Rafael Schiozer (Brazil), Raquel F. Oliveira (Brazil), Richard Saito (Brazil)

Why do banks go public? Evidence from the 2005-2007 wave of Brazilian bank IPOs

Abstract

This paper examines the wave of Initial Public Offering (IPO) of Brazilian banks from 2005 to 2007. The study provides empirical evidence that banks that went public showed ex-ante characteristics different from those of similar banks that remained privately-held. Specifically, IPO-banks had greater profitability, larger loans/asset ratio, smaller proportion of non-performing loans and were more capital constrained than banks that remained private. These results show that the wave of bank IPOs cannot be explained simply by the market-timing theory, but by greater growth opportunities of these banks relative to their competitors. Thus, market liquidity is a necessary, but not sufficient condition, to explain IPOs. We also investigate the effect of the going public decision on the post-issue operational performance of these banks, and find evidence of an increase in the loans/assets ratio and also in the nonperforming loans ratio, even when controlled for the credit boom. Finally, there is indication of an economies-of-scale effect on the IPO-banks, from larger coverage of staffing expenditures with revenues from services (fees).

Keywords: initial public offering, banks, post-IPO performance, Brazil.
JEL Classification: G21, G32, G28.

Introduction

From 2004 to 2007, 106 Brazilian firms went public. In the year of 2007 a record number of IPOs (Initial Public Offerings) were placed on the Sao Paulo Stock Exchange (Bovespa), putting Brazil on the fourth place in the global ranking of IPOs.

The banking industry also took part in this IPO wave, starting with Nossa Caixa, a state-owned bank, in 2005, and nine other banks (Pine, Sofisa, Parana Banco, Cruzeiro do Sul, Daycoval, Indusval, ABC Brasil, BicBanco and Panamericano) in 2007. An overview of these initial public offerings is depicted in Table 1.

Table 1. Overview of bank IPOs in Brazil

This table shows bank IPOs in Brazil from 2005 to 2007, indicating the date of issuance, the type of issuance (primary, secondary or mixed), number of domestic and foreign subscribers, proportion of allocation to foreign investors in terms of volume of issuance, gross proceeds, and percentage of primary issuance.

Bank	Issuance date	Type of emission	# of subscribers		Proportion of foreign investors (in volume)	Gross proceeds (millions of BRL)	
			Domestic	Foreign		Total	Primary
Nossa Caixa	10.28.05	Secondary	n/a	n/a	n/a	920	0.0%
Pine	04.02.07	Mixed	20616	52	90.2%	517	69.1%
Sofisa	05.02.07	Mixed	7441	80	76.0%	505	98.4%
Paraná	06.13.07	Primary	8755	45	89.0%	529	100.0%
Cruzeiro do Sul	06.26.07	Mixed	4368	74	66.5%	567	77.6%
Daycoval	06.29.07	Mixed	7852	162	69.8%	1,092	85.7%
Indusval	07.12.07	Mixed	314	34	90.6%	253	90.1%
ABC Brasil	07.25.07	Mixed	6264	100	74.4%	609	98.4%
BIC Banco	10.15.07	Mixed	5053	105	85.0%	821	26.9%
Panamericano	11.19.07	Primary	3214	48	69.0%	700	100.0%

Sources: Bovespa (São Paulo Stock Exchange), CBLC (Brazilian Clearings Company) and the website of Bank UBS Pactual.

A wave of bank IPOs causes a series of relevant impacts to the financial system. The proceeds of IPOs are an important source of capital for financial institutions, that allows the expansion of bank deposits and assets. Due to regulatory restrictions, Brazilian banks are required to have a capital ratio of at least 11%. This is larger than the 8% Basel requirement. Therefore, a bank that has a low capital ratio may then see an IPO as a means to extend its activities.

However, this new capital may cause a perverse incentive to growth. The bank could use these funds in a way that is not in the best interest of the shareholders, in a classical principal-agency conflict of free cash flow, described by Jensen (1986). For example, in order to grow its credit portfolio, the bank might originate loans of worse quality or with lower spread. If, before the IPO, a capital constrained bank tended to be very selective in choosing the best borrowers, the additional funds provided by the issuance could impel managers to lend to clients with a worse credit score or rating.

Another relevant factor is that the going public decision generally leads to significant changes in terms of corporate governance and systemic risk. The

public listing of stocks implies the creation of a board of shareholders and other statutory bodies which play an important role in conducting business strategy, in the monitoring of managers' activities and in compliance and risk management policies. Additionally, the monitoring performed by institutional investors may also contribute to a greater disclosure of bank activities and to the improvement of internal reporting and control systems. Finally, the scrutiny placed by shareholders may complement the discipline potentially imposed by the depositors.

However, the dynamics of the stock market could have a collateral effect over systemic risk. Shimizu (2009) shows evidence that uninformed depositors use the information from the stock market to make decisions on their deposits. When depositors see stock prices of the bank collapsing, they may understand that as a bad sign and react by withdrawing funds, in a typical bank run process. Despite the fact that there is a series of observable indicators on the financial health of a financial institution, the stock market may overstate depositors' understanding of the bank's risk, especially during crises. Such a perception can set up a particularly adverse dynamic that could lead a bank to greater difficulty of obtaining funding, loss of clients and of important operations, in a clear process of degradation of assets and liabilities. Liquidity issues should be taken into consideration, as we could see in the crisis that started in the US in the summer of 2007, where it has played a major role, as Allen and Carletti (2008) point out. In this study, we address two fundamental questions related to the wave of bank IPOs in Brazil:

(i) whether banks that went public (hereafter, IPO-banks) presented, ex ante, distinctive features from other banks that remained privately held, which make IPO-banks more prone to go public. In other words, we test whether bank IPOs were driven by market timing or were caused by modifications in the economic or regulatory environment of the Brazilian banking industry; and

(ii) the impact of going public on the operational performance of IPO-banks, i.e., whether or not the IPOs affected the operational performance of these banks.

This is the first study, to the best of our knowledge, to confront the market timing and the neoclassical theories in emerging economies. Most of the discussions on these theories have taken place from the perspective of mergers and acquisitions. For instance, Shleifer and Vishny (2003) and Rhodes-Kropf and Viswanathan (2004) develop patterns in which merger waves result from managers seeking to take advantage of windows of opportunity, whereas Harford (2005) contests their results,

showing evidence that merger waves are the result of normative, economic and technological shocks associated with periods of high liquidity on the markets. Since most of the empirical studies are on merger and IPO waves and use US firms, our study is able to contribute to the literature by confronting these theories in a novel economic environment.

Another main contribution of this paper is shedding some light on the going public decision in financial institutions, its effects on operational performance and the potential consequences for the stability of the financial system.

The results show that, indeed, IPO-banks were ex-ante different from those banks of the same size and profile which remained privately held. In summary, IPO-banks were, even years before the IPO, more profitable, had greater loans to assets ratio, smaller proportion of non-performing loans and faced greater capital constraints. These results provide evidence that bank-IPOs cannot be explained simply by market timing.

We also find indications of change in operational performance after banks became public. These results do not have statistical significance, probably because the post-IPO sample size is too small to indicate significance; there is a lack of statistical power. We observed that IPOs place a negative effect on the profitability of the banks and an increase in the size of the credit portfolio, though associated with an undesirable increase in the ratio of non-performing loans. There are also signs of an economies-of-scale effect on the IPO-banks, shown from larger coverage of staffing expenditures with revenues from services (fees).

In addition, only the largest of the 10 banks that took part in the IPO wave have engaged in M&A activity until now. This is of particular interest considering the findings of Rosen et al. (2005), who show that one of the primary reasons for banks going public in the US is to engage in M&A activities, either acquiring, being acquired or merging with other financial institutions.

The remainder of the paper is organized as follows: the next section gives a brief description of the Brazilian banking industry and its environment, the second section comprises the extant literature review, methodology and results, and the last section concludes.

1. The Brazilian banking industry and its environment

The Brazilian banking industry has experienced several changes in its structure since the creation of its institutional framework, through the Banking Reform Law of 1964. Bank operations are regulated

by the federal government and the Central Bank of Brazil (*Banco Central do Brasil*) is the supervising authority. Until the early 1990's, the Brazilian financial system endured severe regulatory restrictions and constraints to the presence of international institutions. In those years, Brazilian financial institutions had great profitability due to sky-high inflationary gains, although the industry showed an overall low efficiency, specially because of the state-owned banks. As Goldfajn et al. (2003) point out, high inflation created an incentive for banks to increase deposits and invest the proceeds in inflation-protected government bonds. This inflationary gain led to the expansion of the banking system, including the opening of new branches nationwide. The number of universal banks in the country increased from 104 in 1988 to 244 at the end of 1994.

After the implementation of the Real Plan (Plano Real) in mid-1994, which changed the currency from Cruzeiro to Real and drastically reduced inflation, banks struggled in their attempts to find new sources of profits. As Oliveira (2007) points out, one of the first things Brazilian banks did was to increase non-interest revenues by charging service fees. At the same time, banks started to try to cut costs in order to reduce non-interest expenses. The other thing to do was to increase interest revenues, through credit operations. However, lending practices were still developing and the risk assessment of credit operations was incipient in Brazilian banks at that time. At the same time, the Mexican crisis of 1995 slowed down economic growth in Brazil which, conjugated with poor quality risk assessment, led to an increase in loan losses. As a result, in the second half of 1995 two major banks (Banco Economico and Banco Nacional) faced distress, forcing the Central Bank of Brazil to intervene. Such interventions created uncertainties about the financial health of the Brazilian banking industry. Soon after, the government launched major restructuring programs that prevented a systemic crisis (Goldfajn et al., 2003).

In a nutshell, those programs aimed at reducing systemic risk and protecting depositors. The main actions included interventions and liquidations, incentives to mergers and acquisitions of troubled banks, privatization of inefficient local state-owned banks (which ultimately resulted in the massive entry of foreign banks), strengthening of federal banks and the creation of a deposit insurance mechanism for small depositors, (FGC, for its acronym in Portuguese)[1].

From 1995 to 2002, the Central Bank performed 57 interventions and liquidations and there were 42 mergers and acquisitions in the Brazilian banking sector (Goldfajn et al., 2003). As a result, the number of banks in Brazil dropped from 263 in 1996 to 194 in 2002. The privatizations led to a decrease in the market share (in total assets) of state-owned banks from 50.9% to 33.4%, and to an increase in the market share of foreign banks, from 8.7% to 30.4%. A detailed description of such restructuring programs occurred in Brazil can be found in Goldfajn et al. (2003) and Oliveira (2007).

With the success of the Real Plan on stabilizing inflation and of the financial sector restructuring reforms, the Brazilian financial system has undergone fast growth from 2003 to 2008. That growth came along with the economic expansion of the period, when the country's GDP experienced an increase of approximately 76%, partially due to the boom in commodity prices.

The credit to GDP ratio has increased from 24.2% in 2002 to 37.0% in June 2008 (Central Bank of Brazil, 2008). This increase in credit operations can be attributed to a series of factors, such as declining interest rates, increased investor protection derived from the reforms in the corporate and banking regulatory framework, the implementation of the Brazilian Payments Systems, which reduced systemic risk and transaction costs for banks, and several governmental programs to foster housing, consumer and corporate credit supply. Nevertheless, this ratio for other major emerging economies such as Chile, Thailand, Korea and Malaysia ranges between 60% and 130%, which may indicate that there is still room for increasing credit supply in Brazil. Developed countries, such as Canada, Australia, UK, Sweden, and USA have much higher total credit to GDP ratio, ranging between 100% and 200%.

At the same time, capital liquidity in international markets spiked. Additionally, the risk perception of investors regarding emerging economies decreased, which caused a huge influx of resources into these countries, including Brazil. Figure 1 shows that the net inflow of resources into emerging equity markets gradually increased from 2002 to 2007. In Brazil, the net inflow of resources increased from circa 2 billion USD in 2002 to more than 26 billion in 2007.

---

[1] Brazilian FGC is a private not-for-profit association. Its mechanism is roughly similar to the US Federal Deposits Insurance Corporation (FDIC).
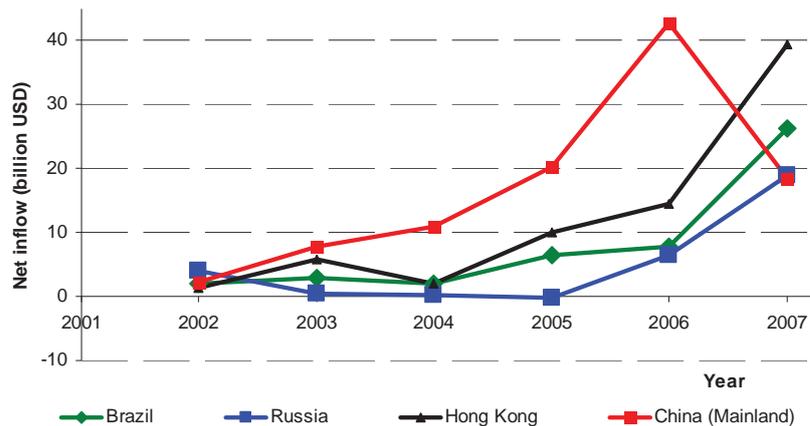
Notes: Net inflow of resources into the equity markets of Brazil, Russia, Hong Kong and China (mainland) is computed as the difference between the inflow and outflow of foreign investment in the local equity markets, including issues of Depositary Receipts by companies of these countries in other markets. Values are shown in billions of US dollars.
Source: International Monetary Fund.

Fig. 1. Net inflow of resources into selected emerging equity markets

As of June 2005, right before the start of the bank-IPO wave studied in this paper, Brazil's banking sector was comprised of 185 banking institutions. From these, only five major banks (*Itaú*, *Bradesco*, *Unibanco* and government-controlled *Banrisul* and *Banco do Brasil*) were publicly traded at the São Paulo Stock Exchange. Nevertheless, none of these banks are widely held. As a matter of fact, Brazilian regulation[1] demands that banks elicit to the Central Bank the composition of the control group. In fact, it is important to note that none of the bank IPOs resulted in the change in the control group of these firms. As such, IPO-banks issued non-voting shares and voting shares in a quantity not enough to result in changes to the control group. Even for state-owned Banco Nossa Caixa, the IPO did not represent a privatization process, since the government remained as the controlling shareholder. Therefore, Brazilian bank-IPOs resulted in less concentrated ownership, but without major changes to corporate control.

The combination of a favorable environment for credit growth in Brazil and high liquidity in international markets ultimately resulted in the wave of bank IPOs observed in the country. In only two years, thus, the number of publicly traded banks in Brazil jumped from five to fifteen. With the exception of Banco Nossa Caixa, which inaugurated the bank-IPO wave in 2005, the other nine banks that went public in 2007 were small to midsized, capital constrained, credit-focused banks, as we show in the next section.

2. Theories of IPO waves and operational performance of the IPO firms

IPOs have long been investigated by the financial literature (examples of early studies are Reilly, 1973; Ibbotson and Jaffe, 1975; Ritter, 1984a, 1984b; Rock, 1982). Some studies on the factors leading firms to go public have found evidence that IPOs cluster in time, resulting in the so called IPO waves (Ibbotson and Jaffe, 1975; Ritter, 1984; and Ibbotson et al., 1994) and are highly correlated with high stock market valuations, whether on the market in general or in specific sectors (Lerner, 1994; Loughram et al., 1994; Pagano et al., 1998; Baker and Wurgler, 2001; and Lowry and Schwert, 2001).

Two theories try to explain the existence of IPO waves: the behavioral and the neoclassical theories. The behavioral theory, defended by Pagano et al. (1998), Baker and Wurgler (2001) and Lowry and Schwert (2001), sustains that firms go public to take advantage of windows of opportunity, making their issuances when assets and stocks are overvalued.

The neoclassical theory, defended by Pástor and Veronesi (2003), for instance, sustains that IPO waves result from shocks in an industry's economic, regulatory and technological environment, which lead to large scale reallocation of economic resources, change of investment opportunities, and optimal financing structure. Time concentration would occur because, during economic expansions, high capital liquidity would cause transaction costs to decrease, allowing for the process of going public for many firms.

Kim and Weisbach (2007) analyze almost 17,000 IPOs occurred in the US from 1990 to 2003 and provide evidence that firms that do primary issuances

---

[1] The National Monetary Council (Conselho Monetário Nacional – CMN) is responsible for this regulation. This particular rule is stated at the CMN Resolution 3,040, of 2002.

(i.e., new shares, with the firm actually increasing its equity) have different motivations from firms that sell existing shares (i.e., entrepreneurs cashing out) in the decision of going public. Primary issuances are better explained by the firms' demand for new capital, since they are well correlated to an increase in capital expenditures, increases in cash and subsequent capital-raising through seasoned offerings. Alti (2001) and Alti and Sulaeman (2008) developed patterns of informational asymmetry to explain the waves of issuances. When a firm goes public, the price of the offer is an indication of investors' interest in the security. Thus, the result of an IPO reveals information that was not initially public, thereby reducing the level of information asymmetry among investors and modifying the optimal capital structure and financing form of firms.

As noted by Pagano et al. (1998), the going public decision may be associated with ex-ante observable characteristics, which make a given firm more prone to make an IPO than others in the same industry (for instance, high sales growth), or to ex-post observable characteristics (reduction in average cost of capital, growth retained by lack of capital, lack of investment by entrepreneurs). To test this hypothesis, the banking sector has a differential advantage, as the information from financial statements is available prior to IPOs, not only for those firms which went public, but also for other firms in the industry that remained privately held. This allows verifying if the IPO banks are ex-ante different from those that remainned private. Rosen et al. (2005) took advantage of this uniqueness of the banking industry and investigated characteristics of the US market. Their results proved favorable to the neoclassical hypothesis.

Financial theory is unable to predict the effects of IPOs itself on the post-issue performance of the firms. Since IPOs modify the ownership structure of firms, the arousal of agency problems becomes more likely once capital becomes less concentrated. On the other hand, outside investors may increase the scrutiny on managers' activities and risk taking profile, resulting in increased performance. Therefore, the change in operational performance of IPO firms is an empirical issue. A few examples of studies on the subject are Degeorge and Zackhauser (1993), Jain and Kini (1994), Mikkelson et al. (1997), Shelor and Anderson (1998), Kim et al. (2004), Coakley et al. (2007) and Pástor et al. (2009). The results are not unanimous, but most studies find a decline in the operational performance in the post IPO period. Pástor et al. (2009) develop a model of entrepreneur learning, which predicts that firm profitability should decline after the IPO on average. In their model, the decision of going public is made by the entrepreneur, based on the tradeoff between the diversification benefits of going public

against the benefits of private control. They consider that going public is optimal for entrepreneurs when the firm's expected profitability in the short future (but not necessarily in the long term) is high. Since the entrepreneur wants to smooth consumption, and is not able to borrow against future profitability, the optimal decision is to go public.

This relative scarcity of studies on the impact of IPO on operational performance is probably due to the absence of pre-issuance information for the majority of firms. Without reliable ex-ante information, it is difficult to make inferences on performance changes which may occur during and after the IPO period. As such, financial institutions make up a unique universe for analysis, since both private and public institutions are required to disclose their financial information in detail. Thus, following the examples of Rosen et al. (2005), we analyze the operational performance of IPO banks by comparing them to similar banks which remained privately held, creating a matched sample of IPO-banks and otherwise, privately held banks. The methodology used, described ahead, is based on Jain and Kini (1994) and Rosen et al. (2005). However, unlike most of the studies that use adjusted performance measures, we are able to match firms not only by industry and size, but also by their business profiles, which allows better measures of adjusted performance.

2.1. Metrics of operational performance and statistical procedures. In order to test whether IPO-banks are different from banks that remained privately held, we build adjusted performance measures. Their construction comprises three fundamental steps: (1) identification, for each IPO bank, of a group of banks with similar characteristics (match-banks); (2) design of financial indicators reflecting the performance of both IPO-banks and non-IPO banks; and (3) computing the difference between the performances of IPO-banks and their match-banks, which is called the adjusted performance of IPO-banks.

Our population is made up of independent commercial banks (i.e., banks that are allowed to receive deposits) and banking conglomerates whose composition includes at least one commercial bank or a universal bank with commercial portfolio.

We use data from financial statements from June 2003 to June 2008, which account for 11 semiannual periods. We use semi-annual data, since this is the frequency for which financial statements are audited[1]. The first period of our sample (June 2003) was selected in order to provide a lag of approximately two years before the beginning of the IPO wave. This

---

[1] Brazilian banks are required to disclose financial information on a monthly basis, but only the June and December statements are subject to the scrutiny of independent auditing companies.

lag allows the identification of ex-ante characteristics that possibly make IPO-banks idiosyncratically distinct from non-IPO banks. Another reason to use a base period that is relatively far in the past is that the results in the period immediately prior to the IPO may be contaminated by the cost of issuance itself, by window dressing (artificially inflated results), or by the injection of capital by underwriters prior to the IPO, a practice that became common in Brazil and received the name of equity kickers.

Our sample is composed of banks in operation as of December 31st, 2007. For identification of the banks which did not go public, but have similar characteristics to IPO banks (match-banks), we followed the procedure described below:

a) Banks were classified by their segment of activity, as defined by the Department of Financial System Monitoring and Information Management (Departamento de Monitoramento do Sistema Financeiro e de Gestão da Informação) of the Central Bank of Brazil. The methodology for this grouping of banks is made by the Central Bank based upon the similarity of bank's business profiles, and is described in an internal document entitled "Segmentation of Institutions and Conglomerates by Type of Activity" (internal Central Bank document). The segments by type of activity of banks or banking financial conglomerates are: (i) complex; (ii) retail; (iii) credit; (iv) treasury; (iv) banks related to auto makers; (v) development banks, and (vi) non-classified.

b) Secondly, the banks were classified based on the size of their assets. For each IPO-bank, we identified three banks classified in the same type of activity with total value of assets immediately lower, and three banks with total value of assets immediately higher. This procedure was repeated for the period from June 2003 to December 2005 (five periods). All the banks identified as one of the three of total value of assets immediately lower or higher in any of the periods formed the match-group of each IPO-bank. In situations where some of the banks identified as potential matches were also IPO banks, two procedures were adopted: (1) moving one position in the list of banks, up or down, as needed, so as to always only non-IPO banks in the match group; and (2) IPO-banks that had crossed reference were grouped together, in a manner that the match group of one IPO-bank also became match to the other.

We match banks by size because banks of different sizes generally compete on distinct markets. In addition, there are several fixed costs associated with the issuance, which make the relative cost very dissimilar for banks of contrasting sizes.

For each of the banks, performance indicator measures were computed. All the measures are adjusted to the match-group, which is done by the simple difference between the values observed for each IPO-bank and the average of values observed in their respective match-group. This difference is called adjusted performance measure.

The indicators chosen are in line with CAMEL rating requisites: capital adequacy (C), asset quality (A), management quality (M), earnings (E) and liquidity (L). The operational definition of all the variables is described in Table 2.

Table 2. Proxies for operational performance

The expected signs, shown in the third column, refer to expectations derived from neoclassical hypothesis for IPOs (i.e., the hypothesis that IPO-banks present distinctive pre-issue features from other banks) before and after the issuance. The question mark indicates that it is not possible to form any expectation about the sign of the variable based on the neoclassical theory.

Fundamentals	Variable	Expected sign before / after the IPO
Capital adequacy	Basel index	- / -
	Loan sales / Total loans	+ / ?
Asset quality	Nonperforming loans/ Total assets	- / -
	Total loans / Total assets	+ / +
Management	Salaries / Fees	? / ?
Earnings	Return on assets (ROA)	+ / ?
Liquidity	Cash holdings / Total assets	- / ?
	(Liquid securities + Derivatives) / Total assets	- / ?
	(Cash + Liq. securities + Derivatives) / Total assets	- / ?

♦ **Capital adequacy**

We measure capital adequacy by the capital ratio (Basel index), as defined by Central Bank's regulatory framework. As mentioned before, the minimum requirement of the Basel index for a Brazilian bank is 11%, not the usual 8%. The neoclassical hypothesis for the going public decision is that, in the periods prior to the IPO, the Basel indexes observed for the IPO banks should be lower than those of the match-groups, based on the implication that the IPO is a response to greater capital constraint (Kim and Weisbach, 2007). Immediately after the IPO, it is expected that the adjusted Basel indexes of IPO-banks will be positive because of the capital infusion that the IPO represents.

Additionally, since selling loans is an alternative to reducing leverage due to the regulatory minimum capital requirement, we use the ratio between the balance of loan sales and the total amount of loans as an indication of capital constraint. Our hypothesis is that IPO-banks will have a greater proportion of loan sales before the IPO, since securitized loans result in lower capital requirements compared to on balance plain vanilla loans. We expect it to decrease

in the post-IPO period. In this sense, it is also expected that banks sell these loans in the form of absolute sales (operations in which the bank makes a definitive sale of a given loan portfolio, which means that the loans are not anymore on the bank's balance sheet and, as such, there is no requirement of capital allocation).

♦ **Asset quality**

The assessment of the quality of assets can be made using several indicators. To a great extent, empirical studies use the ratio of nonperforming loans and total assets. Most of the literature consider that a loan is non-performing if it is past due for over 90 days (e.g., Saunders and Cornett, 2007). As a proxy to non-performing loans, we use the values of loans classified in risk classes E to H. Brazilian banks must rate their credit operations in an ascending order of risk, on levels AA, A, B, C, D, E, F, G and H and report the volume of credit in each of these ratings in their financial statements. Every loan that is overdue for more than 90 days must fall into one of the ratings E to H. Under category E, if the loan is between 91 and 120 days past due, and so on, in a way that a loan with rating H is overdue for more than 180 days. In any case, a loan can be rated E, for example, at any point in time, even before it is past due, should the bank believe there is an expected loss of 30%. That is the reason why the variable used in this study is not exactly nonperforming loans, but is a good proxy of it. Thus, the first measure used to identify the quality of assets is the ratio between the sum of values of loans rated E, F, G and H and the total amount of assets.

The adjusted measure of asset quality (difference between this measure for the IPO-banks and for the average of the match-group of banks) in the periods before the IPO shows whether the quality of the loan portfolio of IPO-banks was better or worse than that of the match-banks. The difference between the post-issue and pre-issue adjusted measure of asset quality indicates whether the institution suffered incentive to originate credit operations of worse quality deriving from the significant injection of capital due to the IPO.

The ratio between the total value of the credit portfolio and the total value of assets is another complementary measure that was used. It may be understood as an indication for the bank's focus on credit. This variable is also important in order to test the neoclassical against the behavioral hypothesis. Following the neoclassical rationale, IPO-banks should show a greater proportion of loans in the composition of their assets. On the other hand, a decline in the proportion of total credits in relation to the assets in the post-issue period would lead to the inference that the IPO is meant to take advantage of

high prices in the stock market, rather than the economic motivation of larger growth opportunities.

♦ **Management quality**

Management quality is one of the fundamentals least explored in the empirical literature, perhaps because it is not directly observable. In this study, we use the ratio of salaries plus other expenditures and personnel and fees charged (hereafter salaries to fees ratio), as it is a popular indicator in Brazil, especially after the economic stabilization. A smaller ratio indicates greater managerial efficiency. Neither of the IPO theories identifies a direct relation between IPO and cost efficiency; therefore, it is not possible to identify, ex-ante, which would be the expected sign for the adjusted performance of this specific variable. This metric is, thus, a proxy to whether or not IPO-banks are better managed than the match-banks.

♦ **Profitability**

In line with the studies of Jain and Kini (1994) and Rosen et al. (2005), the return on assets (ROA) is used as a measure of profitability. We also use ROA, and not the return on equity (ROE), as the issue itself would probably have an impact on the latter in the period right after the IPO. Moreover, ROE is also a variable more correlated to leverage. According to the neoclassical hypothesis, IPO-banks would show higher ex-ante profitability, which causes the expected sign for adjusted ROA to be positive.

♦ **Liquidity**

The liquidity of financial institutions is concentrated on its cash and liquid securities. However, it is not possible to distinguish between liquid securities (non derivatives) and liquid derivatives contracts based on Brazilian banks' financial statements. Thus, we use three different measures of liquidity described in Table 2, in order to verify the robustness of the results to the adopted measure. Since we expect that IPO candidates, before stock issuance, meet greater capital constraints, it is natural to expect that these banks will face a tradeoff between liquidity and profitability (i.e., they may give up liquidity in order to allocate resources in operations of greater profitability). The expected result of this tradeoff is that IPO-banks will show less liquidity relative to the banks from the match-group prior to the issue. Therefore, we expect a negative sign for the variables related to adjusted liquidity in the period prior to the IPO. In the post-issue periods, it is not possible to build any expectation.

In order to identify whether IPO-banks are different from those which remained privately held, a t-test is done for the indicators of adjusted performance. Thus, it is possible to identify if ex-ante characteristics cause some banks to be natural candidates to go public.

This is followed by the application of a differences-in-differences (DD) method. We compute the change in adjusted performance of each IPO-bank, which is the difference in time between the measures of adjusted performance, in relation to a reference period, defined as the period of two years before the IPO. Using a base period which is relatively far in the past from the IPO lessens the chance of using data possibly contaminated by pre-IPO costs, or artificially inflated results (window dressing), which would more likely affect financial statements of one or two semesters right before the IPO. Finally, for each variable, we compute the average of the change in adjusted performance of IPO banks in each period of time (relative to 2 years before the IPO). This calculation will enable identifying whether the operational performance of IPO-banks evolved differently from the average performance of match-banks.

2.2. Adjusted performance indicators – before and after the IPO. The descriptive statistics of our sample is shown in the Appendix. Periods -9 to -3 are the best characterization of the pre-issue situation, since it refers to 9 to 3 semesters before the IPO. Periods -2 to 0 reflect the preparation for the issue, when equity kickers (infusion of capital by underwriters prior to the IPO) were taking place. Periods 1 to 5 reflect the post-issue situation. The dispersion of the observed values relative to their averages is smaller in the group of IPO banks than in the matching banks. We compute the coefficient of variation (CV) for each period for both groups (results unreported) and find that the CV is always smaller for the IPO-banks compared to the matching group.

Table 3 shows the adjusted performance indicators, before and after IPO. As explained before, our periods are measured in semesters and the semester in which the IPO occurred is set to $t = 0$ for each bank. We call "before the IPO" the periods -9 to -3 (i.e., since nine semesters before IPO up to three semesters before IPO). We do not consider periods $t = -1$ and $t = -2$ so as to avoid bias on the results by potential window dressing problems or influence caused by pre-IPO costs of issuance. The adjusted performance "after the IPO" encompasses the periods 1 to 5, i.e., the semester immediately after the IPO up to five semesters after the IPO[1].

The results indicate that IPO-banks presented ex-ante characteristics distinct from the banks that remained privately held. In general, IPO-banks show greater loans-to-assets ratio, better profitability, and were more capital constrained than their private counterparts.

The t-test performed for the adjusted Basel indexes in the periods before the IPO indicates that their average is negative and significantly different from zero, which means that the IPO-banks presented significantly lower Basel indexes than their match-banks. IPO-banks also sold more loans, which is another strong indication that these institutions dealt with greater capital constraints.

The adjusted loans-to-assets ratio indicates that the loan portfolios represented greater proportion of the assets in the IPO-banks than in their privately held counterparts, and IPO-banks had a smaller proportion of nonperforming loans, which are indications that the growth of the portfolio was limited by capital constraints. Moreover, IPO-banks also showed better profitability, measured by ROA, and a smaller proportion of liquid assets.

The results corroborate the neoclassical hypothesis for this wave of IPOs. In other words, the IPOs seem to be responses to economic, technological or regulatory shocks, with the existence of liquidity on the markets being understood as a necessary (but not sufficient) condition. Thus, the IPO was an optimal decision for some (but not for all) banks. Specifically, banks that decided to go public had more growth opportunities and were more capital constrained than other banks that decided to remain privately held. Therefore, the wave of Brazilian bank IPOs cannot be attributed to managers, entrepreneurs or underwriters simply attempting to time the market. In the behavioral theory, IPO-banks would not have performed differently from the banks that remained privately held in the pre-issue periods.

Although it is not the focus of this study to identify the nature of the shocks causing the wave of IPOs, it is possible to identify a series of changes in the regulatory framework and economic environment, as mentioned in section 1, such as improved investor protection, inflation under control and decreasing interest rates, resulting in the credit boom occurred in Brazil starting in 2003, which may have caused some banks with greater ability to provide credit to decide to go public. This phenomenon came along with greater liquidity of the markets beginning in 2005, and especially in the first half of 2007, that reduced transaction costs and allowed issuances.

Table 3 also shows the adjusted performance measures of IPO-banks after going public. These results must be interpreted more carefully, for two

---

[1] Note that the existence of observations for different periods depends on the semester of the IPO. Thus, for Nossa Caixa (IPO in the second semester of 2005), we have observations for the periods -5 (Jun/03) to +5 (Jun/08). For banks Pine, Sofisa, Parana, Cruzeiro do Sul and Daycoval (IPO in the first semester of 2007), the periods observed go from -8 (Jun/03) to +2 (Jun/08) and, for Banks Indusval, ABC Brasil, BIC and Panamericano (IPO in the second semester of 2007), observed periods range from -9 (Jun/03) to +1 (Jun/08). As a result, the total number of observations for performance measures adjusted before the IPO (periods -9 to -3) is 61, and observations for the periods 1 to 5 (after the IPO) totaled 19.

main reasons: (i) the number of observations, 19, is small, and may compromise the quality of the statistics; and (ii) the first post-IPO period ($t = +1$) may present distortions, especially for the difficulty that IPO-banks may face to increase immediately the volume of deposits inflows proportionately to the increase of equity, causing IPO-banks to be less than optimally leveraged in this short period.

Table 3. Adjusted performance measures: pre and post-issue

This table shows the results of adjusted performance measures of the selected variables. The adjusted performance is measured, for each IPO-bank, by the difference between the value observed for the IPO-bank and the average of the banks that form its match-group. The expected signs refer to the neoclassical hypothesis for IPOs. The first sign refers to the pre-IPO and the second to the post-IPO period. The question mark indicates that it is not possible to form an expectation about the sign of the variable based on the theory. The p-values refer to the one-tailed tests when there is any expected sign and two-tailed test when there is no a priori expectation.

Fundamentals	Variable	Expected sign (before / after)	Adjusted performance			
			Before the IPO (from -9 to -3)		After the IPO (from +1 to +5)	
			Mean	P-value	Mean	P-value
Capital adequacy	Basel index	- / -	-0.0752***	0.000	-0.0061	0.378
	Loan sales / Total loans	+ / ?	0.1107**	0.012	0.0724	0.566
Asset quality	Nonperforming loans / Total assets	- / -	-0.0036*	0.052	-0.0027*	0.077
	Total loans / Total assets	+ / +	0.1012***	0.000	0.0731**	0.038
Management	Salaries / Fees	? / ?	-1.2793***	0.000	-3.1011***	0.002
Earnings	Return on assets	+ / ?	0.0136***	0.000	0.0076***	0.004
Liquidity	Cash holdings / Total assets	- / ?	-0.0080***	0.000	-0.0023**	0.045
	(Liquid securities + Derivatives) / Total assets	- / ?	-0.0307**	0.078	0.0977	0.958
	(Cash + Liq. securities + Derivatives) / Total assets	- / ?	-0.0387**	0.036	0.0954	0.955
Number of observations			61		19	

Even taking into consideration the restrictions above, it is possible to conclude that some of the main idiosyncratic characteristics of IPO-banks are maintained, such as: (1) the ratio of loans to total assets remains higher in IPO-banks than in their match-groups; (2) the proportion of non-performing loans over total assets remains smaller in IPO-banks; (3) the salaries to fees ratio remains smaller in IPO-banks compared to their matches; (4) the ROA also remains higher in IPO-banks; and (5) the ratio between cash and total assets remains smaller in IPO-banks. However, in absolute values, the adjusted performance measures suffered changes from before to after the IPO. This information may shed some light on the impact of the IPO on the performance of the banks. This issue will be dealt with in the next section.

Since most of the proceeds of the IPOs in our sample are primary issuances (see Table 1), our evidence is also consistent with Kim and Weisbach (2007) who show that issuances of new shares are related to larger growth opportunities and need for capital, whereas secondary issuances are more related to the entrepreneurs' need for diversification.

2.3. Evidence on change in operational performance (differences in differences). In order to investigate whether the going public decision affects the operational performance of the banks, we compute the change of adjusted performance over time. Fundamentally, this indicator seeks to show the difference between the variation of performance of IPO-banks in relation to the base period, 4 semesters before the IPO, and the change in performance of the match-group banks during each period. Table 4 shows the results.

The information in Table 4 must also be analyzed carefully, since the averages were estimated based only on 10 observations, compromising the power of the statistical tests. Thus, the results shown must be interpreted in a descriptive manner. The existence of data from only one period after the IPO for part of the banks may also limit the analysis: it is impossible to distinguish if the changes in adjusted performance stabilize after any period, if there is some remaining effect of the IPO operation itself in the period $t = 1$, or if the results are simply caused by random variations.

In general, there are indications that IPOs may alter the operational performance of these banks. The main focus of analysis must be the variations observed in the last column of Table 4 (the performance variations adjusted in the period $t = +1$ in relation to the period $t = -4$). The results show a relaxation of capital constraints (with the increase of the Basel index) in relation to the match-group, which was already expected due to capital injection from the IPO. Also, corroborating this result is the fact that loan sales suffered negative adjusted variation in the IPO semester and in the semester immediately after.

The change in the adjusted indicator Total loans / Total assets shows that the IPO-banks expanded the proportion of loans in their assets more than those belonging to their match-groups. One must remember that the results are not influenced by the credit boom

occurred in 2005-2007, since with the use of the method of differences in differences all the metrics are adjusted to the control group.

However, this increase in the ratio of loans comes along with a more than proportional positive adjusted change in the non-performing loans. There are some hypotheses to explain this phenomenon. For instance, more stringent lending practices before the IPO, may have been relaxed because of decreased capital constraints – a problem possibly associated with the classic cost of agency of the free cash flow described by Jensen (1986). A second hypothesis is that, before the IPOs, loans of worse quality were sold to other institutions, due to capital restrictions, and after the IPO they could be maintained in the bank's balance sheet.

Table 4. Change in adjusted performance

This table shows the average change in performance adjusted to the match-group for the ten IPO-banks since 2005. The adjusted performance, for each variable, is calculated as a difference between the values observed for the IPO-bank and the average of the values for the match-group banks (averages of adjusted performance are reported in Table 3). For each bank we calculate the variation of adjusted performance, taking the period t = -4 (four semesters before IPO) as the basis for comparison. The semester in which the IPO occurred corresponds to t = 0.

Fundamentals	Variable	Change in adjusted performance (%)				
		-4 to –3	-4 to –2	-4 to –1	-4 to 0	-4 to +1
Capital adequacy	Basel index	- 3.0	- 1.6	2.1	10.3	6.6
	Loan sales / Total loans	3.4	6.5	2.7	- 2.9	- 7.0
Asset quality	Nonperforming loans / Total assets	- 0.1	- 0.1	- 0.1	0.2	0.6
	Total loans / Total assets	0.8	3.6	9.0	6.8	11.1
Management	Salaries / Fees	2.0	- 87.4	- 254.1	- 308.8	- 109.0
Earnings	Return on assets	- 0.1	- 1.4	- 0.9	- 1.1	- 0.5
Liquidity	Cash holdings / Total assets	- 0.1	- 0.2	- 0.1	0.1	- 0.1
	(Liquid securities + Derivatives) / Total assets	- 2.6	- 0.1	- 1.5	2.0	- 2.6
	(Cash + Liq. securities + Derivatives) / Total assets	- 2.7	- 0.3	- 1.7	2.1	- 2.6
# of observationss		10	10	10	10	10

The adjusted change in the salaries to fees ratio was negative for all the periods, including the post-IPO periods. This indicates that IPO-banks remained with more efficient management than that of the match-group banks, even after going public.

As shown in the previous section, IPO-banks have shown higher return on assets compared to their private counterparts, both before and after the IPO. However, the adjusted negative variation of the return on assets in the post-issue period suggests that the difference of ROA between the IPO-banks and the non-IPO banks was slightly reduced. Therefore, there is indication of a reduction in profitability after the IPO.

Finally, we note that the adjusted change in the liquidity indicators lifted off during the IPO period (t = 0). This was expected, given that IPO-derived resources (and a rise from the additional deposits resulting from decreased capital constraints) are not immediately channeled to credit and/or non-liquidity treasury assets, thus increasing the proportion of liquid assets. In the post-issue periods, a decrease in liquidity relative to the match-group took place. This phenomenon may be related to a smaller post-IPO leverage, which would result in a lower need for liquidity.

Concluding remarks

This study analyzed the wave of IPOs of Brazilian banks, started by Banco Nossa Caixa in October 2005, and followed by other nine banks in 2007. Our results show that banks that decided to go public had, before the IPO, distinctive features from the banks that remained privately held. Specifically, IPO-banks faced greater capital and liquidity constraints and showed better profitability, better management quality, and better quality of assets. Thus, these results reinforce the neoclassical theory about IPO waves, which sustains that IPO activity has economic motivation and that IPO waves result from shocks to an industry economic, regulatory and technological environment. That is, the going public decision is mainly explained by growth opportunities associated with periods of stronger liquidity in the economy, and not by underwriters and the controllers of these banks attempting to time the market, taking advantage of overpriced stocks. Since most of the shares in the Brazilian bank IPOs were primarily issued, our evidence is also consistent with Kim and Weisbach's (2007) findings that primary issues are better explained by larger growth opportunities and greater need for capital.

We also found indications that the IPO per se is capable of affecting the operational performance of these banks. However, it is impossible to verify the statistic significance of the tests, because there are few post-IPO observations. For these banks, the going public decision brought obvious positive effects over capitalization, measured by the Basel index.

Additionally, we noted a reduction in the volume of loan sales, consistent with the post-issue greater capitalization, since selling a loan is an alternative to circumvent capital requirement regulations. The

results suggest that the IPOs also led to an increase in the proportion of credit operations in the bank's assets. However, there was more than proportional rise in the ratio of non-performing loans. This may indicate laxer credit standards than before the IPO. This problem may be related to the agency costs of the free cash flow, as observed by Jensen (1986). On the other hand, it is also possible that the banks had been selling their lower quality loans and after the IPO they were able to keep them in the balance sheets. One possible extension of this study is to identify more precisely the causes of the deterioration of the loan portfolio. It is important to note that none of these results is biased by the recent credit boom, since all measures are adjusted to the control group.

We also found evidence on the improvement of operational efficiency, indicated by the increase in the adjusted salaries to fees ratio. This indicates an economies-of-scale effect, with fees growing more than proportionately to salaries and expenses with personnel.

Profitability, when adjusted to the control group, suffered a slight reduction. It was not possible to identify if this reduction could be due to deferred expenditures of the issue itself or if it was caused by the deterioration of the credit portfolio, or even for some other reason. As with liquidity, it was possible to identify a decrease in the ratio of cash and liquid securities to total assets. This phenomenon may be related to a smaller post-issue leverage, which would result in a reduced need for liquidity.

The main limitation of this study is the few number of observations, specially on the post-issue period. Therefore, the addition of one or two post-IPO periods could help clarify some of the questions still unanswered, by increasing the power of the statistical tests. Thus, only the results on the motivations of IPOs period can be considered conclusive.

Still, the indications that the IPO banks increased the loans-to-assets ratio after going public, compared to the banks with similar characteristics, bring about a series of implications for regulators, investors and for the country's economy as a whole. Even more importantly, the data suggests that these banks expanded the proportion of low performance loans in their portfolios, which may have conesquences to the health of the financial system.

Finally, it is important to supervisory authorities to note that, if the decision to go public in banks affects their performance and risk profile, it has implications on the financial system's systemic risk.

Acknowledgements

References

1. Allen, F. and Carletti, E. (2008). The Role of Liquidity in Financial Crises, available at: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1268367, accessed August 4th, 2009.
2. Alti, A., (2001). Clustering Patterns in IPO Waves, Working paper, available on http://papers.ssrn.com/sol3/papers.cfm?abstract_id=305156, accessed August 4th, 2009.
3. Alti, A., (2005). IPO Market Timing, *Review of Financial Studies* 18, No. 2, 1105-1138.
4. Alti, A., Sulaeman, J., (2008). When do High Stock Returns Trigger Equity Issues?, *working paper*, available at www.mcccombs.utexas.edu/faculty/aydogan.alti .
5. Central Bank of Brazil (1999). Resolution 2.682 of December 22nd, 1999.
6. Central Bank of Brazil (2008). Review of the Criteria of Segmentation of Banking Institutions and Conglomerates by Size and by Type of Activity, *internal document of the Department of System Surveillance and Information Management – Desig*.
7. Coakley, J., Hadass, L., Wood, A. (2007). Post-IPO Operating Performance, Venture Capital and the Bubble Years, *Journal of Business Finance & Accounting*, 34 (9) & (10), 1423-1446.
8. Gavish, B., Kalay, A. (1983). On the asset substitution problem. *Journal of Financial and Quantitative Analysis*, 18, 21-30.
9. Goldfajn, I., Hennings, K. and Mori, H. (2003). Brazil's financial system: resilience to shocks, no currency substitution, but struggling to promote growth, *Center for Research on Economic Development and Policy Reform – Stanford University – Working Paper,* available at <http://scid.stanford.edu/pdf/credpr170.pdf>, accessed August 4th, 2009.
10. Ibbotson, R.G., Jaffe, J.F. (1975). Hot issues´ market, *Journal of Finance* 30, No. 4, 1027-1048.
11. Ibbotson, R.G., Sindelar, J., Ritter, J. (1994). The market's problems with the pricing of Initial Public Offerings, *Journal of Applied Corporate Finance* 6, 66-74.
12. Jain, B., Kini, O. (1994). The post-issue operating performance of IPO firms, *Journal of Finance* 49, No. 5, 1699-1726.
13. Jensen, M.C. (1986). Agency Costs of Free Cash Flow, Corporate Finance, and Takeovers, *American Economic Review* 76, 323-329.

14. Kim, K., Kitsabunnarat, P., Nofsinger, J.R. (2004). Ownership and operating performance in an emerging market: evidence from Thai IPO firms, *Journal of Corporate Finance* 10, 355-381.
15. Kim, W. and Weisbach, M.C., (2007). Do Firms Go Public to Raise Capital?, *NBER Working Paper Series*, available at <http://ideas.repec.org/p/nbr/nberwo/11197.html>, accessed August 4th, 2009.
16. Merton, R.C. (1974). On the pricing of corporate debt: the risk structure of Interest Rates. *Journal of Finance* 29, 449-470.
17. Mikkelson, W.H., Partch, M.M., Sha, K. (1997). Ownership and operating performance of companies that go public. *Journal of Financial Economics* 44, 281-307.
18. Myers, S.C., (1977). Determinants of corporate borrowing. *Journal of Financial Economics* 5, 147-175.
19. Oliveira, R.F., Estudo da Percepção de Risco por Parte dos Depositantes de Bancos – o Caso Brasileiros de 1999 a 2006, *Doctoral Thesis*. Universidade de São Paulo, Brazil.
20. Pagano, M., Panetta, F., Zinagales, L. (1998). Why do Companies Go Public? An empirical Analysis, *Journal of Finance* 53, 27-64.
21. Pástor, L., Veronesi, P. (2003). Stock Prices and IPO Waves, *Working Paper*, available on <www.ssrn.com>, accessed August 4th, 2009.
22. Pástor, L., Taylor, L.A., Veronesi, P. (2009). Entrepreneurial Learning, the IPO Decision, and the Post-IPO Drop in Firm Profitability, *The Review of Financial Studies* 22 (8), 3005-3046.
23. Reilly, Frank K. (1973). Further Evidence on Short-Run Results for New Issue Investors, *Journal of Financial and Quantitative Analysis* 8 (1), 83-90.
24. Ritter, J.R. (1984a). Signaling and valuation of unseasoned new issues: a comment, *Journal of Finance* 39 (4), 1231-1239.
25. Ritter, J.R, (1984b). The hot issue market of 1980, *Journal of Business* 57 (2), 215-240.
26. Rock, K. (1986). Why new issues are underpriced, *Journal of Financial Economics* 15, 187-212.
27. Rosen, R.J., Smart, S.B. and Zutter, C.J. (2005). Why do firms go public? Evidence from the banking industry, *working paper*, Available on < http://papers.ssrn.com/sol3/papers.cfm?abstract_id=686473>, accessed August 4th, 2009.
28. Saunders, A. and Cornett, M.M. (2007). Financial Institutions Management, a Risk Management Approach, 6th Ed. *Mc Graw Hill*.
29. Shelor, R.M. and Anderson, D.C. (1998). The financial performance of REITs following initial public offerings, *Journal of Real Estate Research* 16 (3), 375-387.
30. Shimizu, K. (2009). Is the information produced in the stock market useful for depositors?, Finance Research Letters, 6 (1), 34-39.

Appendix. Descriptive statistics

This table shows the averages and standard deviations (in parentheses) of the studied variables. In the columns indicated by "IPO banks" we show the values for these banks, as the other columns (match) show the values for the match group. Period 0 refers to the semester when the issue was placed. In the cases when the same bank belonged to the matching group of two or more different IPO-banks, with different semesters as the date of IPO (1st semester and 2nd semester of 2007), both were considered as period 0 for the bank belonging to the match group

Period	Capital adequacy				Asset quality				Size	
	Capital ratio (Basel index)		Sold loans / Total loans		Loans / Total assets		Nonperforming loans / Total assets		Assets (BRL million)	
	IPO banks	Match	IPO banks	Match	IPO banks	Match	IPO banks	Match	IPO banks	Match
-9 to -3	0.190	0.286	0.183	0.075	0.498	0.387	0.019	0.029	3,234	5,234
	(0.070)	(0.240)	(0.384)	(0.258)	(0.194)	(0.242)	(0.022)	(0.041)	(5,569)	(10,400)
-2 to 0	0.218	0.270	0.340	0.275	0.489	0.395	0.014	0.027	6,258	8,865
	(0.084)	(0.221)	(0.661)	(0.757)	(0.186)	(0.229)	(0.015)	(0.037)	(8,219)	(16,900)
1 to 5	0.228	0.238	0.276	0.173	0.430	0.375	0.014	0.018	17,700	27,700
	(0.081)	(0.180)	(0.517)	(0.446)	(0.247)	(0.224)	(0.012)	(0.030)	(19,200)	(42,600)
Period	Management quality				Earnings				Liquidity	
	Salaries / Fees		ROA		Cash holdings / Total assets		(Liquid securities + Derivatives) / Total assets		(Cash+ Liq. securities + Derivatives) / Total assets	
	IPO banks	Match	IPO banks	Match	IPO banks	Match	IPO banks	Match	IPO banks	Match
-9 to -3	2.999	4.191	0.018	0.006	0.007	0.0135	0.285	0.329	0.292	0.343
	(1.807)	(8.372)	(0.017)	(0.022)	(0.010)	(0.0288)	(0.210)	(0.227)	(0.209)	(0.222)
-2 to 0	2.714	6.414	0.013	0.009	0.006	0.0118	0.308	0.281	0.314	0.293
	(1.616)	(22.489)	(0.007)	(0.032)	(0.008)	(0.0274)	(0.213)	(0.207)	(0.211)	(0.202)
1 to 5	2.224	4.141	0.017	0.009	0.005	0.0097	0.367	0.252	0.371	0.261
	(1.564)	(14.934)	(0.012)	(0.016)	(0.004)	(0.0213)	(0.265)	(0.1887)	(0.265)	(0.186)