DEPARTAMENTO DE ECONOMIA

PUC-RIO

TEXTO PARA DISCUSSÃO
N.º 345

THE 1994 BRAZILIAN DEBT RENEGOTIATION : A CURE FOR OVERHANG?

MARIA CRISTINA T. TERRA

DEZEMBRO 1995

The 1994 Brazilian Debt Renegotiation: a Cure for Overhang?

Maria Cristina Trindade Terra*

Abstract

The literature argues that open-market sovereign debt repurchases are not beneficial for the debtor country, even if they can alleviate debt overhang. This paper shows that debt buybacks can actually lead to a worsening of the debt overhang problem. This is possible if the real return on investment in the debtor country is sufficiently high, so that resources used to finance the buyback have a very high opportunity cost, and the debt reduction is small compared to the resources allocated to the repurchase. The Brazilian government recently completed its external debt financing package as part of the Brady plan initiative. The Brady plan is an attempt for the severely indebted countries to achieve a debt reduction at a price lower than the one through secondary market buybacks, and therefore retaining some of the (possible) efficiency gains. Using open-market buybacks as benchmark, bounds for possible gains from the deal are calculated, and an assessment is made in respect to whether the deal helped alleviating the debt overhang problem.

* I thank Kenneth Rogoff and Peter Kenen for useful comments and suggestions. All remaining errors are my own. I am grateful to CNPq, Brazil, for financial assistance.

1. Introduction

In search of a solution for the debt crisis triggered in the early 1980's, many highly indebted countries engaged in open-market buybacks. These took the form of debt-for-equity swaps, debt-for-nature swaps, debt-for-education swaps, among others, or even simply buying up part of the debt for cash in the secondary market. A literature emerged trying to assess the possible benefits of such transactions (see, for example, Bulow and Rogoff (1988), (1990) and (1991), Cohen (1993) and Claessens and van Wijnbergen (1993)).

The main argument of this literature is that debt repurchases could be beneficial to the debtor country to the extent that they could alleviate the debt overhang problem. The existence of a debt higher than what the country would ever be able to pay in full has the effect of a tax on marginal investment, because part of the returns on new investments would be used to increase transfers to creditors. This source of inefficiency can be diminished by lowering the face value of the outstanding debt. Bulow and Rogoff (1991) argue, however, that open-market buybacks are not beneficial to the debtor countries. A large repurchase of the debt will provoke an increase of the secondary market price up to the point where the price paid in the transaction would offset any possible gain from increased efficiency. Furthermore, if the country engaged in a marginal buyback, then the price paid would correspond to the average value of the debt, and not the marginal one. In either cases, they show that more than 100 percent of the efficiency gain is taken by the creditors. The country can gain from the operation only if the price pays for the debt were sufficiently below the secondary market one.

This paper shows that debt buybacks could actually worsen the debt overhang problem. In order to carry on the transaction the country has to use resources that could otherwise be used for consumption or investment. If the country has to use too many such resources to achieve a given reduction of the debt, and if the marginal productivity of

investment is sufficiently high, then the country could do so much better by increasing investment and consumption proportionately instead of engaging in the buyback that the expectations of future payments could actually be lower with the buyback than otherwise. Therefore, the debt overhang problem is made worse even though the face value of the debt is lower after the buyback.

On April 15, 1994, the Brazilian government completed its external debt financing package as part of the Brady plan initiative. The Brady plan is an attempt by the severely indebted countries to achieve a debt reduction at a price lower than the one achievable through secondary market buybacks and therefore to retain some of the (possible) efficiency gains. The Brazilian debt restructuring is analyzed in light of the theoretical discussion presented. Bounds on gains or losses from the agreement are calculated, and the existence of efficiency gains are shown to depend on the future value of the libor. The intuition for this result is that the debt service previous to the agreement was established at floating interest rates, tied to libor, whereas the restructuring introduced several bonds bearing fixed interest rates. Hence, the value of libor in the future determines the actual debt relief achieved in the deal, which is a fundamental variable in determining whether there was an alleviation of debt overhang.

Section 2 shows how a debt buyback can result in a worsening of the debt overhang problem. Section 3 describes the Brazilian external debt agreement and presents calculations on possible gains or losses from it. Concluding comments are in section 4.

2. Buybacks and Debt Overhang

This section presents a model that captures the effect of external debt repurchases on debt overhang. A debt buybacks generally alleviates the problem, but it will be shown that there is the possibility that debt overhang might become more severe after the repurchase. The analysis applies to either open market buybacks or to negotiated deals

such as those in the Brady plan initiative. The framework used is based on Bulow and Rogoff (1991). At the end of the section it will be shown how the possibility of a worsening of debt overhang via a buyback affects the behavior of the upper and lower bounds for possible gains from the deal suggested in Bulow and Rogoff (1991).

2.1. The Effect of a Debt Buyback on the Debt Overhang

The first step is to define the variable that measures the overhang of foreign debt. If the country owes a large amount, but is sufficiently rich so that it is expected to pay its debt in full, then there is no debt overhang, and therefore no effect of debt on investment incentives. On the other hand, if the country is expected to repay less than the total debt, part of the return on new investments will be used to increase payments to the creditors. The size of the debt overhang then depends on how much the country is expected pay to creditors (R) in relation to total debt (D). This is precisely what is captured by the secondary market price of the debt (P):

$$P = R/D. \tag{1}$$

Hence, an increase of the price of the debt in the secondary market means a worsening of debt overhang for the country, whereas a decrease of hte

In order to understand the movements of the secondary market price, it is important to determine the variables that affect the expected repayments to creditors. Foreign creditors expect to receive as repayments the minimum between the face value of the debt or an "extraction" function σ of the country's total consumption (C) and returns on investment (g(I)):

$$R = \min\left\{\sigma\left[C, g(I)\right]; D\right\}, \tag{2}$$

where the investment function is strictly increasing, concave, and $g(0) = \infty$, and $0 \le \sigma_C < 1$, $0 \le \sigma_g < 1$, so that when any source of income increases, expected

repayments also increase, but by less than one to one. The extraction function is also assumed to be concave:

$$\sigma[\lambda C, \lambda g(I)] \leq \lambda \sigma[C, g(I)] \text{ for } \lambda \geq 1. \tag{3}$$

Now the effect of a debt buyback on the secondary market price of the debt can be derived. Let the country use an amount X of its *own* resources[1] to reduce the debt from D^o to D^x, so that the total amount of resources available for the country to either consume or invest is W^o before the buyback, and $W^o - X$ after the buyback.

The country has to choose how much of its resources to allocate between consumption and production, given the repayments that will be made to creditors. The pre-buyback decision problem can be represented as:

$$\begin{aligned} &\max_{C,I} \; C + g(I) - R[C, g(I), D^o] \\ &s.t. \quad C + I = W^o, \end{aligned} \tag{4}$$

which yield the following first order conditions:

$$\begin{aligned} 1 - R_C[C^o, g(I^o), D^o] &= g'(I^o)\{1 - R_g[C^o, g(I^o), D^o]\} \\ C^o + I^o &= W^o. \end{aligned} \tag{5}$$

A similar decision problem is faced by the country after the buyback, but then the country has fewer resources to consume or invest, and a lower stock of debt. The first order conditions for the maximization of the post-buyback problem are:

$$\begin{aligned} 1 - R_C[C^x, g(I^x), D^x] &= g'(I^x)\{1 - R_g[C^x, g(I^x), D^x]\} \\ C^x + I^x &= W^o - X. \end{aligned} \tag{6}$$

Let I^x and C^x represent the optimal post-buyback levels of investment and consumption, respectively. In order to see whether debt repurchases alleviates debt

---

[1] The intention here is to compare the secondary market price before and after the buyback. Therefore, the important variable is the amount of resources available to the country before and after the transaction takes place. That is why X does not include funds from foreign sources used in the buyback.

overhang, the price of the debt in the secondary market before the buyback has to be compared to the price after the buyback.

First, the post-buyback allocation will be compared to an hypothetical pre-buyback allocation z in which consumption and investment are proportionately higher, i.e.,

$$\frac{C^z}{C^x} = \frac{g(I^z)}{g(I^x)} = z > 1. \tag{7}$$

Later it will be shown how the results from the comparison between the post-buyback and the z allocation can be used to assess the comparison between the optimal post- and pre-buyback allocations.

There are two possibilities resulting from the buyback:

Case 1: $D^o \geq z D^x$. Using the concavity of the extraction function represented in inequality (3), we get:

$$\frac{R\left[C^x, g(I^x), D^x\right]}{D^x} \geq \frac{R\left[\frac{D^x}{D^o}C^x, \frac{D^x}{D^o}g(I^x), D^x\right]}{D^o} \geq \frac{R\left[C^z, g(I^z), D^o\right]}{D^o} \tag{8}$$

which says that:

$$p^x \geq p^z. \tag{9}$$

Hence, the post-buyback secondary market debt price is not smaller than the pre-buyback price under the hypothetical allocation z. This suggests that the debt overhang constraint is relaxed with the buyback, if the initial allocation were z.

Case 2: $D^o < z D^x$. The concavity of the extraction function now tells that $R\left[C^z, g(I^z), D^o\right] \leq z\, R\left[C^x, g(I^x), D^x\right]$ which implies:

$$p^x \geq \frac{p^z}{z\left(D^x / D^o\right)}. \tag{10}$$

Given that $D^o < z D^x$ in this case, then:

$$\frac{p^z}{z\left(D^x/D^o\right)} < p^z. \tag{11}$$

Therefore it is possible that $p^z > p^x \geq \frac{p^z}{z\left(D^x/D^o\right)}$, i.e., the secondary market price of the debt is lower after the buyback, suggesting a worsening of debt overhang. Here the country could do so much better by increasing consumption and investment proportionally instead of engaging in the buyback that expectations of future repayments are actually lower with the buyback than otherwise.

The crucial condition for this result to hold is that $z\left(D^x/D^o\right) > 1$, which can be achieved with z and/or D^x/D^o being large enough. A high value for D^x/D^o combined with large z indicates a small debt reduction for the given amount of resources X used in the repurchase of the debt. The value of z is directly connected to the value of X and the marginal productivity of investment. A large amount spent on the repurchase X implies that the country had to give away more resources to set the deal. Moreover, if X were to be used to increase consumption and investment proportionately, then the more productive are new investments, the higher will be the resulting total income increase.

Allocation z, however, is not (necessarily) the optimal pre-buyback allocation. The optimal pre-buyback allocation compared to the post-buyback one takes the form:

$$\begin{aligned} C^o &= C^x - \alpha X \\ I^o &= I^x - (1-\alpha) X \end{aligned} \tag{12}$$

where $1 - \left(\frac{W^o - I^x - C^x}{X}\right) \leq \alpha \leq \frac{W^o - I^x - C^x}{X}$.

In allocation z, consumption and investments are proportionately higher than the post-buyback allocation. Basically there are two possible cases: the level of investment in the optimal pre-buyback allocation may be higher or lower than the one in allocation z. If it

is higher, and assuming that $g'(W^o) > 1$ so that shifts from C to I always increase income, then equation (1) and (2) determine that the pre-buyback secondary market price is higher than the hypothetical price p^z. The opposite is true if the pre-buyback investment level is lower than I^z.

It is then straightforward to transform the results in equation (9) and (11) to a comparison between the secondary market price before and after the buyback.

Summarizing his section has shown that when the debt reduction is sufficiently high compared to the resources used in the buyback, i.e., when $D^o \geq z D^x$, then debt overhang is alleviated for sure with the repurchase. On the other hand, when the debt reduction achieved with the repurchase is small compared to the amount of resources used, i.e., when $D^o < z D^x$, then it is possible that debt overhang is worsened after the buyback.

2.2. Lower and Upper Bounds for Gains from Debt Repurchases

Without accounting for any efficiency gains from the buyback (or losses, as we have seen that might be the case!), the net benefit from the transaction should be equal to the reduction in creditors wealth. Using the same notation as in the previous subsection, it is:

$$P^o D^o - P^x D^x - N, \tag{13}$$

where N is the total amount of resources used in the negotiated buyback.

If the buyback brings efficiency gains, this is the lower bound of the possible benefit from the transaction. It represents the upper bound when debt overhang worsens with the buyback.

Bulow and Rogoff (1991) prove that when debt repurchases are made through open market operations, creditors reap more than 100 percent of any efficiency gains that could have resulted from the alleviation of the debt overhang. The price in a negotiated

buyback, however, is supposedly lower than the open market repurchase price, so that some of the possible efficiency gains can be retained by the debtor country. Therefore, the benefit of a negotiated buyback cannot exceed the cost of the repurchase through open market. The other limit of possible benefits or losses is derived form the expression:[2]

$$P^x\left(D^{\prime\prime} - D^x\right) - N. \tag{14}$$

The first term of expression (14) represents the change in expected repayment evaluated at the post-buyback "risk rate" of the country, whereas the second term is the cost of this change. It measures the debt reduction using the post-buyback probability of repayment, and therefore it also captures debt overhang changes. In the (more likely) case that the buyback brings efficiency gains, expression (14) serves as the upper bound of possible gains from the transaction. However, if efficiency losses arise from the buyback, the value stands as the lower bound.

In the next section the Brazilian debt agreement will be studied. The analysis will exemplify how the buyback may worsen debt overhang.

3. The Brady Plan in Brazil

On April 15, 1994, the Brazilian government completed its external debt financing package as part of the Brady plan initiative. First, the terms of the agreement will be analyzed, and then bounds will be constructed to determine possible gains or losses from the agreement. It will be shown that it may worsen the debt overhang ex-post, depending on the value of libor in the future. The value of libor will affect the amount of debt service alleviation brought by the deal because the debt before the agreement was set at flexible interest rates, and the agreement introduced new bonds at fixed interest rates.

---

[2] Note that expression (14) should equal zero in the case of an open market buyback.

3.1. Terms of the Agreement

The agreement covered approximately $46.8 billion, involving $32 billion in previously restructured principal, $5.4 billion owed to Brazilian bank offices located outside Brazil, $3.8 billion in new money from Brazil's 1988 financing package and $5.6 billion in unpaid interest. Approximately 750 creditors participated in the exchange.

The agreement with Brazil is the most complex so far under the Brady plan initiative. The Government issued $8.4 billion in par bonds, $7.3 billion in discount bonds, $1.7 billion in front-loaded interest-reduction bonds (FLIRB), $7.3 billion in FLIRBs with capitalization (C-bond), $5.6 billion in past-due interest bonds (EI bonds), $8.5 billion in debt conversion bonds (DCB), and $2.1 billion in new money bonds. The first three instruments listed require collateral. An additional amount of $2.1 billion was issued in phase-in bonds, which will be converted into discount and par bonds as collateral for them is delivered over the next two years. At the end of the phase-in period, Brazil will have issued $10.5 billion in par bonds and $7.3 billion in discount bonds. Table 1 summarizes the main features of each of the bonds issued.

The Government also delivered $2.8 billion in initial collateral to the collateral agent and drew down $353 million under the new money option.

3.2. Calculating Brazil's Potential Gain without the Efficiency Effect

The value of $P^o D^o - P^x D^x - N$ will be calculated in this sub-section. To calculate the first term in the expression, the total pre-buyback amount of debt has to be multiplied by the secondary market price of the debt that would have prevailed before the buyback if no negotiation had taken place. The price of the Brazilian debt in the secondary market seems to have followed the market trend until mid-march, 1994. At that time the price

Table 1

	Interest Rate (percent)	Tenor (years)	Grace (years)	Collateral		Repayment	Other Details
				Principal	Interest		
Par Bond		30	30	30-yr. US Treasure Zero Coupon Bonds	12 mnths. rolling guarnatee		
year1	4						
year2	4.25						
year3	5						
year4	5.25						
year 5	5.5						
year 6	5.75						
year 7-30	6						
Discount Bond	libor+13/16	30	30	30-yr. US Treasure Zero Coupon Bonds	12 mnths. rolling guarnatee		conversion at 35% discount
FLIRB		15	9		12 mnths. rolling guarnatee for first 6 years	equal semi-annual installments	
year 1-2	4						
year 3-4	4.5						
year 5-6	5						
year 7-15	libor+13/16						
C-Bond		20	10	none	none	equal semi-annual installments	during first 6 years difference between int.rate and 8% capitalized
year 1-2	4						
year 3-4	4.5						
year 5-6	5						
year 7-15	8						
EI Bond	libor+13/16	12	3	none	none	1-7: 1% 8: 5% 9-19: 8%	
DCB	libor+7/8	18	10	none	none		
New Money	libor+7/8	15	7	none	none		$1.00 for each $5.50 converted into DCB
Phase-in	65% of libor+13/16	10	2.5	none	none		to be converted into Par and Discount bonds in 2yrs

Source: Citibank

jumped from 51 cents per dollar to 76 cents per dollar, and the jump was not accompanied by any other country's debt price. Therefore, it is reasonable to take 0.51 as the pre-buyback debt price. As the total amount transacted was \$46.8, $P^o D^o = 23.87$.

$P^x D^x + N$ represents the market value of the remaining debt after the buyback. Brazil guarantees the component $P^x D^x$, whereas N is guaranteed by the collateral. To calculate $P^x D^x$, the post-buyback secondary market price of each bond has to be multiplied by the amount issued of the bond, and the results summed. Table 2 summarizes the calculations. Note that the table does not include either the New Money or the Phase-in bonds. The market for those bonds is very thin, and therefore no secondary market prices are available for them. In order to estimate their market value, the implicit risk rate in the other bonds is calculated and then applied as a discount rate to the stream of payments scheduled for the New Money and Phase-in bonds. The resulting present value is an estimate of the market value of these bonds.

Table 2

Post-Buyback Value of the Debt

Bond	Quantity \$ billions	Secondary Mkt. Price	Value \$ billions
Par Bond	8.40	0.39	3.30
Discount Bond	7.30	0.56	4.09
FLIRB	1.70	0.43	0.72
C-Bond	7.30	0.44	3.21
DCB	8.50	0.51	4.29
EI Bond	5.60	0.58	3.26

Source: Unibanco

The total market value of the bonds for which secondary market prices are available (the sum of the last column in table 2) is \$18.874 billion. \$2.8 billion are collateralized, so that the Brazilian guaranteed share is \$16.074 billion. Hence, \$16.074 is the present value of the stream of scheduled payments (excluding the payments met by the collateral), discounted at the Brazilian risk rate, as perceived by the market. The next step is then to calculate the scheduled stream of payments, excluding the amounts met by the collateral. In

Table 3

Scheduled Stream of Payments for Par bond, Discount bond, FLIRB, C-bond, EI and DCB

$ billions

Libor	5%	7%	10%	15%
Period				
1	0.55	0.69	0.89	1.22
2	0.55	0.69	0.89	1.22
3	0.98	1.18	1.49	1.99
4	0.98	1.18	1.49	1.99
5	1.09	1.30	1.61	2.11
6	1.09	1.30	1.60	2.10
7	1.11	1.31	1.62	2.12
8	1.10	1.31	1.61	2.11
9	1.14	1.35	1.65	2.15
10	1.14	1.34	1.65	2.14
11	1.15	1.36	1.66	2.15
12	1.36	1.56	1.86	2.36
13	1.64	1.85	2.18	2.70
14	1.59	1.81	2.12	2.64
15	1.55	1.76	2.08	2.59
16	1.52	1.72	2.03	2.53
17	1.48	1.69	1.99	2.48
18	1.45	1.65	1.95	2.44
19	1.57	1.77	2.06	2.54
20	1.54	1.73	2.02	2.49
21	2.48	2.67	2.96	3.42
22	2.42	2.60	2.88	3.32
23	2.36	2.54	2.80	3.22
24	4.13	4.30	4.54	4.95
25	2.06	2.20	2.41	2.75
26	2.02	2.15	2.35	2.68
27	1.98	2.11	2.30	2.61
28	1.95	2.07	2.25	2.54
29	1.91	2.02	2.19	2.47
30	1.87	1.98	2.14	2.40
31	1.70	1.80	1.95	2.19
32	1.66	1.76	1.90	2.14
33	1.63	1.72	1.86	2.08
34	1.60	1.68	1.81	2.02
35	1.56	1.65	1.77	1.96
36	1.53	1.61	1.72	1.90
37	0.97	1.04	1.14	1.31
38	0.95	1.02	1.13	1.30
39	0.93	1.00	1.11	1.28
40	0.92	0.99	1.09	1.26
41,60	0.46	0.53	0.63	0.80

the calculations it is assumed that the first year of debt service from the par, discount and FLIRB, and the principal of the par and the discount are met by the collateral. Several debt service payments are set at floating interest rates, i.e., the libor rate plus some spread. The stream of payments is then calculated for four different scenarios for the future value of libor: 5%, 7%, 10% and 15%. The result is presented in table 3. The risk rate is calculated using the following equation:[3]

$$16.074 = \sum_{t=1}^{60} \frac{R_t}{(1+r)^{t/2}} \qquad (15)$$

where R_t is the repayment scheduled for period t, and r the post-buyback risk rate of the debt. Solving equation (15) for each of the streams of payments in table 3, and applying the resulting risk rate to the stream of payments of the New Money and Phase-in bonds, we get the market value of those bonds. The results are summarized in table 4.

Table 4

Libor	5%	7%	10%	15%
Post-buyback risk rate	15.92%	18.15%	21.42%	26.91%
Value of Phase-in Bonds	1.36	1.39	1.44	1.5
Value of New Money Bonds	1.05	1.12	1.21	1.33

Finally, the value of $P^x D^x + N$ is calculated by adding the value of the New Money and Phase-in bonds to the value of the other bonds (i.e., the sum of the last column in table 2).Table 5 presents the results for each value of libor in the future. The bounds for possible gain from the buyback without accounting for the efficiency effect for the different scenarios are also presented in table 5. They show that, without accounting for the efficiency effect, Brazil would have a net gain from the buyback for any of the future

[3] Payments are set in semi-annual installments.

values of libor considered here. It means that the decrease in expected repayments to the creditors ($P^oD^o - P^xD^x$) is lower than the cost of the transaction.

Table 5

Bounds for the Net Benefit of the Brazilian Debt Agreement

LIBOR	5%	7%	10%	15%
PxDx+N	21.29	21.39	21.52	21.70
PxDo	17.47	20.65	24.25	28.26
PoDo	23.87	23.87	23.87	23.87
Bounds				
No Efficiency	2.58	2.48	2.34	2.16
With Efficiency	-3.82	-0.73	2.73	6.55

3.3. Calculating Brazil's Potential Gain Accounting for the Efficiency Effect

To calculate the potential gain accounting for the efficiency effect, the value of the pre-buyback debt has to be calculate at post-buyback prices. The proper way to do it is to discount the pre-buyback scheduled stream of repayments at the post-buyback risk rate of the debt. Assuming that the pre-buyback debt would have had semi-annual payments at a yearly rate equal to libor plus 7/8%, the present value of the stream of payments for different values of libor, discounted at the post-buyback risk rate, is presented in table 5. It is then straightforward to calculate the potential gain (or loss) from the buyback taking into account the efficiency effect. They are presented in the last row of table 5.

One striking result is that for future values of the libor equal to 5% and 7% the efficiency gains are negative, i.e., the potential gain without accounting for the efficiency

effect is *higher* then the one accounting for the effect. Moreover, there is a potential gain if efficiency is not taken into account, but the negative effect of the buyback on efficiency makes it turn into a loss. For higher values of the libor, however, efficiency gains result from the buyback: the potential gain increases when the efficiency effect is taken into account. In other words, debt overhang increases with the buyback if the libor rate remains low in the future, but it decreases if the libor rate becomes high.

The reason for the result described above is that the value of the debt depends on the value of libor, as it is the present value of future payments which are set (at least in part) as a function of libor. The pre-buyback debt is set at floating rates, whereas some of the bonds after the renegotiation are set at fixed rates. The lower is the libor in the future, the smaller will be the reduction of the debt achieved in the negotiation. If the libor is low enough, it may even be the case that the debt becomes higher after the buyback. That is actually the case when the libor is equal to 5%: from table 5, $P^x\left(D^o - D^x\right) = -1.02$ (given that the collateral equals 2.8). When the libor equals 7% the buyback brings a debt reduction, but it is not high enough for the amount of resources spent in it, so that debt overhang gets worse with the buyback.

For higher values of the libor, the potential gain accounting for the efficiency effect is higher than the one without accounting for it. Hence, debt overhang is alleviated with the buyback. Brazil definitely benefits from the deal is this case, and the size of the benefit lies somewhere between the two bounds.

4. Conclusion

This paper showed the possibility of debt buyback worsening debt overhang, instead of alleviating it. It might be possible in a situation where the debt reduction is too low compared to the resources used to set the deal.

The study of the Brazilian debt renegotiation showed a case where debt overhang might not have been alleviated from the buyback. For low values of the libor rate in the future, debt overhang gets worse after the deal, and the opposite is true for high values of the libor. The intuition is that the lower the libor rate in the future, the lower is the debt reduction brought by the deal, and the lower the debt reduction for the fixed amount paid to set the deal. Hence, the stronger will be the effort for repayment necessary after the buyback. It is reasonable to affirm, however, that the probability that the libor will stay at very low value for the next 30 years is very low. Hence, it is *expected* that the deal will result in a net benefit for Brazil.

5. Bibliography

Bulow, Jeremy and Kenneth Rogoff (1988). "The Buyback Boondoggle", *Brookings Papers on Economic Activity*, 2, p. 675-698.

Bulow, Jeremy and Kenneth Rogoff (1990). "Cleaning Up the Debt Crisis Without Getting Taken to the Cleaners", *Journal of Economic Perspectives*, IV, p.31-42.

Bulow, Jeremy and Kenneth Rogoff (1991). "Sovereign Debt Repurchases: No Cure for Overhang", *The Quarterly Journal of Economics*, November, p.1219-1235.

Claessens, Stijn and Sweder van Wijnbergen (1993) "Secondary Market Prices and Mexico's Brady Deal", *The Quarterly Journal of Economics*, November, p.965-982.

Cohen, Daniel (1993). "A Valuation Formula for LDC Debt", *Journal of International Economics*, 34, p.167-180.

Rogoff, Kenneth (1992). "Dealing with Developing Country Debt in the 1990s", *World Economy*, July, v.15, n.4, p.475-486.

van Wijnbergen, Sweder (1991). "The Mexican Debt Deal", *Economic Policy*, April, p.13-56.

TEXTOS PARA DISCUSSÃO:

0325 - ABREU, M. P. O NAFTA e as relações economicas brasileiras. set. 1994. 29p.

0326 - GARCIA, M. G. P. Avoiding some costs of inflation and crawling toward hyperinflation: the case of the Brazilian domestic currency substitute. dez. 1994. 31p.

0327 - ABREU, M. P. ; CARNEIRO, D. D. ; WERNECK, R. L. F. Government and economic growth: a three gap view of the long run prospects of the Brazilain economy. dez. 1994. 33p.

0328 - TERRA, M. C. T. Multiple equilibria and protectionism. dez. 1994. 31p.

0329 - ABREU, M. P. ; CARNEIRO, D. D. ; WERNECK, R. L. F. Growth and environment trade-offs: three gap simulations for Brazil. dez. 1994. 21p.

0330 - GARCIA, M. G. P. Política monetária e cambial: algumas lições do periodo recente para o real. dez. 1994. 21p.

0331 - ABREU, M. P. Trade in manufactures: the outcome of the Uruguay Round and developing country interest. dez. 1994. 23p.

0332 - ABREU, M. P. ; CARNEIRO, D. D. ; WERNECK, R. L. F. Brazil: widening the scope for balanced growth. dez. 1994. 36p.

0333 - CARNEIRO, D. D. ; GARCIA, M. G. P. Private international capital flows to Brazil. mar. 1995. 41p.

0334 - AMADEO, E. J. Contra a inevitabilidade dos paradigmas. maio 1995. 30p.

0335 - AMADEO, E. J. ; CAMARGO, J. M. Regulations and flexibility of the labor market in Brazil. maio 1995. 43p.

0336 - GARCIA, M. G. P. O financiamento à infra-estrutura e a retomada do crescimento econômico sustentado. junho 1995. 22p.

0337 - WERNECK, R. L. F. The changing role of the state in Brazil. julho 1995. 19p.

0338 - AMADEO, E. J. International trade, outsourcing and labor: a view from the developing countries. agosto 1994. 33p.

0339 - TERRA, M. C. T. Openess and inflation: a new assessment. outubro 1995. 23p.

0340 - ABREU, M. P. , BEVILAQUA, Afonso S. Macroeconomic coordination and economic integration lessons for a Western Hemisphere Free Trade Area, nov. 1995 . 32 p.

0341 - BEKAERT,G.; GARCIA, M.G. P. ; HARVEY, C.R. The contribution of speculators to effective financial markets. nov. 1995

0342 -BEKAERT, G.; GARCIA, M.G. P. ; HARVEY, C.R. The role of capital markets in economic growth. nov. 1995

0343 - TERRA, M. C. T. ; GONZAGA, G. Stabilization , volatility and the equilibrium real exchange rate. dez. 1995

0344- BEVILAQUA, Afonso S. "Dual resource transfers and the secondary market price of developing countries' external debt". dez. 1995