

The Influence of Internationalization in Brazilian Bank Performance

CRISTIANO AUGUSTO BORGES FORTI
UNIVERSIDADE FEDERAL DE UBERLÂNDIA (UFU)

MURILLO CÉSAR SANTOS

CAROLINA CAMARGO FELICE
UNIVERSIDADE FEDERAL DE UBERLÂNDIA (UFU)

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Abstract

This study seeks to identify how internationalization affected the performance of the 241 Brazilian banks listed in the Central Bank of Brazil between 2001 and 2012. For this purpose, a variable capable of measuring the internationalization degree was created according to the methodology developed by Sullivan (1994). The internationalization degree (INTD) variable was face up to with 3 bank performance variables taken from the literature, those being return on assets (ROA), return on equity (ROE) and net interest margin (NIM). Ten control variables were used so that other factors wouldn't influence the results. As a result, the INTD interest variable was considered positive and statistically significant in relation to the three performance variables used, ROA, ROE and NIM. In addition, it was verified that the more internationalized banks are bigger, have more operational efficiency, receive more foreign investment and perform more credit operations. Internationalization positively affects bank performance.

Keywords: Internationalization, Performance, Banks.

Introduction

The Brazilian banks presented high competitiveness over the last decades, and demonstrated flexibility, agility, and innovation capacity to endure the adversities of the Brazilian economy. In Brazil, it is the sector that most invests in information technology. However, these factors alone do not guarantee the success of a bank, since this is one of the most competitive sectors of the Brazilian economy and the banks need to constantly search for solutions in order to reduce their costs, increase their revenue and client base and to optimize the return of invested capital. (CAMPELLO; BRUNSTEIN, 2004)

According to the Exame magazine ranking, in 2005, among the five largest firms with highest revenue, three were banks presenting combined revenue of over 200 billion Brazilian Reais. Such results give the impression that these institutions obtain this result only with the application of high interest rates on granted loans, but banks achieve these results through their competitive strategies, that go much further than the simple interest rates applied in loans (CAMPELLO; BRUNSTEIN, 2004).

In spite of its size and relevance, the Brazilian banking sector still lacks in-depth studies to determine which are the factors that influence and contribute in the maximization of its performance. There are few studies in Brazil that extensively investigate the result indicators of the banks. Most of the studies about this sector are case studies of specific organizations in a certain moment such as Nunes et. al (2011). Maffili, Bresan and Souza (2007) were one of the more in-depth studies, which used data from 1995 to 2005. Although performing a longitudinal study Maffili, Bresan and Souza (2007) using only 6 variables, identified a positive correlation between the efficiency index and the profitability of the banks. Maffili, Bresan and Souza (2007) were the pioneers in longitudinal studies of performance in the Brazilian banking sector, but they did not consider essential variables to the bank performance that can influence the results of their researches. Heffernan and Fu (2008), performing a similar study with the Chinese banks using 17 independent variables as well as 3 dependents to measure the performance. The performance measurements used were Return on Assets (ROA), Return on Equity (ROE) and Net Interest Margin (NIM). Heffernan

and Fu (2008) evaluated the Chinese bank performance and how these result variables are affected by other factors. They concluded that the type of bank has influence on the profitability, and that the size, the percentage of foreign investment and other variables do not have an established link with the performance. However, the studies on bank performance did not take into consideration the effect of internationalization. Only the foreign capital variable was used, but not as a measurement of internationalization.

On the other hand, the studies on non-financial firm performance have been concerned with the influence of internationalization, such as Daniels and Bracker, 1989; Ramaswamy, 1995; Gomes and Ramaswamy, 1999; Contractor et al., 2003; Sullivan, 1994; Qian and Li, 2003; Ireland and Hitt, 2000. Therefore, there is a necessity to update the literature on bank performance using models that contemplate internationalization.

In the last decades the Brazilian banking sector experienced an expansion not only in national territory, but in other countries, searching for internationalization as an additional route to improve their results, acquire new clients and have access to resources with lower costs and better conditions than in the internal market.

In Brazil, the internationalization process started in the nineties, attracting more foreign investment to the sector, and was marked by the entry of foreign banks in the country, in addition to the privatization of important state banks. (NUNES et. al, 2011; CORAZZA; OLIVEIRA, 2007). Thus the banking sector in Brazil gained access to foreign resources in a way not yet experienced before, and at the turn of the decade, the Brazilian banks intensified their internationalization strategies and managed to achieve a great result, appearing among the biggest organizations of the country.

Although it is a current theme, in Brazil there are no studies that correlate internationalization with the performance of the Brazilian banks in a conclusive manner. Dórea et al. (2015) performed the first research in Brazil that seeks a relation between the performance of the national firms, except banks, and its internationalization degree and reached a conclusion that this study did not contemplate important variables that influence the internationalization degree and its performance, and presented inconclusive results, emphasizing the importance of new studies that encompass in a more methodical and concise way, all of the possible variables that can affect the internationalization and the performance of the firms.

Nunes et al. (2011), also points out the need of performing a more extensive study about internationalization and how it affects the Brazilian banks. Since most of the existing researches are case studies of the internationalization process of a determined bank, not contemplating the broad context and not considering the whole banking sector.

Taking into consideration the importance of this theme and the lack of researches, this study seeks to investigate if **the internationalization degree influences the performance of Brazilian banks, and in what way it is affected.**

We used data of all Brazilian banks available at the Central Bank of Brazil databases, performing a longitudinal study, from 2001 to 2012 to understand the importance of internationalization for the Brazilian banks and how their performance was affected by it in this period.

This study is divided in five parts, the second part brings the theoretical reference with the necessary approaches for the understanding of this research, after this step the methodology is presented, the results and the fifth part concludes this study.

Theoretical reference

Internationalization

Internationalization is a process by which a company develops an increasing involvement in operations out of its home country. Many may be the reasons to internationalize, among them, to search for new markets, seek new locations with low supply costs, escape trade barriers or exploitation of tax incentives granted by foreign governments. (CARNEIRO; DIB, 2007).

There are many ways of entering a foreign market, among them by indirect, cooperative or direct export. In export normally the products are produced inside the country of origin and sent outside and it is the most common way of entering foreign markets. The indirect export uses partners inside the exporting country of origin, in direct export the partners are situated in the country of destination. The cooperative is halfway between the two which involves agreements with a partner for the use of the distribution market in the market of destination and the formation of cooperatives and consortiums. (TANURE; DUARTE, 2006).

Another classification for international market entry is the contractual that can be by licence, franchising, technical agreement, service contract, management agreement and the contractual alliance. Regardless of the type of contractual entry, it is characterized by the long-term non-equity association between an international firm and an institution in a foreign country. It differs from the export for having the characteristic of knowledge and competence transfer. (TANURE; DUARTE, 2006).

The last classification of international market entry is via investment, that can be greenfield¹ investment, acquisition, subsidiary of complete control and joint venture. The entries by investment involve property of industrial plants or other production units in the foreign country, and can be the more basic type, that requires less investment up to the most complete. (TANURE; DUARTE, 2006).

The banks do not possess as many alternatives as the non-financial firms because of regulation reasons and specific characteristics of the sector. Investments are the most used by the banks (JUMPPONEN et al., 2004).

Discovering the advantages of internationalizing and which factors that motivate internationalization is a current theme of internationalization studies. Many may be the theories about why to internationalize, among these theories three currents stand out. The first is an approach to internationalization based on economic criteria the second is the approach to internationalization based on behavioral evolution and the third approach to internationalization is based on strategy. (ANDERSEN; BUVIK, 2002; TANURE; DUARTE, 2006).

The theories that fit in the approach based on economic criteria dictate that the decision to internationalize are based on (pseudo) rational solutions for the issues generated from the internationalization process, aiming at maximizing the economic return. Three theories fall into this category, the market power theory, the internationalization theory and the eclectic paradigm of international production theory. (CARNEIRO; DIB, 2007; TANURE; DUARTE, 2006).

The behavioral theories of internationalization dictate that the internationalization process depends on the attitudes, on the perceptions and on the behavior of the decision makers that are oriented to reduce the risk on how, where and in which circumstances to expand.

The internationalization approach based on the strategy is less explored in the literature and assumes that the strategy adopted by the firm directly impacts its

internationalization process.

The internationalization theme is still underexplored in the Brazilian academic field. Some studies like Xavier and Turolla (2006) bring the theoretical concepts of the theme, concluding that there is still a timid participation of Brazilian firms in the expansion of global flows, raising the need of public policies and revision of the already existing policies that support the international expansion of the firms.

The work of Sales et al. (2015) points out that the tax incentives, the ease of working capital attainment and the incentives given by the government are primordial factors so that firms make the decision to internationalize. Along similar lines, Atsumi et al. (2007) performed a multiple case study with Brazilian firms, aiming to identify the motivating factors and the internationalization strategies based on direct foreign investment. They find that the size of the company constitutes differential for the strategy used and that internationalization by direct foreign investment is relatively recent in Brazil and contributes to the increase in competitiveness in national firms, strengthening them in the internal and external sphere.

In a recent work, Dorea, Pereira and Martins (2015) argue that among the studies that correlate the performance of the firms with internationalization, none presented conclusive results on what are the real impacts of the internationalization degree in this indicator using a sample of the more internationalized firms of 2010 to define if the more internationalized firms have a better performance.

Dorea, Pereira and Martins (2015) reinforce that they were the first study in Brazil to do an analysis between the internationalization degree and the performance in Brazilian firms, beyond that they emphasize that the internationalization degree and the performance are affected by many other variables that were not contemplated in the study.

Internationalization of the banking sector

The increase of internationalization of the banks started in the eighties, in the United States and spread throughout the world. It mainly comes from strategies of mergers and acquisitions and was driven by globalization, by increase in competition, by deregulation of the financial sector and by the advance of new technologies, boosting the banking sector. (FOCARELLI; PANETTA; SALLEO, 2002)

When the banks begin the internationalization process they face greater risks than other types of businesses, since they have to directly invest in the location that they wish right from the start. It is not possible to enter the market via export, which reduces the risks and brings relevant information before definitively settling in a foreign country, because the banking services require physical proximity between providers and consumers. Therefore, they do not obtain knowledge beforehand, and face high risks in the external market already in the beginning of the internationalization process. (JUMPPONEN et al., 2004).

Nunes et al. (2011), make an adaption of Dunning (1998) work and identifies four reasons for bank internationalization, which are: access to resources, access to market, access to efficiency and access to strategic resources.

The internationalization process in Brazil happened a little later, in the nineties, when the National Financial System underwent profound structural changes, attracting more foreign investment to the sector. The more visible changes that marked the beginning of the internationalization in the country were the entry of new foreign banks in the Brazilian market and the privatization of state banks. (NUNES et al., 2011; CORAZZA; OLIVEIRA, 2007)

Nunes et al. (2011), studied the internationalization strategies in Latin America used by Itaú bank, concluding that the bank presented the competitive advantages that conditioned

the internationalization of the banks, besides the motivation proposed by Dunning (1998). The bank started its internationalization in Argentina, country that the Brazilians consider to have less psychological distance, and occurred incrementally, as the bank gained experience in the Latin market. As a form of entry, Itaú started with organic expansion and later promoted its growth through acquisition in various countries of Latin America.

Despite internationalization being a current process, there aren't many studies that study it directly relating it to the banking sector, mainly in Brazil. There are some studies that explain the story of the Brazilian financial system and that touch on the subject of internationalization like the studies of Corazza and Oliveira (2007) and of Vieira et al. (2012). Other researches like Nunes et al. (2011), studied the process of internationalization in a specific Brazilian bank, their motivations and their results.

Thus, there is no study that evaluates the internationalization and directly relates it to the bank's performance. At the end of the study, Nunes et al. (2011) suggests that more comprehensive researches be conducted on the process of internationalization of the Brazilian banks as a whole.

Performance of the banking sector

To measure the profitability and other performance indicators, some variables are needed. Heffernan and Fu (2008) used the NIM (Net Interest Margin), ROA and ROE indicators in their paper to evaluate the performance of the Chinese banks. They indicated that the NIM is, together with the EVA, one of the best measurements of profitability for the banking sector. The NIM measures the difference between the costs of funding and capital allocation by the banks. The EVA is difficult to measure when you do not have the internal data of the banks.

Heffernan and Fu (2008) used seventeen independent variables to evaluate what is the impact of each one in the profitability of the banks. In this study they discovered that the type of bank affects its profitability, while the size and the percentage of foreign capital does not affect in the sample and period investigated. However, these authors did not use variables of internationalization as explanations for the performance and profitability of the banks.

Data and Methodology

The data of the research originated from the financial reports available on the Central Bank of Brazil (BACEN) website. The information was obtained from the reports of the Informações Financeiras Trimestrais (IFT). Annual financial statements were collected from all of the banks that possess data in the BACEN Database, and the period available was from 2001 to 2012.

The universe of study was composed by 241 banks and 2250 observations. The statements used for the research were the following: Balance Sheet, Statement of Income, Liabilities and Loans Operations, Geographic Dispersion and Maturity and Balance in Foreign Currency.

The methodology of this study was based on the works of Aarma et al. (2004), HEFFERNAN and FU (2008), and GIRADONE et al. (2008). Next, the variables that influence the banking profitability used in this study will be presented, according to the studies of reference on the subject. The formulas and means of calculation of each of the variables are presented on Figure 1. The investigation of the research problem was performed in two steps. The first consists of a descriptive analysis of the data and the second uses multiple regressions with panel data through mathematical models according to the studies cited.

To ease the understanding of the statistical models, the variables were grouped in performance (dependents), control and internationalization (interest variables). The dependent variables represent the profitability of the banks and are the dependent variables in the regressions, the control variables are the ones that give support to the investigation of this study and were used in previous studies and the internationalization variables were created to measure the impact of the internationalization in the banks, in other words, they are the focus variables in this study.

Dependent (Performance) variables:

ROA: Indicates the return on Assets. It is related to the performance of the bank, seeking efficient asset management. (AARMA et al., 2004).

ROE: Indicates the return on Equity. Represents the profitability of the bank and is related to the performance of the bank from the point of view of the shareholders. (AARMA et al., 2004).

NIM: It is the net interest margin. Measuring the spread of the bank. (AARMA et al., 2004).

Control variables:

Operational Efficiency (OE): This indicator demonstrates the costs as a percentage of income. The lower the value the better for the bank, thus indicating that the bank is efficient. This variable represents a negative relation with the performance of the banks. (HEFFERNAN; FU, 2008).

Capital (CAP): Represents the level of equity of the bank in relation to the total assets. This measurement dimensions the ability that the bank has of dealing with losses. The expected signal for this variable can be positive or negative, it depends on the internal policies of the bank. A very high value of this variable can indicate excess of precaution from the bank, causing the organization passing up profitable investments opportunities. A very low value can indicate problems of capital level and regulation problems. (GIRADONE et al., 2008).

Liquidity (LIQ): It is a measurement of liquidity of the banks. It's up to the managers to balance the financial resources of the banks to maintain a good relation between risk and return. If the bank maintains little liquidity, it can be forced to borrow at penal rates from other banks to cover their short-term obligations. On the other hand, a high ratio could result in lost profitable investment, making the sign of coefficient unclear. (GIRADONE et al., 2008; HEFFERNAN; FU, 2008).

Liquidity² (LIQ²): The liquidity squared. The liquidity variable can possess a nonlinear behaviour, since the increasing liquidity can be positive for the bank, but a very elevated liquidity can indicate an excess of inactive resources, which can jeopardize the profitability. A negative signal is expected for this variable.

Loan Loss Reserves (LLR): It is the value of the losses with the bad debt. It is the result of the costs with defaults of the clients. The expected result for this indicator is negative, since the higher the value, the bigger the loss and the lower the profitability of the bank. (HEFFERNAN; FU, 2008).

Size (Size): It measures the influence of the size of the bank in its performance. The initial expectation is that the larger banks possess higher performance resulting from gains of scale. (HEFFERNAN; FU, 2008).

Loan Portfolio (LPO): It is the percentage of assets that comprise the loan portfolio. Higher percentages can indicate better bank performance, demonstrating that the bank

receives more interest income. However, high rates could also reduce liquidity and increase the number of marginal borrowers that default. Its effect on bank performance is ambiguous. ((HEFFERNAN; FU, 2008).; GIRADONE et al., 2008).

Diversification (DIV): The ratio of other operating income to the total assets. It provides an indicator on how much the bank has diversified away from the traditional intermediary function. A positive coefficient is expected. (HEFFERNAN; FU, 2008)

Foreign Equity (FE): It is the percentage of foreign equity investment in the bank. The rationale is that foreign investors will monitor their investment, banks are expected to be more efficient. A positive signal is expected.(HEFFERNAN; FU, 2008). It is worth mentioning that this was the only variable found in the bank performance literature with some relation to bank internationalization. However, this was not the approach used in the researches, the variable was considered as mentioned above.

Efficiency Index (EIN): Measures the efficiency index of the banks related to its service revenues with the personnel expenditure. This indicator measures if the bank is obtaining a good relation between personnel expenditure and service revenues not linked to the activities of lending. A positive relation is expected with the performance. (MAFFILI, BRESAN E SOUZA, 2007).

Internationalization variable

Internationalization Degree (INTD): To measure the internationalization of the Brazilian banking sector, the model developed by Sullivan (1996) was followed, of a factor consisting of variables that may represent dimensions of internationalization in a single multidimensional variable.

However, there are no specific theories about what would be these dimensions in a regulated sector like the banking (Brazilian) and where the internationalization options are restricted.

This lack of theories and options of internationalization has led to the use of the available variables in the interactions of the banks with external markets. The available interactions found were the deposits, assets, liabilities, loans and lending in foreign currency, and the concentration and mixⁱⁱ of foreign currency on the assets and in the liabilities of bank.

Therefore, the method used was the arithmetic mean of the available variables, as used by Sullivan (1996). The internationalization factor (INTD – Internationalization Degree) was calculated by the mean of the seven variables of international interaction, resulting in a single variable. The higher the INTD index, the higher the internationalization degree of the bank. In order to modulate each one of the dimensions, they were relativized by the total interaction of the bank with the market. Thus, deposits in foreign currency were divided by the total deposits to build a factor that represents the percentage of the international deposits in relation to the bank's total deposit. Therefore, the creation of the INTD index was defined as followed:

DEP = Deposits in foreign currency / Total deposits.

ATV = Assets in foreign currency / Total assets.

LIA = Liabilities in foreign currency / Total Liabilities.

LOA = Loans in foreign currency / Total loans.

LEN = Lending in foreign currency / Total lending.

CRC_L = (1 - Concentration ratio of currency on the Liabilities).

CRC_A = (1 - Concentration ratio of currency on the Assets).

INTD Index= (DEP+ATV+LIA+LOA+LEN+(1-CRC_L)+(1-CRC_A)) / 7

The CRC (Concentration ratio of currency) measures the money concentration that the

bank has in a group of foreign currency. It is therefore concluded that the higher the index, the more concentrated in a single currency the bank's money is, and consequently the less internationalized it is. To instate the INTD variable, it is first necessary to subtract 1 from the result, to obtain the dispersion of currency instead of its concentration.

In short, INTD indicates the proportion of activity develops in other countries over its total activity. The higher the index, the more internationalized the bank is.

From the presented variables, an econometric model was constructed containing the variables described above and for the three dependent variables. This study has three distinct econometric models which dependent variables are the ROA, ROE and NIM. As a differential to the previous studies the INTD variable was added as a contribution from this study and as an interest variable. The three models aim to identify the impact that the INTD variable has on the dependent variable and whether it contributes or not to the achievement of a better result of the bank, controlling for all of the other dimensions represented by the control variables.

Model 1:

$$NIM_{i,t} = \alpha + INTD_{i,t} + OE_{i,t} + CAP_{i,t} + LIQ_{i,t} + LIQ^2_{i,t} + LLR_{i,t} + SIZE_{i,t} + LPO_{i,t} + DIV_{i,t} + FE_{i,t} + EIN_{i,t} + d_t + \varepsilon_{i,t}$$

Model 2:

$$ROE_{i,t} = \alpha + INTD_{i,t} + OE_{i,t} + CAP_{i,t} + LIQ_{i,t} + LIQ^2_{i,t} + LLR_{i,t} + SIZE_{i,t} + LPO_{i,t} + DIV_{i,t} + FE_{i,t} + EIN_{i,t} + d_t + \varepsilon_{i,t}$$

Model 3:

$$ROA_{i,t} = \alpha + INTD_{i,t} + OE_{i,t} + CAP_{i,t} + LIQ_{i,t} + LIQ^2_{i,t} + LLR_{i,t} + SIZE_{i,t} + LPO_{i,t} + DIV_{i,t} + FE_{i,t} + EIN_{i,t} + d_t + \varepsilon_{i,t}$$

Where i and t represent the bank and the year respectively. α , d and ε represent the intercept, the dummies for time and the error term respectively. The assumptions of Ordinary least squares were tested (heteroscedasticity, autocorrelation, normality, multicollinearity) with the intention of validating the basic hypotheses of the regression models. The multicollinearity was verified by the VIF method (Variance Inflation Factor) and the heteroscedasticity corrected by the White procedure. Variables with normality problems were transformed to the natural logarithm and the outliers were treated by the winsorization method.

Among the methods of coefficient estimation for panel data, we can point out the “pooled” method, random effects and fixed effects. The selection of the method to be used was through the Breusch Pagan test and the Hausman test. The results indicated the use of the fixed effects.

Figure 1 – Description of the Econometric model Variables

Variable	Expected	Description	Calculation
Control Variables			
OE	(-)	Operational Efficiency	Total Costs/Total Income
CAP		Capital	Equity/ Total Assets
LIQ		Liquidity	Liquid Assets/ Deposits + Short Term funding
LIQ²		Liquidity Square	(Liquid Assets/ Deposits + Short Term funding) ²
LLR	(-)	Loan Loss Reserves	Loan Loss Reserves/ gross loans
SIZE	(+)	Size	Natural Logarithm of Total Assets
LPO		Loan Portfolio	Net Loans/ Total Assets
DIV	(+)	Diversification	Other Operating income / Total Assets
FE	(+)	Foreign Equity	Equity from Foreign / Total Equity
EIN	(+)	Efficiency Index	Service Income/ Personnel Expenses
Dependent variables			
ROA	(+)	Return on Assets	EBT /Total assets
ROE	(+)	Return on Equity	Earnings/ Equity

NIM	(+)	Net Interest Margin	(Interest revenues – Interest Expenses) / Earning Assets
Interest variable			
INTD	(+)	Internationalization Degree	See variable definition

Source: Elaborated by the authors

Results and Discussions

The figures below (Figure 2 and Figure 3) present the descriptive statistics of the variables used in this study. In order to clearly demonstrate the differences between the banks with higher and lower index of internationalization, the banks were separated into two subgroups: the ones that presented higher degree of internationalization, and the ones that presented lower degree. That way the sample was divided into four quartiles according to the INTD variable. The graphics presented only the banks from the first and fourth quartile, excluding the banks from the second and third to facilitate the analysis.

Descriptive analysis of the performance variables

The performance variables (NIM, ROA and ROE) presented various results during the years studied, the ROA and the ROE alternated during the years between the groups of less and more internationalized banks, indicating that in some years these variables were better for the more internationalized banks and in other years they were better for the less internationalized banks. It is not possible to identify graphically what is the impact of internationalization in these two variables. The NIM, however, presented results contrary to the expected. For all of the years analyzed (from 2001 to 2012) the NIM of the banks with lower INTD was bigger than the banks with higher internationalization degree.

Despite the oscillations that occurred during the years, the ROA presented itself better for longer in the banks with lower internationalization degree, these moments being better for the more internationalized banks in the early 2000s and later between 2006 and 2008.

With the ROE this relation was contrary, it presented itself better for longer in the banks with higher Internationalization degree. Despite oscillating a lot, the ROE presented itself better for the less internationalized banks only in the period of 2003 to 2006.

The next step shows the results of the descriptive statistics and its impact on the performance and internationalization variables.

Descriptive analysis of the control variables

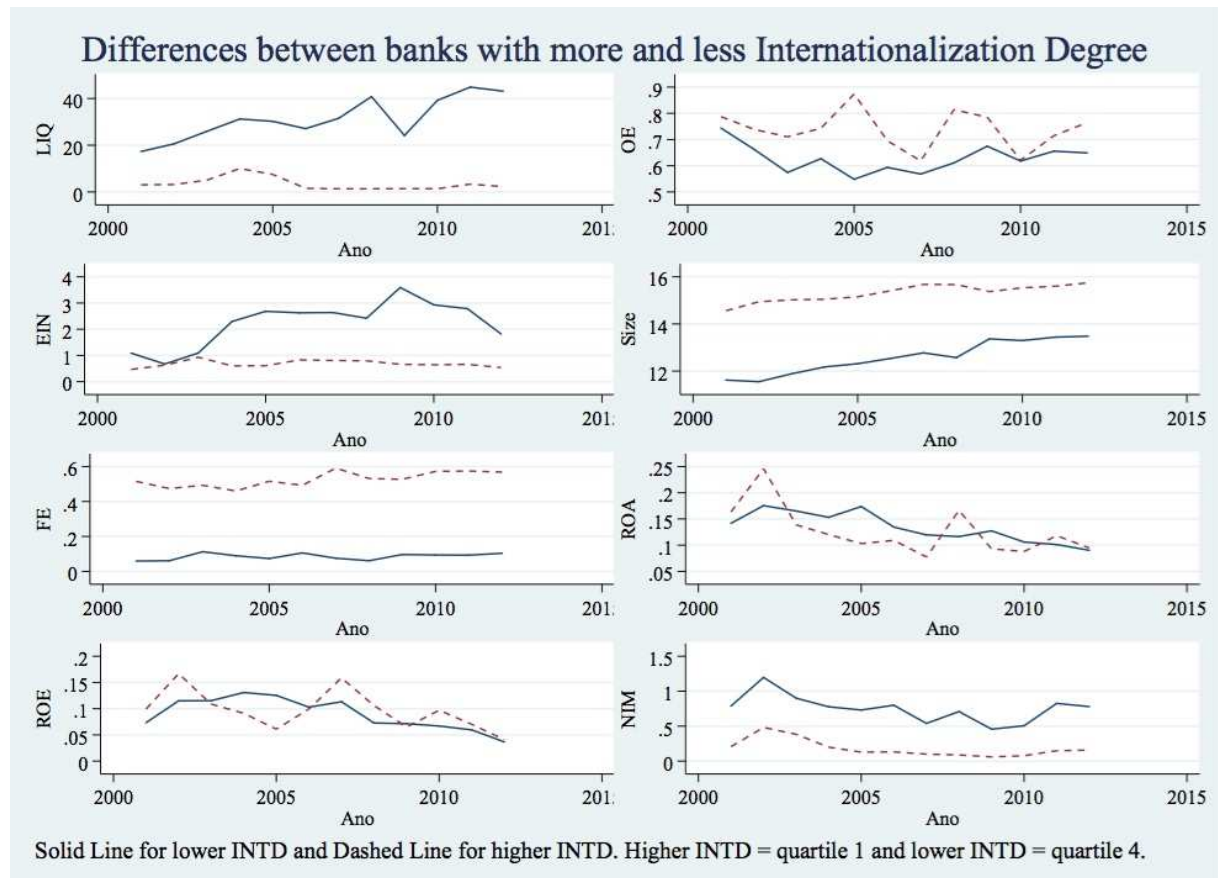
The liquidity of the banks was higher in all of the years analyzed for the less internationalized banks. This difference was notable during the whole period analyzed and shows that maybe banks with higher INTD have better access to international funding and no longer need to keep liquidity high.

Following the same pattern the efficiency index of the banks was also predominantly higher for the less internationalized banks. Capital index also shows higher for the less internationalized banks.

The three indicators that measure the concentration of currency (on assets, on liabilities and total concentration) had the expected result, the less internationalized banks possess higher concentration indicators, demonstrating that these banks possess low dispersion of currency, their activities being predominantly concentrated in one currency. Despite this, in the year 2004 there was an inversion in the concentration of the liabilities index, indicating that in that year specifically, the less internationalized banks possessed greater dispersion of currency in regards to their funding. In the subsequent years the

indicators returned to what was expected, being higher in the group of the more internationalized banks. This increase of the liabilities in foreign currency affected the concentration index of total currency, making it higher in this period also for the group of less internationalized banks.

Figure 2 – Descriptive Statistics



Source: Elaborated by the authors

The internationalization variable is negatively related with liquidity, the efficiency index, the capital, and the concentration of foreign currency, showing that the more internationalized the bank is, in less degree we find these indicators.

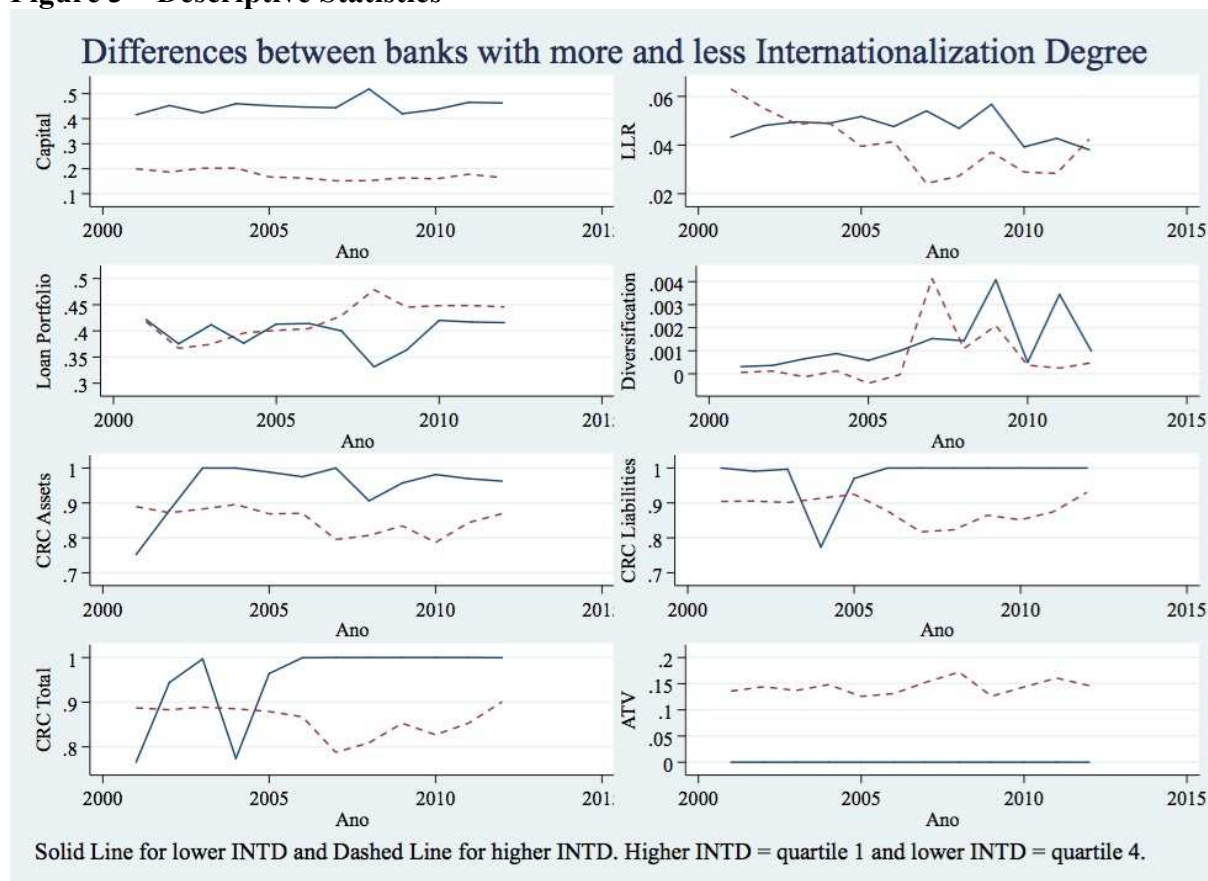
On the other hand the internationalization is positively related with the operational efficiency of the banks, in all of the years analyzed this indicator is higher for the more internationalized banks.

The analysis also shows that the more internationalized banks are the largest and also as expected the ones that most receive foreign investment. The assets and the liabilities are also predominantly higher in the banks with higher internationalization degree and these banks also perform more loan operations.

Some indicators did not clearly demonstrate the correlation with the internationalization degree, oscillating between the years between the more and less internationalized. The Loan Loss Reserves is one of those indicators, being higher for the less internationalized starting in the year 2004 but ending in 2011 lower for the more internationalized banks. The Loan Portfolio also presented not much difference between the

more and less internationalized bank, being slightly higher for the more internationalized banks in the period close to 2008. The Diversification indicator also presented oscillation between the years, presenting three peaks since 2006, the first, higher for the more internationalized banks, the second and third, predominantly higher for the less internationalized banks.

Figure 3 – Descriptive Statistics



Source: Elaborated by the authors

Analysis of the regressions

The results of the regressions presented in Table 1, present the coefficients of the three models using the estimator of Fixed Effects, according to specification tests previously reported. The second column of the table presents the variable's expected signal, and the columns three to five present the coefficients calculated for each one of the models.

With this result it was possible to identify which variables affect the result of the banks and if that influence is positive or negative. The greater focus of this work is the results of the Internationalization Degree Factor (INTD). A positive and significant result of this variable indicates that the banks that are more internationalized possess better financial results than the less internationalized ones, or that the more internationalized the greater your return.

Analyzing the model whose dependent variable is the NIM, it is observed that the variables that contribute positively and statistically significant for the performance are: Internationalization, efficiency index, liquidity square and capital. The study indicates that the higher these variables the higher the NIM of the bank. In this case, the internationalization presented itself an important factor for the NIM, with positive relation, indicating that the more internationalized banks obtain higher margins, controlling for the other operational,

financial, economic and size aspects.

The ROA had as variables positively related and statistically significant the internationalization, the efficiency index, liquidity squared and the loan loss reserves and as significant negative variables: operational efficiency and liquidity. Also for ROA, the internationalization presented as an important factor with positive relation, indicating that the more internationalized banks obtain higher operational efficiency, controlling for the other operational, financial, economic and size aspects.

Table 1 – Determining factors of the internationalization - Regressions

Dependent Variable	Expected	NIM(1)	ROE(2)	ROA(3)
Internationalization degree	(+)	1.1425*** (6.55)	0.1909*** (2.72)	0.0777** (2.51)
Operational Efficiency	(-)	-0.1798*** (-5.38)	-0.1542*** (-11.46)	-0.0285*** (-4.81)
Liquidity		-0.0048*** (-2.80)	-0.0013* (-1.86)	-0.0005* (-1.72)
Liquidity ²		0.0000** (2.26)	0.0000** (2.06)	0.0000* (1.78)
Efficiency Index	(+)	0.0174** (2.09)	0.0073** (2.17)	0.0064*** (4.32)
Foreign Equity	(+)	0.1359 (1.33)	-0.0742* (-1.80)	-0.0276 (-1.52)
Bank Size	(+)	-0.1672*** (-5.90)	0.0213* (1.87)	0.0039 (0.77)
Capital	(+)	0.5889*** (3.66)	0.1382** (2.13)	-0.0092 (-0.32)
Loan Loss Reserves	(-)	-0.4005 (-1.34)	-0.7601*** (-6.31)	0.1128** (2.12)
Loan Portfolio		-1.1175*** (-10.48)	-0.0404 (-0.94)	-0.0033 (-0.18)
Diversification	(+)	-8.7484*** (-2.74)	3.6189*** (2.82)	0.0437 (0.08)
Constant		2.8737*** (6.56)	-0.0721 (-0.41)	0.1009 (1.30)
Dummy for time		Sim	Sim	Sim
Number of Banks		131	131	131
Observations		929	929	929
Adjusted R ²		0.1629	0.1371	0.1665

Obs: This table shows the factors that affect the Performance of the banks. The dependent variable in columns (1) is NIM (2) is the ROE (3) is the ROA. All Columns presents the results for a fixed effects static panel. All models have dummies for years. The t-statistics of the coefficients of the independent variables are shown in parentheses. The symbols *, ** and *** indicate statistical significance at the 10, 5 and 1% levels, respectively. Source: Result of the research

The dependent variable ROE, that indicates the return for shareholders had as variables that contribute in a positive and significant manner the following: internationalization, efficiency index, liquidity squared, size, capital and diversification. According to the data, the higher the variables, the more return on investment the shareholders of the bank will obtain.

The variables that affect in a negative and significant manner the ROE are: operational efficiency, liquidity, foreign capital and loan loss reserves. The increase of theses variables lowers the ROE. The internationalization is statistically significant correlated with ROE,

indicating that the more internationalized the bank, the return for the shareholders tends to be higher.

The internationalization of the bank statistically significant and positively affects the three performance variables, ROA, ROE and NIM. This data proves that in the period studied, the Brazilian banks with higher internationalization degree, presented superior results than the banks with lower levels of internationalization.

Other than the internationalization the variables that affects in a significant and positive manner all of the dependent variables are the efficiency index, indicating that the banks that can decrease the personnel expenses in relation to the service revenues are more profitable, and for the significant variables negatively related with ROE, ROA and NIM, the banks that have less liquidity and lower operational efficiency (relation between the costs and revenues) are better in result than the others.

Robustness of the Interest variable

It is important to note that the variable used in this study for the measurement of internationalization has an unprecedented character in the banking industry. The creation of a multidimensional factor to measure the internationalization degree of a firm developed by Sullivan (1994) did not contemplate banks in its sample primarily by its nature of business. Banks cannot export products and services and their means of entry into other markets are limited and generally controlled by specific legislation in each of the destination countries. The elaboration of the factor that measures the internationalization degree was adapted to the aspects that can be measured from the banks, as assets, liabilities, loans and foreign currency holds, as detailed in the methodology item. However, it is worth mentioning that a new variable, even based on already established internationalization literature must be properly evaluated.

Sullivan (1996) argues that the use of a multidimensional factor brings more reliability and replicability, since each bank can use a different mix of interaction with international markets and also different means of use of these interactions. The use of variables measuring each one of the aspects ends up inflating the internationalization aspects in the regression models by the high relation between the factors. In this aspect a single measurement of internationalization eliminates this bias and puts all influence aspects in the bank performance in equality in the regression models.

Another relevant aspect would be to verify its correlation with other variables, especially with the measurement of the bank size, since it could be judged that larger banks can naturally be more internationalized and thus the INTD variable would be a proxy of size. This alternative explanation was excluded since the correlation of INTD with size is low, only 0.09. The highest correlation rate of INTD is with the Foreign Investment and only of 0.27, value that is not associated to multicollinearity. It is therefore concluded that the INTD variable adequately represents the internationalization of the banks in various dimensions that represent the possible alternatives that the Brazilian banks use to interact with external markets whether it be to raise or allocation funds.

Final considerations

The objective of this paper was to investigate how internationalization affects the Brazilian banks, in the period of 2001 to 2012. Due to the lack of studies on this theme it was necessary to define how the internationalization of the banks would be measured. Based on the studies of Sullivan (1994) an indicator was created, denominated INTD that covers the

main international dimensions of the banks, which are: deposits, assets, liabilities, loans and lending in foreign currency and foreign currency concentration index and mix on assets.

The literature on bank performance provided the performance variables which are the respective control variables used in the study to define the impact of the internationalization in the performance of the banks in order to minimize the bias. The variables used to measure the bank performance were: return on assets (ROA), return on equity (ROE) and net interest margin (NIM). For control the variables used were: operational efficiency, liquidity, liquidity squared, efficiency index, foreign equity, size, capitalization, loan loss reserves, loan portfolio and diversification.

When it comes to internationalization, it is inferred that it is always positive for the businesses, and that in the current era, where globalization is mentioned more and more, the present study sums up evidence about the concepts that we generalized as the truth, are in fact true. Positive and significantly associated with the internationalization degree are the size of the bank, the operational efficiency of the banks, higher foreign investment and higher assets and liabilities. The more internationalized banks are larger than the others, and have a better relation between costs and revenues, which directly impacts on their performance. In spite of that the more internationalized banks did not show themselves superior to less internationalized in all of the investigated aspects.

The less internationalized banks possess higher liquidity, better efficiency index, higher equity and lower currency concentration index. These indicators demonstrate that because they are dependent banks for the most part of the national resources the banks can be more liquid, and the less internationalized banks present a better service revenues in relation to the personnel expenses.

The internationalization degree of the banks positively affected the results. The INTD variable presented itself positive and statistically significant in all of the econometric models used. In other words, the higher the internationalization degree of the banks, the higher their performance and results will be. The banks that internationalize have access to resources that the banks that do not internationalize do not and use these resources in their favor.

Other than that, the consistency of the results found for the multidimensional INTD variable reinforce the importance of researches related to internationalization and Brazilian bank performance.

That is why as a suggestion of future studies it is indicated to apply this study to compare the evolution of the results in order to conclude if the banks that internationalize more obtain superior returns over time and it is also necessary to replicate the analysis of Sullivan (1996) based on the statistical robustness of the INTD variable.

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ⁱ Investments that involve incipient projects, not yet on paper. Rather than investing in a joint venture, or in the acquisition of a firm, the investor allocates its resources for the construction of a structure necessary for the operation. The opposite of "greenfield" investment is "brownfield" investment, in which the resources are allocated to firms with finished structures.

ⁱⁱ Measured by the calculation of the herfindahl index. The higher the currency concentration, the lower the internationalization measurement for this factor.