter-term federal bond with greater liquidity that was more suitable as a monetary policy instrument. This objective was met on January 20, 1970, through Decree-Law 1079, with the creation of the *Letras do Tesouro Nacional*, or LTN ("National Treasury Notes"). The LTN were fixed-rate bonds with a shorter maturity, initially set at 35 days, and then 91 days (December 1970), 182 days (March 1972) and 365 days (January 1973). The initial launch of the LTN, which occurred only in August 1970, sought better to meet the investment needs of the public.

According to Marinho (1986), the LTN were created to provide the market with bonds having simpler characteristics and able to give more flexibility and speed to open market operations, which could not be achieved by the ORTN, since these bonds were more appropriate to capture medium- and long-term savings. The idea, then, was to create better conditions of execute monetary policy, permitting the government to effectively count on another monetary policy instrument.

Acquisition of the LTN was stimulated by permission for commercial banks to invest the remainders of their demand and term deposits in these notes, and also to use them to pay federal taxes[1]. These demand incentives, along with the shorter terms, over the next few years caused a sharp expansion of this instrument's share of the public bond debt, reaching nearly 40% in 1973. Besides this, in the early 1970s the greater market demand for these papers permitted the government, for the first time, to capture through bond issuance more funds than necessary to finance the federal public deficit.

[1] Note in this respect that the introduction of the LTN followed the same strategy employed with the ORTN.

In a context of accelerating inflation, the maturities of public bonds started to be reduced. To meet the demand for short-term bonds and to manage to roll over and expand the public debt, government authorities had to create conditions for financial institutions to carry these papers. Shortening the maturities was exercised through various expedients, the most important of which was "repurchase pledges" (*cartas de recompra*)[2]. This procedure gave new impetus to open market operations, but also created difficulties for conduction of monetary policy, given the rapidly rising interest rates, which at times outpaced the adjustment of even short-term bonds, leading to losses for institutions leveraged in public debt.

Thus the 1970s were a period of rapid development of the public bond market. During this period the public debt became an important instrument, because besides being an alternative mechanism to finance public deficits, it became a fundamental operational element in conducting monetary policy.

At the start of the 1980s, government authorities determined that indexing be fixed in advance. The rate was first set at 45% a year, and then adjusted to 50%, with the justification of trying to favorably influence inflationary expectations, in a first attempt at partial deindexation, based on recognition of the inertial effects produced by indexation on general price levels. For Minella (1995), the advance fixation of the indexing rate represented a deviation from the logic of indexation, causing it to lose its main characteristic, namely a posteriori knowledge of the monetary value. From March to December 1980, the ORTN was indexed at 39%, against inflation of nearly 90% a year.

This situation obviously could not last long. The maintenance of a preset index considerably below real inflation rates faced much resistance, because economic agents started to demand an index that at least closely followed the variation in prices.

During the first half of 1980, the authorities, in an effort to alleviate the pressure on the public deficit exercised by the very cost of the internal public debt, sought to lengthen the average maturity profile of the ORTN in the BCB portfolio. This result was obtained by extending the average ORTN maturity from 25 to 34 months and by increasing, in real values, the total stock of ORTN, in detriment to a sharp fall in the stock of LTN in the overall debt. This process made it clear that the market was rejecting the LTN as an investment alternative, because against a backdrop of rising and uncertain inflation, the cost of carrying bonds with fixed yields became untenable faced with the threat of losing money.

According to Minella (1995), the drawing-out of the average maturity was achieved by offering a paper that promised a high rate of return, faced with the expectations of agents of a possible currency devaluation. Since the ORTN was the only instrument with an exchange rate variation clause, the authorities managed to obtain a large demand for these bonds, which had a five-year maturity, increasing the average maturity of the overall debt. However, the average maturity of the public debt rose not only because of the longer mean term of the ORTN, but also (as seen above) because of their greater relative share of the total debt compared with the LTN.

It is worth noting that government authorities during this period practiced an orthodox policy to fight inflation, by hiking interest rates to attract foreign capital and limit aggregate demand, thus cooling the economy and reducing demand for imports, to keep from aggravating the balance of payments even more in a difficult environment.

[2] The repurchase pledges, introduced by BCB Resolution 366/76, provided a guarantee of repurchase after a preset period, at a price previously stipulated or the market price on the repurchase date, thus providing increased liquidity for the bonds covered by this mechanism.

As long as there was some degree of international liquidity, this policy managed to increase external fund raising by the private sector, generating a degree of exposure to the nuances of the international scenario, which by itself stimulated the demand for foreign exchange hedging instruments. With the strong participation of bonds with a foreign exchange option in the total stock of federal internal debt, any currency devaluation would have significant financial impacts on the State. And this is exactly what occurred. In February 1983, the government decreed a maxi-devaluation of 30%, which had a negative impact on the financial health of the Brazilian public sector.

The trend to shorter maturity periods temporarily reverted, perhaps not because conventional indexing was fulfilling its role of reducing uncertainties, but rather because in special conditions the market preferred the ORTN with a foreign exchange variation option clause, faced with the devaluation expectations.

In contrast, the LTN yield was fixed by the government and their relative share of the public debt continued to dwindle as demand for these securities dried up. The only LTN that still had some demand were those with shorter maturities, especially the issues falling due in three months, later cut to one and two months. Those with longer maturities, particularly six months, were only placed with the Central Bank's portfolio.

In 1983 and 1984, the trend to shorter maturities became even more pronounced. With inflation racing ahead and the LTN losing attractiveness because of their fixed yields, the ORTN continued increasing their share of the total public bond debt, reaching the highest level since the creation of the LTN, nearly 96%.

This trend continued throughout 1984. The papers offered to the market were the same, but their maturities continued to fall. At the start of 1985, the ORTN corresponded to 97% of the total outstanding internal federal debt, while the LTN represented only 3%, with average maturity of less than a month (27 days).

The reduction of the average maturity of the debt was also influenced by the issuance in May 1985 of an ORTN falling due in one year, and during the year nearly all of these bonds were taken up by financial institutions. This shortening trend was speeded up even more with the introduction of a six-month bearer ORTN issue in the first two months of 1986.

Indeed, the entire second half of the 80s was marked by a pronounced preference by economic agents for flexibility and liquidity, evidenced by extreme demand for bonds with ever-shorter maturities. The underlying reason, as always, was the government's failure to control inflation.

With this failure, starting to show itself in earnest during the administration of President Figueiredo in the first half of the decade, it became clear that Brazilian inflation had a strongly inertial character that also needed to be combated. In an attempt finally to put a halt to galloping inflation, which in 1985 hit 230% a year, the Sarney administration (the first civilian government after the end of 21 years of military rule) instituted on February 29, 1986 a stabilization program called the *Plano Cruzado* ("Cruzado Plan", named for the new currency introduced, the cruzado).

The Cruzado Plan brought a series of measures that would have a big impact on the process of managing the public debt. After a prolonged period when the ORTN and LTN were the only instruments in the Brazilian open market, in 1986 significant changes were made in the conduction of the public debt and the very functioning of the financial system.

In line with the main thrust of the Cruzado Plan, which was to freeze prices for a certain period to halt inflationary inertia, the first of these changes (regulated by Decree-Law 2284/86) was to freeze the OPRTN yield, dropping the "adjustable" part of the name to create *Obrigações do Tesouro Nacional*, or OTN ("National Treasury Bonds"). The yield on these

new bonds was initially fixed for one year, at 6% p.a. payable twice yearly and with maturities ranging from six months to twenty years.

A second important change was creation, by BCB Resolution 1124/86 (May 1986), of another debt instrument, the *Letras do Banco Central,* or LBC ("Central Bank Notes"), whose main objective was to serve as a monetary policy instrument, taking the place of the LTN and ORTN. Given the difficulties of new LTN issues, and unable to use the ORTN (now OTN) indexed for inflation, because of the general price freeze, the Central Bank resorted to issuing its own bonds, legally allowed since its creation by Law 4595 of 1964.

The LBC had a maximum maturity of one year. They were placed on the market through public offers, whose conditions were announced in the indenture prospectus. Unlike the system until then practiced, based on indexation by price levels, the LBC introduced an innovation by using a concept of cumulative financial indexation of daily rates linked to the average rate practiced on daily operations in the Special System for Settlement and Custody (*Sistema Especial de Liquidação e Custódia* - SELIC), or the overnight market rate, which closely followed inflation.

For financial institutions, this new indexation method permitted a more stable relation between their funding and investment rates, reducing the risk of high leverage in public bonds[3]. Hence, these new bonds issued by the Central Bank were very well received by the market. This fact is easily seen when we analyze the relative shares of the federal public debt in circulation. At the end of 1986, the OTN had a 41.4% share of the total debt, in other words, less than half that of their predecessors the ORTN just one year before, and this fell further to 26.9% in 1987. The LTN, which had been sinking since 1981, reached 2.2% in 1986 and only 1.8% in 1987. The new LBC, in turn, at the end of the year of their creation (1986) already represented 56.4% of federal public bonds outstanding, and the next year this rose to 71.3%, evidencing an important change in the profile of the public debt composition.

At the end of 1987, the government created the *Letras Financeiras do Tesouro,* or LFT ("Treasury Financial Notes"), to replace the LBC. Created by Decree-Law 2376/87, the main objective of these notes was to finance the deficit. They had the same characteristics as the LBC, but since they were issued by the National Treasury, they were used as an instrument of fiscal policy.

The maturities of these new securities were determined in communiqués from the National Treasury, and their yield was calculated in the same way as for the LBC, i.e., the average SELIC overnight rate. They were placed through offers with access limited to financial institutions belonging to the SELIC.

In 1988, the predominance of the LBC in the market was surpassed by the LFT, which substituted the former as they were retired. With the same characteristics, the LFT became the main type of public bond demanded by the market. At the end of 1988, the OTN represented 31.5% of the total debt in circulation, while the recently created LFT accounted for the remaining 68.5%.

The OTN wound up being extinguished by a new stabilization plan, the *Plano Verão,* or "Summer Plan" (the Cruzado Plan, after initial success, having been swept away by renewed wave of inflation). In 1989, the LBC and OTN were redeemed and the market had the option of two securities, both issued by the National Treasury, the new *Bônus do Tesouro Nacional* - BTN ("National Treasury Bonds") and the old LFT. The latter were far more attractive, ending the year with a 97.9% share of the outstanding federal debt. In this way, the

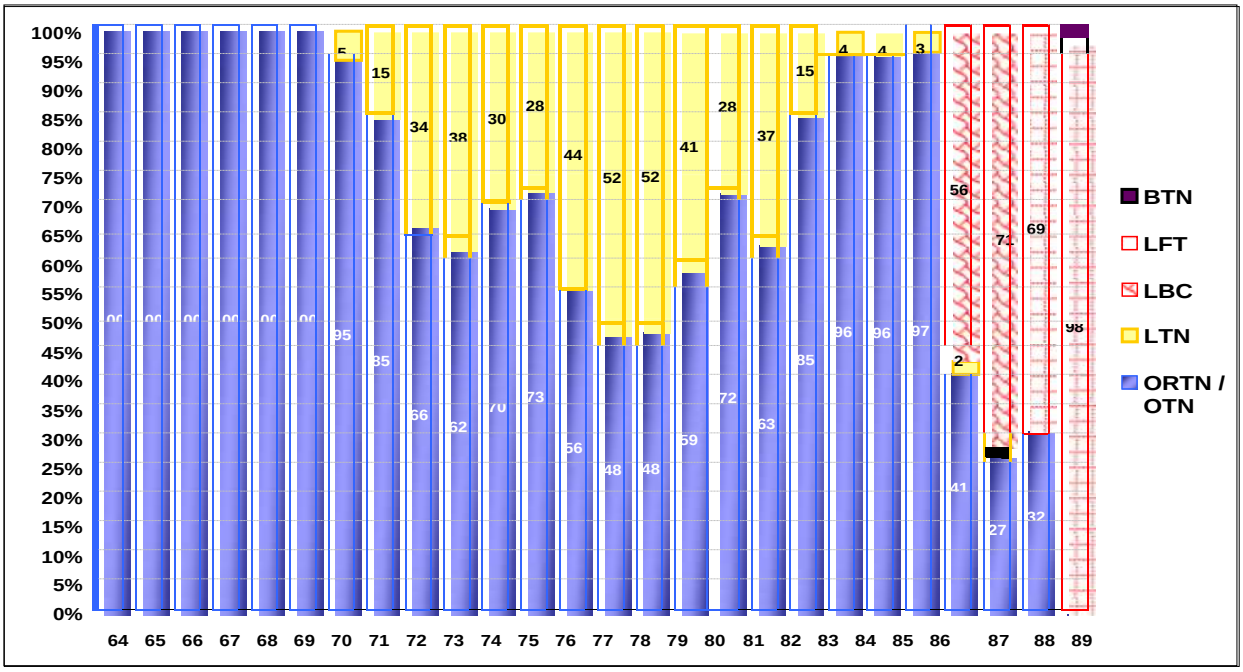
[3] - A more detailed analysis of the financial mechanisms for carrying the federal public debt in the 1980s can be found in Fernandes (1999).

LFT wound up the decade as virtually the only significant source for the federal government to finance its debt.

The BTN were created by Law 7777/89 and were aimed at covering the public deficit, with initial maturity in 25 years. Their yield was composed of interest of 12% p.a., calculated on the adjusted nominal value, and they were placed by offers from the National Treasury open only to financial institutions. The OTN still held by the market, including those with exchange rate variation (tied to the dollar), were redeemed. However, the new BTN also had an option clause for exchange rate indexation, and papers with one- and two-year maturities were the large majority of placements.

With the introduction of the dollarized BTN, exchange rate indexation formally became a part of the composition of the domestic public debt. However, since these bonds could not be financed in the overnight market, they did not perform as well as the LBC and LFT. At the end of 1989, the BTN represented only 2% of the total public debt outstanding. Figure 2 shows the composition of the internal federal debt in the period.

Figure 2
Composition of the internal federal public debt (1964-1989)



Source: ANDIMA (1994).

In the climate of high and unpredictable inflation (punctuated by ultimately ineffective stabilization plans) that marked the late 1980s in Brazil, it is no surprise the market lost confidence in formal indexation at preset rates, and as the decade wore on increasingly turned instead to informal indexation by the overnight rate. Thus, financial savings more and more concentrated on this type of operation, which was backed by extremely liquid public bonds[4]. The market overwhelmingly came to prefer variable-yield bonds, as we have seen, abandoning ones with pre-fixed yields.

[4]- Overnight operations are backed by public bonds, which the financial institution sells to the client with a promise to repurchase them the next day. In this fashion, the operation is carried out daily and the investor is guaranteed daily liquidity.

At the end of the 1980s, inflation as measured by the IGP-DI (General Price Index) surpassed 1700% a year. With such staggering inflation and society's general lack of confidence in the old monetary correction instruments, nearly all financial savings gradually shifted to overnight operations. The big drawback was that this made monetary policy a total prisoner to changes in market behavior, which would always be sanctioned by the system of automatic zeroing with repurchase commitments.

Faced with this situation, the new Collor government that took office in 1990 wasted little time in implementing a new (and questionable) stabilization plan, among whose key (and most unpopular) measures was a type of liquidity blockage. Besides this "asset confiscation", the government also reformulated some practices used previously, among them: i) suspension, in May that year, of the system of automatic zeroing; ii) reactivation of the operations to assist financial liquidity; and iii) return to issuing LTN in place of LFT, seeking to make monetary policy more effective.

At the start of the Collor government, the public debt situation was extremely serious, with the total bond debt held by the market at record levels. The debt had its lowest average maturity and was nearly all backed by papers indexed to the overnight rate. Hence, any change in monetary policy could strongly affect the stock of public debt.

The *Plano Brasil Novo* ("New Brazil Plan", better known as the Collor Plan), decreed on March 16, 1990, froze nearly 70% of existing financial assets in the country and had a significant effect on the total stock of public debt. This impact was exercised by the compulsory exchange of the outstanding stock of bond debt for instruments called BTN-E that would mature in 18 months and would be indexed by the variation of the BTN plus a fixed spread of 6% p.a.

In 1991, as pointed out by Pedras (2003), with the failure of the Collor Plan to conquer inflation and the difficulties faced in placing new LTN in the market, given the loss of confidence in these new issues because of fears of a repeat of the recent asset blockage, the Central Bank chose to issue a new instrument, with the same characteristics, called *Bônus do Banco Central*, or BBC ("Central Bank Bonds"), instituted by Resolution 1780-90. This was the only bond issued in the first months of 1991, but shortly Resolution 1841/91 of the National Monetary Council also authorized issuance of *Notas do Banco Central*, or NBC ("Central Bank Notes"). The NBC would be indexed by the recently created "Reference Interest Rate" (TR).

On the matter of managing the public debt, the Collor Plan included actions to draw out its average maturity. The LFT were compulsorily traded for the BTN-E. As we have seen, the LFT were during the last years of the previous Sarney government the main type of bond in the pubic debt, representing 98% of the total stock of internal federal debt. Since these papers were very short-term and were indexed by the SELIC rate, their exchange for the BTN-E, which had a longer maturity and indexation untied from the overnight market, permitted the central government to lengthen the maturity and cut the financial charges on its debt.

In September 1991, after the 18 months established for the asset freeze, the process began of releasing the funds blocked in March 1990. This created a need to issue new papers to finance this "refund" of blocked assets. In this context, new BBC were issued, with shorter maturities ranging from 28 to 49 days.

At the end of the same year, after encountering difficulties in placing new BBC emissions, the National Treasury created still another instrument, *Notas do Tesouro Nacional* – NTN ("National Treasury Notes"). The idea was to create an instrument to finance the federal debt that would be accepted by the market. With this in mind, the NTN were issued in

various series, differing depending on the type of index used. Those that were most popular were indexed by the IGP-M (NTN – Series C), the Reference Rate (NTN – Series H) and the dollar (NTN - Series D).

The thinking behind the various NTN series was to permit diversification of papers to expand demand for bonds from different investors, thus obtaining the funds needed to pay off the BTN-E. However, at first the only NTN series strongly in demand was the NTN-C, indexed by the IGP-M. The NTN-D, tied to the dollar, was place on the market starting in 1991, but found few takers at first. Only in 1993 did the NTN-D start to be accepted by the market, but at a very short average maturity.

In 1994, during the administration of Itamar Franco (after President Collor's impeachment on unrelated corruption charges), government economic authorities, under the stewardship of Finance Minister (and soon President) Fernando Henrique Cardoso, implemented another price-stabilization plan, the *Plano Real* ("Real Plan"), named after the new currency, the *real* (pronounced "hayal"). In an attempt to promote a broad deindexation of the economy and combat the inertial component of Brazilian inflation, the government issued the NTN – Series H, papers that were indexed by the Reference Rate (TR). The Real Plan, in its legal scope, prohibited use of price level measures to index public bonds, so that the NTN – Series C, which was indexed by the IGP-M, was no longer offered. Regarding the LFT, the government's goal of freeing the economy from indexing, also opposed their continuing placement. And the LTN, given the early doubts (ultimately proved wrong) over the Plan's chances of finally stabilizing the economy, only found takers when issued with very short maturities. However, this also ran counter to the objectives of extending the average maturity profile of the public debt.

The stability of prices, notably as of 1995, however was not enough to put an end to indexation of the public debt. The need to avoid monetary financing of public spending meant the public sector still needed to obtain resources by bond issues, and to place these papers it had to make them attractive enough to find takers, still wary of past government failures to control inflation.

In 1995 the reduced average maturity of the debt made its lengthening a cornerstone of the strategy for managing the public debt. When the stabilizing effects of the new currency were felt with more intensity, the government started to use an indebtedness strategy based on issuing LTN, papers that started to play a growing role in the stock of public debt in the following years. Besides this, as stability increasingly looked to be lasting, the average LTN maturity was gradually lengthened.

Also starting in 1995, the debt started to grow sharply in real terms, due to several factors, of which we can cite the assumption of contingent liabilities and the maintenance of high real interest rates. Mention also should be made of the strong growth of bond debt from operations to sterilize the monetary base, made necessary by the balance of payments surplus from portfolio and foreign direct investment inflows (the latter particularly influenced by the privatization of large government companies).

On the fiscal policy front, the period from 1994 to 1998 did not see such an intense consolidated effort (from local, state and central governments) as occurred from 1999 onward. At the same time, monetary policy was contractionary, particularly in response to the various external shocks faced in the period: the Mexican crisis (94-95), Asian crisis (97) and Russian crisis (98). The increased debt service costs, associated with the strong elevation in real

interest rates in the period, and the need for sterilization, generated a sharp expansion in the stock of public debt.

From the standpoint of the composition of the debt, the portion represented by fixed-yield bonds grew starting in 1994, with the stability that was finally brought by the Real Plan. At the start of that year, the fixed portion was 14.7% of the debt stock. The stability and other changes in the economy starting in 1994 permitted the economic authorities to achieve a level of 60% fixed-yield bonds by 1996.

According to Pedras (2003), when the Asian crisis detonated in 1997, the maturities of fixed papers had to be shortened, with 90-day bonds once again placed. In this way, the crisis made the LTN percentage in the overall debt drop precipitously. Nevertheless, the need to increase the average maturity, faced with an increasing overall stock of debt, forced the economic authorities to offer papers with longer maturities. This strategy, however, kept the LTN (fixed-yield) from recovering their previous importance in the composition of the public debt.

The trajectory of the public debt over the period gradually reduced the willingness of lenders to accept yields fixed in advance. From the point of view of debt managers, recourse to indexation once again was seen as a viable alternative to the high premiums demanded by the market to accept fixed-yield instruments, even those with relatively short maturities. In the middle of 1998, the external shock caused by the Russian debt moratorium generated the need for Brazilian economic policy to avoid any potential problems in rolling over the country's debt. The strategy included a quick movement to replace fixed- with variable-yield bonds in the composition of the domestic debt. This action took place in a very short time frame, due to the large volume of bonds falling due, in turn a result of the relatively short average maturity of this debt. The share of fixed bonds in the overall debt fell from 55.6% in May 1998 to only 1.7% at the end of that year.

Regarding the LFT, with the falling inflation levels and the need to consolidate the deindexation process to halt inflationary inertia, these papers stopped being placed in the market in the middle of 1995, only to return three years later.

At the end of 1998 and start of 1999, significant changes occurred in Brazilian economic policy. The exchange rate, which had been fixed within a system of gradually adjusted bands (a "sliding peg"), wound up caving in to strong speculative pressures, which intensified brutally after the Russian crisis, with the country reaching the point of losing US$ 1 billion in reserves a day in an ultimately futile attempt to prop up the currency. Finally, after three days of an obscure regime technically named "endogenous diagonal bands", the currency was allowed to float "freely" (i.e., subject to occasional interventions, in a system dubbed a "dirty float"). Monetary policy shifted to being totally subject to the search for price stability, with the introduction of inflation targeting. The fiscal regime started being guided by a determined effort to generate high primary surpluses in an attempt to reduce the debt/GDP ratio.

The turnaround in economic policy was cemented with the signing of an agreement with the International Monetary Fund (IMF) in 1998. After nearly fourteen years, the country once again sought an IMF loan facility, under an agreement that would be maintained for the next six years. Although some measures had to be taken before finalizing the IMF deal, the new policy directives were converted into performance commitments under the auspices of the agreement and its subsequent revisions.

Needing to comply with the targets agreed with the IMF, the country started to tally increasing primary fiscal surpluses, obtained in large part by sharply raising the tax burden, especially during President Cardoso's second term, but without managing to cut the net debt/GDP ratio. This ratio continued its upward trajectory, in great part due to the high real interest rates practiced by monetary authorities to reduce aggregate demand as a way to meet the ambitious inflation targets. In this way, economic growth became a byproduct of economic policy.

Another source of pressure on the debt/GDP ratio in this period was, without doubt, the pronounced depreciation of the exchange rate after floating the currency. This devaluation brought negative impacts on Brazil's level of indebtedness, not only on the external debt converted into local currency (*reais*), but also on the internal debt, a good portion of which was indexed to the dollar. While between June 1994 and 1998, a period of four and a half years under the "sliding peg" regime, Brazil's currency had depreciated 20.87%, in the four years between the start of 1999 and December 2003, the accumulated devaluation was 189%.

After the instability triggered by uncertainty caused by the change in the economic bearings during the first half of 1999, the situation largely stabilized, at least temporarily, permitting a market perception more favorable to economic policy. At this moment, there was a slight increase in the participation of fixed-yield bonds. However, new external shocks between 2001 and 2003 (among them market fears of the likely election of a leftist, Lula, as the new president in the 2002 elections) once again reduced the portion of fixed instruments in the total debt stock to levels below 5% in the middle of 2003. With the recovery of confidence as 2003 wore on (associated with the new Lula administration's adoption of an orthodox economic policy), associated with a scenario of high international liquidity, the total of pre-fixed papers recovered a bit, reaching 17.2% of the total internal debt in November 2004, albeit a good deal under the levels reached in the past.

In summary, the significant issue of papers from sterilization operations, associated with the high real interest rates and sharp currency devaluation (starting in the first months of 1999) led to an extreme elevation of the public debt starting with the first Cardoso administration, even against a backdrop of high primary surpluses, such as those obtained during his second term. This strong rise in the debt stock generated the need to combine short maturities and indexation as a way to avoid risk of being unable to roll over the existing debt.

Observing the data on the internal federal debt, one notes that starting in 1995 the economic authorities managed improve one of its attributes, namely raising the share of fixed-yield bonds in the overall stock of debt. Nevertheless, the crisis at the end of 1998 reversed this movement, and starting in 1999, after floating the currency, the evidence suggests that the authorities began prioritizing drawing out the average debt maturity, even in detriment to a worse composition subject to indexation, with a good part of the debt shifting to variable-yield bonds.

In this form, it is evident that despite the advance in terms of reduced inflation rates after 1994, the fact is that the effects on the composition of the public debt have not been auspicious. This leads us to examine the management of Brazil's public debt under the hypothesis of original sin.

II – DEBT MANAGEMENT UNDER THE EFFECTS OF ORIGINAL SIN

The expression "original sin" first appeared in the economic literature in the 1990s and refers to the difficulties faced by emerging economies to raise funds abroad in their own currencies, the achievement of which would avoid the natural mismatch when a country has assets in local currency and liabilities in foreign currency. The term is defined by Eichengreen, Hausmann and Panizza (2003) as *"the inability of a country to borrow abroad in its own currency".*

The central question behind this expression is to show that the economic agents of such countries, whether governments or private companies, because they are unable to borrow abroad in their own currency at fixed interest rates and long payback periods, have only two options: i) obtain loans in their own currency in the domestic market at variable rates and with very short maturities; or ii) obtain loans with longer maturities and fixed rates, but in foreign currency.[5]

There are risks of following either of these paths. In the former case, this is mainly due to the difficulties of constantly having to roll over debt with a short average maturity. In the latter case, the danger lies in abrupt exchange rate swings, a more likely occurrence in countries with a flexible exchange rate. It is important to point out that both companies and the government itself face such risks, and governments, as we shall see presently, can assume even more risk if they decide to take on that from the private sector. This was the case in Brazil at the start of the 1980s, in the process known as debt nationalization, as pointed out by Cruz (1993).

Eichingreen and Hausmann (1999) cite some consequences brought by "original sin" to emerging countries, among them: i) these countries, mainly those with a history of high inflation and poor fiscal control, are more subject to the effects of original sin; ii) the stock of debt of countries subject to original sin is significantly more sensitive to fluctuations in interest and exchange rates; iii) because they are unable to obtain loans in their own currency, they are much more exposed to mismatches of assets and liabilities; iv) the effects of external crises are much stronger in countries subject to original sin; v) the effects created by original sin are greater in countries that have floating exchange rates, due to the large currency value swings and the pass-through effect of devaluation on domestic prices; vi) for countries with floating exchange regimes, these effects can also reach the real economy; vii) such countries, faced with greater macroeconomic instability, are limited to a pro-cyclical fiscal policy, because of the fall in tax revenue and increased debt service cost.

In this way, in situations of evaporating confidence triggered by external crises, such as those in Mexico (94-95), Asia (97) and Russia (98) – which strongly raised the risk perception of markets – internal debt managers' alternatives have been to use two mechanisms to adjust to the new scenario and the demands of the market, namely reducing the average maturity of bonds or changing the debt profile by tethering it to some index, whether the exchange rate or prime interest rate.

There are four strategies to manage the public debt in countries faced with original sin. The strategies depicted in Figure 3 are derived from the capacity to alter two key attributes of the stock of debt, its maturity and profile. With these two attributes, the debt manager will have some possible combinations of maturity and indexation available to administer the internal debt stock.

[5] - According to Eichengreen, Hausmann and Panizza (2003), however, even though the second case has a much more difficult and complex solution, there is evidence that countries such as Chile have already shown signs of escaping from the first pitfall, i.e., they have already managed to obtain loans in the domestic market with long maturities and fixed yields, without resorting to indexation.

Figure 3
Public Debt Choices for Countries Afflicted by "Original Sin"

INDEXATION / MATURITY	VARIABLE	FIXED
SHORT TERM	High risk from crisis	Choose short-term fixed-rate debt
LONG TERM	Choose long-term variable-rate debt	Alternative not available

Source: prepared by the authors.

One option is not to change maturities, but only the indexation. A second option is to shorten the average maturity of the debt but maintain the proportion paying fixed yields. A third option is to change both attributes, reducing maturities and at the same time indexing the debt. The third option will make it even more costly to roll over the debt, since this will need to be done at shorter and shorter intervals, while simultaneously subject to fluctuations in the indices. As the data show, in emerging economies these oscillations are significantly more volatile than in developed countries. A fourth option is to draw out the average maturity and at the same time expand the stock of fixed-rate debt. For authors such as Arida; Bacha and Resende (2004), this strategy is possible as long as the country has a good judicial structure. For these authors it is jurisdictional uncertainty that is behind the idea of original sin of Einchengreen and Hausmann (1999). However, the fourth option becomes impractical in countries with soft (non-convertible) currencies afflicted with original sin, because of the high returns demanded by the market in the face of the crises of confidence that haunt emerging countries.

The effects of this original sin appear clearly in the public debt management strategies adopted in Brazil. We need only make a brief examination of the evolution of the internal federal debt over time. As we observed in Section I, at the end of the 1980s, the Brazilian government carried an internal debt that was at the same time extremely short-term and practically all indexed to the overnight market rate (reaching 98% of the debt in 1989).

With agents' loss of confidence in the monetary correction mechanisms, and in the State's very ability to remain solvent in the face of chronic and spiraling inflation, and without the ability, as on other occasions, to benefit from high international liquidity, the country wound up conducting its internal public debt by the most adverse option: a combination of mainly variable-rate debt with a reduced average maturity.

However, at the start of the 1990s, the incoming Collor government began trying to take measures to extend the debt's average maturity while simultaneously reducing the stock of indexed debt. As we have seen, the LFT, with the decreeing of the Collor Plan, were compulsorily exchanged for the BTN-E. Since the LFT had the shortest maturities among the debt instruments available at that time, this simple switchover to the BTN-E, with longer average terms and indexation divorced from the basic interest rate, permitted the government to attain one of its objectives, namely drawing out the average repayment term while reducing the public sector's exposure to fluctuations in asset prices.

With the arrival of the Real Plan in mid-1994, this strategy was not only maintained, it was intensified. There was an attempt both to raise the average maturity along with a greater share of fixed-yield bonds. From the standpoint of the domestic debt profile, the portion represented by fixed-rate papers grew significantly as of 1994. At the start of this year, the fixed portion was only 15% of the total stock, rising to nearly 60% in the middle of 1996.

Although trying to achieve two objectives simultaneously, i.e., to lengthen the average maturity and also the share of fixed instruments in the total debt stock, the greatest emphasis clearly fell on fixed yields than on longer repayment terms.

However, the price stability was not enough by itself to put an end to indexation of the public debt. Faced with crises on the external front and the need to avoid monetary financing of the public spending, government authorities wound up taking another tack to continue attracting resources.

When the Asian crisis hit in 1997, the share of fixed-yield bonds started to fall steadily, with the percentage of LTN in the total stock of debt dropping sharply. The strategy then shifted to trying to raise the average debt maturity, which became imperative in the face of an increasing stock of debt. So, the government sought to place longer-term papers on the market, and as a result, the LTN never regained their former importance in the debt composition.

In the middle of 1998, with the external shock from the Russian moratorium, the situation turned even more difficult, generating the need to pursue this strategy even more aggressively, with a quick and intense movement to substitute fixed with variable-yield bonds in the domestic debt composition. This speedy substitution was heightened by the significant volume of papers falling due almost simultaneously, in turn because of their short maturities. The participation of fixed bonds in the total stock of debt fell in only six months from 55.6% to only 1.7%.

In this fashion, in the late 1990s, faced with a series of external crises, especially the Asian and Russian ones, and their consequences of raising the risk premium on operations with public bonds of merging economies, the economic authorities preferred to use a strategy of raising the percentage of bonds tied to some index, combined with extending their maturities. This latter lengthening of due dates was not only combined with, but also propitiated by the use of indexed papers.

The trajectory of the public debt during the period, combined with the phenomenon of debt intolerance, thus gradually reduced the willingness of bondholders to accept fixed-yield papers. In this form, for those in charge of managing the debt indexation became the alternative when faced with the demand for ever-higher premiums.

Hence, in response to external crises, the strategy adopted was to associate longer maturities to variable-yield instruments, which as we have seen is one of the debt-management strategies available to countries afflicted with original sin.

III . FINAL CONSIDERATIONS

It is important to stress also that the influence of original sin and debt intolerance in emerging countries also impedes the functioning of the invisible hand. According to Eichengreen and Hausmann (2002), any type of external shock that results in a significant currency devaluation causes important asset losses to economic agents. These losses constitute an obstacle to the operation of processes of automatic adjustment to crises, for example, by making exports more competitive and running current account surpluses. Instead of a process

of reversion, the effects of exogenous crises on such countries are accentuated, due to the greater financial fragility of both the public and private sectors.

Another important point in the debate involves the decision of the governments of these countries on whether to concentrate their financing via internal or external debt. There are authors who argue it is preferable for such nations to choose the domestic market, even if a priori it is more costly than tapping foreign funding sources. According to the Inter-American Development Bank (BID, 1997), the idea behind such arguments is that during moments of crisis, emerging countries have greater difficulties in obtaining financing abroad, but still can do so at home, albeit at less favorable conditions.

The arguments justifying this possibility are:

1. The level of knowledge of the country's economy and politics by domestic investors is significantly greater than among foreign ones, since, even by official duty, they more closely follow the daily government activities and have available a more complete and accurate range of information on the conduction of economic policy.
2. The possibility of compulsory placements or captive markets for public bonds in the internal market, an advantage not enjoyed in the external market.
3. Domestic papers, even when they are indexed to a foreign currency, are redeemed in local currency. In these cases, although not advisable, the government can always make redemptions by expanding the monetary base (or, put less elegantly, by cranking up the printing press), which gives more liquidity to those holding internal debt.

For Reinhart, Rogoff and Savastano (2003), internal placement of public bonds has been proving to be increasingly important in emerging economies, especially when indexed to the exchange rate. These authors argue that the growing participation of bonds indexed to a foreign currency in the total stock of internal debt is evidence of the very process of debt intolerance.

At times of high risk aversion, the market demands indexed debt instruments from the public sector, preferably by the exchange rate with a foreign currency (usually the dollar), as a form of protection. In this way, the central objective of issuing bonds tied to a foreign currency is to make available a hedge mechanism to protect the private sector against the effects of devaluation. In this case, they can avoid the impacts of original sin on the real sector of the economy. However, this creates other macroeconomic problems, such as a significant fiscal-financial impacts on the public purse.

In this form, the protective strategy of economic agents winds up being paid for by the public sector through the availability of papers indexed to the exchange rate. This avoids the negative impacts on the private sector of devaluation and its effects on the mismatch between local-currency assets and foreign-currency liabilities, allowing the private sector smoother sailing through stormy periods.

Nevertheless, the counterpart to offering this exchange-rate hedge facility to the private sector is the exposure of the public sector to such risk, and this brings important fiscal costs. The mechanism to protect the private sector largely shifts the exchange rate risk to the public sector, and this can produce macroeconomic instability, to the extent the government assumes the risk of foreign-currency debt against local-currency revenues.

The growing share of bonds indexed to the exchange rate in the total Brazilian domestic debt, especially from 1997 onward, is a clear example of this process of trying to protect the private sector against the impacts generated by crises.

Another example of the effort undertaken by the government to safeguard the private sector from external crises was the so-called nationalization of the external debt. At the start of the 1980s, the need to execute an external adjustment caused accentuated pressure on the

government accounts. As pointed out by Cruz (1993), faced with a crisis from the external sector, with the explosion of international interest rates at the end of the 1970s and start of the 80s, and given the inherently high risk of foreign-currency debt, the private sector rushed to transfer its foreign debt to the government, through schemes allowing deposits registered in foreign currency (*depósitos registrados em moeda estrangeira*, or DRME).

The interruption of foreign capital inflows with the Mexican moratorium of 1982 caused the collapse of financing through external loans and deepened the government's financial crisis. With the rising cost of a high and "nationalized" foreign debt, the public sector had to finance these costs from the private sector, becoming the main borrower of public savings, mainly by issuing bonds. The Brazilian option, unlike the Mexican, was to keep paying its external commitments, defending the private sector against the impacts the crisis would bring to the segments of the economy more exposed to foreign debt.

According to Belluzzo & Almeida (2002: p. 147), the external adjustment process at the start of the 1980s *"...both preserved the profits and assets of the private sector and also permitted the current account to be re-balanced, but at the same time aggravated uncertainties and....worsened the fiscal crisis and prejudiced the financing of the public sector and government companies."*

Hence, although the processes were different – nationalizing the foreign debt in the 1980s or providing a foreign-exchange hedge to the private sector through foreign-currency indexed bonds in more recent years – both reveal the effects of original sin in countries with soft currencies such as Brazil. Both strategies also reveal the Brazilian government's posture to try to keep the private sector insulated from the direct effects of original sin. However, as we have seen, such strategies can wind up shifting the burden of crises onto the shoulders of the public sector.

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