

# Impact of Operating Revenue on Credit with Financial Performance Banking: analysis of two business banks in the period from 2006 to 2015

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## Abstract

After the implementation of the Real plan, the change caused by the inflation stabilization, the extension of the offer presented Brazil bank credit, as banks' strategy to maintain the level of their revenue (2014). The resources obtained through Bank lending return to society, in the form of consumption and investments, contributing to economic activity. In addition to this social, credit also provides more banks, impacting the financial performance of these institutions. Before this, this article aimed to verify the revenue contribution of credit operations with the Bank's financial performance. The data were extracted from the financial statements of two banks, due to the confidentiality of the data were handled by Bank A and Bank B. For the measurement of financial performance, using the indicators of return on assets (ROA) and return on equity (ROE). The statistical treatment of the data obtained was effected with the use of IBM SPSS Statistics software in version 20.0. It was found, by means of linear regressions, that revenues with credit operations account for 68.6% of financial performance measured by ROE in the Bank. In Bank B, the recipes originated by lending 62% of financial performance determined measured by ROA and 73% of performance measured by ROE. Through this analysis, is the contribution of the lending to the financial performance of these institutions.

**Keywords:** *Financial Institutions, Financial Performance, Bank Credit, ROE, ROA.*

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## 1. INTRODUCTION

Economic activity is affected by financial development (Levine, 1997; Reichstul, Lima, 2006). In Brazil, the financial system is predominantly banking (Reichstul, Lima, 2006), and its solidity affects the economic relations between its agents (Samson, Tarila, 2014). Moreover, countries that have larger and more established banks in the stock market are more easily able to grow (Levine, 1997). The financial system, represented by the institutions and instruments, has as main function to reduce the information and transaction costs originated from the exchange activities, allowing a positive interaction between the financial and productive sectors (Reichstul, Lima, 2006).

The financial performance of an organization affects all stakeholders, managers, partners, employees, investors, suppliers, creditors and customers, impacts the longevity of the institution. In the financial sector, a bank profitability affects the stability of this segment (Dantas, Medeiros, Capelleto, 2012). Profit is one of the objectives of the managers, and a decisive factor for the shareholders and permanent shareholders applying their resources in the institution, instead of a financial market with different investment proposals. According to Porter (1996), companies have as their fundamental goal performance. The revenues of financial institutions

are derived from the various activities carried out, which have been expanded due to the rapid changes in the financial market

In this article, we will discuss the revenue from credit and how much it accounts for the organization's financial performance. Among the indicators that measure financial performance, ROA, ROE and Net Income were chosen because they are indicators used in several studies applied to the banking sector. The data required for the calculation of these indicators were obtained through the financial institutions' financial statements, which are mandatory to the public.

Credit is, therefore, an integral part of the functions presented by banks, mediating the exchange of resources between surplus and deficit agents (Aquino, 2011). In addition to generating revenue for financial institutions, credit plays a major role in the economic development of countries. It allows an increase in investments and consumption, contributing to the growth of the economy (Gouveia, Afonso, 2010). As a result, more developed countries have a higher credit-to-GDP ratio than less developed countries (Menegário, 2012). This demonstrates the importance of granting credit not only to monetize banking activity, but also to the economic development of society.

## 2. THEORETICAL FRAMEWORK

The following sub-sections present aspects related to financial performance and the granting of credit in the banking sector.

### 2.1 The Banks in Brazil

Brazil can be considered a country with a recent financial system. The first financial institution founded in the country was Banco do Brasil, which began operations in 1808, performing deposit, discount and issue functions (Banco do Brasil, 2016). Since then, the functions and number of banking institutions have been increasing. In the XX century to the XXI, there were three milestones that reflected in the National Financial System (SFN): the creation of the Superintendency of Currency and Credit (SUMOC), in 1945; The Banking Reform of 1964; And the implementation of the Real Plan in 1994 (Hajj, 2005).

The Real Plan allowed the inflationary control in Brazil (Hajj, 2005). According to Vieira, Arruda and Tavares (2016), inflation leads to corrosion of the purchasing power of the currency, generating investment flight and decreasing demand for loans, due to inflation causing an increase in the interest rate charged on credit operations. With the implementation of the Real Plan in 1994 and the change in the economic scenario, banks began to expand their credit supply to maintain their revenues, which until then had been sustained by the inflationary process (Porto, 2014; Santos, Famá, 2006) because until then the bank results were mainly hit by floating (Hajj, 2005).

The competitive strategy of the banks had to be changed, because according to Silva (2010), organizations must adapt their strategy to changes in the market and the economic environment. Strategy is the way the institution will compete and which policies it will use to pursue its goals (Porter, 2004). Access to credit has been expanded since then, enabling the financing of goods and services (Moura, 2005). Since credit rationing generates a fall in production and investments (Freitas, 2009), its expansion generates economic growth (Gouveia, Afonso, 2010).

### 2.2 The Role of Banks

The costs inherent to financial services are the responsibility of the financial intermediaries, who specialize in this activity and thus acquire expertise, generating gains of scale and scope (Reichstul, Lima, 2006). In the absence of these intermediaries, the costs would be borne by individual investors (Reichstul, Lima, 2006).

The asymmetry of information is one of the reasons for the existence of financial intermediaries (Rocha, 2007). Banking institutions intermediates exchanges between surplus agents and deficit agents (Aquino, 2011; Oliveira, 2008), with deposit capture and credit granting their main functions (Yoshida Jr., 2014). According to Menegário (2012), banks play a neutral role in the market because they act as savings intermediaries, transferring capital from surplus to deficit agents, at an interest rate that generates the equilibrium of this relation.

Banks have expanded their functions, especially in the last three decades, operating with investment funds, securitizations, capital markets and regulatory arbitrage instruments (Felippi, 2011). Funding is made at a certain cost, and the borrowing of these resources at a higher rate of remuneration, this difference being called the spread (Aquino, 2011). Therefore, financial institutions use third-party capital to make a profit, so they are considered leveraged institutions (Vieira, Arruda, Tavares, 2016).

Financial intermediation can influence the rate of savings and capital accumulation (Rocha, 2007) and, as a result, banks contribute to the liquidity and credit supply conditions in the economy (Saraiva, Paula, 2011), being that interest rate balances this relationship of supply and demand for money (Araujo, Cintra, 2011). In addition, banks contribute to increasing allocative efficiency and technological innovation (Rocha, 2007).

### 2.3 Bank Credit

Credit lending is the characteristic feature of commercial banks, which allows the capture of funds from savers and the granting of these resources to borrowers (Oliveira, 2008). The financial intermediation function offers the banks the opportunity of financial leverage to obtain profits (Vieira, Arruda, Tavares, 2016). The spread, ie difference between the cost of raising funds and the remuneration of loans granted, is the remuneration of banks for this financial intermediation (Aquino, 2011).

Banks can offer different types of loans. Larger institutions, due to economies of scale, can expand the credit modalities they provide to customers (Silva, 2015). The credit has different modalities, with personal guarantee, or real, with alienation or mortgage. Consumers should pay attention to the modality that provides the greatest benefits. Within the real guarantee mode, there is leasing. According to Barbuta-Misu (2010), borrowers obtain advantages by contracting leasing, more than other modalities, due to tax deductions that it allows, reducing the real profit and the income tax to be paid. Another credit option is the payroll loan, which presents itself as an advantageous alternative for banks and consumers.

For banks, according to Santos and Famá (2006), payroll-deductible loans meet the search for profitability and risk reduction. The creditor receives timely, with the debt made directly in payroll (Freitas, 2009), reducing the risk. Profit, in turn, is widened, as the possibility of payroll allocation boosted the growth of the country's personal credit supply (Gouveia, Afonso, 2010). For families, this modality becomes attractive due to the low interest rate (Freitas, 2009), reducing the cost of credit. Faced with the offer of various types of credit, consumers should choose to adjust their needs in order to reduce costs.

In addition to the availability of different types of loans, the terms also differ, since credit operations may be contracted in the short, medium or long term. Long-term credit contributes to Brazil's economic growth and development, as it allows investments in medium- and large-scale enterprises (Menegário, 2012).

In the country, the government can interfere in the credit provided through public banks and the credits classified as directed (Silva, 2015). The segments that are prioritized are rural, real estate and microcredit, in addition to the financing granted by the National Bank for Economic and Social Development (BNDES), which is aimed at small, medium and large companies (Silva, 2015).

All these credit modalities contribute to bank profits. Banking consumers consider these profits to be high, which they attribute to the profitability of the financial segment, due to high spreads, service fees and management fees charged by financial investments (Oliveira, 2008). To safeguard the rights of these consumers, the National Monetary Council (CMN) supervises the performance of the banks in the country. In 2007, CMN implemented measures such as prohibition of the collection of fees for early settlement of loans, standardization of nomenclature for certain services, increased services that should be performed free of charge and set a minimum period of 180 days for tariff increase for the same service (Oliveira, 2008). These measures have benefited consumers, and may impact on the reduction of banks' revenues.

As credit interferes with bank revenues, the decision to lend and profitability depends on a well-designed and implemented evaluation system (Chen, Guo, Huang, 2009). The banks present basically three types of credit scoring models, which calculate the probability of default of borrowers: linear probability models, logit model and linear discriminant analysis (Chen, Guo, Huang, 2009). The search for mechanisms that calculate the risk contributes to the decision to grant credit. Banks treat uncertainties quantitatively, identifying what are the possible outcomes and the probability of occurring (Castro Jr., 2011). According to Castro Júnior (2011), financial institutions aim at reducing the degree of uncertainty of their business, but the risks are not eliminated, they can only be managed. According to the author, the risk must be quantified in order to receive statistical treatment in order to minimize uncertainty. There are expected and unexpected losses, the latter being the difference between the expected loss and the actual loss, and can be measured on the basis of past events (Castro Jr., 2011).

The risks inherent in the granting of credit must be managed, since credit plays a relevant economic role in a country. According to the Unlock ingcredit report: the quest for deep and stable lending (2005), the banking system is fundamental in the distribution of capital, promoting economic development. The report shows that there is a strong correlation between Gross Domestic Product (GDP) and bank credit, and this credit supply is fundamental to a country's economic growth (Inter-American Development Bank, 2005). According to Menegário (2012), the average Brazilian credit / GDP is lower than that of developed countries, with an average of 41.3 from 2001 to 2009, compared to an average of 134.3 in developed countries, according to data from the International Monetary Fund (IMF) in 2010. In July 2016, the Brazilian credit-to-GDP ratio stood at 51.4%, with a total of R \$ 3.116 billion in the financial system (Banco Central do Brasil, 2016).

Menegário (2012) attributed the country's low credit supply due to the government's high indebtedness, which, through the sale of government bonds representing such debt to banks, provided these institutions with reasonable, liquid and low risk gains. However, bank credit should be encouraged, since it raises household consumption, which encourages economic activity and contributes to economic development (Silva, 2013). In addition to consumption, through the credit market, investments are expanded, contributing to the country's economic development (Silva, 2015).

## 2.4 FINANCIAL PERFORMANCE

The profitability of banks contributes to the stability of the financial sector, since it reduces the possibility of insolvency in this segment (Dantas, Medeiros, Capelletto, 2012). Banks, like all other companies, are focused on profit. According to Porter (1996), the goal of companies is performance, which is influenced by business strategy and efficiency. For company strategy, it is necessary to learn about customers and their contexts (Fjeldstad, Sasson, 2010).

Organizations look for results and, according to Farouk and Dandago (2015), profit is the remuneration of the entrepreneurial function of entrepreneurs. Companies must have a performance measurement system based on indicators that are related to their strategic objectives (Panosso, 2014) and this performance needs to be measured, which allows it to be managed (Kaplan, Norton, 2003). When the company is efficient, above-average rates of return are expected, as when the company is inefficient, the expected rate of return is below average (Farouk, Dandago, 2015).

According to Pinto (2012), the focus of the Anglo-Saxon countries on the performance of companies is to maximize the return of owners, while in European countries it seeks to satisfy all stakeholders. Therefore, according to the author, the performance evaluation can be carried out in different ways, with the internal or market perspective. Performance indicators aim to measure and analyze the results obtained in certain periods, which is important for the success of organizations (Panosso, 2014.)

Financial performance can be measured by the ROA and ROE indicators. According to Silva (2015) the ROA, Return on Assets, is defined as the value of net income over total assets, measuring the bank's ability to generate profits from assets, is one of the main measures of profitability used in the academic environment. The profitability represented by the ROA is expected to have a positive coefficient, and the higher the coefficient, the more profitable the bank, and the greater the resistance to adverse shocks, thus increasing the possibility of credit (Silva, 2015).

Berger (1995) points out that ROE and ROA are measures of profitability often used in banking research. According to Aquino (2011), one of the most used indicators in research is the financial-accounting indicators, such as the ROA, because these indicators are more available and facilitate the comparison between companies. ROE is measured by the return on shareholders' equity, measured by the ratio between the net income and the book value of the company (Farouk, Dandago, 2015).

## 3. RESEARCH METHOD

As to its nature, this research is classified as applied (Collis, Hussey, 2005), and as exploratory, regarding the objectives (Cooper, Schindler, 2003). Considering the technical procedures, it is bibliographical (Gil, 2002), with research on articles, dissertations and theses, which were obtained in the CAPES / MEC journal portal and the Brazilian Digital Library of Theses and Dissertations (BDTD).

As for the approach, it is a quantitative research (Marconi, Lakatos, 2009), with financial data analysis of two banks. The data base of this study was obtained from financial statements, the Balance of Payments (BP) and the Statement of Income for the Year (DRE), mandatory disclosure for all banking institutions. From BP, the values of "Total Assets" and "Stockholders' Equity" were extracted. The data on "Net Income" and "Revenue from Credit Operations" were extracted from the DRE.

Through these data, two profitability indexes, ROA and ROE, were chosen because they are constantly used in studies that address bank profitability. Return on Assets (ROA) is the ratio of net income to total assets. Return on Equity (ROE) is the ratio of net income to shareholders' equity.

To calculate the performance of the bank, in addition to the ROA and ROE, the Net Income indicator, the latter obtained directly from the DRE. These indicators were chosen to measure the contribution of revenue from credit operations to bank performance. With this data, linear regressions were made using the IBM SPSS Statistics version 20.0 software. By means of the regressions, we sought to verify how much revenue from credit operations responds to the three mentioned indicators.

As the values of revenues from credit operations presented increasing nominal values due to the inflation suffered during the period, these values were deflated. Then, with the deflation of these values, the real values of revenues from credit operations were reached. For deflation, the index used was the General Market Price Index (IGP-M), calculated monthly by the Getúlio Vargas Foundation (FGV) and used in the market for corrections of monetary values. The percentage values of the annual inflation measured by the IGP-M were obtained, which were transformed into index numbers, in order to deflate the nominal values. The year 2006 was considered the base year, with index number 1, for the deflation of the period from 2006 to 2015.

The performance, represented by the ROA, ROE and LL, exerted the function of dependent variable in the regression, being carried out three different calculations, one for each performance indicator. The independent variable used was revenue from credit operations.

$$ROA = \alpha + \beta . ROC + \varepsilon$$

Where:

ROA = Return On Assets;

$\alpha$  = fixed effect;

ROC= Revenue from Credit Operations;

$\varepsilon$  = regression error term.

$$ROE = \alpha + \beta . ROC + \varepsilon$$

Where:

ROE = Return On Equity;

$\alpha$  = fixed effect;

ROC = Revenue from credit operations;

$\varepsilon$  = regression error term.

$$LL = \alpha + \beta . ROC + \varepsilon$$

Where:

LL= net income;

$\alpha$  = fixed effect;

ROC= revenue from credit operations;

$\varepsilon$  = regression error term.

Through the linear regression analysis, the coefficient of determination was calculated to verify how much the independent variable is explained by the predictive variable (Hair, 2010), in order to estimate how much revenue from credit operations determines the financial performance of the institutions under study. The correlation coefficient was also calculated in order to verify the strength of the association between the dependent variable and the independent variable (Hair, 2010), represented respectively by financial performance and revenue from credit operations.

Two banking institutions were selected for this study, both with the majority shareholding belonging to the public power. The first one, denominated for the study as Bank A, has national action, but with regional focus in one state. The other institution, called Banco B, operates throughout Brazil.

#### 4. DISCUSSION OF RESULTS

Due to the contribution of bank credit to economic growth, several studies have been done on this topic. In Zhou's (2008) survey, bank credit is given an important role in Chinese private sector growth. In China, entrepreneurs depend on external financing to invest in their business, and bank credit is singled out as the main source of external financing (Zhou, 2008).

In another research on the subject, Papi, Presbitero and Zazzaro (2015) studied IMF lending from 1970 to 2010 with 113 developing countries in times of banking crises. They found that countries that integrate IMF lending programs are less likely to face a future banking crisis than countries that do not participate in these programs (Papi, Presbitero, Zazzaro, 2015).

Revenues from credit concessions are part of banks' profits, as well as revenues from fundraising and revenues from services and product sales. In this study, it was chosen to verify the relevance of revenues from credit operations to banks. For this, the figures of the financial statements of two public financial institutions were obtained. Two banks with Brazilian capital, named "Bank A" and "Bank B", were selected.

As a measure of performance, ROA and ROE were chosen based on data obtained from the banks' financial statements, as well as the Net Income, obtained directly from the Statement of Income for the Year. In order to verify how much revenue originated from the credit concession contributes to the banks' financial performance, the linear regression method was used, where revenue from credit operations is the independent variable and financial performance is the dependent variable. The regression analysis for each bank and for the ROA, ROE and LL dependent variables were performed using the IBM SPSS Statistics software in version 20. The results of Bank A are presented in Table 1.

**Table 1 - Contribution of Revenues from Credit Operations to the Financial Performance of Bank A in the period from 2006 to 2015**

Performance Variable	R	R <sup>2</sup>	Adjusted R <sup>2</sup>	F	p-value
ROA	0,738	0,544	0,487	9,555	0,15
ROE	0,828	0,686	0,647	17,467	0,003
NI	0,489	0,239	0,144	2,511	0,152

Source: the authors (2017).

According to the probability of significance, only ROE reached a p-value acceptable in the literature. Therefore, ROA and Net Income were rejected due to the descriptive level and were not considered for analysis.

In Bank A, financial performance is determined 68.6% by revenues from credit operations (ROC), that is, the latter account for most of the financial performance measured by return on equity (ROE). Therefore, credit is relevant to Bank A's financial performance, and shows a positive correlation of 82.8%, indicating a strong association between these variables. The performance indicators measured by ROA and NI presented a positive correlation with ROC, but did not present a significant descriptive level and were therefore not considered.

At Bank B, ROC also proved to be relevant to the institution's financial performance, according to Table 2, which shows the results obtained from the regressions.

**Table 2 - Contribution of Revenues from Credit Operations to the Financial Performance of Bank B in the period from 2006 to 2015**

Performance Variable	R	R <sup>2</sup>	Adjusted R <sup>2</sup>	F	p-value
ROA	0,787	0,620	0,573	13,056	0,007
ROE	0,855	0,730	0,697	21,661	0,02
NI	0,724	0,525	0,465	8,838	0,18

Source: the authors (2017).

At Bank B, revenue from credit operations explains 62% of the financial performance measured by the ROA and 73% of the performance measured by the ROE, demonstrating the importance of credit products to achieving positive results for the organization. ROC has a positive correlation of 78.7% with ROA and 85.5% with ROE, demonstrating the strength of the association of these variables. Of the three performance indicators analyzed, only NI did not present statistical significance, although it showed a positive correlation, and because of this it was not considered for the analysis.

Regarding the financial performance measures used, several studies have used ROA and ROE in the banking sector. One such study was that of Farouk and Dandago (2015), who used ROA and ROE to measure bank financial performance. The survey measured the impact of technology investment on banks' financial performance, from 2006 to 2010, for a sample of 10 banks in Nigeria. The result was that increases in investment in information technology have a negative effect on financial performance. Samson and Tarila (2014) also addressed the financial performance of Nigerian banks through ROA and ROE, verifying the correlation of corporate governance. A positive correlation was found.

Hung, Yen, and Ou (2012) also selected ROA and ROE to measure bank performance. They studied whether the impact of the use of ATMs interferes with the financial performance of Taiwan banks. The results, obtained through the application of the correlation analysis, pointed to a positive relationship between the use of self-service and financial performance, measured by ROA and ROE among other indicators. Mondal and Ghosh (2012) proposed in their research the investigation of the relation between intellectual capital and financial performance of 65 Indian banks for a period of ten years. Return on assets (ROA) and return on equity (ROE) were used to measure the profitability and productivity of Indian banks, and the results of the study suggest that bank intellectual capital is critical to their competitive advantage.

The coefficient of determination and correlation between ROC and the financial performance of the analyzed institutions shows the relevance of the credit concession to the financial result of the analyzed banks. This demonstrates that credit, in addition to contributing to economic growth, also provides positive results for banks.

## 5. CONCLUSIONS

Banks contribute to the growth of a country's economy. One of the primary functions of these institutions is financial intermediation, with funding and loans. Financial institutions are seeking to achieve positive financial results. For this, they have revenues originated basically from three groups: offered credit, funds raised and sale of products or services.

The contribution of revenues from credit operations to the financial performance of two financial institutions was analyzed. Performance was measured through return on assets, return on equity and net income. It was verified that revenues from credit operations account for a considerable part of the financial performance of these banks, and in bank A they determine 68.6% of the return on shareholders' equity. In Bank B, credit income determines 62% of the financial performance measured by the return on assets and 73% of the performance measured by the return on shareholders' equity. Correlations were positive in all cases. In bank A, the correlation between ROC and ROE was 82.8%, and for bank B the correlation between these variables was 85.5%. Still for bank B, the correlation between ROC and ROA was 78.7%.

The granting of credit is one of the fundamental functions of banks, and accounts for part of the financial result presented by the institutions. As a result, banks have diversified existing credit modalities, such as payroll

credit, direct consumer credit and operations with real guarantees, aiming at meeting the different needs of customers and protecting the bank from risks such as operations with guarantees and systems that allow the measurement of risks. Credit, in addition to contributing to bank financial performance, affects the country's economic growth. So much so that the countries with the highest credit-to-GDP ratio are the most developed. Credit encourages consumption and investment, generating economic development.

It is suggested, for future work, the measurement of the contribution of credit to other performance indicators. It is also possible to measure the contribution of revenues from the sale of products and services, which are sought by banks because they present a lower risk than the credit concession. Another suggestion is to compare the contribution of revenues from credit, funding and sale of products to banks' financial performance.

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