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Evolution of Banking Concentration in Brazil (1994-2000)

Fernando Alberto Sampaio Rocha

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- ... Data unknown.
 - Null data or an indication that the corresponding item does not exist.
- 0** ou **0,0** figure smaller than half the value of the last digit to the right.
* preliminary data.

An hyphen (-) between years (1970-1975) indicates the total of years, including the first and the last. A slash (/) between years indicates the yearly average of such years, including the first and the last, or harvest-year or agreement-year, according to the text.

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Foreword

The institutionalization of the Banco Central do Brasil Technical Notes, conducted by the Department of Economics, promotes the dissemination of works featuring economic content, attracting both theoretical and methodological interest, giving a view of the short-term developments of the economy and reflecting the work of the Bank's employees in all areas of action. Besides, other works, though external to the Banco Central, may be included in this series provided the Bank has afforded institutional support to their preparation.

Evolution of Banking Concentration in Brazil (1994 – 2000)

FERNANDO ALBERTO SAMPAIO ROCHA

***Abstract:** the paper presents the evolution of banking concentration in Brazil after the Real Plan and discusses its macro and microeconomic factors. The banking concentration is studied calculating the concentration ratios and the Hirschman-Herfindahl index for the total assets, total deposits, lending operations and adjusted net worth. Besides the traditional calculation of the whole banking sector and of the private banks concentration, was measured, for both cases, the concentration on the “banking groups”, defined as all the banks with the same controller. The statistics showed an overall trend of increasing concentration, notwithstanding substantial differences in the results depending on each sample.*

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Evolution of Banking Concentration in Brazil (1994-2000)¹

FERNANDO ALBERTO SAMPAIO ROCHA²

1. Introduction

The Real Plan started important changes in the Brazilian bank system. Following the loss of profits from the float of funds after the end of chronic and high inflation, the banking industry faced severe problems in 1995-1996, solved with the assistance of government programs to encourage restructuring. Measures in areas such as prudential regulation, supervision and monitoring were subsequently taken to secure a solid and safe financial system. With the same purpose and also aiming at encouraging competition, public banks were privatized and the sector was opened to foreign capital, including the sale of large domestic bank retail institutions, which has never happened before in the Brazilian bank history.

However, changes in the competition environment did not depend only on actions by the monetary authority. The corporations themselves followed the recent financial system developments, which are under worldwide liberalization and deregulation. The scope of activities was enlarged well beyond traditional financial intermediation, creating and exploring new markets and diversifying investments, both geographically and by introducing new products (financial innovation). This environment has fostered a pursuit of scale and market power, which is at the roots of the current world trend of mergers and acquisitions (M&A), causing direct and significant impacts to the industry level of concentration.

This note gauges the recent history of bank concentration in Brazil and attempts to assess how the concentration degree has been affected by selected events, following the concentration path from 1994 through 2000. To do so, besides calculating the total concentration affecting the private and public banking industry, which considers the institutions individually, we prepared two other series for each account analyzed, including the so-called “banking groups”. “Banking groups” were then built by gathering in a single bank all institutions under the same parent corporation, since they are subject to a single decision center and display complementary strategies^{3,4}, in order to obtain a clearer design of the market structure.

1/ The preparation of this paper counted on the indispensable encouragement by Altamir Lopes, Luiz Sampaio Malan, Alzira Rosa Morais da Silva (Depec) and Katherine Hennings (Secre/Dipec) to whom I extend my thanks. The comments by Katherine Hennings and Samuel Bracarense Costa (Deban) to the preliminary version of the text were most welcome. As usual, the analysis, conclusions and, mainly any errors remain a responsibility of the author only, and shall not be attributed to the Central Bank.

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3/ Although being aware of the similarity to the concept of financial conglomerate, we preferred to use banking groups, since it does not include non-banking institutions such as purchase-funding institutions (*financeiras*), brokers, dealers and investment banks, limiting the scope to multiple and commercial banks.

4/ In his article, Matos (1999:18) emphasizes the importance of the movement: “Concentration indices over the past years may be larger, if one considers the existence of large financial groups that control, given recent acquisitions, more than one bank”.

Besides this introduction, the note comprises three other sections. In the second one, the main macro- and microeconomic factors affecting the recent bank concentration process in Brazil are briefly reported and discussed. Section three details the methodology used and exhibits the results achieved. The subsequent section brings the conclusions of the research.

2. Recent history of bank concentration in Brazil

The selection of the period to be analyzed took into consideration that the inflation stabilization following the implementation of the Real Plan made clear that the bank system was in need of a major restructuring. As for the 1964-1965 financial reform that followed PAEG, there seems to exist a link between stabilization and bank reorganization (Moura, 1998: 27-32). From the viewpoint of restructuring impacts that followed the two stabilization plans, the current one exhibits greater intensity over a shorter period of time.

We analyze below the main macro- and microeconomic factors that gave impulse to the current consolidation movement.

2.1 – Macroeconomic factors

The performance of the Brazilian economy and systemic processes that affected and influenced the banking industry structure over the period were taken as macroeconomic factors that shaped bank concentration. One tried to focus the analysis in the relation between factors and the path of concentration in the sector. Below we discuss the impacts caused by inflation stabilization and ensuing bank problems, appearance of foreign banks and privatizations.

2.1.1 – Inflation stabilization

Starting on July 1994, with the introduction of the real and reduction of inflation, the Brazilian economy underwent a period of significant changes that affected severely the banking industry. Stabilization, by fostering remonetization and increasing real income and demand for credit, helped boosting up the financial intermediation market. Then, in the second half of 1994, demand deposits had increased 165.4% and term deposits, about 40%, while loans increased 58.7% (Mendonça de Barros and Almeida Jr., 1997: 4). Revenues linked to services rendered (bank fees), which had its collection significantly liberalized (Resolution 2,303, of 7.25.1996) also increased significantly⁵. On the other hand, with the decreased inflation, banks lost an important

5/ For the six largest Brazilian private banks, fee revenues between 1993 and 1995 increased R\$1.5 billion, of 93% (Cysne and Costa, 1997: 341).

source of income: inflationary transfers, or float. According to IBGE/Andima data (1997: 44), inflationary revenues, which reached 4% of GDP between 1990 and 1993, reduced to 2% in 1994 and to practically zero in 1995. Cysne and Costa (1997: 329-33) estimated that the loss reached yearly US\$8.63 billion.

This was, in a simplified fashion, the bank market at the beginning of 1995, when the effects of the Mexican crisis became apparent. The 20 percentage points increase in interest rates, to 65% p.a., and already existing restrictions to credit operations⁶ caused contraction and increased default in the sector, in part due to lack of criteria and poor risk controls for loans. The newly-established competition environment was no longer attuned with the size of the banking industry, whose number of institutions increased significantly after the creation of multiple banks (Resolution 1,524, of 9.21.1988), coming to 248, from 107, between 1988 and the first half of 1994, considering multiple, commercial and savings banks (Matos, 1999:6).

Small and new banks, coming from non-banking financial institutions, were the most affected institutions in a first moment, a large part of them simply disappearing over the following months without causing systemic risks (Mendonça de Barros e Almeida Jr., 1997: 11 and Moura, 1998: 34). Therefore, though the bank problems following stabilization also had important macroeconomic causes, the stabilization triggered the emergence of troubles. This way, concurrently to contributing to arising of systemic problems and eliminating a large number of institutions, stabilization increased concentration⁷.

2.1.2 – Systemic bank problems during 1995-1996

Bank crises and restructuring tended to increase market concentration. By causing the disappearance of competitors, the bank crisis redistributes customers among the remaining banks, increasing their market share. Restructuring, generally involving M&A, responding to incentives or otherwise, boosts the concentrating effects over the industry. The fact explains the importance of considering banking groups in calculating concentration indicators.

For over one year after the beginning of the Real Plan, adjustment of the banking system was still restricted to small banks. Restrictive macroeconomic measures on interests and credit, coupled with the lack of a credit and risk assessment culture, started to affect defaults, which were reflected in banks' balance sheets, especially retail banks. In this context, the Central Bank intervened in Banco Econômico, in

6/ In the second half of 1994, reserve requirement on demand deposits were increased from 40% to 100%, reserves on savings deposits, from 15% to 20% and subsequently to 30%. Reserves requirement of 20%, later increased to 30%, were also imposed on term deposits, and 15% on loans, to be paid in cash (Bacen, 1996: 25). Besides, the credit markets were put under quantitative restrictions (Freitas, 2000:248).

7/ As the affected banks were initially small, its impact in concentration was also diminished. It was only when large banks were hit and restructuring itself starts with Proer, entrance of foreign banks, privatizations and M&A, that the increased concentration is felt.

8.11.1995. Next, in November, Banco Nacional was under intervention⁸. The measures abated public confidence on the soundness of the banking industry, promoted increased risk aversion and caused a liquidity overhang, where banks in deficit experienced difficulties in gathering funds.

To avoid the emergence of a bank crisis, the government took in November 1995 a set of preventive measures. The most important were the Proer and incentives to M&A, with insolvent banks being assumed by other institutions (Provisional Measure 1,179, of 11.3, and Resolution 2.208, of the same date); regulation of the Credit Guarantee Fund with effect retroactive to the beginning of the Real Plan (Resolution 2,211, of 11.16); increased minimum capital requirements for the establishment, operating as disincentive to new banks Resolution 2,212, of 11.16) and broadening the powers of the Central Bank (Provisional Measure 1,182, of 11.17, turned into Law 9,447, of 11.14.1997)⁹.

Although 104 banks had been under different types of adjustment after the Real Plan (Bacen, 1999: table 3), the larger and paramount operations, those with possible contagion effects, were performed with Proer funds, according to Table 1.

| Institution | Buyer | Publication in the Official Gazette |
|----------------------------|-----------------------|-------------------------------------|
| Banco Nacional | Unibanco | 11.18.1995 |
| Banco Econômico | Banco Excel | 4.30.1996 |
| Banco Mercantil | Banco Rural | 5.31.1996 |
| Banco Banorte | Banco Bandeirantes | 6.17.1996 |
| Banco Martinelli | Banco Pontual | 8.23.1996 |
| Banco United | Banco Antônio Queiroz | 8.30.1996 |
| Banco Bamerindus do Brasil | HSBC | 4.2.1997 |

Source: Bacen (1999: Table 27 and annex III)

The set of preventive measures succeeded in avoiding contagion of healthy institutions and triggering a systemic crisis, permitting restructuring to happen in a painless way for customers and with a reduced fiscal cost for the government, compared with the international experience in bank crises¹⁰. According to Carvalho “what could have been a systemic crisis seemed to be just a condition of distress, though severe” (1998: 323)^{11, 12}.

8/ In these two banks, the same as later in Bamerindus, there was not the classic deposits flight. Their liquidity problems were due to withdrawals by qualified accountholders (other banks, institutional investors, large corporations) that possessed better information regarding the actual situation of the institutions. The liquidity loss became, therefore, a symptom of insufficient assets. This hypothesis, named “silent flight” is advocated by Moura (1998).

9/ A more detailed analysis of these and other policies broadening prudential regulations and bank supervision and monitoring may be found in Mendonça de Barros and Almeida Jr. (1997: 6-9), Puga (1999: 4-9) and Lundberg (1999: 59-66). A careful operating view of Proer and its importance to the Brazilian bank structuring may be found in Maia (1999).

10/ An article by Honohan and Klingebiel (2000: 4 and table A1) estimates in 12.8% of GDP the average cost of bank restructuring in a sample of 40 countries. In Brazil, Proer disbursements (R\$20.8 billion), added to overdrafts on bank reserves (R\$10.6 billion), reached about 4% of that period GDP.

11/ According to the same author, *distress* is “a condition where problems, even non-negligible ones, either are restricted to some financial institutions or have their sequels contained and, to a certain extension, neutralized by actions of a central bank as lender of last resort” (Carvalho, 1998: 297).

12/ This classification of the 1995-1996 bank problems as *distress* is not unanimous in the literature. Among those who consider the situation as one of bank crisis are Costa (1999) and Lundberg (1999). Moura (1998) and Mendonça de Barros and Almeida Jr. (1997) characterized that period as one of *adjustment*. Lundgren, Garcia and Saal (1996) who analyzed events of bank frailty in about 140 countries, consider the Brazilian case as one involving “significant bank problems”.

2.1.3 – Entrance of foreign banks and privatizations

Restricting the analysis of foreign banks entrance to its effects on the level of bank concentration, these effects might be of two kinds: on the one hand, as in any establishment of new institutions, the newly entered banks would bring deconcentration to the market, since they would either attract new clients or compete for clients with already established banks. On the other hand, entrances through M&A would not affect concentration, except for a bank already operating in the country, which would entail higher concentration in banking groups' samples, or in all samples in case a consolidation among institution had occurred.

In the recent Brazilian bank opening, all cases mentioned above were present. Clearly, for the purposes of this paper, the most representative operations were acquisitions of retail institutions, such as Banco Real, the ninth largest M&A operation (Table 4), and Bandepe by ABN Amro and the purchase of banks Noroeste, Geral do Comércio, Meridional group and Banespa, the second largest M&A, by Banco Santander Hispano (BSCH).

The opening of this segment to foreign institutions is included in the set of measures intending to avoid the bank crisis since, originally, foreign access should be coupled with privatization or acquisition of institutions in difficulties (Ministry of Finance Consideration 89, of 3.7.1995, and 311, of 8.24.1995)¹³. This was the rule and justification for the entrance of foreign banks until the purchase of Banco Real, which was not under difficulties, by ABN Amro by the end of 1998, when all privatization notices mentioned possibility of acquisition by a foreign bank.

As a consequence of this opening, the share of foreign controlled banks in total assets of the Brazilian banking industry came to 27.41% in 2000, from 8.35% in 1993. Similar increases took place in equities, to 28.31%, from 7.28%, credit operations, to 25.16%, from 6.56%, and deposits, to 21.14%, from 4.83%, according to Bacen data (2001: tables 21 to 24)¹⁴.

Privatizations in the banking industry over the period took place mainly under Proes and always resulted in acquisition by a bank already operating in the country (table 2), being the consequence an increase in concentration measured by banking groups¹⁵. In the same way, the encouragement to reducing the presence of state

13/ The *Exposições de Motivos* (Considerations) took advantage of two legal “gaps” (“in the interest of the Brazilian government”) created by paragraph 1 of Article no. 52 of Transitory Constitutional Provisions Act, to overcome the impediment posed by the words of Article 52 itself to expansion of foreign capital into the banking industry before implementation of Article 192 of the Federal Constitution.

14/ A deeper analysis, performed in a more comprehensive scope, of the recent internationalization of Brazilian banks, including changes in regulations, domestic and foreign determinants, new strategies of foreign banks and their possible effects to the domestic banking industry was performed by Freitas (1999) and Carvalho (2000 and 1999). Carvalho (2001) discusses the first preliminary studies on internationalization.

15/ In the sample of private banks, privatization results in deconcentration, since the number of banks considered in the study increases.

governments in the banking market – a feature of Proes¹⁶ – causing the number of banks to shrink, results higher concentration-measurement figures, in proportion to the size of the institution.

2.2 – Microeconomic factors

In this section we list factors that directly affected the bank firm, influencing and changing strategies (new technologies, new products and bank opening itself that, making the domestic market more competitive stirred reactions from domestic banks) and capitalization of the institution in the context of changes in prudential regulation. Again, we focus on the effects of such factors on concentration. In what follows, we analyze the improvements in bank regulation, financial innovations and defensive responses of domestic retail banks to the entrance of foreign capital.

Table 2 – Privatization of public banks

| Date | Institution | Purchaser | Amount (R\$ million) | Premium (%) |
|------------|-------------|------------------|----------------------|-------------|
| 6.26.1997 | Banerj | Itaú | 311 | 0.4 |
| 8.7.1997 | Credireal | BCN | 121 | 0.0 |
| 12.4.1997 | Meridional | Bozano, Simonsen | 266 | 55.0 |
| 9.14.1998 | Bemge | Itaú | 583 | 85.7 |
| 11.17.1998 | Bandepe | ABN Amro | 183 | 0.0 |
| 6.22.1999 | Baneb | Bradesco | 260 | 3.2 |
| 10.17.2000 | Banestado | Itaú | 1 625 | 303.2 |
| 11.20.2000 | Banespa | Santander | 7 050 | 281.1 |

Source: Bacen/Depep/GCI, 10.25.2000.

2.2.1 – Improvement of prudential regulation

The prime functions of prudential regulation in the banking industry are the ones of guaranteeing soundness and stability of the system and of protecting accountholders. With these targets, the monetary authority sets minimum capital standards for banks, depending on the risk structure of its investments; regulates operating and accounting procedures and, creating safety nets, institutes bodies of deposit insurance, in addition to operating as a lender of last resort. However, the pursue of a sound banking industry may, to a large extent, conflict with the encouragement of market competition¹⁷.

In the Brazilian case, the period following the Real Plan – with the stabilization, severe bank problems and restructuring – was characterized by the setting

16/ Of the 35 existing state banks in 1996, 10 were closed, 6 undergone privatization by state governments, 7 went under federal control to be privatized afterwards (one privatization – Banespa – has already been carried out) the opening of 14 new development agencies (they do not accept deposits from individuals, therefore, they are not considered banks). Aside from banks under privatization, there are still 5 banks which were restructured with Proes funds and 3 which do not take part in the program (Bacen/Depep/GCI, 2.8.2000). For Proes analysis, see Maia, G.V.S. e Pérez, L. (2001).

17/ The potential opposition between regulation and competition is described by Vesala as follows: “There is a policy conflict on working to stress competition and level the competition (level-playing-field) in the banking industry while preserving financial system stability, since stability is enhanced by banks’ financial strength, *i. e.* high margins and profitability” (1994: 134).

of more restrictive prudential measures aimed at consolidating the soundness of the banking industry. According to Coutinho and Oliveira (1999), existing bank problems induced a preference for keeping the system stable, leaving the principle of defending competition unattended.

The rules of the “Basel Accord” were incorporated to the Brazilian regulation by Resolution 2.099, of 8.17.1994. Among its principle the most relevant for concentration are the minimum capital requirement, weighted by the risk of the bank’s asset operations, from 8%, later increased to 10% (Resolution 2,399, of 6.25.1997) and to 11% (Resolution 2,784, of 11.27.1997) and the increase of the initial capital for authorization of a bank operation (Resolution 2,212, of 4.16.1995). In principle, the higher capital requirements would demand new funds from controlling individuals and/or corporations. Being unable to increase their capital share, they could sell the bank, admit new partners or reduce the bank’s asset lending operations. In most cases, given the requirement, the system tends to display a higher level of concentration, which may be evidenced by a reduced number of institutions or by action of M&A.

Other examples of the need for enhanced capitalization, important for systemic soundness, yet carrying a bias of concentration, are the new provisioning standards for credit operations and reform of the Brazilian payment system. The adoption of a larger number of provisioning levels, from AA (zero provisioning) to H (100% provisioning) according to the quality of customer and guarantor, timeliness of payment and characteristics of operation, as determined by Resolution 2,682, of 12.21.1999, tend to negatively affect bank’s net equity, especially for being performed ex-ante, demanding higher capital and potentially reducing the number of banks in the industry, thereby favoring concentration.

The reform of the payment system, in turn, in addition to investments demanded to systems and communication infrastructure, will require higher number of guarantees from banks, since the credit implicit in a deferred settlement by the net value without cost tends to disappear. Banks in need of such kind of credit, unwilling to build a “guarantee cushion” to operate in the new payment system, may select to withdraw from the market forever or leave their condition of banks to mutate into some other non-banking financial institutio¹⁸.

2.2.2 – New products and technologies

The process of deregulation that is the hallmark of banking systems all over the world coupled with the information technology and telecommunication accomplishments have strongly affected the scale and scope of bank operations and the

^{18/} A detailed analysis on adherence of the domestic bank regulations to the Basel Accord may be found in Mendonça de Barros, Loyola and Bogdanski (1998). Measures taken during 1995-1996 and after are discussed in Mendonça de Barros and Almeida Jr. (1997). For proposals on the reform of the Brazilian payment system, see the Central Bank site on the Internet (<http://www.bcb.gov.br>). A study on the current state of prudential regulations in the country may be found in Nóbrega (2001).

range of products offered (financial innovations). The consequences of this process on bank concentration are difficult to precise. Considering the increase in scale, the whole world is increasingly becoming the relevant market for certain bank activities, drawing a path towards consolidation¹⁹. The same pattern emerges regarding the convergence to a model of universal banks, where there is a progressive elimination of sectoral segmentation while increasingly taking advantages from economies of scope. The need for constant technological updating, entailing hefty investments, also tends to reduce the number of players in the market, where technology operates as a barrier to entry for new competitors and motivation to exit for marginal firms (Vasconcelos and Strachman, 2001).

On the other hand, the creation of new distribution forms for financial product and greater availability of information to agents (risk, quality and price comparisons) may promote competition and appearance of new institutions. Similarly, financial innovations and new markets that appear with them also admit the formation of niches, making the permanence of specialized institutions feasible. The prevailing trend shall be the focus of future investigation²⁰.

2.2.3 – Defensive reaction of domestic banks

The opening of the Brazilian bank sector to foreign capitals in the wake of the Real Plan increased the instability of a market previously closed and with well-defined competitors. From that moment onwards, there was the need for large domestic private banks to defend their leadership and market share. This defensive reaction also intended to avoid the institution to become a target for acquisition by foreign banks. By encouraging M&A by domestic leaders, the opening contributed towards bank concentration.

Until Banespa was purchased by Santander, with the exception of the purchase of Bandepe by ABN Amro, privatizations seemed to be an arena of domestic banks. Regarding the private sector, the domestic capital performed the largest M&A operations, including reacquisition of banks previously sold to foreigners. In this sense, after having failed to manage and following a series of attempts to capitalize the bank, Caixa Geral de Depósitos sold Banco Bandeirantes to Unibanco and groups Espírito Santo and Crédit Agricole, together with the domestic group Monteiro Aranha, sold Boavista Inter-Atlântico to Bradesco.

19/ This concentration trend operates simultaneously to opening and liberalization of bank markets around the world. For a recent survey on consolidation of the financial sector, see Demsetz and Strahan (1999) and Group of Ten (2001). For a full and detailed approach to the process of banking industry transfrontier consolidation, see Berger *et al.* (2000).

20/ A detailed approach to the effects of technology on the banking industry is given by the European Central Bank (ECB, 1999). Though it refers to the European case, the analysis may be easily generalized to other domestic systems. For the effects on concentration, see especially item 2.4, pp. 29-33.

$$RC_k = \left(\sum_{i=1}^k \frac{x_i}{x} \right) 100 \quad k \leq n.$$

3. Introduction and analysis of concentration indicators

In order to calculate the levels of concentration in the Brazilian banking industry, two statistic measures were used: bank concentration ratio (RC) and the Hirschman-Herfindahl index (IHH)²¹. RC is simply the percentage share of the k largest banks on total industry aggregate, according to the following formula:

This way, the RC value of the largest bank ranges from a lowest value tending to zero in a perfect competition market, where there are a large number of homogeneous corporations whose individual sizes are negligible before the market size, to 100%, in case of monopoly. Though this measurement is frequently used and easily interpreted for its intuitive result, RC poses an important limitation when considering only the relation between the k largest banks to the industry total. This way, the indicator fails to measure changes in the concentration of the rest of the market, except in an indirect way, in case there is an impact in the consolidated result. In our analysis we used the RC of the two, five, ten and twenty largest banks.

$$IHH = \sum_{i=1}^n \left(\frac{x_i}{x} \right)^2$$

The IHH statistics eliminates the restriction posed by RC, since it considers the relative share, to the square, of all operating banks. Similarly to RC, IHH tends to zero in theoretical cases where the market structure nears perfect competition and reaches one in monopoly. As a measure of concentration that bring together all desirable statistic qualities²², IHH is the main indicator²³ used in bank concentration analyses²³. IHH is calculated according to the following formula:

To calculate concentration along time, we used half yearly series – from the first half of 1994 (1994.I) to the second half of 2000 (2000.II) – of four aggregates of the banks' balance sheet: total assets, total deposits, credit operations and adjusted net equity (PLA). The source of data is the banking industry balance sheets compiled by the Central Bank as a Ranking of Banks, including commercial, multiple and savings banks, announced in the Central Bank page in the Internet (<http://www.bcb.gov.br>).

21/ The discussion, in this Note, of concentration measurements is based on Hoffmann (1997). See also Cetorelli (1999) and Jucá (1994).

22/ The characteristics are: non ambiguity; reliance on the relative (and not absolute) share of the corporations in the market and not on the market size; encompassing all institutions; being a decreasing function of the number of firms in case of a market comprising firms of the same size; and ranging from zero to one.

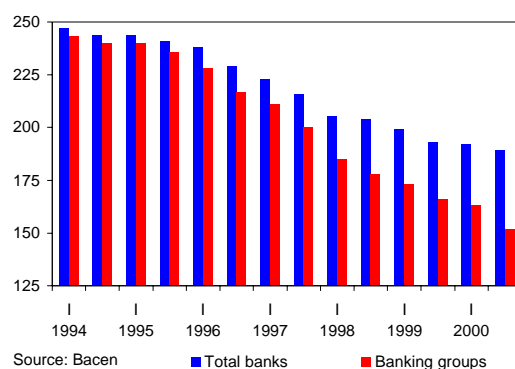
23/ For the Brazilian case, see Matos (1999), Jucá (1994), and Resende (1992). For a comparison among Latin American countries, see Abut, Bigio and Mullen (2001) and Abut (2000). In the United States, the rule for anti-trust analysis is based on IHH, see USA Department of Justice and USA Federal Trade Commission (1997). References for an extensive bibliography on concentration and consolidation, principally in the USA, may be found in the survey by Berger, Demsetz and Strahan (1999).

Four different banking industry samples were used in each balance sheet account for estimating the respective concentration levels:

- a) **Total banking industry:** a more general sample, including public and private banks, disregarding banking groups;
- b) **Total banking industry – bank groups:** includes public and private banks, considering banking groups resulting from the current process of acquisitions, from the half year period in which such acquisitions have occurred or were approved;
- c) **Total private banking industry:** similar to 1 above in disregarding banking groups, excludes public banks, aggregating privatized institutions from the half year in which such operations occurred;
- d) **Total private banking industry – bank groups:** builds banking groups from sample 3.

There was an important reduction in the number of institutions over the period analyzed, due to the 1995–1996 bank problems and, later, to the industry restructuring, extinction of public banks, M&A and new competition conditions in a low inflation environment, liberalization and opening. Total number of banks considered in the sample reduced to 189, in 2000.II, from 247, in 1994.I. Over the same period of time, the number of public banks decreased 50%, and that of private banks, 19.53%, to 173. The number of banking groups, which by construction decline at a faster pace than the total, came to 152, from 243, reducing more than one third. The sample of private bank groups at the end of the period included 136 institutions, for a decrease of 35.55%.

Graph 1 – Number of institutions



In the series that include formation of banking groups, besides the reduction in the number of banks, we shall include the M&A occurred each half year. With this in mind, we surveyed and listed domestic operations, foreign operations that affected the Brazilian domestic market (7), in addition to four cases of international banks that operated in the country as private domestic banks under foreign control and foreign commercial banks (see tables 1 to 3 in Annex II). The 39 domestic operations, half-year by half-year, are summarized in the following Table 3.

| Period | Quantity |
|--------------|-----------|
| 1994 I | 0 |
| 1994 II | 0 |
| 1995 I | 0 |
| 1995 II | 1 |
| 1996 I | 5 |
| 1996 II | 3 |
| 1997 I | 1 |
| 1997 II | 5 |
| 1998 I | 4 |
| 1998 II | 7 |
| 1999 I | 1 |
| 1999 II | 1 |
| 2000 I | 3 |
| 2000 II | 8 |
| TOTAL | 39 |

Source: Prepared based on Annex II data.

Notice that the years of 1997, 1998 and 2000, besides representing, as a whole, 71.8% of the M&A observed, also include the operations causing the largest impact on bank concentration measured by IHH²⁴. The ten largest operations, from the viewpoint of their impact to the consolidation of the financial system, are listed in table 4. The largest was the purchase of BCN bank group by Bradesco, in 1998.I, increasing the IHH in 0.032. Among the remaining ones, the main important were five privatizations (Banespa, Bemge, Banestado, Baneb and Banerj), two acquisitions of a foreign bank by a domestic bank (Boavista Inter-Atlântico by Bradesco and Bandeirantes by Unibanco) and one of a domestic bank by a foreign bank (Real by ABN Amro).

| Nº | Institution sold | Acquiring institution | Period | Impact ^{1/} |
|----|---------------------------------|-----------------------|---------|----------------------|
| 1 | BCN/Credireal/Crefisul | Bradesco | 1998.I | 0.003247 |
| 2 | Banespa | BSCH | 2000.II | 0.002111 |
| 3 | Bemge | Itaú | 1998.II | 0.001437 |
| 4 | Boavista Inter-Atlântico | Bradesco | 2000.II | 0.001162 |
| 5 | Banestado | Itaú | 2000.II | 0.001142 |
| 6 | Baneb | Bradesco | 1999.II | 0.000883 |
| 7 | Pontual/Continental/Martinelli | Bradesco | 1999.I | 0.000712 |
| 8 | Banerj | Itaú | 1997.II | 0.000609 |
| 9 | Real | ABN Amro | 1998.II | 0.000568 |
| 10 | Bandeirantes/Financal Português | Unibanco | 2000.II | 0.000503 |

Source: Prepared based on Annex II data.

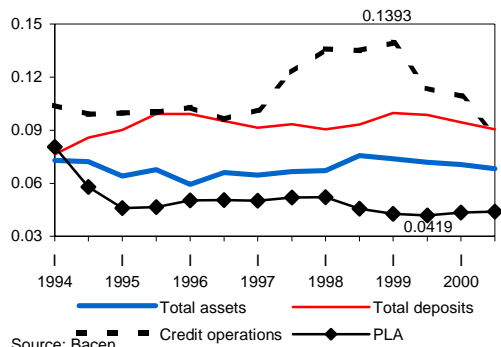
1/ Impact is the change of IHH considering only the acquisition in question in the half-year it occurred. Measured over total assets of the banking industry.

The set of statistics makes clear the importance of using different samples in building a more precise and detailed picture of the recent bank concentration in

24/ The impact is the change of IHH considering only the acquisition in question in the half-year it took place or was approved. The index was measured on total assets of bank sector groups.

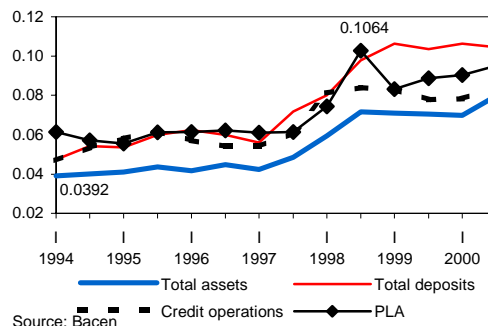
Brazil. Graphs 2 and 3 summarize the largest discrepancies found when comparing the total banking industry IHH with private groups.

Graph 2 – IHH: Total banking industry



Source: Bacen

Graph 3 – IHH: Total private banking groups



Source: Bacen

The level of concentration taking the whole banking industry, measured by IHH, indicated a reduction for assets and credit operation²⁵, between 1994 and 2000, of 6.33% and 15.7%, respectively. The reduction in concentration of PLA was even larger, 45.21%. Only total deposits recorded a growth in the level of concentration over the period, 18.24%. This result may be explained by the fact that the universe had not considered the M&A. The level of concentration recorded in this sample, excepting that of PLA, was larger because of the inclusion of Banco do Brasil (BB) and Federal Savings Bank (CEF), which together represent, on average over the period, 31.46% of total assets, 37.97% of deposits and 40.23% of credit operations. While the first factor underestimates actual concentration, the second makes the IHH behavior to be strongly dependent on the performance of BB and CEF.

In private bank groups, given the absence of the two factors above, one recorded an increase in the level of concentration, almost constant, especially after 1997.I, reflecting an acceleration in the process of M&A. The concentration increase recorded from 1994.I to 2000.II, measured by the IHH, changed from 54.88%, for PLA and 120.58%, for total deposits. It shall be stressed that the average level of the IHH over the period was quite lower than that of the series that included BB and CEF²⁶, though in 2000.II, banking groups had recorded a concentration higher than that of the total industry except, for a small margin, in what regards loans.

When one analyses the total banking industry, either considering the constitution of banking groups or otherwise, an increasing sequence emerges from the level of concentration of the series, starting by the PLA, through total assets and total deposits, to credit operations. Clearly, the hierarchy among the series is, once again, determined by the shares of BB and CEF in each account. Regarding the private sector, in both samples, the less concentrated series is that of total assets and, at the end of the

25/ The significant increase in the concentration of loans from 1997.I and 1999.I will be discussed in subsection 3.3.

26/ The average IHH for private groups was 20.52% below than that of the total banking industry for total assets, 17.96% for total deposits and 39.61% in credit operations. It is only for PLA that concentration in private groups is 44.16% higher. The figures, *grasso modo*, change according to the relative shares of BB and CEF in the market.

period, deposits recorded the higher concentration, evidencing the importance and impact resulting from the building of large private retail banking groups.

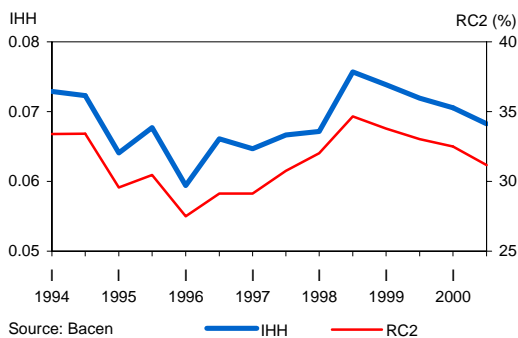
3.1 – Total assets

The pattern of concentration considering total assets, measured by IHH, recorded different results according to the series being examined: total banking industry, private institutions or banking groups. The performance of the whole banking industry was strongly influenced by the behavior of the two large federal public institutions, BB and CEF. Thus, concentration recorded very clear and characteristic periods. The level of concentration for private banks recorded a gradual though steady increase. Private banking groups recorded fast concentration, especially between 1997 and 1998 and in the second half of 2000.

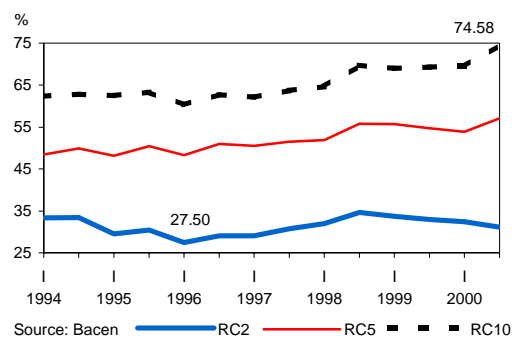
Considering the whole banking industry, the IHH followed the RC2 (BB and CEF), whose market share reached about one third²⁷. Consequently, three periods were focused: from 1994.I to 1996.I there was a deconcentration, where all indicators reached the lowest values; then, until 1998.II, concentration resumed, with RC2 (34.64%) and the IHH (0.0757) reaching their highs; and then, up to the end of the period, a new reduction in concentration was recorded. Analyzing the results of RC, recent years exhibit discrepancies suggesting that restructuring continues under way and that private banks are pursuing a larger scale. RC5, RC10 and RC20 increased from 1999, with the last two reaching their highs in 2000.II²⁸.

For the bank group sample, given that relative importance of BB and CEF kept the same, the behavior of IHH and RCs was the same recorded for the whole of the banking industry, though at a higher level, with the IHH 18.98% above that of 2000.II. Over the last half-year, however, mainly for the impact of the Banespa sale, one recorded an increase in all concentration indicators, except RC2.

Graph 4 – Total banking industry: total assets



Graph 5 – Total banking groups: total assets



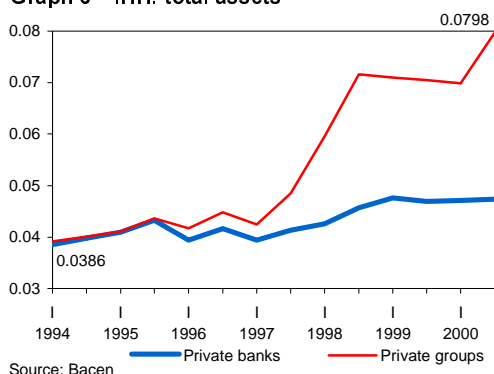
27/ The correlation between the two is almost perfect, reaching 0.9654 over the period under analysis.

28/ If one eliminates the impact of BB and CEF in RC5, calculating only the RC for the third, fourth and fifth larger banks on the total industry, the indicator comes to increase from 1998.II, displaying the strengthening of larger private banks before their competing public banks.

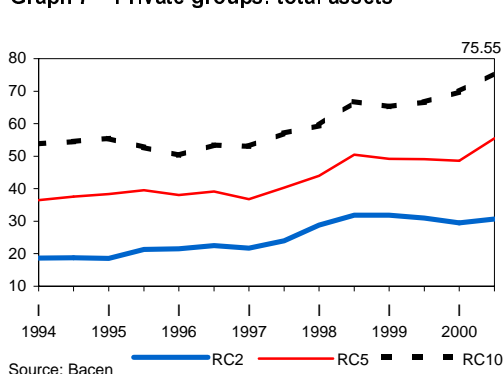
The first striking difference between total banks and the sample including only private institutions is the significantly lower level of the IHH of the latter, due to absence of large public banks. Taking the period average, the private sector IHH (0.043) corresponded to 62.62% of the total IHH. Another discrepancy was the constant trend of increasing concentration, with the topmost figures corresponding to 1999.I, for the IHH and RC2, and to 2000.II for the remaining indicators. While for the total industry total assets recorded a small end-to-end deconcentration, the opposite happened to private banks, with a positive change of 22.75%.

Private banking groups recorded strongly increased concentration, with the IHH growth of between 1994.I (0.0392) and 2000.II (0.0798) reaching 103.57%. The importance of M&A in the structure of the industry and of considering banking groups in calculating concentration may be verified by the increase of 26.93% in the IHH average over the period when one contrasts banks and private groups series²⁹. M&A took place mainly among the largest private banks, which can be verified by RC2 and RC5 figures. The two largest private groups, Bradesco and Itaú, over the period in question, increased their share from 18.68% to 30.7%. The three following banking groups varied their share between 15% and 20% and reached 24.78% in the last half-year of the study, under the impact of the sales of Banco Bandeirantes to Unibanco and Banespa to Banco Santander Central Hispano (BSCH).

Graph 6 – IHH: total assets



Graph 7 – Private groups: total assets



Summarizing, the wide structural changes underwent by the banking industry over the period caused different impacts in concentration, depending on the sample analyzed. The first year of stabilized inflation, the half-year periods of 1994.II and 1995.I, caused a deconcentration on the total of banks and banking groups that was maintained until 1996.I, when they reached the lower point. In the private sector the opposite was the case, pointing to a faster reaction of banks to the increased demand for money and credit that followed stabilization. The remaining events, purchase of domestic institutions by foreign banks, M&A and privatizations³⁰ were, by definition,

29/ Considering just the period where most M&A took place, from 1997.I, the IHH of private groups is 43.32% above that of private banks.

30/ Privatizations caused a deconcentration of private banks by placing a new institution, generally sized above the average, among them. Private banking groups experienced an opposite effect, since all private institutions were acquired by banks that were already in the market.

perceived only by banking groups, except when the assignment of control had implied an incorporation.

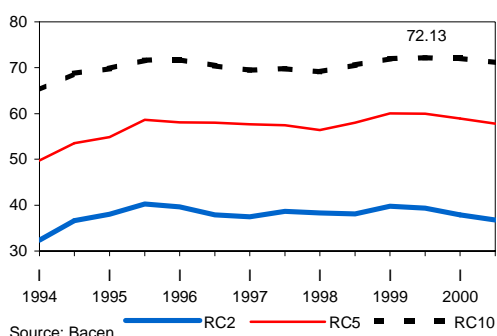
3.2 – Total deposits

In the concentration series that measured market share considering total deposits (Cosif account 4.1.0.00.00-7) the importance of the largest banks, BB and CEF, became even more evident, when studying the banking industry, while Bradesco and Itaú play this role in the private sector. In both cases RC2 is higher than that for assets. Another noticeable aspect was a significant increase of the IHH and RC2 in all series, between 1994.II and 1995.II, seen as a sign of an incipient flight for quality, associated to the fact that public banks apparently could rely on implicit government guarantees, while large private banks exhibited quality and soundness, at the time of the 1995 bank problems.

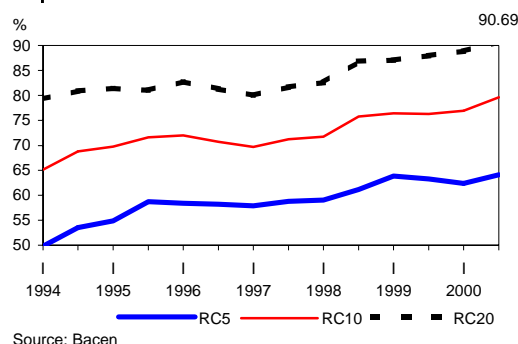
BB and CEF were the main beneficiaries of this “flight”. Measured by RC2 of total banks, between 1994.I and 1995.II, the share of these two institutions increased 7.82 percentage points and reached the top figure in the period under analysis, 40.26%. The increase in terms of share in total deposits for the three following banks was just 1.07 percentage points while others diminished their market share³¹. Notice that the five largest banks held, on average, 57.09% of total deposits of the bank system. The concentration pattern measured by the IHH was paralleled by that of RC2, increasing 29.61% between the same half-year periods of 1994 and 1995. As a result, an effect of diminished bank concentration following inflation stabilization was not perceived. RC10 and RC20 recorded top figures at the end of the period, simultaneously to the lost of share experienced by BB and CEF, suggesting that there was still room for further increase of concentration.

When one analyzes concentration from the viewpoint of banking groups, the pattern is, in general, the same. The major difference is that a new cycle of increased concentration became more evident at the end of the period, when all RC, with the obvious exception of RC2, reached their top figures in 2000.II.

Graph 8 – Total banking industry: total deposits



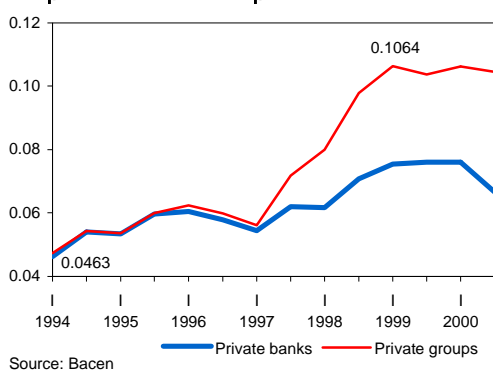
Graph 9 – Total banking groups: total deposits



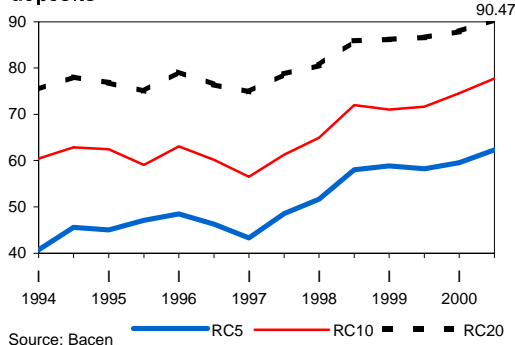
31/ This calculation considered the market share of banks of a certain category, with the exclusion of banks of the previous category. This way, RC5 excluded the two largest banks, RC10, the five largest banks, and RC20, the ten largest.

In the private banks series, in turn, the trend of increasing levels of concentration was practically constant, though the levels were significantly lower than those for the banking industry as a whole. Comparing the end of the period with the first half of 1994, the increases of the IHH and RC2 reached 40.59% and 46%, respectively. During 1995, when bank problems surfaced, the increase was recorded only in RC2, which raised 16.06%. Bank concentration grew especially after 1998 and until 2000.I, when the IHH reached its top figure. In the second half of 2000, with two large privatizations, Banestado and Banespa, the indicators reduced because of the increase in the sample of private banks. Finally, in private bank groups, where one considers consolidation through M&A – which took place mainly around large retail private banks – the increase in concentration affected significant 120.58% of the IHH, which reached 0.1045 in 2000.II. The RC20 reaches, at the end of the period, the larger absolute figure in all series, 90.47%. Starting in 1997, this change comes to occur in “jumps” as a result of acquisition of new banks by the market leaders.

Graph 10 – IHH: total deposits



Graph 11 – Private groups: total deposits



The increased concentration in total deposits suggests that, after the deposit flight, there is nothing but a partial return of customers, and hence, the institutions identified as safe by customers consistently increased their market share. The level of concentration in private banking groups, 40.37% above that of private banks on the 1998-2000 average evidences the importance of M&A as a mechanism to achieve market share. That is to say, gaining access to low-cost funding seems to be one of the targets of M&A.

3.3 – Credit operations³²

In Brazil, inflation stabilization fostered the expansion of bank credit. The growing demand for credit in the first year of the Real Plan was basically met by large private retail banks, as reflected in concentration indicators. However, this series of credit operations (Cosif account 1.6.0.00.00-1) exhibited the larger share of private

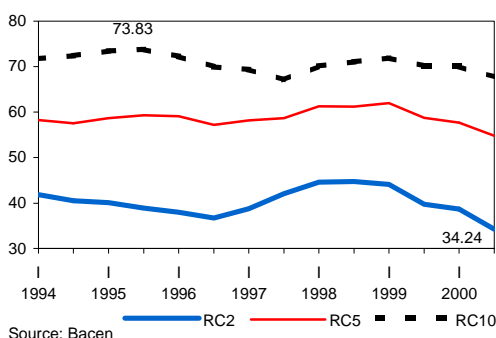
32/ Matos (1999:14) has reservations about this series because of the practice, mainly by some state-owned banks, of incorporating revenues to appropriate to credit values, biasing the data. The same problem could, in principle, affect total assets.

banks among all those analyzed³³. As a result, the average IHH of total banks and that of banking groups were the largest among all indices calculated in this note. The years 1999 and 2000 recorded significant reductions, both to RC2 (BB and CEF) and to the IHH.

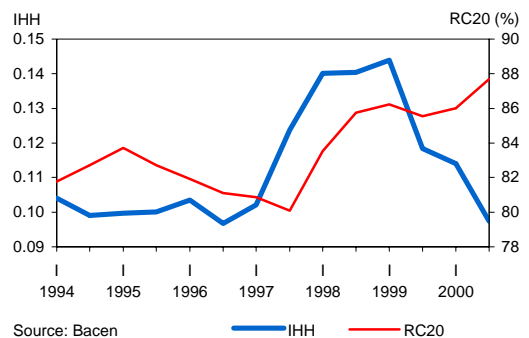
In credit operations of the total banking industry, BB and CEF were responsible, on average, for 40.23% of the credit granted in the period. Highly correlated to RC2 (0.89 in the period), the average IHH, 0.1105, was the highest among those calculated for the sample based on selected balance sheet accounts. Between 1997 and the first half of 1999 there was a significant increase in the concentration of loans, almost entirely explained by the increase in RC2. In 1999.I, the IHH reached 0.1393. This significant change of the indicator seems to be a counterpart of the reduced credit growth in the private sector caused by the economic instability prevailing at that time, a fact that did not occur, or occurred less intensely, with public banks. The contrary happened after the foreign exchange devaluation, with the important increase of private loans, which diminished RC2 (-9.86 percentage points between 1999.I and 2000.II) and increased the market share of private institutions. The deconcentration recorded was responsible for the lowest IHH of the period, 0.0877.

When one considers the share in banking groups in the total banking industry, given the strong participation of large federal banks, the average increase in concentration is merely 2.36%. However, this is the sample where the higher level of concentration is reached among all samples studied, with IHH reaching 0.1439 in 1999.I. Notice that the concentration measured by RC10 and RC20 grows by the end of the period.

Graph 12 – Total banking industry: credit operations



Graph 13 – Banking groups: credit operations



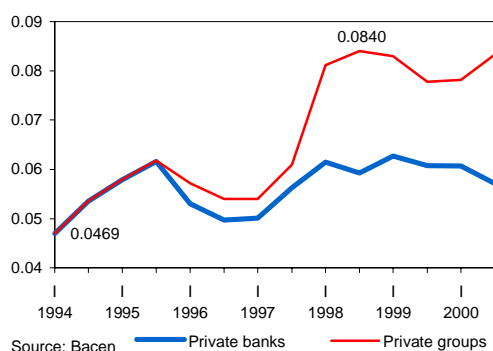
At the beginning of the period, private banks experienced an increase in concentration immediately after stabilization took place, followed by a short, though significant, decline in the year 1996. Concentration continued to increase from 1997.I

33/ In the case of Banespa, the series was discontinued after the bank was privatized, in 12.23.1997. Therefore, from 1997.II, the bank credits against the State of São Paulo were transferred to the Federal Government, changed by federal public securities (Puga, 1999:29). The bank's credit operations reduced from R\$27.59 billion (13.34% of the market) to R\$2.93 billion (1.6%), with Banespa coming from the second to the ninth in the ranking. The operation reduced total loans, causing concentration to increase, measured by RC2 (growth of 2.56 percentage points) and by the IHH (20.97%), which is at the root of the high level of concentration recorded between 1997 and 1999.

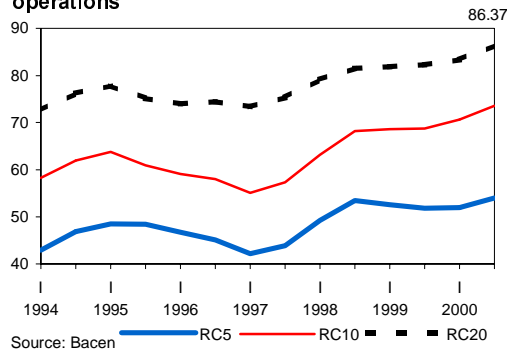
until reaching its top level in 1999.I (IHH of 0.0627), diminishing through 2000.II under the effects of the privatizations of the half-year, although not as total banks did. The end-to-end change of the IHH 21.73%. The behavior of RC showed that just RC2 recorded accelerated concentration, reaching its higher level in 1999.I, 28.03%. Other concentration ratios had their high in 1995.I and the movement towards concentration, started in 1997, was unable to exceed that level.

The outlook becomes quite different when one uses the private bank's sample. Not only the decline recorded in 1996 was less significant but also, to a great extent, the increase of concentration between 1997 and 1999 was considerably higher, reflecting the impact of M&A in the sector. The IHH, with its lowest level, 0.0469 recorded in 1994.I, changed 77.55% until 2000.II. The increase in concentration, measured by RC5 and RC20 largely exceeds, at the end of the period, the 1995.I figure, recording significant acceleration from 1997 onwards.

Graph 14 – IHH: credit operations



Graph 15 – Private groups: credit operations



The expansion/retraction impact from large federal public banks was decisive for the concentration change in credit operations, despite their loss in market share over the past two years, making clear their position of market makers. In the most recent period, as from 1999.I, the three samples recorded a reduction in concentration, except for private groups, which once more brings to focus the idea of incorporating M&A to the studies of concentration and structure of the Brazilian banking market.

3.4 – Adjusted Net Equity (PLA)

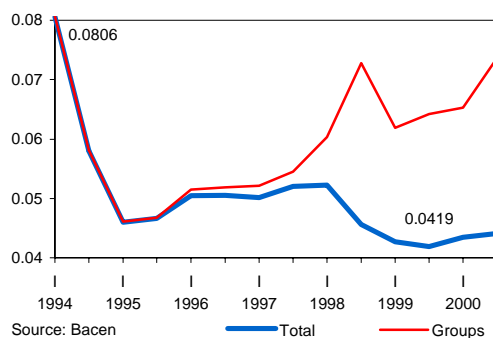
The assessment of banks' net equity one considers the "capital" "reserves" and "cumulative profits (losses)" accounts. PLA, announced by the Central Bank based on the balance sheet of multiple and commercial banks CEF, is obtained by adjusting the net equity of the previous half-year by capitalization and building of reserves plus (minus) profits (losses) earned (supported) in the fiscal year. This way, the path of bank concentration, measured by PLA, results in a proxy of how is the banking industry capitalization distributed, which results not only from different acting strategies of each institution, but also from the requirements of prudential regulations.

Regarding the Brazilian bank market over the period analyzed, however, this indicator may have problems caused by the negative PLA measured in institutions that underwent liquidation (Matos, 1999:15). In the 1995.II and 1996.I half-year periods, banks with PLA below zero represented 37.6% and 49% of the total, respectively, reflecting the severe systemic problems that disturbed the industry. The high incidence of negative results was again apparent in the three half-year periods from 1997.I to 1998.I: 9.96%, 15.65% and 10.41%, respectively. When calculating the IHH – which squares up the relative share of each institution – and the RCs, one must exclude the negative information. The effect is that the PLA sample has a lower number of banks than the remaining series.

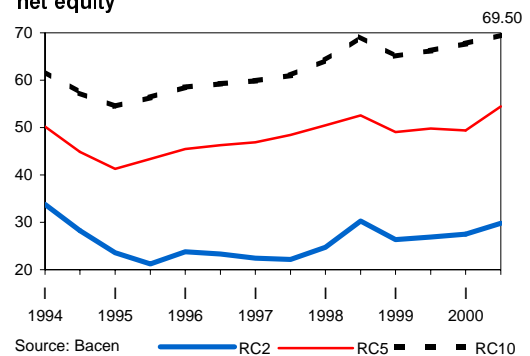
For the whole of the banking industry, the PLA series records the lowest level of concentration among the four balance sheet accounts examined and an average IHH of 0.0503, being the only series to exhibit a practically constant trend of deconcentrating IHH, whose result in 2000.II is 45.21% lower than those of 1994.I. A significant part of this reduction in concentration indicators happened between 1994.I and 1995.II, with the IHH reducing 42.12% and RC2, 36.97%. Among the possible explanations for this performance is the increase in capitalization of private banks in the wake of changes in prudential regulations in the period. One shall also notice the impact of a BB capitalization, of R\$8 billion, in 1996.I. With this operation, the bank market share jumped from 11.96% to 17.78%, leading the ranking once again, and its PLA increased R\$1.87 billion, reflected in a 2.5 percentage points increase in RC2. The indicators of concentration revealed a minor expansion in 2000.

By building banking groups from the total banking industry, the picture becomes entirely different. The indicators declined only over the two first years, recording after that an almost constant increasing trend and reaching the highest levels of the period in 2000.II, except for RC2. Besides reversing the trend, banking groups revealed to be, on average over the period, 19.19% more concentrated than the total banking industry, according to the IHH.

Graph 16 – IHH: adjusted net equity



Graph 17 – Banking groups: adjusted net equity

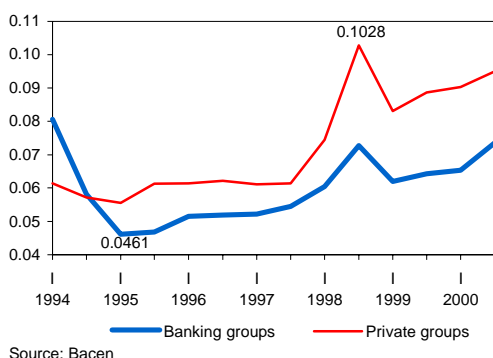


Private banks, similarly to the banking industry, recorded significant deconcentration between 1994.I and 1999.I, the IHH reducing 23.37%, a trend that was reverted in the last half-year of the period. Still against the total banking industry,

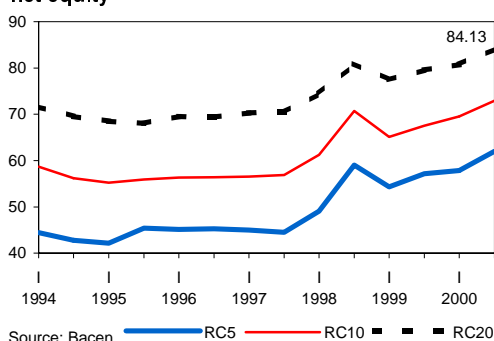
the PLA series of private banks was the only one to record a relatively higher level of concentration. The possible cause of deconcentration was the large inflows of capital from purchasing banks to the newly acquired institutions, necessary under the prudential regulations, and the advantageous use of fiscal credits. The analysis of such private bank groups, which is able to perceive this movement, demonstrates that the degree of concentration increased steadily. The average IHH of the period was above 32.49%, and higher than that of private banks³⁴.

The RC enables us to determine the measure of absolute concentration of capital in the banking industry. Analyzing the samples that include banking groups, joining all banks owned by one single parent corporation, one notices that, for the total of the banking industry, the five largest banking groups held, in the period, an average of 48.05% of PLA and the twenty larger, 74.38%. For private banking groups, which exclude the share of state capital, the share of the two largest groups, Bradesco and Itaú, deserves mention, with an average of 33.2% of the total. The remaining RC of private groups was similar to that of total banking groups.

Graph 18 – IHH: adjusted net equity



Graph 19 – Private groups: adjusted net equity



4. Conclusions

This note examined the performance of bank concentration in Brazil, assessing the possible effects of changes in the sector happened in the wake of the Real Plan. To do so, one calculated the concentration ratios (2, 5, 10 and 20 larger banks or banking groups) and the Hirschman-Herfindahl index for total assets, total deposits, credit operations and PLA series. The concentration path was assessed for the whole banking industry (universe) and private banks, with a specific difference of building of two series, total and private, considering the banking groups, a concept that comprises all institutions under the same parent corporation, narrowing the indicators around the current structure of the Brazilian market.

The figures suggest, in the majority of cases analyzed, higher levels of concentration for the set in the period, though there are subperiods with different paths.

34/ If one considers just the period from 1997 to 2000, when almost all the M&A and privatizations took place, the increase goes up to 58.62%.

The exception was the PLA series. **As expected, the trend toward concentration was clearer when one considers banking groups, mainly those of the private sector, where restructuring was more intense, with the IHH more than doubling in some series, in addition to displaying a behavior different from the series that do not consider the effects of M&A.**

The absolute levels of IHH in all series, however, are not high when compared to the international case, and seem to indicate that there is still room for furthering the current process of bank consolidation in the country. According to the United States Department of Justice and Federation of Commerce (1997), results below 0.1 suggest deconcentrated markets; from 0.1 to 0.18, moderately concentrated; and only those above 0.18, highly concentrated markets, prone to non-competitive practices. On the other hand, works by Abut (2000) and Abut, Bigio and Bullen (2001) identify, in Latin America, bank industries more concentrated than that of Brazil, mentioning the cases of Mexico, Chile and Peru.

However, one shall recognize the limits posed by the analysis of concentration indicators. The indicators may not be used to directly infer or derive qualitative analyses of competitive conditions and market structure. The indices are only an indication of such facts, and shall be complemented by analyses of competitiveness and opening, degree of efficiency and quality of prudential regulations³⁵. The analysis of concentration impacts on efficiency and costs (whether there are or not economies of scale and scope) and their transfer to customers still depend on specific inquiries, which may deliver different results, depending on the country and market studied. One must also recognize that the banking market is a multi-products one, that is to say, in reality there is a coexistence of different markets practically distinct from each other, with different structures and leader institutions.

Finally, one shall notice that the program for the strengthening of financial institutions (Proef), announced by the Ministry of Finance at the end of June 2001³⁶ shall have effects on concentration indices, acting to reverse the increasing trend revealed in this Note. This impact shall take place mainly because of an estimated R\$30 billion reduction in total assets and credit operations of CEF, reducing the level of bank concentration indicators. Regarding PLA, the opposite is expected with the strengthened capitalization of federal public banks, where one does not expect the series of total deposits to be affected by the actions of the capitalization program.

35/ See Nakane (2001) for an analysis of the recent structure of the Brazilian bank market.

36/ For details, see information in the Internet page of the Ministry of Finance (<http://www.fazenda.gov.br/portugues/releases/2001/r010622.html>).

Bibliography

ABUT, Daniel A. (2000). Bank Consolidation in Latin America: variations on a theme. Emerging Markets Weekly Forum. New York: Goldman Sachs, February 4, pp. 13-23.

ABUT, Daniel A., BIGIO, Sylvia, and MULLEN, John H. (2001). Revisiting Latin America's Bank Consolidation Process. Emerging Markets Weekly Forum, New York: Goldman Sachs, March 23, pp. 15-24.

BACEN (2001 and 1999). Evolução do Sistema Financeiro Nacional: relatórios de dezembro de 1998 e de dezembro de 2000. Brasília: Bacen. <http://www.bcb.gov.br>.

_____. (1996). Evolução da Economia Brasileira Após o Plano Real, Boletim do Banco Central do Brasil, vol 32, no. 7, separate. Brasília: Bacen, July 87 pp.

BACEN/DEPEC/GCI. Focus. Different numbers. <http://www.bcb.gov.br/updatescd/default.asp>.

BCE (1999). The effects of Technology in the EU Banking System. Frankfurt: BCE, July, 56 pp. <http://www.ecb.int>.

BERGER, Allen N., DEMSETS, Rebecca S. and STRAHAN, Philip E. (1999). The Consolidation of the Financial Services Industry: causes, consequences and implications for the future. Journal of Banking and Finance, vol. 23, no. 2-4, pp 135-194.

BERGER, Allen N. et al. (2000). Globalization of Financial Institutions: evidence from cross-border bank performance. Finance and Economics Discussion Series 2000-4. Washington: Federal Reserve Board of Governors, January, 113 pp. <http://www.federalreserve.gov/pubs/feds/2000>.

CARVALHO, Fernando J. Cardim de (2001). The Recent Expansion of Foreign Banks in Brazil: first results. Working paper Series 18/2001. University of Oxford Centre for Brazilian Studies, 30 pp. <http://www.brazil.ox.ac.uk/workpap.html>.

_____. (2000). New Competitive Strategies of Foreign Banks in Large Emerging Economies: the case of Brazil. Banca Nazionale del Lavoro Quarterly Review, no. 213, June, pp. 135-69.

_____. (1999). Sistema Bancário e Competitividade: efeitos da penetração do capital estrangeiro no setor bancário brasileiro. In: COSTA, Carlos A. and ARRUDA, Carlos A. (orgs.), Em Busca do Futuro: a competitividade no Brasil. Rio de Janeiro. Campus. Chap 4, pp. 121-49.

_____. (1998). The Real Stabilization Plan and the Banking Sector in Brazil. Banca Nazionale del Lavoro Quarterly Review, Vol. LI, no. 206, September, pp. 291-326.

CETORELLI, Nicola (1999). *Competitive Analysis in Banking: appraisal of the methodologies. Economic Perspectives*. Chicago: Federal Reserve Bank of Chicago, first quarter, pp. 2-15. <http://www.chicagofed.org/publications/economicperspectives/index.cfm>.

COUTINHO, Paulo C. and OLIVEIRA, André R. (1999). *Regulação Prudencial e Concorrência no Setor Bancário*. Presented at the International Seminar on Banking Sector Regulation and Defense of Competition, sponsored by CADE and Asbace. Brasília, February, 26 pp.

COSTA, Fernando N. (1999). *Economia Monetária e Financeira: uma abordagem pluralista*. São Paulo: Makron Books. Chap. 14 (Bancos no Brasil), pp. 281-314.

CYSNE, Rubens P. and COSTA, Sérgio G. S. da (1997). *Reflexos do Plano Real Sobre o Sistema Bancário Brasileiro*. *Revista Brasileira de Economia*, vol. 51, no. 3, July-September, pp. 325-46.

UNITED STATES DEPARTMENT OF JUSTICE and FEDERAL TRADE COMMISSION (1997). *Horizontal Merger Guidelines*. April 8, http://www.usdoj.gov/atr/public/guidelines/horiz_book/hmgl.html.

FREITAS, M. Cristina P. (2000). *Política Financeira, Fragilidade e Reestruturação Bancária*. In: FUNDAP. *Gestão Estatal no Brasil: armadilhas da estabilização 1995-1998*. São Paulo: Fundap, pp. 237-95.

_____. (1999). *Abertura do Sistema Bancário Brasileiro ao Capital Estrangeiro*. In _____. (org.). *Abertura do Sistema Financeiro no Brasil nos Anos 90*. São Paulo/Brasília: Fundap/Ipea, pp. 101-73.

GROUP OF TEN (2001). *Consolidation in the Financial Sector*. January, 459 pp. <http://www.bis.org/publ/gten05.htm>.

HOFFMANN, Rodolfo (1997). *Distribuição da Renda: medidas de desigualdade e pobreza*. Mimeo. Campinas: IE-Unicamp, December. Chap. 10 (Medidas de concentração e medidas de segregação), pp. 267-84.

HONOHAN, Patrick and KLINGEBIEL, Daniela (2000). *Controlling the Fiscal Costs of Banking Crises*. Working papers no. 2,441. Washington: World Bank, September, 35 pp. <http://econ.worldbank.org>.

IBGE/ANDIMA (1997). *Sistema Financeiro: uma análise a partir das contas nacionais, 1990-1995*. Rio de Janeiro: IBGE. 164 pp.

JUCÁ, Afonso (1994). *O Setor Bancário Brasileiro: evolução institucional e processo de concentração*. Fortaleza: UFC (Master's dissertation), June, Chap. 4 (A concentração

no setor bancário brasileiro: evidência empírica) and Apêndice Estatístico, pp. 50-90 and 132-49.

LINDGREN, Carl-Johan, GARCIA, Gillian and SAAL, Matthew I. (1996). Bank Soundness and Macroeconomic Policy. Washington: IMF. Part I (Worldwide Experience with Bank Fragility), pp. 3-35.

LUNDBERG, Eduardo L. (1999). Saneamento do Sistema Financeiro: a experiência brasileira dos últimos 25 anos. In SADDI, Jairo (org.). Intervenção e Liquidação Extrajudicial no Sistema Financeiro Nacional: 25 anos da Lei 6.024/74. São Paulo: Textonovo. Chap 2. pp. 53-70.

MAIA, Geraldo V.S. (1999). Restructuring the Banking System: the case of Brazil. In: BIS. Bank Restructuring in Practice. Policy paper no. 6, Basel: BIS, August, pp. 106-23, <http://www.bis.org/publ/index.htm>.

MAIA, Geraldo V. S. and PÉREZ, Lorenzo (2001). Restructuring Brazil's State-Owned Financial System. In. IMF. Brazil: selected issues and statistical appendix. IMF Country Report no. 1/10. Washington: IMF, January, Chap VIII, pp. 153-75, <http://www.imf.org/external/pubind.htm>.

MATOS, Orlando C. (1999). Caracterização do Processo de Mudanças Estruturais do Sistema Financeiro Brasileiro, 1988/98. In. BACEN/DEPEC. Evolução Estrutural do Sistema Financeiro Brasileiro; Brasília: Bacen/Depec, August, Chap 2, pp. 3-30.

MENDONÇA DE BARROS, José Roberto and ALMEIDA Jr. Mansueto R. (1997). Análise do Ajuste do Sistema Financeiro no Brasil. Brasília: MF/SPE, May, 29 pp. <http://www.fazenda.gov.br/portugues/document/publica.html>.

MENDONÇA DE BARROS, José Roberto, LOYOLA, Gustavo, and BOGDANSKI, Joel (1998). Reestruturação do Sistema Financeiro. Brasília: MF/SPE, January, 11 pp. <http://www.fazenda.gov.br/portugues/document/publica.html>.

MOURA, Alkimar R. (1998). Notas Sobre o Ajustamento do Sistema Bancário Privado no Brasil Pós-Real. Revista Brasileira de Economia, vol. 52, no. especial, February, pp. 27-38.

NAKANE, Márcio I. (2001). A Test of Competition in Brazilian Banking. Working Papers Series no. 12. Brasília: Bacen, March, 23 pp. <http://www.bcb.gov.br>.
NÓBREGA, Lourinaldo B. (2001). Regulação Prudencial Bancária no Brasil. Mimeo. Brasília: Bacen/Depec, January, 7 pp.

PUGA, Fernando P. (1999). Sistema Financeiro Brasileiro: reestruturação recente, comparações internacionais e vulnerabilidade à crise cambial. Textos para Discussão no. 68. Rio de Janeiro: BNDES, March, 51 pp. <http://www.bndes.gov.br>.

RESENDE, Marcelo (1992). Determinantes da Estrutura de Mercado no Setor Bancário Brasileiro – 1970-1986. *Revista Brasileira de Economia*, vol. 46, no. 2, April/July, pp. 211-22.

VASCONCELOS, Marcos and STRACHMAN, Eduardo (2001). Restruturação do Setor de Serviços Financeiros em Nível Mundial: caracterização, regularização e conseqüências para as discussões com o GATS. In: TIRONI, L. F. *Aspectos Estratégicos da Política Comercial Brasileira*. Brasília: IPEA/IPRI, Vol I, chap. I, pp. 17-99.

VESALA, Jukka (1994). Banking Industry Performance in Europe: trends and issues. In: OCDE. *The New Financial Landscape: forces shaping the revolution of banking, risk management and capital markets*. Paris: OECD, 1995, Chap 3, pp. 97-165.

ANNEX I – Performance of bank concentration indicators

Bank concentration indicators: total assets Total banking industry

| Period | RC2 | RC5 | RC10 | RC20 | IHH |
|--------|-------|-------|-------|-------|--------|
| 1994 I | 33.38 | 48.45 | 62.37 | 75.01 | 0.0729 |
| II | 33.41 | 49.91 | 62.82 | 75.59 | 0.0723 |
| 1995 I | 29.57 | 48.14 | 62.54 | 75.44 | 0.0641 |
| II | 30.46 | 50.44 | 63.39 | 75.34 | 0.0677 |
| 1996 I | 27.50 | 47.70 | 59.73 | 71.16 | 0.0594 |
| II | 29.14 | 50.34 | 62.12 | 73.97 | 0.0661 |
| 1997 I | 29.13 | 49.91 | 61.40 | 75.22 | 0.0647 |
| II | 30.76 | 50.30 | 61.41 | 76.04 | 0.0667 |
| 1998 I | 32.02 | 48.31 | 60.92 | 74.16 | 0.0671 |
| II | 34.64 | 51.23 | 63.54 | 76.28 | 0.0757 |
| 1999 I | 33.77 | 51.67 | 63.11 | 75.66 | 0.0738 |
| II | 33.03 | 50.72 | 62.96 | 76.79 | 0.0719 |
| 2000 I | 32.49 | 50.07 | 63.70 | 77.41 | 0.0705 |
| II | 31.17 | 50.26 | 64.24 | 78.35 | 0.0682 |

Source: Central Bank of Brazil, Financial Institution data.

Bank concentration indicators: total assets Total banking industry – bank groups

| Period | RC2 | RC5 | RC10 | RC20 | IHH |
|--------|-------|-------|-------|-------|--------|
| 1994 I | 33.38 | 48.45 | 62.37 | 75.86 | 0.0730 |
| II | 33.41 | 49.91 | 62.82 | 75.70 | 0.0724 |
| 1995 I | 29.57 | 48.14 | 62.54 | 75.44 | 0.0641 |
| II | 30.46 | 50.44 | 63.39 | 75.34 | 0.0678 |
| 1996 I | 27.50 | 48.28 | 60.30 | 72.12 | 0.0600 |
| II | 29.14 | 50.95 | 62.73 | 75.56 | 0.0668 |
| 1997 I | 29.13 | 50.51 | 62.12 | 76.67 | 0.0655 |
| II | 30.76 | 51.46 | 63.74 | 78.77 | 0.0686 |
| 1998 I | 32.02 | 51.86 | 64.63 | 78.48 | 0.0725 |
| II | 34.64 | 55.81 | 69.77 | 83.31 | 0.0832 |
| 1999 I | 33.77 | 55.75 | 68.99 | 82.11 | 0.0811 |
| II | 33.03 | 54.72 | 69.27 | 83.30 | 0.0795 |
| 2000 I | 32.49 | 53.91 | 69.48 | 84.44 | 0.0781 |
| II | 31.17 | 57.09 | 74.58 | 88.22 | 0.0812 |

Source: Central Bank of Brazil, Financial Institutions data

Bank concentration indicators: total assets Total private banking industry

| Period | RC2 | RC5 | RC10 | RC20 | IHH |
|--------|-------|-------|-------|-------|--------|
| 1994 I | 18.68 | 36.52 | 53.52 | 69.10 | 0.0386 |
| II | 18.78 | 37.55 | 54.33 | 70.08 | 0.0398 |
| 1995 I | 18.53 | 38.41 | 55.50 | 70.01 | 0.0410 |
| II | 21.43 | 39.55 | 52.67 | 67.87 | 0.0433 |
| 1996 I | 20.53 | 37.00 | 48.52 | 64.20 | 0.0394 |
| II | 21.33 | 37.92 | 50.77 | 66.80 | 0.0417 |
| 1997 I | 20.58 | 35.36 | 51.33 | 68.13 | 0.0394 |
| II | 21.82 | 35.83 | 52.18 | 69.27 | 0.0414 |
| 1998 I | 22.52 | 37.37 | 52.48 | 67.98 | 0.0426 |
| II | 23.79 | 39.07 | 53.24 | 69.61 | 0.0457 |
| 1999 I | 24.90 | 39.31 | 53.18 | 70.18 | 0.0476 |
| II | 24.22 | 39.08 | 53.57 | 71.43 | 0.0469 |
| 2000 I | 23.30 | 40.76 | 56.40 | 72.66 | 0.0471 |
| II | 22.91 | 41.06 | 57.45 | 74.03 | 0.0473 |

Source: Central Bank of Brazil, Financial Institution data.

Bank concentration indicators: total assets Total private banking industry – bank groups

| Period | RC2 | RC5 | RC10 | RC20 | IHH |
|--------|-------|-------|-------|-------|--------|
| 1994 I | 18.68 | 36.52 | 53.74 | 70.56 | 0.0392 |
| II | 18.78 | 37.55 | 54.49 | 71.03 | 0.0401 |
| 1995 I | 18.53 | 38.41 | 55.50 | 70.23 | 0.0411 |
| II | 21.43 | 39.55 | 52.67 | 69.13 | 0.0436 |
| 1996 I | 21.63 | 38.10 | 50.26 | 66.64 | 0.0417 |
| II | 22.58 | 39.17 | 53.42 | 70.29 | 0.0449 |
| 1997 I | 21.76 | 36.78 | 53.03 | 71.74 | 0.0425 |
| II | 24.06 | 40.36 | 57.02 | 75.02 | 0.0485 |
| 1998 I | 28.84 | 43.98 | 59.39 | 75.65 | 0.0595 |
| II | 31.87 | 50.45 | 66.80 | 80.70 | 0.0716 |
| 1999 I | 31.93 | 49.19 | 65.29 | 80.36 | 0.0710 |
| II | 30.99 | 49.04 | 66.67 | 81.97 | 0.0705 |
| 2000 I | 29.58 | 48.62 | 69.85 | 83.66 | 0.0699 |
| II | 30.70 | 55.48 | 75.55 | 87.65 | 0.0798 |

Source: Central Bank of Brazil, Financial Institutions data

**Bank concentration indicators: total deposits
Total banking industry**

| Period | RC2 | RC5 | RC10 | RC20 | IHH |
|--------|-------|-------|-------|-------|--------|
| 1994 I | 32.44 | 49.78 | 65.11 | 78.11 | 0.0765 |
| II | 36.67 | 53.51 | 68.76 | 80.72 | 0.0858 |
| 1995 I | 38.07 | 54.88 | 69.78 | 81.40 | 0.0901 |
| II | 40.26 | 58.68 | 71.61 | 81.01 | 0.0991 |
| 1996 I | 39.65 | 58.11 | 71.70 | 82.49 | 0.0992 |
| II | 37.95 | 57.99 | 70.42 | 80.65 | 0.0952 |
| 1997 I | 37.49 | 57.66 | 69.44 | 79.63 | 0.0913 |
| II | 38.66 | 57.44 | 69.79 | 79.85 | 0.0934 |
| 1998 I | 38.32 | 56.41 | 69.11 | 79.60 | 0.0905 |
| II | 38.15 | 58.00 | 70.52 | 81.85 | 0.0931 |
| 1999 I | 39.81 | 60.05 | 71.91 | 82.68 | 0.0997 |
| II | 39.37 | 59.98 | 72.13 | 83.50 | 0.0986 |
| 2000 I | 37.91 | 58.91 | 71.98 | 83.80 | 0.0943 |
| II | 36.81 | 57.80 | 71.12 | 83.70 | 0.0904 |

Source: Central Bank of Brasil, Financial Institutions data

**Bank concentration indicators: total deposits
Total banking industry – bank groups**

| Period | RC2 | RC5 | RC10 | RC20 | IHH |
|--------|-------|-------|-------|-------|--------|
| 1994 I | 32.44 | 49.78 | 65.11 | 79.30 | 0.0768 |
| II | 36.67 | 53.51 | 68.76 | 80.91 | 0.0858 |
| 1995 I | 38.07 | 54.88 | 69.78 | 81.40 | 0.0901 |
| II | 40.26 | 58.68 | 71.61 | 81.01 | 0.0992 |
| 1996 I | 39.65 | 58.41 | 72.00 | 82.79 | 0.0995 |
| II | 37.95 | 58.21 | 70.75 | 81.32 | 0.0955 |
| 1997 I | 37.49 | 57.88 | 69.74 | 80.03 | 0.0916 |
| II | 38.66 | 58.79 | 71.27 | 81.68 | 0.0954 |
| 1998 I | 38.32 | 59.03 | 71.73 | 82.60 | 0.0945 |
| II | 38.15 | 61.17 | 75.80 | 86.84 | 0.0995 |
| 1999 I | 39.81 | 63.83 | 76.44 | 87.04 | 0.1067 |
| II | 39.37 | 63.22 | 76.31 | 87.94 | 0.1052 |
| 2000 I | 37.91 | 62.36 | 76.93 | 88.86 | 0.1018 |
| II | 36.81 | 64.06 | 79.65 | 90.69 | 0.1023 |

Source: Central Bank of Brasil, Financial Institutions data

**Bank concentration indicators: total deposits
Total private banking industry**

| Period | RC2 | RC5 | RC10 | RC20 | IHH |
|--------|-------|-------|-------|-------|--------|
| 1994 I | 21.03 | 40.76 | 58.71 | 73.47 | 0.0463 |
| II | 23.23 | 45.57 | 62.93 | 77.05 | 0.0540 |
| 1995 I | 22.83 | 45.03 | 62.51 | 76.53 | 0.0535 |
| II | 26.50 | 47.10 | 59.00 | 73.74 | 0.0596 |
| 1996 I | 26.44 | 47.76 | 62.36 | 77.29 | 0.0605 |
| II | 27.30 | 45.45 | 58.71 | 74.38 | 0.0579 |
| 1997 I | 27.11 | 42.58 | 55.69 | 73.38 | 0.0544 |
| II | 30.57 | 45.30 | 57.28 | 74.48 | 0.0619 |
| 1998 I | 30.08 | 46.09 | 58.06 | 74.65 | 0.0617 |
| II | 33.40 | 48.03 | 61.09 | 77.09 | 0.0708 |
| 1999 I | 34.60 | 49.26 | 61.77 | 78.28 | 0.0755 |
| II | 34.66 | 49.91 | 62.68 | 78.30 | 0.0760 |
| 2000 I | 34.40 | 50.88 | 64.03 | 79.65 | 0.0760 |
| II | 31.01 | 47.48 | 62.18 | 79.65 | 0.0665 |

Source: Central Bank of Brasil, Financial Institutions data

**Bank concentration indicators: total deposits
Total private banking industry – bank groups**

| Period | RC2 | RC5 | RC10 | RC20 | IHH |
|--------|-------|-------|-------|-------|--------|
| 1994 I | 21.03 | 40.76 | 60.39 | 75.40 | 0.0474 |
| II | 23.23 | 45.57 | 62.93 | 78.07 | 0.0543 |
| 1995 I | 22.83 | 45.03 | 62.51 | 76.83 | 0.5360 |
| II | 26.50 | 47.10 | 59.00 | 74.94 | 0.0600 |
| 1996 I | 27.18 | 48.50 | 63.11 | 79.18 | 0.0624 |
| II | 27.83 | 46.27 | 60.11 | 76.43 | 0.0599 |
| 1997 I | 27.62 | 43.29 | 56.47 | 74.84 | 0.0561 |
| II | 33.54 | 48.56 | 61.23 | 78.70 | 0.0718 |
| 1998 I | 35.67 | 51.69 | 64.95 | 80.55 | 0.0800 |
| II | 39.92 | 57.99 | 72.01 | 85.92 | 0.0979 |
| 1999 I | 42.56 | 58.83 | 71.05 | 86.19 | 0.1064 |
| II | 41.27 | 58.19 | 71.65 | 86.59 | 0.1037 |
| 2000 I | 41.33 | 59.53 | 74.57 | 87.94 | 0.1063 |
| II | 39.49 | 62.28 | 77.70 | 90.47 | 0.1045 |

Source: Central Bank of Brasil, Financial Institutions data

**Bank concentration indicators:
credit operations**

Total banking industry

| Period | RC2 | RC5 | RC10 | RC20 | IHH |
|--------|-------|-------|-------|-------|--------|
| 1994 I | 41.89 | 58.22 | 71.81 | 81.76 | 0.1041 |
| II | 40.50 | 57.53 | 72.40 | 82.70 | 0.0990 |
| 1995 I | 40.15 | 58.67 | 73.44 | 83.70 | 0.0997 |
| II | 38.91 | 59.25 | 73.83 | 82.71 | 0.1001 |
| 1996 I | 38.02 | 59.05 | 72.24 | 80.87 | 0.1029 |
| II | 36.69 | 57.19 | 69.93 | 79.90 | 0.0960 |
| 1997 I | 38.79 | 58.14 | 69.43 | 79.76 | 0.1014 |
| II | 42.06 | 58.62 | 67.01 | 78.30 | 0.1227 |
| 1998 I | 44.63 | 61.23 | 70.16 | 80.67 | 0.1359 |
| II | 44.77 | 61.13 | 71.10 | 80.86 | 0.1351 |
| 1999 I | 44.10 | 61.97 | 71.96 | 82.29 | 0.1393 |
| II | 39.78 | 58.69 | 70.20 | 81.89 | 0.1138 |
| 2000 I | 38.71 | 57.66 | 70.09 | 82.17 | 0.1090 |
| II | 34.24 | 54.76 | 67.67 | 80.46 | 0.0877 |

Source: Central Bank of Brazil, Financial Institutions data

**Bank concentration indicators:
credit operations**

Total banking industry - bank groups

| Period | RC2 | RC5 | RC10 | RC20 | IHH |
|--------|-------|-------|-------|-------|--------|
| 1994 I | 41.89 | 58.22 | 71.81 | 81.76 | 0.1041 |
| II | 40.50 | 57.53 | 72.40 | 82.70 | 0.0990 |
| 1995 I | 40.15 | 58.67 | 73.44 | 83.70 | 0.0997 |
| II | 38.91 | 59.25 | 73.83 | 82.71 | 0.1001 |
| 1996 I | 38.02 | 59.63 | 73.03 | 81.91 | 0.1035 |
| II | 36.69 | 57.66 | 71.12 | 81.10 | 0.0968 |
| 1997 I | 38.79 | 58.80 | 70.36 | 80.86 | 0.1021 |
| II | 42.06 | 59.65 | 68.29 | 80.08 | 0.1238 |
| 1998 I | 44.63 | 64.02 | 72.90 | 83.52 | 0.1401 |
| II | 44.77 | 64.42 | 75.60 | 85.76 | 0.1404 |
| 1999 I | 44.13 | 64.24 | 75.72 | 86.23 | 0.1439 |
| II | 39.81 | 60.80 | 73.83 | 85.55 | 0.1184 |
| 2000 I | 39.14 | 60.10 | 73.40 | 86.01 | 0.1140 |
| II | 36.05 | 59.34 | 74.58 | 87.69 | 0.0974 |

Source: Central Bank of Brazil, Financial Institutions data

**Bank concentration indicators:
credit operations**

Total private banking industry

| Period | RC2 | RC5 | RC10 | RC20 | IHH |
|--------|-------|-------|-------|-------|--------|
| 1994 I | 20.60 | 42.93 | 53.26 | 72.52 | 0.0469 |
| II | 21.76 | 46.83 | 61.97 | 76.01 | 0.0536 |
| 1995 I | 23.72 | 48.53 | 63.78 | 77.73 | 0.0579 |
| II | 26.04 | 48.47 | 60.94 | 74.46 | 0.0616 |
| 1996 I | 23.66 | 44.63 | 56.53 | 71.17 | 0.0530 |
| II | 23.46 | 42.51 | 55.03 | 71.54 | 0.0497 |
| 1997 I | 24.31 | 39.94 | 52.78 | 70.14 | 0.0501 |
| II | 26.32 | 41.20 | 54.07 | 71.13 | 0.0563 |
| 1998 I | 27.93 | 43.37 | 56.93 | 73.14 | 0.0614 |
| II | 27.97 | 43.96 | 57.51 | 72.30 | 0.0593 |
| 1999 I | 28.03 | 45.96 | 60.28 | 75.55 | 0.0627 |
| II | 26.93 | 45.87 | 61.31 | 76.37 | 0.0607 |
| 2000 I | 26.26 | 46.81 | 62.92 | 76.90 | 0.0607 |
| II | 25.76 | 44.46 | 60.06 | 75.92 | 0.0571 |

Source: Central Bank of Brazil, Financial Institutions data

**Bank concentration indicators:
credit operations**

Total private banking industry - bank groups

| Period | RC2 | RC5 | RC10 | RC20 | IHH |
|--------|-------|-------|-------|-------|--------|
| 1994 I | 20.60 | 42.93 | 58.27 | 72.57 | 0.0469 |
| II | 21.76 | 46.83 | 61.97 | 76.15 | 0.0536 |
| 1995 I | 23.72 | 48.53 | 63.78 | 77.83 | 0.0580 |
| II | 26.04 | 48.47 | 60.94 | 75.13 | 0.0618 |
| 1996 I | 25.59 | 46.68 | 59.12 | 73.92 | 0.0572 |
| II | 24.57 | 45.08 | 58.02 | 74.42 | 0.0540 |
| 1997 I | 25.88 | 42.18 | 55.08 | 73.35 | 0.0540 |
| II | 28.13 | 43.85 | 57.37 | 75.27 | 0.0609 |
| 1998 I | 33.01 | 49.28 | 63.19 | 79.15 | 0.0812 |
| II | 32.73 | 53.50 | 68.21 | 81.50 | 0.0840 |
| 1999 I | 32.52 | 52.61 | 68.58 | 81.88 | 0.0830 |
| II | 30.78 | 51.83 | 68.69 | 82.27 | 0.0778 |
| 2000 I | 30.60 | 51.99 | 70.66 | 83.37 | 0.0782 |
| II | 31.49 | 54.01 | 73.57 | 86.37 | 0.0833 |

Source: Central Bank of Brazil, Financial Institutions data

**Bank concentration indicators: PLA
Total banking industry**

| Period | RC2 | RC5 | RC10 | RC20 | IHH |
|--------|-------|-------|-------|-------|--------|
| 1994 I | 33.78 | 50.23 | 61.87 | 73.68 | 0.0806 |
| II | 28.26 | 44.89 | 57.31 | 69.82 | 0.0580 |
| 1995 I | 23.63 | 41.28 | 54.43 | 67.29 | 0.0460 |
| II | 21.29 | 43.36 | 56.35 | 67.71 | 0.0466 |
| 1996 I | 23.81 | 44.97 | 57.94 | 69.10 | 0.0505 |
| II | 23.36 | 45.71 | 58.06 | 68.94 | 0.0505 |
| 1997 I | 22.46 | 45.96 | 58.35 | 69.81 | 0.0501 |
| II | 22.19 | 47.21 | 59.59 | 71.19 | 0.0520 |
| 1998 I | 22.87 | 46.88 | 59.67 | 71.81 | 0.0522 |
| II | 19.76 | 41.30 | 59.38 | 73.06 | 0.0457 |
| 1999 I | 19.77 | 40.35 | 55.51 | 69.38 | 0.0427 |
| II | 18.98 | 38.72 | 55.84 | 68.96 | 0.0419 |
| 2000 I | 19.18 | 39.90 | 56.97 | 69.92 | 0.0435 |
| II | 20.40 | 42.46 | 55.21 | 68.28 | 0.0441 |

Source: Central Bank of Brazil, Financial Institutions data

**Bank concentration indicators: PLA
Total banking industry - bank groups**

| Period | RC2 | RC5 | RC10 | RC20 | IHH |
|--------|-------|-------|-------|-------|--------|
| 1994 I | 33.78 | 50.23 | 61.87 | 73.84 | 0.0806 |
| II | 28.26 | 44.89 | 57.31 | 70.08 | 0.0581 |
| 1995 I | 23.63 | 41.28 | 54.43 | 67.55 | 0.0461 |
| II | 21.29 | 43.36 | 56.35 | 67.71 | 0.0468 |
| 1996 I | 23.81 | 45.51 | 58.48 | 70.05 | 0.0515 |
| II | 23.36 | 46.30 | 59.21 | 70.09 | 0.0519 |
| 1997 I | 22.46 | 46.92 | 59.81 | 71.59 | 0.0521 |
| II | 22.19 | 48.48 | 60.97 | 73.82 | 0.0545 |
| 1998 I | 24.80 | 50.49 | 64.14 | 77.30 | 0.0604 |
| II | 30.28 | 52.55 | 69.16 | 81.19 | 0.0728 |
| 1999 I | 26.42 | 49.10 | 64.99 | 77.79 | 0.0619 |
| II | 26.95 | 49.80 | 66.22 | 78.65 | 0.0642 |
| 2000 I | 27.56 | 49.38 | 67.72 | 79.86 | 0.0653 |
| II | 29.81 | 54.46 | 69.50 | 81.79 | 0.0736 |

Source: Central Bank of Brazil, Financial Institutions data

**Bank concentration indicators: PLA
Total private banking industry**

| Period | RC2 | RC5 | RC10 | RC20 | IHH |
|--------|-------|-------|-------|-------|--------|
| 1994 I | 30.56 | 44.41 | 58.69 | 70.59 | 0.0611 |
| II | 29.37 | 42.77 | 56.19 | 68.50 | 0.0569 |
| 1995 I | 28.80 | 42.17 | 55.24 | 67.88 | 0.0553 |
| II | 30.21 | 45.35 | 55.94 | 67.25 | 0.0610 |
| 1996 I | 29.68 | 44.29 | 55.10 | 67.14 | 0.0591 |
| II | 30.03 | 43.50 | 54.60 | 66.56 | 0.0591 |
| 1997 I | 29.08 | 42.76 | 53.95 | 66.72 | 0.0565 |
| II | 28.62 | 42.50 | 53.57 | 66.26 | 0.0555 |
| 1998 I | 28.95 | 42.74 | 53.93 | 66.73 | 0.0566 |
| II | 23.79 | 45.70 | 57.37 | 71.61 | 0.0521 |
| 1999 I | 25.07 | 40.37 | 52.34 | 67.85 | 0.0468 |
| II | 24.25 | 41.76 | 53.36 | 68.40 | 0.0474 |
| 2000 I | 24.83 | 43.51 | 54.74 | 68.79 | 0.0500 |
| II | 23.90 | 43.37 | 54.97 | 68.77 | 0.0492 |

Source: Central Bank of Brazil, Financial Institutions data

**Bank concentration indicators: PLA
Total private banking industry – bank groups**

| Period | RC2 | RC5 | RC10 | RC20 | IHH |
|--------|-------|-------|-------|-------|--------|
| 1994 I | 30.56 | 44.41 | 58.69 | 71.55 | 0.0613 |
| II | 29.37 | 42.77 | 56.19 | 69.53 | 0.0572 |
| 1995 I | 28.80 | 42.17 | 55.24 | 68.51 | 0.0555 |
| II | 30.21 | 45.35 | 55.94 | 67.98 | 0.0613 |
| 1996 I | 30.49 | 45.10 | 56.37 | 69.50 | 0.0614 |
| II | 30.93 | 45.25 | 56.38 | 69.40 | 0.0621 |
| 1997 I | 30.56 | 45.00 | 56.56 | 70.26 | 0.0611 |
| II | 30.58 | 44.46 | 56.93 | 70.41 | 0.0614 |
| 1998 I | 34.29 | 49.10 | 61.21 | 74.38 | 0.0745 |
| II | 41.43 | 59.05 | 70.01 | 80.96 | 0.1028 |
| 1999 I | 36.35 | 54.38 | 65.08 | 77.47 | 0.0831 |
| II | 36.55 | 57.17 | 67.53 | 79.59 | 0.0887 |
| 2000 I | 37.50 | 57.89 | 69.55 | 80.78 | 0.0903 |
| II | 37.14 | 61.98 | 72.89 | 84.13 | 0.0950 |

Source: Central Bank of Brazil, Financial Institutions data

ANNEX II: Operations considered for building bank groups

Table 1
Domestic merger and acquisition operations after the Real Plan that affected bank concentration by creating or expanding bank groups.

| Nr. | Starting date | Acquired institution | Acquiring institution | End data | Comment | Impact ¹ |
|-----|---------------|---------------------------------|-------------------------------|----------|---------------------|---------------------|
| 1 | 1995. II | Digibanco | Banco Pontual | 1996. II | Control assgnmt. | 0.000001 |
| 2 | 1996. I | Banco Crefisul S.A | Banco Itamarati S.A | 1996. I | Control assgnmt. | 0.000005 |
| 3 | 1996. I | Banco Continental | Banco Pontual S.A | 1998. II | Control assgnmt. | 0.000001 |
| 4 | 1996. I | Banco Francês e Brasileiro S.A | Banco Itaú S.A | | Control assgnmt. | 0.000489 |
| 5 | 1996. I | BR Banco Mercantil | Banco Rural S.A | | Control assgnmt. | 0.000001 |
| 6 | 1996. I | Banco Banorte S.A | Banco Bandeirantes | 1996. I | Proer | 0.000023 |
| 7 | 1996. II | Banco Itamarati | Banco de Crédito Nacional S.A | 1997. I | Control assgnmt. | 0.000071 |
| | 1996. II | Banco Crefisul S.A | Banco de Crédito Nacional S.A | 1997. II | Control assgnmt. | |
| 8 | 1996. II | Banco Martinelli S.A | Banco Pontual S.A | 1998. II | Control assgnmt. | 0.000001 |
| 9 | 1996. II | Banco Grande Rio S.A | Dresdner Bank S.A | | Foreign | 0.000001 |
| 10 | 1997. I | Banco Multiplic | Lloyds S.A | 1998. I | Foreign | 0.000038 |
| 11 | 1997. II | Banco do Estado do RJ S.A | Banco Itaú S.A | | Privatization | 0.000609 |
| 12 | 1997. II | Banco de Crédito Real de MG S.A | Banco de Crédito Nacional S.A | 1997. II | Privatization | 0.000052 |
| 13 | 1997. II | Banco Geral do Comércio S.A | Banco Santander | | Foreign | 0.000001 |
| 14 | 1997. II | Banco SRL S.A | Amex Holding | | Control assgnmt. | 0.000000 |
| 15 | 1997. II | Banco Meridional do Brasil S.A | Banco Bozano, Simonsen S.A | 1999. II | Privatization | 0.000387 |
| 16 | 1998. I | Banco de Crédito Nacional S.A | Bradesco S.A | | Control assgnmt. | 0.003247 |
| | 1998. I | Banco de Crédito Real de MG S.A | Bradesco S.A | | Control assgnmt. | |
| | 1998. I | Banco Crefisul S.A | Bradesco S.A | 1998. II | Control assgnmt. | |
| 17 | 1998. I | Banco Itabanco S.A | Bradesco S.A | 1999. II | Control assgnmt. | 0.000047 |
| 18 | 1998. I | Banco Noroeste S.A | Banco Santander | 1998. II | Foreign | 0.000122 |
| 19 | 1998. I | Banco Bandeirantes S.A | CGD/ Finacial Português | 2000. I | Foreign | 0.000005 |
| 20 | 1998. II | Banco de Crédito Real de S.A | Bradesco S.A | | Control assgnmt. | 0.000004 |
| 21 | 1998. II | Banco Sistema S.A | Banco Pactual S.A | | Control assgnmt. | 0.000002 |
| 22 | 1998. II | Banco América do Sul S.A | Banco Sudameris | | Foreign | 0.000120 |
| 23 | 1998. II | Banco Dibens S.A | Unibanco S.A | | Control assgnmt. | 0.000169 |
| 24 | 1998. II | Banco Real S.A | ABN Amro Holding N.V. | 1999. II | Foreign | 0.000568 |
| 25 | 1998. II | Banco do Estado de MG S.A | Banco Itaú S.A. | | Privatization | 0.001437 |
| 26 | 1998. II | Banco do Estado de PE S.A | ABN Amro Holding N.V. | | Privatiz./ Foreign. | 0.000093 |
| 27 | 1999. I | Pontual | BCN S.A/ Bradesco S.A | 1999. I | Control assgnmt. | 0.000712 |
| | 1999. I | Continental Banco S.A | BCN S.A/ Bradesco S.A | | Control assgnmt. | |
| | 1999. I | Banco Martinelli S.A | BCN S.A/ Bradesco S.A | 1999. I | Control assgnmt. | |
| 28 | 1999. II | Banco do Estado da Bahia S.A | Bradesco S.A | | Privatization | 0.000883 |
| 29 | 2000. I | Credibanco | Unibanco S.A | | Control assgnmt. | 0.000047 |
| 30 | 2000. I | Banco Bozano, Simonsen | Banco Santander | | Foreign | 0.000381 |
| | 2000. I | Banco Meridional | Banco Santander | | Foreign | |
| 31 | 2000. I | J. Safra | Banco Safra | | New Institution | 0.000036 |
| 32 | 2000. II | Banco Bandeirantes S.A | Unibanco S.A | | Control assgnmt. | 0.000503 |
| | 2000. II | Finacial Português | Unibanco S.A | | Control assgnmt. | |
| 33 | 2000. II | Banco Boavista Inter-Atlântico | Bradesco S.A | | Control assgnmt. | 0.001162 |
| 34 | 2000. II | Banco do Estado do Paraná | Banco Itaú S.A | | Privatization | 0.001142 |
| 35 | 2000. II | Banco1.net | Unibanco S.A | | New Institution | 0.000017 |
| 36 | 2000. II | Banespa | Banco Santander | | Privatiz./ Foreign. | 0.002111 |
| 37 | 2000. II | Fininvest | Unibanco S.A | | Control assgnmt. | 0.000159 |
| 38 | 2000. II | Nações | BCN S.A/ Bradesco S.A | | Control assgnmt. | 0.000024 |
| 39 | 2000. II | Banco Uno-E | BBVA | | New Institution | 0.000001 |

Source: Bacen

1/ Impact is the change of IHH considering just the acquisition in question in the half-year in which it occurred. . Measured over total assets of the bank industry.

Table 2
Merger and acquisition operations abroad, with impact in domestic bank concentration by building-up or expanding bank groups

| Nr. | Starting date | Sold institution | Acquiring institution | End date | Comments | Impact ¹ |
|-----|---------------|----------------------------|-----------------------|----------|------------------------|---------------------|
| 1 | 1998. II | Bank of America | Nations Bank | | Ctrl. assgnmnt-foreign | 0.000002 |
| 2 | 1999. I | Banco Central Hispano | Banco Santander | 1999. II | Ctrl. assgnmnt-foreign | 0.000000 |
| 3 | 1999. II | Argentaria | BBV | 2000. I | Ctrl. assgnmnt-foreign | 0.000002 |
| 4 | 1999. II | Republic New York | HSBC | | Ctrl. assgnmnt-foreign | 0.000068 |
| 5 | 2000. I | Crédit Comercial de France | HSBC | | Ctrl. assgnmnt-foreign | 0.000229 |
| 6 | 2000. I | Fleming Graphus | Chase Manhattan | | Ctrl. assgnmnt-foreign | 0.000005 |
| 7 | 2000. II | J.P. Morgan | Chase Manhattan | | Ctrl. assgnmnt-foreign | 0.000038 |
| | 2000. II | Morgan Guaranty Trust | Chase Manhattan | | Ctrl. assgnmnt-foreign | |

Source: Author's primary survey

^{1/} Impact is the change of IHH considering just the acquisition in question in the half-year in which it occurred. . Measured over total assets of the bank industry.

Table 3
Banks operating in Brazil both as branches of foreign institutions (foreign banks) and domestic private banks under foreign control

| Nr. | Starting date | Sold institution | Acquiring institution | End date | Comments |
|-----|---------------|-----------------------------|--------------------------|----------|-----------|
| 1 | 1994. I | Citibank N.A | Citibank S.A | | Same bank |
| 2 | 1994. I | BankBoston N.A | BankBoston S.A | | Same bank |
| 3 | 1994. I | Lloyds Bank PLC | Lloyds Bank S.A | | Same bank |
| 4 | 1994. I | Morgan Guaranty trust | J. P. Morgan | 2000. I | Same bank |
| | 1996. II | Dresdner Lateinamerika A.G. | Dresdner Bank Brasil S.A | | Same bank |
| | 1997. II | Inter-American Express | American Express | | Same bank |

Source: Bacen