
Revista Catarinense da
CIÊNCIA CONTÁBIL

Cataloging at source
Cataloguing data compiled by Librarian Leandro Pinheiro-CRB-14/1340

R454

Revista Catarinense da Ciência Contábil / Conselho Regional de Contabilidade de Santa Catarina. – v.1, n. 1, (2001)-
Florianópolis: CRCSC, 2001-.
v. : 24 cm

Quadrimester
Continuation of Journal CRCSC & Você, dec./2001 – jul./2004.
ISSN 1808-3781 (2001-2016)
eISSN 2237-7662
Access mode: http://revista.crcsc.org.br
DOI: http://dx.doi.org/10.16930/2237-7662/rccc

1. Accounting. 2. Accounting Sciences I. Conselho Regional de Contabilidade de Santa Catarina.

CDU - 657

Address for exchange and correspondence:
Revista Catarinense da Ciência Contábil
Conselho Regional de Contabilidade de Santa Catarina
Av. Osvaldo Rodrigues Cabral, 1900 – Centro
88.015-710 Florianópolis/SC

Telephone: 48 3027-7006
Email: revista@crcsc.org.br
@crcscoficial
www.facebook.com.br/crcsantacatarina
Home Page: www.crcsc.org.br

Concept **Qualis/Capes**: **B2**

The electronic journal is indexed in www.ebscohost.com; doaj.org; www.sumarios.org; www.latindex.org; portalnuclear.cnen.gov.br/livre/Inicial.asp; www.base-search.net; www.drji.org; dialnet.unirioja.es; www.redalyc.org/; www.redib.org/; www.ulrichsweb.com

Mission

Revista Catarinense da Ciência Contábil is a four-monthly publication by Santa Catarina State Board of Accountancy whose mission is to disseminate the scientific production, in the area of Accounting, of professors, researchers, students and professionals from Brazil and abroad, who are selected according to the quality and contribution to the development and dissemination of knowledge within this field.

The articles published in Revista Catarinense da Ciência Contábil are unpublished and undergo a process of analysis and approval by its Editorial Committee (Editorial Board and Ad Hoc evaluators). The content and quality of the articles are the responsibility of their authors and do not necessarily express the point of view of the Editorial Board.

CRCSC BOARD-2018/2019 BIENNIUM

Marcello Alexandre Seemann
President
Rubia Albers Magalhães
Vice President for Administration and Finance
José Mateus Hoffmann
Vice President for Supervision
Raquel de Cássia S. Souto
Vice President for Registration
Adriano de Souza Pereira
Vice President for Internal control
Adilson Pagani Ramos
Vice President for Professional Development
Roberto Aurelio Merlo
Vice President Technical Chamber
Adilson Bacthold
Vice President for Institutional Relations
Cassiano Bambinetti
Representative for Accounting Technicians

BOARD OF REGISTRATION

Seat Holders	*Alternates*
Raquel de Cássia Souza Souto	Claudio Marcio de Souza
Irineu Moreira	Rudinei Almeida dos Santos
Lecir dos Passos Ghisi	Roni Luiz Dal Magro
Ranieri Angioletti	John Kennedy Lara da Costa
Edio Silveira	José Carlos de Souza

BOARD OF SUPERVISION

Seat Holders	*Alternates*
José Mateus Hoffmann	Marlise Alves Silva Teixeira
Sergio da Silva	Tadeu Oneda
Adilson Bacthold	Hermeliano de Oliveira
Pericles de Oliveira Borges	Valdecir José Nunes da Silva
Cassiano Bambinetti	Walmor Mafra
Gelson Luiz dal Ri	Emanuela de Melo
John Carlos Zoschke	Tadeu Pedro Vieira
Solange Rejane Schroder	Filipy Furtado Sell
Ranieri Angioletti	John Kennedy Lara da Costa
Roberto Aurelio Merlo	Marcos Alexandre Emilio
Valdeci Sagaz	Luiz Ricardo Espindola
Adilson Pagani Ramos	Jose Carlos de Faveri

BOARD OF ETHICS AND DISCIPLINE

Seat Holders	*Alternates*
José Mateus Hoffmann	Marlise Alves Silva Teixeira
Adilson Bacthold	Hermeliano de Oliveira
Pericles de Oliveira Borges	Valdecir José Nunes da Silva
Cassiano Bambinetti	Walmor Mafra
Gelson Luiz dal Ri	Emanuela de Melo
Solange Rejane Schroder	Filipy Furtado Sell
Ranieri Angioletti	John Kennedy Lara da Costa
Roberto Aurelio Merlo	Marcos Alexandre Emilio
Adilson Pagani Ramos	Jose Carlos de Faveri

BOARD OF RESOURCES, ETHICS AND DISCIPLINE

Seat Holders	*Alternates*
Ilário Bruch	Marcelo Machado de Freitas
Guilherme Corbellini	Dayana Fernandes da Silva
Édio Silveira	José Carlos de Souza
Pericles de Oliveira Borges	Valdecir José Nunes da Silva
Irineu Moreira	Rudinei Almeida dos Santos
Raquel de Cassia Souza Souto	Claudio Marcio de Souza

BOARD OF INTERNAL CONTROL

Seat Holders	*Alternates*
Adriano de Souza Pereira	Neusa Ivete Muller
John Carlos Zoschke	Tadeu Pedro Vieira
Guilherme Corbellini	Dayana Fernandes da Silva
Lecir dos Passos Ghisi	Roni Luiz Dal Magro
Valdeci Sagaz	Luiz Ricardo Espindola

BOARD OF PROFESSIONAL DEVELOPMENT

Seat Holders	*Alternates*
Adilson Pagani Ramos	Hermeliano de Oliveira
Cassiano Bambinetti	Walmor Mafra
Edio Silveira	José Carlos de Souza
Solange Rejane Schroder	Filipy Furtado Sell
Guilherme Corbellini	Dayana Fernandes da Silva

TECHNICAL BOARD

Seat Holders	*Alternates*
Roberto Aurelio Merlo	Marcos Alexandre Emilio
Ilário Bruch	Marcelo Machado de Freitas
Adriano de Souza Pereira	Neusa Ivete Muller

INSTITUTIONAL BOARD AND BOARD OF RELATIONSHIP WITH PROFESSIONALS

Seat Holders	*Alternates*
Adilson Bacthold	Hermeliano de Oliveira

ALSO PART OF THE PLENARY

Tadeu Oneda
Maria Denize Henrique Casagrande

Contents

Editorial

The Accounting Journal of Santa Catarina (*Revista Catarinense de Ciencia Contabil,* or *RCCC*), at each issue brings studies on current topics related to accounting, such as strategic management, transparency, social control, financial and tax planning, among others.

We are experiencing a major evolution in the accounting system regarding the increase of transparency policies in the public and private sector. In this issue, transparency is the subject of two articles. The first one, by Eduardo Carvalho Correa de Araujo, Victor Rangel dos Santos Rodrigues, Danilo Soares Monte-mor and Rogerio Dias Correia, with the title **Corruption and market value: the effects of Operation Car Wash on the Brazilian stock market**, makes a technical analysis of the variation of the value of the roles of companies involved in the operation carried out by the Federal Public Ministry and the Federal Police.

The second article, **Relationship between the republishing of the financial statements and the Audit Delay**, by Vanessa Chiudini, Paulo Roberto da Cunha and Leandro Marques, raises the hypothesis that a greater delay in the release of the accounting report may signal greater risks for the performance of the audit.

The article **Analysis of the impact of macroeconomic variables on the economic and financial performance of companies in the cyclical and non-cyclical consumption sectors on BM&FBovespa**, by authors Jardel Pandini, Diego Rafael Stüpp and Valkyrie Vieira Fabre, shows that there are significant differences in the economic fluctuation impact on companies in the sector of cyclical and non-cyclical consumption.

In the article by the authors Tatieli Borges Machado and Alex Mussoi Ribeiro, **Anticipating receivables in banks and factoring: an analysis of the differences between the rates charged and their possible causes**, they review the average rates setting used by commercial banks and trading companies on fostering receivables from companies in the Brazilian scenario.

A relevant subject for the State of Santa Catarina is the concession of presumed credit of Services Tax Over Merchandise Circulation (ICMS) to the textile industries. The article **Tax incentives as a public policy of industrial development: an empirical analysis of the economic effects of granting presumed ICMS credit to the industries of the State of Santa Catarina** presents the analysis of the authors Julio Cesar Fazoli, Fabricia da Silva Rosa, Leonardo Flach and Luiz Felipe Ferreira.

Still in this edition, in the article **Performance of the funds of investment in quotas in Brazil**, a comparison is demonstrated between the performance of the funds of investments in quotas with the performance of the other funds, result of the research work of Dermeval Martins Borges Junior and Rodrigo Fernandes Malaquias .

Finally, the article **Subsidy and government assistance in Brazilian companies with innovation promotion of FINEP**, by Jackeline Lucas Souza, Paulo Henrique Nobre Parente, Ivaneide Ferreira Farias and Hyane Correia Forte, brings the content and level of evidence of Government Grants and Assistance (SAG) in the financial statements of Brazilian companies benefiting from FINEP. Good reading!

Accountant **Marcello Alexandre Seemann**
CRCSC President

Revista Catarinense da Ciência Contábil,
ISSN 1808-3781 — eISSN 2237-7662,
Florianópolis, SC, v. 17, n. 51, p. 7-21,
May/Aug. 2018

DOI: 10.16930/2237-7662/rccc.v17n51.2606
Available at http://revista.crcsc.org.br

ANALYSIS OF THE IMPACT OF MACROECONOMIC VARIABLES ON THE FINANCIAL PERFORMANCE OF COMPANIES IN THE SECTORS OF CONSUMER CYCLICAL AND NON-CYCLICAL OF BM&FBOVESPA

JARDEL PANDINI
A college degree holder in accounting sciences from Universidade do Estado de Santa Catarina (UDESC). ***Address:*** *Rua Braulino Guimarães, 36 | Gabiroba | 88400-000 | Ituporanga/SC | Brazil.*
E-mail: *jardelpandini@hotmail.com*

DIEGO RAFAEL STÜPP
A master's degree holder in accounting from Universidade Federal de Santa Catarina (UFSC). Professor at the Universidade do Estado de Santa Catarina (UDESC). ***Address:*** *Rua João Custódio da Luz, 43 | Progresso | 89163-766 | Rio do Sul/SC | Brazil.*
E-mail: *diego.stupp@udesc.br*

VALKYRIE VIEIRA FABRE
A master's degree holder in accounting from Universidade Federal de Santa Catarina (UFSC). A professor at Universidade do Estado de Santa Catarina (UDESC). ***Address:*** *Rua Siegolf Radloff, 76 | Ponto Chic | 89140-000 | Ibirama/SC | Brazil.*
E-mail: *valkyrie.fabre@udesc.br*

ABSTRACT

All companies are influenced by macroeconomic variables, more or less sharply, as they are subject to the economic conditions of the regions where they operate. Thus, this reasoning is no different for companies that sell goods and services to end users, such as companies belonging to the consumption sector Cyclical (production and sale of durable goods) and Non-Cyclical (production and sale of non-durable goods) sector of BM&FBovespa). In light of the Business Cycle Theory, the aim of this study was to assess the impact of macroeconomic variables on the financial indicators of companies in the Consumer Cyclical sector and Non-Cyclical BM&FBovespa, since they have to companies in the first sector are more affected by economic fluctuations than companies in the second sector. In this sense, there was a quantitative, descriptive and analysis of documentary data. The study used calculation of canonical correlation coefficients, using statistical software SPSS (Statistical Package for Social Sciences). The survey sample consisted of 103 companies that negotiate their roles in the BM&FBovespa, divided into the sectors of Consumer Cyclical (64 companies) and Consumer Non-Cyclical (39 companies). The study's findings point to an acceptance of the theory that cyclical companies are more impacted by changes in the Brazilian economy, since the results obtained by the canonical correlation indicates that the economic-financial indicators of Cyclical sector companies are more correlated to macroeconomic variables than the indicators of the companies not Cyclical.

Keywords: Cyclical Consumption. Consumer Cyclical not. Macroeconomic Variables. Performance Indicators.

Submission on 01/31/2018. **Review on** 04/13/2018. **Accepted on** 05/03/2018.

1 INTRODUCTION

The Brazilian economy has been facing a series of variations in its macroeconomic indicators in recent years, mainly in the Gross Domestic Product (GDP), which measures the growth of the economy in general; in the exchange rate, which is the rate at which transactions are translated into foreign currency; in the rate of the SELIC (Brazilian Portuguese abbreviation for Special Settlement and Custody System of Central Bank of Brazil), the basic interest rate of the Brazilian economy; and inflation, as measured by indicators that express increase in prices of products and services in a given region and period (Banco Central do Brasil, 2016; IBGE, 2016).

These constant changes in the economy lead to numerous uncertainties for households and companies. Uncertainties about the economy performance based on inflation increases, growth reduction and unemployment rise, for example. These uncertainties affect families' consumption decisions, which may prefer to keep money on bank savings accounts rather than spending on consumer goods. In the business field, investments are compromised, since companies tend to cut productive capacity increase options during periods of economic activity (Haddow, Hare & Hooley, 2013; Costa, 2014).

With regard to B3 [(in full, B3 – Brasil Bolsa Balcão S.A. or B3 – Brazil, Stock Exchange and Over-the-Counter Market), formerly BM&FBOVESPA, the Stock Exchange located at São Paulo], one of the sectors of activity that is most vulnerable to macroeconomic variations is Cyclical Consumption. In theory, companies' revenues in this sector are directly affected by fluctuations in the economy, especially in periods of recession or economic expansion. Included in this group are companies that produce and market durable goods, the billing of which varies according to the short-term income level of the consumer market, since they are goods that have high income elasticity, that is, income effect on consumption (Pindyck & Rubinfeld, 2009; Calixto, Oliveira & Kretzer, 2015).

Another group that represents the companies whose main economic activity is the production and/or commercialization of consumer goods is the Noncyclical Consumption sector. It can be defined, in theory, as the least affected by macroeconomic variations. Organizations included in this sector have as main product nondurable consumer goods such as food, beverages, cleaning and hygiene materials and so on. Products and services from these companies do not undergo income elasticity effects since even if there are variations in the population's income, consumption of such goods and services tends to remain stable (Vasconcellos & Garcia, 2014; Calixto *et al.*, 2015).

Studies in the area of a country's macroeconomic variations have been carried out since the beginning of the twentieth century. This area can be characterized by the Economic Cycles Theory, which proposes that countries' economic activity undergoes fluctuations in terms of products. There is no consensus among authors of this research branch to explain such variations but the most accepted lines among scholars are that money (income) and nonmonetary factors, such as productivity and labor, are the motives that most propagate these fluctuations (Santos, Teixeira & Dalmácio, 2008).

As stated by Santos *et al.* (2008), one of the first ones to study this phenomenon was (American economist) Wesley Clair Mitchell, who published relevant works on the subject. The idea that business cycles could affect business performance was one of Mitchell's key thinking trends. The author believed that each organization's sector of activity made it more or less affected by these cycles (Mitchell, 1927; Santos *et al.*, 2008).

Recent international studies show that the area of economic cycles is still a subject of research. Enqvist, Graham and Nikkinen (2014) have analyzed the impact of working capital management on the profitability of some Finnish companies over a number of business cycles and have found that macroeconomic conditions have measurable influences on the working capital/profitability ratio. As for Frösén, Jaakkola, Churakova and Tikkanen (2016), they have demonstrated in their study about companies that have an emphasis on long-term customer relationships (business-to-business) that macroeconomic variations have a notable influence on these organizations' performance.

When analyzing the relationship between macroeconomic aggregates and economic-financial performance, it is important to know the indicators that express organizations'

performance. For this procedure, techniques known as balance sheet analysis or financial statements analysis are used, which is the way to extract information from companies for decision making. Based on data contained in the statements, balance sheet analysis produces information that shall be useful for a more reasoned process of analyzing companies' economic-financial situation and consequently for decision-making by managers (Matarazzo, 2008).

After developing several studies on the subject, a shortage of papers analyzing the relationship between variables GDP, exchange rate, SELIC rate and inflation with companies' performance in Cyclical Consumption and Noncyclical Consumption sectors listed on B3 was observed. In the context covered, the research problem that arises in the present study is: *What is the impact of macroeconomic variations on companies*' *economic-financial performance in the Cyclical Consumption and Noncyclical Consumption sectors listed on B3 between 2008 and 2015?*

From the context discussed, it is possible that variations in economy performance can lead to variations in companies' performance and, especially when economic curves show falls, jobs generation and income distribution may be compromised (Enqvist *et al.*, 2014). As a social contribution, the present study seeks to analyze how the performance of consumer companies in Brazil is affected by macroeconomic variations and whether this represents risks to the economically active population seeking employment.

In relation to the study practical contributions, it seeks to provide a parameter of analysis for companies' officers and managers that fit into the Cyclical Consumption and Noncyclical Consumption sectors. It also seeks to help reduce uncertainties in future planning and modify organizations' areas that deserve to be highlighted, as there are variations in the country's economic activities.

In order to meet the study objective, which has been to verify the impact of macroeconomic variables on B3's economic-financial indicators, the present study is divided into sections that include: introduction; theoretical foundation, which describes the theory of economic cycles and relevant studies; research method and procedures; data analysis and the final section, which presents final thoughts.

2 THEORETICAL FOUNDATION

The present theoretical reference is based on the explanation of the Economic Cycles Theory and the description of some studies relevant to the development of this work.

2.1 Economic Cycles Theory

"Business cycles" or "economic cycles" can be defined as fluctuations in nations' economic activities across a broad range of macroeconomic variables such as products, jobs, prices, consumption, investment and technological innovations (Long & Plosser, 1983). As explained by Santos *et al.* (2008), there is no consensus among classical authors of this research branch explaining such variations. The most accepted trends among scholars are that money supply (the population's income), investments, productivity, labor, technological innovations and variations outside the economy, such as climate change, are the reasons that most propagate the cycles.

Serious efforts to explain business crises and economic downturns began in the mid-eighteenth century amid violent trade fluctuations after the (series of major conflicts pitting the French Empire and its allies, led by Napoleon I) Napoleonic Wars (1803–1815). For more than a century, Western Europe was steeped in intervals of speculative economics, saturated markets and bankruptcy epidemic but at that time no conclusive idea that this was a trend that would recur many times later had been developed (Mitchell, 1927).

From the nineteenth century on, (German philosopher, economist, historian, political theorist, sociologist, journalist and revolutionary socialist) Karl Marx and (Scottish economist, philosopher and author) Adam Smith, political philosophers who possessed vast economic knowledge, began to pay attention to economic movements in the rhythmic trade variations and formulated the first questions about business cycles. Such formulations served as a basis for authors such as Mitchell (1913 and 1927), Schumpeter (1939), Burns and Mitchell (1946),

Lucas (1977), Kydland and Prescott (1982 and 1990) and Long and Plosser (1983), among others, to develop their studies about economic cycles and consolidate this branch as a relevant research area (Mitchell, 1927; Schumpeter, 1939).

One of the oldest and most influential authors who studied economic cycles in depth and tried to understand this phenomenon origins and causes was Wesley Clair Mitchell. For the author, the crucial characteristic of a modern capitalist economy is that everything revolves around currencies, that is, production only takes place if there is some expectation of profit for companies with the sale of such products. Without profit generation, production declines, unemployment rises and a generalized crisis sets in. In times of economic downturn, companies go bankrupt, assets are liquidated and the ground is set for a new recovery, prosperity, new crises and new economic depressions (Mitchell, 1913; Sherman, 2001).

As a deepening of his first impressions regarding business cycles, Mitchell published another book in 1927 in which he sought to explain more clearly the problem involving economic cycles and their configurations. According to Mitchell, there is a succession of factors that lead to variations in countries' economic activities. These factors start with periods of prosperity, which lead to crises due to poor planning from businesses, government and households and thus periods of economic recession and depression, which, after some time, shall give rise to conditions leading to new recovery so that the cycle is restarted.

Joseph Alois Schumpeter (Austrian political economist) (1939), in his book on business cycles, brings a complementary view to that of Mitchell (1927) on the causes of this phenomenon. For him, in addition to internal factors of the economic system, such as changes in consumers' tastes, production quantity or quality and modification in commodities supply, for example, there are factors external to the economy that cause the cycles, such as climate, discovery of new sources of precious metals, unexplored lands, opening up to new countries, among others, that had been the cause of business cycles in the past.

A few years later, Arthur Frank Burns and Wesley Clair Mitchell (1946), by virtue of the prerogative that business cycles last one to ten or twelve years and are not divisible into shorter cycles of a similar character, seek to measure business cycles by means of a detailed exposition of methods for measuring cyclic behavior. The authors have also developed some research using these same methods to follow possible changes in the behavior of macroeconomic variables over time (Burns & Mitchell, 1946; Koopmans, 1947).

In this study, Burns and Mitchell reinforce the statement that economic cycles are a type of fluctuation found in countries' global economic activity that organize their work in companies and specifically aim for profit. A cycle consists of variations that end up affecting all sectors of an economy and always happen in a similar way: prosperity, which leads to crises, then economic recessions and depressions and then again there are periods of prosperity and expansion, crises, recessions and so on (Burns & Mitchell, 1946).

After criticism by Koopmans (1947) that the study by Burns and Mitchell was developed so that certain hypotheses were accepted as true, the business cycle branch ceased to be an active area in macroeconomic research in the following decades. The Keynesian model prevailed that shocks of supply and demand are the cause of business cycles. However, in the 1970s, Robert E. Lucas, the author who revolutionized macroeconomic studies with the postulate that monetary factors are the main cause of economic cycles, corroborates the Keynesian model theories (Santos *et al.*, 2008).

Other authors who stood out in the explanation of business cycles were Finn Kydland and Edward C. Prescott. In 1982, these authors published a study that again changed the interpretation of economic cycles. With the use of quarterly data from the postwar US economy and statistical models that were groundbreaking for the time, which considered mainly time-to-build (time that a capital asset takes to be built), Kydland and Prescott sought to explain the cyclical variations of a set of economic time series.

Following the same line of reasoning from Lucas and Kydland and Prescott, Long and Plosser (1983) also argue that shocks in supply and demand are the mechanisms that most propagate cycles, since additional and unexpected increases in population's income make the pursuit of durable and nondurable goods increase. By means of this, production is adjusted so that there are not enough products on the market...

Another significant change in the understanding of business cycles has come with the study by Long and Plosser (1983). Scholars are the first to use the term Real Business Cycles in their studies. Such a theory emphasizes that there are large random fluctuations in the rate of technological change and, from this, individuals rationally change their levels of work and consumption. Therefore, shocks of supply and productivity caused by technological variations are the main determinants of countries' economic variations and not price level and money supply, as advocated by the previous Economic Cycles Theory (Long & Plosser, 1983; Mankiw, 1989).

From this study, the new theory was consolidated regarding business cycles and other researchers followed the new study line. Mankiw (1989) emphasizes that this new theory does not provide a plausible explanation for economic fluctuations and therefore it should not be used by political decisions to evaluate the proposed macroeconomic policies effects. In Plosser's view (1989), although the Real Business Cycles Theory is rooted in the analysis of technological or productivity shocks, it cannot be confined to this since there are other factors that also interfere in nations' economic activities.

2.2 Relevant studies

Santos *et al.* (2008) have developed a study aiming at analyzing the relation between economic cycles in Brazil and publicly-held corporations' economic-financial performance in the country. The sample consisted of all the companies listed on B3 between the first quarter of 1995 and the last quarter of 2005. As a related macroeconomic variable, real GDP per capita was used. As for measuring the companies' economic-financial performance, a set of nine indicators was used, divided between liquidity, indebtedness and capital structure, profitability and profitability indexes and also volatility indexes. Cross-correlation tests were used to measure the degree of interaction between business cycles and companies' performance. It was concluded from these analyses that the financial sector was the one that most presented some relation with the economic cycle. It indicates that this sector directly influences GDP. Another verification of the study is that indicators of net worth and operating margin profitability were the ones most presenting correlation with GDP. And in some sectors a great correlation, such as in iron and steel, mining and metallurgy industries. Other indicators showed little or no correlation with the economic cycle measured by GDP.

The study by Bastos, Nakamura and Basso (2009) was aimed at verifying determinants of the capital structure in publicly-held corporations in Latin America, taking into account companies' specific factors as well as macroeconomic and institutional factors. To that end, they used 388 publicly-held corporations from five of the seven largest economies in Latin America measured by 2005 GDP (Mexico, Brazil, Argentina, Chile and Peru). Findings of the study pointed out that the current liquidity and asset return indices were the companies' specific factors that helped determine their capital structure. Regarding macroeconomic and institutional factors, the variable GDP growth was the most relevant. It presented a negative relation with the companies' total indebtedness since in times of economic growth companies tend to have more internal resources to finance their investments.

Costa, Schmitt, Leite and Silva (2011) have sought to show in their work how macroeconomic variables have influenced the cash level of Brazilian companies listed on B3. For this analysis, the authors used financial statements from 82 companies chosen at random from among those trading shares on B3 between 2002 and 2009, compared to macroeconomic variables GDP, SELIC and Brazilian National Index of Broad Consumer Prices (IPCA, in the Portuguese abbreviation). At the end of the study, the authors found in a preliminary descriptive statistical analysis a negative correlation between the average level of cash and the variations of the IPCA and the SELIC rate. After applying statistical tests, it was confirmed that IPCA, SELIC rate and GDP were significant to determine the companies' level of availability.

A study developed by Costa and Gomes (2011) has aimed at analyzing the influence of economic cycles on Brazilian publicly-held corporations' performance. The sample of this research was publicly-held corporations in Brazil, referring to periods from 1986 to 2008, reaching a total of 5,581 observations. This period was chosen because it represented major global financial crises, as well as the numerous variations in Brazilian economic plans.

Companies' performance was measured by the dependent variable ROA (net profit in relation to assets). A statistical model was used to verify the relationship between performance and macroeconomic variations. From the observations, the authors concluded that the firm effect (individual characteristics of each company) is still the one most responsible for the most relevant part of organizations' performance, although large periods of time tend to cause macroeconomic variables to have greater power of explanation of firms individually. In addition, year and branch business effects were also relevant in the companies' performance.

Coelho (2012), in her dissertation about the relationship between performance indicators and macroeconomic variables, has aimed to investigate how changes in exchange rate, GDP, inflation and interest rate impact companies' current level of liquidity. The survey sample comprised companies listed on B3 that had shares traded between the 2003-2011 period and that were not owned by financial and insurance sectors. Quarterly data were collected from 141 companies from 13 different sectors. In conclusion, results obtained by the author show that the level of liquidity of the companies analyzed is impacted by macroeconomic variations. In addition, it was verified that variables GDP and interest rate (SELIC) correlate with current liquidity indices in a positive way, while exchange rate and inflation variables are negatively related.

In their study, "The relationship between the profits of publicly-held corporations and macroeconomic variables," Fabris and Fontana (2012) have analyzed the short-term and long-term relationship between the macroeconomic variables and the quarterly profit series (operating, net and per share income) of the main Brazilian companies listed on B3. Based on that study, data from companies AmBev, BRF S.A., Gerdau, Petrobras, Souza Cruz and Vivo between the first quarter of 2000 and the last one of 2010 have been used. As a result, it was observed that corporate profits and macroeconomic variables tend to balance in the long run, especially net and operating income. Through that study, parameters were estimated for correcting errors that contribute to the realization of short-term profit forecasts.

Albuquerque, Silva and Maluf (2014) have carried out a study with the objective of verifying if there is a relation between the prediction of future income from Brazilian iron and steel companies against macroeconomic information such as GDP, SELIC rate and inflation. As a sample, four national iron and steel companies were used: Gerdau, CSN (Companhia Siderúrgica Nacional), Usiminas and Vicunha, with analyses between the second quarter of 2002 and the last one of 2010. The methodology used in the study is known as autoregressive–moving-average (ARMA) model and is intended to ensure that all exogenous variables (GDP, inflation and SELIC rate) can be simultaneously considered in comparison to the dependent endogenous variable (income). As a result, the authors have found that the SELIC rate is the macroeconomic variable that most influences future turnover of companies in the iron and steel sector since high interest rates slow down investments in the industry, while lower interest rates tend to cause investment growth. The variables GDP and inflation, although less significant, have also influenced the expectation of corporate income.

As a recent research, one has the study by Lopes, Costa, Carvalho and Castro (2016), which has aimed to analyze the behavior of the market value of Brazilian publicly-held corporations in relation to their economic-financial situation during two major global financial crises (2008 and 2012). At the end of the research, the authors concluded that the relationship between market value and net worth (NW) behaved differently in the two years analyzed. In 2008, companies that had a market variation in relation to below-average NW had higher liquidity, lower indebtedness and lower profitability than companies that had a market variation compared to above-average NW. In 2012, results were reversed, i.e., companies that had a market variation in relation to below-average NW had lower liquidity, higher indebtedness and higher profitability than above-average companies. From that point on, the authors point out that companies that had higher financial leverage in 2008 were better evaluated by the market in that year while companies with higher liquidity were the ones with the highest market value in 2012.

3 RESEARCH METHOD AND PROCEDURES

Regarding the problem approach, this research is classified as quantitative due to using statistical techniques such as coefficients and indexes. Silva (2010) presents the idea of quantitative research as the one that uses sophisticated study techniques such as improved use of statistics. For this reason, mathematics takes a prominent place in investigations that are classified as quantitative (Silva, 2010).

Regarding objectives proposed, the present research is characterized as descriptive. For Silva (2010), a descriptive research has as its main objective to establish relations between variables from the characteristics of a certain population or phenomenon. In this type of research there are standardized techniques for obtaining the necessary data and it is of crucial importance that the researcher has a certain degree of responsibility for the research to present scientific validity.

This study is defined as a documentary research. Such a procedure is based on materials that have not received any kind of handling from scholars and so can be shaped based on the objective the research intends to achieve. In this type of research, the objective is to select, handle and interpret information in its raw state, seeking to extract some meaning from it and attribute some value to it (Raupp & Beuren, 2014).

The population of this research is all 143 companies that make up the Cyclical Consumption and Noncyclical Consumption sectors of B3, according to the sectoral classification report on the website. Regarding this research sample, it can be defined as non-probabilistic. Thus, the sample of the present study fits elements of the population of companies of B3's Cyclical Consumption and Noncyclical Consumption sectors.

In August 2016, there were 64 companies listed in the Cyclical Consumption sector that traded their shares on B3 and had financial statements published as required by legislation applicable to this type of organization. These companies are classified in this sector because their revenues differ, in theory, according to the performance of the economy in which they are inserted. These are companies that produce durable consumer goods that do not have consumer priority in case of a decrease in the population's income.

For B3's Noncyclical Consumption sector, the sample consisted of 39 companies listed in August 2016, subdivided into eight operating subsectors, according to the target activity of each one. Such companies fit in this sector as they produce and/or market non-durable consumer goods that are of great importance for people. For this reason, regardless of the economic situation of the region in which they are installed, these organizations' income is less impacted by the economic environment where they are inserted.

The data collection instrument of this research aims to obtain the data that shall be the economic-financial performance indicators of companies in the Cyclical Consumption and Noncyclical Consumption sectors, based on data published on the B3 website. Data were collected that formed the nine economic-financial performance indicators analyzed in the study, such as: current liquidity, general liquidity, level of indebtedness, composition of indebtedness, EBIT (earnings before interest and taxes) (operating) margin, net margin, asset profitability, net worth profitability and net operating income variation. Santos *et al.* (2008) and Stüpp (2015) mention that such indicators for financial statements analysis are widely used as explanatory variables for companies' economic-financial performance.

With the aid of the (investment platform) Economatica® database, data were collected to aid in the calculation of variables present in Table 3. These data included the period from 2008 to 2015 and were obtained in July 2016.

Justification for the period used to collect data for the present study is the fact that at the end of 2007, Law No. 11,638/07 was enacted, which provided for changes in the Brazilian Business Corporation Law (Law No. 6,404/76) and determined that Brazilian companies adopt the International Financial Reporting Standards (IFRS). This event has led to some changes in preparation and disclosure of financial statements from financial institutions and publicly-held corporations in the country (KPMG Auditores Independentes, 2008).

In relation to macroeconomic variables, which were used as the basis for measuring economic fluctuations, there are the GDP, inflation (measured by the IPCA), the SELIC rate and the exchange rate. These indicators can be obtained from official institutes' databases, such as

the Brazilian Institute of Geography and Statistics (IBGE, in the Portuguese abbreviation) and the Central Bank of Brazil.

Thus, the data obtained in the present documentary research were tabulated in Microsoft Office Excel® 2010 spreadsheets in order to organize them in a systematic way that facilitated later analyses. Then, the tabulated data were processed using statistical software SPSS (Statistical Package for the Social Sciences) version 23 to calculate the canonical correlation between the dependent and independent variables of the study.

The statistical method used was the canonical-correlation analysis (CCA), as defined by Hair, Anderson, Black, Babin and Tatham (2009). It is a logical extension of an analysis carried out through multiple linear regressions (a relationship between a single dependent variable with two or more independent variables). In canonical correlation, the objective is to simultaneously correlate several metric dependent variables (variables that undergo influence from others and are measured in a quantitative form) with independent variables (causative of changes in relation to the dependent variables), also metrics. This method of dependence is the most general technique from which all others derive (Fávero, Belfiore, Silva, & Chan, 2009; Hair *et al.*, 2009).

4 DATA ANALYSIS

In this section we present description (as tables) and analysis of the data that were obtained through application of the canonical correlation test of the variables. This test consisted of the calculation of the canonical correlation coefficient and the level of significance (p-value) of the group of macroeconomic variables in relation to economic-financial indicators of the companies of B3's Cyclical Consumption and Noncyclical Consumption sectors. Table 1 shows the canonical correlation of the macroeconomic variables listed in the study with the group of performance variables of the Cyclical Consumption sector companies.

From an analysis of Table 1, it can be seen that four different linear combinations were calculated by SPSS (Column 1), which represent the group of macroeconomic variables (IPCA, SELIC, exchange rate and GDP). The Eigenvalues and Wilks' Lambda columns indicate the covariance (dependence) matrix of each variable responsible for the correlation between them (Magro, 2012). The p-value, in turn, indicates the significance of the linear combination, which, according to Hair *et al.* (2009), is at the level of 0.05 (5%).

Table 1
Canonical correlation of macroeconomic variables with the group of economic-financial performance of companies in the Cyclical Consumption sector

	Correlation Canonical	**Self-worth**	***Wilks Lambda***	**D.F.**	***P-value***
1	.762	1.385	.314	36.000	.000
2	.389	.178	.749	24.000	.686
3	.266	.076	.883	14.000	.848
4	.224	.053	.950	6.000	.729

Source: Research data.

Thus, it can be observed that there was a significant canonical correlation of the first linear combination (0.762) with a level of significance at 0.05 (p-value of 0.000). Therefore, this coefficient of canonical correlation of 0.762 indicates that there is a considerable relation between the variables of the model. Table 2 shows the coefficients of the canonical variables derived from the relationship between the macroeconomic variables and the economic-financial indicators of the companies of the Cyclical Consumption sector.

As observed in Table 2, the highest correlation of the four linear combinations occurred in the first column. Therefore, analysis of the coefficients of Table 2 shall also be developed based on column one. Coefficients of the other columns refer to the calculation of the other three linear combinations but since the objective of the model is to present the variables that

have maximum correlation with each other, only the first column in the analysis is used (Magro, 2012).

Table 2
Coefficients for the canonical variables of the macroeconomic and economic-financial indicators of the companies of the Cyclical Consumption sector

Groups	Variable	Linear combinations			
		1	**2**	**3**	**4**
Economic-financial indicators	LC	-.102	-.391	.629	.515
	GL	.154	-.060	.053	-.281
	LI	-.001	-.153	-.083	-.351
	CI	.048	-.128	-.220	.275
	EBIT MG	.085	.353	-1.106	.201
	NM	.188	.125	.181	-.976
	ROA	-.261	1.087	.183	.892
	RONW	-.066	-.333	.642	-.874
	NOI VAR	.973	-.436	.449	.278
Macroeconomic Variables	IPCA	.464	1.204	-1.050	-.150
	SELIC	-.058	-.106	.890	-.832
	EXCHANGE RATE	-1.492	-.466	.432	.532
	GDP	-.498	.653	.516	.810

Source: Research data.

When the macroeconomic variables are related to the economic-financial indicators of column one (1), there is a directly proportional correlation between the macroeconomic variable IPCA and the economic-financial performance indicators General Liquidity (GL), Composition of Indebtedness (CI), EBIT Margin (EBIT MG), Net Margin (NM) and Net Revenue Variation (NRV). This last variable is more related with a coefficient of 0.973. Thus, the greater or lesser the IPCA, the greater or lesser also the economic-financial performance indicators (GL, CI, EBIT MG, NM, NVR) (Fávero *et al.*, 2009).

In a similar way, one can also observe a directly proportional relationship between the macroeconomic indicators SELIC rate, exchange rate and GDP with the economic-financial indicators Current Liquidity (CL), Level of Indebtedness (LI), Return on Asset (ROA) and Return on NW (RONW). Thus, the greater or lesser the SELIC rate, the exchange rate and GDP, the greater or lesser shall be the economic-financial performance indicators (CL, LI, ROA, RONW).

As a way of comparing the canonical correlations of the companies of the Cyclical Consumption sector with the companies of the Noncyclical Consumption sector, we shall now proceed to analyses of the latter group. Table 3 shows the canonical correlation of the macroeconomic variables (IPCA, SELIC, exchange rate and GDP) with the group of variables of economic-financial performance of companies in the Noncyclical Consumption sector.

Table 3
Canonical correlation of macroeconomic variables with the group of economic-financial performance of companies in the Noncyclical Consumption sector

	Correlation Canonical	**Self-worth**	***Wilks Lambda***	**D.F.**	***P-value***
1	.590	.535	.534	36.000	.052
2	.314	.110	.819	24.000	.883

Continue

Table 3 (continued)

	Correlation Canonical	Self-worth	*Wilks Lambda*	D.F.	*P-value*
3	.263	.074	.909	14.000	.903
4	.153	.024	.976	6.000	.926

Source: Research data.

In Table 3, four sets of linear combinations were generated by SPSS, which represent the group of macroeconomic variables (IPCA, SELIC, exchange rate and GDP). It is observed that there was a moderate canonical correlation in the first linear combination (0.590), lower than that observed in the largest linear combination of macroeconomic variables with companies in the Cyclical Consumption sector. In addition, no combination showed significance at the level of 0.05 (5%). The nearest one reached 0.052, contrary to the information observed in the Cyclical Consumption companies, which presented a p-value significance of 0.000 in the first linear combination.

Despite this, the canonical correlation coefficient of 0.590 represents that there is a moderate relationship among the variables of the model, that is, the variations in the economic-financial indicators of companies in the Noncyclical Consumption sector are also explained by the first linear combination of the model, although none of them reached the significance level of 5%.

Table 4 shows the coefficients of the canonical variables derived from the relationship between the macroeconomic variables and the economic-financial indicators of the companies of B3's Noncyclical Consumption sector. The highest correlation of the four linear combinations occurred in the first column, observing the highest degree of correlation found, although there was no degree of significance in the combination.

When the macroeconomic variables are related to the economic-financial indicators of column one (1), there is a directly proportional correlation between the macroeconomic variable IPCA and GDP and the economic-financial performance indicators General Liquidity (GL), Level of Indebtedness (LI), EBIT Margin (EBIT MG), Net Margin (NM), Return on NW (RONW) and Net Revenue Variation (NRV), the latter variable being more related to macroeconomic variables, with a coefficient of 0.826. Thus, it is concluded that the greater or lesser the IPCA and GDP, the greater or lesser also the economic-financial performance indicators (GL, LI, EBIT MG, NM, RONW and NRV).

In addition, one can also observe a directly proportional relationship between the SELIC and exchange rate indicators with the economic-financial indicators Current Liquidity (CL), Composition of Indebtedness (CI) and Return on Asset (ROA). Thus, the greater or lesser the SELIC rate and the exchange rate, the greater or lesser the economic-financial performance indicators (CL, EC and ROA).

Table 4

Coefficients for the canonical variables of the macroeconomic and economic-financial indicators of the companies of the Noncyclical Consumption sector

Groups	Variable	Linear combinations			
		1	**2**	**3**	**4**
Economic-financial indicators	LC	-.142	.166	-1.824	.536
	GL	.105	-.633	1.828	-1.291
	LI	.146	-.456	-.826	.200
	CI	-.227	.309	-1.457	.695

Continue

Table 4 (continued)

Groups	Variable	Linear combinations			
		1	**2**	**3**	**4**
Economic-financial indicators	EBIT MG	.203	-1.071	-.472	-.119
	NM	.147	1.467	.352	-1.022
	ROA	-.286	.442	-.660	1.588
	RONW	.108	-.215	-.016	-.529
	NOI VAR	.826	.304	.143	.275
Macroeconomic Variables	IPCA	.334	.927	-1.111	1.073
	SELIC	-.983	-.177	-.128	-.731
	EXCHANGE RATE	-.414	.036	1.779	.049
	GDP	.078	1.199	.670	-.126

Source: Research data.

As evidenced in the literature, business cycles or the economy performance are able to influence the performance of companies that are inserted in this environment since many macroeconomic factors overlap and end up impacting organizations' activity levels. The most accepted trends among scholars are that money supply (the population's income), investments, productivity, labor, technological innovations and variations outside the economy, such as climate change, are the reasons that most propagate macroeconomic variations in a country (Long & Plosser, 1983; Santos *et al.*, 2008).

As predicted by the theory, macroeconomic fluctuations expressed by inflation indicators (IPCA), interest rate (SELIC), exchange rate and GDP were more significant in companies of the Cyclical Consumption sector than in the Noncyclical Consumption sector. From analysis of Tables 1 and 3, a greater correlation of the macroeconomic variables with companies of the Cyclical Consumption sector is observed (0.762 against 0.590 of the Noncyclical Consumption sector).

Results found in the present study corroborate results from some studies and are contrary to others found in the literature. For liquidity indicators, Costa *et al.* (2011) have evidenced a negative relation between the level of cash flow (which influences the companies' liquidity indicators) and the IPCA. Coelho (2012) has concluded in her study that companies' liquidity indicators positively correlate to the interest rate and GDP and negatively to the exchange rate and inflation, as in the present research.

Regarding indebtedness indicators, the present study has found no significant relationship between macroeconomic variables and such indicators. Bastos *et al.* (2009) have not observed a significant relationship of inflation rates with the accounting indebtedness of Latin American companies either but have observed that there is an influence of GDP on companies' indebtedness, as well as Dani, Padilha, Santos and Almeida-Santos (2016), who emphasize that one of the main factors that influence companies' capital structure is the GDP, since economic growth brings greater availability of internal resources to companies that use more of their own capital for their financing.

For indicators of profitability (NM, EBIT MG, ROA, RONW and NRV), the present study indicates a high correlation of macroeconomic variables with Net Revenue Variation (NRV), corroborating previous studies that tend to affirm that there is relationship between the countries' economy and companies' economic-financial performance indicators, described below.

Santos *et al*. (2008) have identified a positive relationship between the return on assets (ROA) and companies' operating margin (EBIT MG) in relation to Brazilian publicly-held corporations' GDP. They indicate that if countries' economy performs well, it positively affects companies' results. Fabris and Fontana (2012) argue that macroeconomic variables and corporate profitability tend to balance in the long run, i.e., if countries' economy performs well,

companies tend to have good profitability. As for Albuquerque *et al.* (2014), they have found that the SELIC rate is the macroeconomic variable that most influences the future turnover of companies in the iron and steel sector and variables GDP and inflation, although less significant, have also influenced these companies' expected revenue.

A study by Deleersnyder, Dekimpe, Sarvary and Parker (2003) corroborates the present study findings. The authors argue that durable consumer goods (produced by Cyclical Consumption companies) tend to be less consumed in times of economic recession since the population tends to concentrate its consumption on non-durable consumer goods (produced by companies of the Noncyclical Consumption sector), most needed for survival. This explains a greater correlation of the Net Revenue Variation in relation to the macroeconomic variables in the Cyclical Consumption sector than in the Noncyclical Consumption.

5 FINAL THOUGHTS

The present study has aimed to analyze the impact of macroeconomic variations on the economic-financial performance of B3's Cyclical Consumption and Noncyclical Consumption companies between 2008 and 2015 in order to verify which of the two sectors is most impacted by variations in the domestic economy and whether the theory regarding the sectors is confirmed in relation to performance indicators.

In order to better organize the companies that negotiate their shares in the capital market, B3 uses their sector classification, according to the main activity that generates revenues for each one, thus forming company blocks that similarly act in the market. Within these sectors are the Cyclical Consumption and Noncyclical Consumption, whose main function is the sale of goods and services to the final consumer.

According to the literature, companies belonging to the Cyclical Consumption sector (clothing, footwear, automobiles, furniture, household appliances, among others) are influenced by changes in the economy, either by economic recessions or expansion, since they produce or sell goods that are not considered necessary or of which consumption can be reduced. On the other hand, companies belonging to the Noncyclical Consumption sector produce nondurable goods, such as food and beverages, and provide medical and hospital services, which are considered to be necessity goods and are expenses with little impact from the population's income level because they are consumed even in times of economic recession.

The study through canonical correlation, which consists in analyzing the linear relationship between two data sets, presented results that prove the theory that companies belonging to the Cyclical Consumption sector are more affected by the economy performance than companies in the Noncyclical Consumption sector.

When economic-financial indicators of companies of the Cyclical Consumption sector were correlated, there was one in the first linear combination of 0.762 with a level of significance at the level of 0.000. This indicates that the correlation is statistically significant. For the Noncyclical Consumption sector, the largest linear combination was 0.590 but with no statistical significance at the 5% level.

In addition, it was confirmed by the canonical correlation that the variation in net operating revenue was the corporate performance variable most impacted by the macroeconomic variables, with a correlation coefficient of 0.973 for the Cyclical Consumption sector and 0.826 for Noncyclical Consumption, which again confirms the greater impact of macroeconomic variables on Cyclical Consumption companies revenues. In addition, other important indicators that measure business performance, such as the profit margin, have not shown significant correlation in any of the two sectors analyzed in this study.

Therefore, it is suggested for future studies that researchers seek to list other performance variables of the Cyclical Consumption and Noncyclical Consumption companies that may be related to macroeconomic factors such as activity indicators (average sales receipt periods and payment of suppliers, operational cycle and financial cycle) and the dynamic analysis of working capital, among others. In addition, it is suggested to replicate this study in other sectors of B3 companies (basic materials, industrial, financial, health,

telecommunications, public utility goods) in order to verify if there is a relationship between such companies' performance and the Brazilian economy, as verified in this study.

REFERENCES

Albuquerque, P. H. M., Silva, L. C., & Maluf, Y. S. (2014) Estimação da influência de variáveis macroeconômicas sobre o faturamento de organizações siderúrgicas usando o ARMAX. *Gestão & Produção*, 21(3), 648-659.

Banco Central do Brasil. *Índices de inflação.* Recuperado em 8 maio, 2016, de http://www.bcb.gov.br/pre/portalCidadao/indecon/indice_inflacao.asp?idPai=PORTALBCB

Bastos, D. D., Nakamura, W.T, & Basso, L. F. C. (2009). Determinantes da Estrutura de Capital das Companhias Abertas na América Latina: um estudo empírico considerando fatores macroeconômicos e institucionais. *Revista de Administração Mackenzie, 10*(6), 47-77.

Burns, A. F., & Mitchell, W. C. (1946). *Measuring Business Cycles.* New York: National Bureau of Economic Research Books.

Calixto, T. C., Oliveira, R., & Kretzer, J. (2015). O comportamento das indústrias cíclicas brasileiras pós-real. *Semana de Ciências Econômicas*, Guarapuava, 16.

Coelho, L. B. (2012). *Efeitos de variáveis macroeconômicas no nível de liquidez de empresas brasileiras.* Dissertação de Mestrado, Fundação Getúlio Vargas, São Paulo, SP, Brasil.

Costa, A. E., Filho (2014). Incerteza e atividade econômica no Brasil. *Economia Aplicada, 18*, (3), 421-453.

Costa, C. T., & Gomes, F. P. (2011). Análise da variação do desempenho de empresas brasileiras. *Organizações em Contexto, 7*(13), 85-105.

Costa, G. P. C. L., Schmitt, F. O., Leite, P. A. M., Filho, Silva, C. A. T. (2011) O reflexo das variáveis macroeconômicas no nível de caixa evidenciado pelas empresas brasileiras listadas na Bovespa. *Anais Congresso ANPCONT*, Vitória, ES, Brasil, 5.

Dani, A. C., Padilha, D., Santos, C. A. dos, & Almeida-Santos, P. S. (2016). Effect of market timing in the capital structure of Latin America. *Revista de Gestão, Finanças e Contabilidade*, *6*(3), 143-159.

Deleersnyder, B., Dekimpe, M. G., Sarvary, M., & Parker, P. M. (2003). Weathering tight economic times: the sales evolution of consumer durables over the business cycle. *Quantitative Marketing and Economics, 2*(4), 347-383.

Enqvist, J., Graham, M., & Nikkinen, J. (2014). The impact of working capital management on firm profitability in different business cycles: Evidence from Finland. *Research in International Business and Finance, 32*, 36-49.

Fabris, T. R., & Fontana, M. L. L. (2012). A relação existente entre os lucros das empresas de capital aberto e das variáveis macroeconômicas. *Anais Congresso USP de Iniciação Científica em Contabilidade*, São Paulo, SP, Brasil, 9.

Fávero, L. P., Belfiore, P., Silva, F. L., & Chan, B. L. (2009). *Análise de dados: modelagem multivariada para tomada de decisões.* Rio de Janeiro: Campus.

Frösén, J., Jaakkola, M., Churakova, I., & Tikkanen, H. (2016). Effective forms of market orientation across the business cycle: A longitudinal analysis of business-to-business firms. *Industrial Marketing Management, 52*, 91-99.

Haddow, A., Hare, C., & Hooley, J. (2013). Macroeconomic uncertainty: what is it, how can we measure it and why does it matter? *Bank of England Quarterly Bulletin*, p. Q2.

Hair, J. F., Anderson, R. E., Black, W. C., Babin, B. J., & Tatham, R. L. (2009). Análise multivariada de dados (6a ed.). Porto Alegre: Bookman.

Instituto Brasileiro de Geografia e Estatística. *Contas Nacionais.* Recuperado em 27 março, 2016, de http://brasilemsintese.ibge.gov.br/contas-nacionais.html

Koopmans, T. C. (1947). Measurement without theory. *The Review of Economics and Statistics, 29*(3), 161-172.

KPMG. (2008). O Brasil e as normas internacionais de contabilidade (IFRS). Recuperado em 5 maio 2016, de http://www.kpmg.com.br/publicacoes/audit/ifrs/folder_ifrs_perguntas_respostas.pdf

Kydland, F. E, & Prescott, E. C. (1982). Time to build and aggregate fluctuations. *Econometrica – Journal of the Economy Society, 50*(6), 1345-1370.

Long, J. B. J., & Plosser, C.I. (1983). Real business cycles. *The Journal of Political Economy, 91*(1), 39-69.

Lopes, P. F., Costa, D. F., Carvalho, F. M., & Castro, L. G., Filho (2016). Desempenho econômico e financeiro das empresas brasileiras de capital aberto: um estudo das crises de 2008 e 2012. *Revista Universo Contábil, 12*(1), 105-121.

Lucas, R. E. (1976). Understanding Business Cycles*. Kiel Conference on Growth Without Inflation*, Kiel, Alemanha.

Magro, C. B. D. (2012). *Utilidade do orçamento empresarial nas indústrias catarinenses sob a ótica da teoria da dependência de recursos.* Dissertação de Mestrado, Fundação Universidade Regional de Blumenau, SC, Brasil.

Mankiw, N. G. (1989). Real Business Cycles: A new keynesian perspective*. The Journal of Economic Perspectives, 3*(3), 79-90.

Matarazzo, D. C. (2008). *Análise financeira de balanços: abordagem básica e gerencial* (6a ed.) São Paulo: Atlas.

Mitchell, W. C. (1913). *Business Cycles.* Berkeley: University of California Press.

Mitchell, W. C. (1927). *Business Cycles: The Problem and Its Setting.* New York: National Bureau of Economic Research Books.

Pindyck, R. S., & Rubinfeld, D. L. (2009). *Microeconomia* (7a ed.). Madrid: Pearson Prentice Hall.

Plosser, C. I. (1989). Understanding real business cycles. *The Journal of Economic Perspectives, 3*(3), 51-77.

Raupp, F. M., Beuren, I. M. (2014) *Metodologia da pesquisa aplicável às ciências sociais.* In I. M. Beuren (Org.) *Como elaborar trabalhos monográficos em contabilidade* (3a ed.). São Paulo: Atlas.

Santos, E. S. (2011) Full IFRS x Lei 11.638 (1ª fase) x Lei 6.404: impacto esperado nos resultados de 2010 a partir das empresas que se anteciparam. *Anais Congresso USP de Contabilidade e Controladoria*, São Paulo, SP, Brasil, 11.

Santos, F. M., Teixeira, A., & Dalmacio, F. Z. (2008). Impacto das flutuações econômicas no desempenho das empresas: estudo intra-setorial sob a perspectiva da teoria dos ciclos econômicos. *Anais Congresso ANPCONT*, Salvador, BA, Brasil, 2.

Sherman, H. (2001). The Business Cycles Theory of Wesley Mitchell. *Journal of Economic Issues, 35*(1), 85-97.

Schumpeter, J. A. (1939). *Business Cycles: A Theoretical, Historical, and Statistical Analysis of the Capitalist Process*. New York: McGraw-Hill Book Company.

Silva, A. C. R. (2010). *Metodologia da pesquisa aplicada à contabilidade: orientações de estudos, projetos, artigos, relatórios, monografias, dissertações, teses*. Atlas.

Stüpp, D. R. (2015). *Previsão de insolvência a partir de indicadores contábeis: evidências de empresas listadas na BM&FBovespa nos anos 2004-2013.* Dissertação de Mestrado, Universidade do Estado de Santa Catarina, SC, Brasil.

Vasconcellos, M. A. S., & Garcia, M. E. (2014). *Fundamentos de economia* (5ª ed.). São Paulo: Saraiva.

Revista Catarinense da Ciência Contábil,
ISSN 1808-3781 - eISSN 2237-7662,
Florianópolis, SC, v. 17, n. 51, p. 22-38,
May/Aug. 2018

DOI: 10.16930/2237-7662/rccc.v17n51.2554
Available at http://revista.crcsc.org.br

ANTICIPATION OF RECEIVABLES IN BANKS VRS FACTORINGS: AN ANALYSIS OF THE DIFFERENCES BETWEEN THE RATES CHARGED AND THEIR POSSIBLE CAUSES

TATIELI BORGES MACHADO
Undergraduate degree in Accounting Sciences from the Federal University of Santa Catarina (UFSC). Graduate student in Accounting Audit and Controlling by the Instituto de Consultoria Empresarial e Pós Graduação (ICEP). ***Address:*** *Rua Manoel Rosa, 116 | Areias | São José/SC | Brazil.*
E-mail: *tatieli_machado@hotmail.com*

ALEX MUSSOI RIBEIRO
PhD in Controlling and Accounting from the University of São Paulo (USP). Assistant professor and Researcher at the Federal University of Santa Catarina (UFSC). ***Address:*** *Campus Reitor João David Ferreira Lima CCN/CSE, 115 | Trindade | Florianópolis/SC | Brazil.*
E-mail: *alex.mussoi@ufsc.br*

ABSTRACT

This article aims to analyze the difference between the average rates used by commercial banks and factoring companies in the negotiation of corporate receivables in the Brazilian scenario. The variables analyzed were the average effective rates applied by financial institutions and factoring companies in the purchase of trade acceptance bills and checks between the years of 2012 and 2016.The statistical tests used were the parametric means test for independent samples, the D-Cohen statistic and the correlation analysis. The data used in the research were obtained on the website of the Central Bank of Brazil (BACEN) and the National Factoring Association (ANFAC). The results show a difference of 1.35% greater in the ANFAC factor in relation to the average rates charged by the banks. The D-Cohen statistic has shown that such a difference is significant and relevant. Based on the correlation, it was possible to infer that a possible cause for such a difference lies in the methods adopted between the credit risk analysis models used in such entities and environment more flexible and the less bureaucratic in which factoring companies operates. The contributions obtained with this research allow us to direct the users that seek the anticipation of receivables as a credit modality and break the lack of studies related to the factoring agencies in Brazil, mainly from an empirical perspective.

Keywords: Banks. Factoring. ANFAC Factor. D-Cohen.

1 INTRODUCTION

Companies with their own resources will often not be able to remain competitive in the market or even make timely settlement of their debts to employees, suppliers and the government. According to data published in a research performed by the Brazilian Micro and Small Business Support Service (SEBRAE) of São Paulo (2010), more than half of the analyzed companies that started their activities before 2010 closed their doors in a period of up to five years. One of the main difficulties pointed out by the interviewees in the study was the lack of

Submission on 09/25/2017. **Revision on** 01/19/2018. **Accepted on** 05/10/2018.

financial resources to manage their short-term obligations. Another research conducted by SEBRAE of São Paulo in 2014 highlighted that, in the first year of a company's activities, the lack of capital (cash) is considered the second most significant difficulty to continue the business, only losing to the difficulty of training from customers.

As can be seen from the results of SEBRAE research, adequate cash management is crucial for the survival and economic sustainability of both large and small organizations. The task of managing a company's cash position, on the other hand, is not simple and involves a number of complex issues that may or may not be managed by those in charge of the business. (e.g., term of payments of suppliers and receipt of customers, payments of employees and their benefits, theft, fraud and etc.). Gitman and Zutter (2012) point out that managing a company's working capital is one of the most challenging and time-consuming tasks of financial managers.

While it is a challenging task, a company's cash management can be aided by banks or financial firms that, if necessary, can provide resources for the entity to meet its short-term obligations. Among the most common resources for this type of need are working capital loans and negotiation of receivables. In a study conducted by Araújo and Machado (2007), with companies from Paraíba scholars found that almost half of the small companies analyzed used discount checks as a way to finance their cash and more than half use banks for working capital loans.

Working capital loans have the advantage of high agility in obtaining credit and, in most cases, the non-obligation to provide a real guarantee in the operation, since banks and financial institutions calculate a previous limit, based on the entity's credit score. The major disadvantage of these working capital operations is the financial cost of the loan, which is among the highest rates charged in the market.

A second operation, also common to help short-term cash management, is the anticipation of receivables. According to International Financial Reporting Standard (IFRS) 9, there are two main modalities of anticipation of receivables: (1) one that substantially transfers the risk of the financial instrument to whom acquires the security and (2) one in which the holding company bears the risk of not paying the security, using the financial instrument as a mere guarantee for its raising funds with banks (IASB, 2014).

The first form of anticipation of receivables is known by the market as the sale of receivables (securitization). In it occurs the effective sale of the security and its respective accounting write-off by the seller. The second form of anticipation, in turn, is known as discount checks or trade acceptance bills (or sales installments by credit card) and is the most common modality, especially in the scope of small companies. In this situation only the transfer of funds from the bank (or financial operator) to the company that guarantees the trade acceptance bills or the checks that have to receive. The accounting treatment of the second type of transaction is the same as accounting for a loan. The rates charged by the bank or financial institution are part of the effective cost of the operation and must be treated as such, that is, they must be included in the effective cost of the financing. The great advantage of this modality in relation to the working capital loan are the rates charged, substantially lower than those of unsecured loans.

In order to raise funds with the anticipation of trade acceptance bills or checks, an organization may use a commercial bank or a factoring company. The bank mediates financial resources, raises and lends money from popular savings. Capital is absorbed together with surplus agents and delivered to deficit agents. Factoring already operates with its own resources, provides collection services and purchases the direct credits (rights) of its customers. In the bank discount, the cost of the anticipation transaction for the customer is measured by the effective rate that represents the credit risk, the bank spread (difference between the cost of raising and the application of the market value), taxes and the rate that the bank charges for the operation. In factorings, the cost of anticipation is measured by the purchase factor. This factor represents the effective rate charged by the factoring companies together with their margin and their total direct and indirect costs (Anfac, 2017; Capelletto & Corrar, 2008; Gonçalves, Gouvêa, & Mantovani, 2013; Leite, 2011; Wolf, 2008).

Although banks and factoring formally have distinct conceptions of activities and forms of financing, in the operations of anticipation of receivables essentially, they do the same thing; they lend resources based on the guarantee of the security to be received. The rates charged

by the bank and the factoring factor, despite reflecting the situation and the particular costs of credit operations, also represent the same for those who need resources, the actual cost of the operation. Even so, several authors, such as Cochrane (2005), Dodl (2006), Falcão (2001), Goulart and Paulo (2011), Leite (2011) and Wolf (2008) highlight the relevance of the role of factoring in financing the economy, especially the more informal ones, since the process of obtaining credit in such entities is not as demanding as in banks (the lower requirement can be verified in the research of Anjos, Miranda, Silva and Freitas, (2012), according to which only 3% of the interviewees indicated the most demanding accounting information factories while the banks represent 53% of the cases).

It is natural that in a less judicious environment there are greater risks in operations and this should be reflected in the rates charged and the costs of raising to the market. But to what extent does this cost make a significant difference in factoring rates when compared to commercial banks? Stabile (2012), in his theoretical essay, points out that the costs of credit operations with factoring are greater than those of the operations with banks, but does not investigate the size or relevance of this difference.

In this context, this work aims to analyze the difference between the average rates used by commercial banks and factoring companies in the negotiation of corporate receivables in the Brazilian scenario. More specifically, this study analyzed the differences in effective rates charged by factoring agencies and commercial banks over a five-year horizon (2012-2016). In addition, ancillary analyzes were carried out to measure the size of the economic effect of the differences between the rates charged and the possible macroeconomic drivers of these relationships.

Works such as those made by Batista and Junior (2012) and Silveira (2010) have created a kind of "mystical" relevance around the role of factoring in regional economic development, especially in the context of small enterprises. The purpose of this research is to contribute with empirical data and to show that, although factoring has a relevant role in the distribution of funds in the market for the anticipation of receivables, the rates charged reflect a higher risk of its operations and are significantly higher than the rates charged by commercial banks. In practical terms, this research can also serve as a basis for economic agents to decide the vehicle used to anticipate their receivables, given their credit conditions.

2 THEORETICAL FOUNDATION

2.1 Factoring companies and commercial banks as working capital lenders

Although Gitman and Zutter (2012) point out the high degree of difficulty in calibrating an adequate financial policy for a successful management of working capital, there are some tools that can help the financial manager in this endeavor. Among these tools is the discount of trade acceptance bills or checks. A company that decides to anticipate its receivables may resort to commercial banks or factoring agencies.

For Leite (2011), factoring is characterized as an atypical mixed commercial activity, which involves the continuous provision of services, together with the purchase of credit rights resulting from commercial sales or service rendered over the long term. Law No. 9,430/96, in its art. 58, item XV, indicates factoring as companies:

> XV - that explore the activities of cumulative and continuous rendering of credit, marketing, credit management, selection and risk management services, administration of accounts payable and receivable, purchases of credit rights resulting from forward sales or services rendered (factoring).

Markusons (1997, as cited in Wloch, 2006, p.13) describes the use of services provided by developers as an important tool for firms that have restrictions and are unable to operate with Banks, as the level of demand and bureaucracy are many different. The flexibility to open the register and to grant credit is greater than in other institutions, since the contact of the developer is closer to the customer company. Another advantage is that the focus of factoring is the

purchase of receivables. Therefore, they do not require reciprocity from customers; such as the sale of insurance, capitalization and consortia (Diário do Comércio, 2016; Gonçalves, 2012).

In this way, factoring helps as support for its customer companies and contributes to the growth, continuity and development of these companies in the market. Therefore, factoring can act to foster and assist small and medium-sized businesses with day-to-day cash flow problems. This would enable faster business growth and greater turnover of your working capital. The activity also has a speed that other systems do not offer (Katayama, 2003; Santos, 2014; Silveira, 2010; Sinfac-SP, 2016; Wolf, 2008).

The activity of a commercial bank, on the other hand, is financial intermediation. Banks raise funds from popular savings and invest in activities that demand resources. Taylor (2013) points out that banks' capital is made up of deposits from their account holders and that their result is derived from the difference between the rate paid to capture these deposits from the rate charged to those who need them. In Taylor's view (2013), the best banks will be the ones that raise the cheapest and lend more expensive within a certain level of credit risk.

In an operation to discount trade acceptance bills or checks, however, the role of factoring and commercial banks has a great similarity. In both cases, the financial agent transfers resources to customers. It takes collateralized receivables as guarantee. The main difference between the two operations, in this case, would be the way they are funded. In banks, capital is regulated and financed by the depositaries. In the factoring agencies, in turn, the capital employed is often their own and this gives greater flexibility to investment. As a consequence, factoring can cede resources to customers that banks would not cede due to, for example, having cadastral restrictions. This aspect was pointed out in the research of Eckert, Rizzon, Mecca and Biasio (2015).

In addition, commercial banks need the authorization of the Central Bank to operate, differently from developers who do not require such authorization (Gonçalves, 2012). Falcão (2001, p. 4) cites factoring as "a limited, or anonymous, mercantile company whose legal existence arises with the filing of its constituent acts at the Commercial Board".

2.2 Credit and risk

The word credit originates from the Latin creditum and means confidence or security of something (Securato, 2002). According to Schrickel (1997, p. 25), "credit is every act of willingness of someone to highlight or temporarily assign part of his or her equity to a third party, with the expectation that this portion will return to his/her possession in full, after the stipulated time".

Credit can be considered as an important instrument in the development of an economy, since it aims to finance and foster deficit agents, such as the State, companies and families (Palmuti & Picchiai, 2012).

In the context of this work, credit consists in the provision of a certain amount to a company as payment for the negotiation of a security with future maturity, and with the expectation of payment of the security by another company, that bought a particular product or had the provision of after the agreed period. Thus, it represents the expectation of the institution, which put the value in the market, to receive it at a future date (Brito & Assaf, 2008a; Brito & Assaf, 2008b; Silva, 2014).

However, the fact that there is an expectation of future return entails the existence of a risk that it will not be realized. The credit involved in the transaction is associated with the risk that the borrower does not make the settlement under the agreed conditions. This risk is known as credit risk and, as defined by Jorion (2011), is the risk of an economic loss derived from the failure of a counterparty to fulfill its contractual obligations, that is, to fail to pay the agreed upon risk.

In the case of banks and factoring, this is the main risk underlying their receivables anticipation operations. Jorion (2011) composes credit risk based on three elements: default risk, recovery risk and market risk. For the author, the default risk and the recovery risk can be managed, but market risk affects the entire system. Although the credit risk inherent in the activity of anticipating banks and factoring is not subject to elimination in its entirety, it can be minimized through efficient management. (Brito, Assaf & Corrar, 2009; Capelletto & Corrar,

2008; Dantas, Rodrigues, Rodrigues, & Capelletto, 2010; Palmuti & Picchiai, 2012; Schrickel, 1997; Silva, 2014; Souza, 2015).

Jorion (2011) points out three main drivers for determining credit risk: (1) the probability of default, (2) the credit exposure, and (3) the actual loss resulting from the default (it is the loss less what was recovered). When it comes to dealing in receivables, there is yet another element, which is the default probability of the original borrower of the obligation. In the case of banks this risk is managed directly with your customer. The bank evaluates the credit of those who will make the transaction of anticipation of the receivables. In the case of non-payment of the counterparty originating from the security, the bank charges the amount of the customer who made the anticipation.

Therefore, the bank does not merit the quality of the receivable that it takes as guarantee, since it has the right of return in the transaction. In the case of factoring this right of return is not yet legally well established, which may increase the focus of its risk analysis, leaving only the customer (as in banks) and also including the debtor originating from the security. In short, each institution, whether financial or not, can analyze the risk involved in discount operations in its own way (Katayama, 2003; Silva, 2014). Credit institutions need sound policies to measure and control such risks in order to avoid insolvency and financial success through profit (Capelletto & Corrar, 2008).

In addition to the intrinsic risk of the customer and the security that are involved in the negotiation, there is a macroeconomic or market risk. Hull (2015) points out that market risk is linked to the future movement of market variables. In the case of dealing in receivables, the market variables that may affect credit risk are: the basic interest rate represented by Selic and the general default level of the economy. Market risk sensitivity is the only one that can be tested because it does not depend on the individual credit model of each bank or financial institution. The correlation of the discount rate of receivables practiced by factorings and banks with market variables may be a sign of the complexity of the credit analysis models present in such entities. The more correlated with the lower market risk will be the weight that the risk of the individual analysis of the customer will have in the composition of the total credit risk.

In the case of banks, a lower correlation is expected because their models are able to assess the particularities of each customer or portfolio of customers with greater accuracy, which makes their model less susceptible to general fluctuations in the economy. Factoring is the opposite. A greater correlation with economic variables is expected because they do not invest in models as sophisticated as banks.

In the banking risk model, statistical programs are used to classify the customer companies according to their probability of default. Depending on the test result the company fits into a risk group. The credit concession is also tied to the statistical models used and the group in which the company fits. The model is more general and has greater accuracy (Gonçalves *et*. *al*., 2013; Palmuti & Picchiai, 2012).

In addition, banks often operate with larger companies that have a credit analysis performed by rating agencies, which can aid in the accuracy of risk models. In factoring, the analysis is done on an individual basis to each customer company and to each company responsible for the purchased security, since it is understood that each one of these companies has its peculiarities, its way of managing and its business perspectives. Risk classification is performed more flexibly by the factoring company manager. The decision to grant credit is more dynamic and directed to each situation (Diario de Comercio, 2016, Lima, Ensslin, & Montibeller, 2008; Wolf, 2008) .Eckert et al. (2015) even point out that factoring agencies are highly sought after by firms with cadastral restrictions because of their greater flexibility in granting credit.

The view of the risks involved in operations can directly affect the rate applied since it must absorb the risk of loss. In the rate used by banks are included the cost of purchased capital from third parties, the banking spread, the risk involved and the taxes. In factoring, the composition of the purchase factor includes the opportunity cost of equity, fixed and variable costs, operating taxes, collection expenses and risk and profit expectation (Anfac, 2017; Gonçalves *et*. *al*., 2013).

2.3 Related research

At the national level, the work related to factoring is more theoretical and hardly presents empirical data. For the most part, they cite what the activity is and how it can help companies that need working capital (Gonçalves, 2012; Silveira, 2010; Stabile, 2012). Those who present some empirical data use a questionnaire or case study to base their analyzes and seek to investigate aspects related to the management models of factoring companies or the reasons that send other companies to use their services (Wolf, 2008; Decker& Gomes, 2014; Rotta& Lima, 2006; Eckert *et al.,* 2015).

Among the outstanding theoretical works, Gonçalves (2012) and Silveira (2010) describe the origin of the activity and the history in Brazil. Wolf (2008), in turn, presents the activity and analysis procedures for granting credit used by a factoring.

Silveira (2010) and Wolf (2008) also cite the lack of interaction between accounting and factoring agencies. According to Silveira (2010), the accountant needs to know this modality better, taking into account the number of companies that use the services. This would avoid problems at the time of accounting and add knowledge. The author also points out that a small number of factorings are managed by accounting professionals. Wolf (2008), in his research, sought to present, through an interview and data collection, the practices adopted by a factoring to grant credit to its customer companies. The author suggested that the company studied use more the indexes and the accounting data of its customers for the analyzes performed.

Regarding the work related to credit risk, those developed by Brito and Assaf Neto (2008a), Brito and Assaf Neto (2008b) and Brito, Assaf Neto and Corrar (2009) can be highlighted. The authors sought to highlight risk classification models, with companies listed on BM&FBOVESPA. The data used were financial economic indexes, drawn from the Securities and Exchange Commission (CVM) or Economática® software, in order to classify the companies used in the samples in solvents and insolvent, and after analyzing the risk classification systems, to evaluate the risks of the credits granted to companies or propose procedures to measure such risks. The statistical technique used in the three studies was logistic regression, in which the dependent variable is categorical and assumes one of two possible outcomes (binary), such as: "failure or success", "solvent or insolvent".

The research conducted by Brito and Assaf Neto (2008a) aimed to develop a risk classification model to measure the credit risk of companies in the Brazilian scenario. The results indicate that the model of classification of such risks, developed by the authors, predicts default events one year in advance and with a good level of precision. The work also indicates that the financial statements have information that makes it possible to classify companies as probable solvent or probable insolvent.

The other study developed by the same authors, Brito and Assaf Neto (2008b), proposed a set of methods to evaluate the credit risk granted by banks to companies. A simple conceptual approach was used. The proposed model used a methodology based on the simulation of the explanatory variables of a credit scoring model - a method used by financial institutions to verify the default risk of the credit requesting company. The results obtained with the research show that the model proposed by the authors represents an option that allows for the risk of measured loan portfolios.

Finally, the research by Brito, Assaf Neto and Corrar (2009) examined whether default events of listed companies in the country could be predicted by a credit rating system based on accounting indices. The proposed system used cluster analysis to classify firms into risk classes. The variable used to confer the risk classification to the companies was the probability of default, foreseen in the credit risk model prepared by Brito and Assaf Neto (2008a). The system assigned annual ratings to companies. Next, risk migration matrices were generated. The results demonstrate that the risk classification system developed shows the risk of insolvent companies prior to the year of default. Most of these companies were classified in the worst risk classes or showed migrations to lower classes in the years after the default.

In theoretical terms, this work can contribute with empirical evidence on the difference in the behavior of the rates charged by banks and factoring in receivables discount operations. As previously mentioned, some works, such as Stabile (2012) and Eckert et al. (2015), point out advantages and disadvantages of operating with factoring agencies, but without a relevant

empirical contribution. This research seeks to show with data that the cost of raising discount receivables operations in factoring agencies is much higher than in banks and that this cost may be linked to the more rudimentary and flexible credit risk analysis model used.

3 RESEARCH DESIGN

3.1 Collection and organization of data

In order to satisfy the aim proposed in this study, a quantitative approach was chosen, with a descriptive character, using the average rates charged by banks and factoring in the negotiation of receivables between the years 2012 and 2016. The data of the factoring agencies were withdrawn from the website of National Factoring Association (ANFAC), while bank variables were obtained from the website of the Central Bank of Brazil (BACEN).

The historical series of the purchase factor factoring was found in the magazine Fomento Comercial, edition number 102 - referring to the months of October, November and December of 2016 - present on the Anfac website. No adjustment was necessary in the factor, since it represents the general costs and the profit margin of the raising of such companies.

The bank variables, found on the Bacen website, were obtained in "interest rate". "Credit transaction interest rate" was selected, then "history after 01/01/2012" was selected. The next field has been changed to legal entity and the modality for trade acceptance bill discount and later check discount. This was done, since the average factor of factorings had already been obtained by joining the purchase of trade acceptance bills and checks and also on a monthly basis, while at the bank rate it was necessary to make the sum of the rate applied to trade acceptance bills and checks and calculate the monthly rate since it was found in weekly.

The rates on the Central Bank's website were arranged in intervals of days. One period of days differed from the other by the exclusion of the last business day and the sum of the subsequent business day. As some days were repeated in the periods, the intervals of time were separated, so that they could be distinct, but without omitting any day. The sum of the bank rates corresponding to each selected period was then calculated and divided by the number of banks in the time interval of the period, since the number of banks disposed in the website changed in the intervals of days. Some institutions did not operate in the modalities in the referred periods or did not provide information to the Central Bank.

Subsequently, they were grouped roughly to represent the weeks of each month. After that, the group rates were added in periods, which represented the weeks, and divided by the number of weeks of each month. The procedure was applied first for the trade acceptance bill discount and later for the check discount. Finally, adding the rates of trade acceptance bills and checks, since the periods were identical, and dividing them by two, the average monthly rate of the banks was obtained.

This average rate represents the average of the rates charged by all banks in the periods of interstices analyzed. Since within this average there are banks with very different characteristics and this could influence it, a sensitivity analysis was made only with the rates charged by the six largest banks in the country (to perform the sensitivity analysis): These are: Banco Bradesco, Banco do Brasil, Banco Santander, Caixa Econômica Federal, HSBC Bank Brasil (this one with data prepared until October 2016, was later incorporated into Banco Bradesco) and Itaú Unibanco. The process of data organization was the same applied at the rate of all banks.

In order to fulfill the research goal, secondary data were also obtained, in order to analyze the reflection of the different rates applied in the negotiation of the receivables and in the risk models applied. The secondary data were the SELIC rate and the default indicator, both obtained on the Central Bank website. No adjustment was required at these rates.

The SELIC rate was caught in "interest rate", "daily Selic rate"; the "accumulated factors" option was selected and then the monthly option. The default indicator was found on the "economy and finances" tab, in the "time series" guide, the "Access to the SGS (Time Series Management System)" option was selected, then accessed "Delays and defaults", then

"Default", and subsequently "Portfolio Default - Legal Entities - Total". The series was consulted, then the desired period was selected and finally the values were consulted.

It should be noted that the rates used by both factoring and banks are the general average effective rates, that is, the credit risk of each customer is not considered. This is a limitation of the work, since the rates charged between the best and worst customers may not vary in a homogeneous way.

3.2 Statistical tests

For the data analysis, three main statistical tests were used: the parametric means test of independent samples to verify if the differences between the rates charged are statistically significant, the D-Cohen statistic to calculate the size of the effect of the differences between the rates and the correlation of Pearson to verify the relation of the rates with other economic measures, in order to raise possible justifications for the results found.

The first test performed in the work was the means of independent samples. The first step of this test was to verify the normality of the data to define the type of test applied: parametric or non-parametric. The results (not shown) of the normality tests showed that the data presented normal distribution, therefore, it was opted to use the parametric means test (which follow the parameters of the normal distribution). The second step of the means test was to analyze the homogeneity of the variance between the samples of rates. In this case, the hypothesis of homogeneity was rejected and it was necessary to use a correction in the test that leaves it more conservative, since it increases the standard error and the size of the non-rejection interval of the null hypothesis (of non-statistical significance).

In order to verify the size of the effect on the variables, the D statistic of Cohen (1998) was applied. According to the author, this statistic portrays the degree to which the phenomenon is present in the population or the degree to which the null hypothesis is false. Cohen (1998) points out that the larger the effect size, the greater the degree to which the phenomena studied is manifested, and if the null hypothesis is not rejected or the D statistic contains zero within its confidence interval is equal to say that the effect is null. The formula for calculating the D statistic uses the mean of the populations and the standard deviation set between them. This relationship can be expressed as follows for a non-directional (two-tailed) effect:

$$\mathcal{D} = \frac{|m_A - m_B|}{\sigma} \qquad \text{Equation (1)}$$

On what:

m_A= Mean of population A.

m_B= Mean of population B.

σ = Population set standard deviation.

Finally, a correlation analysis of the bank rates and the ANFAC factor with economic indicators of the basic economic rate and of default was made. This analysis was made with the purpose of justifying the differences found between the rates based on their relationship with the economic indicators.

The tests were performed with the aid of STATA13® software. The description of the variables used in the work is shown in Figure 1.

Variable	Description	Source
Anfac Factor	Indicator that indicates the reference price of purchase of credits for the factoring (mere parameter). The composition of the factor takes into account the items: cost - opportunity of equity, fixed costs, variable costs, operating taxes, collection expenses and risk / profit expectations. In the composition of the factor calculation, ANFAC uses as an indication of the cost - opportunity the Bank Deposit Certificate - CDB rate (security issued by a financial institution of 1 st line, with interest rate fixed for 30 - day periods).	ANFAC
Bank Rate	They correspond to arithmetic averages weighted by the values of the operations contracted in the five business days mentioned in each presented period. These rates represent the average effective cost of credit operations to customers, composed of interest rates effectively practiced by financial institutions in their credit operations, plus tax and operating charges on operations.	BACEN
Selic Rate	Adjusted average rate of daily financings determined in the Special Settlement and Custody System (Selic) for federal securities. For the purpose of calculating the rate, the daily financing of the transactions recorded and settled in the Selic itself and in systems operated by clearing houses or providers of clearing and settlement services (Article 1 of Circular No. 2,900, dated June 24, 1999, with the amendment introduced by article 1 of Circular No. 3,119, of April 18, 2002).	BACEN
Default Indicator	Percentage of the loan portfolio of the National Financial System with at least one installment with arrears greater than 90 days. Includes operations contracted in the free credit segment and in the targeted credit segment.	BACEN

Figure 1. Description of the variables used in the research

4 PRESENTATION AND ANALYSIS OF RESULTS

4.1 Descriptive Statistics

The monthly data of five years were used, from January 2012 to December 2016, totaling sixty observations for each variable analyzed. The average of the rates indicates a higher value of the ANFAC factor compared to the bank rate, which was already expected due to a higher risk in factoring activities. The maximum and minimum values of the two main variables also differ, but within an interval close to 1 percentage point. The standard deviation of the ANFAC factor was much higher than the bank rate. This greater deviation denotes a greater dispersion of the factoring rate within the analyzed period. It may be an indication of the malleability in the credit granting process of factoring agencies, since the rate rises and falls within a larger range, that is, it is a more flexible rate than the rate of banks that change within a smaller range over time.

Table 1
Statistics of the variables used in the research

Variables	Nº of Observations	Average	Standard Deviation	Minimum	Maximum
ANFAC	60	4.04	0.40	3.56	4.69
BACEN	60	2.68	0.28	2.34	3.45
SELIC	60	0.87	0.20	0.49	1.22
DEFAULT	60	2.35	0.46	1.80	3.61

The next analysis was to verify the trend of the behavior of the two rates within the analyzed period. This is shown in Figure 2. It can be seen from the graph that the ANFAC factor is constantly higher than the banks rate. The variation in rates, on the other hand, showed that banks had a more radical increase in the rate at the beginning of 2016. This may be related to some economic deterioration in the period, such as an increase in the default rate that did not have such a radical reflection on factoring because they already operate in a larger default environment. The work done by Dodl (2006) also presents a graph with some credit modalities, including the variables ANFAC factor and BACEN rate, in comparison to the SELIC rate.

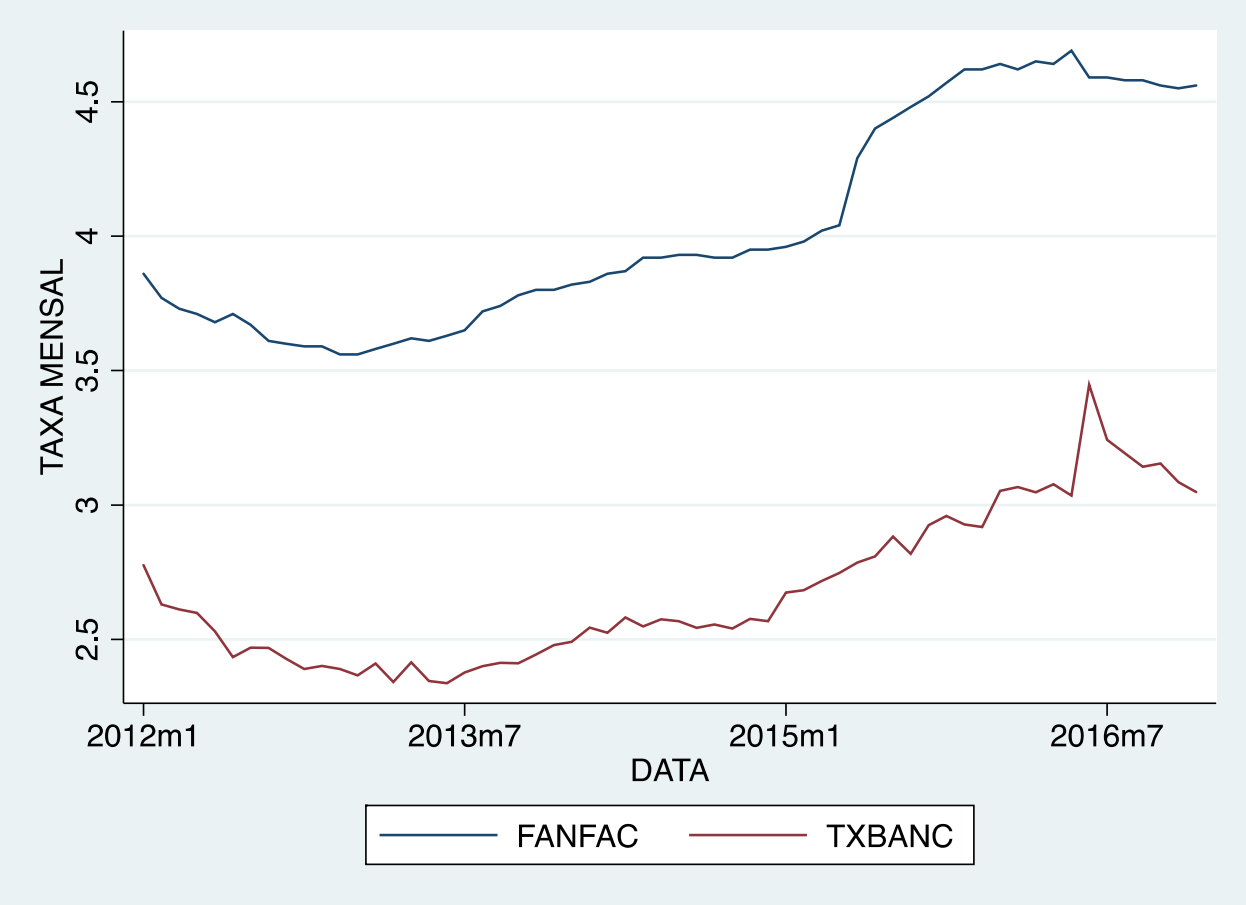

Figure 2. Evolution of the monthly average rates over time

The data used in this work refer to January 2001 to November 2004. According to Dodl (2006), obtaining the discount of trade acceptance bill in the banks has a lower cost to the customer company. However, the use of factoring services can be explained by the fragility of management controls in credit contracting companies, which increases credit risk and hampers the process of raising funds with banks. In addition, the activities provided by the factoring agencies include a series of market analyzes. They contribute to the management of the companies requesting the credit.

4.2 Results of statistical tests

The next step of the research was the analysis of the statistical tests. The first test was averages. Their results are set forth in Table 2.

Table 2
Results of the test of averages between the rates analyzed

Variables	Obs	Average	Standard Error	Standard Deviation	[95% Confidence Interval]	
ANFAC	60	4.036333	0.051043	0.395380	3.934196	4.138471
BACEN	60	2.681918	0.036315	0.281295	2.609252	2.754584
Combined	120	3.359126	0.069474	0.761052	3.221560	3.496692
Dif	60	1.354415*	0.062644		1.230226	1.478605

Note. * denotes statistical significance at a level of P-value <1% bi-flow. The statistical test used was the test for independent samples with control of variance homogeneity.

Based on the results, it can be seen that the average ANFAC factor is significantly higher than the average rate charged by the banks. It should be noted that both rates are effective and already include all the costs of the discount operation, such as the rates charged by the institutions. The difference obtained between the average rates was 1.35% and its range of variation is relatively small, according to the standard error obtained. Based on the data obtained, it is inferred that the rates charged by the factorings reflect their risk environment and that they transfer the cost directly to the borrower because the rates charged are significantly higher.

The second test was the Cohen D, in order to evaluate the magnitude of the difference between the variables. According to Cohen (1988), the effect size is classified as small, medium and large. A statistic with D <0.20 has a small effect; between 0.21 <D <0.79 an average effect and D> 0.80 a large effect. This research has an effect of 3.95. Therefore, it has a large distribution pattern in relation to the Cohen D test, as observed in Table 3.

Table 3
Effect size test results

Effect Size	Estimate	[95% Confidence Interval]	
Cohen's Test (d)	3.947438	3.305338	4.583145

Note. According to Cohen (1988), effect size has the following average distribution pattern in relation to the D-Cohen result: a statistic D <0.20 represents a small effect; between 0.21 <D <0.79 an average effect and when it is D> 0.80 a large effect.

The evidence provided by the Cohen (1988) test corroborates the statistical significance of the differences and indicates that the size of the difference between the rates is also economically significant for the borrower, that is, the criteria adopted in the granting of credit affect relevantly the borrowers in anticipation of the factoring agencies compared to the borrowers in the anticipation of the banks.

These results corroborate those of the theoretical works of Stabile (2012) and Eckert et al. (2015). The cost of raising funds through the discount of receivables in factoring agencies is significantly and economically higher than in banks. Stabile (2012) points out that among the reasons that generate this difference are the cost of malleability, which makes the operation more expensive and not always advantageous for those who need to raise funds. Eckert et al. (2015) also follow the same line and point out, based on the results of their research that companies, which need to finance their working capital, do so in factoring, mainly because they have cadastral restrictions, which makes such operations impossible in banks. In addition, the researchers point out that respondents also choose factoring agencies because they have a low operating limit on banks and in factoring the process is less bureaucratic.

In order to try to understand the possible reasons why there are significant differences between rates, a correlation analysis of the rates used with some economic variables, such as the basic rate of the economy and the default indicator (Table 4), was made.

Table 4
Correlation between variables

	ANFAC	BACEN	SELIC	DEFAULT
ANFAC	1			
BACEN	0.9392*	1		
SELIC	0.9261*	0.878*	1	
DEFAULT	0.7478*	0.8139*	0.5736*	1

Note. * denotes statistical significance at a level of P-value <1% bi-flow.

The results obtained with the correlation test provide some inferences about the relation of the rates charged with other indicators. The first aspect, which can be observed, is the higher correlation of the ANFAC factor with the SELIC (0.9261) than the rate charged by the banks with SELIC (0.878). This may be an aspect related to the malleability and sophistication of credit risk analysis models. A higher correlation with SELIC is an indication that the factoring rate follows more the global economic picture (market risk) than the rate charged by banks, which depends more on their own credit analysis model. This was also clear in the correlation of the rates with the default indicator. The ANFAC factor is less correlated with default (0.7478) than the banks rate (0.8139). This higher correlation indicates that bank rates vary more closely from default than the ANFAC factor and may be a reflection of the fact that banks transfer this cost more quickly and more accurately to their rates, which does not occur in factoring agencies, for undertaking a more flexible and less bureaucratic process of credit analysis (Eckert *et al.,* 2015).

4.3 Sensitivity analysis

Finally, a sensitivity analysis was made with the rates charged by the six largest commercial banks in Brazil (Bradesco, Banco do Brasil, Banco Santander, Caixa Econômica Federal, HSBC Bank Brasil and Itaú Unibanco). As the average bank rate involved all banks with trade acceptance bills and check discount transactions, it would be possible that, by involving banks with diversified operations, cheaper and more expensive rates could distort average results. In this way, the main banks (those with the largest customer base, which increases the probability of being searched for this type of operation) were selected to perform a sensitivity analysis with their average rates. The results of this analysis are shown in Table 5.

Table 5
Sensitivity analysis results

Variables	Obs	Average	Standard Error	Standard Deviation	[95% Confidence Interval]	
ANFAC	60	4.036330	0.051043	0.395380	3.934196	4.138471
BACEN	60	2.572373	0.046371	0.359190	2.479585	2.665162
Combined	120	3.304353	0.075375	0.825694	3.155103	3.453604
Dif	60	1.463960*	0.068962		1.327397	1.600523

Note. * denotes statistical significance at a level of P-value <1% bi-flow. The statistical test used was the t test for independent samples with control of variance homogeneity.

On the basis of the results, it can be seen that there was a slight increase in the differences between the rates charged when only large banks were taken into account, that is, the statistical significance remained the same.

4.4 Evaluation and implications of results

The results obtained by the work confirm that there is a significant and relevant difference between the rate charged by factorings (ANFAC factor) and the average rate charged by the banks in the operations of anticipation of receivables. Among the possible factors that explain this difference is the level of sophistication of risk analysis models employed by factoring agencies and banks. At the time of anticipation of financial resources, banks and factories analyze customer companies, credit borrowing companies and marketable securities in divergent ways. Companies that need credit and have cadastral restrictions are more difficult to operate with banks and end up using factorings as an alternative. This aspect was pointed out in the research by Eckert et al. (2015). On the other hand, the financial institutions do not usually examine the debtor companies because they consider that this analysis has already been performed by the company that gives the security to discount. Factorings also check the credit risk, also based on the debtor of the security, which increases the scope of its service compared to commercial banks.

Works such as those by Wolf (2008) and Wloch (2006) also highlight some differences between activities and emphasize that the factoring agency works together with its customers, providing a series of non-credit services, which makes both business, and this could bring a reflection on the rates charged. According to Dodl (2006), companies initially seek the working capital they need, but the differential of factoring services are in the long term.

Finally, another point that can be considered as a reason for the difference in the applied rates is the right or not to the factoring return (if the debtor does not pay the agreed security, the creditor institution has the right, or not, to collect the amount negotiated from its customer company). In cases in which the factoring company cannot return the values of the receivables with its customer companies, it will have to assume as loss the receivable acquired and not paid by the debtor company. On this subject, there is a lack of specific legislation regulating such activity, which has opposite positions in both jurisprudence and doctrine. In financial institutions, the theme is consonant. Goulart & Paulo (2011, p. 296) cite that, "the bank has direct return against the cedent of the security in the event of default." Thus, if the debtor does not fulfill his obligation of discharge, the financial institution charges the company that made the discount of the security. It is guaranteed, therefore, that there will be no loss in the discounted security.

All of these factors may be the driving force behind the differences found between rates in this research. However, despite these motivational factors and the role that factorings have as a mechanism of development in a more malleable economy and in the midst of small companies (Batista & Junior, 2012; Silveira, 2010), the rates charged by them reflect greater risk. For whom need to anticipate their receivables, it is more economically feasible to look for a commercial bank because they have a lower effective rate. If the customer does not have the necessary credit score or has some restriction that prevents the assignment of bank credit the solution is to anticipate the receivables in a factoring.

5 CONCLUSIONS

This research aimed to analyze the difference between the average rates used by commercial banks and factoring companies in the negotiation of corporate receivables in the Brazilian scenario. The analyzed period comprises the last five years and it was analyzed how different the rates are, as well as the possible explanations for the phenomenon observed.

The results show that the main variables, ANFAC factor and bank rate, follow a similar trend of increase or decrease over the periods. However, their values differ markedly. The ANFAC factor of factorings, which is the average rate charged to make the anticipation of receivables, is significantly higher than the effective average rate charged by the banks, which can be explained by the risk model applied and the peculiarities of the two activities. Jorion

(2011) and Hull (2015) point out that there are several types of models to analyze credit risk and that each model must be adapted to the risk appetite of the company that analyzes it. Due to the differences between the forms of financing, regulation and even the design of its activities, banks and factoring companies are likely to have different models. The banking risk model is generally quite technological and more accurate, while the factoring model is more malleable and less bureaucratic, which allows it to be more targeted to each customer business situation, but at a higher rate. This aspect was reflected in the correlation analysis, which showed a higher ratio of banks to default and lower SELIC, compared to the ANFAC factor rate, which showed the opposite and showed a higher correlation with the base rate and lower with default.

In the market, a reflection of this significantly higher rate charged by factorings is that companies end up using their services in the second instance or when they have some cadastral restriction that prevents them from operating with banks (Stabile, 2012). With this, the risk involved in the factoring operation ends up being superior to the banking one and must be passed on the applied rate.

One limitation of this research is that it was not possible to deepen the composition of the applied rates, verifying cost, risk and profit of each institution. Another limitation was the small amount of work found with related topics. As a suggestion, other research may be more focused on the rates charged with more advanced econometric models to try to discover novelties in the behavior of such rates. Another point that can be deepened is a study more directed to a specific region or sector of the market that seeks to assist companies in the management of their business.

REFERENCES

Anjos, L.C.M., Miranda, L.C., Silva, D.J.C.,& Freitas, A.R.F. (2012). Uso da Contabilidade para Obtenção de Financiamento pelas Micro e Pequenas Empresas: Um Estudo a Partir da Percepção dos Gestores. *Revista Universo Contábil,* 8(1), 86-104.

Araújo, V.S. & Machado, M.A.V. (2007). Gestão do Capital de Giro de Pequenas Empresas. *Rev. Cent. Admin. 13*(1), 48-61.

Associação Nacional de Fomento Comercial (ANFAC). (2017). Recuperado em 7 fevereiro, 2017, dehttp://www.anfac.com.br/v3/

Banco Central do Brasil (BACEN)(2017). Recuperado em 7 fevereiro, 2017, de http://www.bcb.gov.br/pt-br/#!/home

Batista, R. S., & Junior, J. F. B. R. (2012). A importância do *Factoring* para pequenas e médias empresas. *Veredas Favip - Revista Eletrônica de Ciências, 5*(1), 75-85.

Brito, G. A. S., Assaf, A. A., Neto & Corrar, L. J. (2009). Sistema de classificação de risco de crédito: uma aplicação a companhias abertas no Brasil. *Revista Contabilidade e Finanças, 20*(51), 28-43.

Brito, G. A. S. & Assaf, A. A., Neto (2008a). Modelo de classificação de risco de crédito de empresas. *Revista Contabilidade e Finanças, 19*(46), 18-29.

Brito, G. A. S. & Assaf, A. A., Neto (2008b). Modelo de risco para carteiras de créditos corporativos. *Revista de Administração, 43*(3), 263-274.

Capelletto, L. R. & Corrar, L. J. (2008). Índices de risco sistêmico para o setor bancário. *Revista Contabilidade e Finanças, 19*(47), 6-18.

Cohen, J. (1988), *Statiscal Power Analysis for the Behavioral Siences* (2a ed.). New York: Lawrence Erlbaum Associates.

Cochrane, T. M. C. (2005, Julho 15). As empresas de *factoring* e as micro e pequenas e médias empresas: parceiras. *Jornal o povo*. Recuperado em 02 fevereiro, 2017, de http://www.planejamentotributario.ufc.br/

Dantas, J. A., Rodrigues, F. F, Rodrigues, J. M.,& Capelletto, L. R. (2010). Determinantes do grau de evidenciação de risco de crédito pelos bancos brasileiros. *Revista Contabilidade e Finanças, 21*(52).

Decker, S.R.F. & Gomes, M.C. (2014). Análise de Crédito Utilizando Mapas Cognitivos como Instrumento de Apoio ao Processo Decisório em uma Empresa de Factoring. *Revista Produção Online, 14*(3), 822-836.

Diário do comércio (2016). *Crise abre oportunidade para empresas de factorin*g*. Restrições de crédito tem levado gestores a recorrer à modalidade*. Recuperado em 02 fevereiro, 2017, de http://www.diariodocomercio.com.br/noticia.php?tit=crise_abre_oportunidades_para_empresas_de_factoring&id=172753

Dodl, A. V. B. (2006). *A atividade de factoring no mercado brasileiro*. Dissertação de Mestrado, Universidade Federal do Paraná, Curitiba, PR, Brasil.

Eckert, A.,Rizzon, F., Mecca, M.S.,&Biasio, R. (2015). Motivações, Vantagens e Desvantagens da Captação de Recursos Financeiros em Factoring: Um Estudo de Caso. *Revista Interdisciplinar Científica Aplicada, 9*(2), 61-78.

Falcão, G. J. (2001*). Legislação que regula as empresas de fomento mercantil ("factoring") no Brasil* (p. 4). Recuperado em 25 março, 2017, de http://bd.camara.gov.br/bd/discover

Gitman, L. J. &Zutter, C.J. (2012). *Principles of Managerial Finance*(13aed.).Boston: Prentice Hall.

Gonçalves, E. B., Gouvêa, M. A.,&Mantovani, D. M. N. (2013). Análise de risco de crédito com o uso de regressão logística. *Revista Contemporânea de Contabilidade, 10*(20), 139-160.

Gonçalves, G. de A. (2012). *Factoring como alternativa fonte de recursos para o capital de giro da empresas*. Graduação em Ciências Contábeis, Faculdade Cearense, Fortaleza, CE, Brasil.

Goulart, A. M. C., & Paulo, E. (2011). *Factoring*. In I. S. Lima, G. A. S. F. de Lima, &R. C. Pimentel (Org). Curso de Mercado Financeiro (Cap. 9, pp 289-315). São Paulo: Atlas.

Hull, J. C. (2015). *Risk Management and Financial Institutions* (4aed.).New Jersey: John Wiley& Sons Inc.

InternationalAccounting Standards Board (IASB) (2014). International Financial Reporting Standards (9). Financial Instruments.

Jorion, P. (2011). *Financial Risk Manager Handbook*(6aed.).New Jersey: John Wiley & Sons Inc.

Katayama, D. M. (2003). *Modelos de Crédito Aplicados a Empresas de Factoring.* Graduação em Administração de Empresas, Universidade de São Paulo, São Paulo, SP, Brasil.

Lei nº 9.430/96, de 27 de Dezembro de 1996 (1996). Dispõe sobre a legislação tributária federal, as contribuições para a seguridade social, o processo administrativo de consulta

e dá outras providências. Brasília, DF. Recuperado em 5 janeiro, 2017, de http://www.planalto.gov.br/ccivil_03/leis/L9430.htm

Leite, L. L. (2011). *Factoring no Brasil* (12a ed., pp. 221-225). São Paulo: Atlas.

Lima, M. V. A., Ensslin, L.,&Montibeller G., Neto (2008). Modelo multicritério para gerenciamento de risco por uma empresa de *factoring*. *Revista de Economia e Administração, 7*(3), 328-340.

Palmuti, C. R. & Picchiai, D. (2012). Mensuração do risco de crédito por meio de análise estatística multivariada. *Revista Economia, 26*(2), 7-22.

Rotta, B.L. & Lima, J.F. (2006). O Perfil das Empresas de Factoring na Cidade de Toledo (PR). *Revista de Ciências Empresarias da UNIPAR, 7*(2), 185-194.

Santos, C. dos (2014). *Proposta de planejamento estratégico para uma pequena empresa de Factoring de São José – SC.* Graduação em Administração, Centro Universitário de São José, São José, SC, Brasil.

Serviço de Apoio às Micro e Pequenas Empresas de São Paulo (SEBRAE-SP). (2014). *Causa Mortis: o sucesso e o fracasso das empresas nos primeiros cinco anos de vida*. Recuperado em 08 Janeiro, 2016, de http://www.sebraesp.com.br/arquivos_site/biblioteca/EstudosPesquisas/mortalidade/causa_mortis_2014.pdf

Serviço de Apoio às Micro e Pequenas Empresas de São Paulo (SEBRAE-SP). (2010). *Doze anos de monitoramento da sobrevivência e mortalidade de empresas*. Recuperado em 08 Janeiro, 2016, de http://www.sebraesp.com.br/arquivos_site/biblioteca/EstudosPesquisas/mortalidade/mortalidade_12_anos.pdf

Schrickel, W. K. (1997). *Análise de Crédito: Concessão e Gerência de Empréstimos* (3a ed., p. 25). São Paulo: Atlas.

Securato, J. R. (2002). *Crédito: análise e avaliação do risco*. São Paulo: Saint Paul.

Securato, J. R. & Famá, R. (1997).Um procedimento para a decisão de crédito pelos bancos. *Revista de Administração Contemporânea, 1*(1).

Silva, José Pereira. (2014). *Gestão e análise do risco de crédito* (8a ed.). São Paulo: Atlas.

Silveira, M. da (2010). *Como as empresas de Factoring podem funcionar como apoio ao crescimento das Micros e Pequenas Empresas brasileiras*. Graduação em Ciências Contábeis, Universidade Federal de Santa Catarina, Florianópolis, SC, Brasil.

Sindicato das Sociedades de Fomento Mercantil *Factoring* do Estado de São Paulo (SINFAC SP). (2010). *O que é Factoring?*. Recuperado em 18 Janeiro, 2017, de, http://www.sinfac-sp.com.br/v2/content.php?id_page=27

Souza, J. M. de (2015). *Análise das Informações sobre o Risco de Crédito: Estudo de cão do Banco Santander*. Graduação em Ciências Contábeis, Universidade de Brasília, Brasília, DF, Brasil.

Stabile, H. H. (2012). Factoring: Um Estudo Desse Mecanismo de Apoio às Pequenas e Médias Empresas. *Caderno de Administração Universidade Estadual de Maringá, 20*(2), 38-50.

Taylor, M. (2013). *Global Banks and Financial Intermediaries.* InG. Caprio Jr. (Org.) Handbook of Key Global Financial Markets, Institutions and Infrastructure (Cap. 33, pp. 357 – 366). London: Elsevier.

Wloch, A. P. (2006). *A utilização dos serviços de factoring na região de Tubarão-SC: um estudo de caso*. Pós-graduação em MBA Gestão Empresarial, Universidade do Extremo Sul Catarinense, Tubarão, SC, Brasil.

Wolf, F. M. (2008). *As práticas de análise para concessão de crédito numa empresa de fomento mercantil (factoring)*. Graduação em Ciências Contábeis, Universidade Federal de Santa Catarina, Florianópolis, SC, Brasil.

Revista Catarinense da Ciência Contábil,
ISSN 1808-3781 - eISSN 2237-7662,
Florianópolis, SC, v. 17, n. 51, p. 39-55,
May/Aug. 2018

DOI: 10.16930/2237-7662/rccc.v17n51.2626
Available at http://revista.crcsc.org.br

CORRUPTION AND MARKET VALUE: EFFECTS OF THE LAVA JATO OPERATION ON THE BRAZILIAN STOCK MARKET

EDUARDO CARVALHO CORREA DE ARAÚJO
M.Sc. in Accounting Sciences. Fucape Business School. ***Address:*** *Rua da Assembleia, 100, 3º Andar | Centro | Rio de Janeiro/RJ | Brazil.*
E-mail: *eduaraujo00@yahoo.com.br*

VICTOR RANGEL DOS SANTOS RODRIGUES
B.S. in Economic Sciences. Fucape Business School. ***Address:*** *Av. Fernando Ferrari, 1358 | Boa Vista | Vitória/ES | Brazil.*
E-mail: *victorrangelrodrigues@gmail.com*

DANILO SOARES MONTE-MOR
PhD in Business and Accounting Sciences. Fucape Business School.
Address: *Av. Fernando Ferrari, 1358 | Boa Vista | Vitória/ES | Brazil.*
E-mail: *danilo@fucape.br*

ROGÉRIO DIAS CORREIA
PhD in Law. Fucape Business School. ***Address:*** *Av. Fernando Ferrari, 1358 | Boa Vista | Vitória/ES | Brazil.*
E-mail: *rogeriocorreia@fucape.br*

ABSTRACT

This paper aims to identify the effects of the disclosure of corruption events on the market values of companies listed on the Brazilian Stock Exchange. For this purpose, we applied the event studies methodology to evaluate the influence of exposing the phases of one of the most extensive Brazilian anti-corruption operations - the Lava Jato Operation - on the cumulative abnormal return of shares, both of the companies cited in the investigations (direct involvement) and of those listed in the same segments as the cited companies. Results indicate that the Lava Jato Operation reduced the market values of the companies directly involved in the corruption scandals above market variations. For the other companies in the concerned segments, there was a positive effect on the cumulative abnormal returns. Such results suggest that the onset of anti-corruption operations such as the Lava Jato Operation has the potential to reduce pricing differences that exist between companies that directly participate in fraudulent contracts and other companies in the same segments. This pricing adjustment may be associated with the correction made by the market due to losses in competiveness caused by unfair competition.

Keywords: Corruption. Market value. Lava Jato Operation.

1 INTRODUCTION

Brazilian newscasts have often shown corruption events in various spheres and hierarchy levels of public power, as well as in contracts that involve the public and private sectors. Such news reports are aligned with the increase in the perception of corruption by Brazilians, to Brazil's decline in the Corruption Perception Index (CPI), as well as the outbreak of anti-corruption operations such as the Lava Jato Operation. This is one of the most extensive

Submission on 01/31/2018. **Revision on** 04/13/2018. **Accepted on** 05/03/2018.

Brazilian anti-corruption operations and has enabled the discovery and dismemberment of various corruption schemes throughout the country, which count on the participation of leading politicians and prominent businesspeople and involve billions of Reais (Polícia Federal, 2016).

In the literature on the subject, researchers investigate the effects of corruption on economic growth by analyzing factors such as investments (Mo, 2001), transactional costs and market efficiency (Méon & Weill, 2010), and governmental policies (Mauro, 1996; 1997). The conclusions are still divergent: some results suggest that corruption reduces the investment level and economic growth due to the increase in market inefficiency and uncertainty (Mauro, 1996; Ionescu, 2014), while other studies suggest that the corruption effects may be adverse in different economies depending on specific institutional/socioeconomic conditions and factors (Blackburn, Bose, & Haque, 2011; Wang & You, 2012).

The study by Méon and Sekkat (2005), for example, shows that corruption's adverse effect on investments and economic growth is strengthened by political violence, government inefficiency, and weak legal institutions. Méon and Weill (2010), on the other hand, suggest that the effects of corruption are less perverse in countries with less developed institutions. Also, the authors noted that, in cases of dysfunctional and inefficient institutions, corruption might even be linked to a relative increase in efficiency because, in such extreme cases, the damage caused by bureaucracy and slowness of the institutions outweigh the corruption-related losses. In other words, corruption appears to be a less costly, albeit illegal, solution for business growth (Acemoglu & Verdier, 1998; Blackburn et al., 2011). In such scenarios, fragile legislations and bureaucratic, as well as institutional obstacles end up creating perverse incentives for economic agents.

However, it is unclear how the disclosure of corruption events influences the market values of corrupt and non-corrupt companies in contexts where fraudulent contracts hurt competition fairness and interfere with competitiveness levels. This paper aims to contribute to this debate by identifying the effects of disclosing corruption events on the company market values.

Regarding corruption effects on the financial market, some results suggest that corruption reduces company values through inefficient investments for those involved in fraudulent contracts (Lee & Ng, 2006). In this case, part of the funds invested is diverted toward corrupt public institutions and officials as bribes (Fisman & Svensson, 2007). The misuse of such resources increases the costs of products and services inherent to the business activities, functioning as a "tax" that introduces uncertainty and risk on future profitability (Mauro, 1996; Méon & Sekkat, 2005; Fisman & Svensson, 2007).

On the other hand, the signing of contracts through political interference and fraud in public biddings, while imposing a competitive disadvantage to other companies in the market, provides favoritism and opportunities to the corrupting companies, since products and services are acquired in disregard with the best cost-benefit ratio (Lamdsdorff, 2003). In this case, corruption constitutes an obstacle to competition and provides the corrupting companies with a competitive advantage, which may generate pressure for an increase in the relative market value of such companies (Delavallade, 2006). However, it is unclear how the market creates prices and responds to the disclosure of corruption events both for companies directly involved in corruption schemes and for those in the same segments which are indirectly involved because of competitive disadvantages.

To understand the effects of disclosing corruption events on the market values of the companies involved, we chose the Brazilian scenario in the midst of the facts established and disclosed by the Lava Jato Operation. Hence, the purpose of this paper is to identify the effects of the disclosure of corruption events on the market values of the companies listed on the Brazilian Stock Exchange.

In theoretical terms, this paper contributes to the literature by analyzing a specific corruption scenario outlined by contracts between the public sphere and private companies, in addition to previously related studies (Porta, Lopez-de-Silanes, Shleifer, & Vishny, 1998; Lee & Ng, 2006), which indicate that corruption may be linked to uncertainty in future events and the level of investor confidence. Additionally, this study differs from others when analyzing the effects of disclosing corruption events in the market values of directly involved companies as well as companies that are indirectly involved through market competitiveness. In practical

terms, this study indicates that the fight against corruption and the disclosure of facts established by the Lava Jato Operation resulted in a loss of market values for the cited companies and in an increase of market values for the other companies in the same segments. In other words, the disclosure of anti-corruption operations contributes to reducing the pricing discrepancies inherent to the corruption practiced by the companies involved in the respective operations. Such pricing adjustment may be associated with the corrections made by the market due to losses in competitiveness caused by unfair competition.

2 THEORETICAL BACKGROUND

2.1 Corruption and market value

In analyzing corruption effects on firm market values, Porta et al. (1998) and Lee and Ng (2006) suggested that high corruption levels in the public sector negatively influence the share price of publicly traded companies. Using variables such as ROE or ROA, profit margin, research and development spending, and dividend payment, they observed that the effect of corruption is robust in the depreciation of the Price to Book due to the reductions in expected cash flow and the prediction of future profits. Thus, at certain levels, corruption may be a problem for the economy, with the increase in uncertainty and market risk resulting in investment reduction with consequences for economic and social development (Mauro, 1996; Ehrlich & Lui, 1999; Lee & Ng, 2006).

Mauro (1996), for example, pointed out that corruption generates investment inefficiency, since part of the resources are directed at corrupt public institutions and servants through bribes, which increases the cost of public products and services necessary for the business activities, thus functioning as a "tax" that introduces uncertainty and risk about future events (Mauro, 1996; Méon & Sekkat, 2005; Fisman & Svensson, 2007).

O'Toole and Tarp (2014) emphasized the importance of investment efficiency because it is directly related to economic growth and the marginal product of the invested capital. In a study on corruption and investment efficiency in developing countries, it was found that the effect of corruption is negative. It mainly affects the small and medium-sized companies, which are generally the most dependent on public products and services and have a lower payment capacity.

In line with the previous studies, Everhart, Martinez-Vazquez, Martinez-Vasquez, and Mcnab (2003) observed that corruption has the effect of reducing the efficiency of the public and private sectors, once it allows people to assume relevant positions in various spheres of power with diverse objectives or without the required competencies to support the promotion. In such unstable environments, returns on investments are harder to predict, which affects decisions about private investments, with negative consequences on long-term economic and sustainable development. In addition to reducing investment efficiency, the signing of contracts through political interference and fraud in public biddings imposes a competitive disadvantage to the other companies in the market, since products and services are acquired in disregard of the best cost-benefit (Lambsdorff, 2003).

If, on the one hand, the adverse effects of corruption on investments and economic growth is evident, on the other hand, Méon and Weill (2010) suggested that they are less perverse in countries with less developed institutions. Also, the authors noted that in cases of dysfunctional and inefficient institutions, corruption might even be linked to an increase in relative efficiency. This is because, in such extreme cases, the damage caused by institution bureaucracy and slowness outweigh the corruption-related losses. In other words, corruption appears to be a less costly, albeit illegal, solution for business growth (Acemoglu & Verdier, 1998; Blackburn et al., 2011). In this scenario, bureaucratic and institutional obstacles end up creating perverse incentives for economic agents.

The paper by Méon and Weill (2010) tests two hypotheses. First, "Grease on the Wheels", which, in summary, defends that corruption may have beneficial effects on a country's productivity in cases of severe institution deterioration such as political violence, weakened Judiciary system, and inefficient public administration. Second, "Sand on the Wheels", which proposes corruption is perverse in all scenarios and its costs are higher even when a country's

institutions are weaker. Briefly, both hypotheses point to corruption as a factor of economic detriment in a context of strong and effective institutions. However, the first hypothesis states that in extreme cases of inefficiency, corruption may be beneficial, while the second presents corruption as an obstacle to growth independent of the scenario.

The results of Méon and Weill (2010) point, on average, to a non-rejection of the "Grease on the Wheels" hypothesis. That is, in countries with deteriorating institutional contexts, there are indications of marginal benefits of corruption. The authors emphasize, however, that such an interpretation is extreme and risky, and that a country that benefits from such effects may eventually fall into a future trap of inefficiency and mismanagement.

Under balanced conditions, in fact, the economy is always in a more fragile situation when its agents are submitted to excessive bureaucracy and experience corruption and political-institutional instability. The strengthening of institutions, of the political-economic environment, and the establishment of appropriate legal punishments for corruption crimes are, therefore, fundamental so that perverse incentives to economic agents are not created.

2.2 The Lava Jato Operation and the agency costs

According to the Brazilian Federal Police (FP) (Polícia Federal, 2016), the Lava Jato Operation is an anti-corruption and money laundering investigation that covers several mixed-economy and privately-owned companies accused of fraud in public biddings, money laundering, and bribery. In this scenario, the embezzlement of resources from Petrobrás, Brazil's main mixed-economy company, amounts to billions of dollars in contract fraud.

The first phase of the Lava Jato Operation was started by the Federal Police on March 17th, 2014, with the purpose of dismantling organizations that practiced crimes against the National Financial System, mainly the laundering of money resulting from contractual fraud and bribery. According to the Financial Activities Control Council (COAF) of the Brazilian Department of Treasury, the investigated groups registered atypical financial operations involving billions of Reais.

Such contractual relationships may be explored through the Agency theory, which analyzes commercial relations established using contracts between the principal and the agent. Such relations are susceptible to conflicts and require governance mechanisms that limit the behavior of the actors, evidencing the actions and obligations of the parties to reduce the conflict of interests between the principal and the agent. Legislations, mechanisms to reduce the informational asymmetry, rules for capital allocation, and remuneration and reward systems are used to mitigate risks and prevent self-interest actions with the purpose of assuring organization efficiency (Fama & Jensen, 1983; Brudney, 1985).

Such governance mechanisms, however, generate agency costs which may indirectly affect the company's expected profit due to high expenses associated with bureaucratic systems and with the control and inhibition of unwanted behaviors and actions. Nevertheless, omitting these mechanisms may imply an increased risk for investors, with direct impact on a company's capital costs. As verified by Porta et al. (1996), the differences and characteristics of legal systems and investor protection are relevant for reducing both agency costs and the risks associated with capital costs. In more corrupt regimes, insiders and controller blocks act with greater impunity, increasing market uncertainty and the need for protection mechanisms. Consequently, they generate higher agency costs.

Examples of problems involving such mechanisms may be given by the initial target of the Lava Jato Operation: Petrobrás, in which public agents were receiving bribes to facilitate the closing of overpriced public biddings. Others companies were also identified as participants in this corruption network.

Specifically, the actions of the Lava Jato Operation are divided into phases, which partly unfold from previous phases. The unfolding phases were included in this study because they are directly related to the investigations and the enforcement of legal warrants against companies or individuals involved in the frauds, thus indicating the continuity and progress of the Operation. Figure 1 shows a summary of the first phases of the Lava Jato Operation. One may obtain information about other phases from the website of the Brazilian Federal Police.

Phase	Date	Goal	Results	Main Targets
1st	March 1th, 2014	Disarticulate the illegal action by moneychangers who would use people and companies on behalf of third parties to commit crimes against the national financial system and money laundering.	FP enforces 81 search and seizure warrants, 18 preventive arrest warrants, 10 temporary arrest warrants, and 19 coercive conduction warrants.	Moneychangers.
2nd	March 20th, 2014	Investigation of the same crime category with focus extended to other moneychangers and the involvement of a former director of Petrobrás.	FP enforces 6 search warrants and 1 temporary arrest warrant.	Moneychangers, former Petrobrás Director Paulo Roberto Costa.
3rd	April 11th, 2014	Continuation of investigations from previous phases.	FP enforces 16 search warrants, 3 temporary arrest warrants, and 6 coercive conduction warrants.	Moneychangers.
4th	June 11th, 2014	Technical unfolding of the previous phases.	FP enforces 1 search warrant and 1 preventive arrest warrant.	Former Petrobrás Supply Chain Director Paulo Roberto Costa.
5th	July 1st, 2014	Enforcement of court orders.	FP enforces 7 search warrants, 1 temporary arrest warrant, and 1 coercive conduction warrant.	Partners of moneychanger Alberto Youssef and front companies that moved accounts in Switzerland.
6th	August 22nd, 2014	Technical unfolding of the previous phase.	FP enforces 15 search warrants and 1 coercive conduction warrant.	Companies linked to Paulo Roberto Costa.
7th	November 14th, 2014	Arrest of contractors and operators of the bribe distribution scheme involving illicit contracts with Petrobrás.	FP enforces 49 search warrants, 6 preventive arrest warrants, 21 temporary arrest warrants, and 9 coercive conduction warrants.	Presidents and executives of contractor companies.
8th	January 14th, 2015	Technical unfolding of the previous phase.	FP enforces 1 preventive arrest warrant.	Former Petrobrás International Director, Nestor Cerveró.
9th	February 5th, 2015	Investigate the bidding fraud scheme in Petrobrás and consequent distribution of bribes involving other boards of the company.	FP enforces 40 search and seizure warrants, 18 coercive conduction warrants, 3 temporary arrest warrants, and 1 preventive arrest warrant.	Operators of the corruption scheme.
10th	March 16th, 2015	Enforcement of court orders for the crimes of criminal association, false documents, passive corruption, active corruption, bidding process fraud, and money laundering.	FP enforces 2 preventive arrest warrants, 4 temporary arrest warrants, and 12 search and seizure warrants.	Former Petrobrás Service Director, Renato Duque, operators and beneficiaries of the scheme.
11th	April 10th, 2015	Investigation of criminal acts attributed to three groups of former political agents in the context of misappropriation of resources from Petrobrás and federal public agencies.	FP enforces 7 arrest warrants, 9 coercive conduction warrants, and 16 search and seizure warrants.	Politicians and former politicians.
12th	April 15th, 2015	Enforcement of court orders.	FP enforces 1 search and seizure warrant, 1 preventive arrest warrant, 1 temporary arrest warrant, and 1 coercive conduction warrant.	Accused of receiving undue advantages derived from fraud in Petrobrás contracts.
13th	April 21st, 2015	Technical unfolding of the previous phase.	FP enforces 4 search and seizure warrants, 1 coercive conduction warrant, and 1 preventive arrest warrant.	Financial operators that acted on contracts signed by contractors with Petrobrás.
14th	June 19th, 2015	Expand the investigation into crimes of cartel formation, biddings fraud, corruption, misappropriation of public funds, and money laundry regarding two large national and international contractors.	FP enforces 8 preventive arrest warrants, 4 temporary arrest warrants, 38 search warrants, and 9 coercive conduction warrants.	Executives, contractors, and their controlled contractors.
15th	July 2nd, 2015	Investigate the receipt of illicit benefits within the international board of directors of Petrobrás	FP enforces 4 search warrants and 1 preventive arrest warrant.	Former Petrobrás International Director Jorge Zelada
16th	July 28th,	Investigate the cartel formation and the prior	FP enforces 23 search	President of state-

	2015	bidding adjustments, as well as the undue payment of financial advantages to employees of state-owned Eletronuclear.	warrants, 2 temporary arrest warrants, and 5 coercive conduction warrants.	owned Eletronuclear.
17th	August 3rd, 2015	Enforcement of precautionary measures regarding payers and recipients of undue advantages from contracts with the Public Power.	FP enforces 26 search warrants, 3 preventive arrest warrants, 5 temporary arrest warrants, and 6 coercive conduction warrants.	Politicians, former politicians, lobbyists, and straw men used in transactions.
18th	August 13th, 2015	Enforcement of precautionary measures regarding the operator identified in the previous phase, responsible for raising funds related to undue advantages from a payroll loan contract with the Brazilian Ministry of Planning.	FP enforces 1 temporary arrest warrant and 10 search and seizure warrants.	Operator identified in the previous phase.
19th	September 21st, 2015	Development of the investigations from previous phases and of contractors already investigated in the Lava Jato Operation.	FP enforces 7 search and seizure warrants, 1 preventive arrest warrant, 1 temporary arrest warrant, and 2 coercive conduction warrants.	Executives and contractors.
20th	November 16th, 2015	Investigate the participation of former Petrobrás employees investigated for the undue receipt of funds from representatives of the contracted companies.	FP enforces 11 search and seizure warrants, 2 temporary arrest warrants, and 5 coercive conduction warrants.	Former Petrobrás employees and new identified financial operator
21st	November 24th, 2015	Investigate the financial scheme used by the investigated to conceal the real destination of the undue amounts paid to public agents and Petrobrás directors.	FP enforces 25 search and seizure warrants, 1 preventive arrest warrant, and 6 coercive conduction warrants.	Lobbyist José Carlos Bumlai, appointed as a friend of former president Luiz Inácio Lula da Silva, and Luiz Esteves, partner of investment bank BTG Pactual.
22nd	January 27th, 2016	Investigate the scheme for opening offshore companies and accounts to conceal and disguise resources deriving from fraud and embezzlement in contracts with Petrobrás.	FP enforces 15 search and seizure warrants, 6 temporary arrest warrants, and 2 coercive conduction warrants.	Senator Delcídio do Amaral and banker André Esteves, partner of investment bank BTG Pactual.
23rd	February 22nd, 2016	Enforcement of precautionary measures related to the payment and receipt of bribes.	FP enforces 38 search and seizure warrants, 2 preventive arrest warrants, 6 temporary arrest warrants, and 5 coercive conduction warrants.	Bribing companies, an operator, and bribe recipients of the scheme.
24th	March 4th, 2016	Investigate the receipt of advantages from contractors directly linked to the corruption scheme.	FP enforces 33 search and seizure warrants and 11 coercive conduction warrants.	Former president Luiz Inácio Lula da Silva and his son Fábio Luiz Lula da Silva.
25th	March 21st, 2016	Enforcement of the arrest of the operator appointed as responsible for paying bribes to former Petrobrás directors.	FP enforces 1 arrest warrant and 1 search and seizure warrant, both in Lisbon, Portugal.	Operator Raul Schmidt Felipe Junior.
26th	March 22nd, 2016	Investigate the parallel accounting scheme of one of the business groups involved, intended to pay undue advantages to third parties, several of which are directly or indirectly linked to the public power.	FP enforces 67 search and seizure warrants, 28 coercive conduction warrants, 11 temporary arrest warrants, and 4 preventive arrest warrants.	Odebrecht business group and financial operators linked to the parallel exchange market.
27th	April 1st, 2016	Investigate scheme for laundering money derived from a loan with the Schahin bank involving a transfer to the Brazilian Workers Party (PT).	PF enforces 8 search and seizure warrants, 2 temporary arrest warrants, and 2 coercive conduction	Former Secretary-General of the Workers Party (PT), Sílvio Pereira, former PT Treasurer Delúbio

			warrants.	Soares, and entrepreneurs linked to the scheme.
28th	April 12th, 2016	Investigate the collection of bribes to avoid the convening of contractors to provide testimony in a Parliamentary Commission of Inquiry (CPI) established in 2014 by the federal senate and the chamber of deputies to investigate embezzlement in Petrobrás.	FP enforces 14 search and seizure warrants, 1 preventive arrest warrant, 2 temporary arrest warrants, and 5 coercive conduction warrants.	Former senator and vice-president of the Petrobrás CPI, Gim Argello.
29th	May 23rd, 2016	Continue investigating conspiracy to commit crimes, money laundering, and passive and active corruption involving funds diverted from Petrobrás.	FP enforces 6 search and seizure warrants, 1 preventive arrest warrant, and 2 temporary arrest warrants.	Former treasurer of the Progressive Party, João Cláudio Genu, and entrepreneurs linked to the scheme.
30th	May 24th, 2016	Investigate fraudulent contract for embezzlement in Petrobrás.	FP enforces 28 search and seizure warrants, 2 preventive arrest warrants, and 9 conduction warrants.	Business groups, operators, and Petrobrás employees.
31st	July 1st, 2016	Investigate bidding process fraud, bribery to servers of Caixa Econômica Federal and Petrobrás, and transfer of funds from private companies to a political party due to success in specific signings.	FP enforces 7 coercive conduction warrants, 4 temporary arrest warrants, 2 preventive arrest warrants, and 42 search and seizure warrants.	Money changers to companies that kept relations with the former president of the chamber of deputies Eduardo Cunha. A former treasurer of the Workers Party, Paulo Ferreira, and businesspeople.
32nd	July 7th, 2016	Investigate the Panamanian financial institution that acted clandestinely in Brazil and practices of crimes against the National Financial System, asset laundering, and transnational criminal organization.	FP enforces 7 coercive conduction warrants and 10 search and seizure warrants.	Clandestine financial institution FBP Bank.
33rd	August 2nd, 2016	Investigate the participation of contractor Queiroz Galvão in the so-called "cartel of contractors", a group of companies with the purpose of executing construction work contracted by Petrobrás.	FP enforces 23 search and seizure warrants, 2 preventive arrest warrant, 1 temporary arrest warrant, and 6 coercive conduction warrants.	Officers and employees of contractor Queiroz Galvão.
34th	September 22nd, 2016	Investigate facts related to the contracting by Petrobrás of companies for the construction of two platforms.	FP enforces 33 search and seizure warrants, 9 temporary arrest warrants, and 8 coercive conduction warrants.	Companies Mendes Junior and OSX, businesspeople, and politicians.
35th	September 26th, 2016	Investigate indications of a criminal relationship between a former Minister of the Civil House and Treasury with the command of the main contractor in the country.	FP enforces 27 search and seizure warrants, 3 temporary arrest warrants, and 15 coercive conduction warrants.	Contractor Odebrechet, former minister Antônio Palocci.
36th	November 10th, 2016	Investigate money laundering and illegal fund movement, mainly derived from criminal relationships between contractors and companies headquartered in Brazil with executives and employees of Petrobrás.	FP enforces 16 search and seizure warrants and 2 preventive arrest warrants.	Financial operators, contractors, and other companies contracted by the public administration.
37th	November 17th, 2016	Investigate irregularities and embezzlement of funds from large construction works contracted by the public administration of the state of Rio de Janeiro.	FP enforces 15 search and seizure warrants, 1 preventive arrest warrant, and 2 temporary arrest warrants.	Former governor Sérgio Cabral and contractors.

Figure 1. Phases of the Lava Jato Operation
Source: Adapted from Polícia Federal, 2016.

3 METHODOLOGY

3.1 Structure of the research

To identify the effects of disclosing corruption events on the market values of companies listed on the Brazilian Stock Exchange, we performed a quantitative research using a survey of secondary data obtained from the Economática and CVM databases for all types (classes) of shares of the companies listed as active in B3 from January 1st, 2014, to December 31st, 2016. During this period, we used data from the first 37 phases of the Lava Jato Operation, the first of which took place on March 17th, 2014, and the last on November 17th, 2016.

In order to capture the impacts of the onset of the events in each of the phases of the Lava Jato Operation on the shares' return of the companies listed in B3, we employed the event studies methodology. Simply put, this methodology consists in evaluating how a piece of information affects the market at a specific moment given the disclosure of a presumably relevant and unanticipated fact. In this sense, we used the sum of the abnormal daily returns of each company on the days that are part of the 1-day window surrounding the event (CAR_LavaJato), aiming to capture the informational content around this event (Kolari & Pynnone, 2010).

We performed the analyses considering the effects of the Operation both on the companies cited in the investigations and on the other companies in the same segments of those cited. In the latter case, we also intended to establish whether corruption operations generate information transfer between companies in the same segment. To be able to control for the disclosure of other events that may influence the annual abnormal returns, we also considered the sum of abnormal daily returns of each company on the days that are part of the 1-day window surrounding events of mandatory and voluntary disclosures made by the respective companies (CAR_Mandatory and CAR_Voluntary, respectively). The mandatory information set includes the disclosure of the events related to financial statements such as Balance Sheet, Income Statement, Statement of Changes in Shareholders' Equity, Statement of Comprehensive Income, Statement of Added Value, Explanatory Notes, and Audit Report. In turn, voluntary events refer to the information given to the market such as subscriptions, dissent or recess, voluntary conversions, and retractions. We collected both mandatory disclosures and voluntary releases to the market manually on the CVM website.

Thus, independent variables CAR_LavaJato, CAR_Mandatory, and CAR_Voluntary represent, in consolidated terms, the sum of the CARs of the respective types of events throughout the year, always considering a 1-day window surrounding each event of the same type (i.e., Lava Jato, mandatory, or voluntary). In cases when a voluntary disclosure event is in the same window as a Lava Jato event, only the Lava Jato event was considered. The model proposed by Equation 1 aims to establish if the disclosure events of the phases of the Lava Jato Operation throughout 2014, 2015, and 2016 presented information that could explain the cumulative abnormal returns in that year of the shares that compose the market, as well as the market's reaction to the shares of the companies in the same segments as those cited in the Lava Jato Operation.

$$CAR_{ano} = \beta_0 + \beta_1 CAR\ Lava\ Jato + \beta_2 CAR\ Lava\ Jato * Dummy\ Citada + \\ + \beta_3 CAR\ Lava\ Jato * Dummy\ Segmento + \beta_4 CAR\ Obrigatório + \\ + \beta_5 CAR\ Voluntário + Controles + Erro \quad (1)$$

in which CAR_{ano} represents the annual cumulative abnormal return; $Dummy\ Citada$ is 1 for the companies mentioned in the Lava Jato Operation, and 0 otherwise; $Dummy\ Segmento$ is 1 for the companies that were not mentioned but belong to the same segment as those mentioned, and 0 otherwise; and $CAR\ Lava\ Jato$, $CAR\ Obrigatório$, and $CAR\ Voluntário$ represent the sum of daily abnormal returns of each company on the days that are part of the 1-day window surrounding the events of the Lava Jato Operation, mandatory disclosures, and voluntary releases, respectively.

This model allows verifying the incremental effects of disclosing each type of event on the annual cumulative abnormal return. Specifically, in addition to the possibility of establishing the effects on the abnormal returns surrounding the disclosures of the phases of the Lava Jato Operation on the cumulative abnormal returns (significance and direction of coefficients β_1 and β_3), the analysis of the R2 adjusted in specifications that do and do not consider variable $CAR\ Lava\ Jato$ has a potential to indicate the incremental relevance that the information that guided the phases of the Operation has to explain abnormal variations of the returns of shares throughout the year. The choice of the model described in Equation 1 is in line with the methodology used by Basu, Mcgavock, and Zhang (2013).

In general terms, the obtained results point to a negative effect on the annual cumulative abnormal returns of shares for companies cited in the phases of the Lava Jato Operation, and a positive effect on the annual cumulative abnormal returns of shares for companies in the same segment as those cited. Nevertheless, we observed that the effects on the annual cumulative abnormal return of shares for companies that were not cited in the Lava Jato Operation nor listed in the same segment as those cited is statistically equal to zero. Such findings suggest that the events of the Operation, although not significantly influencing the companies that were not cited nor listed in the same segment as the companies cited, affected the returns for companies directly and indirectly affected by the Operation. This becomes relevant when analyzing the extension of the impacts of the Lava Jato Operation on the Brazilian Stock Market.

Specifically, the results indicate that the Operation reduced the market values of companies directly involved in the corruption scandals above market variations. Such evidence is aligned with the findings of Everhart, Martinez, and McNab (2003), which suggest that, in the presence of corruption, the returns on investments are harder to predict, which affects decisions on private investments with negative consequences on long-term economic and sustainable development.

Figure 2 shows the companies cited in the investigations during the period from the 1st to the 37th phase of the Lava Jato Operation. The cited companies and the respective phases when the citation occurred are shown. Based on such data, one may distinguish the cited companies from those not cited in the Lava Jato Operation.

COMPANY	BOVESPA SEGMENT	LISTING SEGMENT	LAVA JATO MENTION
BRASKEM	Basic / Chemical / Petrochemical Materials	N1	14th; 35th phases
JBS	Non-Cyclic Consumption / Processed Foods / Meat and Derivatives	NM	31st phase
ELETROBRAS	Public Utility / Electric Power / Electric Power	N1	16th phase
GOL	Industrial Goods / Transportation / Air Transportation	N2	31st phase
HYPERMARCAS	Non-Cyclic Consumption / Miscellaneous / Miscellaneous Products	NM	31st phase
PETROBRAS	Petroleum. Gas and Biofuels / Petroleum. Gas and Biofuels / Exploration. Refining and Distribution	-	2nd; 3rd; 4th; 6th; 7th; 8th; 9th; 10th; 11th; 12th; 13th; 15th; 20th; 21st; 22nd; 28th; 29th 30th; 31st; 33rd; 34th, 36th, 37th phases
OI	Telecommunications / Telecommunications / Telecommunications	N1	23rd phase
BTG Pactual	Financial and Others / Miscellaneous Financial Services / Resource and Investment Management	DDR3	21st phase
BTG Banco	Financial and Others / Financial Intermediaries / Banks	-	21st phase

Figure 2. A sample of companies mentioned in the Lava Jato Operation that have shares traded on BM&F Bovespa
Source: Adapted from Polícia Federal, 2016; Bovespa, 2016.

3.2 Data processing

Based on the proposed model, we consolidated the observations for calculating the CAR into shares of different classes and companies in a given year. The database was initially composed of 371 companies and 579 share classes, with a total of 453,412 daily observations in the base period. For data processing, we removed companies that did not present any daily returns in 365 days. Altogether, we excluded 152,447 observations, leaving 300,965 regarding 298 companies and 411 shares.

We also removed, in the following order: 33,488 observations from companies with negative Shareholders' Equity; 32,886 of companies listed in the "Finance and Insurance" segment in Economática; and 73 observations of companies that did not have consolidated ROA, Financial Leverage, Total Assets, and Market Value data during the analyzed period. After processing and consolidation of daily return data into annual data, 243 companies and 329 share classes remained, totaling 866 company-class-year observations in the base period. We winsorized the control variables at 2.5% to mitigate the possible influence of outliers in the results.

3.3 Calculation of the cumulative abnormal returns

To calculate the cumulative abnormal returns, we employed the market-adjusted statistical model, widely used to calculate abnormal returns in event studies (Brown & Warner, 1980), according to Equation (2):

$$ARit = Rit - Rmt, \quad (2)$$

where ARit is the abnormal return of share *i* on date *t*, Rit is the return of share *i* on data *t*, and Rmt is the average market return on date *t*.

At first, we calculated the return of share *i* on date *t* (Rit) for all companies listed at BM&F Bovespa, for all days in the base period, using the logarithm method:

$$Rit = Ln\left(\frac{Pt}{Pt-1}\right) \quad (3)$$

Then, we calculated the average market return on date *t* (RMt) using the Market Value-Weight Return method, a result of summing the return of the market portfolio weighted by its respective weight (Wi) in Reais (R$) over the total value of the market on date *t* in Reais (R$). For this calculation, we disregarded the shares for companies mentioned in the Lava Jato Operation.

$$RMt = \sum_{t=1}^{T} Rit.Wit \quad (4)$$

To standardize the abnormal returns of the different assets, we divided the excessive return of the share by its standard deviation, thus generating an abnormal return coefficient (SAR), as presented in Equation (5) (McWilliams & Siegel, 1997):

$$\textit{Standardized Abnormal Return:} \quad SAR = \frac{AR_{it}}{\sigma_{it}}, \quad (5)$$

where σ_i is the standard deviation of share *i* on the date of the event, calculated over the 365 previous days.

Finally, we calculated the cumulative abnormal return of the share during the event window using the sum of the standardized abnormal returns:

$$CAR_{it} = \sum_{t=1}^{T} SARit \quad (6)$$

3.4 Control variables

As control variables, we chose indicators based on accounting information relevant to shareholders, investors, and the market (Kulmar & Sopariwala, 1992; Hitt, Hoskisson, Johnson, & Moesel, 1996; Gompers, Ishii, & Metrick, 2003), namely:

- **Profitability:** Lee and Ng (2006) found that the corruption impact on shareholder value is robust, controlled by statistically significant indicators such as historical profitability (ROE or ROA);
- **Size:** Fama and French (1992) posited that the average returns of companies with low market values would be higher than expected due to their estimated betas;
- **Liquidity:** to Amihud and Mendelson (1988), investors are willing to pay more for increased liquidity, while expecting higher returns for less liquid actives;

- **Indebtedness:** the degree of financial leverage would be a condition of an additional risk factor to the share's beta, positively related to abnormal returns (Bhandari, 1988);
- **Book-to-Market:** book and market values are related to growth opportunities, financial costs, and the firm's profitability (Chen & Zhao, 2006).

Variable	Analysis	Formula
Return on Asset (ROA)	Profitability	$\frac{Lucro\ Liquido}{Total\ do\ Ativo}$ Liquid Profit / Total Assets
Stock Trading	Liquidity	**Traded Volume**
Total Assets	Size	**Ln Total Assets**
Degree of Financial Leverage	Indebtedness	$\frac{Lucro\ Liquido}{PL} / \frac{Lucro\ Liquido}{Total\ do\ Ativo}$ **(Liquid Profit/Profit Sharing) / (Liquid Profit/Total Assets)**
Book to Marketing	Growth Opportunity	**Profit Sharing / Market Value**

Figure 3. Summary Table – Control Variables used in the Model

4 RESULTS

4.1 Descriptive statistics

In Table 1, we show that both the CAR of voluntary events and that of Lava Jato events have standard deviations approximately three times higher than the CAR of mandatory events. This difference suggests that non-mandatory events such as voluntary announcements and events related to the Lava Jato Operation may be associated with a higher volatility of the assets listed in the stock exchange.

Table 1
Descriptive Statistics of the Variables

The descriptive statistics of the variables used in the model include position and dispersion measures, with information on the set of shares of companies listed at BM&F Bovespa which were active in the base period within the parameters adopted in this paper.

Variable	Mean	Median	Standard Deviation	1st Quartile	3rd Quartile
CAR_Year	0.07	-0.01	1.10	-0.21	0.13
CAR_LavaJato	-0.00	0.00	0.31	-0.05	0.02
CAR_Mandatory	-0.01	0.00	0.10	-0.01	0.01
CAR_Voluntary	0.02	0.00	0.34	-0.02	0.03
ROA	1.72	2.50	7.77	-1.10	5.90
Financial Leverage	3.04	1.61	8.85	0.95	2.67
Liquidity	0.21	0.01	0.45	0.00	0.17
Ln(Total_Assets)	15.10	15.24	1.73	13.89	16.25
Book-to-Market	1.59	1.05	1.55	0.54	2.09

We point out that both CAR_LavaJato and CAR_Mandatory have negative mean values, while CAR_Voluntary has, on average, positive values. Such results provide evidence that investors penalized the Brazilian market in the period of disclosure of information from the Lava Jato Operation, and that the announcement of the companies' balance sheets was surrounded by negative surprises with results below market expectations.

However, these analyses do not allow us to establish whether the decrease in company values during the disclosure of the phases of the Lava Jato Operation are related to systemic movements or if the companies were affected differently by the Operation. In the next section, we present the Operation's effects on companies both directly and indirectly involved compared to companies in segments that are uninvolved with the Operation.

4.2 Regression results

Table 2 presents four different specifications for model 1, which considers the effects of disclosing mandatory (CAR_Mandatory), voluntary (CAR_Voluntary), and Lava Jato Operation (CAR_LavaJato) events on the annual cumulative abnormal returns (CAR_Year) of Brazilian

companies. Column A of Table 3 presents a specification that considers only the influence of mandatory events, while column B also takes into account the effects of voluntary events.

On the other hand, the specifications in columns C and D equally consider the influence of the Lava Jato Operation. Specifically, column C allows establishing if the Operation influenced the Brazilian market regardless of whether or not the companies were cited. In turn, column D segregates the effects of the Lava Jato Operation between cited companies and others that belong to the same segment as those cited compared to unrelated companies.

The results of the estimates for specification A show that the coefficient of the CAR_Mandatory variable is significant at 95% confidence, which suggests that the mandatory disclosures bring relevant information that is priced by the market also in the Brazilian case. The R^2 of the model in specification A, however, was only 1.28%, suggesting that other events may have informational relevance to explaining the variations in annual cumulative abnormal returns of the companies. Such a result corroborates evidence presented by Ball and Shivakumar (2008), whose results point to a discrete presence of new information during the disclosure of the quarterly balance sheets.

Considering, in specification B, the voluntary disclosure events, we observed a significant coefficient for the CAR_Voluntary at 99% confidence, as well as an increase of R^2 to 5.86%. This result has two interpretations: i) as in Ball and Shivakumar (2008), the significance of the coefficient and the increase in the explanatory power of the model indicate that voluntary events bring new information to the Brazilian market which allows better explaining of the variations in annual cumulative abnormal returns; ii) however, although the R^2 value increased, the 5.86% is in line with that found by Basu et al. (2013) when considering the complete sample of companies that did and those that did not make voluntary announcements annually. In this case, we notice that the explanatory power, although higher, still suggests the existence of other information that considerably has the potential to explain the variations in annual abnormal return of the companies.

Specifications in columns C and D present evidence that, in the Brazilian case, the Lava Jato Operation is one of those sources of great informational relevance. One may notice that the coefficient of variable CAR_LavaJato was significant at 99% confidence in specification C, which suggests that the Lava Jato Operation influenced the returns of market shares. Also, the 25.67% R^2 value, considerably higher than the previous regression (5.86%), indicates that the Lava Jato Operation had a significant impact on the Brazilian market.

Segregating the effects between cited companies and those in the same segments relative to those unrelated to the Lava Jato Operation, according to specification D, one may notice that the information content of the Lava Jato Operation is only significant for companies that were directly involved in the Operation and for companies that were not directly involved but belong to the sectors affected by the Operation. In this case, we observe that the coefficient of the uninvolved companies (0.3009) was not significant, while the coefficients for cited companies (-3.6922) and those belonging to the same segments (1.3408) were significant at 95% and 99% confidence, respectively.

The negative coefficient of the CAR_LavaJato*DummyCited interaction evidences the cost generated by the Lava Jato Operation to the companies directly involved in the corruption scandals. Such results indicate that the Operation reduced the market values of these companies above the market variations, in line with the results found by Macnab (2003), which suggest that, in the presence of corruption, returns on investments are harder to predict. The result affected decisions on private investments, with negative consequences on long-term economic and sustainable development.

When analyzing the companies that were indirectly involved in the Lava Jato Operation using the CAR_LavaJato*DummySegment interaction, we observed an opposite result to that of directly cited companies. Specifically, information contained in the Lava Jato Operation positively influenced the abnormal return of uninvolved companies that belong to the same segments of those directly involved in the Operation. This result corroborates evidence in the literature that corruption tends to be an obstacle to competition, since the signing of contracts through political interference and fraud in public biddings imposes a competitive disadvantage to the other companies in the market, given that products and services are acquired from the corrupting companies with disregard to the best cost-benefit (Lambsdorff, 2003). In this case,

the disclosure of anti-corruption operations contributes to reducing the pricing discrepancies inherent to the corruption practiced by the companies involved in the respective operations. This pricing adjustment may be associated with the correction made by the market due to damage to competitiveness caused by unfair competition.

Table 2

Effects of the Lava Jato Operation on the Returns of Involved and Uninvolved Companies

This table shows results of model

$$CAR_{ano} = \beta_0 + \beta_1 CAR\ Lava\ Jato + \beta_2 CAR\ Lava\ Jato * Dummy\ Citada + \beta_3 CAR\ Lava\ Jato * Dummy\ Segmento + \beta_4 CAR\ \text{Obrigatório} + \beta_5 CAR\ Voluntário + Controles + Erro \quad (1)$$

We used variables DummyCited and DummySegment to highlight the effects of the Lava Jato Operation events on the cumulative abnormal returns of cited companies (CAR_LavaJato*DummyCited) and the cumulative abnormal returns of companies in the same segments of those cited (CAR_LavaJato*DummySegment).

Variable	Specifications							
	A		B		C		D	
	Coef.	P-Value	Coef.	P-Value	Coef.	P-Value	Coef.	P-Value
CAR_Mandatory	.9527	0.027	1.3183	0.001	1.3009	0.001	1.5125	0.000
CAR_Voluntary			.8385	0.000	1.1187	0.000	1.1861	0.000
CAR_LavaJato					1.1472	0.000	.3009	0.132
CAR_LavaJato*DummyCited							-3.6922	0.035
CAR_LavaJato*DummySegment							1.3408	0.000
ROA	-.0046	0.554	-.0047	0.529	-.0053	0.444	-.00764	0.260
Financial Leverage	.0079	0.089	.0062	0.161	.0038	0.357	.00392	0.329
Liquidity	.2994	0.427	.0694	0.847	-.1446	0.666	.0126	0.969
Ln(Total Assets)	-.2779	0.389	-.2388	0.437	-.0000	1.000	-.0330	0.906
Book-to-Market	-.1333	0.010	-.1250	0.011	-.0801	0.080	-.1292	0.005
R-sq: overall	**0.0128**		**0.0586**		**0.2567**		**0.2565**	

Regarding the controls, we observed that, in all regressions, variable Book-to-Market (BtM) presents a statistically positive coefficient. This indicates an explanatory relevance over the dependent variable, at a 90% confidence level, which corroborates the model proposed by Ohlson (1995) relating the BtM to the cumulative abnormal returns, as well as by Chen and Zhao (2006) relating the indicator to the firm's growth possibility, profitability, and, consequently, its market value. In regression A, control variable Financial Leverage also presented a statistically significant positive coefficient at 90% confidence to explain the cumulative abnormal returns, providing indications of its explanatory capacity on abnormal returns. The remaining control variables did not present statistically significant results in any of the regressions, suggesting that they do not influence the model's dependent variable.

4.3 Sensitivity analysis

In general, the results of the proposed model indicate that the events of the Lava Jato Operation, although not significantly influencing the companies that are not listed in the same segments as those investigated, affected the returns of companies both directly and indirectly involved in the Operation. It is unclear, however, if the effects refer to preexisting differences between the analyzed groups or if they are in fact associated with the unfolding of the Operation.

To check whether or not the investigated companies already had differences in returns relative to companies unrelated to the Lava Jato Operation even before it began, we performed t-tests of the difference of averages to compare the means of the control and CAR variables considering the data from 2013 of companies cited in the Lava Jato Operation (Cited) with the group of companies that were not cited and do not belong to the same segment as those cited (Unrelated).

Comparing the cited companies with those unrelated to the Lava Jato Operation in terms of cumulative abnormal returns, we observed, as shown in panel B of Table 2, that there are no statistically significant differences between the average abnormal returns within the total set of annual information (CAR_Year) or for the mandatory (CAR_Mandatory) and voluntary (CAR_Voluntary) information. These results are significant as they indicate that, regarding returns and informational content, the analyzed groups of companies were not different in the period before the Lava Jato Operation.

In addition, as shown in panel A of Table 3, regarding the control variables of Liquidity and Total Assets, the mean difference test presented a significant coefficient at a 99% confidence, which indicates the existence of statistically significant differences between these two indicators for the companies cited and those not cited in the Lava Jato Operation. Thus, on average, the Liquidity and Total Assets of the cited companies were higher than those of the companies not cited in the Lava Jato Operation.

These results indicate that, in general, the companies investigated in the Lava Jato Operation are those that, on average, already had greater liquidity and size (total assets) in the period before the start of the Operation. Since the model in Equation (1) seeks to capture the informational relevance of windows surrounding the phases of the Lava Jato Operation to explain the annual abnormal return, there is a lower sensitivity of the coefficients of the employed model (referring to 3-day windows) to variations in liquidity and size of the companies (annual variations). However, this result underscores the importance of controlling for size and liquidity in valuation models that involve corruption in Brazilian companies. For the variables ROA, Financial Leverage, and Book to Market, we did not observe statistically significant differences between the companies cited in the Lava Jato Operation and other companies before the start of the Operation.

Table 3

Test of Difference of Means between the cited companies and those unrelated to the Lava Jato Operation

The panel presents the tests of differences of means between the companies with no relation to the Lava Jato Operation and those cited in the Operation. We sought to evaluate if significant initial differences exist between the two groups, independently of the Lava Jato Operation events. To do so, we compared the company shares using the consolidated data from 2013, a period immediately before the start of the Lava Jato Operation, considering the control variables (Panel A) as well as information regarding the mandatory and voluntary disclosures (Panel B).

Panel A: Comparison of the cited companies and those unrelated to the Lava Jato Operation regarding the control variables from 2013.

	Unrelated		Cited		Difference of Means	
Variable	**Mean**	**Standard Deviation**	**Mean**	**Standard Deviation**	**A-B**	**P-Value**
ROA	1.245	17.467	-0.2	3.834	-0.755	0.827
Financial Leverage	2.535	4.613	1.117	1.528	1.007	0.418
Liquidity	0.192	0.334	0.622	0.486	-0.43	0.0012
Ln(Total Assets)	14.851	1.530	17.688	1.048	-2,837	0.000
Book_to_Market	0.866	0.823	1.362	1.207	-0,496	0.125

Panel B: Comparison of the cited companies and those unrelated to the Lava Jato Operation regarding the CARs in the year and around the windows of mandatory and voluntary events in 2013.

	Unrelated		Cited		Difference of Means	
CAR_Year	0.0363	1.052	-0.0154	0.2442	0.0517	0.785
CAR_Mandatory	-0.0133	0.1293	-0.0110	0.0543	-0.0022	0.923
CAR_Voluntary	0.0123	0.3099	-0.0630	0.3607	0.0754	0.200

5 CONCLUSION

This study aimed to identify the effects of disclosing corruption events on the market value of companies listed in the Brazilian Stock Exchange. The results of the research indicate that corruption-related events, disclosed by the Lava Jato Operation, have greater informational relevance in explaining the variations in the annual cumulative abnormal returns of the companies listed in the Brazilian Stock Exchange than events of mandatory (accounting and financial events) and voluntary announcement.

Additionally, the results point to a negative effect on the annual cumulative abnormal returns of companies cited in the phases of the Lava Jato Operation, as well as a positive effect on the cumulative abnormal returns of companies in the same segment as those cited. Nevertheless, we found that the effects on the annual cumulative abnormal returns of the shares of companies that were not cited in the Lava Jato Operation and are not listed in the same segment of those cited is statistically equal to zero. These findings suggest that the events of the Lava Jato Operation, although not significantly influencing the companies that

were not cited nor are listed in the same segment as those cited, affected the returns of companies directly and indirectly affected by the Operation.

Specifically, the results indicate that the Operation reduced the market value of companies directly involved with the corruption scandals above market variations. These results are in line with Macnab (2003), whose findings suggest that, in the presence of corruption, the investment returns are harder to predict, affecting the decisions on private investments with negative consequences on long-term economic and sustainable development.

When analyzing the companies indirectly involved in the Lava Jato Operation, we observed the opposite result to the directly cited companies. Specifically, the information contained in the Lava Jato Operation positively influenced the abnormal return of uninvolved companies that belong to the same segment as those investigated. This corroborates evidence in the literature that corruption tends to be an obstacle to competition, as it provides favoritism and opportunities to the corrupting companies such as the signing of contracts through public bidding fraud, in which products and services are acquired in disregard to the best cost-benefit (Lambsdorff, 2003).

Our findings suggest that the events of the Lava Jato Operation, although not significantly influencing the companies that were not investigated nor are listed in the same segment as those cited, affected the returns of companies directly and indirectly affected by the Operation. This becomes relevant when analyzing the extent of the impacts of the Lava Jato Operation on the Brazilian Stock Exchange.

Overall, the results partly support the "Grease on the Wheels" hypothesis of Méon and Weill (2010) and raise an alert for the Brazilian scenario. The results found by Méon and Weill (2010) indicate that, on average, in countries with deteriorating institutional contexts present indications of marginal corruption benefits. The reduction of the market value of the companies directly cited and the increase in market value of those indirectly involved may be reflecting a competitive imbalance in the market, in which companies that engage in corruption schemes have a competitive advantage over other companies in the same segment.

Under balanced conditions, however, the economy is always in a more fragile situation in the presence of corruption. The strengthening of institutions, of the political-economic environment, and the establishment of appropriate legal punishment for corruption crimes are, therefore, fundamental so that perverse incentives are not created for the agents of the economy.

As a contribution, this paper empirically shows the effects of the disclosure of corruption on the Brazilian Stock Exchange from fraudulent contracts between the public and private sectors. Results are even more relevant for analyzing a specific scenario in which an extensive ongoing investigation against corruption crimes (the Lava Jato Operation), which provides a range of information and corruption data verified through facts that become public. Moreover, this study differs from others in the literature when analyzing the effects of disclosing corruption events on the market value of both directly involved companies and those indirectly involved via market competitiveness.

In practical terms, this paper indicates that the fight against corruption and the disclosure of facts established by the Lava Jato Operation resulted in losses of market values for companies cited and in gains of market values for companies in the same segment as those cited. In other words, the disclosure of anti-corruption operations contributes to reducing the pricing discrepancies inherent to corruption practiced by the companies involved in the respective operations. Such pricing adjustment may be associated with the correction made by the market due to the competitiveness losses caused by unfair competition.

This study presents some limitations. First, the companies not cited in the Lava Jato Operation may present other mechanisms for improving returns which are unidentifiable from the employed database. Second, companies that were not cited may still be involved in corruption schemes. In this case, we suggest that other methods be used to eliminate possible specification problems, such as matching or the use of another type of corruption event.

REFERENCES

Acemoglu, D., & Verdier, T. (1998). Property rights, corruption and the allocation of talent: a general equilibrium approach. *The economic journal*, *108*(450), 1381-1403.

Amihud, Y., & Mendelson, H. (1988). Liquidity and asset prices: Financial management implications. *Financial Management*, 5-15.

Ball, R. & Shivakumar, L. (2008). How much new information is there in earnings?. *Journal of Accounting Research*, *46*(5), 975-1016.

Basu, K., McGavock, T., & Zhang, B. (2013). When competition corrupts: a theoretical analysis of market structure and the incidence of corruption.

Bhandari, L. C. (1988). Debt/equity ratio and expected common stock returns: Empirical evidence. *The journal of finance*, *43*(2), 507-528.

Blackburn, K., Bose, N., & Haque, M. E. (2005). Public expenditures, bureaucratic corruption and economic development. *Centre for Growth and Business Cycle Research Discussion Paper Series*, *53*(13), 417-58.

Brown, S. J. & Warner, J. B. (1980). Measuring security price performance. *Journal of financial economics*, *8*(3), 205-258.

Brudney, V. (1985). Corporate governance, agency costs, and the rhetoric of contract. *Columbia Law Review*, 1403-1444.

Chen, L. & Zhao, X. (2006). On the relation between the market-to-book ratio, growth opportunity, and leverage ratio. *Finance Research Letters*, *3*(4), 253-266.

Delavallade, C. (2006). Corruption and distribution of public spending in developing countries. *Journal of economics and finance*, *30*(2), 222-239.

Ehrlich, I., & Lui, F. T. (1999). Bureaucratic corruption and endogenous economic growth. *Journal of Political Economy*, *107*(S6), S270-S293.

Everhart, S. S., Martinez-Vazquez, J., , J., & McNab, R. M. (2003). Corruption, Investment, and Growth in Developing Countries. *Annual Conference on Taxation and Minutes of the Annual Meeting of the National Tax Association* (Vol. 96, pp. 84-90).

Fama, E. F. & French, K. R. (1992). The cross-section of expected stock returns. *the Journal of Finance*, *47*(2), 427-465.

Fama, E. F. & Jensen, M. C. (1983). Agency problems and residual claims. *The Journal of Law and Economics*, *26*(2), 327-349.

Fisman, R. & Svensson, J. (2007). Are corruption and taxation really harmful to growth? Firm level evidence. *Journal of development economics*, *83*(1), 63-75.

Gompers, P., Ishii, J., & Metrick, A. (2003). Corporate governance and equity prices. *The quarterly journal of economics*, *118*(1), 107-156.

Hitt, M. A., Hoskisson, R. E., Johnson, R. A., & Moesel, D. D. (1996). The market for corporate control and firm innovation. *Academy of management journal*, *39*(5), 1084-1119.

Ionescu, L. (2014). The adverse effects of corruption on growth and development. *Economics, Management and Financial Markets*, *9*(4), 125.

Kolari, J. W., & Pynnönen, S. (2010). Event study testing with cross-sectional correlation of abnormal returns. *The Review of financial studies*, *23*(11), 3996-4025.

Lambsdorff, J. G. (2003). How corruption affects productivity. *Kyklos*, *56*(4), 457-474.

Lee, Charles M.C. and Ng, David T (2006). Corruption and International Valuation: Does Virtue Pay? *Johnson School Research Paper* No. 41-06.

Mauro, M. P. (1996). *The Effects of Corruptionon Growth, Investment, and Government Expenditure*.

Mauro, M. P. (1997). *Why worry about corruption?* (Vol. 6). International Monetary Fund.

McWilliams, A. & Siegel, D. (1997). Event studies in management research: Theoretical and empirical issues. *Academy of management journal*, *40*(3), 626-657.

Méon, P. G. & Sekkat, K. (2005). Does corruption grease or sand the wheels of growth?. *Public choice*, *122*(1-2), 69-97.

Méon, P. G. & Weill, L. (2010). Is corruption an efficient grease?. *World development*, *38*(3), 244-259.

Mo, Pak-Hung (2001). Corruption and economic growth. *Journal of comparative economics, 29*(1), 66-79.

Ohlson, J. A. (1995). Earnings, book values, and dividends in equity valuation. *Contemporary accounting research*, *11*(2), 661-687.

O'Toole, C. M. & Tarp, F. (2014). Corruption and the efficiency of capital investment in developing countries. *Journal of International Development*, *26*(5), 567-597.

Porta, R. L., Lopez-de-Silanes, F., Shleifer, A., & Vishny, R. W. (1998). Law and finance. *Journal of political economy*, *106*(6), 1113-1155.

Wang, Y. & You, J. (2012). Corruption and firm growth: Evidence from China. *China Economic Review*, *23*(2), 415-433.

Polícia Federal. *Fases da Operação Lava Jato*. Recuperado em 30 julho, 2016, em http://www.pf.gov.br/imprensa/lava-jato/fases-da-operacao-lava-jato-1

BOVESPA (2016). *Empresas listadas*. Recuperado em 15 agosto, 2016, em http://www.bmfbovespa.com.br/pt_br/produtos/listados-a-vista-e-derivativos/renda-variavel/empresas-listadas.html

Revista Catarinense da Ciência Contábil,
ISSN 1808-3781 – eISSN 2237-7662,
Florianópolis, SC, v. 17, n. 51, p. 56-70,
May/Aug. 2018

DOI: 10.16930/2237-7662/rccc.v17n51.2508
Available at http://revista.crcsc.org.br

TAX INCENTIVES AS PUBLIC POLICY OF INDUSTRIAL DEVELOPMENT: AN EMPIRICAL ANALYSIS OF THE ECONOMIC EFFECTS OF THE ICMS PRESUMED CREDIT CONCESSION FOR TEXTILE INDUSTRIES OF STATE OF SANTA CATARINA

JULIO CESAR FAZOLI
A master's degree holder in accounting from Universidade Federal de Santa Catarina (UFSC). ***Address:*** *Campus Reitor João David Ferreira Lima, s/n | Trindade | 88040-900 | Florianópolis/SC | Brazil.*
E-mail: *j.fazoli@gmail.com*

FABRÍCIA DA SILVA ROSA
A doctorate degree holder in production engineering from Universidade Federal de Santa Catarina. A professor at the postgraduation program in accounting at Universidade Federal de Santa Catarina (UFSC). ***Address:*** *Campus Reitor João David Ferreira Lima, s/n | Trindade | 88040-900 | Florianópolis/SC | Brazil.*
E-mail: *fabricia.rosa@ufsc.br*

LEONARDO FLACH
A doctorate degree holder in business administration from Universidade Federal do Rio Grande do Sul. A professor at the postgraduation program in accounting at Universidade Federal de Santa Catarina (UFSC). ***Address:*** *Campus Reitor João David Ferreira Lima, s/n | Trindade | 88040-900 | Florianópolis/SC | Brazil.*
E-mail: *leonardo.flach@ufsc.br*

LUIZ FELIPE FERREIRA
A doctorate degree holder in environmental engineering from Universidade Federal de Santa Catarina. A professor at the postgraduation program in accounting at Universidade Federal de Santa Catarina (UFSC). ***Address:*** *Campus Reitor João David Ferreira Lima, s/n | Trindade | 88040-900 | Florianópolis/SC | Brazil.*
E-mail: *luiz.felipe@ufsc.br*

ABSTRACT

In Brazil, the tax competition among state governments to attract private investment is not something new. According to the participating states, such measures would allow the economic development of their regions, generating income and employment, in addition to the significant increase in the value added along the supply chains due to increased industrial processing. This study sought to contribute to the topic, analyzing the behavior of value added generated by 11.272 Santa Catarina establishments operating in the textile sector. Were collected the value added informations between the years of 2006 and 2010, resulting in 60 months. To verifying the behavior of textile industries´s value added before and after of tax incentive it was used the panel data model known as "difference in differences" (diff-in-diff). The results show a fall of 32.89% in real value added generated by companies in the sector after the establishment of the ICMS presumed credit. Moreover, while there was an increase of 105% in the monthly rate of

Article presented at VII Congresso Nacional de Administração e Contabilidade – AdCont 2016, Rio de Janeiro, RJ.

Submission on 07/12/2017. **Review on** 10/20/2017. **Accepted on** 07/12/2018.

growth of value added to the beneficiary companies, there was a fall by 53.30% for the companies not granted the same treatment, which shows a process of migration markets, probably due to the unfair competition generated by the tax incentive.

Keywords: Tax incentives. Tax War. Economic development. ICMS.

1 INTRODUCTION

Competition between state and local governments to attract companies can be classified as the process seeking to economically qualify specific regions or sub regions through implicit or explicit processes of dispute with other regions (Cheshire & Gordon, 1998; Rodrígues-Pose & Arbix, 1999). Such a proactive movement has attracted the interest of accountants, economists, legislators, and policy makers, especially in emerging markets (Tanzi & Zee, 2000; Lee, 2008).

In Brazil, as in other countries strongly marked by regional heterogeneity, proactive policies of attracting private investment are old, with traces dating back to the 1950s (Prado, 1999; Dulci, 2002). However, as highlighted by Ibanez (2005), until the early part of the 1990s, disputes between subnational governments would take place in small proportions, with no major consequences for its participants.

Throughout the 1980s, there was an exhaustion of the public sector financing pattern in force until the previous decade, which compromised the federal government's ability to implement regional development policies, especially through state-owned enterprises (SOE) (Prado, 1999; Dulci, 2002; Oliveira, Dias & Tabosa, 2014). In addition, economic deconcentration policies, widely used during the 1970s [SUDAM (Brazilian Portuguese abbreviation for Superintendency of Development for the Amazon, a local authority of the federal government of Brazil), SUDENE (Brazilian Portuguese abbreviation for Superintendency for the Development of the Northeast, a Brazilian governmental agency), Free Economic Zone of Manaus (Zona Franca de Manaus, a free economic zone in the city of Manaus, the capital of the State of Amazonas, Northern Brazil), among others] were progressively left behind in the 1980s. It further emphasized the serious inequalities among Brazilian regions (Suzigan & Furtado, 2006; Macedo & Angelis, 2013).

In the economic scenario, with the Brazilian economy opening-up in the early 1990s, there was an increasing flow of international capital in search of investment opportunities in the country (Dulci, 2002). At the same time, the 1988 constitutional order brought a new model of political and institutional decentralization, with a significant shift of power in favor of states and municipalities, which led to a significant increase in current expenditures of subnational governments (Melo, 1996; Perobelli & Piancastelli, 1996; Dulci, 2002; Oliveira *et al.*, 2014).

Therefore, seeking to intervene decisively in their developmental trajectory, the Brazilian federative units have promoted a competition for private investments, a movement classified as "Tax War" (Nascimento, Câmara & Godoy, 2002; Nascimento, 2009). Justifications raised by the participating states are that such measures would allow economic development of their regions as well as the generation of income and employment, in addition to significant increase in the value added along the productive chains due to greater industrial transformation in the state, filling the void left by the federal government in instituting development measures in the various regions of the country (Perobelli & Piancastelli, 1996; Nascimento *et al.,* 2002; Dulci, 2002; Nascimento, 2009; Oliveira *et al*., 2014).

Within this competitive scenario, since 2008, with the publication of Ruling 1,669/2008, the Brazilian state of Santa Catarina ensures tax incentive policies for the textile and clothing segments. It seeks to foster the sector competitiveness and increase the value added along the productive chain through promotion of textile industrial transformation in the territory of Santa Catarina. These segments, together, employ 166 thousand people in the state. They represent 20% of the sector's workers in the Brazilian territory and 27% of the state processing industry [Federação das Indústrias de Santa Catarina (FIESC), 2014].

However, according to Tanzi (2000) and Chirinko and Wilson (2008), even if there is an economic increase in the investments benefited, it should be inquired whether this increase actually arises from the tax incentive policies adopted. It is precisely this reflection that the present work intends to carry out. Thus, in order to contribute to understanding the topic,

especially with regard to tax incentive policies used by the state of Santa Catarina, the following research question arises: *Is the concession of presumed ICMS (Brazilian tax on the circulation of goods, interstate and intercity transportation and communication services) credit by the state of Santa Catarina an effective instrument for generation of value added to the Santa Catarina textile production chain?*

As a general objective, the goal is to verify the value added behavior generated by textile companies before and after adoption of the public policy, considering the effects of tax incentives as an inductive tool for economic growth in the state textile chain.

The choice of the topic "tax incentives and regional development" stems from the current relevance of the subject in Brazil. Also, as highlighted by Stark and Wilson (2006), in spite of the importance of the topic as a tool for guiding or redirecting public policies, surprisingly few empirical studies have approached this issue with the attention that it deserves. Nevertheless, due to the institutional discomfort generated among its protagonists, the topic has produced partial and eminently taxing arguments, hindering the necessary understanding of the topic (Amaral, 2010).

There is no consensus on the true social and economic effects of tax incentives in Brazil. Authors such as Nascimento *et al.* (2002), Carvalho and Oliveira (2003), Oliveira and Dias (2011), Cardozo (2013) and Oliveira *et al*. (2014) have found that tax incentives were not sufficient to promote dynamism in the regions benefited. On the other hand, authors such as Luca and Lima (2007) and Nascimento (2009) have found that tax incentives have positively contributed to the regions' economic development. They have brought significant impacts to the least developed states. Finally, it is important to highlight studies by Ferreira and Oliveira (2009), Lima and Lima (2010) and Mello and Armange (2014). The authors have found only partial impacts on the economy. They have emphasized that such policies alone would not be sufficient to ensure the reduction of regional economic inequalities.

Based on this research gap, the present work seeks to contribute to the topic by analyzing the effectiveness of granting tax incentives to the Santa Catarina textile sector in promoting uniform growth of the state economy.

This work is segmented into six sections: Introduction, Theoretical Framework, Methodology, Data Analysis, Results Analysis and Conclusion. In the Theoretical Framework an explanation is presented on the subject, highlighting the competition among the subnational governments, their origins and, finally, the national and international works that have sought to analyze the topic. The third part is devoted to the method adopted in the present work. It details what information and statistical models were used to obtain the results. The fourth and fifth sections are, respectively, intended for analysis of data and results obtained. Finally, the sixth and final sections are devoted to conclusions about the work.

2 THEORETICAL FRAMEWORK

Tax incentives appear as measures seeking to exclude, totally or partially, tax credit applied for the purpose of economically developing a particular region or certain sectors of activity (Calderaro, 1973). Gadelha (2010) explains that, in a broader sense, tax incentives would be instruments of intervention in the economic domain, so that the state can concretize vectors and values that have guided its public policies.

Thus, within the state's role of inducing in the economy, tax incentive policies gain relevance, since they enable public managers to direct economic agents' performance and behavior for specific purposes, seeking to reduce social and economic inequalities as well as to promote well-being for the population, a phenomenon classified as tax extra-fiscality (Cavalcanti, 1997; Grau, 2006; Avi-Yonah, 2008; Alexandre, 2008; Giambiagi & Além, 2008; Papadopol, 2009, Assunção, 2011).

The tax has an extra-tax purpose when it is intended to intervene in a given social and economic situation. As examples, there are import and export taxes. Such taxes are aimed at controlling Brazilian international trade and may even serve as a protective barrier to the national economy, in addition to stimulating import or export of certain species of goods (Alexandre, 2008).

Extra-fiscality occurs when the legislator, in the name of social interests, increases or decreases tax rates and/or tax bases in order to induce taxpayers to carry out or stop carrying out particular actions. Extra-fiscality does not always cause cash losses. It can increase it, for example, when taxation on cigarette consumption is exacerbated (Carrazza, 2002).

In spite of the fact that tax incentives developmental bias is accepted among the authors, the same situation does not exist to define their types (Formigoni, 2008). By way of example, authors such as Elali (2007), Formigoni (2008) and Assunção (2011) classify deferral as a tax benefit when, in reality, it is a hypothesis in which, simply, responsibility for payment falls on a person other than the one who has a personal and direct relationship with the taxable event (Alexandre, 2008).

Thus, it is assumed that tax incentives aim to eliminate or reduce, in whole or in part, the tax burden of certain taxpayers or sectors (Calderaro, 1973; Elali, 2007). It should be noted that tax incentives are tax relief granted prior to the occurrence of the taxable event, which, in practice, prevents the tax authority from constituting, in principle, the portion related to the tax waiver. If the tax relief is granted on a tax already constituted, it shall be a remission, a hypothesis that is defined as the extinction of the tax credit (Article 156, IV, of the Brazilian National Tax Code).

However, for Rodrigues and Freitas (2005), the bias inducing tax extra-fiscality can have negative effects on society itself, especially when there is a real “delivery” of public funds in favor of economic elites. Also, according to authors such as Varsano (1996), Prado (1999) and Rodrigues and Freitas (2005), on the practical level, under the pretext of seeking social development, it is verified that freedom granted to managers to dispose of tax exemptions ends up becoming a tool of competition among regions and municipalities, fomenting a process of migration of companies and jobs from one federated unit to another, usually in pursuit of tax gains (Varsano, 1996; Prado, 1999; Dulci, 2002; Rodrigues & Freitas, 2005). This competition for private investments by Brazilian states through tax incentives is known as “Tax War” (Nascimento *et al.,* 2002; Nascimento, 2009).

Dulci (2002) points out that in Brazil “Tax War” stems from political and economic factors that have emerged one after another since the 1980s. In this sense, it is still worth mentioning that authors such as Prado (1999), Varsano (1996) and Perobelli & Piancastelli (1996) go beyond that. They point out that the state tax model on value added (the current ICMS) has greatly contributed to competition. Thus, within the Brazilian context, it can be said that the “Tax War” has three basic foundations: the legal-tributary one, the political-administrative one and, finally, the economic one. According to the agents involved, the background to such measures would be unique: to fill the void left by central government to promote regional development policies in the country’s various regions (Prado & Cavalcanti, 2000; Ibanez, 2005; Dulci, 2002).

2.1 Foundations of “Tax War” in Brazil

Within a federation, tax system constitutional and legal provisions play a key role in harmonious coexistence among subnational governments (Prado, 1999). The Brazilian model of value added taxation has remained unchanged since its origins, becoming the main factor for the support of the “Tax War” among the Brazilian states (Perobelli & Piancastelli, 1996; Varsano, 1996; Prado, 1999).

With the publication of Constitutional Amendment no. 18 in 1965, there was a significant change in the national tax system, which allowed Brazil to have a rational tax system, free of cascading effects and with uniformity of rates, the latter imposed by the Federal Senate (Perobelli & Piancastelli, 1996). Despite significant changes, the new ICM brought the principle of origin, in which it seeks to tax goods or merchandise at the place of production to the detriment of the locality in which they shall actually be consumed. Since then, this model has allowed a wide possibility of negotiation between investing companies and the producer state, since the latter would pay the due tax on operations (Perobelli & Piancastelli, 1996; Varsano, 1996; Prado, 1999; Lima & Lima, 2010).

With the publication of the 1988 Constitution of the Federative Republic of Brazil, the problem has considerably worsened. The new Constitutional Order has brought a competition tool to the state governments: the possibility of establishing, through their own laws, ICMS tax rates levied on internal operations (Varsano, 1996; Prado, 1999; Dulci, 2002). As highlighted by

Prado (1999), since its inception, the ICMS seems to be in line with what is considered a worldwide standard for value added taxes, usually held under central government control or, at least, by shared competence, guaranteeing some level of regulatory influence by the greater power.

The role played by the Brazilian National Council of Treasury Policy (CONFAZ, in the Brazilian Portuguese abbreviation), created by Complementary Law No. 24, dated January 7, 1975, consisting of the State Treasury Department Secretaries and the Minister of Finance, the main purpose of which would be to regulate consensually special policy in ICMS taxation, has greatly contributed to competition among state governments (Varsano, 1996; Prado, 1999). As highlighted by Prado (1999), until the second half of the 1980s, CONFAZ is competent to exercise some control over autonomous incentive policies granted by state governments.

However, with the entry into force of the Federal Constitution of 1988, there was a substantial weakening of CONFAZ, especially as a regulatory body for tax incentives policies adopted by the Brazilian states (Varsano, 1996; Prado, 1999). With increase in the states' political representation in view of the new Constitution as well as the lack of institutional instances of compliance control with standards issued by CONFAZ, there was a substantial increase in unilateral policies of tax incentives promoted by the states and the Brazilian Federal District, which have culminated in the current tax scenario in Brazil (Prado, 1999; Ferreira, 2000; Dulci, 2002; Arbix, 2002; Mello, 2008).

At the same time, since the early 1980s, Brazilian states had been experiencing a process of economic stagnation and financial crisis (Prado, 1999). The new model of political and institutional decentralization of 1988 has brought a significant shift of attributions to states and municipalities, which resulted in a significant increase in current expenditures of state governments (Melo, 1996; Perobelli & Piancastelli, 1996; Dulci, 2002; Oliveira *et al.*, 2014). Even with the expansion of the ICMS tax base and the federal contributions to the State Participation Fund (FPE, in the Brazilian Portuguese abbreviation) after 1988, state revenues were not sufficient to meet growing expenses, further aggravating deficits in state accounts (Oliveira, 1999).

In view of increasing public account deficits, regional and local governments began to promote proactive measures to attract investment, given that, at least from a state perspective, the direct impact of these private enterprises could, in the short term, ease the growing state deficit in view of the immediate increase tax collection that such measures could bring to the territories that would host the investments encouraged (Lima & Lima, 2010).

In the economic scenario, with the Brazilian economy opening-up from the early 1990s, there was an increasing flow of international capital in search of investment opportunities in the country (Dulci, 2002; Ibanez, 2005; Nascimento, 2009). The gradual consolidation of Mercosur (also known as Mercosul or Ñemby Ñemuha; South American trade bloc) and the relative stability provided by the so-called (set of measures taken to stabilize the Brazilian economy in 1994) Real Plan (real being the official currency of Brazil) provided good horizons for multinational corporations to include Brazil in their business plans (Rodrígues-Pose & Arbix, 1999; Dulci, 2002; Arbix, 2002; Ibanez, 2005; Nascimento, 2009). At the same time, there was a neoliberal behavior on the part of the federal government. The watchword would be the search for systemic gains, which radically changed the inductive process in the economy (Dulci, 2002; Ibanez, 2005).

Although this liberal (as the political and moral philosophy based on liberty and equality) model would be widely held at the time, in Brazil the progressive withdrawal of government from the economy would not lead to market efficiency, as everyone expected, but instead created a void of development policies, quickly filled by subnational governments (Prado & Cavalcanti, 2000; Dulci, 2002). According to Amaral (2010), in the Brazilian economic context, the dispute over private investment takes place only among a restricted group of dynamized states (São Paulo, Rio de Janeiro and Minas Gerais), which forces other states to institute proactive policies, especially if their chances of attracting investment without the corresponding tax incentive are unlikely.

In this scenario, there was a real dispute among subnational governments for the new international investments, which would seek in Brazil markets in fast growth (Rodrígues-Pose & Arbix 1999; Arbix, 2002). A clear example of this dispute can be seen from the second half of

the 1990s on international investments of the automobile sector (Rodrígues-Pose & Arbix 1999; Arbix, 2002; Dulci, 2002).

2.2 Previous studies

As in Brazil, international literature presents cases of competition among subnational governments (Nascimento, 2009). In this topic, several empirical studies have gained relevance in North America, which sought to measure the effectiveness of the model known as Enterprise Zones. It is a national US program that seeks, from granting tax incentives, to develop regions considered economically disadvantaged and increases the level of employment and income in the localities benefited (Alm & Hart, 1998; Bondonio & Engberg, 2000; Bondonio & Greenbaum, 2007).

Bondonio and Engberg (2000) have tested the effects of *Enterprise Zones.* They sought to measure effects of this policy on job creation in the benefited regions of five American states (California, Kentucky, New York, Pennsylvania and Virginia). By means of econometric regression models, the authors compared the result generated by companies with and without tax incentives. Results showed that tax incentives implemented by the Enterprise Zones do not have significant effects on job creation in the regions benefited. Similar results were found in studies by Dowall (1996) and Neumark and Kolko (2010) for the state of California and Boarnet and Bogart (1996) for the state of New Jersey.

Bondonio and Greenbaum (2007) have investigated different impacts of tax incentives for Enterprise Zones in ten American states (California, Connecticut, Florida, Indiana, Kentucky, Maryland, New Jersey, New York, Pennsylvania and Virginia). Variables used were the increase in level of employment, sales, capital expenditure and salary data of beneficiary companies. For research purposes, the authors separated the sample into three clusters: a) new companies; b) already existing ones and c) those in the process of closure. Results showed positive gains on the gross flow of jobs, sales and capital expenditures for new companies. However, the same situation has not been verified for existing companies and those in the process of closing. This fact, according to the authors, could lead to discrepant policies between new and existing companies.

O'Keefe (2004) has examined the impact of California state Enterprise Zones. Increase in employment has been used as an independent variable. For the study, data from the American demographic census were used, as well as information regarding companies based in the beneficiary areas or not. The study results suggest that locations classified as Enterprise Zones show an increase in employment (about 3% a year) only in the first six years after its designation. However, this effect does not persist in time. Data pointed to growth in employment level of companies that have tax incentives when compared to those that do not have similar incentives.

In Brazil, studies such as those by Nascimento *et al.* (2002), Carvalho and Oliveira (2003), Oliveira and Dias (2011), Cardozo (2013) and Oliveira *et al.* (2014), Cardozo (2013) have analyzed the impact of tax incentives on various metrics (employment, GDP per capita, tax collection, industrial value added, among others) and in all of them results were below that expected, demonstrating that tax incentives have not promoted a boost in the regions benefited. On the other hand, in their studies, Luca and Lima (2007) and Nascimento (2009) have concluded that state tax incentive policies have positively contributed to the regions' economic development. They have brought significant impacts to the least developed states. Studies such as those by Ferreira and Oliveira (2009), Lima and Lima (2010) and Armange and Mello (2014) have found only partial impacts on the economy. They have emphasized that such policies alone would not be sufficient to ensure the reduction of regional economic inequalities.

The research uses as a study variable the value added generated by companies, especially by the importance that this metric has in demonstrating wealth generation by economic agents. As highlighted by Luca (1998), Kroetz (2000) and Santos (2003), measurement of value added is the most competent way of measuring and demonstrating entities' ability to generate and distribute wealth. It is the Gross Domestic Product (GDP) produced by organizations. It should be noted that studies such as those by Nascimento (2009), Oliveira and Dias (2011), Oliveira *et al.* (2014) and Rezende (2015) have also used this variable

as a measure of economic impacts of tax incentives granted by governments, which emphasizes their importance as a measurement metric of economic development.

3 SEARCH METHOD

In order to carry out the research, industrial companies of the textile sector based in the Brazilian state of Santa Catarina were selected. Data were obtained by request and authorization from the Tax Administration Department of the state of Santa Catarina's Treasury Department, which is responsible for managing activities inherent in tax inspection and collection, in addition to acting in compliance with state tax laws.

According to Luca (1998), wealth generated by companies is calculated from the difference between the value of its sale and that of goods produced by third parties and used in their production processes. In Brazil, this form of value added measurement has legal protection, inasmuch as Complementary Law No. 63/90, when stipulating criteria for distribution of ICMS tax collection to municipalities, establishes that, for division purposes, at least three quarters must comply with the proportion of value added generated in the respective municipalities. Finally, the law declares that states should consider as value added "the value of goods exited plus the value of services rendered in their territory minus the value of goods entered in each calendar year."

Thus, for the purposes of this research, the concept of economic value added was adopted as the difference between the values related to the sales of merchandise and goods produced and acquisitions of goods and inputs by the companies analyzed. Previously, the Tax Codes of Operations and Provisions (CFOP, in the Brazilian Portuguese abbreviation), related to sales and purchases of goods and products were selected. From this list of CFOPs, amounts reported by taxpayers in the ICMS and Economic Movement form (DIME, in the Brazilian Portuguese abbreviation) (Article 168, item II, Annex 05, ICMS Regulation of SC) were collected from January 2006 to December of 2010. It should be emphasized that only companies opting for the so-called (Brazilian Treasury Department) "National Simple" (a differentiated, simplified and favored tax policy), which have their own regulation (Complementary Law 123/2006), are exempt from providing this declaration.

It should be noted that, as a condition for preserving tax confidentiality, information that could identify taxpayers, such as corporate name and other registration data, were suppressed in the analysis development. Therefore, numbers referring to taxpayers' register were replaced by key numbers. The reason for assigning this policy was to maintain each taxpayer's individuality, since the study tries to measure the effects of the public policy of incentives individually for each establishment.

In order to verify the textile industries' value added behavior before and after the introduction of the ICMS tax incentive, the longitudinal regression model for panel data known as "differences in differences" (DID or DD), applied in studies such as those by Nascimento (2009) and Oliveira and Dias (2011) was used. The "differences in differences" model allows variables behavior verification over a period of time, identifying possible changes related to the application of a given public policy (Oliveira & Dias, 2011). With the use of this model it is possible to estimate the value added generated by the textile companies that have received tax incentives if they had not received the policy, which allows better comparison of the effects of the public policy under analysis (Nascimento, 2009; Oliveira & Dias, 2011).

In order to prevent the capture of exogenous trends prior to the creation of tax exemption, the determinants of which would not be related to the tax incentive granting, the present study has used polygonal adjustments with binary variables in the model proposed (Nascimento, 2009; Oliveira & Dias, 2011). Moreover, as the model proposes to measure the real growth rate of value added generated by textile companies, it was decided to discount the accumulated inflation rate of the period (IPCA) from the dependent variable (value added). The month of January 2006 was used as a base.

After adjustments, the longitudinal regression model for panel data of "differences in differences" presented the following formula:

$$\ln\left(\frac{Y_i}{r_{acum}}\right) = \propto_0 + \beta_0 t + \delta_0 P_i(t - \theta) + \propto_1 S_i + \beta_1 t S_i + \delta_1 P_i(t - \theta) S_i + \varepsilon_1$$

Where:
$\ln\left(\frac{Y_i}{r_{acum}}\right)$= the natural logarithm of the value added generated by the company in the respective month divided by the accumulated inflation up to the period, based on the month of January 2006;
P_i = the binary variable, being "0" for the months prior to November 2008 (date of setting forth the tax incentive with the publication of State Ruling No. 1,669/08) and "1" for subsequent months;
S_i = the binary variable, with "0" for textile companies that did not receive the presumed ICMS credit in the period analyzed and "1" for those that received it after the tax incentive was set forth;
t = represents the trend variable;
θ = represents the abscissa of the vertex. In this model, it is the month of November 2008 that delimits the period before and after setting forth the tax incentive (State Ruling No. 1,669/08);
$\propto_0$, $\propto_1$, β_0, β_1, δ_0, δ_1 = they represent the model parameter and
ε_1 = represents the error term.

In the model proposed, the growth rate of the value added (Y_i) shall be:

a) β_0, in the control group, before the structural change;
b) β_0+δ_0, in the control group after the structural change;
c) β_0+ β_1 in the policy group, before the structural change;
d) β_0+δ_0+β_1+δ_1, in the policy group after the structural change.

Also, in order to guarantee results robustness, the following tests are used for data adequacy to regression model assumptions with panel data, according to Tables 1 and 2:

Table 1
Assumptions for applying the regression model to panel data

Tests	**Null hypothesis**	**Alternative hypothesis**
White test	There is no heteroscedasticity in the data	There is heteroscedasticity in the data
Wooldridge test	Absence of correlation in the data	Existence of correlation in the data

Source: Prepared by the authors themselves (2016).

Table 2
Assumptions for defining the regression model to panel data

Tests	**Null hypothesis**	**Alternative hypothesis**
Chow test	Intercepts are equal for all cross-sections [POLS (Pooled Ordinary Least Square)]	Intercepts are different for all cross-sections (fixed effects)
Breusch-Pagan LM Test	The variance of the residues reflecting the difference is equal to zero (POLS)	The variance of the residues reflecting the difference is nonzero (random effects)
Durbin–Wu–Hausman test (also called Hausman specification test)	The error correction model is suitable (random effects)	The error correction model is not suitable (fixed effects)

Source: Prepared by the authors themselves (2016).

After consolidating the information, 11,272 establishments in the Brazilian state of Santa Catarina were surveyed in the state's textile sector. From this volume, between November 2008 and December 2010, 678 establishments received authorization from the State Treasury Department to use the presumed ICMS credit provided for in item IX, Art. 21, Annex 02 of RICMS/SC. As already mentioned, monthly information on value added was obtained in the period from 2006 to 2010, totaling 60 months. Considering that the model proposed uses the dependent variable natural logarithm (value added), establishments that presented value added

equal to zero in the respective month were not computed. Therefore, there were 164,431 observations to be submitted to the tests proposed by the present study.

Finally, it should be noted that, for measuring statistical data, software Stata® SR for Windows® version 12 was used.

4 DATA ANALYSIS

Independently of previous tests, based on the relevant sample size (164,431 observations) and using the asymptotic distribution conception, the present study considered that the data have a normal distribution, since, in these cases, the estimators remain consistent with large samples, in addition to guaranteeing valid results for Student's t-test and F-test (Gujarati & Porter, 2011).

Thus, initially, the tests listed in Table 1 are applied to verify assumptions of use of the regression model for panel data (absence of residue autocorrelation and data homoscedasticity). Results are shown in Table 3.

Table 3
Tests to verify regression assumptions

Regression model assumptions	**Test**	**Null hypothesis (H_0)**	**Alternative hypothesis (H_1)**	**Result**	**Hypothesis**
Absence of residues autocorrelation	Wooldridge test	Absence of correlation in the data	Existence of correlation in the data	Prob > F = 0.0000	Rejects H_0 in favor of H_1
Homoscedasticity	White test	There is no heteroscedasticity in the data	There is heteroscedasticity in the data	P-value = 0.0000	Rejects H_0 in favor of H_1

Source: Prepared by the authors themselves (2016).

Based on the results of Table 3, the Wooldridge and White tests demonstrate, respectively, autocorrelation and heteroscedasticity problems in the data collected. In this sense, according to Gujarati and Porter (2011), in the case of coexistence of autocorrelation and heteroscedasticity problems, especially in reasonably large samples, it is interesting to adopt the Newey-West estimator, since the method can deal with the existence of problems, guaranteeing linearity, non-bias and consistency in the estimators. Thus, the present study has adopted the Newey-West estimator, also known as heteroscedasticity-consistent standard errors (HC) and autocorrelation.

In light of the tests and corrections mentioned above, the model with panel data was generated for the study of the value added generated by the Brazilian state of Santa Catarina's textile industries, the result of which is shown in Table 4:

Table 4
Result of the estimation of the model with panel data to evaluate the behavior of value added of Santa Catarina's textile industries during the period from 2006 to 2015

Variable	**Real growth rate**			**Nominal growth rate**		
	Coefficient	**Standard error**	**P value**	**Coefficient**	**Standard error**	**P value**
β_0	0.0571475	0.0008775	0.000	0.0606862	0.0008777	0.000
δ_0	-0.0304579	0.0023162	0.000	-0.029496	0.0023165	0.000
β_1	-0.0487251	0.0021281	0.000	-0.0484238	0.0021282	0.000
δ_1	0.0393482	0.0044225	0.000	0.0387022	0.0044226	0.000
Number of observations:		164,431				
Confidence Interval:		95%				

Dependent variable: Added monthly value generated by the company.

Note[1]: At the level of significance of 95%.

Note[2]: The regression model definition tests for panel data (fixed, random or POLS effects), provided in Table 2, were suppressed, since the estimation of the model was based on the Newey-West estimator, with a view to correcting previously detected heteroscedasticity and autocorrelation problems.

Note[3]: Considering that the model seeks to measure the relative rate of the impact of tax incentives on the generation of wealth in the economy, there was an option for the semi-logarithmic model, considering its greater relevance for the economic analyses (Gujarati & Porter, 2011).

Source: Prepared by the authors based on the research data (2016).

According to data extracted from the model, between January 2006 and October 2008, the period prior to setting forth the presumed ICMS credit, the real growth rate of value added generated by the control group (textile industries without tax incentives – β_0) presented an average increase of 5.71% per month (6.06% in nominal terms) while the policy group (textile industries that received tax incentives – β_0+β_1) showed an average growth of only 0.84% per month (1.73% in nominal terms).

In the period after setting forth the presumed ICMS credit, there was a substantial change in numbers. According to the results, since that period, the real growth rate of value added generated by the control group (textile industries without tax incentives – $\beta_0 + \delta_0$), has continued to grow but with a decrease of 53.30%. There was an average monthly increase of 2.67% (3.12%, in nominal values). On the other hand, there was a 105% increase in the policy group (textile industries that received tax incentives – $\beta_0 + \delta_0 + \beta_1 + \delta_1$), which rose to an average monthly growth rate of 1.73% (2.15%, in nominal values).

5 ANALYSIS OF RESULTS

Given the results presented, some findings can be presented. The first is that, indeed, tax incentives granted to the textile sector have not been effective in promoting the segment economic growth. This can be perceived by the 32.89% decrease in the real value added monthly generated by companies in the sector after the institution of the presumed ICMS credit (the average monthly value added before the publication of State Ruling No. 1,669/08 was 3.28% per month and became 2.20% in the subsequent period). Thus, the results corroborate those verified in studies such as those by Nascimento et al. (2002), Carvalho and Oliveira (2003), Oliveira and Dias (2011), Cardozo (2013) and Oliveira *et al.* (2014), by means of which it was concluded that there were no economic gains with the state tax incentives policies.

Another point worth mentioning is the change in the monthly rate of increase in value added, generated between the policy and control groups after publication of the Ruling. While in the first group there was a real fall of 53.30%, in the second one there was an increase of 105%, which can demonstrate a simple process of market migration due to unfair competition generated by the tax incentive, as verified in a study by Bondonio and Greenbaum (2007) for the North American Enterprise Zones. Thus, state intervention in the economy has not generated efficiency in the market but only negative externality to companies that perhaps could not have access to the tax incentive. This result gives rise to reflections on the decision-making capacity of political agents responsible for public choices.

As highlighted by Oliveira (1999), the choice of tax incentive concession by federative units generates some cost that, as a rule, cannot be measured. Thus, there is some real information asymmetry on the part of public managers that prevents choices from being economically rational or satisfying all agents involved (Oliveira, 1999). In existing democratic models, public managers are constantly subject to influences from organized groups (rent-seeking), which allows certain agents to actively influence political decisions, compromising the most rational economic choices (Oliveira, 1999).

In addition, results indicate a clear gradual reduction of the textile industry value added growth rate, which may signal a progressive weakening of the sector in the state. This negative result may be closely linked to state foreign trade policies. According to Macedo and Angelis (2013), with the publication of the Pro-Employment program (Law no. 13,992/2007), Santa Catarina has changed the level and structure of the state's imports. Until 2004, the state's largest importers were industrial companies. This situation has been completely reversed in the following period, turning trading companies into leaders of import processes from 2011 (Macedo & Angelis, 2013).

6 CONCLUSIONS

The present study has aimed to verify the value added behavior generated by textile companies before and after the adoption of a public policy, considering tax incentives effects as an inductive tool for the state's textile chain economic growth. Preliminarily, tax, political and economic issues were considered, taking into account the foundations of the current "Tax War" scenario in Brazil. In an empirical way, the study has sought to measure tax incentive effects as an inductive tool for economic growth in the state textile chain, analyzing the value added behavior generated by textile companies before and after the institution of the presumed ICMS credit.

Results show a 32.89% decrease in the real value added monthly generated by companies in the sector after institution of the presumed ICMS credit (the monthly average value added before the Ruling was published was 3.28% per month; it has increased to 2.20% in the subsequent period). In addition, after introduction of the tax incentive, there was a real decrease of 53.30% in the control group (companies without tax incentive), while at the same time a 105% increase in the policy group (companies with tax incentives), which shows a clear process of market migration, possibly in view of unfair competition generated by the tax incentive.

According to FIESC (Brazilian Portuguese abbreviation for the Federation of Industries of the state of Santa Catarina) (2014, page 13), "The textile sector has lost productive density in the years analyzed, measured by the degree of industrialization." This means that industrial costs have increased more than the value added. This lower production density, for FIESC (2014, p.13) "is related to an increase in textile raw materials imports for use in the industry." This process corresponds to the textile and garment industrial movement in the rest of Brazil, where, in the same period analyzed, production density increased to two industrial segments (FIESC, 2014). However, the present paper does not intend to end discussions about tax incentives effectiveness in promoting regional development but rather warn about how this type of public policy is set forth.

Therefore, the present study has sought to theoretically and empirically contribute to the topic. However, the issue still needs to be academically deepened, especially as to what measures can serve as guiding tools for redirecting this kind of public policy, allowing support for public managers to promote economically rational and efficient choices, maximizing well-being of agents involved.

REFERENCES

Alexandre, R. (2008). Direito *tributário esquematizado* (2a ed.) São Paulo: Método.

Alm, J. & Hart, J. A. (1998). *Enterprise zones and economic development in Colorado* [Working Paper No. 98-16]. Center for Economic Analysis, Department of Economics, University of Colorado, Boulder, CO, USA.

Almeida, F. C. R. de. (2000). Uma abordagem estruturada da renúncia de receita pública federal. *Revista do Tribunal de Contas da União, 31*(84), 22-28.

Amaral, J., Filho (2010). Incentivo Fiscal como Instrumento de Desenvolvimento Local ou Regional. *Revista Desenbahia*. 2(1), 07 – 38. Recuperado em 16 agosto, 2016, de http://www.desenbahia.ba.gov.br/uploads/2508201114531875_Cap1.pdf

Arbix, G. (2002). Políticas do desperdício e assimetria entre público e privado na indústria automobilística. *Revista Brasileira de Ciências Sociais, 17*(48), 109-129.

Assunção, M. C. (2011). Incentivos fiscais em tempos de crise: impactos econômicos e reflexos financeiros. *Revista da PGFN, 1*(1), 99-121.

Avi-Yonah, R. S. (2008). Os três objetivos da tributação. *Revista Direito Tributário Atual, 22*.

Boarnet, M. G. & Bogart, W. T. (1996). Enterprise zones and employment: evidence from New Jersey. *Journal of Urban Economics, 40*(2), 198-215.

Bondonio, D. & Engberg, J. (2000). Enterprise zones and local employment: evidence from the states' programs. *Regional Science and Urban Economics, 30*(5), 519-549.

Bondonio, D. & Greenbaum, R. T. (2007). Do local tax incentives affect economic growth? What mean impacts miss in the analysis of enterprise zone policies. *Regional Science and Urban Economics, 37*(1), 121-136.

Calderaro, F. R. S. (1973). *Incentivos fiscais à exportação*. São Paulo: Resenha Tributária.

Cardozo, S. A. (2013). Crise da política regional de desenvolvimento e a guerra fiscal: estudo de alguns estados selecionados. *Anais do Encontro Nacionais da ANPUR*, Recife, Pernambuco, Brasil, 15.

Carrazza, R. A. (2002). *Curso de Direito Constitucional Tributário* (17a ed.). São Paulo: Malheiros Editores Ltda.

Carvalho, J. R. & Oliveira, V. H. (2003). O Fundo de desenvolvimento industrial do Ceará: uma avaliação econométrica com dados em painel para o período de 1995 a 2001. *Estudos Econômicos, 47*(1), 12-14.

Cavalcanti, F. Q. B. (1997). Reflexões sobre o papel do Estado frente à atividade econômica. *Revista Trimestral de Direito Público, 1*(20), 1997.

Cheshire, P. C. & Gordon, I. R. (1998). Territorial competition: some lessons for policy. *The annals of regional science, 32*(3), 321-346.

Chirinko, R. S. & Wilson, D. J. (2008) State investment tax incentives: A zero-sum game?. *Journal of Public Economics, 92*(12), 2362-2384.

Decreto n° 1.669, de 08 de setembro de 2008. Introduz a Alteração 1.774 no RICMS/01. Diário Oficial do Estado de Santa Catarina, Florianópolis, 08 de setembro de 2008. Recuperado em 16 agosto, 2016, de http://legislacao.sef.sc.gov.br/Consulta/Views/Publico/Frame.aspx?x=/html/decretos/frame_decretos.htm

Decreto n° 2.870, de 27 de agosto de 2001. Aprova o Regulamento do Imposto sobre Operações Relativas à Circulação de Mercadorias e sobre Prestações de Serviços de Transporte Interestadual e Intermunicipal e de Comunicação do Estado de Santa Catarina. Diário Oficial do Estado de Santa Catarina, Florianópolis, 29 de agosto de 2001. Recuperado em 16 agosto, 2016, de http://legislacao.sef.sc.gov.br/legtrib_internet/cabecalhos/frame_ricms_01_00_00.htm.

Dowall, D. E. (1996). An evaluation of California's enterprise zone programs. *Economic Development Quarterly, 10*(4), 352-368.

Dulci, O. S. (2002). Guerra fiscal, desenvolvimento desigual e relações federativas no Brasil. *Revista de Sociologia e Política, 18*, 95-107.

Elali, A. (2007). *Incentivos fiscais, neutralidade da tributação e desenvolvimento econômico: a questão da redução das desigualdades regionais e sociais*. Incentivos fiscais: questões pontuais nas esferas federal, estadual e municipal. São Paulo: MP, 37-66.

Ferreira, S. G. (2000). *Guerra fiscal: competição tributária ou corrida ao fundo do tacho?* Boletim da Secretaria de Assuntos Fiscais do BNDES: informe-se, Rio de Janeiro, 4.

Ferreira, S. G. & Oliveira, L. S. (2009). *Avaliação de impacto de um programa de incentivo fiscal com uso de método quase-experimental.* Seminário. Instituto de Economia da Universidade Federal do Rio de Janeiro, Rio de Janeiro, RJ, Brasil.

Federação das Indústrias de Santa Catarina. (2014). *Rotas Estratégicas Setoriais para a Indústria Catarinense 2022: Têxtil & Confecção*. Florianópolis: FIESC.

Formigoni, H. (2008). *A influência dos incentivos fiscais sobre a estrutura de capital e a rentabilidade das companhias abertas brasileiras não financeiras.* Tese de Doutorado, Faculdade de Economia, Administração e Contabilidade, Universidade de São Paulo, São Paulo, Brasil.

Gadelha, G. P. (2010). *Isenção tributária: crise de paradigma do federalismo fiscal cooperativo*. Curitiba: Juruá.

Giambiagi, F. & Além, A. C. D. de (2008). *Finanças públicas: teoria e prática no Brasil*. Brasil: Elsevier.

Grau, E. R. (2006). *A ordem econômica na Constituição de 1988* (11a ed.). São Paulo: Malheiros.

Gujarati, D. N. & Porter, D. C. (2011). *Econometria Básica* (5a ed.). São Paulo: AMGH Editora.

Ibanez, P. (2005). Guerra fiscal e território brasileiro: o caso do setor automotivo. *Anais do Encontro de Geógrafos da América Latina*, São Paulo, São Paulo, Brasil, 10.

O´Keefe, Suzanne (2004). Job creation in California's enterprise zones: a comparison using a propensity score matching model. *Journal of Urban Economics*, *55*(1), 131-150.

Kroetz, C. E. St. (2000). *Balanço social, teoria e prática*. São Paulo: Atlas, 2000.

Lee, Y. (2008). Geographic redistribution of US manufacturing and the role of state development policy. *Journal of Urban Economics, 64*(2), 436-450.

Lei Complementar nº 123, de 14 de dezembro de 2006. Institui o Estatuto Nacional da Microempresa e da Empresa de Pequeno Porte. Diário Oficial da União, Brasília, 15 de dezembro de 2006. Recuperado em 16 agosto, 2016, de http://www.planalto.gov.br/ccivil_03/leis/LCP/Lcp123.htm

Lima, A. C. C. & Lima, J. P. R. (2010). Programas de desenvolvimento local na região Nordeste do Brasil: uma avaliação preliminar da “guerra fiscal”. *Economia e Sociedade, 19*(3), 557-588.

Luca, M. M. M. de. (1998). *Demonstração do Valor Adicionado: do cálculo da riqueza criada pela empresa ao valor do PIB*. São Paulo: Atlas, 1998.

Luca, M. M. M. de & Lima, V. F. L. (2007). Efeito dos incentivos fiscais no patrimônio das entidades beneficiárias do programa FDI, do governo do estado do Ceará. *Contextus - Revista Contemporânea de Economia e Gestão, 5*(1).

Macedo, F. C. de & Angelis, A. de. (2013). Guerra fiscal dos portos e desenvolvimento regional no Brasil. *Revista de Desenvolvimento Regional, 18*(1), 185-212.

Mello, G. R. & Armange, M. W. (2014). ICMS e a geração de postos de trabalhos: comparativo entre os estados das regiões nordeste e Sul do Brasil. *Revista Capital Científico-Eletrônica, 12*(3), 44-58.

Mello, L. de. (2008). The Brazilian "Tax War" The Case of Value-Added Tax Competition among the States. *Public Finance Review, 36*(2), 169-193.

Melo, M. A. (1996). Crise federativa, guerra fiscal e "hobbesianismo municipal" efeitos perversos da descentralização? *São Paulo em perspectiva, 10*(3).

Nascimento, S. P. do. (2009). Guerra fiscal: uma análise quantitativa para estados participantes e não participantes. *Revista Economia*, 211-237.

Nascimento, S. P., Camara, M. R. G., & Godoy, M. R. (2002). Guerra fiscal: causas e consequências. Uma análise empírica para o Estado do Paraná. *Anais Encontro da Associação Nacional dos Programas de Pós-Graduação em Administração*, Salvador, Bahia, Brasil, 26.

Neumark, D. & Kolko, J. (2010). Do enterprise zones createjobs? Evidence from California's enterprise zone program. *Journal of Urban Economics, 68*(1), 1-19.

Oliveira, J. N., Júnior, & Dias, A. F. (2011). Guerra Fiscal no Estado do Pará: Uma avaliação da política de incentivos sobre o ISS, Emprego e Valor Adicionado Bruto da indústria. *Anais do Circuito de Debates Acadêmicos (CODE) – IPEA*, Brasília, Distrito Federal, Brasil, 2.

Oliveira, J. N., Júnior, Dias, A. F., & Tabosa, F. J. S. (2014). Avaliação da Política de Incentivos Fiscais sobre a Capacidade Fiscal, ISS, Emprego e Valor Adicionado Bruto da Indústria no Estado do Pará. *Novos Cadernos NAEA, 17*(1).

Oliveira, L. G. (1999). Federalismo e guerra fiscal. Pesquisa & Debate. *Revista do Programa de Estudos Pós-Graduados em Economia Política, 10*(2).

Papadopol, M. D. (2009). *A extrafiscalidade e os controles de proporcionalidade e de igualdade.* Dissertação de Mestrado, Universidade Federal do Rio Grande do Sul, Porto Alegre, Brasil.

Perobelli, F. & Piancastelli, M. (1996). *ICMS: evolução recente e guerra fiscal*. Brasília: IPEA (Texto para discussão nº 402). Recuperado em 29 fevereiro, 2016, de http://repositorio.ipea.gov.br/handle/11058/1789

Prado, S. (1999). Guerra fiscal e políticas de desenvolvimento estadual no Brasil. *Economia e Sociedade, 8*(2), 1-40.

Prado, S. & Cavalcanti, C. E. G. (2000). *A guerra fiscal no Brasil*. São Paulo: Fundap/IPEA/FAPESP.

Rezende, A. J. (2015). *Avaliação do impacto dos incentivos fiscais sobre os retornos e as políticas de investimento e financiamento das empresas.* Tese de Livre-Docência, Faculdade de Economia, Administração e Contabilidade da Universidade de São Paulo, Ribeirão Preto, São Paulo, Brasil.

Rodrigues, H. T. & Freitas, D. D. (2005). Cooperativismo interinstitucional público: uma proposta de gestão pública tributária para superação da guerra fiscal em busca do desenvolvimento. *Direitos sociais e políticas públicas: desafios contemporâneos, 1*, 2686-2705.

Rodrígues-Pose, A. & Arbix, G. (1999). Estratégias do desperdício. A guerra entre estados e municípios por novos investimentos e as incertezas do desenvolvimento. *Novos Estudos Cebrap, 54*, 55-71.

Santos, A. dos. (2003). *Demonstração do Valor Adicionado: Como elaborar e analisar a DVA*. São Paulo: Atlas.

Stark, K. J. & Wilson, D. J. (2006). What do we know about the interstate economic effects of state tax incentives?. *Geo. JL & Pub. Pol'y, 4*, 133.

Suzigan, W. & Furtado, J. (2006). Política industrial e desenvolvimento. *Revista de economia política, 26*(2), p. 163-185.

Tanzi, V. & Zee, H. H. (2000). Tax policy for emerging markets: developing countries. *National Tax journal*, 299-322.

Varsano, R. (1996). *A guerra fiscal do ICMS:* quem ganha e quem perde. *Seminário Internacional* "*Políticas Industriais Recentralizadas*", CEPAL/IPEA, Brasília.

Revista Catarinense da Ciência Contábil,
ISSN 1808-3781 - eISSN 2237-7662,
Florianópolis, SC, v. 17, n. 51, p. 71-83,
May/Aug. 2018

DOI: 10.16930/2237-7662/rccc.v17n51.2568
Available at http://revista.crcsc.org.br

PERFORMANCE OF FUNDS OF FUNDS IN BRAZIL

DERMEVAL MARTINS BORGES JUNIOR
Master in Business Administration at the Federal University of Uberlândia (FAGEN / UFU). ***Address****: Av. João Naves de Ávila, 2121 | Bloco 1F | Sala 1F-216 | Campus Santa Mônica | Uberlândia / MG | Brazil.*
E-mail: *dermevaljr14@hotmail.com*

RODRIGO FERNANDES MALAQUIAS
PhD in Business Administration from Fundação Getúlio Vargas (EAESP / FGV). Professor of the Post-Graduate Program in Administration (Master's) from FAGEN / UFU and the Post-Graduate Program in Accounting Sciences of FACIC / UFU. ***Address****: Av. João Naves de Ávila, 2121 | Bloco 1F | Sala 1F-216 | Campus Santa Mônica | Uberlândia / MG | Brazil.*
E-mail: rodrigofmalaquias@yahoo.com.br

ABSTRACT

Among the modalities of existing funds are the Investment Funds in Quotas (FICs), which they are funds that acquire shares from other funds instead of directly investing in market assets. In addition to offering the inherent advantages of traditional funds, the FIC allows the expansion of investment options, since its structure allows access to several other funds with low initial investment. On the other hand, the structure of the FICs presents rates and costs that can negatively affect their performance. However, the objective of this study is to analyze the performance of the Brazilian FICs, with focus on the other funds. From a sample of 1,723 stock funds, with data available for the period from January 2005 to March 2016, the analysis was used to reach the objective of the study. The results indicated better performance indicators (Sharpe Ratio) for FICs, compared to the other funds in the sample.

Keywords: Institutional investors. Funds of funds. Funds of equity funds. Investment funds. Performance.

1 INTRODUCTION

The fund industry in Brazil has shown growth both in absolute terms and when compared to other regions such as Latin America and the United States, although the US fund industry is approximately 14 times larger than the Brazilian one. This growth made it possible to develop and regulate various types of investment funds. Among the modalities of existing funds are Investment Funds in Quotas (FICs), which, instead of directly investing in stock market assets, acquire holdings from other funds (Varga & Wengert, 2011).

In addition to offering the inherent advantages of traditional funds, FICs allow the expansion of investment options, as their structure allows investors to access various other funds, including closed, and low initial investment. Despite this, they present additional costs and fees compared to traditional direct funds, since in addition to the fees from the underlying funds, the investor also assumes extra expenses related to FIC management (Bertin & Prather, 2009, Ang, Rhodes-Kropf, Zhao, 2008).

We thank FAPEMIG for the support to develop the research (Process APQ0126514, Public Notice 01/2014 of FAPEMIG).

Submission on 11/15/2017. **Revision on** 05/24/2018. **Accepted on** 05/26/2018.

Some studies suggest that the higher costs of FICs are offset by the diversification and management model. Dai and Shawky´s work (2010) shows that the more diversified the FIC the better the result and the lower the risk. Turner (2004) points out that the fund manager can add value through the ability to choose the best mix of markets or class of assets to invest in and identify the individual fund managers who are better Elaborated to achieve the proposed objectives. Despite of this fact, Amenc and Vaissié (2006) observed that only 20% of the FICs analyzed presented value creation, taking into account portfolio and management construction.

In Brazil, few works deal with FICs. Malaquias and Eid (2014) found that, in times of crisis, FICs were able to add more value than other multimarket funds. Accordingly, Malaquias and Mamede (2015) were compared with the other investment funds. Regarding funds flows from fund managers, Cotrim (2012) states that Brazilian FIC managers supervise to generate value to the adversary as strategies that will compose a portfolio of funds, but they destroy value by trying to make good funds within each strategy.

FICs are generally included in Brazilian academic studies as a control variable (Assali, 2008; Malaquias and Eid, 2014; Malaquias and Mamede, 2015). The indicators showed that FICs have a different structure from the other investment funds, which motivated a study with emphasis on the type of institutional investor. Thus, the research summary consists of analyzing the determinants of the return to risk of Brazilian equity investment funds, with a focus on quota funds.

Data from the Investment Company Institute (2014) in 2013, the assets of the Latin American bond mutual recognition industry totaled approximately US $ 1.2 trillion, almost 25% higher than in 2009, which was US $ 905 billion. It is worth mentioning that Latin American participation was 85% in 2013, equivalent to almost US $ 1.02 trillion. Of note is a growth that expresses values, since in 2009 Brazil had US $ 784 billion of funds of funds.

According to data from the Investment Company Institute (2014), in analyzing the assets of the BRICS vehicle industry (Brazil, Russia, India, China and South Africa) in 2013, the existing value was US $ 1.75 trillion, almost 26% higher than in 2009, disbursed at US $ 1.30 trillion. Brazil's participation in relation to the BRICS in 2013 was 58.2% and in 2009, 60.4%. Despite the participation in Brazil, it is not so important in the BRICS in comparison to Latin America, it is still quite significant, and therefore represents a relevant market to be studied.

It is worth mentioning that FICs are inserted in an important segment of the Brazilian financial market: institutional investors. This class of investors is responsible for moving significant amounts of resources in the financial market, characterizing itself as the largest investors in investment funds in Brazil (Institute of Applied Economic Research, 2015).

2 REVIEW OF LITERATURE

Investment funds are among the main ways of attracting and allocating existing financial resources. The volume of funds invested in this type of investment grew significantly in Brazil in the early 1990s, with the process of economic liberalization. It provided the creation of several new funds and increased investment in existing funds (Milani, Ceretta, Barba, & Casarin, 2010).

According to Bertin and Prather (2009), the investment fund industry has witnessed a rapid growth in a category of funds called funds of investment funds (FIC). Basically, FICs are funds that invest in traditional funds instead of investing directly in the financial market. Ang et al. (2008) indicate three main reasons for increasing the popularity of these funds: i) the possibility for investors to access investment funds that are closed to individual investors; ii) minimum investment required when compared to other funds; iii) access to diversified portfolio, so that only individual investors with large amounts of capital could replicate this level of diversification.

According to Fothergill and Coke (2001), FICs offer investors a broad range of alternative investment strategies based on the combination of different underlying funds in the FIC portfolio, so such diversification can provide returns with low levels of risk. In addition, because of the structure of the FICs, individual investors tend to obtain greater transparency benefits than they would have if they invested in an investment fund in a direct way, thus minimizing eventual problems with the choice of the fund or the due process. diligence, for

example. Despite these benefits, it is important to highlight that FICs present additional costs and fees compared to traditional funds, which make them more expensive. According to Ang et al. (2008), FICs pass on to investors all the fees charged by the underlying funds in the quota fund portfolio. In addition, there are extra fees to compensate the fund manager, which are also relevant and may corrode a possible performance above the expected return.

When comparing the performance of traditional hedge funds and FICs of hedge funds, Ammann and Moerth (2008) observed that the average annual return of hedge funds was 8.42% in the period from January 1994 to April 2005, while FICs presented a 6.53% average annual return for the same period. The authors attributed this difference in performance precisely to the FIC rate structure, so the results suggested an additional incidence rate of 1.84% per year compared to the direct hedge funds, very close to the difference from the average performance (1.89% per annum).

Regarding the profitability, it is worth mentioning some studies on private equity FICs, such as Aggarwal, Sharma and Prashar (2012), which, when listing three private equity FIC indexes with five market indices (AORD, SSE Composite, N225, FTSE 100 and S & P500), showed that two of the three FIC indexes showed higher annual returns than four of the market indexes in four of the five years analyzed. Gresch and Wyss (2011), in analyzing 1,641 private equity funds, indicated that FICs are more attractive in terms of risk and return than direct investment funds.

On the other hand, Denvir and Hutson (2006), when analyzing data from 332 FICs, from January 1990 to May 2003, performed worse than individual hedge funds, due to the high rates inherent to the structure of FICs. Nevertheless, the authors have also shown valuable features of FICs that compensate for this problem, it is mentioned, that their returns do not suffer from the same negative asymmetry that characterizes the return of hedge funds.

In the case of the Brazilian FICs, the results of the study by Malaquias and Mamede (2015) suggested better performance indicators in comparison to the other investment funds, even with the structure that involves higher rates.

Similarly, Rocco (2009) studied the profitability, volatility, equity and risk-adjusted return of Brazilian multimarket funds, comparing the results of direct funds and FICs in the period from 2002 to 2007. Among the results, Rocco (2009) found evidence of Sharpe's highest index for investment funds in quotas of other funds in relation to funds that invest directly in assets of the market.

In addition, Malaquias and Eid (2014), when analyzing Brazilian multimarket funds, found that FICs, even with the structure with higher rates of interest than traditional funds, can add more value than the other multimarket funds analyzed. The justification for this is that FICs are able to find forecasted trading opportunities in a segment that does not conform to the Market Efficiency Hypothesis. It is worth mentioning that, according to the authors, the size of funds, regardless of the period analyzed, presented a positive relation with performance, that is, the higher the fund the better its performance.

According to Geranio and Zanotti (2005), FICs have the highest management rate compared to other categories of funds. This rate reflects the costs with how the funds are managed. FICs that invest in systems by their same asset management company charge only a commission, while those who buy funds in another management company add extra management fee to compensate for asset allocation services. The authors also indicated two explanations for the higher FICs rates: i) a premium price because of the benefit provided by the diversification; ii) the predominance of quota funds investing in systems not managed by the same promoter. These arguments lead one to think that the relationship between performance and the FICs management rate may behave differently from that presented in traditional funds.

Some studies suggest that while FICs are more expensive, this can be offset by the benefits provided by diversification. Compared to traditional investment funds, the Bertin and Prather (2009) survey showed a favorable performance during the period from 1996 to 2003, mainly due to the diversification of fund managers.

The study also pointed out that the identification of the management team and the management knowledge influence the FICs performance. Dai and Shawky (2010) have found evidence of better results when comparing performance among specialized stock funds (diversify only among managers but are within a single fund strategy) and diversified (diversify

both among managers and fund strategies) and the lower the risk the greater the diversification. Amo, Harasty and Hillion (2007) also studied the benefits of FIC diversification. Their results indicated that by adding only a small number of hedge funds, no more than six, hedge fund risk falls by half compared to individual hedge funds.

In contrast to earlier work on diversification, according to Brown, Gregoriou and Pascalau (2012), the risk reduction provided by FICs tends to end when it reaches between 10 and 20 underlying hedge funds. In addition, the diversification of over 25 underlying funds leads, in most cases, to a significant reduction in performance. In this way, it is perceived that there are relevant limits regarding the diversification provided by the FICs.

Brands and Gallagher (2005) also argue that regardless of the portfolio selection strategy, most FIC diversification gains are obtained with a portfolio comprising only six funds. After this point, the incremental increases in the number of funds held in the portfolio do not show significant gains from the risk and return point of view.

Besides with regard to the fund portfolio, Milan and Eid (2014) analyzed the turnover of Brazilian investment funds portfolios from 2007 to 2011, in order to identify possible effects on performance. The main results presented by the authors indicated that high levels of monthly portfolio turnover exert a negative effect on performance. In addition, the FICs showed significantly lower monthly turnover rates than stock funds, therefore, it was suggested that FICs tend to maintain their stable portfolios.

Another factor that may represent an important advantage for FICs is the choice of the manager. Borges and Martelanc (2015), from ten thousand data simulations, from Brazilian stock investment funds from 2000 to 2013, have found consistent evidence of the ability of fund managers to produce positive abnormal returns, that is to say, higher than those that would be obtained by pure luck, especially in managers of large funds.

In this context, Reddy, Brady and Patel (2007) affirm that FICs can choose managers from a large universe of funds, whereas a multi-strategy manager, for example, is limited to her/his ability to hire teams according to each strategy that participates. Thus, in a sense, it is possible to state that an FIC has access to the best managers for a wide range of investment strategy. This can have a positive impact on fund performance if you can build a portfolio with high-average managers.

Turner (2004) points out that by investing in an FIC, unlike in a common fund, the fund manager can add value through the ability to choose the best mix of markets or class of assets to invest. It identifies individual fund managers who are best Elaborated to deliver value in these markets in order to achieve the fund's investment objectives.

In this sense, Aiken, Clifford, and Ellis (2015) examined the portfolios of hedge fund of funds to identify the channels through which FICs add value to their clients. Although the mentioned authors identify portfolios maintained by FICs composed of several funds, which would be expensive and infeasible for individual investors to manage on their own, the evidence suggests that FICs do not have extraordinary ability in choosing their underlying hedge funds. In other words, FICs can apply funds to funds with poor future performance. On the other hand,

Aiken et al. (2015) have shown that FICs are good at making investment decisions, ei, after an FIC liquidates its position in a hedge fund, it is later a poorer performance (more frequently). Thus, Aiken et al. (2015) understand that FICs play a key role as intermediaries in the markets where Transaction cost are significant.

On the other hand, Cotrim (2012), when studying funds from hedge funds in Brazil, classified as multi-manager funds, found that the managers of these funds manage to generate value by selecting the strategies that will compose the portfolio of the respective multi-manager fund, but destroy value by trying to anticipate market movements and, in addition, can not choose the best funds within each strategy.

The results of Kat and Helder's research, presented in Gregoriou (2006), indicated that most FICs in terms of return to investors did not show value added, which does not mean that these funds are not useful, since to the advantages described above, as low investment required, allow small investors to have access to diversified fund portfolio. The study by Amenc and Vaissié (2006) showed that approximately 89% of FICs demonstrated value creation in terms of portfolio construction and 31% had added value through active management. However,

when considering both portfolio construction and management, only 20% presented value creation.

Edelman, Fung, Hsieh and Naik (2012) used a database of 1,591 hedge FICs to verify the performance of diversified hedge fund portfolios during the period from January 2005 to December 2010. Their results demonstrated that the returns of FICs analyzed are, to a large extent, driven by exposure to systematic risk factors. In addition, FICs presented a positive cumulative mean return, when exposed to different sources of systematic risk, only in the first period analyzed (from January 2005 to June 2007).

According to Leusin (2006), although the FICs present many advantages for the investor, such as diversification, choice of professionals who will manage the funds, small investors access to restricted funds, among others, the effect of the incident rates generates a cost very high for the quota holders, in order to restrict the attractiveness of these investments. The results of Leusin's work (2006) indicated that, although managers can add value to the investor, the excess of fees greatly compromises the return, absorbing much of the advantage of this type of investment.

According to Füss, Kaiser and Strittmatter (2009), characteristics such as size and age can also influence the risk / return performance of funds. The results showed that the return decreases for small FICs and increases for large FICs, as the experience (age) of funds grows. The explanation for this point is that new FICs tend to be more cautious in taking risk, more diversified and having lower return volatility than the older ones. Shawky and Wang (2014) also found that larger ones tend to outperform smaller funds, because FICs do not generate direct asset portfolios, they are less subject to the liquidity costs associated with high portfolios of assets in other types of investments.

Another aspect that we should pay attention is the crisis periods. There is evidence in the literature that periods of crisis may have some effect on the performance of investment funds. In their study of Brazilian multimarket funds, Malaquias and Eid (2014) established a variable to verify the possible influence of crisis periods on the performance of the funds, so that the period from January 2005 to May 2008 was considered a market moment in high and from June 2008 to August 2011 a period of crisis. The results of the research by Malaquias and Eid (2014), in this context, demonstrated statistically significant differences between the average performance of the funds in periods of crisis and in periods of stability. In periods of crisis the average performance of the funds was worse.

Similarly, Joaquim and Moura (2011) analyzed performance and indicators of persistence of Brazilian multimarket funds in the period from 2007 to 2011, noting the effects that the crisis of 2008 could exert on performance. Among the results, the authors identified even during the crisis period, the existence of abnormal returns and persistence for a significant amount of funds at the aggregate level, but few funds showed persistence of performance at the individual level, so that performance decreased as the increase as time passes by.

Garay, Hernández and Rivillo (2017) analyzed the behavior of microeconomic variables of multimarket funds during the period prior to the crisis of 2008, in order to identify if such elements could predict the probability of FIC survival in the crisis period. Among the results of the study, it was observed that the probability of FIC survival during the global financial crisis of 2008 can be explained by the behavior of the average return estimate, the standard deviation of the monthly returns, the administration rate, the performance rate and the coefficient of kurtosis of the monthly returns.

In general, it is possible to perceive that it seems to be a consensus among the studies that FICs tend to be less profitable when compared to the profitability of traditional investment funds, mainly due to their structure, which presents additional rates. Despite, some studies indicate the fact can be offset by other benefits provided, mainly by the diversification and management of these funds. Moreover, it cannot be said that such factors are indisputable benefits, since, as seen, diversification has limits and there is controversy about the value created by managers, which motivates and shows the opportunity to carry out a new study on the subject matter.

3 METHODOLOGICAL PROCEDURES

For this study, all the stock funds with monthly data available in the *Economatica* database for the period from January 2005 to March 2016 were considered. The year 2005 was chosen due to the use of the period after the harmonization of the content disclosed by investment funds (CVM Instruction 409, No. 411, No. 413, 2004). The end date was selected because it is the month with the most recent data available during the collection period (which ended in July 2016), which provided 1,723 funds available. It is important to highlight that the sample includes active funds, as well as funds that were closed during the period.

Four factors were included in the study, as previous work has already shown a significant relationship with performance. Here come:

i) administration rate: considered in the studies of Dai and Shawky (2010), Sialm, Sun and Zheng (2013) and Malaquias and Eid (2014). It is expected to find in this work a negative relationship between the management fee and the profitability, since the incidence of these rates is not necessarily linked to the good performance of a particular fund and, therefore, tend to worn out the gains. Measurement form: maximum rate of administration charged annually by the funds;

ii) performance rate: considered in the studies of Brown, Goetzmann and Liang (2003), Dai and Shawky (2010) and Malaquias and Eid (2014). Unlike management fees, performance fees represent an incentive for fund managers to achieve good results. Thus, we expect to find in this study a positive relationship between the performance rate and the performance. Measurement form: dummy variable, receiving “one” for funds that charge performance fee and “zero” for the others;

iii) background size: considered in the studies of Füss et al. (2009), Shawky and Wang (2014), Malaquias and Eid (2014) and Malaquias and Mamede (2015). We expect to find in this work a positive relationship between fund size and performance, given that larger funds tend to have lower operating costs due to economies of scale.

Measurement form: Naperian logarithm of the fund's average Net Equity. during the observation period;

iv) background age: considered in the studies of Agarwal and Kale (2007), Füss et al. (2009), Li, Zhang and Zhao (2011) and Malaquias and Mamede (2015). Based on these studies, there is evidence for both a positive relationship between age and performance, since new funds present initial costs with portfolio construction and greater caution in investments, as well as a negative relation, since they may present performance because they are more likely to use innovative investment strategies in order to establish themselves in the market. Measurement form: age, in years, based on the last observation available for each fund.

Table 1 presents a summary of study variables:

Table 1
Study variables

Variable	**Description**	**Literature**
Sharpe_Ratio	Sharpe Ratio	Joaquim and Moura (2011), Milan and Eid (2014) and Malaquias and Eid (2014).
FIC	*Dummy* for quota fund (fic), receiving 1 for quota funds and 0 for traditional funds.	Assali (2008), Malaquias and Eid (2014) and Malaquias and Mamede (2015)
Adm_fee	Maximum rate of administration charged annually	Dai and Shawky (2010), Sialm, Sun and Zheng (2013) e Malaquias and Eid (2014).
Perf_fee	*Dummy* variable, receiving 1 for funds that charge performance and zero for others.	Brown, Goetzmann and Liang (2003), Dai and Shawky (2010) and Malaquias and Eid (2014).
Size	Naperian logarithm of the fund's average net equity during the observation period.	Füss *et al.* (2009), Shawky and Wang (2014), Malaquias and Eid (2014) and

		Malaquias and Mamede (2015)
Age	Age, in years, based on the last observation available for each fund.	Agarwal and Kale (2007), Füss *et al.* (2009), Li *et al.* (2011) and Malaquias and Mamede (2015)

Source: Elaborated by the authors.

To adjust for performance by risk, we used the Sharpe Ratio, which indicates the average return above the risk free rate, weighted by the volatility of the returns. The estimate for the risk-free rate used in this study was the SELIC monthly profitability. Thus, the dependent variable of the quantitative model is the output of the Sharpe Ratio for each fund. The main independent variable is the dummy for quota fund (FIC), receiving 1 for quota funds and 0 for the others. The other independent variables are those already presented: size, age, administration rate and performance rate. The quantitative model elaborated is indicated below:

$$sharpe\_ratio = \underset{i}{\beta_{0^+}} \beta_1 fic_1 + \beta_2 size_i + \beta_3 admfee + \beta_4 perf\_fee_1 + \beta_5 age_i + \varepsilon_1$$

in which, Sharpe_Ratio represents the Sharpe Ratio in the period; FIC a dummy variable for quotas background, receiving 1 for quota funds and 0 for others; size represents the Naperian logarithm of the fund's average net equity; adm_fee represents the maximum rate of administration charged by the funds; perf_fee represents a dummy variable, receiving 1 for funds that charge performance and zero for others; age represents the age of the funds in years.

It is appropriate to indicate that an additional analysis was carried out, including the segregation of the model in two different economic periods. For the choice of periods, the monthly risk premium for all sample funds was initially calculated. Then, the average risk premium was calculated per year. It was observed that the years 2008, 2011, 2013, 2014 and 2015 presented average premium for the negative risk, while in the other periods the average risk premium was positive. Accordingly, the information of the referred periods (2008, 2011, 2013, 2014 and 2015) was considered as periods of crisis.

The quantitative model was estimated based on the multivariate regression analysis with standard errors robust to heteroscedasticity (since the White test was statistically significant in the models estimated in this study - Tables 3, 4 and 5). According to Hair, Black, Babin, Anderson and Tatham (2009), multivariate regression analysis consists of a statistical technique used to examine the relationship between a single dependent variable and a set of independent variables with wide applicability in research problems forecasting and explanation.

4 RESULTS

Table 2, presents the descriptive statistics for the study variables. The average Sharpe Ratio points out that the value added by the funds, on average, does not exceed the risk-free rate of each period (since its average is equal to -0.093). Approximately 40% of the sample is made up of quota funds (39.6%) and 47% of them charge their quotaholders' performance fees.

Table 2
Descriptive statistics

Variablel	N#	Average	SD.	Min.	Max.
size	1.723	16.933	1.503	12.204	22.299
Fic	1.723	0.396	a	0.000	1.000
adm_fee	1.723	1.601	1.237	0.000	10.000
perf_fee	1.723	0.470	a	0.000	1.000
age	1.723	6.916	5.913	1.017	49.456
Sharpe_Ratio	1.723	- 0.093	0.156	- 0.945	0.801

Source: Elaborated by the authors. a = values suppressed because the variables are dummies.

Table 3 contains the results for the regression analysis, in order to test the hypothesis of the study. This analysis involves all the funds in the sample (ie, it has not got the survival bias, as it does not disregard closed funds in the period). The results indicated that all the variables used were important to understand the Sharpe Ratio variations of the funds, since they were statistically significant up to the 5% level. The results also indicated the absence of problems due to multicollinearity, since the VIF (Variance Inflation Factor) test was below 5.

Table 3
Results for regression analysis (all funds)

Variable	beta	Stand_error (robust)	t	sig.
size	0.033	0.003	12.320	0.000
adm_fee	- 0.012	0.003	- 4.020	0.000
perf_fee	- 0.017	0.007	- 2.420	0.016
age	0.004	0.001	6.470	0.000
FIC	0.034	0.007	4.640	0.000
constant	- 0.658	0.045	-14.500	0.000

Note. Adjusted R-squared = 17.02%. Maximum value for the FIV statistic: 1.29. The extreme values for the dependent variable (in this case, 5% of the database) were excluded and the model was estimated again; the coefficients, in terms of signal and level of significance, were equivalent. They indicated that the results do not appear to be influenced by potential extreme value effects.
Source: Elaborated by the authors.

In general, the results indicated better performance indicators for Investment Funds in Quotas (FICs) compared to the other funds in the sample. Such evidence is in disagreement with some works observed in the literature on the subject, such as Denvir and Hutson (2006), Gregoriou (2006), Leusin (2006), Ang et al. (2008) and Edelman et al. (2012), which showed worse performance of FICs. However, it is important to note that the results verified in this research are in line with the recent studies of these funds in the Brazilian market, such as those presented by Malaquias and Eid (2014) and Malaquias and Mamede (2015). Bertin and Prather (2009) also found a better performance of FICs than traditional funds.

As mentioned before, all control variables had got a significant relationship with the dependent variable. As well as the results of the works by Füss et al. (2009), Malaquias and Eid (2014), Shawky and Wang (2014) and Malaquias and Mamede (2015), a positive relationship between the size of the fund as measured by its Net Equity and performance were verified in this study, risk adjusted return is lower for small funds and larger for large funds. Larger funds tend to achieve economies of scale which can impact on better performance. In addition, the better performance of large funds may also be a reflection of the benefits of greater diversification, according to studies by Amo et al. (2007), Bertin and Prather (2009) and Dai and Shawky (2010).

Concerning the age of the funds, the results were convergent to those had been found by Füss et al. (2009) and Malaquias and Mamede (2015), since a positive relationship was found between age and return, so that the new funds did not perform better than the old funds. The reasoning that new funds are more likely to seek bold investment alternatives in an attempt to achieve better results than established funds in order to gain market share does not seem to be consistent with the fund characteristics of this study sample. The quantitative analysis also showed indications that management fees and performance rates are related to the lower performance achieved by the funds.

As the objective of analyzing whether the results would be equivalent considering only the funds in activity, funds closed during the period were excluded from the sample and the model was estimated again (total funds in activity: 1,370). Table 4 contains the results and indicates that the model with all the funds has better explanation power (the adjusted r-squared of the first model is superior).

Table 4
Results for regression analysis (surviving funds only)

Variable	Beta	Stand_error (robust)	t	sig.
size	0.027	0.003	10.470	0.000
adm_fee	-0.012	0.003	- 3.920	0.000
perf_fee	-0.012	0.007	- 1.710	0.088
age	0.003	0.001	5.380	0.000
FIC	0.027	0.007	3.680	0.000
constant	-0.560	0.045	-12.490	0.000

Note. Adjusted R-squared = 24.23%. Maximum value for the FIV statistic: 1.31. Crisis = dummy variable that receives 1 for the Sharpe Ratio in the period of 2008, 2011, 2013, 2014 and 2015, receiving 0 for the Sharpe Ratio obtained in the other periods. The extreme values for the dependent variable (in this case, 5% of the database) were excluded and the model was estimated again; the coefficients, in terms of signal and level of significance, were equivalent, indicating that the results do not seem to be influenced by potential extreme value effects.
Source: Elaborated by the authors.

The results presented in Table 4 are equivalent to those presented in Table 4, except for the Performance Rate variable, which is no longer significant at the 5% level but remains significant at the 10% level. The analysis of the main hypothesis of the study remains the same: quota funds registered a better risk-adjusted return indicator. In view of the results presented, it can be seen that, even with a structure with higher rates of interest rates, FICs can excel in their performance in relation to other types of funds. Thus, they may represent a timely alternative for investors, since in addition to their superior performance, observed in this work, they have unusual benefits in other types of investment, such as access to closed funds, low initial investment, access to diversified portfolio, among others. In order to verify the potential effects of periods of crisis in the results of this study, a new regression analysis was performed, the results of which are available in Table 5.

Table 5
Results for regression analysis (surviving funds only, considering the control for different periods)

Variable	beta	Stand_error (robust)	t	sig.
crisis	-0.615	0.022	- 27.700	0.000
size	0.024	0.008	2.920	0.004
adm_fee	-0.021	0.009	- 2.270	0.023
perf_fee	0.030	0.022	1.320	0.186
age	-0.005	0.002	- 3.090	0.002
FIC	0.138	0.027	5.130	0.000
constant	-0.066	0.135	- 0.490	0.624

Note. Adjusted R-squared = 24.23%. Maximum value for the FIV statistic: 1.31. Crisis = dummy variable that receives 1 for the Sharpe Indices in the period of 2008, 2011, 2013, 2014 and 2015, receiving 0 for the Sharpe Indices obtained in the other periods. The extreme values for the dependent variable (in this case, 5% of the database) were excluded and the model was estimated again; the coefficients, in terms of signal and level of significance, were equivalent, indicating that the results do not seem to be influenced by potential extreme value effects. Source: Elaborated by the authors.

The results available in Table 5 are consistent with the literature (Malaquias & Eid, 2014), that periods of crisis can significantly affect fund performance. However, even with the control for periods of crisis, the variables Size and Quota Funds continued to present a positive and statistically significant effect. On the other hand, it should be noted that, in both Table 3 and Table 4, the coefficients found, although statistically significant, may not present economic significance. Therefore, the Cohen D for the analyzed variables was estimated considering the difference between groups of traditional investment funds (non-FICs) and FICs, as indicated in Table 6.

Table 6
Effect size per group (non-FICs and FICs)

Variable	D de Cohen	Interval (95%)	
Sharpe_Ratio	-0,172	-0,269	- 0,754
size	-0,016	-0,113	0,080
adm_fee	-0,535	-0,633	- 0,437
perf_fee	-0,143	-0,239	- 0,046
age	-0,054	-0,151	0,042

Note. Observations of non-FICs = 1,040; observations of FICs = 683.
Source: Elaborated by the authors

According to the results presented in Table 6, it is observed that, on average, FICs showed higher Sharpe Ratio compared to the other sample bottoms, so that the effect size estimated by Cohen's D can be classified as medium (-0.172). This means that, in practical terms, there is some economic significance of superior performance of the FICs, eliminating the possibility of any misleading results indicated in the regression analysis from the large sample size.

It should be mentioned that, even with regard to the analysis of effect size, FICs presented, on average, higher rates than the other funds. The effect size estimated by Cohen's D was classified as large for the administration rate (-0.535) and small for the performance rate (-0.143). These results corroborate previous studies that have already empirically demonstrated the incidence of higher rates in FICs due to their structure, such as Geranio and Zanotti (2005), Denvir and Hutson (2006), Ang et al. (2008), Ammann and Moerth (2008). The effect size observed for the variables age (-0.054) and size (-0.016) seems not to have been economically significant.

5 CONCLUSION

This work was developed with the general objective of analyzing the performance of the funds of investments in quotas, considering a scenario with favorable arguments and contrary to the extraordinary value of these funds, especially due to a structure that may involve double collection of fees. The database comprised 1,723 stock funds and the results found were tested in the complete sample, as well as in a sub-sample, with only the remaining funds in the period. The results in these two samples were equivalent for the main hypothesis test of the study. Remarking previous studies, four control variables were also added to the study, namely: size and age, which presented a positive relation with the risk-adjusted return, and administration and performance rates, which presented a negative relation with the performance.

The main result indicated that the FICs belonging to the study sample presented better risk-adjusted return indexes, which is in line with arguments already available in the literature, such as studies by Turner (2004), Dai and Shawky (2010) and Malaquias and Mamede (2015). The evidence obtained in this study also suggests the possible advantage of FICs in the management of funds. Many criticisms are made because of the high cost of management, since, in addition to the fees for administering the underlying funds, there may be extra fees to compensate the fund manager. The fact that this research indicates a better risk-adjusted return of FICs, compared to traditional funds, points to evidence that management strategies by quota fund managers can favor the identification of assets with the potential to overcoming the benchmark, strategies which may work well in the investment fund segment (where quota funds operate).

When assessing whether this difference in performance between FICs and other sample funds was economically significant, the results of the effect size tests indicated that, with respect to the difference between the averages of the Sharpe Ratio., the size of the effect found was classified as *median*, that is, corroborated the findings of the regression analysis. Likewise, effect size tests have indicated that FICs charge higher rates than traditional funds, especially tax administration.

This work progresses in relation to the others which have already been developed on the subject, above all, by proposing an analysis that focuses specifically on the FICs, which are usually deprecated from the samples of studies of investment funds in Brazil. In addition, it contributes to the literature of the area by indicating results that may support future discussions about the potential of these funds as an investment alternative, even if it was compared to traditional funds.

The main limitation related to this study is found in the database, which considers only the class of stock funds, when there are other types of active management funds in Brazil, for instance, the multimarket funds. In the multimarket funds, there is also the possibility of operation of the FICs, and new studies on the subject can be developed to verify if the results are favorable or not to those one found in this research.

REFERENCES

Agarwal, V. & Kale, J. R. (2007). On the relative performance of multi-strategy and funds of hedge funds. *Journal of Investment Management*, *5*(3), 41.

Aggarwal, R., Sharma, M., & Prashar, E. (2012). Fund of Funds Company Indices: Performance Analysis and Maximizing the Coefficient of Determination. *The Journal of Private Equity*, *16*(1), 100.

Aiken, A. L., Clifford, C. P., & Ellis, J. (2015). The Value of Funds of Hedge Funds: Evidence from Their Holdings. *Management Science, 61*(10), 2415-2429.

Amenc, N. & Vaissié, M. (2006). Determinants of Funds of Hedge Funds' Performance. *The Journal of Investing*, *15*(4), 46-52.

Ammann, M. & Moerth, P. (2008). Performance of Funds of Hedge Funds. *The Journal of Wealth Management, 11*(1), 46-63.

Amo, A. V., Harasty, H., & Hillion, P. (2007). Diversification benefits of funds of hedge funds: Identifying the optimal number of hedge funds. *The Journal of Alternative Investments*, *10*(2), 10.

Ang, A., Rhodes-Kropf, M. & Zhao, R. (2008). *Do funds-of-funds deserve their fees-on-fees?* (No. w13944). National Bureau of Economic Research.

Assali, N. A. (2008). *Análise de desempenho e características de fundos de fundos multigestores do mercado Brasileiro no período de setembro/1998 a Agosto/2007*. Dissertação de Mestrado em Finanças e Economia Empresarial, Escola de Economia de São Paulo da Fundação Getúlio Vargas – EESP-FGV, São Paulo, SP, Brasil.

Bertin, W. J. & Prather, L. (2009). Management structure and the performance of funds of mutual funds. *Journal of business research*, *62*(12), 1364-1369.

Borges, E. C. & Martelanc, R. (2015). Sorte ou habilidade: uma avaliação dos fundos de investimento no Brasil. *Revista de Administração, 50*(2), 196-207.

Brands, S. & Gallagher, D. R. (2005). Portfolio selection, diversification and fund-of-funds: a note. *Accounting & Finance*, *45*(2), 185-197.

Brown, S. J., Goetzmann, W. N., & Liang, B. (2003). *Fees on fees in funds of funds* (No. w9464). National Bureau of Economic Research.

Brown, S. J., Gregoriou, G. N., & Pascalau, R. (2012). Diversification in funds of hedge funds: Is it possible to overdiversify?. *Review of Asset Pricing Studies*, *2*(1), 89-110.

Cotrim, F. M. (2012). *Um estudo sobre a capacidade de gestores de fundos multigestor adicionarem valor aos cotistas*. Dissertação de Mestrado em Finanças e Economia Empresarial, Escola de Pós-Graduação em Economia da Fundação Getúlio Vargas – EPGE-FGV, Rio de Janeiro, RJ, Brasil.

Dai, N. & Shawky, H. A. (2010). Diversification Strategies and the Performance of Funds of Hedge Funds. *Available at SSRN 1719749*.

Denvir, E. & Hutson, E. (2006). The performance and diversification benefits of funds of hedge funds. *Journal of International Financial Markets, Institutions and Money*, *16*(1), 4-22.

Edelman, D., Fung, W., Hsieh, D. A., & Naik, N. Y. (2012). Funds of hedge funds: performance, risk and capital formation 2005 to 2010. *Financial Markets and Portfolio Management*, *26*(1), 87-108.

Fothergill, M. & Coke, C. (2001). Funds of Hedge Funds: An Introduction to Multi-Manager Funds. *The Journal of Alternative Investments, 4*(2), 7-16.

Füss, R., Kaiser, D. G., & Strittmatter, A. (2009). Measuring funds of hedge funds performance using quantile regressions: Do experience and size matter?. *The Journal of Alternative Investments*, *12*(2), 41.

Garay, U., Hernández, M., & Rivillo, C. (2017). Variables microeconómicas de los fondos de fondos de cobertura (FFC) y su desempeño durante la crisis financiera global 2008-2009. *Revista Finanzas y Política Económica, 9*(2), 373-396.

Geranio, M. & Zanotti, G. (2005). Can mutual funds characteristics explain fees?. *Journal of Multinational Financial Management*, *15*(4), 354-376.

Gregoriou, G. N. (2006). *Funds of Hedge Funds: Performance, Assessment, Diversification, and Statistical Properties*. Elsevier, 2011.

Gresch, N. & Von Wyss, R. (2011). Private Equity Funds of Funds vs. Funds: A Performance Comparison. *The Journal of Private Equity*, *14*(2), 43.

Hair, J. F., Jr., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. L. (2009). Análise multivariada de dados. Porto Alegre: Bookman.

Instituto de Pesquisa Econômica Aplicada. (2015). Os fundos de investimento no Brasil de 2008 a 2013: institucionalidades e interfaces com a política econômica.

Instrução CVM n. 409, de 18 de agosto de 2004. Dispõe sobre a constituição, a administração, o funcionamento e a divulgação de informações dos fundos de investimento. Rio de Janeiro: Comissão de Valores Mobiliários.

Instrução CVM n. 411, de 26 de novembro de 2004. Altera a Instrução CVM n. 409, de 18 de agosto de 2004. Rio de Janeiro: Comissão de Valores Mobiliários.

Instrução CVM n. 413, de 30 de dezembro de 2004. Altera a Instrução CVM n. 409, de 18 de agosto de 2004. Rio de Janeiro: Comissão de Valores Mobiliários.

Investment Company Institute (US). (2014). *Investment Company Fact Book*. Investment Company Institute. Recuperado de https://www.ici.org/pdf/2014_factbook.pdf

Joaquim, G. P. G. & Moura, M. L. (2011). Performance and Persistence of Brazilian Hedge Funds during the Financial Crisis. *Revista Brasileira de Finanças, 9*(4), 465-488.

Leusin, L. M. C. (2006). *Análise de Fundo de Fundos: Um estudo para o caso brasileiro* (Dissertação de Mestrado Profissional em Finanças e Economia Empresarial). Escola de Pós-Graduação em Economia da Fundação Getúlio Vargas – EPGE-FGV, Rio de Janeiro, RJ, Brasil.

Li, H., Zhang, X., & Zhao, R. (2011). Investing in talents: Manager characteristics and hedge fund performances. *Journal of Financial and Quantitative Analysis*, *46*(01), 59-82.

Malaquias, R. F. & Eid, W., Jr. E. (2014). Fundos multimercados: desempenho, determinantes do desempenho e efeito moderador. *Revista de Administração Mackenzie*, *15*(4), 135.

Malaquias, R. F. & Mamede, S. D. P. N. (2015). Efeito Calendário e Finanças Comportamentais no Segmento de Fundos Multimercados. *Revista de Administração Contemporânea*, *19*, 98.

Milan, P. L. A. B. & Eid, W., Jr. (2014). Elevada Rotatividade de Carteiras e o Desempenho dos Fundos de Investimento em Ações. *Revista Brasileira de Finanças, 12*(4), 469-497.

Milani, B., Ceretta, P. S., Barba, F. G. de., & Casarin, F. (2010). Fundos de Investimento Brasileiros: a influência dos momentos superiores na avaliação de desempenho. *Revista Brasileira de Gestão e Negócios, 10*(36), 289-303.

Reddy, G., Brady, P., & Patel, K. (2007). Are Funds of Funds Simply Multi-Strategy Managers with Extra Fees?. *The Journal of Alternative Investments*,*10*(3), 49.

Rocco, L. U. (2009). *Uma análise de desempenho dos fundos multimercados com renda variável e alavancagem no Brasil durante o período entre 2002-2007*. Monografia de Conclusão de Curso de Ciências Econômicas, Universidade Federal de Santa Catarina – UFSC, Florianópolis, SC, Brasil.

Shawky, H. A. & Wang, Y. (2014). Liquidity Risk and Economies of Scale in Funds of Hedge Funds. *The Journal of Alternative Investments*, *17*(2), 51.

Sialm, C., Sun, Z., & Zheng, L. (2013). *Home bias and local contagion: Evidence from funds of hedge funds* (No. w19570). National Bureau of Economic Research.

Turner, C. (2004). *International Funds: A practical guide to their establishment and operations*. Elsevier, Oxford.

Varga, G. & Wengert, M. (2011). A indústria de fundos de investimentos no Brasil. *Revista de Economia e Administração*, *10*(1).

Revista Catarinense da Ciência Contábil,
ISSN 1808-3781 - eISSN 2237-7662,
Florianópolis, SC, v. 17, n. 51, p. 84-101,
May/Aug. 2018

DOI: 10.16930/2237-7662/rccc.v17n51.2617
Available at http://revista.crcsc.org.br

RELATIONSHIP BETWEEN FINANCIAL RESTATEMENTS AND AUDIT DELAY

VANESSA CHIUDINI
Graduated in Accounting Science from Santa Catarina State University (UDESC). Academic of the Specialization Course in Auditing and Expert Investigation from UNIDAVI. ***Address:*** *Rua João Aurich, 2300 | Ponto Chic | 89140-000 | Ibirama/SC | Brazil.*
E-mail: *vanessa.chiudini@hotmail.com*

PAULO ROBERTO DA CUNHA
PhD in Accounting Sciences and Administration from Regional University of Blumenau (FURB). Professor at the Post-graduation Program in Accounting Sciences from FURB (PPGCC/FURB). Professor at the Undergraduate Course in Accounting Sciences from UDESC. ***Adress:*** *Campus I, Bloco D, Sala 202 | Rua Antônio da Veiga, 140 | Itoupava Seca | 89030-003 | Blumenau/SC | Brazil.*
E-mail: *pauloccsa@gmail.com*

LEANDRO MARQUES
Master of accounting Sciences from Regional University of Blumenau (FURB). ***Address:*** *Campus I, Bloco D, Sala 202 | Rua Antônio da Veiga, 140 | Itoupava Seca | 89030-003 | Blumenau/SC | Brazil.*
E-mail: *leandromarques@hotmail.com*

ABSTRACT

The aim of this paper is to verify the relationship between the financial restataments and the audit delay. Consist of a descriptive research, of the document type with quantitative approach. The companies with Audit Report between 2011 and 2016 were selected for the survey. The data were analyzed through means and correlation test in SPSS® software. The results indicate that there is a relationship between the financial restataments and the audit delay in the years 2011, 2012, 2015 and 2016, while for the years 2013 and 2014 this relationship could not be confirmed. In 2013, there was no significant difference in the audit delay of the companies that published or republished the financial statements. Already, in 2014, there was an inverse relation to the expected, a smaller audit delay related to the financial restatements. It is concluded, therefore, that in the Brazilian market a greater delay in the release of the auditor's report may signal greater risks for the audit, giving indications that the statements can be republished. Further research is needed to explain the dissonant outcome observed in 2014.

Keywords: Financial restataments. Audit report. Audit delay.

1 INTRODUCTION

The disclosure of accounting information is directly related to the purpose of the Accountancy, which is to promote useful information to its several users. The relevance of accountancy increase insofar as the users needed information about their equity. Thus, the type of information that each user needs to make decisions was identified. That, as already mentioned, leads to the understanding that the purpose of accountancy is to provide the

Article presented at X Conference ANPCONT, 2016 in Ribeirão Preto - SP.

Submission on 11/15/2017. **Revision on** 05/24/2018. **Accepted on** 05/26/2018.

different types of users with relevant information (Dantas, Chaves, Silva, & Carvalho, 2011; Teixeira, Politelo and Klann, 2013).

Niyama and Silva (2011) argue that information disclosed should allow users to analyze the performance of the entity in several periods, which requires consistency and standardization in accounting procedure. Aiming at improving communication between investors, manager and the universal market, the quality of accounting information grants greater credibility to investors.

The disclosure definition tends to the release of relevant information, whether as financial reports, press release or public statements. The quality of these disclosures conducted by companies is particularly interesting to investors and capital market players, because the expectation is that the higher the quality of the disclosure, the lower the information asymmetry, which leads to less conflicts between investors and managers (Brown & Hillegeist, 2008).

Dantas *et al.* (2011) state that the disclosing process of the accounting information, the *disclosure*, shall provide useful data that allows a proper understanding of the economic and financial situation of the entity. The regulatory agencies play a relevant role in ensuring the appropriate disclosure. These shall specify what and how to disclose, besides managing the disclosing process. In Brazil, according to Laws 6.385, dated 1976, and 6.404, dated 1976, these role is played by the Securities and Exchange Commission (Comissão de Valores Mobiliários - CVM), which regulated the presentation of financial statements generally used pursuant to Resolution n. 488, dated 2005, aimed at ensuring comparability both with previous reports and with information from other companies. This Resolution, which approved the Accountancy Pronouncement and Standard (Norma e Pronunciamento de Contabilidade - NPC) n. 27 from the Brazilian Institute of Independent Auditors (Instituto dos Auditores Independentes do Brasil - IBRACON), was revoked by CVM Resolution n. 595, dated 15.9.2009, which endorsed the Technical Pronouncement n. 26 from the Accounting Pronouncements Committee (Comitê de Pronunciamentos Contábeis - CPC), addressing the submission of the financial statements.

These statements shall provide the most diverse users with information about the equity and financial capabilities, the results and the financial flow of the entities, supporting them in their decision-making process. CVM, acting as supervisory body, can identify *disclosure* problems and determine the financial restatement and recast. In addition to observing CVM standards, the statements must also be reviewed by independent auditors (Dantas *et al.*, 2011).

In this context the auditing lead on the review of the financial statements and issues an opinion on the ownership, besides ensuring the truthfulness thereof. Santos, Souza, Machado and Silva (2009) explain that such opinion, in the report, is grounded on evidences and proofs obtained from auditing procedures. These procedures gather facts, forms, inquiries, copies of documents, remarks and annotations that shall serve as basis for issuing an Auditor's Opinion on the financial statements of the company.

By adopting the International Auditing Standards, the final product of the work, formerly referred to as audit opinion, is now referred to as Independent Auditor's Report on the Financial Statements. The independent auditor's report on the financial statements can be divided in two groups: unmodified (formerly known as opinion without reservations) or modified (includes the opinion with reservations, adverse opinion and opinion expressing the absence of opinion). The independent auditor's report on the financial statements can have reservations regarding the consistency of accounting practices, the scope of the auditing process, or the uncertainty associated with large unresolved contingencies (Damascena & Paulo, 2013).

The period elapsed between the closing of the fiscal year and the date the auditor's report is issued is referred to as *audit delay.* If the *audit delay* is long, it is possible that the perceived of risk of performance information is worse for companies. This may induce the investors to sell its actions or to demand greater compensations (Pereira & Costa, 2012).

Pereira & Costa (2012) outline that the Brazilian framework has an additional element. With the adoption of the International Accounting Standards, the *audit delay* may have increased, insofar as the process of preparation and auditing of the statements became much more complex. Professionals need more time to incorporate the international accounting standards to the Brazilian Accounting Standards.

Given the foregoing, and considering the increasing need of a credible *disclosure* that meets the expectations of its users and the time needed for publication of the independent

auditor's report, the following research question is drawn: *What is the relationship between the financial restatements and the audit delay? Thus, the purpose of this study is to verify the relationship between the financial restatements and the audit delay.*

From the theoretical perspective, the research contributes with studies on the financial restatements and the audit delay, mainly in the Brazilian context, where the discussion on this regard is underdeveloped. Angeli (2008) highlights that the investigation of this matter is a very important academic contribution for a real problem of the Brazilian stock market that is, however, little approached by the national literature.

From the empirical perspective, Dantas *et al.* (2011) outline that such mapping can contribute to understanding possible problems in the preparation of the financial statements of companies comprising the Brazilian stock market. The research may help to identify mistakes made in the preparation of the financial statements or even frauds. The companies can weight their information, which shall result in better quality financial statements and, therefore, reduce the *audit delay*.

From the social perspective, the research can be convenient for investors, who shall have a better assessment of companies on which they intent to or already invest, in the sense of evaluating if the financial restatements is connected to the *audit delay*, aiming the stock market credibility.

2 THEORETICAL REFERNCE

2.1 Financial Restatements

The financial statements are one of the main sources for the decision making of investors, creditors and other users of accounting information (Chen, Goo & Shen, 2014). In Brazil, according to Law no. 6.404 (*law no. 6.404*, 1976), at the end of every fiscal year, the publicly-traded companies shall disclosure the financial statements, supplemented by explanatory notes, the Administration Report, and the Independent Auditors' Report on the Financial Statements. Such information shall be disclosed up to a month before the General Shareholders Meeting and submitted to the CVM on the date these are made available to the public (Securities and Exchange Commission, 2018).

Regarding the information disclosed by companies, the importance of surveillance by a supervisory body to ensure fair and appropriate disclosure is essential to govern the disclosure process. The Brazilian Securities and Exchange Commission (CVM) is the body that takes this role in Brazil (Dantas et al., 2011).

The statements prepared in a neutral way seek to fully portray the economic, financial and equity situation of the company. But, in some cases, those responsible for the disclosure of these statements choose to manipulate the accounting information in favor of the interest of the entity and/or their own interests. Consequently, they can lead external users to biased judgments (Murcia & Carvalho, 2007).

Even with the independent auditing and surveillance by CVM, many companies in the stock market conceal or disclose biased information. The intervention of the CVM, requesting, in some cases, the recasting and the financial restatements, is necessary (Murcia & Borba, 2005).

He & Chiang (2013) outline that the restatements are the repreparation and disclosure of accounting information when material errors or concealments are identified after the disclosure and publication of financial statements. These restatements may take place spontaneously or *Ex Officio* (Marques, Amaral, Souza, Santos, & Rodrigues, 2017).

Regarding the need to recast and republish the financial statements, Netto & Pereira (2011) clarify that, when there is a change in the accounting policies or correction of errors, the adjustments shall be recorded in retained earnings, and it is necessary to restate the past statements that were affected by these adjustments. However, when the change in the accounting policy is a result from a new standard, and it provides otherwise, the provisions of this new standard shall become effective. Regarding changes in the accounting estimates, the restatement is not necessary, and adjustments shall be recorded in the result of the period in which the change was made.

Teixeira et al. (2013) supports that, without affecting the republication / disclosure, the biased, confusing or incomplete information are corrected, without affecting the equity position. The recast includes unrealized records (provisions, errors in accounting estimates, inconsistent classification of G/L accounts), which modifies the company's equity position and is usually accompanied by the republication that occurs due to the CVM's requirement.

According to Dantas et al. (2011), CVM supervises the publication of quarterly and yearly reports, regulates the performance of the several agents and also punishes performances that violate the standards and regulations. The determination for republication of financial statements is only convenient when these statements present errors and / or are insufficient for a good understanding.

When a publicly-traded company conceals or biases information, CVM issues a letter of notification requesting the necessary corrections of errors or discrepancies, and the restatement of the relevant statement. CVM Resolution no. 388/2001 allows for the full-text disclosure of the letter of notification, allowing investors and the general public to know the reasons of recast e the restatements of the company's statements. The disclosure of the letters of notification is done through CVM's website (Dantas *et al.*, 2011).

According to Bills, Swanquist and Whited (2016), the restatements are understood as a quality indicator of the statements and the quality of auditing. In this sense, republishing may be an indicator of the poor quality of previously published statements, as well as may suggest a poorer audit quality, since it was not able to detect in a timely manner possible errors or discrepancies. Thus, a higher quality audit shall be able to detect more errors, which results in lower republishing (Ettredge, Fuerherm & Li, 2014). According to Bischoff, Finley and Leblanc (2008), the stock market tends to react negatively to the recast news, because it gives investors the impression that management is trying to fraudulently misrepresent information, or that it is unable to prepare high-quality statements. For this reason, the restatements are one of the key points discussed when it comes to the quality of the accounting information disclosed to markets (Romanus, Maher, & Fleming, 2008).

Among the main reasons for the recast and republishing of the statements are: undue recognition of revenue and expenditure, recognition of compensations based on performance, errors in the classification of accounts and the fact that companies avoid disclosing the restatements (Bischoff *et al.*, 2008).

Confidence in the stock market depends on the level of confidence investors place in the financial statements when making investment decisions. Therefore, the role played by the auditors in ensuring the quality of financial statements has been gaining more attention in recent years (Romanus et al., 2008).

2.2 *Audit Delay*

According to the Brazilian Accounting Standards NBC TA 200 (R1) (Federal Accounting Council [CFC], 2016a), the purpose of the auditing is to increase the level of confidence of users in the financial statements by means of the auditor's opinion on whether these financial statements have been prepared in accordance with an applicable financial reporting structure.

In this context, it is certain that the auditor plays a relevant role in the reduction of information discrepancies, by expressing its opinion in the report.

All publicly-traded companies and large corporations in Brazil must subject their financial statements to audit conducted by independent auditor enrolled with CVM. Resolution no. 953/03 of the Accounting Federal Council and Instruction no. 308/99 of CVM establish that the independent auditors should issue an opinion on the adequacy of the company to the accounting practices adopted in the country, in a given period (Damascena, Firmino & Paulo, 2011).

The Independent Auditor's Report is the document that contains the clear and objective opinion of the auditor, which states whether the audited statements are duly represented or not; it addresses quotaholders, shareholders or members, the Board of Directors or the executive board. Through the report the auditor assumes the technical and professional responsibility, and such document must comply with the inherent characteristics established by the relevant standards (Dantas *et al.,* 2011).

Damascena *et al.* (2011) refer to the report as the materialization of all works performed by the audit. According to NBC TA 705 (CFC, 2016b), the independent auditor's report is classified, according to the nature of the opinion expressed, in two main types: unmodified and modified opinion (with reservations, adverse opinion and opinion expressing the absence of opinion).

The unmodified opinion indicates that the financial statements of the company were prepared according to the current Brazilian practices and standards; the modified opinion with reservations takes place when the auditor finds that the effect of any disagreement or restriction may affect the financial statements; the adverse modified opinion evidences that the financial statements do not comply with the accounting standards and practices adopted in the country, while the abstention or opinion denial occurs when the auditor is not capable of issuing an opinion once a confirmation of information to substantiate it is not obtained (Damascena *et al.*, 2011).

Another relevant fact included in the independent auditor's report is the paragraph of emphasis and other matters. According to NBC TA 706 (CFC, 2016c), the paragraph of emphasis shall provide information that are correctly submitted within the financial statements, but that the auditor deems to be critically relevant for the users' understanding of the statements. Worth noting that the paragraph of emphasis does not modify the type of opinion issued by the auditor. The *audit delay*¸ also referred to as *audit report lag*, is the number of days elapsed since the end of the fiscal year and the date of the auditor's report (O'Sullivan, 2000; Knechel & Sharma, 2012).

Pereira (2011) further considers that if the audit delay is high, it can mean that the company has problems in the financial statements, which may jeopardize the independent auditor's report delivery time, worsening the perception of information risk on the performance of companies and affecting decision making. Investor may want to sell shares or demand better compensation, while board members may want to change the auditor.

Dantas *et al.* (2011) support that the higher the quality of works developed by the auditors the greater is its effectiveness, provided that auditing is a key driver of confidence by investors and other users of information released by the entities. In practice, whenever the disclosure and publication of financial statements are found not to observe the appropriate, fair and full disclosure requirements, the use of the auditors' work is strongly questioned (Dantas et al., 2011).

3 METHODOLOGIES

3.1 Outline of the research, population and sample

Considering the objective of this work, which is to analyze the relationship between the financial restatements and the *audit delay*, this paper can be classified as a descriptive research with quantitative approach carried out through documentary research. According to Gil (1999), the descriptive researches aim at describing the characteristics of certain population or phenomenon, or – alternatively – the establishment of relationships between variables.

In the light of the technical procedures used, a documentary research is established. According to Martins and Theóphilo (2009), the documentary research is characterized by the use of documents as source of data, information and evidences. The authors further state that the documentary research employ material gathered by the authors of the work, which have not yet been analyzed, or that can also be reworked according to the research purposes. In this sense, this work is a documentary research, and data used arise from the BM&FBovespa site, where data collected are published to several users.

In the light of the approach of the problem, this research is classified as quantitative. According to Raupp & Beuren (2003), the main characteristic of the quantitative method is the use of statistical instruments in data collection and processing. This study is characterized as quantitative given the use of statistical methods in data collection. These data are taken from the reference form on the BM&FBovespa website and tabulated in a spreadsheet for further analysis.

The population of this work comprises 495 companies listed on BM&FBovespa, divided in the following sectors: 37 companies from the industry of industrial goods, 71 of the Construction and Transportation, 66 of Cyclic Consumption, 39 of Non-cyclic Consumption, 139 of financial and others, 38 of Basic Materials, 12 of Oil, Gas and Biofuels, 10 of Information Technology, 8 of Telecommunications and 75 of Public Utility.

From a total of 495 companies listed on BM&FBovespa, those presenting the Independent Auditor's Report on the company's financial statements, between 2011 and 2016, were selected for the research. The final sample comprises 446 companies selected in the year of 2011, 463 companies in 2012, 465 companies in 2013, 462 companies in 2014, 404 companies in 2015 and 416 companies in 2016, as shown in Table 1.

Table 1
Number of companies by industry selected for analysis in each period

	2011		2012		2013		2014		2015		2016	
Sector of Activity	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Industrial Goods	33	7.4	34	7.3	34	7.3	32	6.9	32	7.9	37	8.9
Construction and Transportation	64	14.3	68	14.7	71	15.3	68	14.7	51	12.6	51	12.3
Cyclic Consumption	60	13.5	62	13.4	63	13.5	63	13.6	61	15.1	65	15.6
Non-cyclic Consumption	30	6.7	33	7.1	33	7.1	33	7.1	29	7.2	30	7.2
Financial and Others	129	28.9	135	29.2	135	29.0	135	29.2	111	27.5	112	26.9
Basic Materials	37	8.3	37	8.0	36	7.7	36	7.8	32	7.9	32	7.7
Oil, Gas and Biofuel	5	1.1	5	1.1	6	1.3	6	1.3	11	2.7	12	2.9
Information Technology	9	2.0	10	2.2	9	1.9	10	2.2	7	1.7	7	1.7
Telecommunications	8	1.8	8	1.7	8	1.7	8	1.7	5	1.2	5	1.2
Public Utility	71	15.9	71	15.3	70	15.1	71	15.4	65	16.1	65	15.6
Total	**446**	**100%**	**463**	**100%**	**465**	**100%**	**462**	**100%**	**404**	**100%**	**416**	**100 %**

Source: Research Data.

As seen in Table 1, the largest sample (465) is concentrated in the year 2013. The sector with the largest number of companies is "Financial and Others", with 135 companies, which represents 29% of the sample of the period. The next sector with the largest number of companies is "Construction and Transportation" (15.3%), with 71 companies, followed by the "Public Utility" sector (15.1%), with 70 companies.

The choice of the time period (from 2011 to 2016) was due to the fact that before 2011 the companies were still in the process of alignment with the IFRS standard, which could extend the audit delay more than usual. It should be noted that 2017 was not included in the analysis, given that many companies had not yet disclosed the financial statements when the data was collected.

3.2 Construct of the Research

Martins & Theóphilo (2009, p. 35) state "to empirically explore a theoretical concept, the researcher needs to translate the generic assertion of the concept into a relationship with the real world, based on observable and measurable variables and phenomena". The authors further clarify that to seek the solution of a problem, the researcher must precisely clarify the meanings of the main terms, concepts, definitions and constructs that are addressed in the research. Therefore, the construct of this work is shown in Table 2, considering the study variables and the specific objectives.

Table 2
Construct of the Research

Variable	Operationalization	Collection Location
Financial Restatements	Restatements performed and published on BM&FBovespa website, where "1" is restatement and "0" publication.	Financial statements of companies published on BM&FBovespa website.
Audit Delay	Number of days elapsed between the date of year-end closing and the date of the independent Auditor's report.	Financial statements of companies published on BM&FBovespa website.

Source: Research Data.

It is worth mentioning that this research did not consider the grounds for the financial restatement. Therefore, all financial restatements were considered in the analysis, regardless of whether these were recasted or not.

3.3 Data Collection and Analysis

Initially, BM&FBovespa website was used to research and collect all listed companies. Then, data collection regarding the audit delay and restatement of these companies was started. Data were collected in the financial reports published on BM&FBovespa website. The desired year was selected and data regarding the type (publication or republication), the date of receipt of the Statements and the date of the Independent Auditor's Report were collected.

All data were collected and tabulated in a spreadsheet. Aiming at the overall objective of the research, which is to verify the relationship between the financial restatements and the audit delay, data analysis were carried out. For this purpose, descriptive statistics, mean tests and correlation tests were calculated using *the* software Statistical Package for the Social Sciences® (SPSS).

According to Magalhães & Lima (2005), descriptive statistics is used at the first contact with data. Fávero, Belfiore, Silva and Chan (2009) complement that the descriptive statistics provides the researcher a better understanding of the data behavior, through tables, graphs and measures. It identifies trends, variability and atypical values.

The mean difference test aims at determining whether there is a statistically significant difference between the means of two groups (Field, 2009). In this case, the analysis focused on whether the average audit delay of the companies that presented restatements is significantly different from the average of the companies that did not present it.

Before proceeding to the mean difference test, analysis of data normality was conducted through Kolmogorov-Smirnov test. Whenever the significance value presented in these tests is lower than 0.05, the data do not present normal distribution, whereas if the result is greater than 0.05 there are indications that the data present normal distribution (Field, 2009).

It is necessary to understand how data are distributed, because different tests shall be applied depending on the type of distribution. Thus, when data present normal distribution, parametric tests are performed, whereas if the sample distribution is abnormal, non-parametric tests should be applied (Field, 2009). The normality test results evidenced that the distribution significantly differs from a normal division, as shown in Table 3.

Table 3
Data Normality Test

Year	Group	Kolmogorov-Smirnov		
		Statistic	df	Sig.
2011	Statement	0.306	292	0.000
	Restatement	0.374	154	0.000
2012	Statement	0.197	301	0.000
	Restatement	0.368	162	0.000
2013	Statement	0.250	338	0.000
	Restatement	0.241	127	0.000
2014	Statement	0.152	355	0.000
	Restatement	0.177	107	0.000
2015	Statement	0.125	312	0.000
	Restatement	0.367	92	0.000
2016	Statement	0.322	319	0.000
	Restatement	0.296	97	0.000

Source: Research Data.

From the analysis of Table 3 it can be observed that all tests were significant at 5%, which indicates that data are not normally distributed. Therefore, the Mann-Whitney non-parametric test was adopted to analyze the difference of existing means between the groups.

The Mann-Whitney non-parametric test is used to test whether two independent samples arise from populations with equivalent means. It is based on the provision of data in stations

and does not require the population to have the same variance, but only that the level of measurement is on a continuous scale (Stevenson, 2001).

Finally, so as to test the relationship existing between the two variables researched, a correlation test was performed. Correlation is an association technique used to determine whether there is a coherent and systematic relationship between two or more variables (Hair, Babin, Money, & Samouel, 2005).

4 ANALYSES OF RESULTS

4.1 Financial Statement and Restatement

Initially, the companies listed on BM&FBovespa were divided between those that published their financial statement only once and those that, for some reason, republished it during the analysis period. Table 4 shows the separation of the companies with restatement or without restatement during the analysis period.

Table 4
Number of companies with statement and restatement, per year

	2011		2012		2013		2014		2015		2016		Total	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Statement	292	65.5	301	65.1	338	72.7	355	76.8	312	77.2	319	76.7	1917	72.2
Restatement	154	34.5	162	34.9	127	27.3	107	23.2	92	22.8	97	23.3	739	27.8
Total	**446**	**100%**	**463**	**100%**	**465**	**100%**	**462**	**100%**	**404**	**100%**	**416**	**100%**	**2656**	**100%**

Source: Research data.

From the analysis of Table 4, it can be observed that in 2012 there was a higher incidence of restatements, corresponding to 34.9% of a total of 463 companies classified for the analysis. In 2011, from a total of 446 companies, 154 presented financial restatements, corresponding to 34.5%. This can be related to the process of alignment with international accounting standards introduced by Law 11.638/07. It is highlighted however, that 2008 was the first year truly influenced by said Law. Teixeira *et al.* (2013) stresses that the extension of recast indicate possible difficulties of companies to adjust to the new accounting standards.

However, still analyzing Table 3, there was a reduction of restatement cases over the years: in 2011 it corresponded to 34.5%, while in 2016 it represented only 23.3% from all financial restatements. This may indicate that companies are focused on disclosing their financial statements in compliance with the applicable standards. According to Dantas *et al.* (2011), the determination of financial restatement and recast should be avoided, in order to keep its integrity providing the user with information on the financial and equity position in addition to supporting the decision-making process.

The identification of companies listed on BM&FBovespa was carried out observing the segments where all are included, which totals 10 industries. Table 5 shows the number of financial statements and restatements per segment during the entire analysis period.

Table 5
Statements and restatement per industry, from 2011 to 2016

Sector of Activity	Statement	Restatement	Total	%
Industrial Goods	158	44	202	7.6%
Construction and Transportation	277	96	373	14.0%
Cyclic Consumption	265	109	374	14.1%
Non-cyclic Consumption	139	49	188	7.1%
Financial and Others	548	209	757	28.5%
Basic Materials	157	53	210	7.9%
Oil. Gas and Biofuel	31	14	45	1.7%
Information Technology	36	16	52	2.0%
Telecommunications	32	10	42	1.6%
Public Utility	274	139	413	15.5%
Total	**1917**	**739**	**2656**	**100%**

Source: Research Data.

It can be observed from Table 5 that the most representative sector is "Financial and Others", with 28.5% from a total of 2656 observations analyzed. This result was already expected, as it is the sector that comprises the largest number of companies in the sample studied. The "Public Utility" industry comes immediately after, with 15.5%, followed by the "Cyclical Consumption" industry, with 14.1%.

Table 6 refers to the amount of restatements occurred in each industry in every year analyzed.

Table 6
Number of restatements per industry from 2011 to 2016

Sector of Activity	2011		2012		2013		2014		2015		2016		Total	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Industrial Goods	9	5.8	10	6.2	11	8.7	3	2.8	3	3.3	8	8.2	44	6.0
Construction and Transportation	25	16.2	25	15.4	16	12.6	11	10.3	9	9.8	11	11.3	97	13.1
Cyclic Consumption	20	13.0	21	13.0	19	15.0	15	14.0	18	19.6	15	15.5	108	14.6
Non-cyclic Consumption	7	4.5	13	8.0	12	9.4	5	4.7	4	4.3	8	8.2	49	6.6
Financial and Others	37	24.0	49	30.2	33	26.0	39	36.4	27	29.3	24	24.7	209	28.3
Basic Materials	15	9.7	8	4.9	13	10.2	10	9.3	1	1.1	6	6.2	53	7.2
Oil. Gas and Biofuel	4	2.6	1	0.6	2	1.6	1	0.9	3	3.3	3	3.1	14	1.9
Information Technology	6	3.9	4	2.5	0	0.0	4	3.7	2	2.2	0	0.0	16	2.2
Telecommunications	4	2.6	4	2.5	0	0.0	1	0.9	0	0.0	1	1.0	10	1.4
Public Utility	27	17.5	27	16.7	21	16.5	18	16.8	25	27.2	21	21.6	139	18.8
Total	**154**	**100**	**162**	**100**	**127**	**100**	**107**	**100**	**92**	**100**	**97**	**100**	**739**	**100**

Source: Research Data.

As seen in Table 6, the "Financial and other" industry has the highest percentage of restatements in all years, 24%, 30.2%, 26%, 36.4%, 29.3% and 24, 7%, respectively. This is due to the fact that it has a greater participation in the research, as can be seen in Table 5. It can be further observed that restatements, in general, trended to reduce over the analyzed period. However, in some sectors, this trend was interrupted in the years 2015 and 2016, as shown in Table 6, in the industries of industrial goods, construction and transportation, cyclical and non-cyclical, financial, oil, gas and biofuel consumption and public utility.

According to Murcia & Carvalho (2007), those responsible for disclosing financial statements in the stock market, in some cases omit or disclose manipulated information in favor of the interest of the entity and/or their own interests, which may lead external users to misjudgments. In these cases, CVM intervenes by requiring the financial restatements and recast.

4.2 Audit Delay in the companies investigated

The audit delay analysis is performed using the descriptive statistics supported by the software SPSS®. Thus, the mean, maximum and minimum values of days for report delivery were analyzed. Table 7 presents these means, in days, for the overall audit delay, regarding statements and restatements per year.

Table 7
Identification of the audit delay of publications and restatements disclosed per year

Year	Statement			Restatement		
	Minimum	Maximum	Mean	Minimum	Maximum	Mean
2011	19	639	72	23	816	109
2012	15	238	68	22	690	95
2013	10	525	69	34	318	72
2014	9	210	68	26	133	67
2015	14	218	69	26	697	160
2016	19	405	77	20	331	93

Source: Research Data

The audit delay is represented by the number of days between the year-end closing and the date of the independent auditor’s report. According to Pereira (2011), the higher the audit

delay, the worse it is for the company, because this is analyzed under the probability that the company is in trouble. That justifies the delay in the delivery of reports by auditors. For the present research, following the definition of Pereira (2011), it is understood that a "good" audit delay is a small audit delay, that is, the smaller the delay in the report delivery, the better.

It can be observed in the sample selected that among the companies that did not present financial restatements, the smallest audit delay was of 9 days in 2014, while the longest term occurs in 2011, with a maximum of 639 days for opinion. In companies with restatements, the smallest audit delay is 20 days in 2016, with longest term of 816 days in 2011.

However, when comparing only the means of the audit delay, the shortest period between the disclosures of statements was practically the same in 2012, 2013 and 2014, with an average of 68 days. 2015 presented the mean of 69 days, 2011 the mean of 72 days and 2016 the mean of 77 days. However, in the group of restatements the lowest mean was 67 days in 2014, and in 2015 the highest average was observed, with 160 days of audit delay.

It is observed that the increase of the audit delay followed trend presented in Table 6. In the years of 2015 and 2016 the restatements increased. As shown in Table 7, the audit delay increased again in those years (2015 and 2016), as observed in the minimum, maximum and mean values.

It should be stressed that the study by Camargo & Flach (2016) found a mean *audit delay* for 2013 lower than that found hereof. The authors found that the number of days for receiving the audit report for the companies in the studied sample is 60 days, while this study reported an average term of 69 days for the same period. However, it should be noted that the sample used by Camargo & Flach (2016) considered only companies that trade in the IBrX100, which may have led to this difference.

From Table 7 it can be observed that, except for 2014, all other years present smaller mean *audit delay* in the group that presented the financial statements only once. Below, this difference is analyzed more closely, using the mean difference test and the correlation test.

4.3 Relationship between restatement and Audit Delay

In order to reach the proposed objective, that is, to verify the relationship between the financial restatement and the audit delay, the mean difference test was first carried out in order to identify if the average days of audit delay with restatement is significantly different from the means of companies without republishing. Finally, the correlation analysis between the two research variables is performed.

First, the year of 2011 was analyzed. The Mann-Whitney test was used in order to assess the difference of means. Within the analysis period, the sample comprised 446 companies presenting all information necessary for the analysis. From this total, 292 companies did not present restatements, and the remaining 154 presented restatements. After analyzing the mean of each group, it can be observed that the *audit delay* of the publication of statements corresponded to 72 days, while the mean *audit delay* of companies with restatement, was 109 days. Therefore, there are indicators that means observed arise from two different groups. To evidence such fact, the Mann-Whitney test was performed, whose results are shown in Table 8.

Table 8
Mann-Whitney Test on Means of 2011

Group	**N**	**Mean Outlets**	**Sum of classifications**	***Mean of Audit Delay***
Statement	292	211.28	61692.5	72
Restatement	154	246.68	37988.5	109
Total	**446**			
U of Mann-Whitney			18914.5	
Wilcoxon W			61692.5	
Z			-2.759	
Significance Sig. (2 extremes)			0.006	

Source: Research Data.

When analyzing the results of the Mann-Whitney test, it is observed to be significant at the level of 5% (Sig. of 0.006), which indicates that there is a significant difference between the audit delay means of companies with financial statements and restatements in the year of 2011.

This fact indicates that the higher the audit delay, the greater the chance of the company presenting financial restatements, since the average of the group with restatements was higher than the average of the group without it.

A longer *audit delay* indicates that greater work was performed by auditors in the analysis process. It evidences the existence of discrepancies in financial statements. Pereira (2011) argues that a high *audit delay* can affect decision making, worsen the perceived risk in companies' performance and lead investors to sell their shares or even demand greater compensation.

The sample of 2012 included 301 companies that published their statements only once, and 162 that had their financial statements republished, thus totalizing the sample of 463 companies. Considering the average of each group, it is found that the average audit delay of companies that did not present restatements was 68 days, while the average audit delay of the companies with restatements was 95 days. The Mann-Whitney test, presented in Table 9, evidences a significant difference between the means of the two groups.

Table 9
Mann-Whitney Test on Means of 2012

Group	**N**	**Mean Outlets**	**Sum of classifications**	***Mean of Audit Delay***
Statement	301	215.13	64754.0	68
Restatement	162	263.35	42662.0	95
Total	**463**			
U of Mann-Whitney			19303.0	
Wilcoxon W			64754.0	
Z			-3.701	
Significance Sig. (2 extremes)			0.000	

Source: Research Data.

The Mann-Whitney test result indicates a significance level of 0.000, which represents a significant difference between the audit delay means of financial statements and restatements in the period of 2012. As the mean of the group with restatements was greater than the average of companies with statements, the evidence is endorsed in the sense that a high audit delay may indicate that the financial statements of these companies can be republished.

Subsequently, we analyzed the year 2013, which included a sample of 465 companies. 338 published their statements only once, while 127 has, at some point, their statements republished. It was observed an average audit time of 69 days for the financial statements published only once and an average of 72 days for restatements. The difference between the mean audit delays of the two analyzed groups is not very significant. A Mann-Whitney test was carried out to verify whether there is statistical difference, as per Table 10.

Table 10
Mann-Whitney Test on Means of 2013

Group	**N**	**Mean Outlets**	**Sum of classifications**	***Mean of Audit Delay***
Statement	338	228.75	77318.5	69
Restatement	127	244.30	31026.5	72
Total	**465**			
U of Mann-Whitney			20027.5	
Wilcoxon W			77318.5	
Z			-1.112	
Significance Sig. (2 extremes))			0.266	

Source: Research Data.

The Mann-Whitney test result presented no significance (Sig. 0.266). It indicates that the means of the two groups analyzed do not differ significantly. Even so, the average of the companies with financial restatements was above those with statements. Again, this fact strengthens the evidence that a high audit delay may be linked to the republishing of company statements and may indicate the discrepancies found by auditors.

Pereira & Costa (2012) concluded in their research, between 1999 and 2008, that there is a positive relationship between the audit delay and the occurrence of reservations. The behavior of the auditors and the use of the independent auditors' report on financial statements

are questioned in practice whenever the disclosure and publication of the financial statements are not fair and appropriate. The audit shall enhance the confidence of all users of the information disclosed by the company (Dantas et al., 2011).

Subsequently, analysis of 3014 was performed comprising 355 companies with financial statements and 107 with financial restatements, totaling a sample of 462 companies that presented all the necessary information for the analysis. From the analysis of the average of each group, it can be observed that the audit delay of the companies with statements was 68 days, while the average audit delay of the companies with restatements was 67 days. The Mann-Whitney test, presented in Table 11, was not significant (Sig. 0.834). It indicates that the mean of the two groups does not differ significantly.

Table 11
Mann-Whitney Test on Means of 2014

Group	N	Mean Outlets	Sum of classifications	*Mean of Audit Delay*
Statement	355	230.78	81928.5	68
Restatement	107	233.87	25024.5	67
Total	**462**			
U of Mann-Whitney			18738.5	
Wilcoxon W			81928.5	
Z			-0.210	
Significance Sig. (2 extremes)			0.834	

Source: Research Data.

The audit delay means of companies that republished or not their statements showed only one day of difference. The mean of publications was higher, with 68 days. This contradicts the suggestion that a larger audit delay would be linked to the financial restatements.

On the other hand, the analysis for the year 2015 corroborated the results found in 2011 and 2012, indicating a significantly different audit delay mean between the companies that published their financial statements only once and the companies that republished their statements. The result for the mean difference test is shown in Table 12 below.

Table 12
Mann-Whitney Test on Mean of 2015

Group	N	Mean Outlets	Sum of classifications	*Mean of Audit Delay*
Statement	312	187.89	58622.50	69
Restatement	92	252.04	23187.50	160
Total	**404**			
U of Mann-Whitney			9794.5	
Wilcoxon W			58622.5	
Z			-4.633	
Significance Sig. (2 extremes)			0.000	

Source: Research Data.

In fact, in 2015, the mean of the two groups analyzed was visibly different. The group of companies with restatements took an average of 109 days longer to obtain the auditor's report compared to the group of companies with statements. Finally, 2016 was analyzed, as presented in Table 13.

Table 13
Mann-Whitney Test on Means of 2016

Group	N	Mean Outlets	Sum of classifications	*Mean of Audit Delay*
Statement	319	203.35	64867.50	77
Restatement	97	225.45	21868.50	93
Total	**416**			
U de Mann-Whitney			13827.5	
Wilcoxon W			64867.5	
Z			-1.586	
Significance Sig. (2 extremes)			0.113	

Source: Research Data.

In 2016, there was no significant difference in the audit delay mean between the two groups analyzed. However, it should be stressed that companies that did not republish the statements presented a mean of 16 days less during the period of disclosure of the audit report.

Overall, the mean difference test shows that in 2011, 2012 and 2015 there was a significant difference. The group of companies that presented restatements had higher audit delay compared to the group of companies that did not present the restatements. For the years of 2013 and 2016, although there was no significant difference between the means of the two groups, it was also observed that the mean audit delay was higher in the group of companies with restatement. These results indicate that a longer audit delay is related to the republishing of the financial statements.

Analyzing, however, the year 2014, an inversion is observed, since the mean audit delay was slightly higher for companies that did not republish their financial statements. It should be noted, however, that the mean difference between the two groups was only 1 day, and therefore, not significant.

In order to verify if there is a relationship between the presentation of financial restatements and the audit delay, as well as to increase the soundness of the findings, a correlation analysis was carried out in the SPSS. The analysis was performed per year and the results are summarized in Table 14 below.

Table 14
Correlation Analysis

Year	Variables	Restatement	*Audit Delay*
2011	Restatement	1	0.211**
	Audit Delay	0.211**	1
2012	Restatement	1	0.204**
	Audit Delay	0.204**	1
2013	Restatement	1	0.039
	Audit Delay	0.039	1
2014	Restatement	1	-0.025
	Audit Delay	-0.025	1
2015	Restatement	1	0.399**
	Audit Delay	0.399**	1
2016	Restatement	1	0.132**
	Audit Delay	0.132**	1

Note. * Correlation is significant at 99%.
Source: Research Data.

Observing Table 14, it can be ascertained that the correlation coefficients found evidence a weak relationship between the two variables under analysis, since all show to be lower than 0.40 (Dancey & Reidy, 2006). This indicates that there may be other variables that influence those correlated in this study and thus affect the outcome (Field, 2009).

It is interesting, however, to note that in the years of 2011, 2012, 2015 and 2016 the correlation coefficient was higher compared to the years of 2013 and 2014. In addition, these were the only significant coefficients at a level of 99%. This result is in line with the previous mean difference test. Therefore, it confirms that when the audit delay is longer there are financial restatements, considering that the correlation coefficient was positive in the four years.

For 2013, the correlation coefficient found was very low (0.039) and did not present statistical significance, evidencing a weak relationship between the variables. However, it can be observed that the coefficient was positive, thus indicating that when the audit delay is longer there are financial restatements. This result is in line with the audit delay means of 2013 (68 days for statement and 72 days for restatement). However, once the means did not differ significantly, this fact may have contributed to the low correlation coefficient herein found.

Finally, for the year 2014, a low (-0.025), non-significant and negative correlation coefficient was found. Thus, unlike the findings from in previous years, the relationship between the two variables was negative in 2014, which indicates that when the audit delay is longer there is no republishing of the financial statements. Again, it is observed that the results herein found are in line with the previously presented means, since the average audit delay of companies with republication (67 days) was lower than the average audit delay of companies

that did not republish their statements (68 days). In addition, the low coefficient found may reflect the similarity between the means, which did not differ significantly.

Overall, the results found by this research indicate that a longer *audit delay* is connected to the presentation of financial restatements, since in most cases under analysis the data indicate such behavior. This result corroborates the findings of Blankley, Hurtt and MacGregor (2014), which also evidence that companies that eventually present their financial re statements have great delay in the receipt of the audit report.

These evidences may suggest that the auditor had to deal with more complex issues that required more time and greater professional judgment in the course of the work. These cases tend to increase the audit time, which may, consequently, increase the pressure on the auditor to complete the expert investigation. These factors may jeopardize the quality of the audit work, making it less effective in detecting errors and deviations (Blankley et al., 2014; Ettredge et al., 2014). Thus, a possible consequence of the reduction in the quality of the audit is the presentation of restatements that are eventually disclosed to the market with errors or omissions.

It is assumed that this is the case of the Brazilian market. Therefore, the delay in issuing the independent auditor's report indicates an increase in the audit risk, which can result in the future occurrence of financial restatements.

Consideration should be given regarding the divergent result found in 2014. In that year, the results indicated a negative relationship between the audit delay and the financial restatements. They evidenced that the longer the delay in publishing the auditor's report, the lower the probability of restatement. In fact, a theoretical understanding supports that the delay in the publication of the auditor's report reflects the effort employed in the audit (Knechel & Payne 2001). Empirical evidence supports the fact that the greater the audit effort, the higher the quality of the auditor's work (O'Sullivan, 2000; Knechel & Sharma, 2012). Therefore, a longer delay would be desirable, since it would signal greater efforts by auditors and, consequently, a higher-quality audit.

This is not perceived, however, as the most reasonable explanation for the results, considering that investors in the Brazilian market react negatively to the delay in disclosing accounting information (Terra & Lima, 2006). Therefore, companies receive incentives to publish the statements in a timely manner. In addition, it should be highlighted that the audit delay means found for both groups (statement and restatement) were very close, which does not allow us to infer on the positive relationship observed between the two variables investigated. In this sense, future studies may deeper investigate the matter, specially in 2014, analyzing other variables that were not addressed hereunder, for example the time of relationship between auditor and auditee or the specialization of the audit firm.

5 CONCLUSION

This study aimed at verifying the relationship between the audit delay and the financial restatements of Brazilian companies listed on BM&FBovespa. Thus, a descriptive research with a quantitative approach was performed through documentary analysis in order to achieve the general objective previously established.

The first step was to identify the companies listed on BM&FBovespa that presented financial restatements from 2011 to 2016. This was made through the website of the Futures And Commodities Exchange (BM&FBovespa). It was found that within 2012 there was a higher incidence of restatements, with a total of 162 companies from 463 classified for analysis in the year. From the analysis per industry, it was noticed that "Financial and others" was the most representative, which had the highest percentage of participation in restatements in all years.

The second step aimed to identify the audit delay of Brazilian companies listed on BM&FBovespa. For this purpose, data were collected from BM&FBovespa's electronic website, which allowed the calculation of the delay in issuing the independent auditor's report. In this paper, based on the definition of Pereira (2011), the concept that a "*good*" audit delay was considered to be a small audit delay, that is, the shorter the delivery delay, the better. The

results showed that among companies that for some reason had to present restatements, the smallest audit delay was 20 days in 2016 and the longest 816 days, in 2011.

Finally, we sought to relate the presentation of financial restatements with the delay in issuing the independent auditor's report on financial statements (*audit delay*) of Brazilian companies listed on BM&FBovespa. Considering the mean difference test results and the correlation analysis, it was found that for the years of 2011, 2012, 2015 and 2016 a higher audit delay is related to the financial restatements, which is in line with the findings of Blankley et al. (2014). Therefore, considering that the Brazilian market reacts negatively to delays in the publication of accounting information, it is understood that the pressure on the auditor for a timely conclusion of the audit may lead to a reduction in the quality of the work performed, which explains the publication of biased statements

For 2013 and 2014,however, such relationship was not verified. In 2013, there was no significant difference in the *audit delay* of the two groups of companies (with and without restatements), which led to an extremely low and insignificant correlation coefficient. While in 2014, the observed averages showed a relation inverse to that expected, that is, a lower audit delay related to the financial restatements; such fact was confirmed by the correlation coefficient identified. It should be noted, however, that the observed relationship was not statistically significant, as well as the lack of significant difference between the means of the two groups analyzed.

Thus, the results found in this work allow ascertaining that for 2011, 2012, 2015 and 2016, companies with longer *audit delay* present financial restatements. For 2013 and 2014, the same conclusion cannot be ascertained, given the results reported.

Like all researches, this work has also its limitations, among which we highlight the failure to separate recast and republication. Further studies related to this topic can investigate whether the reasons for the restatements are related to each other, as well as to investigate the reasons for the difference of audit delay identified between companies operating in the same industry.

REFERENCES

Angeli, P. P. T. (2008). *Republicação das Demonstrações Contábeis:* uma análise dos índices ROA, ROE e endividamento total em empresas brasileiras no período de 2000 a 2005. Dissertação Mestrado em Ciências Contábeis, Programa de Pós-Graduação em Ciências Contábeis, da Fundação Instituto Capixaba de Pesquisa em Contabilidade, Economia e Finanças (FUCAPE), Vitória, Espírito Santo, Brasil.

Bills, K. L., Swanquist, Q. T., & Whited, R. L. (2015). Growing pains: Audit quality and office growth. *Contemporary Accounting Research*, *33*(1), 288-313.

Bischoff, J., Finley, J., & Leblanc, D. (2008). *Financial Statement Restatements: Causes and Effects.* Tennessee CPA Journal. April.

Blankley, A. I., Hurtt, D. N., & MacGregor, J. E. (2014). The relationship between audit report lags and future restatements. *Auditing: A Journal of Practice & Theory, 33*(2), 27-57.

Brown, S. & Hillegeist, S. A. (2007). How disclosure quality affects the level of information asymmetry. *Review of Accounting Studies, 12*(2-3), 443-477.

Camargo, R. C. C. P. & Flach, L. (2016). Audit Report Lag e Expertise da Firma de Auditoria: Uma Análise com Empresas Listadas na BM&FBovespa*. Advances in Scientific and Applied Accounting, 9*(2), 181-203.

Chen, S., Goo, & Shen, Z. (2014). A Hbrid Approach of Stepwise Regression, Logistic Regression, Support Vector Machine, and Decision Tree for Forecasting Fraudulent Financial Statements. *The Scientific World Journal*, 2014, 1-10.

Comissão de Valores Mobiliários. (2018). *Texto integral da Instrução CVM nº 480, de 7 dezembro de 2009 com as alterações introduzidas pelas Instruções CVM nº 488/10, 509/11, 511/11, 520/12, 525/12, 547/14, 552/14, 561/15, 567/15, 568/15, 569/15, 583/16, 584/17, 585/17, 586/17, 588/17, 595/18 e 596/18.* Dispõe sobre o registro de emissores de valores mobiliários admitidos à negociação em mercados regulamentados de valores mobiliários. Rio de Janeiro.

Conselho Federal de Contabilidade. (2016a). *NBC TA 200 (R1): Objetivos gerais do auditor independente e a condução da auditoria em conformidade com normas de auditoria*. Brasília.

Conselho Federal de Contabilidade. (2016b). *NBC TA 705: Modificações na opinião do auditor independente*. Brasília.

Conselho Federal de Contabilidade. (2016c). *NBC TA 706: Parágrafos de ênfase e parágrafos de outros assuntos no relatório do auditor independente*. Brasília.

Damascena, L. G. & Paulo, E. (2013). Pareceres de Auditoria: um estudo das ressalvas e parágrafos de ênfases constantes nas demonstrações contábeis das companhias abertas brasileiras. *Revista Universo Contábil, 9*(3), 104-127.

Damascena, L. G., Firmino, J. E., & Paulo, E. (2011). Estudo sobre os pareceres de auditoria: análise dos parágrafos de ênfase e ressalvas constantes nas demonstrações contábeis das companhias listadas na Bovespa. *Contabilidade Vista & Revista, 22*(1), 125-154.

Dancey, C. & Reidy, J. (2006). *Estatística Sem Matemática para Psicologia: Usando SPSS para Windows.* Porto Alegre: Artmed.

Dantas, J. A., Chaves, S. M. T., Silva, M. R., & Carvalho, R. P. (2011). Determinações de recast/republicação de demonstrações financeiras pela CVM: o papel dos auditores independentes. *Revista Universo Contábil, 7*(2), 45-64.

Ettredge, M., Fuerherm, E. E., & Li, C. (2014). Fee pressure and audit quality. *Accounting, Organizations and Society*, *39*(4), 247-263.

Fávero, L. P., Belfiore, P., Silva. F. L., & Chan, B. L. (2009). *Análise de dados: modelagem multivariada para tomada de decisões* (2a ed.) Rio de Janeiro: Elsevier.

Field, A. P. (2009). *Descobrindo a estatística usando o SPSS* (2a ed.). Porto Alegre: Artmed.

Gil, A. C. (1999). *Métodos e Técnicas de Pesquisa Social* (5a ed.). São Paulo: Atlas.

Hair, J. F., Jr., Babin, B. J., Money, A. H., & Samouel, P. (2005). *Fundamentos de métodos de pesquisa em administração.* Porto Alegre: Bookman.

He, L. & Chiang, H. (2013). Market Reaction to Financial Statemen Restatement: A Study on the Information and Insurance Role of Auditors. *Advances in Management and Applied Economics, 3*(4), 37-50.

Knechel, W. R., & J. L. Payne. (2001). Additional evidence on audit report lag. *Auditing: A Journal of Practice & Theory 20*(1): 137–146.

Knechel, W. R. & Sharma, D. S. (2012). Auditor-provided nonaudit services and audit effectiveness and efficiency: Evidence from pre-and post-SOX audit report lags. *Auditing: A Journal of Practice & Theory, 31*(4), 85-114.

Lei nº 6.404, de 15 de dezembro de 1976 (1976). Dispõe sobre as Sociedades por Ações. Brasília, 15 de dezembro de 1976.

Magalhães, M. N. & Lima, A. C. P. (2005). *Noções de Probabilidade e Estatística.* São Paulo: EDUSP.

Marques, V. A., Amaral, H. F., Souza, A. A., Santos, K. L., & Rodrigues, P. H. (2017). Determinantes das Republicações no Mercado Brasileiro: Uma Análise a partir dos Incentivos ao Gerenciamento de Resultados. *Revista de Educação e Pesquisa em Contabilidade, 11*(2), 191-213.

Martins, G. A & Theóphilo, C. R. (2009). *Metodologia da investigação científica para ciências sociais aplicadas* (2a ed.). São Paulo: Atlas.

Murcia, F. D. R. & Borba, J. A. (2005). Um estudo das fraudes contábeis sob duas óticas: Jornais econômicos versus periódicos acadêmicos no período de 2001-2004. *Revista de Contabilidade do Mestrado de Ciências Contábeis da UERJ, 10*(2), 99-114.

Murcia, F. D.R. & Carvalho, L. N. (2007). Conjecturas Acerca do Gerenciamento de Lucros, Republicação das Demonstrações Contábeis e Fraude Contábil. *Contabilidade Vista & Revista, 18*(4), 61-82.

Niyama, J. K. & Silva, C. A. T. (2011). *Teoria da Contabilidade*. (2a ed.). São Paulo: Atlas.

Netto, F. H. & Pereira, C. C. (2011). Impacto da republicação de demonstrações financeiras no preço das ações de empresas brasileiras**.** *Revista Contemporânea de Contabilidade*, *7*(14), 29-50.

O'Sullivan. (2000). The impact of board composition and ownership on audit quality: Evidence from large UK companies. *The British Accounting Review*, *32*(4), 397-414.

Pereira, A. N. & Costa, F. M. (2012). Determinantes do atraso de auditoria externa (Audit Delay) em companhias brasileiras. *Encontro da Associação Nacional de Programas de Pós-Graduação em Administração (ENANPAD),* Rio de Janeiro (RJ).

Pereira, A. N. (2011). *Determinantes do atraso de auditoria externa (Audit Delay) em companhias brasileiras.* Dissertação de Mestrado em Ciências Contábeis, Programa de Pós-Graduação em Ciências Contábeis, da Fundação Instituto Capixaba de Pesquisa em Contabilidade, Economia e Finanças (FUCAPE), Vitória, Espírito Santo, Brasil.

Raupp, F. M. & Beuren, I. M. (2003). Metodologia da Pesquisa Aplicável às Ciências Sociais. In Ilse M. Beuren (Org). *Como elaborar trabalhos monográficos em contabilidade: teoria e prática* (Cap. 3, pp. 76-97). São Paulo: Atlas.

Romanus, R. N., Maher, J. J., & Fleming, D. M. (2008). Auditor industry specialization, auditor changes, and accounting restatements. *Accounting Horizons*, *22*(4), 389-413.

Santos, A. C., Souza, M. A., Machado, D. G., & Silva, R. P. (2009). Auditoria independente: um estudo dos pareceres emitidos sobre demonstrações contábeis de empresas brasileiras listadas na Bovespa e na Nyse. *Revista Universo Contábil, 5*(4).

Stevenson, W. J. (2001). *Estatística aplicada a administração.* Editora Harbra.

Teixeira, S. A., Politelo, L., & Klann, R. C. (2013). Fatores relacionados ao recast das demonstrações contábeis das companhias brasileiras de capital aberto. *Encontro Nacional dos Cursos de Graduação em Administração*, Florianópolis, SC, 24.

Terra, P. R. S., & De Lima, J. B. N. (2006). Governança corporativa e a reação do mercado de capitais à divulgação das accounting information. *Revista Contabilidade & Finanças, 17*(42), 35-49.

Revista Catarinense da Ciência Contábil,
ISSN 1808-3781 - eISSN 2237-7662,
Florianópolis, SC, v. 17, n. 51, p. 102-116,
May/Aug. 2018

DOI: 10.16930/2237-7662/rccc.v17n51.2565
Available at http://revista.crcsc.org.br

GOVERNMENTAL GRANTS AND ASSISTANCE IN THE BRAZILIAN COMPANIES WITH INNOVATION FOSTERED BY FINEP

JACKELINE LUCAS SOUZA
PhD in Civil Engineering from the Federal University of Ceara (UFC). Adjunct professor of the UFC. ***Address:*** *Rua Torres Câmara, 891, Ap. 702 | Aldeota | 60150-060 | Fortaleza/CE | Brazil.*
E-mail: *jackeline.souza@hotmail.com*

PAULO HENRIQUE NOBRE PARENTE
Doctorate student in Accounting Sciences by the Post-Graduate Program in Accounting Sciences of the Federal University of Paraiba (PPGCC-UFPB). Effective professor of Basic, Technical and Technological Education of the Federal Education, Science and Technological Institution of Ceara (IFCE). ***Address:*** *Rua Valdemar Paes, 925 | Bom Jardim | 60545-055 | Fortaleza/CE | Brazil.*
E-mail: *paulonobreparente@gmail.com*

IVANEIDE FERREIRA FARIAS
Master´s student of the Post-Graduation Program in Administration and Controllership of the Federal University of Ceara (UFC). ***Address:*** *Rua Dona Mendinha, 1120 | Álvaro Weyne | 60336-035 | Fortaleza/CE | Brazil.*
E-mail: *ivaneideffarias@yahoo.com.br*

HYANE CORREIA FORTE
Undergraduate student of Accounting Sciences of the Federal University of Ceara (UFC). ***Address:*** *Rua Pedro Melo, 136 | Antônio Bezerra | 60360-220 | Fortaleza/CE | Brazil.*
E-mail: *hyane_0104@hotmail.com*

ABSTRACT

This study verifies the content and level of disclosure of Government Grants and Assistance (GGA) in the financial statements of Brazilian companies fostered by the Studies and Projects Funding Entity [FINEP] between 2008 and 2015. CPC 07 requires companies to disclose their accounting policy, the nature and amounts of government grants, and the requirements that must be met by the companies. Of the 1,992 companies fostered during this period, only 48 are publicly-held and, consequently, publish financial statements on the Stock Exchange, Brazil, and over-the-counter [B3] website. We used the content analysis, in which we collected the companies´ registration, sectorial, financial and accounting data, including general GGA information. We obtained information on the financed and subsidized projects from the FINEP website. The verification of receiving the GGA considered the guidelines of the CPC 07 (2008) and its subsequent review, CPC 07 – R1 (2010), which presents the eight items subject to disclosure. We verified that 71.2% of the sampled companies disclosed receiving the GGA. The year 2009 was the most representative. The other 28.8% of the sampled companies did not demonstrate receiving the GGA but explicitly mentioned the CPC 07. In conclusion, despite mentioning the CPC 07, a significant part of the sampled companies did not disclose the information regarding the GGA for the period between 2010 and 2015, showing greater disclosure only in 2009.

Keywords: Tax incentives. Disclosure. Accounting Pronouncements. CPC 07.

1 INTRODUCTION

The approval of laws nº 11,638 of December 28th, 2007 and nº 11,941 of May 27th, 2009 and the publication of technical pronouncements by the Accounting Pronouncement Committee [CPC] represents an advance of Brazilian society regulation, contributing to the process of accounting convergence to the international laws. As a result, changes occurred on the structure of accounting statements, on the increase in the quality of accounting information, on the new accounting criteria, and on the disclosure of patrimonial elements and company results (Andrade & Martins, 2009).

Among the changes provided by the regulations, the revocation of the capital reserve 'Donations and Grants for Investment', account that affects the accounting registration of the Governmental Grants and Assistance (GGA), is no longer recognized as a reserve in the net patrimony of the companies and is now registered in the income statement account. The acknowledgment in the income only occurs when meeting the revenue recognition conditions (Martins, Gelbcke, Santos, & Iudícibus, 2013), ensuring that this verification approximates the profit-cash relation (Nogueira, Jucá & Macedo, 2010).

The Technical Pronouncements of the CPC 07 – Governmental Grants and Assistance – enacted in 2008 and modified by the CPC 07 - R1, approved by the CVM Deliberation nº 646 of December 2nd, 2010 (Securities and Exchange Commission [CVM], 2010) proposes this change and aims at aligning the accounting standards to the international norm IAS 20, issued by the International Accounting Standards, which regulated the transactions undertaken between the public and private sectors.

The GGAs are programs administered and made feasible by the Federal, State, Federal District, and Municipal governments with the objective of increasing operations. Attracting local investments with the need for development, and fostering various activities of public interest (Taveira, 2009). We highlight that the concession of grants is a potential and necessary research field in the areas of administration and accounting since the taxes have a direct impact on the company´s accounting and patrimony statement (Formigoni, 2008).

In this context, we highlight the support of the Studies and Projects Financing Entity [FINEP] in the promotion of technological development in Brazil through innovation promotion programs (Inovar, Juro Zero, Subvenção Econômica and Subvenção Pesquisador/Empresa). Such programs are developed through subsidized financing, economic grants, and equity flow (Macaneiro & Cherobim, 2009). We highlight the dimension of the resources involved. FINEP has released R$ 16.2 billion between 2008 and 2016 for projects with innovative characteristics, according to the data presented at the end of this work.

When considering the representativeness of the values subject of the GGAs, granted by the government to Brazilian companies, we question in which manner is the GGA disclosed by the Brazilian companies benefited by FINEP, as required by the CPC 07 (2008) and CPC 07 – R1 (2010)? The study had the general objective of verifying the content and level of disclosure of the GGAs in the accounting statements of Brazilian companies benefited by FINEP. Additionally, we analyze the relationship between the level of disclosure and the representativeness of the GGA received.

The research sample consists of 48 Brazilian publicly-held companies, distributed between 2008 and 2015, identified by the information collected from the accounting statements, and published at the Exchange Stock, Brazil and over-the-counter [B3] and FINEP websites.

In accounting terms, after the convergence process and approval of the Accounting Pronouncement CPC 07 – R1 (2010), the accounting treatment given to GGA underwent significant changes. Taveira (2009), Chagas, Araújo and Damascena (2011), Loureiro, Gallon and De Luca (2011), Rodrigues, Silva and Faustino (2011), Benetti, Benetti, Utzig, Braun and Oro (2014) and Barros, Souza and Dalfior (2015) studied the accounting aspects of the GGA and their respective effects on the companies.

The results of this study showed that 71.2% of the companies disclosed the government grants and assistance, demonstrated by the receipt of tax incentives. The companies received 6.11% and 17.70% of GGA and FINEP projects when compared to the total assets. Furthermore, we verified that the companies received up to 69.7% and 532.0% of GGA and FINEP projects, respectively, regarding total assets and net patrimony.

It is worth considering that the Brazilian companies have faced difficulties in obtaining external financing for innovation (Crisóstomo, 2009), which motivates the Government to develop innovation in the country (Hamburg, 2010) through governmental grants, among which are those provided by FINEP. Thus, we justify the context of the research analysis, restricted by the perspective of the company returning to the society the resource received, performing the due accountability, and complying with the accounting norms, as determined by the CPC 07 (2008) and CPC 07 – R1 (2010).

We divided this article into six sections. The first, an introduction to the research, followed by the theoretical background, in which we approached the government grants and assistance under the context of accounting convergence and researches conducted on the theme. Subsequently, the section on methodological procedures presents the techniques and methods used for conducting the investigation. The following section assembles the results and discussion. The final considerations indicated the results, limitations, and suggestions for future researches.

2 THEORETICAL BACKGROUND

2.1 Accounting convergence and governmental grants and assistance

The convergence process of the Brazilian accounting norms to the international norms began with the enactment of Law nº 11,638 (2007), changing and revoking the provisions of Laws nº 6,404 (1976) and nº 6,385 (1976) (Crispim, 2011). In this context, the Accounting Pronouncements Committee [CPC] was instituted with the objective of studying, analyzing, elaborating, and emitting technical pronouncements on accounting procedures to be adopted by the institutions (Barros *et al.*, 2015).

These changes impact the accounting of the companies, resulting in a new structure for accounting statements of which focus is the prevalence of the economic essence over the form of the event, with new accounting criteria and disclosure of the patrimony elements and results, affecting the quality of the accounting information (Andrade & Martins, 2009).

Among the changes generated by the societal legislation is the accounting segregation concerning the accounting statements related to taxation (Iudícibus, Martins, Gelbcke, & Santos, 2010) and the innovations brought to the accounting registrations. Such innovations have impacted the profit, stocks, and entity dividends, as in the case of the registrations of the government grants and assistance [GGA], which are now accounted in the earnings account instead of in the net patrimony. Thus, the registration of the GGA as revenue occurs at the moment of its receipt, provided the conditions necessary for its effectiveness be fulfilled (Iudícibus *et al.*, 2010; Loureiro *et al.*, 2011).

In the context of international accounting, the International Accounting Standards – IAS 20, issued in 1983 and reviewed in 1994 by the International Accounting Standards Board [IASB], addresses the subject on donations and grants (Barros *et al.*, 2015).

In Brazil, the Technical Pronouncement CPC 07 was approved by the Brazilian Norm of Technical Accounting [NBCT] 19.4 – Government Grants and Assistance, through the Resolution nº 1,143 (2008) of the Accounting Federal Council [CFC] and CVM Deliberation nº 555 (2008), to regulate this activity in consonance with the IAS 20 (CPC, 2010).

The CPC 07 presents the procedures applicable to accounting and disclosure of governmental grants, as well as the modalities of transactions conducted between the public (government) and private (companies) sectors (CPC, 2010). We highlight that the CVM Deliberation nº 646 (2010) regulated the change of CPC 07 to CPC 07 – R1 and changed the criteria for disclosing the GGA.

In conformation with the changes provided by the Law nº 6,404 (1976), the CPC 07 – R1 (2010) presents arguments to justify the acknowledgement of the GGA as revenue in the income statement, among which are: (a) the grant must not be credited directly into the net patrimony, but recognized as revenue in the appropriate periods, since it is received from non-shareholder sources and derives from an administration act in benefit of the entity; (b) it is rarely gratuitous and the entity effectively gains this revenue when fulfilling the rules of the GGA and

certain obligations; (c) it is an extension of the taxation polity, such as the tributes are expenses recognized in the income statement. The GGA must also be recognized and registered in the income.

The GGA can be recognized when there is reasonable certainty that the company will fulfill all established conditions. The grant can be credited in its reserve as the accumulation of tax incentives after the income statement is sent and based on the accumulated profit or damages account (CPC, 2010).

Regarding the items that must be disclosed in accounting statements, the CPC 07 (2008) orients that companies with GGA must disclose, at least, the following information: (a) the accounting polity and presentation methods adopted for the GGA; (b) the nature and extension of the GGA, as well as the indication of other forms of governmental assistance of which the entity has benefited from directly; (c) the conditions to be fulfilled related to the recognized GGA; (d) the non-compliance of conditions related to the GGA or the existence of other contingencies; (e) the term in which the GGA will remain in the entity; (f) eventual GGA to be accountably recognized, after fulfilling the contractual conditions; (g) the premises used for calculating the just values; and (h) the information relevant to the parcels applied in regional investment funds and the reductions or exemptions of taxes in the incentivized areas. With the changes derived from the CPC 07 -R1 (2010), the number of items that must be disclosed by the companies was reduced, addressing only the information indicated in items (a), (b), and (c).

The CPC 07 – R1 (2010) defines governmental assistance as a government action destined to provide a specific economic benefit to an entity or group of entities that fulfill the established criteria, while governmental grant is defined as the governmental assistance in the form of, but not restricted to, a pecuniary contribution, conferred to an entity, usually in the exchange of the fulfillment of past or future conditions related to the operational activities of the entity (CPC 07 – R1, 2010, p.2).

Loureiro *et al.* (2011) and Chagas *et al.* (2011, p. 9) specify the difference between grant and assistance. The first has pecuniary nature, while the second can occur through other actions of non-pecuniary nature. Fonteneles, Ponte, Oliveira, and Ribeiro (2014) add that the GGAs are the subsidies offered to companies by the government with the objective of stimulating the socioeconomic development of a specific location.

Crispim (2011) indicates that the grants vary according to nature and conditions in which they occur. They can consist of tax incentives, subsidized loans, subsidies in loans, contributions, among others. The grants aim at attracting investments and stimulating a particular economic sector or region, incrementing operations and financing the promotion of activities of public interest. The government can confer them in the municipal, state and federal spheres (Taveira, 2009; Barros *et al.*, 2015).

In this context, the grants can aid in the implementation of many projects, such as those operationalized by organs such as the FINEP, which directly performs the promotion of innovation development in the country. In this sense, the government grant would act as a propelling factor for innovation development (Hamburg, 2010). The government participation must be considered, given that the innovation process must be considered a political-institutional issue (Silva & Costa, 2012).

FINEP has fostered the innovation in Brazil through a few programs, such as project Inovar, Juro Zero, Subvenção Econômica and Subvenção Pesquisador/Empresa. Alongside the National Economic and Social Development Bank [BNDES] and the National Scientific Development Council [CNPq], FINEP has contributed to innovation in Brazil (Macaneiro & Cherobim, 2009). The governmental programs developed by FINEP have been conducted through the concession of research scholarships, subsidized financings (refundable), financial grants (non-refundable), and equity flow (Macaneiro & Cherobim, 2009).

The Brazilian companies have opted for seeking, from among governmental entities, resources derived from grants as assistance to innovation (Corder & Sales-Filho, 2006). The provision of resources destined to the initial investments of innovative companies must derive from the public sector, given that the larger-scale investors prefer to invest only in future stages (Corder & Sales-Filho, 2006). Thus, the grants would have in important role in implementing and leveraging the innovation projects.

2.2 Previous studies

The changes provided by the CPC 07 – R1 (2010) raised the development of researches concerning how the companies have recognized and disclosed the GGAs. However, studies regarding this subject are still scarce. Among the studies conducted, we highlighted those of Taveira (2009), Chagas *et al.* (2010), Loureiro *et al.* (2011), Rodrigues *et al.* (2011), Benetti *et al.* (2014) and Barros *et al*. (2015).

Taveira (2009) evaluated how the publicly-held companies, classified in the distinct segments of corporative governance of the BM&FBovespa, fulfilled the orientations of the CPC 07 (2008) disclosed in the accounting statements of 2008. The results of the study showed accounting information with little or no specifications of items that demand greater explanations, that is, they did not fulfill the criteria defined by the CPC 07 (2008).

Chagas *et al.* (2010) verified the government grants and assistance obtained by the Public Interest Civil Society Organizations [OSCIPs] of the states of Paraiba and Rio Grande do Norte, were according to the CPC 07 – R1 (2010) and NBCT 19.14 – Resolution CFC nº 1,143 (2008). The results showed that a significant portion of the OSCIPs disclosed the government grants and assistance in compliance with the Technical Pronouncement of the CPC 07 – R1 (2010) and NBCT 19.14.

Loureiro *et al.* (2011) investigated the information and economic effects derived from the recognition of the GGA in accounting statements of the 100 largest publicly-held companies in Brazil, listed in the Exame magazine, between 2008 and 2009, according to the CPC 07 – R1 (2010). The authors observed that the companies presented low levels of disclosure, greater disclosure of the item accounting policy adopted for the GGAs, including the presentation methods adopted in the accounting statements, in addition to the significant participation of the GGA in the revenue in companies of the textile and paper and cellulose sectors.

Rodrigues *et al.* (2011) researched the companies headquartered in the state of Pernambuco, which received grants derived from income tax (IR) and tax over merchandise and service circulation (ICMS) incentives, during the period from 2007 to 2009. The objective was to identify how the accounting registrations of the government grants were disclosed and whether they were in accordance with the orientations of the CPC 07 ´R1 (2010). Among the results obtained, only 31% of the analyzed accounting statements followed the CPC orientations.

Benetti *et al.* (2014) verified if the level of GGA disclosure of the companies listed by the BM&FBovespa complied to the Technical Pronouncement of the CPC 07 – R1 (2010). The authors observed that the item of accounting policy adopted by the entity for governmental grants was badly disclosed, as was the items regarding the method of presentation and the nature and quantity of the GGA.

Barros *et al.* (2015) investigated the application of the CPC 07 – R1 (2010) in companies of the indirect public administration of the state of Minas Gerais, in 2013. The results showed that of the 15 companies analyzed, seven did not receive government grants and assistance, three received the grants and assistance but did not apply the determinations of the CPC, and three partially followed the orientations. Only two companies presented total conformity for their accounting statements.

Gonçalves, Nascimento, and Wilbert (2016) analyzed if the Brazilian companies that received government grants presented a higher level of tax avoidance and if they generated more richness to society. The results showed that the companies benefited with the GGA presented higher levels of tax avoidance regarding the taxes on profit, and aggregated lower value to the generated goods and services.

The present study distinguishes itself from others when analyzing the adherence of publicly-held companies in Brazil benefited by the FINEP programs between 2008 and 2015, in relation to the disclosure of GGA demanded by the CPC 07 – R1 (2010). It is worth highlighting the relevance of the profile analysis of all entities benefited by FINEP and the analysis of the representativeness of the publicly-held companies listed in B3, in relation to all the companies benefited by FINEP, as well as its association to the level of disclosure.

3 METHODOLOGICAL PROCEDURES

We used the descriptive methodology for this study, seeking to identify the content and level of disclosure of the government grants and assistance received by the companies. We collected the secondary data, classified as documental, from the B3 and FINEP websites. The data analysis was qualitative-quantitative.

All the companies benefited by FINEP comprise the research universe, totalizing 1,992 entities. Of the total, 48 are publicly-held companies which publish their accounting statements on the B3 website. Therefore, only 48 companies and 66 projects submitted and approved represent the sample – 2.4% of the studied population.

The lack of randomness in the definition of the publicly-held companies occurred due to the study objective. The approval of the Federal Accounting Council [CFC] Resolution nº 1,143/08 determines that the norm must be applied in accounting and disclosure of the governmental grant, as well as in other forms of governmental assistance.

We conducted the content analysis of the accounting statements – financial statements, income statement, and explanatory notes – of the companies, between 2008 and 2015, disclosed in the CVM portal, from which we collected registration, sectorial, financial, and accounting data, including general information on the GGAs. The information concerning the financed and subsidized projects was obtained at the FINEP website.

We initially verified if the companies disclosed the receipt of the GGA in the explanatory notes in each of the analyzed periods. In case the company received no GGA, we attributed the value of zero (0), if they received the GGA, we attributed the value of one (1). We classified the benefits as Federal (F), State (E), and Municipal (M), depending on the origin of the public resource. For the companies that disclosed receiving the GGA, we analyzed the level and content of the information contained in the explanatory notes and the items required by the CPC 07 (2008) and CPC 07 – R1 (2010), as demonstrated in Table 1.

We compared the information analyzed in the explanatory notes with the information present in the FINEP database to identify if and how the companies classify the GGA projects received by FINEP, as well as its representativeness in relation to the total GGA of the companies.

Table 1
Disclosure items of the verification GGA in the explanatory notes

Item	Information to be disclosed by the companies (CPC 07, 2008)
1	The accounting policy adopted for the governmental grants, including the methods of presentation of the accounting statements.
2	The nature and the quantity of the recognized governmental grants or assistance, as well as the indication of other forms of governmental assistance from which the entity has benefited directly.
3	The conditions to be fulfilled regarding the recognized governmental assistance.
4	The non-compliance of conditions related to grants or the existence of other contingencies.
5	The term during which the grant will remain in the entity.
6	Eventual grants to be accountably recognized, after fulfilling the contractual conditions.
7	The assumptions used to calculate the just value demanded the accounting regulation.
8	The information regarding the parcels applied in regional investment funds and the reductions or insertions of tributes to incentivized areas.

Source: Adapted from the Technical Pronouncement of the CPC 07 (2008).

To identify the level of disclosure, we opted for the disclosure related to each item described in the Technical Pronouncement of the CPC 07 (2008). According to this criterion, when the information is disclosed in the explanatory notes of the study period, we applied the values of one (1) and zero (0), if not, we applied eight points to the total and maximum. Furthermore, the CPC 07 – R1 (2010) renders mandatory only the disclosure of items 1, 2, and 3.

We obtained information regarding the projects submitted by the companies from the FINEP website, including the modality, project value, and value released. Regarding the modality, the submitted projects can be classified as refundable and non-refundable. The first refers to the subsidizes financings, while the second refers to the financial grant. When submitting the FINEP projects, the companies propose a value for its accomplishment.

However, the FINEP is responsible for the value released, which not always represents the suggested value.

We divided the qualitative data analysis into three stages: (i) profile of the institutions and GGA received; (ii) level and content of disclosure of the information required by the GGA norm; (iii) representativeness of the GGA in the company´s accounts; and (iv) analysis of the representativeness of the values received by the GGA companies and FINEP projects in relation to the total assets and net patrimony. A *priori*, we developed a panorama of the institutions that were benefited by the FINEP from 2008 to 2015 to, later, demonstrate the representativeness of the GGA of the publicly-held companies in Brazil when compared to others. Posteriorly we present the level and content of the disclosure of the information demanded by the CPC 07 (2008) and CPC 07 – R1 (2010). Finally, we examine the representativeness of the GGA in relation to the total assets and net patrimony of the company.

4 RESULT ANALYSIS

4.1 Result analysis

In the period from 2008 to 2015, FINEP received 3,930 projects, of which 3,577 received resources. We demonstrated in Table 2 that the year with the highest number of projects financed by FINEP was 2010, presenting a total of 780 projects. In second place was 2008, with 638 projects. Table 2 also shows a decrease in the number of projects financed in the last three years. Regarding the modality, most financings were without refund, with 2,920 projects without and 605 with refunding.

We can also verify in Table 2 that, of the 3,525 projects that received financing, only 75 are companies listed in the B3, and most unlisted institutions are universities, research centers, or associations. Over the eight years, the number of projects from companies participating in the B3 has decreased.

Table 2
Analysis of the projects financed by the FINEP

	Attributes	2008	2009	2010	2011	2012	2013	2014	2015	Total	%
FINEP Projects	N	638	617	780	390	375	453	229	43	3,525	100.0
Modality	Refundable	62	71	86	144	94	124	24	0	605	17.2
	Non-refundable	576	546	694	246	281	329	205	43	2,920	82.8
Companies listed at the B3	Yes	5	18	14	9	9	13	6	1	75	2.1
	No	633	599	766	381	366	440	223	42	3,450	97.9
Projects/Regions of Brazil	North	38	27	38	19	9	20	6	1	158	4.5
	Northeast	133	79	126	42	52	73	33	1	539	15.3
	Center-West	35	32	52	23	20	26	10	2	200	5.7
	Southeast	286	327	395	181	203	216	121	28	1,757	49.8
	South	146	152	169	125	91	118	59	11	871	24.7

Source: Research data.

We verified that FINEP approved 3,525 projects to the entities for innovation development, of which 82.8% are characterized as non-refundable, that is, do not present the characteristic of financing. It is unnecessary to return the resource received. It is noticeable that a significant portion of the entities (97.9%) benefited by FINEP is not listed on the Stock Exchange.

The results also show that the Southeastern region of the country presented 1,757 projects financed by the FINEP in the studied period, followed by the Southern region, with 871 projects. The same can be observed when analyzing each year separately, that is, 74.5 of the companies benefited are in the Southern and Southeastern regions.

After verifying the projects, we conducted a descriptive analysis of the resources released during the study period, observing a mean value of R$ 4,491,345.80 of financings, as presented in Table 3.

Table 3

Descriptive analysis of the resources released for the FINEP projects

Period	N	Minimum	Maximum	Mean	Growth (%)	SD	CV
2008	638	16,913.30	100,000,000.00	2,813,203.20	-	8,817,623.30	3.10
2009	617	2,448.00	100,000,000.00	4,194,144.50	0.49	11,577,941.30	2.80
2010	780	41,595.00	93,229,363.00	3,146,147.70	-0.25	9,087,378.80	2.90
2011	390	13,425.00	93,840,000.00	4,011,453.40	0.28	9,882,670.30	2.50
2012	375	1,912.00	126,000,000.00	3,565,683.00	-0.11	11,580,265.80	3.20
2013	453	38,100.00	321,804,051.00	10,914,141.80	2.06	32,790,867.50	3.00
2014	229	58,500.00	240,292,166.00	5,828,529.50	-0.47	20,752,198.10	3.60
2015	43	80,000.00	7,000,000.00	1,457,463.00	-0.75	1,485,212.10	1.00
Total	**3525**	**1,912.00**	**321,804,051.00**	**4,491,345.80**	-0.28	**9,490,105.50**	**2.10**

Source: Research data.

The period with the highest range in relation to the innovation project values was between 2013 and 2015, presenting a difference of R$ 9.5 million. The project values suffered significant reductions, of -87.0%, possibly due to the financial crisis and situation of the economic crisis. We also verified that the coefficients of variation were high, suggesting a high variability of the released values, which can indicate the diversity of the monetary values invested in the projects.

Table 3 shows that the mean growth rate of the project values presents oscillating behavior between the periods, with interval increases and decreases. The period of 2015 is represented by a sharp decline in the number of projects serviced by FINEP.

For the initial analysis, we considered the companies that effectively mentioned the accounting statements. Figure 1 illustrates the number of projects approved and not by FINEP during the analyzed period.

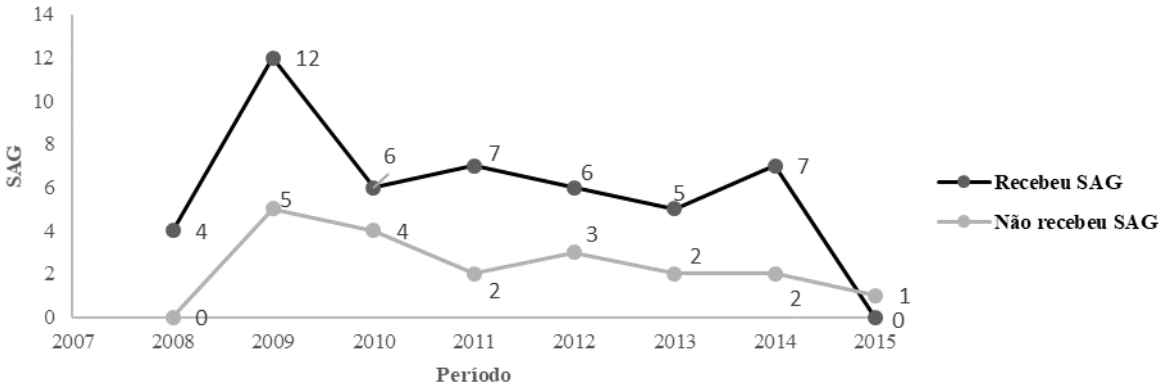

Figure 1. Evolution of the projects approved by the FINEP to publicly-held Brazilian companies.
Source: Research data.

In general, 71.2% of the sampled companies disclosed receiving the GGAs. Figure 1 demonstrates that the peak of GGA receipt occurred in 2009, with a total of 12 benefits (29.3%). Moreover, we can verify in Table 4, based on the publication of the CPC 07 – R1 (2010), that the companies disclosed a receipt of GGA at a constant rate from 2010 to 2015, according to the origin of the resources (federal, state, or municipal).

The disclosure of the GGA in the companies presents similar behavior when compared to the number of projects approved by FINEP, indicating that the grants and assistance provided by the government are decreasing since 2010.

Table 4
Disclosure and mention of the CPC 07 – R1 by the companies benefited by the FINEP

Disclosure and origin of the GGA	GGA Receiving		Mention of the CPC 07	
	N	(%)	N	(%)
Did not disclose GGA	19	28.8	2	13.3
Disclosed GGA	47	71.2	13	86.7
Federal	24	36.3	8	53.3
State	12	18.2	1	6.7
Municipal	0	0.0	0	0.0
Federal and State	11	16.7	4	26.7
Federal, Municipal and State	0	0.0	0	0.0
Total	**66**	**100.0**	**15**	**100.0**

Source: Research data.

The results showed that 28.8% of the companies did not disclose the receipt of GGA. However, they explicitly mentioned the CPC 07. Furthermore, we can observe that, of the companies that received GGA, 24 (36.3%) are of federal origin, 12 (18.2%) of state origin and none presented municipal origin. A significant portion of the received grants is under the form of tax incentives, demonstrated by the disclosure in the explanatory notes of, especially, the Legal Entity Income Tax [IRPJ].

Moreover, despite the companies receiving benefits from the government, they do not mention the CPC 07, even if the study has occurred between the publication of the CPC 07 (2008) and five years after the publication of the CPC 07 – R1 (2010).

Regarding the qualitative information disclosed, Table 5 demonstrated that 33 companies (50%) used the terminology Tax Incentive as a reference to the GGA, followed by six companies using the terminology Subsidy or others in reference of such benefits. We also verified that 11 companies (16.7%) did not disclose the received GGA.

Table 5
Qualitative information disclosed in explanatory notes

Information disclosed in explanatory notes		N	%
Terminology used to inform the received GGA	Subsidy	6	9.1
	Tax incentive	33	50.0
	Donation	2	3.0
	Award	4	6.1
	Other	6	9.1
	Did not inform	11	16.7
Characteristic of the received GGA	Monetary asset	32	48.5
	Non-monetary asset	16	24.2
	Monetary and non-monetary	2	3.0
	Did not inform	12	18.2
Relation between the GGA received and the FINEP	Yes	1	1.5
	No	65	98.5
Total		**66**	**100.0**

Source: Research data.

Table 5 demonstrated that 48.5% of the sampled companies characterize the GGA in the explanatory notes as a monetary asset, while 24.2% described it as a non-monetary asset. We also verified that 65 (98.5%) of the sampled companies did not disclose the relationship between the GGA and FINEP, that is, did not inform the source of the resource. Complementing this analysis, Table 6 indicated the companies had disclosed the items demanded by the CPC 07.

Table 6
Level of the fulfillment of the CPC 07 and CPC 07 – R1 items

Level of the fulfillment of the items in the Explanatory Notes – CPC 07 (2008)									
	Itens obrigatórios								Média Geral
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	
Disclosed	33,3	19,0	14,3	4,8	9,5	0,0	4,8	4,8	11,3
Not disclosed	66,7	81,0	85,7	95,2	90,5	100,0	95,2	95,2	88,7

Level of the fulfillment of the items in the Explanatory Notes – CPC 07 – R1 (2010)											
	Mandatory Items			Partial Mean	Voluntary Items					Partial Mean	General Mean
	1	**2**	**3**		**4**	**5**	**6**	**7**	**8**		
Disclosed	51,1	26,7	20,0	32,6	4,4	8,9	2,2	4,4	2,2	4,4	15,0
Not disclosed	48,9	73,3	80,0	67,4	95,6	91,1	97,8	95,6	97,8	95,6	85,0

Source: Research data.

Regarding the level of items disclosed in the explanatory notes, during the period from 2008 to 2009, we applied the CPC 07 (2008), while in the period from 2010 to 2015, we applied the CPC 07 – R1 (2010).

Thus, Table 6 demonstrated that, on average, 11.3% of the sampled companies disclosed the items demanded by the CPC 07. When analyzing each item, we verified that most companies did not disclose items 1 (66.7%), 2 (81.0%), 3 (85.7%), 4 (95.2%), 5 (90.5%), 6 (100%),7 (95.2%), and 8 (95.2%). Despite the disclosure being mandatory, we verified that from 2008 to 2009, most companies that received GGA did not follow the recommendations of the CPC 07.

Concerning the period from 2010 to 2015, Table 7 shows that 32.6% of the companies disclosed the mandatory items and 4.4% exposed the voluntary items. In general, only 15% of the sampled companies presented the mandatory and voluntary items. When analyzing each item, we verified that of the three mandatory items described by the CPC 07 – R1 (2010), only item 1 presented a higher percentage of disclosure (51.1%). Items 2 and 3 were not disclosed by most companies, representing 73.3% and 80.0%, respectively. Regarding the voluntary items, a significant portion of the companies disclosed no information.

Moreover, we observed that, in both periods, the item “accounting policy adopted for the government grants” was the most disclosed. Table 7 shows the representativeness of the GGA and FINEP resources in the total assets and net patrimony. Therefore, of 66 financed projects, in a mean value of R$ 33,836,514.75, and 41 projects, in a mean value of R$ 614,175.00, were contemplated with GGA, and 14 companies disclosed Tax Incentive Reserve (RIF), in a mean value of R$ 285,902.00.

Table 7
Representativeness of the GGA and FINEP in the total assets and net patrimony

PANNEL A – Values (in thousand R$) relative to the FINEP, GGA, and RIF						
Variables	N	Mean (%)	Median (%)	Minimum (%)	Maximum (%)	SD
FINEP	66	33,837	14,371	139	240,292	4.39
GGA	41	614,175	15,622	60	4,569,660	1,123.28
RIF	14	285,902	82,929	5,347	1,849,893	509.78
PANNEL B – Representativeness of the GGA and FINEP						
Variables	N	Mean (%)	Median (%)	Minimum (%)	Maximum (%)	SD
GGA/AT	41	6.11	18.61	0.03	27.34	7.64
GGA/PL	41	16.54	4.67	0.06	69.71	23.08
FINEP/AT	66	17.70	3.85	0.00	352.00	47.93
FINEP/PL	66	17.38	8.89	0.00	253.83	51.12

Note. FINEP: represents the values received by the companies from the FINEP, regardless of the modality; GGA: denotes the grant received from the government; RIF: is the tax incentives reserve; GGA/AT and GGA/PL: refers to the ratio between the GGA received and the total asset and net patrimony, respectively; FINEP/AT and FINEP/PL: is the value released by the FINEP on the total asset and net patrimony, respectively.
Source: Research data.

The results show that the companies present superior GGA values when compared to the resources provided by FINEP, since the companies have other forms of obtaining government incentives, as presented in Table 5. Other results indicate that 46.5% of the resources received are destined to tax incentive reserves. Also, we highlight that not all

companies that receive resources from FINEP duly disclose in explanatory notes, as determined by the CPC 07 (2008) and CPC 07 – R1 (2010).

We verified that the ratio between the GGA resources and the assets is of 6.11, that is, every R$ 1.00 of the asset amounts to the mean GGA value of R$ 6.11, and each R$ 1.00 of the net patrimony amounts to the mean GGA value of R$ 16.54. In the case of the resources derived from FINEP, even with the participation of all sampled companies, we verify that the representativeness in relation to the asset and net patrimony present a higher value then GGA, which can be verified in the mean values of the assets (R$ 17.70) and net patrimony (R$ 17.38), as well as in the maximum asset and net patrimony values of R$ 352.00 and R$ 253.83, respectively.

These results are, in fact, significant, considering that for the total composition of assets and net patrimony, approximately 17% refer to the resources provided by FINEP. However, it is interesting to observe that the representativeness measures for the FINEP have high variability, with indexes of 47.9 and 51.1 in relation to the total asset and net patrimony, respectively.

4.2 Result discussion

The companies benefited by FINEP present low levels of information disclosure regarding the government grants and assistance. Only 22.7% mentioned the CPC 07 and CPC 07 – R1, and, of these, only one company related the GGA to FINEP. Such results show significant noncompliance with the demands of the norm, considering especially the representativeness of the values received by the companies.

The results also show the low level of information disclosure in the accounting statements, with means of 11.3% and 15.0 in relation to the CPC 07 and CPC 07 - R1, respectively. These results corroborate those obtained by Taveira (2009), Loureiro *et al.* (2011), Rodrigues *et al.* (2011) and Barros *et al.* (2015), who verified low levels of disclosure of the demands described by the CPC 07 (2008) and CPC 07 – R1 (2010). Therefore, they do not confirm the results found by Benetti *et al.* (2014) and Chagas *et al.* (2010), who indicated that the companies analyzed in their studies had disclosed the government grants according to the CPC 07 – R1 (2010).

In this sense, it is relevant that the company comply with disclosing the mandatory information and its benefits, such as the perception, by part of the investors, that the company is concerned with the many stakeholders, especially regarding the government and its investors.

Despite the changes of the CPC 07 (2008), the level of disclosure is significantly low. The companies do not disclose the demanded information, as classified by Hendriksen and Van Breda (1999). Thus, it is worth questioning if the low level of disclosure is in conformation with the objectives of accounting.

Regarding the most disclosed item, as occurs in this research, Loureiro *et al.* (2011) and Benetti *et al.* (2014) verified that the item “accounting policy adopted for the governmental grants” is the most frequent in the accounting statements.

Other items refer to the representativeness of the received values, given that, when verifying the representation of the GGA and FINEP resources, received with total asset and net patrimony, the means are of 11.3% and 17.5%, respectively. Loureiro *et al.* (2011) observed considerable participation of the GGA in the companies´ capital in the textile and paper and cellulose sectors. These results show the relevance of the public resources received by the companies and strengthen the need for a higher compliance with the accounting norms and of monitoring by accounting organs.

5 CONCLUSION

The present study had the general objective of verifying the content and level of disclosure of the Government Grants and Assistance [GGA] of the accounting statements of Brazilian companies benefited by FINEP. The specific objectives were to: (i) profile the institutions favored by the FINEP financings; (ii) identify if the publicly-held companies in Brazil have disclosed the receiving the GGA in both accounting statements, verifying the content of

the information demonstrated regarding the origin of the GGA; (iii) examine the level of fulfillment of the disclosing requisites of the CPC 07 (2008) and CPC 07 – R1 (2010) of the publicly-held companies; and (iv) analyze the relation between the disclosure and the representativeness of the GGA.

For the first specific objective, we verified that the organizations most benefited by this financing are the universities and research centers in which there is an incentive to conducting projects aimed at the scientific and technological development of the country. Moreover, we observed that the organizations most benefited by FINEP are concentrated in the South and Southeastern regions of the country.

Regarding the second specific objective and considering the changes that occurred in 2007 and 2009 in Brazilian society legislation regarding the accounting registrations of the government grants and assistance, we verified a high percentage of companies (71.2%) that disclosed the GGA in their financial statements. The most substantial disclosures were of grants received in the form of tax incentives, especially in the reduction of the Legal Entity Income Tax (IRPJ).

For the third specific objective, of the eight mandatory disclosure items described in the COC 07 (2008), item 43 – reviewed in COC 07 – R1 (2010), regarding the government grants and assistance [GGA], we verified low concern of the organizations in presenting the information related to the received GGAs, considering the low percentage of publicly-held companies that disclosed such information, especially in the CPC 07 – R1 (2010). The mandatory items are only three, and no longer eight as described in the CPC 07 (2008).

Regarding the last specific objective, in addition to the values concerning the FINEP and the GGA received by the companies, we observed the representativeness of these values in relation to the total assets and net patrimony. On average, the companies received 6.11% and 17.70% of GGA and FINEP projects, respectively, in relation to the total assets. This representativeness is relatively superior to the net patrimony of the companies. Furthermore, we observed that the companies received up to 69.7% and 532.0% of GGA and FINEP projects, respectively, in relation to the total assets and net patrimony. These indicators show the representation and relevance of these figures on the patrimonial structure of the companies.

Future researches can analyze the financings conducted by the FINEP, accessing the account data of the benefited companies regarding the Studies and Projects Financing Entity [FINEP], to allow the verification of the elaborated projects and to which places the GGA resources were effectively allocated.

REFERENCES

Andrade, M. E. M. C. & Martins, V. A. (2009). Análise dos normativos de contabilidade internacional sobre contabilização de contratos de parcerias público – privadas. *Revista Contemporânea de Contabilidade, 1*(11), 83-107.

Barros, E. L., Souza, C. A., & Dalfior, V. A. O. (2015, outubro) Aplicação do CPC 07 (R1) – Subvenção e Assistência Governamentais em empresas da administração pública indireta do Estado de Minas Gerais. *Anais do Simpósio de Excelência em Gestão e Tecnologia*, Rio de Janeiro, RJ, Brasil, 12.

Benetti, K., Benetti, K., Utzig, M. J. S., Braun, M., & Oro, I. M. (2014). Evidenciação de subvenção e assistência governamentais das empresas na BM&FBOVESPA. *Revista Evidenciação Contábil & Finanças*, *2*(1), 75-90.

Chagas, M. J. R., Araujo, A. O., & Damascena, L. G. (2011). Evidenciação das subvenções e assistências governamentais recebidas pelas OSCIPs: Uma análise empírica nos estados da Paraíba e do Rio Grande do Norte. *Revista Ambiente Contábil, 3*(2), 100-115.

Comitê de Pronunciamentos Contábeis (CPC). *Pronunciamento Técnico CPC 07 (R1)*, de 05 de novembro de 2010. (2010). Subvenção e assistência governamentais. 2010. Aplicado

na contabilização e na divulgação de subvenção governamental e na divulgação de outras formas de assistência governamental. Recuperado em 15 dezembro, 2016, de http://www.cpc.org.br/pronunciamentosIndex.php

Comitê de Pronunciamentos Contábeis (CPC). *Pronunciamento Técnico CPC 07*, de 03 de outubro de 2008. (2008). Subvenção e assistência governamental. 2008. Aplicado na contabilização e na divulgação de subvenção governamental e na divulgação de outras formas de assistência governamental. Recuperado em 4 dezembro, 2016, de http://www.cpc.org.br/pdf/CPC_07.pdf

Comissão de Valores Mobiliários (2010). *Deliberação CVM nº 646, de 02 de dezembro de 2010*. (2010). Aprova o Pronunciamento Técnico CPC 07 (R1) do Comitê de Pronunciamentos Contábeis, que trata de subvenção e assistência governamentais. Recuperado em 15 fevereiro, 2017, de http://www.cvm.gov.br/export/sites/cvm/legislacao/deliberacoes/anexos/0600/deli646.pdf

Comissão de Valores Mobiliários (2010). *Deliberação CVM nº 555, de 12 de novembro de 2008*. (2008). Aprova o Pronunciamento Técnico CPC 07 do Comitê de Pronunciamentos Contábeis, que trata de Subvenções e Assistências Governamentais. Recuperado em 10 fevereiro, 2017, em http://www.cvm.gov.br/export/sites/cvm/legislacao/deliberacoes/anexos/0500/deli555.pdf

Comissão de Valores Mobiliários (2010). *Instrução CVM nº 469, de 02 de maio de 2008.* (2008). Dispõe sobre a aplicação da Lei nº 11.638, de 28 de dezembro de 2007. Altera as Instruções CVM nº 247, de 27 de março de 1996 e 331, de 4 de abril de 2000. Recuperado em 10 fevereiro, 2017, de http://www.normaslegais.com.br/legislacao/instrucaocvm469_2008.htm

Comissão de Valores Mobiliários (2010). *Instrução CVM nº 059, de 22 de dezembro de 1986.* (1986). Dispõe sobre a obrigatoriedade de elaboração e publicação da demonstração das mutações do patrimônio líquido pelas companhias abertas. Recuperado em 11 fevereiro, 2017, de http://www.cvm.gov.br/export/sites/cvm/legislacao/instrucoes/anexos/001/inst059.pdf

Conselho Federal de Contabilidade (CFC). *Resolução nº 1.143, de 21 de novembro de 2008*. (2008). Aprova a NBC T 19.4 - Subvenção e Assistência Governamentais. Recuperado em 28 dezembro, 2016, de http://www.normaslegais.com.br/legislacao/resolucaocfc1143_2008.htm

Corder, S. & Salles-Filho, S. (2006). Aspectos conceituais do financiamento à inovação. *Revista Brasileira de Inovação, 5*(1), 33-76.

Crispim, G. (2011). *Subvenção governamental sob a ótica do CPC 07: reconhecimento contábil após a Lei nº 11.638/2007 nas entidades privadas no Estado de Pernambuco.* Dissertação de mestrado, Universidade Federal de Pernambuco, Recife, PE, Brasil.

Crisóstomo, V. L. (2009). Dificuldades das empresas brasileiras para financiar seus investimentos em capital físico e em inovação. *Revista de Economia Contemporânea, 13*(2), 259-280.

Fonteneles, I. V., Ponte, V. M. R., Oliveira, M. C., & Ribeiro, M. S. (2014, setembro). Assistências Governamentais e *Disclosure* Socioambiental. *Anais do Encontro Nacional da Associação Nacional de Pós-Graduação e Pesquisa em Administração*, Rio de Janeiro, RJ, Brasil, 38.

Formigoni, H. (2008). *A influência dos incentivos fiscais sobre a estrutura de capital e a rentabilidade das companhias abertas brasileiras não financeiras*. Tese de doutorado, Universidade de São Paulo, São Paulo, SP, Brasil.

Gonçalves, R. S., Nascimento, G. G. do, Wilbert, M. D. (2016). Os efeitos da subvenção governamental frente à elisão fiscal e a geração de riqueza. *Revista Catarinense da Ciência Contábil, 15*(45), 34-48.

Hamburg, M. A. (2010). Innovation, Regulation, and the FDA. *New England Journal of Medicine, 363*(23), 2228-2232.

Hendriksen, E. S. & Van Breda, M. F. (1999). *Teoria da Contabilidade*. São Paulo: Atlas.

Iudícibus, S., Martins, E., Gelbcke, E. R., & Santos, A. (2010). *Manual de Contabilidade Societária: aplicável a todas as sociedades de acordo com as normas internacionais e do CPC*. São Paulo: Atlas.

Lei nº 11.941, de 27 de maio de 2009. (2009). Altera a legislação tributária federal relativa ao parcelamento ordinário de débitos tributários; institui regime tributário de transição e dá outras providências. Recuperado em 20 janeiro, 2017, de http://www.planalto.gov.br/ccivil_03/_ato2007-2010/2009/lei/l11941.htm

Lei nº 11.638, de 28 de dezembro de 2007. (2007). Altera e revoga dispositivos da Lei nº 6.404, de 15 de dezembro de 1976, e da Lei nº 6.385, de 7 de dezembro de 1976, e estende às sociedades de grande porte disposições relativas à elaboração e divulgação de demonstrações financeiras. Recuperado em 19 janeiro, 2017, de http://www.planalto.gov.br/ccivil_03/_ato2007-2010/2007/lei/l11638.htm

Lei nº 6.404, de 15 de dezembro de 1976. (1976). Dispõe sobre as sociedades por ações. Recuperado em 15 janeiro, 2017, de http://www.planalto.gov.br/CCivil_03/Leis/L6404compilada.htm

Lei nº 6.385, de 7 de dezembro de 1976. (1976). Dispõe sobre o mercado de valores mobiliários e cria a Comissão de Valores Mobiliários. Recuperado em 11 outubro, 2017, de http://www.planalto.gov.br/ccivil_03/leis/L6385.htm

Loureiro, D. Q., Gallon, A. V., & De Luca, M. M. M. (2011). Subvenções e Assistências Governamentais (SAG): Evidenciação e Rentabilidade das Maiores Empresas Brasileiras. *Revista de Contabilidade e Organizações, 5*(13), 34-54.

Macaneiro, M. B. & Cherobim, A. P. M. (2009). O financiamento da inovação tecnológica por meio de programas governamentais de apoio às empresas brasileiras. *Revista de Administração, Contabilidade e Economia, 8*(2), 291-324.

Martins, E., Gelbcke, E. R., Santos, A., & Iudícibus, S. (2013). *Manual de Contabilidade Societária: Aplicável a todas as sociedades* (2a ed.). São Paulo: Atlas.

Nogueira, E., Júnior, Jucá, M. N., & Macedo, M. A. S. (2010). O impacto da harmonização das práticas contábeis brasileiras às internacionais na relação entre o lucro líquido e o fluxo de caixa operacional. *Revista Contabilidade Vista & Revista. 23*(1), 47-74.

Rodrigues, R., N., Silva, G. C., & Faustino, O. W. C. (2011). Subvenção e assistência governamental sob a ótica do CPC 07: reconhecimento contábil após a lei 11.638/2007 nas entidades privadas no Estado de Pernambuco. *Registro Contábil - RECONT, 2*(3), 35-45.

Silva, R. G. L. & Costa, M. C. (2012). Tecnologia e política industrial na organização dos espaços de inovação. *Revista Economia & Tecnologia, 8*(1), 111-128.

Taveira, J. H. P. S. (2009). *Conformidade do disclosure das subvenções governamentais nas empresas de capital aberto*. Dissertação de mestrado, Faculdade de Economia e Finanças IBMEC, Rio de Janeiro, Brasil.

Guidelines for Submission of Articles

Revista Catarinense da Ciência Contábil is a four-monthly publication by Santa Catarina State Board of Accountancy whose **mission** is: to disseminate the scientific production, in the area of Accounting, of professors, researchers, students and professionals from Brazil and abroad, who are selected according to the quality and contribution to the development and dissemination of knowledge within this field It is the continuation of journal CRCSC & Você, published by Santa Catarina State Board of Accountancy since 2001.

The texts should address matters within the following areas: Accounting Theory, Controllership, Financial Accounting, Management Accounting, International Accounting, Financial Statement Analysis, Finance, Risk Management, Capital Markets, Corporate Valuation, Financial Instruments, Corporate Governance, Environmental Accounting, Social Accounting, Ethics, Actuarial, Auditing, Education and Learning, Strategic Cost Management, Logistics, Accounting and Price Fluctuations, Government Accounting, Third-Sector Organizations, Accounting Information Systems, Rural Accounting and Related Topics.

SCOPE AND POLICY

1 Articles and works to be published are evaluated by at least two Ad hoc consultants, through the blind review system, being also submitted, through the same system, to the Scientific Editor, and / or by members of the Editorial Board. In this sense, the double blind review system is ensured, and the authors of the papers are not known at any evaluation phase.

2 Works are analyzed as to the scope (innovation), depth and clarity of ideas presented, as well as accessibility to readers - professors, executives, students and Accounting scholars in general.

3 The article must be unpublished, that is, it must not have been sent for publication by another editor. In case the work has already been published in Yearbooks: indicate the name, place and date of publication.

4 The articles are the sole and exclusive responsibility of the authors assigning copyright to Santa Catarina State Board of Accountancy.

5 The editor reserves the right to perform grammatical review to the originals, in order to keep the quality of the publication, respecting, however, the styles and opinions of the authors.

6 The opinions expressed by the authors of the article are their sole responsibility.

7 The texts should be written in Portuguese in a clear and concise style The articles of authors from abroad are published in English, Spanish or Portuguese, as the case may be.

METHOD AND PREPARATION OF ARTICLES

Presentation of Papers

The structure of the paper shall consist of the following:

- **Title of the paper:** The title followed by its English translation should be concise and sufficiently specific and descriptive.
- **Summary:** An informative summary of up to 250 words should consist of a single paragraph.
- **Keywords:** In the language of the text, with up to five most recurrent descriptors of the field and separated from each other by period and also ending with period.
- **Abstract:** Version of the abstract from the original language to the English language.
- **Keywords:** Up to five descriptors.
- **Introduction**
- **Development**
- **Conclusion**
- **References:** As of January 2017, according to the American Psychological Association (APA) Standard. Only references referred to in the text should be listed in alphabetical order at the end of the article.
- **Quotations:** As of January 2017, according to the American Psychological Association (APA) Standard. They should be indicated in the text by system called 'author-date'. Example: Souza (2016).
- **Format:** Do not exceed 15 pages (minimum of 8), including References, typed in software compatible with Microsoft Office 2000 or later versions for Windows, with the following specifications:
  - **a) Font**: Arial, size 11 (for text) and 9 (for tables, figures, and footnotes);
  - **b) Spacing**: simple spacing between lines;
  - **c) Alignment**: justified (for paragraphs);

d) Number of pages: in the lower right margin;
e) Margins: right and bottom = 2 cm; left and top = 2.5 cm;
f) Page size: A4 (21,0 mm x 29,7 mm);

- **Table**: only this term shall be used in the title for quantitative and / or qualitative data presented in the form of lines and rows (**do not refer to as "chart"**). Tables shall be sequentially numbered with title, explaining what is being represented. The title shall be above the Table, according to the American Psychological Association (APA).
  Example:
  Table 1
  Data Distribution Normality Test

- **Figure**: only this term shall be used in the title for images (do not use the terms "illustration", "graphic", "organization chart", etc.). The title shall be at the bottom (below the image), preceded by the word Figure followed by its number of occurrence in the text, in Arabic numerals, according to the American Psychological Association (APA) standard.
  Example: **Figure 1.** Processes inherent to institutionalization.

- **Acronyms**: when they appear for the first time in the text, the description precedes the acronyms, which are placed in parentheses.
  Example: University of São Paulo (USP).

- Tables, Figures and Formulas shall allow editing in Microsoft Office 2000 or later software for Windows.

SUBMISSION OF ARTICLES

The articles shall be submitted in the page of the Journal, in section Online Submissions (http://revista.crcsc.org.br). The submission form shall include a **brief curriculum of the authors**, highlighting the registration number in the relevant State Board of Accountancy and the Institution to which they are linked (as a professor, student or professional of the accounting area), as well as the **mailing address** (including telephone number and email address). It is mandatory to fill in all the fields in the submission form. Doubts regarding the submission process can be clarified through the email of the Journal (revista@crcsc.org.br).

Revista Catarinense da Ciência Contábil - Editorial Secretariat
Conselho Regional de Contabilidade de Santa Catarina
Av. Osvaldo Rodrigues Cabral, 1900
88.015-710 – Florianópolis – SC
Phone: 48 3027-7006