The competitive structure and strategic rank of Brazilian banks

Abstract

This work looks into the dynamics of the competitive structure and strategic positioning of the Brazilian banks. Over the eighteen years covered by the study, we saw periods of strategic instability in this industry and differing structures of strategic groups, with regard to not only their number, but also their composition. Our study therefore, provides empirical evidence that, of few periods of full strategic stability. These findings denote that, at some moment, there is a change in the strategic rank of these firms and provides insight with regard to the competitive patterns of an industry over the period.

Key words: strategy banks Brazil

Track: Financial Markets, Investment and Risk Management

1. Introduction

The conduct and performance of these firms and industries are topics that have aroused considerable scientific interest for some time. A logical understanding with regard to the operating methods of the firms and industries was originally the prime objective of literature on Industrial Organization (IO).

The theory then based on the paradigm of "structure-conduct-performance" posited that for a particular sector there would be an ideal strategy to be followed and therefore, variances in the profitability of the companies would be the result of a scale economy (Mason, 1949 and Bain, 1959). However, Hunt's observations in 1972 showed the presence of groups in the same sector with different strategies and thus a new line of inquiry was born.

The treatment of the strategic groups provided a new characterization of the facts. The classic models of microeconomic theory, whose assumption is the homogeneity of the firms in a given market, were considered to be unsuitable to explain the conduct and performance of the companies and the markets.

This work is focused on this treatment of the strategic groups. Questions such as the dynamics of the competitive structure and strategic rank of the firms and industries are of great academic interest. However, the over time analysis of the conduct of the strategic groups shows to be an appropriate vehicle for a look into the history and evolution of a market.

Cool's (1985), Cool's & Schendel's (1987), Fiegenbaum's (1987), Mascarenhas's (1989) and Fiegenbaum's & Thomas's (1990) empirical studies, looked into the basic questions with regard to the make up of the strategic groups, their evolution and the kinds of change to which they had been subjected from a dynamic perspective. These works gave rise to a series of similar studies during the 1990s.

However, some restrictions should be highlighted, as pointed out by Zúñiga et al (2004), with regard to these studies, that on the one hand, in their analysis, the majority covered a period characterized by stability in the environmental conditions, and on the other hand made use of stable samples of companies, these being comprised of the largest companies in the industry.

In line with the Zúñiga et al (2004) study, we examined, by means of statistical analysis, the dynamics of the competitive structure and strategic rank of a specific industry, the Brazilian banking market. Over the period analyzed, the firms in this industry were subject to continual environmental

disruptions and furthermore, this is an industry characterized by changes in its make up (bankruptcies, mergers, takeovers and privatizations).

Although our study is clearly in line with the research of Zúñiga et al (2004), the differences relate to the variables that characterize current strategic activities. One of the gaps in the Zúñiga et al (2004) study is in the research into the strategic rank of Spanish banks by means of the variables that only characterize this strategic rank at business level (types of consumers and products), whereas our study fills in these gaps by expanding the research to the operational level (decisions with regard to the commitment of resources) by using data on the capital equity structure and the results of the banks. According to Amel & Rhoades (1988) the commitment of resources (raising of capital policies and investment of funds) and the business environment (type of consumer, products and risks) is reflected in these structural decisions.

This work is organized in five sections. The next section shows a review of the literature on research that contributes to the understanding of the field of the study and other aspects connected to our study. In section 3, we detail the study variables and methodology used in the analysis of the data. In section 4, we show and discuss the results and evidence obtained. Finally, in section 5 we conclude our work.

2. The literature of the strategic groups

The treatment of the strategic groups arises from an attempt to fill in the existing gaps in the industrial organization theory with regard to the paradigm "structure-conduct-performance". The term "strategic group" was originally coined by Hunt (1972), who identified the strategic differences between firms in American industry, which divided white goods into four groups on the basis of three strategy sizes (asymmetries existing in that industry).

These groups were called strategic groups and defined by the author as being firms in the same industry that are highly symmetrical with regard to their cost structure, degree of vertical integration, degree of product differentiation, formal organization, control systems, management remuneration and sanctions, and lastly their personal views and preferences with regard to the various possible results.

The concept of strategic groups was developed from two points of view, the first emanating from the industrial organization school (Hunt, 1972; Newman, 1973; Porter, 1973; Caves & Porter,

1977; Newman, 1978 and Oster, 1982), and the second from the school of strategic management (Hatten, 1974; Patton, 1976 and Cool, 1985).

From the perspectives of the industrial organization school, measures such as the size of the firm (Porter, 1973 and 1979), the number of agents in an industry (Porter 1976, Oster 1982) and the degree of vertical integration (Newman, 1973) were taken as proxies for the strategy and therefore related to the performance to thus explain the existing differences.

For its part, the strategic management school treated the strategic groups from a different perspective. Starting from the idea that these groups comprise a useful analytical tool to bring together firms with similar strategies to provide comparisons, this line of research is concentrated on the individual firms and their competitive patterns using many variables linked to the strategy so as to identify the strategic groups in one particular industry (Hatten, 1974; Patton, 1976 and Cool, 1985).

Already in the middle of the 1980s, a new phase of research now focused on matters such as the exploration of mobility barriers (McGee & Thomas, 1986 and Mascarenhas & Aaker, 1989) and the stability of the strategic groups (Oster, 1982; Cool, 1985; Cool & Schendel, 1987; Cool & Schendel, 1988; Fiegenbaum, 1987; Mascarenhas, 1989 and Fiegenbaum & Thomas, 1990).

Although the dynamics of the strategic groups had been repeatedly documented in longitudinal studies of the conduct of the groups, significant methodological differences were observed in said empirical studies.

There are works in which the method of defining the time period during which the group structures do not undergo significant changes is subjective, these periods being determined a priori by means of knowledge of the sector being analyzed (Amel & Rhoades, 1988 and 1992; Ketchen, Thomas & Snow, 1993) in addition to studies in which technical statistics (among which are of Hotelling's T^2 test and the Box's M test) are used to objectively define the periods of strategic stability (Cool & Schendel, 1987 and 1988; Fiegenbaum & Thomas, 1990 and 1993; Fiegenbaum et al, 1990; Flavián & Polo, 1998; Más, 1999; García et al, 2001; Flavián et al, 2002 and Zúñiga et al, 2004).

It is worth highlighting that the Amel & Rhoades (1988) study, although it defines the periods of strategic stability subjectively, merits attention because it brings in as an innovation, the use of financial statement data as variables that characterize the strategic activity of the firm.

In line with the works that objectively define the time period in which the group structures do not undergo any significant changes, researches can be seen that also turn their attention to the

circumstances that affect the classification of the firms (Mascarenhas, 1989; Bogner, 1991 and Zúñiga et al. 2004).

The Mascarenhas (1989) work, a dynamic analysis of the strategic groups in the petroleum industry, has already provided data with regard to a connection between the mobility of the strategic groups and the environmental changes. For his part, Bogner (1991) studied the dynamics of the strategic groups in the American pharmaceutical industry and tested various hypotheses as to why the firms changed their strategic rank and under what circumstances this occurred. Within the set of questions explored by the author, some pondered the possibility of changes in the firms in the strategic groups during unsettled periods.

Contrary to what was expected, the empirical results obtained by Bogner (1991) showed changes at various times and not only during times of upheaval. The work of Zúñiga et al (2004) backed up these results. One of the assumptions in this study is that at some point in time almost all industries show firms that move from one strategic group to another when the total number of companies in the industry is considered.

The authors recognize that the existence of periods of strategic stability shown in previous studies is linked to the sample now selected by the researchers (the largest companies in an industry) and empirically show that, taking into account a population of companies that have over time been subject to environmental disturbances and largely made up of small units, there is no strategic stability since, at some time or another, these companies move from one strategic group to another, contradicting other studies among which is that of Cool & Schendel (1987).

As regards Brazil, specifically considering studies related to the banking industry, only the existence of strategic groups was explored by Savoia & Weiss (1995) and Gonzalez; Savoia & Gouvêa (2008) and up to now there are no works that deal with the stability of the strategic groups in the banking industry and the influences exerted by new environmental conditions on the strategic patterns of the groups.

3. Data and Methodology

The identification and specification of the variables that best reflect the strategic rank of a firm depend on the selected industry (Cool & Schendel, 1987). For the selected population in this study, the strategic activity was linked to decisions within the firm environment (type of consumers, products and risks) and decisions with regard to the commitment of resources (resources and investment of funds

policies), since the selection of the variables that characterize this strategic activity are based on a review of the literature on the strategic groups in the Brazilian banking industry.

With the purpose of examining the relation between the upheaval in the environmental conditions and the changes that took place over the period in the competitive structure of the Brazilian banks, we used variables similar to those of the Gonzalez; Savoia & Gouvêa (2008) study, which are described in Table 1. However, we highlight that said variables derive from the capital equity structure and the results of the banks being taken from the headings of the Financial Institutions Chart of Accounts (called COSIF by the Brazilian Central Bank) and since these depicted said structures, their use made it possible to eliminate potential arbitrariness in the choice of the variables that characterize strategic activity. (Amel & Rhoades, 1988)

Table 1: Work study variables

VARIABLE	DESCRIPTION
DI.A	Interbank investments and Cash Equivalents / Total Assets.
TVM.A	Securities (TVM) and Derivative Financial Instruments / Total Assets.
CRED.A	Total Credit and Commercial Lease Transactions / Total Assets.
DEP.P	Total Deposits / Total Liabilities.
EMPR.P	Loan and Transfer Liabilities and Funds from the Acceptance and Issuance of Securities / Total Liabilities.
DI.R	Income from Interbank Investments and Cash Equivalents / Total Income.
TVM.R	Income from Securities and Derivative Financial Instruments / Total Income.
SERV.R	Income from the Provision of Services / Total Income.
CRED.R	Income from Credit and Commercial Lease Transactions / Total Income.

A final aspect to be mentioned consists in the time limits of this work, it being limited to the period from 1994 to 2011, this time window also being used for the Brazilian banking institutions currently registered with the Brazilian Central Bank, i.e., non-banking institutions and conglomerates and credit cooperatives are not considered.

From the study variables thus shown, we made a specific description of the methods for defining the strategic stability periods and strategic groups. Our study, like other works (Fiegenbaum & Thomas, 1990 and 1993; Fiegenbaum et al, 1990; Flavián & Polo, 1998; Más, 1999; Zúñiga et al, 2004), followed a similar methodology as that of Fiegenbaum et al (1987). The periods of strategic stability are defined as those which meet the dual condition that the variance-covariance matrix, as well as the average vector of the strategic variables remains relatively stable.

In this context, strategic instability comes into play the moment there is an infringement of one of the two criteria posited by Fiegenbaum et al (1987). Thus, two statistical tests are applied to the two strategic stability criteria. For the first, the Box's M test is used for the purpose of testing the equality of the covariance matrixes of the strategic variables and the Hotelling's T^2 test is therefore used to test the second criteria, i.e., the equality of the average strategic variable vectors.

For the building of the strategic groups, or *clusters*, one of the most frequently used methods is the hierarchical model-based clustering method developed by Banfield & Raftery (1993). This method enables the investigation of the heterogeneity of a population by means of a finite mixture model in which each grouping is described by a different probability density function so that:

$$f(x) = \sum_{k=1}^{g} \pi_k f_k(x), \text{ being that } 0 \leq \pi_k \leq 1 \text{ and } \sum_{k=1}^{g} \pi_k = 1 \qquad \textbf{(1)}, \text{ where:}$$

x is a finite mixture of g components with a probability density function defined in accordance with the formula (1),

π_k are the proportions or weights of the mixture, i.e., consist of the probability that an observation belongs to the kth component.

$f_1(.), \ldots, f_g(.)$ are called mixture density components and represent any distribution.

However, considering $f_k(x) = f_k(x) \mid \theta_k)$ for k = 1, 2, …, g, i.e., the density components of the mixture belonging to a parametric family, θ_k being a vector of unknown parameters of the kth density component of the mixture, the formula (1) can be re-written as follows:

$$f(x|\theta, \pi) = \sum_{k=1}^{g} \pi_k f_k(x|\theta_k) \qquad \textbf{(2)}, \text{ where:}$$

π_k consists of the probability associated with each component of the mixture to produce the observations x = (x_1, …, x_n).

There are however, unknown parameters to be estimated by applying the maximum likelihood method using the EM (*Expectation-Maximization*) algorithm. The likelihood function is built starting from formula (2), thus:

$$L_{mix}\left(\theta_1,\ldots,\theta_g,\pi_1,\ldots,\pi_g\middle|x\right)=\prod_{i=1}^{n}\left[\sum_{k=1}^{g}\pi_k f_k\left(x_i\middle|\theta_k\right)\right]$$

(3), where:

the vector $x_i = x_{i1}, x_{i2}, \ldots, x_{in}$ for $i = 1, 2, \ldots, n$.

Thus, by means of the EM (*Expectation-Maximization*) algorithm, the maximum likelihood of the unknown parameters is estimated, i.e., the parameters that are the most consistent such as the sample data that are estimated in order to maximize the likelihood function shown.

In this study, for building the strategic groups or clusters, we followed Zúñiga et al (2004), who used the *Model-based Clustering* (*Mclust)* computer model. By means of this model, it is possible to make an analysis of the *clusters* using the hierarchical model-based clustering method posited by Banfield & Raftery (1993).

The *Mclust* therefore, makes it possible to obtain the best possible solution that does not refer to the number of *clusters*, thus the choice of this number does not depend on the subjective judgment of the researcher as seen in cases where traditional hierarchic and non-hierarchic models are used. In *Mclust*, each *cluster* is described by a probability density function Φ_k of a normal multivariate distribution parameterized by the average vectors μ_k and the covariance matrix Σ_k:

$$\Phi\left(x_i\middle|\mu_k,\Sigma_k\right)=\frac{\exp\left\{-\frac{1}{2}\left(x_i-\mu_k\right)^T\Sigma_k^{-1}\left(x_i-\mu_k\right)\right\}}{\sqrt{\det 2\pi\Sigma_k}}$$

(4), where:

the vector $x_i = x_{i1}, x_{i2}, \ldots, x_{in}$ for $i = 1, 2, \ldots, n$.

k is the full number that identifies a particular cluster,

$(x_i - \mu_k)^T$ is a transposed matrix,

Σ_k^{-1} is an inverse matrix.

The parameters π_k, μ_k and Σ_k are estimated by means of the likelihood function shown in formula (5) by applying the maximum likelihood method using the EM (*Expectation-Maximization*) algorithm.

$$\prod_{i:1}^{n}\left\{\sum_{k:1}^{g}\pi_k\left|x_i\right|_k\right\}, \Sigma_k\right\} \quad \textbf{(5)}$$

It should be emphasized that the characteristics of a *cluster* expressed by means of the Σ_k covariance matrix can vary and therefore it is possible to build several models for different parameterizations of this matrix. Another aspect has to do with the number of components that make up the population. Insofar as this number is unknown it is necessary to use a selection technique of the models to estimate the number of components. Thus, in order to choose the best model and determine the number of components (groups) of the mixture, the *Bayesian Information Criterion* (BIC) is used. This criterion, shown in formula (6), consists of a close estimate of the integral likelihood. In the end, the greater the value of the BIC statistic, the stronger is the evidence in favor of the corresponding model.

$$BIC(M) = 2\Lambda(M) - k(M)\log n \qquad \textbf{(6)}, \text{ where:}$$

Λ is the maximum log-likelihood on model M,

k is its complexity, i.e., the number of parameters,

n is the size of the sample.

Changes in the strategies of the group are studied as in Más (1999) by means of a comparison of the strategic groups and their key strategic variables in consecutive periods. As the changes are already arranged in the groups (the number of members of the groups), they are studied in each period by means of a mobility rate, this being the calculation of the probability that a firm moves around in strategic groups in consecutive periods in accordance with the procedure developed by Sudharshan et al (1991). Finally, the changes in the number of strategic groups in the Brazilian banking industry are gathered, observing increases and decreases in groups for each period.

4. Results

In order to define the time period when the structure of the strategic groups was not subject to significant changes, we carried out the Box's M test and the Hotelling's T^2 test. However, Cool & Schendel (1987) state that the determination of the strategic transition points may be affected by the make up of the sample being used, a supplementary analysis being required to verify the sensitivity of the results to the make up of the sample.

The approach suggested by the authors consists in determining the strategic transition points on a "q" sample of companies where "q<n" and repeat this analysis several times, adding companies until the total "n" of the sample is obtained. We followed this approach and repeated the aforementioned tests for randomly selected bank samples, the results obtained being shown in Table 2:

Table 2: Tests of the equality of the variance-covariance matrix and the average vector of the variables

Year Pairs Compared	Sample Size n=	M Box	F	Probability	T^2	F	Probability
1994-1995	533	182,632	3,986	0,000	0,266	15,468	0,000
	453	176,499	3,841	0,000	0,272	13,495	0,000
	400	261,674	5,681	0,000	0,281	12,597	0,000
	346	238,054	5,155	0,000	0,318	12,824	0,000
1995-1996	524	196,742	4,293	0,000	0,044	2,524	0,008
	445	179,471	3,902	0,000	0,039	1,851	0,058
	393	136,113	2,948	0,000	0,051	2,078	0,031
	341	161,971	3,494	0,000	0,058	2,031	0,036
1996-1997	504	107,398	2,342	0,000	0,061	3,370	0,001
	428	72,940	1,584	0,008	0,073	3,340	0,001
	378	126,913	2,751	0,000	0,079	3,280	0,001
	328	87,832	1,895	0,000	0,076	2,700	0,005
1997-1998	478	50,736	1,105	0,291	0,024	1,223	0,278
	406	90,045	1,955	0,000	0,029	1,288	0,241
	359	110,265	2,383	0,000	0,030	1,141	0,333
	311	73,058	1,573	0,008	0,031	1,034	0,413
1998-1999	453	67,310	1,464	0,023	0,065	3,213	0,001
	385	70,514	1,527	0,013	0,055	2,242	0,019
	340	41,630	0,899	0,665	0,090	3,223	0,001
	294	48,950	1,054	0,374	0,062	2,055	0,033
1999-2000	434	177,672	3,862	0,000	0,015	0,713	0,697
	369	175,321	3,796	0,000	0,019	0,743	0,670
	326	142,223	3,068	0,000	0,013	0,436	0,915
	282	224,330	4,822	0,000	0,030	0,943	0,488
2000-2001	417	188,419	4,092	0,000	0,017	0,791	0,625
	354	304,868	6,596	0,000	0,030	1,184	0,304
	313	172,118	3,709	0,000	0,037	1,241	0,269
	271	42,102	0,900	0,662	0,060	1,636	0,106
2001-2002	397	42,931	0,931	0,604	0,040	1,714	0,084

337	102,148	2,208	0,000	0,057	2,125	0,027
298	66,298	1,425	0,032	0,450	1,407	0,184
258	78,184	1,674	0,003	0,033	0,938	0,493
2002-2003	384	43,191	0,936	0,595	0,028	1,145	0,330
326	72,446	1,563	0,009	0,031	1,082	0,376
288	59,280	1,273	0,103	0,046	1,397	0,189
250	77,817	1,663	0,003	0,045	1,200	0,296
2003-2004	378	93,879	2,034	0,000	0,029	1,176	0,309
321	102,510	2,211	0,000	0,036	1,236	0,272
284	191,399	4,113	0,000	0,055	1,705	0,088
246	103,269	2,202	0,000	0,072	1,814	0,067
2004-2005	372	55,285	1,197	0,171	0,009	0,369	0,949
316	71,810	1,549	0,011	0,014	0,486	0,883
279	80,696	1,728	0,002	0,030	0,834	0,585
242	76,471	1,629	0,005	0,017	0,417	0,925
2005-2006	363	15,073	0,326	1,000	0,018	0,720	0,690
309	24,226	0,522	0,997	0,038	1,253	0,262
272	74,965	1,601	0,006	0,062	1,606	0,114
236	52,771	1,124	0,262	0,074	1,820	0,066
2006-2007	356	32,368	0,700	0,936	0,026	1,007	0,434
303	43,887	0,945	0,578	0,029	0,951	0,481
267	66,131	1,416	0,034	0,052	1,462	0,162
231	91,062	1,937	0,000	0,066	1,562	0,128
2007-2008	356	38,503	0,833	0,780	0,030	1,142	0,332
303	48,520	1,044	0,392	0,040	1,263	0,257
267	51,151	1,097	0,303	0,037	1,090	0,370
231	81,343	1,730	0,002	0,039	0,923	0,506
2008-2009	357	41,514	0,898	0,667	0,071	2,720	0,004
303	45,854	0,988	0,495	0,081	2,728	0,005
268	73,321	1,569	0,009	0,081	2,252	0,019
232	61,349	1,305	0,082	0,089	2,135	0,028
2009-2010	356	43,850	0,948	0,571	0,041	1,564	0,125
303	56,260	1,208	0,159	0,061	1,864	0,057
267	62,827	1,344	0,062	0,053	1,423	0,179
231	97,610	2,081	0,000	0,092	2,292	0,018
2010-2011	357	28,610	0,619	0,979	0,016	0,621	0,779
303	74,133	1,595	0,007	0,029	0,919	0,509
268	85,274	1,825	0,001	0,050	1,384	0,196
232	67,151	1,424	0,032	0,045	1,003	0,439

Source: Brazilian Central Bank – BACEN (data used by the authors)
Note: Adjustments used – tests carried out for several random samples of banks obtained by means of a syntax that selected a single random sample that represented a percentage of cases available on the IBM® SPSS®.

The results shown here are in line with the work of Zúñiga et al (2004). Thus, as in the

Spanish banking sector, the Brazilian banking industry underwent significant structural changes over

the period, resulting in the necessity of reformulating the competitive strategies of the firms so as to adapt them to the new environmental conditions.

The Brazilian banking sector experienced remarkable episodes which triggered significant changes in their composition. Many banks did not easily adapt to the new environmental conditions imposed on them, and as a result there were bankruptcies, mergers, takeovers and privatizations. In this way, in accordance with the results obtained, every year would be associated with a transition point of the competitive patterns of the banks. From these findings, it is expected that different structures of the strategic groups in terms of the number of groups and their composition will take place. However, our next step consists of the identification of these groups over the time window defined for this study.

Over the time window defined for this study, various structures of strategic groups in terms of the number of groups have been observed. In Table 3, we show the optimum number of strategic groups for each of the 18 years obtained by means of Model-based Clustering (Mclust), as well as the number of new groups and those that have disappeared over time. However, the results obtained from this grouping method back up the results obtained by means of the Box's M and Hotelling's T^2 tests shown above.

The number of strategic groups changes over time, 29 (twenty-nine) strategic groups having been identified in the period from 1994 to 2011, this number of groups being proportionately (considering the number of banks and the time window of the study) in line with the Zúñiga et all (2004) study in which 24 (twenty-four) strategic groups were identified in the Spanish banking industry.

However, we emphasize that only 4 (four) of these strategic groups last over practically the whole time window of the study, thus around 23 (twenty-three) of these may be considered as transitory groups and we will detail this definition further on in this section.

Table 3: The evolution of the number of strategic groups over time

Source: Brazilian Central Bank – BACEN (data used by the authors)

Table 4: The most stable strategic groups and the frequency of disappearances

Period	Strategic Group	Main Strategic Characteristics
Stable strategic groups with a lesser frequency of disappearance		
1994 – 2011	Retail Banks	Although they do not show any kind of evident specialization that affects their investments, in general, they are banks with a hybrid activity profile, both with regard to credit and treasury transactions. Their raising of capital is mainly by means of deposits presented, and therefore has a high leverage.
1994 – 2011	Interbank Operating Banks	With regard to their investments, they are specialized in interbank transactions, and their main revenues subdivided in interbank transactions and the provision of services. The main source of funds of these banks is their Own Capital, and they therefore are banks with a low leverage.
1994 - 2007 and 2009 – 2011	Treasury Banks	These banks have significant investments and revenues in securities and financial derivatives instruments. Therefore, like interbank transaction banks, their raising of capital is predominantly in Own Capital, and thus are also banks with a low leverage.
1994 - 2002 and 2004 – 2011	Credit Banks	These are banks specialized in credit transactions, and therefore have significant investments and revenues in credits. They are high leverage banks when compared to other banks, and their raising of capital in mainly derived from deposits.
Stable strategic groups with a greater frequency of disappearance		
1994 – 1999, 2001 – 2002, 2005 - 2007 and 2009 – 2011	Transfer Banks	Like credit banks, these banks are specialized in credit transactions, although they are different from credit banks with regard to the origin of resources, once they do not derive their raising of capital from significant deposits, and their principal source of funds is in their obligation accounts due to loans and transfers (an account mainly made up by loans from the BNDES (Brazilian Development Bank) system. These are funds distributing banks that have neither the size nor the funds to maintain a branch structure.
2005 - 2006 and 2009 – 2010	Business Banks	These are low leverage banks with high service revenues, and therefore show no preponderance in their asset accounts. These banks can adopt a strategy of interbank investment (DI) and in treasury, as an alternative to seasonal conditions or low demand for their services for the placement and issuance of private securities.

Source: Brazilian Central Bank – BACEN (data used by the authors)

In order to identify the strategies that distinguish one group from another, following the procedure used by Amel & Rhoades (1988), we compared the average values of the strategic variables of each group with the industry average.

From the total groups thus identified, around 6 (six) of these described in Table 4, can be considered as basic models of strategic conduct of Brazilian banks (four remain over the time window of the study and two disappear in one particular year and reappear the following year). The other

groups appear and disappear over the years and therefore can be seen as transitory competitive patterns (or strategic groups).

With regard to the banks taken as basic models of strategic conduct, the retail banks, credit and treasury banks provide full banking services, whereas the interbank operating, business and transfer banks would be the intermediaries of banking intermediation, i.e., are intermediaries within the system, who aim to guarantee the liquidity of the others.

The banks taken as transitory, the justification for said conduct is based on the Gonzalez; Savoia & Gouvêa (2008) study, where the authors emphasize that interbank operating are not a long-term profitable activity, since the donor bank incurs a high cost of maintaining a banking structure without the benefit of the ample margins of banking spreads.

Notice therefore, that some of the transitory groups (those who appear and disappear over the study time window) are comprised of these interbank operating banks that have recently increased their credit portfolio, but do not yet express credit income by virtue of the incipient maturity of the loans then granted.

A part of these transitory groups is also comprised of banks that have shown a meaningful credit portfolio in previous periods, i.e., were credit banks. However, they are at a review phase of their activity strategy, reducing their risk exposure in credit transactions, or by treasury and business banks in the process of increasing their credit portfolio.

In years of great environmental upheaval, an increase in these strategic groups followed by these decreases can be clearly seen. The years 2002 and 2003 were marked by economic upheavals in South American countries (Argentina and Brazil among them).

On the international scenario, the Nasdaq Crisis drove investors to an aversion to risk, thus the surge of the Argentine Crisis that culminated in devaluation and collapse of the State, had a negative effect on Brazil. Adding to the confused international context, the presidential election, in which the left-wing candidate, Luis Ignácio Lula da Silva, was leading the polls, triggered a negative reaction in the financial market due to the fear that the future government might change the economic policy.

In the beginning of 2002, government bonds issued by the National Treasury and the Central Bank lost value and the reputation of Brazilian government debt was called into question in the face of the growth in the aversion to risk, and credit was rationed. This year, we saw an increase in the number of transitory groups that indicated a strategic repositioning of Brazilian banks. Thus in 2003, only three

strategic groups are observed (interbank operating, treasury and retail banks), the strategic rank of these banks being in line with the context of credit rationing. There was also a retraction in the expansion of foreign banks in Brazil marked by the shutting down of activities in the country by some of those banks.

The Sub-Prime crisis is another period worth highlighting. The overseas crisis restricted access by banks and companies to foreign credit in Brazil, besides affecting the capital and exchange markets in the country. The Government and the Central Bank had to take measures to minimize the impact of this crisis. Among these measures, those of credit lines are reflected in the strategic rank of the banks in 2008, the year in which we observed three strategic groups (interbank operating, credit and retail banks), two of which are mainly orientated to the extending of credit.

In the light of the results shown so far, we may infer that the evolution of the Brazilian banking industry has been marked by periods of strategic instability. They have redirected their strategy to deal with the new environmental contexts. Some of the strategic groups seen are comprised of transitory groups made up of banks that are repositioning their competitive strategy toward a competitive pattern, i.e., they are making incremental changes in their strategy, reconfiguring their asset base in order to compete under the new market conditions.

With regard to a viable strategic pattern, these groups have a tendency to grow. More and more, other banks start to follow those that have been shown to be successful. In order to substantiate the changes in the group arrangements (number of group members), we calculated the mobility rates between strategic groups for each period. To build this index, we recorded the number of times that banks moved from one particular group to another one, as well as the number of times they remained in the same group.

On comparing the strategic groups over consecutive periods, in cases where the same banks belonged to identical groups in both periods, we can state that there is no mobility, since there are no changes in the make up or structure of the groups in said periods. Mobility arises at the time that any bank differs from the group when there are significant differences in the make up of the groups.

Our results show a mobility rate that oscillates between 0.455 and 0.745, indicating a relatively high level of mobility between the strategic groups. On average, according to Table 5, about 61.1% of the banks changed their strategic rank over the time window of this study.

Table 5: Mobility rate among strategic groups

This level of mobility evidences greater instability in the strategic patterns of an industry represented by a population of companies, also made up of small firms as is the case of the Brazilian banking market.

5. Conclusions

From the restrictions shown by Zúñiga et al (2004) with regard to the empirical studies that looked into (from a dynamic perspective) the basic questions about the make up of strategic groups, their evolution and types of changes to which they have suffered, our study looked into questions such as the dynamics of the competitive structure and the competitive rank of the firms and the Brazilian banking industry. For this analysis, we considered a period characterized by instability in the environmental conditions, as well as an unstable sample of banks (they "are born" and disappear over the period of the study time window), these being comprised not only of the largest banks in the industry, but also of small banks.

Initially we recognized by means of statistical techniques (among them the Box's M and Hotelling's T^2 tests), the existence of periods of great strategic instability in the Brazilian banking industry. One of the reasons now attributed for said existence would be strictly related to continuous environmental upheavals that took place in the sector over the period.

With regard to said environmental upheavals, we also highlighted that taking into account a sample of banks also comprising small banks, it would have been difficult to find periods of strategic stability, since each bank reacted differently to the environmental upheavals. From these first findings, we began to look into the occurrence of different strategic group structures in terms of the number of groups and their composition by means of the identification of these groups over the time window defined for this study.

Over the 18 years covered by this study, various strategic group structures, in terms of group numbers, have been observed. Several empirical studies (Cool, 1985; Cool & Schendel, 1987;

Fiegenbaum, 1987; Mascarenhas, 1989; Fiegenbaum & Thomas, 1990) provide strong evidence with regard to the existence of periods of strategic stability, in addition to a certain stability not only in the number of strategic groups identified, as well as the pattern of competitive conduct of each group and low mobility among the strategic groups in the long run. This study, for its part, confirms the work of Zúñiga et al (2004), providing empirical evidence that from a sample of large and small firms that have been subject to the instability of environmental conditions over time, it was hard to find a period of complete strategic stability.

This finding means that at some time, there is a change in the strategic rank of these firms that enables an understanding of the evolution of the competitive patterns of an industry over time.

Individually, the banks also change their competitive rank. The average mobility rate of the Brazilian industry was high (on average around 61.1% of the banks changed their strategic rank) in relation to other empirical studies and very close to the results of Zúñiga et al (2004) on the Spanish banking industry.

We highlight that this result must be considered with caution, since the probability of changes in the individual strategic rank of banks measured by means of the mobility rate of the Brazilian banking industry was very different for each year considered. A possible justification for this could be related to the fact that the people who manage each bank react differently to each environmental change. It would be worthwhile to look into the existence of mimicry whenever a new strategy emerges. In this context, the good performance of some members of a particular dominant group would also be observed in the others, in the long run.

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