Defaults, Spreads and Interest Rates: The Trend of Brazilian Credit Market

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Resumo

A importância do crédito para o crescimento econômico torna-se mais relevante em casos de escassez de recursos financeiros. Diversos são os motivos que causam a oferta de crédito abaixo da desejada ou a demanda reprimida de recursos por parte dos agentes econômicos: o alto custo dos empréstimos, os obstáculos de acesso ao mercado fomentador e as elevadas taxas de juros e spread são alguns deles. A trajetória do crédito no Brasil vem se tornando crescente ao longo dos últimos anos. Porém, o volume ainda é pequeno em relação ao nível de atividade econômica quando comparado a outros países, inclusive países em desenvolvimento. Assim, o artigo investiga as principais causas do baixo nível de crédito no país.

Palavras-Chave: *Crédito, Inadimplência, Taxas de Juros e Spread.*

Introduction

The importance of credit to the economy has been highlighted in the work of different schools of academics over different periods (SCHUMPETER, 1982 [1911]; KEYNES, 1937; MINSKY, 1986; STIGLITZ, 1989; GERTLER and GILCHRIST, 1994; BERNANKE and GERTLER, 1995; and LEVINE, 1997 and 2004). The implications of credit for economic growth are even greater in times of scarcity or insufficient supply of financial resources and/or repressed demand for credit.

Following the introduction of the Real Plan in Brazil, the Credit/GDP ratio fell to 23.8% in March 2003 (Chart 1). Sustained growth of availability of credit only reappeared in the second half of 2003, principally in the freely allocated (i.e. excluding officially directed lending programs) segment of the credit market (Chart 2) and provided by Private Financial System (Chart 1).
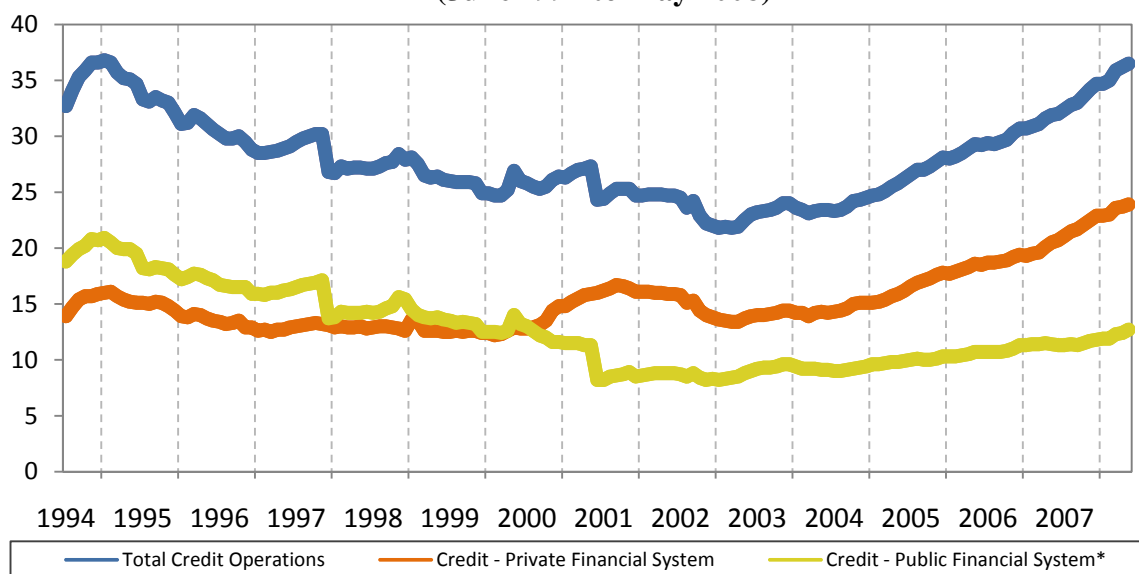
The Chart 1 shows two distinct periods in relation to the conduct of public and private institutions. First, from the economic stabilization plan in July 1994, until July 2000, notes that the credit originating in public institutions presented general downward trend in relation to GDP. However, it should be noted that throughout this period, the credit come from those institutions was higher than that of private institutions. Second, in the following period - that extended until June 2006 - private institutions have become the main source of credit in Brazil, presenting even higher trajectory of growth.

The post-2003 period was one of greater economic stability, both domestically and internationally, compared with previous years, especially 2000-2001 and the first half of 2003. In 2001 Brazil suffered from energy rationing, the Argentine crisis and a decline in global economic growth. Things improved little in 2002, when Brazil lost US$27.8 billion in external credit lines (nearly 6% of domestic GDP) as the result of heightened risk aversion in international markets and problems with domestic public debt management. These factors affected economic growth and sapped the credibility of monetary policy (MENDONÇA and

SOUZA, 2007). A political crisis also emerged during that same year, caused by the distinct possibility that candidate Lula could win the presidential election, the so-called Lula effect. The poor performance in 2003 was mostly confined to the first quarter and reflected the problems of the previous year.

Credit markets therefore only began to feel the effect of rising economic growth and, later, the cuts in the Selic benchmark interest rate in the second half of 2003.
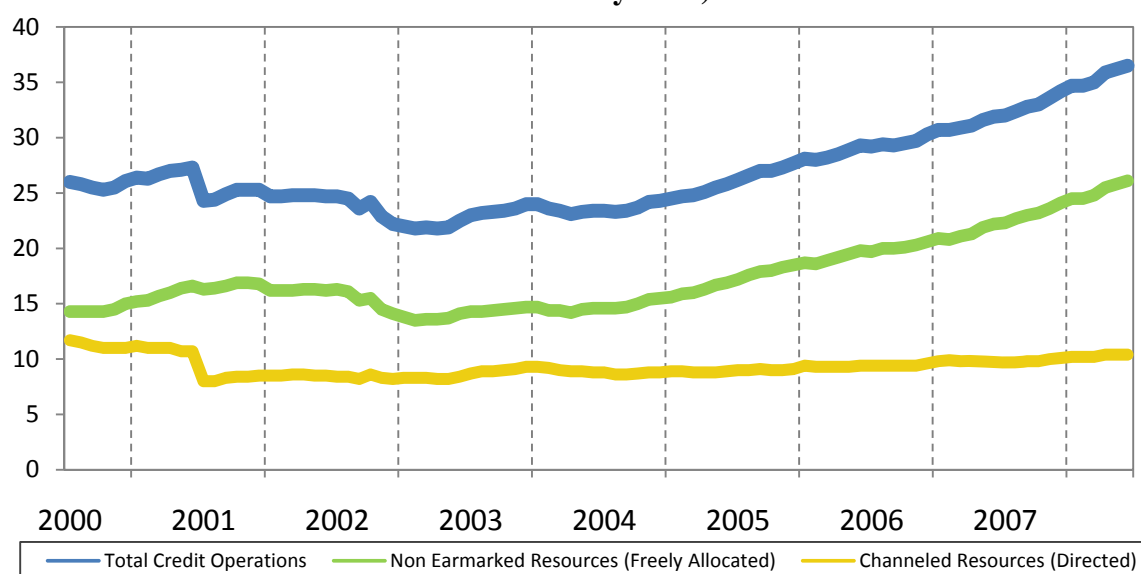
Chart 1
Total Credit Volume, Public and Private Institution – Percentage (%) of GDP (June 1994 to May 2008)

Source: Central Bank of Brazil, series 11,400; 11,402 and 11,403.
Note: (*) Public institutions refer to those where governments Federal, State and Municipal hold more than 50% participation in the voting capital, according to the Circular Letter no. 2345 of BCB in January 25, 1993.
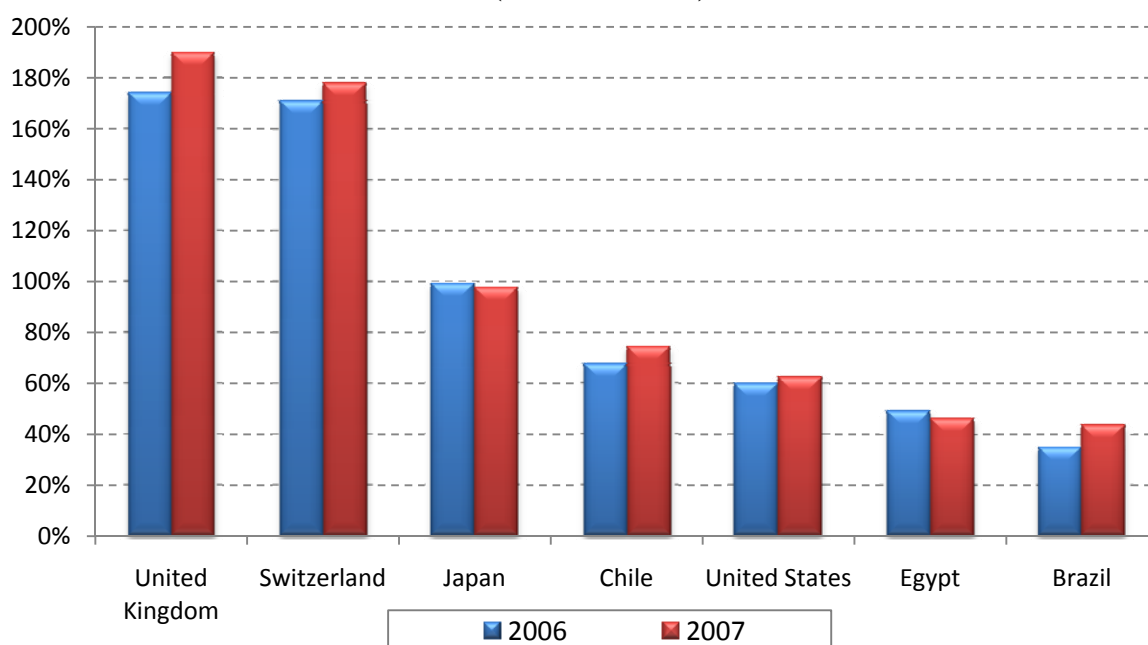
Chart 2
Total Credit Volume, Freely Allocated and Directed – Percentage (%) of GDP (June 2000 to May 2008)

Source: Central Bank of Brazil, series 11,400; 11,388 and 11,387.

The improvement, however, in the financial environment still falls short of what would be needed to meet today's demand for credit. The level of credit in the Brazilian economy is still low compared with the rest of the world (Chart 3). The Credit/GDP ratio (private sector) for Chile in 2007, for example, was 74.37% and 46.36% for Egypt (emerging economies). The gap is wider still if the comparison is made with the more developed economies like, for example, Japan (97.44%), Switzerland (178.02%) and the United Kingdom (190.01%).

Chart 3
Claims on Private Sector – Percentage (%) of GDP
(2006 and 2007)

Source: IFS – International Financial Statistics data base.

Credit in Brazil suffers from excessively high cost and supply bottlenecks. One of the chief causes is the high default risk premium built into loan spreads. Theoretical and empirical research can help explain the mechanisms through which default risk distorts the formation of credit spreads.

Interest Rates, Spreads and Defaults

The analysis in this section will focus on the period from 2000 to 2008. The choice coincides with a period of greater stability in Brazil's institutional, economic and financial environment. From 2000 onwards, the effects the Real Plan began to make themselves felt: the floating exchange rate, the inflation-targeting regime, increasing integration with international capital markets and the new requirements for banks regarding capital adequacy and loan loss provisions.
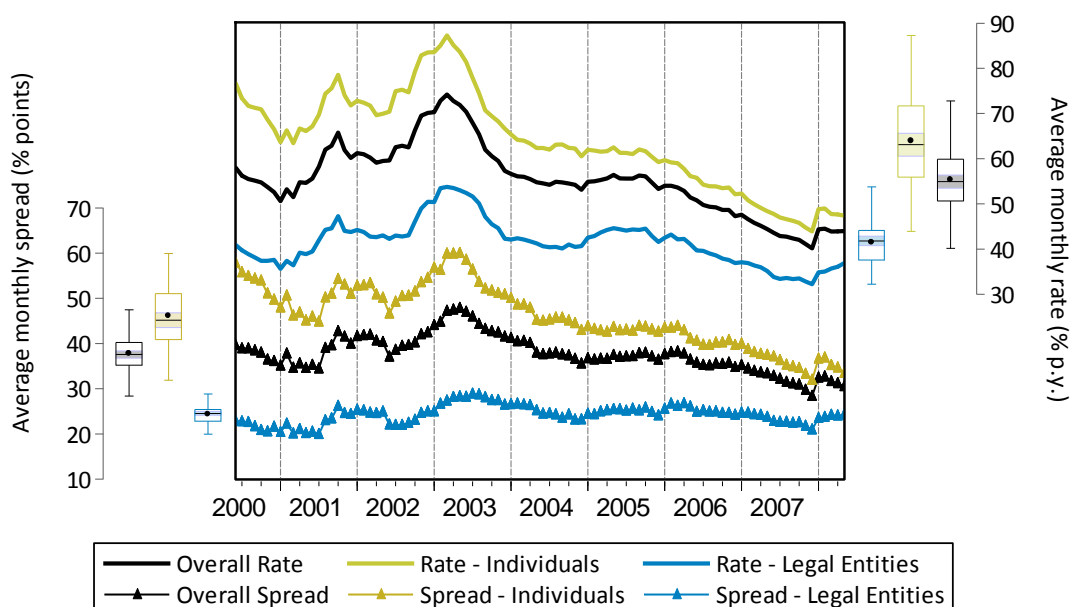
The analysis of interest rates, loan spreads and default rates is based on a series of data on the freely allocated segment of the credit market used as the benchmark for tracking interest rates. The Central Bank of Brazil (BCB) provides more detail regarding rates, late payments and maturities for this series of data, which also offers a clearer vision of credit markets, since credit conditions in this segment (to the contrary of the directed credit segment) are freely negotiated between borrower and lender.

The types of interest rate mechanism used in this segment can be fixed ex-ante (fixed), fixed ex-post (variable), floating and inflation-adjusted. The rate structures analyzed in this

section are the fixed rate and a consolidated rate (an average rate covering fixed, variable rate and floating rates, weighted by their respective volumes). The breaking out of the fixed rate portfolios is justified by the preponderance of this type of rate structure[1], especially in the consumer and personal loan portfolios[2], and by the fact that they have frequently been used in research into the composition and trends of credit spreads (AFANASIEFF, LHACER and NAKANE, 2002; KOYAMA and NAKANE, 2002a and 2002b, and OREIRO *et al.*, 2006).

Both the loan spread (measured in percentage points) and the loan rate (measured in % per year) show increases in 2001 and 2002, peaking in the first semester of 2003, as can be seen in Chart 4. This was followed by a declining trend until 2008, which may have been one of the factors behind the increase in the availability of freely allocated credit and, consequently, of total credit volumes, as seen in Chart 2. Even in the first quarter of 2008, however, the overall spread of 30.50% and the overall interest rate of 43.99% p.y. (for May 2008) were still very high by international standards[3].

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Chart 4
Monthly Average of Loan Rates (% p.y.) and Spreads (% points)
Credit Operations with Nonearmarked Funds - Fixed Rate:
Individual Borrowers, Corporate Borrowers and Overall
(March 2000 to May 2008)

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Source: Central Bank of Brazil, series 3,955; 3,957; 3,956; 3,951; 3,953 and 3,952.

As can be seen in Chart 5, the trend in spreads and loan rates in general, as measured by the consolidated rate referred to above, were not very different from those verified in the fixed rate segment. This is due, as mentioned earlier, to the predominance of fixed rate loans in the total volume of freely allocated credit and thus in total credit volumes. The average
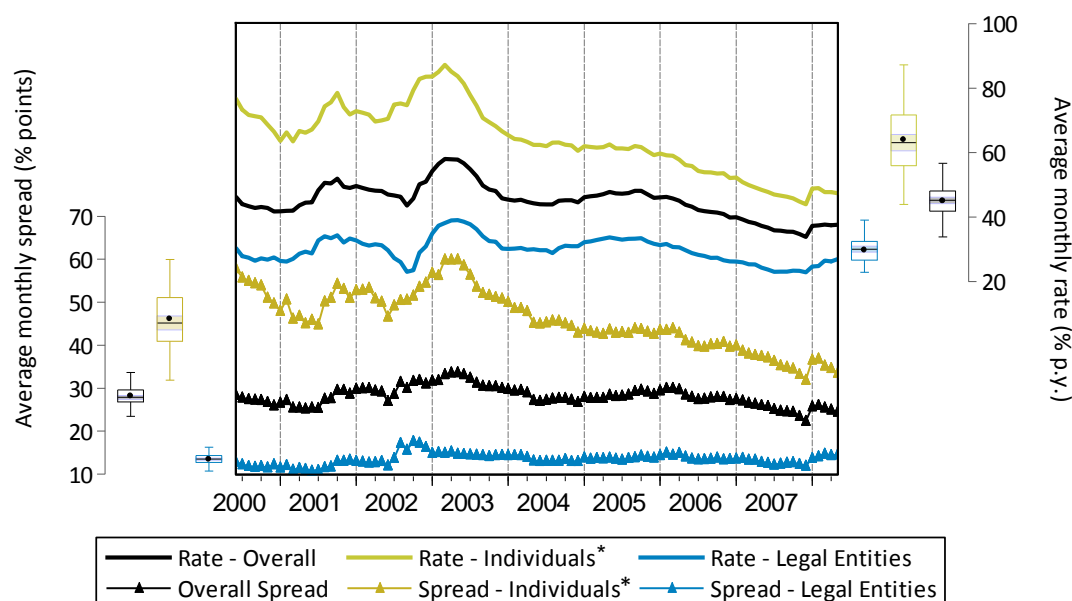
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[1] Fixed-rate loans in the freely allocated credit segment accounted for over 50% of the freely allocated credit segment as a whole between June 2000 and May 2008, according to BCB data.
[2] For the average consolidated interest rate for loans to individual borrowers (fixed rate loans, variable rate loans and floating rate loans), the BCB uses the average fixed rate interest rate for loans to individual borrowers, since transactions of this kind are predominantly done at fixed rates.
[3] Overall rates are obtained by calculating the geometric average of the rates practiced in each segment (individual borrowers and corporate borrowers), weighted for the proportionate size of each portfolio.

level of rates and spreads, however, is higher in the fixed rate market.   For the period from June 2000 to June 2006, the fixed interest rate averaged 58.59% p.y. and the spread 39.31%, while the average for the consolidated interest rate was 47.24% p.y. and 28.91%, respectively.

Chart 5

Monthly Average of Loan Rates (% p.y.) and Spreads (% points) — Consolidated Interest Rate: Individual Borrowers, Corporate Borrowers and Overall (June 2000 to May 2008)

Source: Central Bank of Brazil, series 8,298; 3,957; 8,299; 8,287; 3,953 and 8,288.
Note: (*) The data on individual borrowers refers to the fixed rate segment. See footnote N° 3.

The consolidated rate incorporates variable postset rate and floating rate loans as well as fixed rate loans. The variable rate structure typically is composed entirely of a variable rate, or of a two-tier structure, one part with a fixed rate and the other with a variable rate. The variable rate is usually based on a rate, longer in tenor than overnight, that is regularly and publicly calculated and published (such as TR, TBF or TJLP[4]) or on the exchange rate, all which can be followed by the parties to the loan agreement from the date it is signed to the maturity or the next amortization of the loan. Floating rate loans are different from variable rate loans in that they are based on overnight rates (the benchmark Selic rate, for example). They are usually used in loans to corporate borrowers (legal entities) where the risk of default tends to be lower.

Charts 4 and 5 show that, although the downward trend in rates is similar for both individual and corporate borrowers, from 2003 onwards the decline was more accentuated for rates on loans to individual borrowers. This relatively steeper decline would seem to be associated with growth in the volume of credit outstanding to individual borrowers. Nevertheless, both the actual level and the volatility of the spread and of the rate itself continued greater for individual borrowers[5]. For instance, while the average spread during that period for fixed rate loans to corporate borrowers was 24.63% and the average rate

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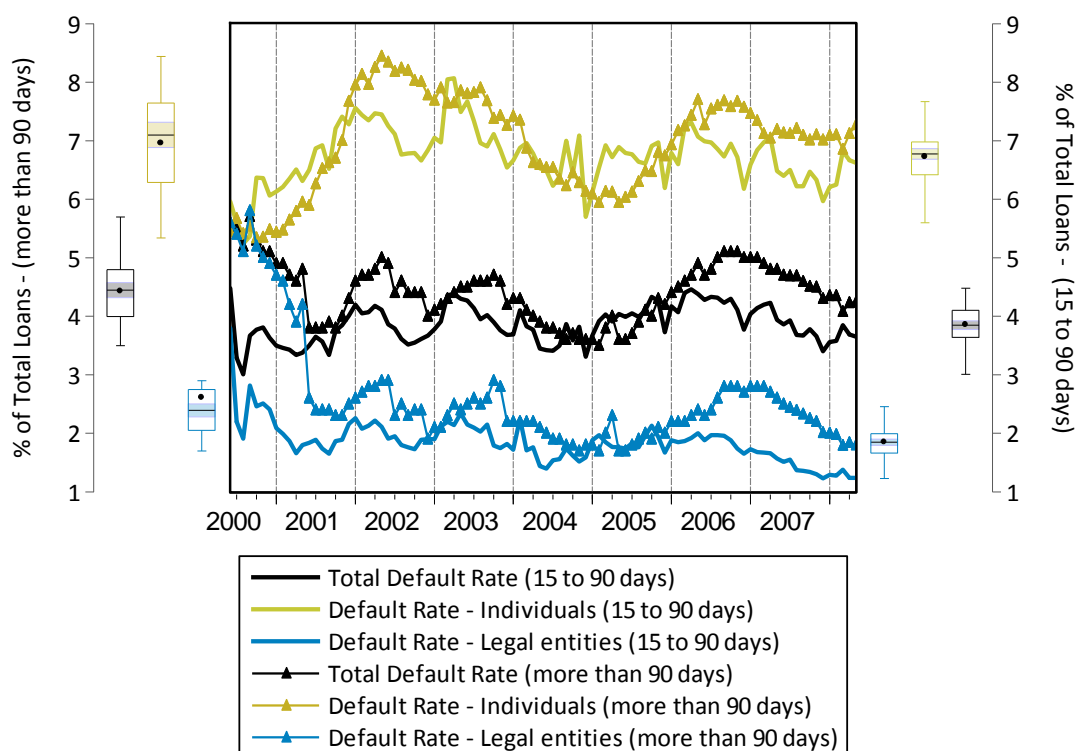[4] Benchmark Rate, Basic Interest Rate and Long-term Interest Rate, respectively.
[5] The rate for each segment (individual borrowers and corporate borrowers) is obtained by calculating the geometric average of the rates practiced in each segment, weighted for the proportionate size of each portfolio.

43.39% p.y., the spread and the rate for individual borrowers during the same period were 49.36% and 68.94% p.y., respectively. The coefficient of variation for corporate borrowers was 0.09 (spread) and 0.10 (rate), compared with 0.11 for individual borrowers (spread and rate).

These substantially higher rates and spreads for individual borrowers are directly related to the higher costs of lending to individuals, principally as regards risk. Default rates among individual borrowers are at a substantially higher level than those associated with corporate borrowers, as can be seen in Chart 6.

What this chart shows is that, irrespective of the number of days chosen to define default – in this case from 15 to 90 days or beyond 90 days – borrower behaviour shows little variation, the salient point being the gap between the default rates for corporate and that for individual borrowers. While the default rates for individual borrowers are always higher than 5% of the total for each segment, the rates for corporate borrowers are below this level for most of the time. The average default rates for individual borrowers are 6.78% (15 to 90 days) and 6.86% (above 90 days), while the rates for corporate borrowers are 1.95% and 2.68%, respectively.

Chart 6
**Loan Default Rates, from 15 to 90 Days and above 90 Days, as a % of Total Loans* to Individual borrowers, Corporate borrowers and Overall
(June 2000 to May 2008)**

Source: Central Bank of Brazil, series 7,914; 7,916; 7,915; 7,936; 7,938 and 7,937.
Note: (*) Refers to the credit transaction types used to track interest rates.

The difference between the default patterns of individual and corporate borrowers can be explained by the differences between the two markets. The corporate market, for example, is characterized by less information asymmetry [6], the existence of collateral for most

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[6] See Stiglitz and Weiss (1981) regarding the information asymmetry in credit markets.

transactions, tailored-made loan structures and greater bargaining power, among other characteristics that help reduce loan costs and/or credit risk.

The default rates for individual borrowers for the two default periods used are substantially similar. Rates for corporate borrowers developed a larger gap during the period 2001-2002. Overall, the default rate is greater for loans with payment delays of over 90 days. The overall average default rate for 15 to 90 day period is 3.84%, while that for the more than 90 days period is 4.35%.

According to Paula and Leal (2006), Brazil, compared with world standards, exhibits an unhealthy combination of a low credit/GDP ratio, high loan interest rates and high loan spreads[7]. The cost of credit, together with poor economic growth, is responsible to a large degree for the scarcity of credit.

Some of these characteristics can be perceived in Brazil's recent economic environment. Credit in Brazil is scarce by world standards, maturities are short and loan rates are inflated by the high spreads built into the rate structures.

The problem has become so critical that in 1999 the BCB created its Interest Rates and Loan Spreads in Brazil project, declaring publicly the priority the government was giving to reducing the rates charged by banks on their credit portfolios. Every year since 1999 the BCB has published its Report on the Banking Economy, in which it tries to make an accurate diagnosis of the high rates charged by banks and, through an improved analytical understanding of the credit markets, adopt measures against the principal economic causes of the high bank spreads. The following section focuses on a discussion of banking spreads and, in particular, how they are affected by the level of credit defaults.

Spread: Concept, Structure and Causes

Spread is obtained through the difference between the rate of interest on a credit transaction and the cost of funding, and is the source of profit and the premium for the risk being run on such transactions. According to Dick (1999:1): "[…] *bank spreads,* [*are*] *defined as the difference between the lending and the deposit interest rates* […]*. This rate difference may be interpreted to be the margin between the prices of the main product (loans) and the main input (deposits) of this industry*".

Spreads, therefore, are influenced by a number of variables, in particular the credit quality of the borrower/issuer, market conditions, the size and liquidity of the issue or loan, and the tenor. In order to calculate the spread, the internal rate of return of the cash flows is deducted from the internal rate of return of an associated benchmark. It represents the difference between the interest rates on the loan asset and the funding liability, representing the profit margin and compensation for the risk in the transaction. Banking spreads can be seen as indicators of the efficiency of the banking system's resource intermediation function, since they measure the cost of the same (DEMIRGÜÇ-KUNT and HUIZINGA, 1999, and BROCK E ROJAS-SUARES, 2000).

The size of banking spreads is generally associated with the level of bank profitability. An increase in spreads, however, does not necessarily mean higher profits. Profit is only one of the components that go to make up bank spreads (COSTA and NAKANE, 2005c).

Leal (2006), for the purpose of making a comparative evaluation of the research available on the topic of spreads, proposes to classify the empirical research according to the source of the information (ex-ante or ex-post), the content (revenues and expenses) and the scope of the sample (banks and loan types). Box 1 summarizes the principal foreign research available on banking spreads and the groups of countries they cover.

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[7] See Nakane and Costa (2005) for a deeper discussion of the comparison between Brazilian bank spreads and world standards.

Box 1
International Empirical Research and Analysis of Bank Spreads by Group of Countries

Research	Number of countries	Period	Scope and Spread Type
Demirgüç-Kunt and Huizinga (1999)	80	1988 - 1995	Structure and determinants of ex-post spreads
Saunders and Schumacher (2000)	7 (OECD*)	1988 -1995	Trends and determinants of ex-post spreads
Claessens, Demirguç-Kunt and Huizinga (2001)	80	1988 - 1995	Determinants of ex-post spreads
Demirgüç-Kunt, Laeven and Levine (2004)	72	1995 - 1999	Trends and determinants of ex-post spreads
Maudos and Guevara (2004)	5 (Europe)	1993 - 2000	Determinants of ex-post spreads
Peria and Mody (2004)	5 (Latin American)	1995 - 2001	Trends and determinants of ex-post spreads
Gelos (2006)	85 (emerging, with 14 from Latin America)	1999 - 2002	Trends in ex-ante and ex-post spreads. Determinants of ex-post spreads

Source: Leal (2006).
Note: (*) Organization for Economic Development and Cooperation.

There are three main types of approach to analyzing spreads: evolution, structure and determinants. In the first of these, the analysis is based on the evolution of bank spreads over time. The second approach, basically an accounting one, tries to measure the different components of bank spreads, such as defaults, administrative costs, taxes etc. Analysis of the determinants, however, is what is used to investigate the quantitative effects of changes in other variables on bank spreads.

Research can be found in Brazil using all three methodologies. Box 2 summarizes the Brazilian literature on the topic by approach and also by source of information (ex-ante or ex-post).

The ex-ante spread is basically the difference between the rate of interest on the banks' loan portfolios and the rate of interest paid on the banks' funding, as taken from the available information on the banks' operations. In the words of Leal (2006:13):

> The ex-ante bank spread [...] is measured based on the banks' pricing decisions as regards interest rates on their funding and loan portfolios, before realizing the profit on the same. This measure reflects the **expectations** of banks regarding demand, **defaults** and competition, among others (our bold type).

The ex-post spread is the quantitative measurement of the result of banks' financial intermediation, based on the revenues effectively generated by the loan portfolios and the effective cost of the funding for those loan portfolios. The measurement is made after the

effective results of each loan are known, usually using accounting information. While the first is based on the rates set by the banks when entering each transaction, the second is based on the financial results effectively achieved.

Box 2

Empirical research into Brazilian Bank Spreads by Analytical Approach and by Type of Spread Measurement

TYPE OF SPREAD MEASUREMENT	TYPE OF ANALYTICAL APPROACH		
	Evolution	**Structure**	**Determinants**
Ex-ante	BCB (1999 to 2005, and 2006b); Afanasieff, Lhacer and Nakane (2001 and 2002) Koyama and Nakane (2002a).	BCB (1999 to 2006a); Costa and Nakane (2004, 2005a and 2005b).	Aronovich (1994); Koyama and Nakane (2002a and 2002b); Afanasieff, Lhacer and Nakane (2001 and 2002); Oreiro *et al.* (2006); Bignotto and Rodrigues (2006).
Ex-post	-	FIPECAFI (2004 and 2005); Matias (2006).	Guimarães (2002).

Source: Adapted from Leal (2006).

The bulk of the research done in Brazil is into the ex-ante spread. There is no consensus, however, as to which of the two measures is the more efficient. According to Demirgüç-Kunt and Huizinga (1999), the ex-ante spread tends to be more sensitive to perceived risk. Changing risk expectations produce immediate changes in spreads, as banks attempt to protect their expected risk-return ratios. The ex-post spread depends on the results generated by such risk expectations. These authors consider the ex-post spread more reliable for the purposes of international comparisons, given the greater consistency of their data. On the other hand, the ex-ante spread is a better measure of the cost of credit to the borrower, since it is part of the rate used to price the actual credit transaction. The choice of what type of information to use depends on the objectives being pursued and the limitations of each of them.
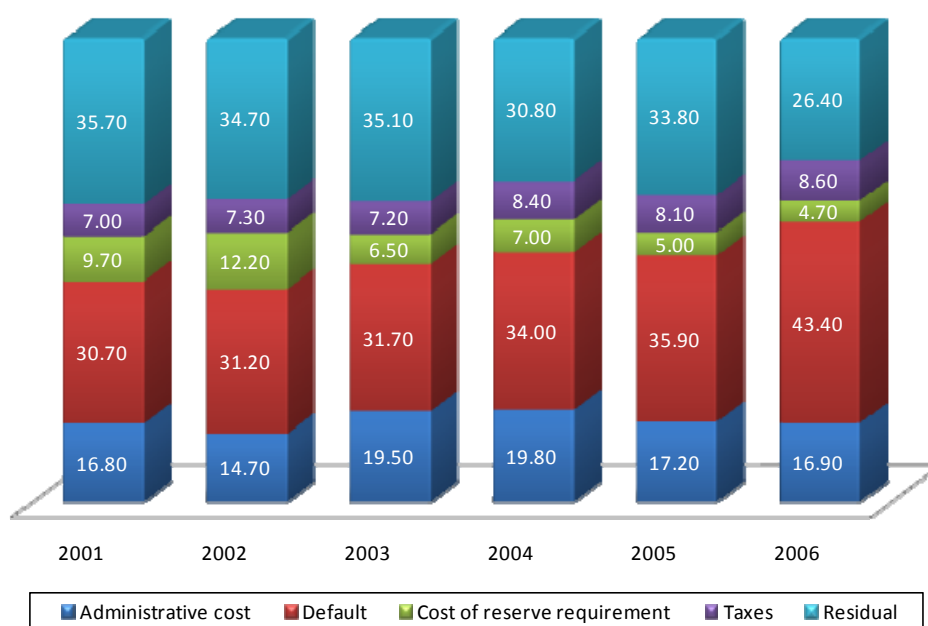
Structure of the Brazilian Spread

The trend in Brazilian bank spreads from 2000 onwards has already been analyzed and illustrated earlier. Regarding the structure of such spreads, the official reference work is the research undertaken by the BCB (2001 to 2006a). According to the methodology used in this research work, the Brazilian bank (ex-ante) spread for fixed rate loans can be broken down into administrative costs, default risk, reserve requirements, taxes plus a residual, which is considered to be the bank's profit margin[8].

The methodology for calculating the component parts of bank spreads has improved over the years. The methodology proposed by the BCB (2006a) was applied to the period from 2001 to 2006, as can be seen in Chart 7, summarizing the relative importance of each component. It can be seen that a substantial part of the difference between funding rates and loan rates (30.70%) can be explained by the level of loan defaults in 2001, which continued to

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[8] The gross residual is always calculated by subtracting from the spread the other variables considered to be components of the spread. The net residual is obtained by deducting direct taxes from the gross residual.

increase over the years until reaching 43.40% in 2006. The average participation of default risk in the total over the whole period was 34.48%. Administrative costs also accounted for another significant part of the spread composition (17.48% on average). Taxes accounted for another 7.7% on average, while the cost of maintaining reserve requirements represented another 7.52%. The average figure for the residual was 32.75% for the whole period from 2001 to 2006.

Chart 7
Structure of the Ex-ante Bank Spread (% composition) in Brazil (2001 a 2006)

Source: Central Bank of Brazil (2006a).
Note: The estimated percentages were applied to the average consolidated spread for December of each year.

In overall terms, the breakdown of the bank spread has not suffered any very great changes over the years. The only component to have shown a consistent rise has been default risk, with a particularly high jump in 2006, a reflection of the increased volume of late payments in that year. The other components merely oscillated, without any clear trend.

Costa and Nakane (2005a) broke down the spread in 2002 into different sub-examples of banks, including a separation of private and public sector banks. The methodology used is only slightly different from that used by the BCB (2006a). For example, they break out the cost of the Credit Guarantee Fund (FGC) separately. The analysis by sub-samples, however, brings to light some interesting conclusions. Table 1 summarizes the results.

As can be seen, administrative costs and loan defaults accounted, on average, for over half of the total costs of financial intermediation, whatever the sample used. The participation of these two components, however, was greater in the public sector than in the private sector banks. At the same time the residual or profit margin was higher in the private sector than in the public sector banks, the greatest disparity being in the comparison with the 17 largest private sector banks.

Table 1
Structure of the Brazilian Ex-ante Bank Spread (% composition) by Sample Type
(December 2002)

Components of the *Spread*	Largest private sector banks	Financial System as a whole	Complete sample	Private sector banks	Public sector banks
Cost of FGC	0.22%	0.24%	0.24%	0.25%	0.28%
Administrative costs	21.12%	29.36%	28.34%	22.47%	38.26%
Defaults	23.03%	27.63%	27.31%	25.35%	30.44%
Cost Res. Requirements	10.66%	8.18%	8.31%	9.76%	7.23%
Taxes	13.41%	11.18%	12.33%	12.82%	11.80%
Residual	31.56%	23.41%	23.47%	29.35%	11.98%
Number of banks	17	57	100	61	14

Source: Adapted from Costa and Nakane (2005a).

Determinants of Brazilian Spreads

Following the introduction of inflation targeting and the floating exchange rate regime in Brazil, the BCB turned its attention to the determinants of banking spreads, seeking not only to identify the elements comprising such spreads but also to diagnose the mechanisms needed to reduce the cost of credit and expand the volume of credit in the economy (BCB, 2004). The bulk of the work in Brazil has been carried out by researchers working with the BCB (Box 3).

Each individual analysis identifies its own possible determinants of bank spreads. Despite the different variables chosen, some of the identified determinants turn up in most of the analyses, as is the case with inflation, benchmark interest rates, economic growth and credit risk, as can be seen in Box 3.

Aronovich (1994), in his earlier study of the determinants of bank spreads in Brazil, tested the following variables: inflation, as measured by the General Price Index-Internal Supply (IGP-DI), the level of economic activity as measured by capacity utilization (an indicator calculated by the São Paulo Industrial Association-FIESP) and economic shocks (by incorporating dummies). In Koyama and Nakane (2002a), the variables used are inflation (IGP-DI),seasonally-adjusted industrial production (as calculated by the Brazilian National Statistical Institute-IBGE), interest rates (Selic), administrative costs, reserve requirements (on sight deposits), credit risk (the spread of the C-bond over US Treasuries of the same maturity) and indirect taxes (PIS, COFINS, and CPMF). In another paper (2002b), the same authors tried to evaluate the sensitivity of bank spreads to the accounting breakdown performed by the BCB. For this purpose, they considered the following variables as having a causal relationship: Selic; administrative costs; reserve requirements; credit risk; indirect taxes; and a deterministic tendency.

The set of macroeconomic variables used by Afanasieff, Lhacer and Nakane (2001) comprises inflation (IGP-DI), growth of industrial production (as calculated by the IBGE), the Selic rate and interest rate risk (as measured by the volatility of the Selic rate). In a later paper (2002), Afanasieff, Lhacer and Nakane (2002) added indirect taxes and reserve requirements to the list of variables, as well as altering their risk methodology to that used by Koyama and Nakane (2002a and 2002b). Oreiro *et al.* (2006) list inflation (IPCA), the Selic rate, industrial production (IBGE), risk (volatility of the Selic rate) and the level of reserve requirements on sight deposits.

Bignotto and Rodrigues (2006) adapted the Ho and Saunders (1981) model to include the effects of risk factors and administrative costs. The variables introduced are

administrative costs, credit risk (the minimum loan loss provisions required by the BCB), interest rate risk, market share, liquidity, fee income, reserve requirements and tax outlays. Guimarães, in his 2002 paper, uses the following variables: inflation (implicit GDP deflator), Selic, real GDP growth rate, real per capita GDP, operating expenses, cash and short-term deposits, non-interest bearing assets, net worth, market share of foreign banks, taxes and sector concentration.

Despite the differences in methodology, econometric modelling, time intervals and composition of the samples, some conclusions have been drawn by Leal (2006) from the overall analysis of these researchers. From a structural point of view, the author argues that evidence exists that the principal components of ex-ante and ex-post bank spreads in Brazil between 2001 and 2005 were operating expenses, loan loss provisions (credit risk) and the net profit margins of the banks. Regarding the determinants, he too propounds a positive correlation between risk and ex-ante spreads, thus corroborating the theory put forward by Ho and Saunders (1981), according to which an increase in risk results in a widening of the ex-ante spread. He concludes that an overall analysis of structure and determinants clearly demonstrates the importance of administrative costs and loan default risk as components and explanations of bank spreads.

Box 3
Variables used in the Empirical Literature on Brazilian Bank Spreads

Author(s)	Period	Variables
Aronovich (1994)	March 1986 - Dec.1992	Inflation, economic growth
Koyama and Nakane (2002a)	March 1996 - Sep. 2001	Inflation, industrial production, Selic rate, spread over Treasuries, indirect taxes, reserve requirements, administrative costs
Koyama and Nakane (2002b)	Aug. 1994 - Sep. 2001	Selic rate, risk, spread over Treasuries, reserve requirements, administrative costs
Afanasieff, Lhacer and Nakane (2001)*	Feb. 1997 - Nov. 2000	Inflation, growth of industrial production, Selic rate, volatility of Selic rate
Afanasieff, Lhacer and Nakane (2002)*	Feb. 1997 - Nov. 2000	Inflation, growth of industrial production, Selic rate, spread over Treasuries, indirect taxes, reserve requirements
Oreiro *et al.* (2006)	Jan. 1995 - Dec. 2003	CPI, industrial production, Selic rate, Selic rate volatility
Bignotto and Rodrigues (2006)	March 2001 - March 2004	CPI, Selic rate, tax expenses, administrative costs, interest rate risk, credit risk, market share, liquidity, fee income, reserve requirements, total assets
Guimarães (2002)**	1995 - 2001	Foreign banks' market share, cash and deposits, net worth, non-interest bearing assets, operating costs, real per capita GDP, real GDP growth, inflation, real interest rates, taxes, tax revenues

Source: Adapted from Leal (2006).
Note: (*) In this study, the regression is calculated in two stages. The variables refer to the second stage. (**) The author uses annual numbers, aggregate as well as broken down by bank. In the second case, taxes and tax revenues are not taken into account as variables.

The Relation between Credit Risk and Brazilian Spreads

Many have been the means employed to try and identify the reasons for the high bank spreads practiced in Brazil. Belaisch (2003) focuses his research on the possibility that the Brazilian banking sector may not be fully competitive. In his own words, "[....] *this is suggested by the stylized facts, and indeed is confirmed by the empirical investigation, which indicates that Brazilian banks behave oligopolistically*" (BELAISCH, 2003:20).

Such a competitive structure would weaken the incentives to improve efficiency, which would explain why financial intermediation by banks is so scarce and costly. Not everyone, however, agrees on this issue. Nakane (2003:64) summarizes and analyzes several studies on the pricing power of banks in Brazil and argues that "[....] there exists little evidence to suggest that the high bank spreads practiced in Brazil are the result of weak competition in the banking sector".

Other studies, such as Afanasieff, Lhacer and Nakane (2001 and 2002), Koyama and Nakane (2002a), Paula and Leal (2006) and Oreiro *et al*. (2006) put more emphasis on the relevance of macroeconomic variables to explanations of bank spreads in Brazil. For Afanasieff, Lhacer and Nakane (2001), their econometric findings suggest that macroeconomic variables provide the most cogent explanations for the bank spreads practiced in Brazil.

Koyama and Nakane (2002a) also find evidence of the effect macroeconomic conditions have on bank spreads. For Oreiro *et al.* (2006) and Paula and Leal (2006), the macroeconomic uncertainties faced by banks in Brazil are the fundamental cause of the high bank spreads and, consequently, the high cost of bank credit. Without macroeconomic policies that effectively result in sustainable and financially stable economic growth, therefore, microeconomic measures to reduce bank spreads may well prove to be innocuous.

The entire series of BCB reports on the banking economy and credit, from 1999 to 2006, has always highlighted the risk involved in the lending business. In its first report, BCB diagnosed that the high bank spreads in Brazil could be explained, at least in part, by the level of payment defaults and by the low level of the banks' loan leverage, which puts limitations on the extent to which they can dilute their operating costs and their cost of capital. It was suggested, furthermore, that banks were reluctant to increase their loan portfolios for fear of the high levels of default they experienced. Seen from this angle, low levels of bank loan leverage could be considered a legitimate way for the banks to protect themselves in times of uncertainty.

The BCB's 2000 report placed greater emphasis on the more rigorous rules regarding loan classification and loan loss provisions that were being implemented as part of the BCB's role as sector regulator, responsible for controlling risks at the financial institutions under its control. The most important measure adopted here was to make it obligatory for all banks to classify their credit exposures into credit risk quality categories and to start constituting provisions for all such credit exposures from the second category downwards (Resolution 2,682, dated 12/21/1999). This followed in the wake of the international trend towards giving priority attention to the risks that banks assume and their capacity to manage them. Although such measures might be thought to limit, initially, the banks' field of action, they were meant to result over time in greater stability, lower credit defaults and, in the medium and long term, to lower costs, lower loan spreads and a lower overall cost of credit.

Between 2001 and 2006, credit risk became to be increasingly considered as the most significant explanatory variable, both from the accounting breakdown of bank spreads and from the use of econometric models to identify and estimate the importance of determinants.

Both methodologies have benefited over time from improvements in the quantity and quality of the available data.

Risk of default, therefore, is one of the principle individual elements in the BCB's diagnosis (1999 to 2006a) of what needs to be done to lower the average interest rate charged on loans in Brazil. Credit default rates in Brazil, besides their cyclical element, are also related to institutional issues such as the lack of a credit culture (due to long years of inflation), poor quality of available borrower information, inappropriate credit instruments and a legal system that lacks the legal mechanisms necessary to enforce loan collections (BCB, 2000).

There still exist, however, many measures that could be taken to lower the cost of credit for borrowers, such as a reduction in benchmark interest rates, reduction of the tax burden, as well as other measures to reduce credit risk and increase the efficiency and leverage of Brazil's financial institutions. In order, however, to reduce the level of credit risk, a clearer understanding has to be reached of how credit risk relates to cyclical factors.

As has been seen here, risk, principally credit risk, is of major importance in the structure and determination of bank spreads. A more thorough investigation into the nature of this variable is needed, in order to broaden our understanding not only of spreads, but of credit itself.

Conclusion

From all that has been discussed above, the importance of default risk has been clearly demonstrated, given its close correlation with the performance of financial institutions, the health of the financial system and national economic development itself.

The most recent data on the credit market released by the BCB shows a substantial increase in the volume of credit currently outstanding on the banks' books. Furthermore the increase in the share of freely allocated credit in the total accounts for a significant part of this growth.

The credit/GDP ratio in Brazil, however, is still low compared with other emerging markets. This situation is largely the result of a combination of undesirable factors, such as a deeply-rooted inflationary memory, concentration in the credit market and high spreads and, consequently, high overall cost of credit. Much research is being undertaken into the possible causes and the probable solutions, of which the foremost is dedicated to identifying the components and the determinants of bank spreads.

This article has also pointed out the relevance of credit default risk to the analysis of both the structure and the determinants of bank spreads in Brazil. The excessive credit risk in the lending activity restricts the availability of credit on the one hand, and, on the other, by increasing the cost, represses the demand for credit.

It has been accepted (BCB, 2004 and 2006a) that one of the main causes of the high Brazilian bank spreads is the average level of default risk faced by banks in their credit portfolios. It follows that the level of default risk needs to be reduced in order to achieve a similar effect in bank spreads.

References

AFANASIEFF, T. S.; LHACER, P.M.; NAKANE, M. I. The Determinants of Bank Interest Spread in Brazil. In: XXIX Encontro Nacional de Economia – ANPEC, Salvador, BA. **Anais do XXIX Encontro Nacional de Economia,** 2001.

_____. The Determinants of Bank Interest Spread in Brazil. **Money Affairs**, v. 15, n. 2, 2002, p. 183-207.

ARONOVICH, S. Uma Nota sobre os efeitos da Inflação e do Nível de Atividade sobre o *Spread* Bancário. **Revista Brasileira de Economia**. Rio de Janeiro, v. 48, n.1, 1994, p. 125-40.

BELAISCH, A. Do Brazilian Banks Compete? **IMF Working Paper**, n. 03/113, Washington: International Monetary Fund, May 2003.

BERNANKE, B. S.; GERTLER, M. Inside the Black Box: the credit channel of monetary policy transmission. **Journal of Economic Perspectives**, v.9, n.4, Autumn 1995, p. 27-48.

BIGNOTTO, F. G.; RODRIGUES, E. A. S. Fatores de Risco e *Spread* Bancário no Brasil. **Trabalhos para Discussão do Banco Central do Brasil**, n. 110. Brasília: BCB, jul. 2006.

BRASIL. Banco Central do Brasil. **Juros e *Spread* Bancário no Brasil**. Brasília: BCB, out., 1999. On-line in: <http://www.bcb.gov.br/ftp/juros-spread1.pdf>.

_____. **Relatório de Economia Bancária e Crédito**: avaliação de 1 ano do projeto juros e *spread* bancário. Brasília: BCB, nov., 2000. On-line in: <http://www.bcb.gov.br/ftp/jurospread112000.pdf>.

_____. **Relatório de Economia Bancária e Crédito:** avaliação de 2 ano do projeto juros e *spread* bancário. Brasília: BCB, nov., 2001. On-line in: <http://www.bcb.gov.br/ftp/jurospread112001.pdf>.

_____. **Relatório de Economia Bancária e Crédito**: avaliação de 3 anos do projeto juros e *spread* bancário. Brasília: BCB, dez., 2002. On-line in: <http://www.bcb.gov.br/ftp/jurospread122002.pdf >.

_____. **Relatório de Economia Bancária e Crédito**: avaliação de 4 anos do projeto juros e *spread* bancário. Brasília: BCB, dez., 2003. On-line in: <http://www.bcb.gov.br/ftp/rel_economia_bancaria_credito.pdf>.

_____. **Relatório de Economia Bancária e Crédito**: avaliação de 5 anos do projeto juros e *spread* bancário. Brasília: BCB, dez., 2004. On-line in: <http://www.bcb.gov.br/ftp/rel_economia_bancaria_credito.pdf>.

_____. **Relatório de Economia Bancária e Crédito**. Brasília: BCB, 2005. On-line in: <http://www.bcb.gov.br/pec/spread/port/rel_econ_ban_cred .pdf>.

_____. **Relatório de Economia Bancária e Crédito**. Brasília: BCB, 2006a. On-line in: <http://www.bcb.gov.br/pec/spread/port/rel_econ_ban_cred .pdf>.

_____. Crédito Bancário: evolução recente e perspectivas. In: **Relatório de Inflação.** Brasília: BCB, p. 45-7, dez., 2006b. On-line in: <http://www.bcb.gov.br/htms/relinf/port/2006/12/ri200612b4p.pdf>.

BROCK, P. L.; ROJAS-SUAREZ, L. Understanding the Behavior of Bank Spreads in Latin America. **Journal of Development Economics**, n. 63, Aug. 2000, p.113-34.

CLAESSENS, S.; DEMIRGUÇ-KUNT, A.; HUIZINGA, H. How Does Foreign Entry Affect Domestic Banking Markets? **Journal of Banking and Finance**, n.25, Apr. 2001, p. 891-911.

COSTA, A.C. A.; NAKANE, M. I. A Decomposição do *Spread* Bancário no Brasil. In: **Relatório de Economia Bancária e Crédito**: avaliação de 5 anos do projeto de juros e *spread* bancário. Brasília: BCB, dez. 2004, p. 17-30.

_____. **Revisiting the Methodology for the Bank Interest Spread Decomposition in Brazil**: an application of the theory of cost allocation. X Reunión de la Red de Investigadores de Bancos Centrales del Continente Americano. Lima, Peru, Oct. (CEMLA), 2005a. On-line in: <http://www.cemla.org/red/papers/redx-br-abrao.pdf>.

_____. Crédito Direcionado e Custo das Operações de Crédito Livre: uma avaliação do subsídio cruzado do crédito imobiliário e rural no Brasil. In: **Relatório de Economia Bancária e Crédito**. Brasília: BCB, 2005b, p. 29-43.

_____. *Spread* Bancário no Brasil: dois esclarecimentos e duas constatações. **Tecnologia de Crédito**, n. 48, São Paulo: SERASA, 2005c, p.24-37.

DEMIRGÜÇ-KUNT, A.; HUIZINGA, H. Determinants of Commercial Bank Interest Margins and Profitability: some international evidence. **World Bank Economic Review.** Oxford: Oxford University Press, v.13, n. 2, May. 1999, p. 379-408.

_____; LAEVEN, L.; LEVINE, R. Regulations, Market Structure, Institutions, and the Cost of Financial Intermediation. **Journal of Money, Credit, and Banking**, v. 36, n.3, Jun. 2004, p.593–622.

DICK, A. Banking Spreads in Central America: evolution, structure, and behaviour. HIID **Development Discussion Papers**. *C*ambridge: Harvard Institute for International Development, 1999.

FIPECAFI. **Estudo sobre a Estrutura da Taxa de Juros no Brasil**: apuração do *spread* da indústria bancária. São Paulo: FEA/USP, 2004. On-line in: <http://www.febraban.org.br/Arquivo/Destaques/Fipecafi_GDE.pdf>.

_____. **Estudo sobre a Apuração do *Spread* da Indústria Bancária**. São Paulo: FEA/USP, 2005. On-line in: <http://www.febraban.org.br/Arquivo/Destaques/fipecafi_port_ net.pdf>.

GELOS, R. Banking Spreads in Latin America. **IMF Working Paper**, n. 06/44, Washington: International Monetary Fund, Feb. 2006.

GERTLER, M.; GILCHRIST, S. Monetary Policy, Business Cycles, and the Behavior of Small Manufacturing Firms. **The Quarterly Journal of Economics**, MIT Press, v. 109, n. 2, May. 1994, p. 309-40.

GUIMARÃES, P. How Does Foreign Entry Affect the Domestic Banking Market? The Brazilian case. **Latin American Business Review**, v.3, n.4, 2002, p.121-40.

HO T.; SAUNDERS, A. The Determinants of Bank Interest Margins: theory and empirical evidence. **Journal of Financial and Quantitative Analysis**, v. 16, n. 4, Jun. 1981, p. 581-600.

KEYNES, J.M. The "Ex-Ante" Theory of the Rate of Interest. **The Economic Journal**, v. 47, n.188, Sep.1937, p. 663-9.

KOYAMA, S.; NAKANE, M. O *Spread* Bancário Segundo Fatores de Persistência e Conjuntura. **Notas Técnicas do Banco Central do Brasil**, n. 18. Brasília: BCB, abr. 2002a.

_____. Os Determinantes do *Spread* Bancário no Brasil. **Notas Técnicas do Banco Central do Brasil**, n. 19. Brasília: BCB, abr. 2002b.

LEAL, R. M. **Estrutura e Determinantes do *Spread* Bancário no Brasil**: uma resenha comparativa da literatura empírica. Dissertação (Mestrado em Economia), UERJ, Rio de Janeiro, 2006.

LEVINE, R. Financial Development and Economic Growth: views and agenda. **Journal of Economic Literature**, v. 35, Jun. 1997, p. 688-726.

_____. Finance and Growth: theory and evidence. **NBER Working Paper**, n. 10766, National Bureau of Economic Research, Sep. 2004.

MATIAS, A. B. Condições Estruturais do Sistema Bancário Brasileiro: o *spread* bancário brasileiro. **Estudos CODEMEC**, n. 54, Abr. São Paulo: IBMEC, 2006.

MAUDOS, J.; GUEVARA, J. F. Factors Explaining the Interest Margin in the Banking Sectors of the European Union. **Journal of Banking and Finance**, v. 28, n.9, Sep. 2004, p. 2259-81.

MENDONÇA, H. F.; SOUZA, G. J. G. Credibilidade do Regime de Metas para Inflação no Brasil. **Pesquisa e Planejamento Econômico**, v.37, n.2, agosto. Rio de Janeiro: IPEA, 2007.

MINSKY, H. P. **Stabilizing an Unstable Economy**. New Haven: Yale University Press, May 1986.

NAKANE, M. I.. Concorrência e *Spread* Bancário: uma revisão da evidência para o Brasil. In: **Relatório de Economia Bancária e Crédito**: avaliação de 4 anos do projeto juros e *spread* bancário. Brasília: BCB, dez. 2003, p. 58-67.

NAKANE, M. I.; COSTA, A. C. A. *Spread* Bancário: os problemas da comparação internacional. **Risk Update**, ano 1, n.3, maio 2005, p. 9-14.

OREIRO, J. L. C.; PAULA, L. F.; SILVA, G. J. C.; ONO, F. H. Determinantes Macroeconômicos do *Spread* Bancário no Brasil: teoria e evidência recente. **Economia Aplicada**, v. 10, n. 4, out./dez 2006.

PAULA, L. F.; LEAL, R. M. Custo do Crédito no Brasil: uma avaliação recente. **Indicadores Econômicos**. v. 34, n. 2. Porto Alegre: FEE, set. 2006, p. 91-102.

PERIA, M. S. M.; MODY, A. How Foreign Participation and Market Concentration Impact Bank Spreads: evidence from Latin America. **Journal of Money, Credit, and Banking**, v. 36, n. 3, [s.l.], 2004, p. 511–37.

SAUNDERS, A.; SCHUMACHER, L. The Determinants of Bank Interest Rate Margins: an international study. **Journal of International Money and Finance**, v.19, 2000, p. 813-32.

SCHUMPETER, J. A. (1911). **A Teoria do Desenvolvimento Econômico**: uma investigação sobre lucros, capital, crédito, juro e o ciclo econômico. São Paulo: Abril Cultural, 1982. (Coleção Os Economistas).

STIGLITZ, J. E. Money, Credit, and Business Fluctuations. **NBER Working Papers**, *n.* 2823, National Bureau of Economic Research, Inc., 1989. On-line in: <http://www.nber.org/papers/w2823.v5.pdf>.

_____.; WEISS, A. Credit Rationing in Markets with Imperfect Information. **The American Economic Review**, v. 71, n. 3, Jun. 1981, p. 393-410.