

**IFRS vs BACEN GAAP: ACCOUNTING INFORMATION'S VALUE RELEVANCE
OF THE BRAZILIAN FINANCIAL INSTITUTIONS**

MARIANA TITOTO MARQUES

Universidade de São Paulo

FLÁVIA ZÓBOLI DALMÁCIO

Universidade de São Paulo

AMAURY JOSÉ REZENDE

Universidade de São Paulo

ABSTRACT

Brazilian financial institutions that have an Audit Committee and/or are listed on the Stock Exchange are obliged to disclose the financial statements in two different set of standards: Bacen GAAP and IFRS. This research compares the relevance of them using the Ohlson Model (1995) adding control variables and using panel data for the years 2010 to 2017. Two models were estimated, one for each set of standards, and the analysis of relevance was based on the R^2 values, information criteria, and robustness testing. In the model that considered all variables, the IFRS was more value relevant than Bacen. The estimation of the EPS is more value relevant when measured according to Bacen in comparison to IFRS, and the opposite was observed for the estimation of the BVPS, in which the measurement using IFRS was more relevant. Also, the EPS has more explanatory factors than the BVPS. The differences in value relevance, however, are subtle, suggesting interference from the Brazilian institutional environment. These results suggest a reflection by the Central Bank of Brazil in order to analyze the adoption of IFRS, which would mean fewer costs related to disclosure.

Keywords: Value relevance. IFRS. Bacen GAAP.

1. INTRODUCTION

The usefulness of accounting information has interested researchers on accounting and finance for more than fifty years, in a line of research called 'value relevance' (M. E. Barth, Beaver, & Landsman, 2001). The pioneer studies by Ball and Brown (1968) and Beaver (1968) demonstrated the relevance of accounting information by presenting the relationship between the disclosure of information and the share prices. Some authors, however, affirm that this relevance could be reduced according to the characteristics of the firms and the institutional environment (Ball, 2006; Jeanjean & Stolowy, 2008; Rezaee, Smith & Szendi, 2010), which are among the conditions that justify the convergence of the countries' accounting standards (a role of the International Accounting Standards Board (IASB) that issues the International Financial Reporting Standards – IFRS) (Lourenço & Branco, 2015).

In Brazil, the accounting harmonization process began at the end of 2007 and brought about many research on value relevance, looking at empirical evidence on value relevance measured according to IFRS and according to the domestic standards. Several authors argue that the convergence of accounting standards is important because it increases transparency, the quality of the financial statements and the comparability, which makes the capital market more efficient (M.E. Barth, Landsman, & Lang, 2008; Chalmers, Clinch, & Godfrey, 2011; Jeanjean & Stolowy, 2008; Macêdo, Bezerra, & Klann, 2014). However, the results of the studies are divergent, as some authors suggest that the adoption of a single standard is not sufficient to

guarantee better information (Ball, 2006; Burgstahler, Hail, & Leuz, 2006; Daske, Hail, Leuz, & Verdi, 2013; Hail, Leuz, & Wysocki, 2010; Osma & Pope, 2011).

Regarding the adoption of IFRS, financial institutions around the world expressed some concerns. For M. E. Barth, Landsman, Young, and Zhuang (2014), these concerns were related to the use of fair value as a measurement basis (a clear feature of international standards), especially when it comes to financial instruments (IAS 39), which are the main components of these firms' balance sheet reports. Lim, Lim, and Lobo (2013) point out that fair value is considered by many bankers as the major enabler of the global crisis of 2008. In this sense, the financial sector's concern is that the application of IAS 39 could reduce the usefulness of the financial statements and destabilize Europe's financial system (Armstrong, Guay, & Weber, 2010).

From the point of view of value relevance in financial institutions, the literature is diversified. Some studies highlighted the value relevance of fair value in banks (Ahmed, Kilic, & Lobo, 2006; M. E. Barth, 1994; M. E. Barth, Beaver, & Landsman, 1996; Chiqueto, Silva, Colossal, & Carvalho, 2015; Eccher, Ramesh, & Thiagarajan, 1996; Fiechter & Novotny-Farkas, 2016; Grillo, Lachini, Baioco, Reina, & Neto, 2016; Nelson, 1996; Sayed & Salotti, 2015; Song, Thomas, & Yi, 2010; Venkatachalam, 1996). Others showed the value relevance in the context of conservatism (W. Choi, 2007; Manganaris, Spathis, & Dasilas, 2015; 2016). Finally, some studies showed the value relevance in situations of the financial crisis (Agostino, Drago, & Silipo, 2011; Anandarajan, Francis, Hasan, & John, 2011; Elbakry, Nwachukwu, Abdou, & Elshandidy, 2017; Fé Junior, Nakao, & Souza Ribeiro, 2015).

It is observed that the literature has not yet addressed the impact of IFRS considering the context of double disclosure in financial institutions. Thus, based on what was presented, this research seeks to answer the following question: "What accounting information disclosed by financial institutions is most value relevant to the Brazilian capital market: information that uses the IFRS or Bacen-GAAP standards?" Thus, the study seeks to compare the value relevance of accounting information presented according to IFRS and Bacen standards. The methodology used was panel data for the period from 2010 to 2017. The econometric model consisted of the Ohlson Model (1995) with the addition of control variables to estimate more robust parameters. The comparison between the two set of standards was based on the analysis of R^2 and the information criteria (AIC, BIC, and AICc) for model selection, as well as the estimation of a robustness test.

The results indicated that IFRS seems to be more value relevant. In the fully estimated model (including the variables of interest EPS and BVPS, and the control variables), information using IFRS had greater explanatory power and less AIC, BIC, and AICc. However, when separated only with the EPS, the EPS_Bacen is more value relevant. When separated only with the BVPS, the BVPS_IFRS is more value relevant. Also, EPS had greater explanatory power when compared to BVPS, contrary to previous Brazilian studies. A particularly interesting result is that there is a small difference between the information criteria and the models' explanatory power, which indicates little difference in value relevance. This may suggest the influence of the country's institutional characteristics in reducing value relevance.

In comparison to previous studies, this research uses an innovative approach regarding the disclosure requirements according to Bacen and IFRS set of standards. We focus on financial institutions, considering they are an essential part of the economic system and are in a highly representative sector in the Brazilian market. These institutions have some peculiarities that encourage research, such as studies evaluating the effects and impacts of this condition of double disclosure. As there are other studies that highlighted the main differences of these two

set of standards (IFRS and Bacen) or that relate them to conservatism and its characteristics, the boldness of this research lies precisely in proposing a different view, from the perspective of value relevance. This view is justified because if the accounting numbers are not significant for the users' decision-making, the effort of the regulatory agencies will be useless (Lima Duarte, Girão, & Paulo, 2017).

2. LITERATURE REVIEW AND HYPHOTESES

2.1. Value relevance

Accounting is a tool to reduce informational asymmetry in the capital market (Iudicibus & Lopes, 2004; Lopes & Martins, 2007; Scott, 2012). According to Ball and Brown (1968), the accounting information is useful in the decision-making processes and promotes the market's reaction and adjustment in the share prices. The research line that studies the association between accounting information (profit and equity) and the share prices is called value relevance, and it has been subject to numerous research works.

The term 'value relevance' was presented in the article by Amir, Harris, and Venuti (1993). The authors compared the value relevance in the asset value between the United States' domestic and non-domestic accounting information standards, from the point of view of reconciling profit (mandatory for firms following American domestic standards). The literature in the area, however, starts from the article by Miller and Modigliani (1966), whose objective was to present ways of estimating the cost of capital for the electricity sector for the years 1954, 1956 and 1957. They studied a sample of 63 firms, and the results showed that the assets' capitalized yields made a greater contribution to their market value.

There is a consensus among researchers that the works by Ball and Brown (1968), and Beaver (1968) are critical to understanding the link between business value and accounting information. The innovation brought by Ball and Brown (1968) was to question the validity of the normative theory, predominant in accounting research. They concluded that the information contained in the annual earnings reports are useful and the market will react if the earnings released are different from what was expected. Beaver (1968) analyzed the investors' reactions to the release of information about firms' earnings, based on changes in the volumes of common shares traded and on the returns of the shares in the weeks adjacent to the date of the release. The findings indicated that share prices' behavior is an outcome of changes in the market expectation about the results of the firms. Also, the volume traded is related to the changes in the expectation of the individual investors about the firms' results.

Ohlson (1995) developed the conceptual and mathematical framework that says that the firm's value is a function of net assets, together with portions of residual profit. The Ohlson Model (1995), known as 'Residual Income Valuation' (RIV) is the main methodology used in research in the area of value relevance. It explains the firm's value based on accounting information, such as equity and accounting profit, which are considered complementary in the formation of the firm's market value. Collins, Maydew, and Weiss (1997) used the Ohlson Model to investigate, in the period 1953 to 1993, whether there were changes in the relevance of the accounting result and the book value as explanatory variables in the valuation of American firms. The results contradicted the authors' expectations and showed that the combined relevance of the profit and the asset value increased.

It should be noted that most of the literature on 'value relevance' tested the relevance of the results in developed countries, such as the United States and European countries. For

Burgstahler and Dichev (1997) and Beaver (1998), this relevance could be reduced in emerging countries, since they have certain specific characteristics, or country-specific factors, that would make them inefficient. Lopes, Sant'Anna, and Costa (2007) argue that historically when analyzing accounting and the capital market in Brazil, it is possible to observe characteristics such as credit-based stock market, strong links between tax aspects, governmental influence in the establishment of accounting standards, and the influence of Roman law in the legislation. Thus, to change these characteristics and increase transparency, relevance, and quality of accounting reports, facilitating comparability among them and making the capital market more efficient, Law 11638/2007 was enacted, which obliged publicly-traded firms to adopt international accounting standards, the so-called IFRS.

2.2. Adoption of IFRS

Accounting is a science shaped both by economic and political factors. As markets and policies work dynamically and increasingly integrated, the harmonization of accounting standards and practices around the world turn out to be almost inevitable (Ball, 2006). Thus, in 1973 a private international body was created, the International Accounting Standards Board, or IASB. The IASB is an entity that promotes the convergence of accounting standards between countries by issuing a set of standards that should be used in the preparation of the firms' financial statements, called the International Financial Reporting Standards (IFRS) (Lourenço & Branco, 2015).

According to Lourenço and Branco (2015), the number of countries to permit or require the adoption of IFRS in the preparation of the financial statements has grown over the last few years due to the various arguments favoring the adoption of IFRS presented in the literature (M. E. Barth et al., 2008; Jeanjean & Stolowy, 2008). Van Tendeloo and Vanstraelen (2005) list four advantages of adopting international standards: to increase the investors' capacity of making informed decisions, by promoting uniformity in the way firms measure their position and asset performance; to reduce the costs of preparing financial information to accomplish the requirements of different sets of standards; to increase incentives for international investment; and to enable a more efficient allocation of financial resources worldwide.

According to Ball (2006), an IFRS-based system, in addition to representing the economic essence of transactions rather than their legal form, also timely reflects economic gains and losses, increases the informative aspects of the results, and provides higher quality accounting information. Lourenço and Branco (2015) emphasize that one of the main arguments used in favor of the adoption of IFRS is that it allows obtaining higher quality information as a consequence of the use of recognition and measurement criteria that best reflect the economic reality of the firms, as well as providing a wide range of information in the explanatory notes.

According to Callao, Jarne, and Laínez (2007), one of the main points of the adoption of IFRS is the assumption that it increases the relevance of accounting information. Harris and Muller (1999), researching a sample of 89 firms over four years, showed greater value relevance of the IFRS than in US-GAAPs regarding the price, but less regarding the return. Bartov, Goldberg, and Kim (2005) compared the value relevance of profit in Germany and concluded that IFRS is more value relevant than the local set of standards. Horton and Serafeim (2006) analyzed the reaction of the English market and the value relevance in the period of transition to IFRS and found that the adoption was relevant only for profit and not for equity. In the Norwegian context, Gjerde, Knisfla, and Sættem (2008) found little evidence that the IFRS was more value relevant.

However, there is no consensus in the literature, and the effect of adopting this set of standards still needs to be debated (Christensen, 2012; Lourenço & Branco, 2015). For Ball (2006), a higher accounting standard such as the IFRS does not necessarily imply higher quality disclosure, because economic and political forces also influence the quality of the accounting reports. Thus, differences in the quality of accounting information should be observed even after the end of the convergence process, because the quality is a consequence of the corporate, institutional apparatus, which includes the legal and political systems of the country (Rezaee, Smith, & Szendi, 2010).

In this perspective, the financial institutions around the world expressed concern about the adoption of international standards in the European Union in 2005 (M. E. Barth et al., 2014). Armstrong et al. (2010) pointed out that one of the main changes caused by the adoption of IFRS is the use of fair value as a measurement basis, especially in financial instruments, which are almost exclusively the asset element in the balance sheet of financial institutions. According to Acharya and Ryan (2016), firms that are part of the financial system are crucial for the maintenance and guarantee of the well-being of the countries, thus requiring high-quality information.

2.3. Financial system

The efficiency of the financial system is directly proportional to the stability of a nation since it is a central element in a country's financial infrastructure (Bushman, 2014; Acharya & Ryan, 2016). Bushman (2014) stresses that the financial system has basic roles such as monitoring and producing information about opportunities of investment and capital allocation, monitoring corporate governance after lending, supporting negotiations, and offering risk diversification and management.

Financial institutions directly or indirectly operate as intermediaries in the process of exchanging resources between surplus and deficit agents (Bhattacharya, Boot, & Thakor, 1998). In the case of Brazil, financial institutions (multiple banks; commercial and investment banks; banks of development; credit cooperatives; leasing, credit, financing, investment, real estate credit companies; and savings and loan associations) are subject to the rules of the Central Bank of Brazil (Bacen) (Farias et al., 2014). Historically, institutions that are part of the financial sector have always had an exclusive accounting framework compared to other non-financial institutions. This specific framework is based on a chart of accounts called the Accounting Plan of Institutions of the National Financial System (Cosif, in Portuguese), using the standard BR GAAP (Brazilian Generally Accepted Accounting Principles), respecting the accounting guidelines established by laws 4595/1964 (National Financial System Law), and 6404/1976 (Brazilian Corporation Law).

However, the regulatory agency has always supported convergence with international standards. Through the announcement 14259/2006, Bacen disclosed procedures for the convergence of domestic to international standards. The document cites benefits of adopting international standards and reinforces the importance of quality, transparency, and comparability of the financial institutions' financial statements, the credibility, and simplification of the monitoring of the economic and financial situation and performance, allowing to optimize capital allocation and to reduce costs related to fundraising and operating costs. The adoption of international standards, therefore, would eliminate the need to prepare multiple sets of financial statements.

Therefore, the Brazilian financial sector is in a particular condition where it has to

present double financial disclosure, elaborated in distinct accounting models: the first one based on Cosif, which is under the responsibility of the Central Bank of Brazil (Bacen); and the second, following the international accounting standards. As a basic principle, these different models have divergent priorities. The first focuses on the interests of regulatory and control agencies, emphasizing the financial system's stability and the solidity of the institutions. The second focuses on the needs regarding information, especially for investors and creditors (Cunha et al., 2016).

2.4. Previous studies

Some studies have observed the application of the concept of value relevance in the financial sector, from different perspectives. M. E. Barth (1994) researched how the disclosure of the fair value estimates of investment securities and the gains and losses based on the estimates were reflected in the share prices, as compared to historical costs. The author concluded that fair value estimates of investment securities provide significant explanatory power. The historical costs of investment securities, however, provided no significant exploratory power. Also, based on a measurement error model, the author observed that the fair value presented less measurement error regarding the share prices. Finally, the research observes that, in some specifications, gains and losses do not have explanatory power, while historical cost always provides explanatory power incremental to fair values.

Agostino et al. (2011) investigated the value relevance of accounting information in the European banking industry before and after the adoption of IFRS. The findings show that the industry was significantly affected by the adoption of IFRS, especially because of the use of fair value. They concluded that the share prices rose after adoption. Thus, the changes introduced by IFRS have improved the content of accounting information as they have increased transparency. On the other hand, greater transparency does not necessarily mean that there has been an increase in value relevance. Anandarajan et al. (2011) go beyond transparency and investigate the role of accounting, legal, financial, corporate and banking environment, considering the level, size, risk, and organization, and how this affects the value relevance. They concluded that, at a macro level, differences in measurement forms and the type of legal environment are the factors that most influence value relevance.

Manganaris et al. (2015) studied the relationship between the value relevance of accounting information and the conditional conservatism. The results indicate an increase in relevance and a decrease in conservatism after the adoption of international standards. In a new study, Manganaris et al. (2016) expanded the relationship between accounting conservatism in banks and the relevance of accounting information. The authors considered other institutional parameters when examining the effect of adopting international standards in the sector, obtaining results similar to those of their previous work. Fiechter and Novotny-Farkas (2016) sought to identify whether institutional differences between countries affect the investor's ability to process fair value information. They found a difference in the discount rate, which is reduced in an institutional environment where there are investors with greater experience in measuring using fair value.

Morris et al. (2016) examined the economic determinants and value relevance of banks' loan loss provisions during a financial crisis, observing a sample of 5,187 banks from 2006 to 2010. Their findings suggest that the loan loss provisions increased substantially during the crisis, while the levels of these provisions about equity remained modest. Recently, Elbakry et al. (2017) researched the changes in the value relevance of accounting information before and

after the mandatory adoption of IFRS in Germany and the United Kingdom, based on several methodologies. Using the Ohlson Model (1995), they found that the value relevance of the book values of equity declined. When using a modified model, they observed an incremental value relevance of earnings and book values in the two countries.

In the Brazilian literature on the subject, the recent studies by Chiqueto et al. (2015), Fé Junior et al. (2015), Sayed and Salotti (2015), and Grillo et al. (2016), stand out. Sayed and Salotti (2015) studied the relationship between market values, net book value, and fair value as the sole measurement basis for financial instruments in the banks listed in BM&FBovespa, LSE and Euronext stock exchanges. The evidence points out that the use of fair value as a measurement basis approximates, even if discreetly, the net book value of the market value. However, accounting for the financial instrument at fair value does not impact the net asset value.

Fé Junior et al. (2015) researched the reactions of the stock market in the moment of the first disclosure using the IFRS in 2010. As the disclosure using IFRS occurred after the disclosure of the statements according to the Bacen standards, it was necessary to isolate the effect of incremental information in relation to what had already been presented, using Bacen standards. Based on an event study, the results pointed out the existence of cumulative abnormal returns, which suggests that the adoption of international standards was value relevant to the analyzed banks. Also, they found that returns were risk-weighted, indicating that the adoption of IFRS may have improved investor risk assessment.

Chiqueto et al. (2015) studied whether the fair value of the Brazilian bank's securities is relevant for investors in times of crisis, and the empirical evidence confirmed the value relevance of fair value. Also, validating their hypotheses, the authors found that there is a reduction in the value relevance of fair value in periods of crisis. In this same research topic, Grillo et al. (2016) observed the effect of using fair value in measuring equity elements based on the value relevance of accounting information. The authors used the Ohlson Model (1995) and found that the equity did not become more value relevant, which can be explained by the subjectivity of fair value as opposed to the greater objectivity of historical cost.

Analyzing the literature, therefore, it is possible to see that the value relevance in the context of disclosure using the IFRS and Bacen-GAAP for Brazilian financial institutions is an issue not yet studied. On the other hand, since the information organized according to the IFRS is aimed at meeting the interests of investors and according to the Bacen is aimed at regulatory agencies, it is expected that information at an international standard will be more relevant to investors when making market decisions. In addition, as these standards may be associated with higher quality information (M. E. Barth et al., 2008; Chalmers et al., 2011; Jeanjean & Stolowy, 2008; Macêdo et al., 2014), it is assumed that the investor will consider the standards that are more likely to inform them to make better investment decisions. This assumption led to formulate the following hypotheses:

H₁: Income statements using the IFRS are more value relevant to the capital market than the information presented according to the Bacen-GAAP.

H₂: Earnings per share calculated according to the IFRS standards are more value relevant to the capital market than those calculated according to the Bacen-GAAP standards.

H₃: The book value per share calculated according to the IFRS standards is more value relevant to the capital market than those according to the Bacen-GAAP standards.

3. METHODOLOGY

3.1. Sample and data collection

In order to test the hypotheses elaborated empirically, data was used from financial statements of banks listed in *Brasil, Bolsa, Balcão* (B3) and/or banks that are required to constitute an Audit Committee, pursuant to Resolution 3786/2009 of the CMN, and therefore, are subject to double disclosure, i.e., adopting IFRS and Bacen-GAAP set of standards. Cunha, Dantas, and Medeiros (2016) found a total of 41 banks that fulfilled this condition, 20 of which are listed on the stock exchange and the other 21, although not listed, have constituted Audit Committees. In order to achieve greater comparability among the observations, only the banks that disclosed their accounting information for the period analyzed in both sets of standards were considered in the final sample. Therefore, firms that failed to disclose one of the two models of the financial demonstration were not included in the sample.

In addition, the final sample was limited only to the institutions that are listed in B3, since the dependent variable of the model was the share price, as explained below. The period of analysis started in 2010, the year in which the banks were required to disclose their financial statements in an international standard, as provided in Resolution 3786/2009. The final year analyzed was 2017, the year of the most recent information available at the time of the research. The data, extracted from the CVM website, were collected annually to ensure greater comparability, considering that the IFRS statements are disclosed only once a year in most financial institutions, while the statements following the Bacen standards are disclosed quarterly. The analysis of these criteria led to a final sample of 14 financial institutions, with a total of 112 observations for the analyzed period, according to Table 2:

Table 2 – Research sample

Financial institutions	
Banco ABC Brasil S.A.	Banco Mercantil Brasil S.A
Banco Alfa de Investimento S.A	Banco Pan S.A
Banco Bradesco S.A	Banco Pine S.A
Banco do Brasil S.A	Banco Santander (Brasil) S.A
Banco do Estado de Sergipe S.A	Banestes S.A Banco do Estado do Espirito Santo
Banco do Estado do Rio Grande do Sul S.A	BRB-Banco De Brasilia S.A
Banco Indusval S.A	Itaú Unibanco Holding S.A

Source: Elaborated by the authors.

3.2. Econometric model

The regression used is based on the valuation model proposed by Ohlson (1995) and found in the study by Collins et al. (1997). The Ohlson model (1995) includes the equity and the profit, which form the firm's market value. In this model, the firm's value, represented here by the firm's share price, can be expressed as a function between the earnings per share (EPS) and the book value per share (BVPS), according to equation 1. In addition, Collins et al. (1997) segregate equation 1 in order to verify the explanatory power of each variable, according to equations 2 and 3:

$$P_{i,t} = B_0 + B_1 * EPS_{i,t-1} + B_2 * BVPS_{i,t-1} + u \quad (1)$$

$$P_{i,t} = \alpha_0 + \alpha_1 * EPS_{i,t} + \varepsilon_{i,t} \quad (2)$$

$$P_{i,t} = \alpha_0 + \alpha_1 * EPS_{i,t} + \varepsilon_{i,t} \quad (3)$$

$P_{i,t}$ = Price of a share of firm i in the period t ;
 $EPS_{i,t}$ = Earnings per share of firm i in the period t ;
 $BVPS_{i,t}$ = Book value per share of firm i in the period t ;
 $\varepsilon_{i,t}$ = Error.

In order to obtain more robust results, control variables were added to the original model, in order to control other effects that may influence the dependent variable. The intention is to control such effects to isolate the possible effect that EPS and BVPS can have on value/price and make inferences about causality. Thus, the Ohlson model (1995) with the insertion of control variables can be specified according to equation 7:

$$P_{i,t} = B_0 + B_1 * EPS_{i,t-1} + B_2 * BVPS_{i,t-1} + B_3 * Size_{i,t-1} + B_4 * Riskcred_{i,t-1} + B_5 * GDP_{i,t-1} + B_6 * Lev_{i,t-1} + u \quad (4)$$

The variables of the model, as well as the type, description, expected signal, the theoretical justifications, and corresponding literature, are explained in detail in Table 3. In order to "remove" the impact of inflation on financial data and obtain accurate values of the accounting information, financial variables were deflated considering the index IPCA-E.

Panel data analysis was the method used to estimate the regression parameters, in which there are different ways of estimating the parameters: by independently pooled panels, random effects model, and fixed effects model. The definition of which model is most appropriate is based on statistical tests: Chow test (pooled model vs. fixed effects), Hausman test (fixed effects vs. random effects) and Breusch-Pagan LM test (pooled model vs. random effects). The results of these tests indicated that the fixed effects model is the most suitable for both IFRS and Bacen models. The models were estimated with the option of robust standard errors grouped by firms. Finally, a test was performed to detect multicollinearity. The results of the VIF test discarded the presence of multicollinearity.

Table 3 – Variables of the model

Variable	Type	Description/Calculation	Expected Signal	Justification and literature	Fonte
$P_{i,t}$ (Price)	Dependent	Closing price on March 31 of the next year (end of the next fiscal year)		<i>Proxy</i> often used for value (Ohlson,1995). It is observed the price at the end of the next fiscal year	Economática®
$EPS_{i,t-1}$ (Earnings per share)	Interest	Firm's net earnings disclosed in each fiscal year, divided by the number of outstanding shares.	+	The higher the disclosed profits, the higher the price of the shares (Ohlson, 1995)	Financial statements – CVM <i>website</i>
$BVPS_{i,t-1}$ (Book value per share)	Interest	Firm's book value disclosed in each fiscal year, divided by the number of outstanding shares.	+	The higher the equity disclosed, the higher the price of the shares (Ohlson, 1995)	Financial statements – CVM <i>website</i>
$Size_{i,t-1}$	Control	Natural logarithm of the asset (based on data from Bacen)	+	Smaller banks are more likely to report losses in comparison to big banks, who are more profitable (Anandarajan et al., 2011; Bignotto & Rodrigues, 2005; Hayn, 1995)	Financial statements – CVM <i>website</i>
$Riskcred_{i,t-1}$ (Risk of credit)	Control	Losses divided by credit operations	+	Banks at risk are likely to violate the rule of minimum capital required by regulatory agencies. Therefore, they may inflate profits to avoid failing with requirements, increasing return and value (Moyer, 1990; Dantas, Medeiros & Capelletto, 2011).	Financial statements – CVM <i>website</i>
$GDP_{i,t-1}$	Control	Variation of the GDP at the end of the fiscal year	+	<i>Value relevance</i> is influenced by economic dynamics. The value relevance of profit and equity is influenced by the GDP (Dichev, 1997; Dontoh et al., 2000) Also, moments of economic growth lead to valorization of shares (Primo, Dantas, Medeiros & Capelletto, 2013)	IBGE <i>website</i>
$Lev_{i,t-1}$	Control	Relation between liabilities and equity (based on data according to IFRS)	-	High leverage reduces value relevance (Manganaris et al., 2015). Indebtedness increases agency costs and the risk of insolvency, increasing the risk of the business (Vinhado & Divino, 2013).	Financial statements – CVM <i>website</i>

Source: Elaborated by the authors.

4. RESULTS ANALYSIS AND DISCUSSION

4.1. Descriptive statistics

In order to verify the characteristics of the sample, a descriptive statistical analysis was conducted, as shown in Table 4.

Table 4 – Descriptive statistics

Variable	Observations	Mean	Standard deviation	Minimum value	Maximum value
price	112	8.7319	6.5653	0.6502	29.011
eps_ifrs	112	1.6384	1.9637	- 3.4319	8.3919
bvps_ifrs	112	11.882	7.0977	- 1.6173	27.293
bvps_bacen	112	11.707	6.7064	0.1337	26.077
eps_bacen	112	1.5350	1.8549	- 2.8726	8.1792
size	112	17.132	1.8988	14.299	20.800
risk_cred	112	0.0585	0.0276	0.0141	0.1618
gdp	112	0.0251	0.0545	- 0.0621	0.1020
lev	112	11.128	5.8175	5.7570	61.675

Source: Elaborated by the authors.

Note: price = price of the firm's share; eps_ifrs = earnings per share measured according to IFRS; bvps_ifrs: book value per share measured according to IFRS; eps_bacen = earnings per share measured according to Bacen; bvps_bacen: book value per share measured according to Bacen; size = size of the firm; risk_cred = risk of credit; GDP = variation of the gross domestic product, and lev = level of financial leverage.

Table 4 shows that the values measured according to the Bacen standards are always lower when compared to IFRS. The mean values of EPS and BVPS for IFRS are respectively 1.63 and 11.882, while the EPS for Bacen is 1.53 and BVPS is 11.707. For standard deviation, and minimum and maximum values, the variables show the same characteristic, evidencing the differences between them when measured according to the IFRS or Bacen set of standards. This characteristic corroborates the idea that the financial statement produced using Bacen is conservative. As observed by Farias et al. (2014), this idea may explain why Bacen maintains this standard following the Cosif: as it presents, on average, smaller values, there is less room for manipulation in the financial statement and therefore, greater reliability.

It is known that a characteristic of IFRS is the greater judgment of managers in the recognition, measurement, and disclosure of economic events, which may open greater possibility of manipulation (Lourenço & Branco, 2015). As pointed out by Cunha et al. (2016), the statements using the Bacen standard are focused on ensuring the stability and solidity of the financial system. Therefore, a greater possibility of manipulation may be the concern of the regulatory agency towards the full adoption of IFRS.

4.2. Correlation

Another analysis that is often performed is the correlation analysis of the variables of the model, as observed in Table 5.

Table 5 – Correlation

	price	eps_ifrs	bvps_ifrs	bvps_bacen	eps_bacen	size	risk_cred	gdp	lev
price	1.0000								
eps_ifrs	0.5998	1.0000							
bvps_ifrs	0.5738	0.7563	1.0000						
bvps_bacen	0.4744	0.6803	0.9481	1.0000					
eps_bacen	0.6164	0.8628	0.7175	0.6453	1.0000				
size	0.4671	0.0634	0.1063	0.0401	0.1255	1.0000			
risk_cred	0.0027	- 0.2842	- 0.2535	- 0.3616	- 0.2958	0.2175	1.0000		
gdp	0.0593	0.0765	0.0322	0.0628	0.1554	- 0.0133	- 0.1665	1.0000	
lev	0.0752	0.0900	0.1156	0.0461	0.0563	0.1176	0.3471	0.0642	1.0000

Source: Elaborated by the authors.

Note: price = price of the firm's share; eps_ifrs = earnings per share measured according to IFRS; bvps_ifrs: book value per share measured according to IFRS; eps_bacen = earnings per share measured according to Bacen; bvps_bacen: book value per share measured according to Bacen; size = size of the firm; risk_cred = risk of credit; GDP = variation of the gross domestic product, and lev = level of financial leverage.

According to Gujarati and Porter (2011), the correlation analysis has the main objective of measuring the strength or the degree of linear association between two variables and is related to the regression analysis. Therefore, analyzing separately the correlation coefficients is insufficient to make inferences of causality since they indicate only the association between variables and does not mean that one is the cause of the other. For example, in Table 5, it can be observed that the correlation between price and EPS is higher for IFRS (0.5738) than for Bacen (0.4744). However, this result is not sufficient to conclude that the financial statement according to the IFRS standard is more value relevant than the one according to Bacen.

4.3. Panel data estimation – IFRS model

Table 6 shows the outcomes of the fixed effects estimation with robust standard error correction, grouped by firms for the model in which the interest variables were measured according to data using the IFRS standard.

By the values of the test t presented in Table 6, it is possible to observe that the variables of interest, EPS and BVPS were significant both in the complete and separate models. This result corroborates with the Ohlson model (1995), in which profit and equity explain the firm's value. Therefore, such information is relevant for investors at the moment of making investment decisions. Also, the two variables present a positive signal, that is, the higher the profit and equity disclosed by the firms, the greater the value and the price of their shares, as expected by Ohlson (1995).

Table 6 – Outcomes of the fixed effects estimation with robust standard error correction, grouped by firms – IFRS model

	IFRS model - complete			IFRS model - only EPS			IFRS model – only BVPS			IFRS model – only control variables		
	Coefficient	t	P> t	Coefficient	t	P> t	Coefficient	t	P> t	Coefficient	t	P> t
eps_ifrs	0.7592 (0.32881)	2.31	0.021**	1.0921 (0.26391)	4.14	0.000***						
bvps_ifrs	0.4064 (0.21425)	1.9	0.058*				0.5710 (0.19522)	2.93	0.003***			
size	1.3263 (0.51036)	2.6	0.009***							1.8433 (0.75824)	2.43	0.015**
risk_cred	3.9913 (2.38902)	1.67	0.095***							2.3737 (2.00903)	0.12	0.906
gdp	8.1212 (4.16141)	1.95	0.051*							8.5597 (4.74104)	1.81	0.071*
lev	-0.1141 (0.06403)	-1.78	0.075*							-0.0505 (0.05357)	-0.94	0.345
_cons	-2.1331 (7.13600)	-2.99	0.003***	6.9426 (1.35962)	5.11	0.000***	1.9467 (2.04683)	0.95	0.342	-2.2640 (1.33868)	-1.69	0.091*
Observations	112			112			112			112		
Number of firms	14			14			14			14		
F	284.13			17.11			8.56			11.19		
Prob > F	0.0000			0.0000			0.0034			0.0246		
R² within	22.06%			10.74%			15.45%			4.30%		
R² between	68.16%			54.57%			39.01%			28.02%		
R² overall	56.37%			35.98%			32.93%			21.83%		

Source: Elaborated by the authors.

Note: price = price of the firm's share; eps_ifrs = earnings per share measured according to IFRS; bvps_ifrs: book value per share measured according to IFRS; eps_bacen = earnings per share measured according to Bacen; bvps_bacen: book value per share measured according to Bacen; size = size of the firm; risk_cred = risk of credit; GDP = variation of the gross domestic product, and lev = level of financial leverage. * = 10% significance level; ** = 5% significance level, and *** = 1% significance level. Robust standard error in parentheses.

It is interesting to observe that the EPS coefficient is higher than the BVPS, indicating a stronger relationship with the change in the bank's share prices, which is also confirmed by the variables' significance level. This issue is reflected in the R^2 of the regression, since this is higher in the EPS model than in the BVPS, suggesting that investors holding shares of financial institutions listed in B3 rely more on profit than equity to make their investment decisions, when the data is using the IFRS standard. This finding is interesting, considering that Lopes' (2001) study indicated that, in Brazil, the explanation for share prices is based on equity and not on profit, different from what was calculated here. It should be noted, however, that Lopes (2001) did not include financial sector firms in his sample and this is a sector with many peculiarities.

Another finding worth mentioning is that in the general model using IFRS, all control variables were significant. The variable 'size' was statistically significant and had a positive signal, indicating that larger banks are more profitable, have higher market value and, therefore, higher prices for their shares than other financial institutions (Anandarajan et al., 2011; Bignotto & Rodrigues, 2005; Hayn, 1995). *Risco_cred*, as predicted, was significant with a positive coefficient, which suggests that banks that are at risk may tend to inflate their profits to confront the loss in their results, which may increase returns and value (Moyer, 1990; Dantas, Medeiros & Capelleto, 2011). As for the GDP, according to Dichev (1997) and Dontoh et al. (2000), moments of economic growth positively impact the market, increasing share prices. The impact of the leverage (*Lev*) was significant but with a negative coefficient. This result corroborates Manganaris et al. (2015), who observed that greater leverage decreases the value relevance and increases agency costs and insolvency risks, which is avoided by the investor (Vinhado & Divino, 2013).

4.4. Panel data estimation – Bacen model

Table 7 shows the result of the fixed effects estimation with robust standard error correction grouped by firms for the model in which the interest variables were measured according to the data using the Bacen standard. Similar to the IFRS model, the F test indicates that both the complete and separate models are valid. By the values of the t-test, it is possible to observe that in the Bacen model, the interest variables, EPS and BVPS were significant both in the complete model and separate models, again corroborating Ohlson's (1995) findings. Therefore, such information is relevant for investors' decision making, and this relation shows a positive signal: the disclosure of positive profit and equity increases the share price; when profit and equity are negative, the share price decreases.

It is important to note that, similarly to the IFRS, in the Bacen model the EPS was more value relevant than the BVPS, and this difference is more attenuated than in the IFRS model. By the criterion of R^2 , for example, there is a 'between' R^2 of 61.18% for the EPS, against only 27.44% of the BVPS. This implies that the profit is more value relevant than the equity for investors' decision making based on information produced according to the Bacen standard. Also, regarding the control variables, 'size,' 'risk_cred' and 'lev' remained significant with their signals preserved. The variable GDP, on the other hand, was not statistically significant in the Bacen model.

Table 7 – Outcomes of the fixed effects estimation with robust standard error correction, grouped by firms – Bacen model

	Bacen model - complete			Bacen model - only EPS			Bacen model – only BVPS			Bacen model – only control variables		
	Coefficient	t	P> t	Coefficient	t	P> t	Coefficient	t	P> t	Coefficient	t	P> t
eps_bacen	0.9504 (0.5469886)	1.74	0.082*	1.1295 (0.4585056)	2.46	0.014**						
bvps_bacen	0.3228 (0.1875122)	1.72	0.085*				0.4382 (0.2032003)	2.16	0.031**			
size	1.4128 (0.5376563)	2.63	0.009***							1.8433 (0.7582497)	2.43	0.015**
risk_cred	4.1793 (2.476368)	1.69	0.091*							2.3737 (2.009039)	0.12	0.906
gdp	4.4578 (4.095743)	1.09	0.276							8.5597 (4.74104)	1.81	0.071*
lev	-0.0942 (0.0524484)	-1.8	0.072*							-0.0505 (0.0535781)	-0.94	0.345
_cons	-2.2217 (7.684102)	-2.89	0.004***	6.9981 (1.41464)	4.95	0.000***	3.6012 (2.135865)	1.69	0.092*	-2.2640 (1.338683)	-1.69	0.091*
Observations	112			112			112			112		
Number of firms	14			14			14			14		
F	342.02			6.07			4.65			11.19		
Prob > F	0.0000			0.0138			0.0310			0.0246		
R² within	16.48%			9.11%			8.22%			4.30%		
R² between	67.16%			61.18%			27.44%			28.02%		
R² overall	54.08%			38.00%			22.51%			21.83%		

Source: Elaborated by the authors.

Note: price = price of the firm's share; eps_ifrs = earnings per share measured according to IFRS; bvps_ifrs: book value per share measured according to IFRS; eps_bacen = earnings per share measured according to Bacen; bvps_bacen: book value per share measured according to Bacen; size = size of the firm; risk_cred = risk of credit; GDP = variation of the gross domestic product, and lev = level of financial leverage. * = 10% significance level; ** = 5% significance level, and *** = 1% significance level. Robust standard error in parentheses.

4.5. Comparative analysis between IFRS vs. Bacen

After the analysis of the models' estimates, a comparison of the outcomes is crucial to advance and answer the research question: What accounting information disclosed by financial institutions is most value relevant to the Brazilian capital market: information that uses the IFRS or Bacen-GAAP standards? In this case, because it is a relative association study, the R^2 of the model is the research focus, and the model that presents the R^2 will be considered, therefore, the most value relevant. The R^2 is an indicator of the proportion of the sample variation of the dependent variable explained by the set of explanatory variables (Wooldridge, 2011). In the case of panel data, there are three types of variances: within, between and overall, and therefore three R^2 . The outcomes of the complete models are shown in Table 8:

Table 8 – Comparison IFRS model vs Bacen model

	IFRS model - complete			IFRS model – only EPS			IFRS model - only BVPS		
	Coefficient	t	P> t	Coefficient	t	P> t	Coefficient	t	P> t
eps_ifrs	0.7591799 (0.3288128)	2.31	0.021**	1.092069 (0.2639764)	4.14	0.000***			
bvps_ifrs	0.4063605 (0.2142588)	1.9	0.058*				0.5710488 (0.1952239)	2.93	0.003***
R² within	22.06%			10.74%			15.45%		
R² between	68.16%			54.57%			39.01%		
R² overall	56.37%			35.98%			32.93%		
	Bacen model - complete			Bacen model - only EPS			Bacen model - only BVPS		
	Coefficient	t	P> t	Coefficient	t	P> t	Coefficient	t	P> t
eps_bacen	0.950428 (0.5469886)	1.74	0.082*	1.12951 (0.4585056)	2.46	0.014**			
bvps_bacen	0.3227782 (0.1875122)	1.72	0.085*				0.438244 (0.2032003)	2.16	0.031**
R² within	16.48%			9.11%			8.22%		
R² between	67.16%			61.18%			27.44%		
R² overall	54.08%			38.00%			22.51%		

Source: Elaborated by the authors.

Note: price = price of the firm's share; eps_ifrs = earnings per share measured according to IFRS; bvps_ifrs: book value per share measured according to IFRS; eps_bacen = earnings per share measured according to Bacen; bvps_bacen: book value per share measured according to Bacen. * = 10% significance level; ** = 5% significance level, and *** = 1% significance level. Robust standard error in parentheses.

The data presented in Table 8, shows that, in the complete model, within R^2 is 22.06%, for IFRS and 16.48% for Bacen. These percentages represent what the set of variables explains in the variation over time, regarding share prices, for each financial institution of the sample. On the other hand, between R^2 has a higher value (68.16% for IFRS and 67.16% for Bacen). This is the ratio by which the independent variables of the model explain the price related to each of the financial institutions analyzed. Finally, overall R^2 is 56.37% for the IFRS and 54.08% for Bacen, representing the percentages through which the explanatory variables of each model explain the price for each institution at a given time.

In this context, it is important to emphasize that, regardless of the type of R^2 , in all cases, the IFRS model presents values higher than the Bacen model, although the difference is not so significant. This implies that H1 cannot be rejected, suggesting that the financial information of financial institutions measured according to IFRS are more value relevant than those in Bacen, i.e., they are preferred by investors when making their investment decisions. Therefore,

there may be a positive effect in the adoption of the international accounting standards for Brazil, corroborating studies by M. E. Barth, Landsman, and Lang, 2008; Chalmers, Clinch, and Godfrey, 2011; Jeanjean and Stolowy, 2008; Macêdo, Bezerra, and Klann, 2014.

Regarding the values of R^2 , the outcomes of the complete model presented in Table 8 indicate that although the IFRS explains more, the difference between explanatory power is, in percentage terms, relatively small. Table 8 shows that the greater difference is the within R^2 , and its value is approximately 7%. In a more intrinsic reflection, this may point to a certain loss in the value relevance of accounting information, which may be related to the presence of the specific characteristics previously mentioned and which were elucidated by Burgstahler and Dichev (1997) and Beaver (1998): the use of bank credit to finance itself; influence of tax legislation; high inflation; low level of audit services; high intervention of the government by establishing accounting norms (Alford, Jones, Leftwich, & Zmijewski, 1993; Ali & Hwang, 2000; Joos & Lang, 1994).

According to Lopes, Sant'Anna, and Costa (2007), the Brazilian context presents such characteristics, and the adoption of the IFRS standard is precisely an attempt to break this paradigm. Thus, this little difference between the predictive power of the models suggests that the country still needs to advance to make its capital markets more efficient. Thus, it is possible to conclude that, although the standards represent a step forward in terms of the value relevance of accounting information, this relevance is still modest due to the institutional characteristics of the country. Therefore, according to Ball (2006), only the adoption of IFRS may not guarantee improvement in value relevance of information. Deeper changes in the system and the market as a whole seem to be necessary.

On the other hand, in the outcomes of the estimates for the separate models, when comparing earnings per share (EPS) and book value per share (BVPS), it is observed that, in general, the changes in share prices are explained by the EPS and not the BVPS. This observation contradicts Lopes' (2001) findings but, as already pointed out, the author disregarded financial institutions in the research, and this sector has shown to be atypical. Thus, even if this seems an odd outcome, it corroborates previous studies of the same theme. Examples are the works by Leventis, Dimitropoulos and Anandarajan (2011), whose study focused on banks and concluded that the adoption of IFRS increased the quality of profits, and by Agostino et al. (2011), which indicates an increase in value relevance only for profit in the context of the adoption of international standards.

In the comparison between EPS_Bacen and EPS_IFRS, the profit for the Bacen model has a higher coefficient, indicating a more intense impact on the share price. The R^2 values, similarly, indicate that EPS_Bacen has more explanatory power for share prices, which leads to the rejection of H2. Therefore, the EPS_IFRS seems to be less value relevant, being deprecated in comparison with the EPS_bacen. A plausible explanation for this outcome is that the banks have great control over the market, and are a highly regulated sector, providing information in order to ensure a solid system. In this context, it is worth mentioning that EPS_Bacen refers to the profit considered for the purpose of distributing dividends to investors, hence their relevance to these actors. It is relevant information to investors because they will receive their dividends based on EPS_Bacen and EPS_IFRS.

This scenario, however, is reversed when analyzing equity, since its coefficient is higher for IFRS than for the Bacen model. The R^2 values are higher in all cases, which confirm this outcome. This implies that H3 cannot be rejected and, consequently, the earnings per share measured according to the IFRS standards are more value relevant than the one measured according to the Bacen standards. This result also reinforces the positive effect of adopting international accounting standards. It is important to remember that, unlike the information presented according to Bacen, the one using IFRS is aimed at the investor. Thus, a stronger

relationship in the BVPS_IFRS may indicate that the investor prefers this information because it can be a sign of higher quality and the investor may feel more protected.

4.6. Information criteria to select the models

According to the outcomes presented before, using the R^2 as a criterion, the IFRS model presents greater explanatory power in comparison to the Bacen model. In order to validate the outcomes from the estimation of the models in panel data, additional statistical tests were performed for model selection. For Bozdangan (1987), such tests are crucial in the process of data analysis, and the intention is always to find the most parsimonious model. Also, there are several methods for adopting one model over another. Lindsey and Simon (2010) emphasize the use of the Akaike (AIC) and Bayesian information (BIC) criteria for both nested and non-nested models. Table 9 presents the results of the tests for model selection:

	AIC	BIC	AICc
Bacen	655.3544	668.9469	656.1544
IFRS	652.8876	663.7616	653.4536

Source: Elaborated by the authors.

Note: AIC=Akaike information criterion;

BIC=Bayesian information criterion; AICc:

corrected Akaike information criterion.

The results presented in Table 9 also confirm the hypothesis that the IFRS Model is more explanatory than the Bacen since it is possible to observe that, in all the criteria, the IFRS presents a smaller value, even if this difference is low. The IFRS model has AIC, BIC and AICc values of 652.8876, 663.7616, and 653.4536, respectively; and the Bacen model has AIC of 655.3544, BIC of 668.9469 and AICc of 656.154. This means that the IFRS is the best model because it presents a smaller distance from the “ideal model.” These values confirm the results of the panel data estimates, indicating robustness and reliability of the conclusions presented in this study.

4.7. Robustness testing

Together with the statistical tests for model selection and the panel data estimation, an additional test of robustness was carried out in order to validate the results. The procedure adopted was to change the variables ‘size’ and ‘leverage’ (Lev). The variable ‘size’ was originally calculated from the natural logarithm of the asset according to the value measured according to the Bacen model. Thus, in the robustness test, it was changed by the variable ‘size’ (size_ifrs), whose asset was measured according to IFRS. Similarly, the ‘leverage’ variable, which in the original model was measured according to IFRS, was replaced by the ‘leverage’ variable (lev_bacen), calculated based on information reported according to the Bacen standard. The results of the robustness test performed are presented in Table 10:

	IFRS model - complete			IFRS model – only EPS			IFRS model - only BVPS		
	Coefficient	t	P> t	Coefficient	t	P> t	Coefficient	t	P> t
eps_ifrs	0.7617554 (0.3385904)	2.25	0.024**	1.092069 (0.2639764)	4.14	0.000***			
bvps_ifrs	0.3615875 (0.1942137)	1.86	0.063*				0.5710488 (0.1952239)	2.93	0.003***
R² within	22.15%			10.74%			15.45%		

	Bacen model - complete			Bacen model - only EPS			Bacen model - only BVPS		
	Coefficient	t	P> t	Coefficient	t	P> t	Coefficient	t	P> t
R² between	73.00%			54.57%			39.01%		
R² overall	59.97%			35.98%			32.93%		
eps_bacen	1.022089 (0.5644247)	1.81	0.07*	1.12951 (0.4585056)	2.46	0.014**			
bvps_bacen	0.2806792 (0.1620338)	1.73	0.083*				0.438244 (0.2032003)	2.16	0.031**
R² within	17.41%			9.11%			8.22%		
R² between	72.91%			61.18%			27.44%		
R² overall	58.69%			38.00%			22.51%		

Source: Elaborated by the authors.

Note: price = price of the firm's share; eps_ifrs = earnings per share measured according to IFRS; bvps_ifrs: book value per share measured according to IFRS; eps_bacen = earnings per share measured according to Bacen; bvps_bacen: book value per share measured according to Bacen. * = 10% significance level; ** = 5% significance level, and *** = 1% significance level. Robust standard error in parentheses.

It was possible to observe that the outcomes of the robustness test carried out are very similar to those found in the panel data estimation. They also corroborate the findings obtained from the information criteria. These results altogether lead to the non-rejection of the H_1 , which implies that the information provided according to IFRS are, in general, more value relevant than the information provided according to Bacen. Therefore, it is fair to say that the adoption of IFRS in Brazil represents a step forward, since it makes the accounting information more value relevant, even if this relevance was possibly reduced by the country's institutional characteristics. On the other hand, the EPS measured according to Bacen is more value relevant than the EPS measured according to IFRS (which is the opposite when it comes to the BVPS).

These conclusions contribute to the literature in different aspects. In practical terms, in the context of greater value relevance of the BVPS for IFRS, but greater value relevance of the EPS for Bacen, it may be necessary to reflect on regulatory and control agencies about a possible complementarity of these two types of information. Perhaps it would be pertinent for the regulatory agency to have internalized the information provided according to the Bacen standard. It is important to highlight that a model can produce more useful information – aimed at the investors (IFRS) – and the other provides more objective information – emphasizing compliance with the rules (Bacen). However, since the IFRS standard, in general, is more value relevant than the Bacen, it is suggested that the Central Bank of Brazil analyze the appropriateness of adopting IFRS. This can reduce both the disclosure costs for firms and the issuance of standards for the regulatory agencies.

In addition, there are some theoretical contributions. Regarding the effects of the adoption of IFRS, this study suggests that they are positive because they increase the value relevance of accounting information to investors. This is crucial because if the information is not practically relevant, the efforts of the regulatory bodies have not had an effect. As for the value relevance as a research topic, the results confirm the usefulness of the accounting information, indicating, however, that the increase in relevance is low. This conclusion is important because it implies that only adopting a single standard does not guarantee more useful information given the existence of other influencing factors. Finally, the findings suggest that Brazil needs to change and move forward in terms of providing accounting information and developing a more efficient capital market.

5. CONCLUSION

This research compared the value relevance of accounting information provided according to IFRS and Bacen standards, which are mandatory forms of disclosure for financial institutions who are required to form an Audit Committee and/or are publicly-traded in the B3 stock exchange. The methodology adopted panel data analysis of 14 financial institutions for the period from 2010 to 2017. The econometric model used the Ohlson model (1995), adding control variables in order to estimate more robust parameters.

The results were, for the most part, consistent with the expectations and were maintained even after the estimation of the information criteria and the robustness testing. In the complete model, information provided according to IFRS presented greater explanatory power and lower AIC, BIC, and AICc, which suggests that this type of information is more value relevant to the investor when making investment decisions. It should be noted that there is little difference between the information criteria and the explanatory power of the models, which indicates a low difference in value relevance.

On the other hand, when analyzing the EPS separately, the EPS measured according to Bacen was more value relevant, which may be explained by the fact that this is the profit considered for dividend distribution purposes and is therefore considered in decision making. As for the BVPS, the context is the opposite, with higher BVPS for IFRS than for Bacen, which may indicate a particular perception of investors regarding the quality of information and the protection of their interests. Also, the EPS has more explanatory power when compared to BVPS. Overall, these results are different from previous national studies, as they suggest that the explanatory power is concentrated in BVPS. Nevertheless, in the context of international financial sector research, there seems to be a tendency for more explanation regarding the profit.

It should be noted that the sample of 14 financial institutions is quite small. Therefore, the results were based on a total of only 112 observations. In this sense, the findings of this research cannot be generalized, and their interpretations are specifically restricted to this sample.

However, this does not invalidate the contributions of the study. In practice, the findings suggest a reflection on the part of regulatory and control agencies about a possible complementarity of the two types of information (IFRS and Bacen). In addition, these agencies may consider the possibility of adopting the IFRS standard, as this could reduce costs related to information disclosure and issuance of norms. From the perspective of contributions to the theory, the study indicates the positive effects of the adoption of international standards. The conclusion is that the value relevance of accounting information increased, in a subtle way. This low increase may lead to a reflection on the need for more intrinsic transformations in the institutional context of the Brazilian capital market.

REFERENCES

- Acharya, V. V., & Ryan, S. G. (2016). Banks' financial reporting and financial system stability. *Journal of Accounting Research*, 54(2), 277–340.
- Agostino, M., Drago, D., & Silipo, D. B. (2011). The value relevance of IFRS in the European banking industry. *Review of Quantitative Finance and Accounting*, 36(3), 437–457.
- Ahmed, A. S., Kilic, E., & Lobo, G. J. (2006). Does recognition versus disclosure matter? Evidence from value-relevance of banks' recognized and disclosed derivative financial instruments. *The Accounting Review*, 81(3), 567–588.
- Alford, A., Jones, J., Leftwich, R., & Zmijewski, M. (1993). The relative informativeness of accounting disclosures in different countries. *Journal of Accounting Research*, 183–223.
- Ali, A., & Hwang, L.-S. (2000). Country-specific factors related to financial reporting and the

- value relevance of accounting data. *Journal of Accounting Research*, 38(1), 1-21.
- Amir, E., & Lev, B. (1996). Value-relevance of nonfinancial information: The wireless communications industry. *Journal of Accounting and Economics*, 22(1), 3–30.
- Amir, E., Harris, T. S., & Venuti, E. K. (1993). A comparison of the value-relevance of us versus non-us GAAPs accounting measures using form 20-F reconciliations. *Journal of Accounting Research*, 230–264.
- Anandarajan, A., Francis, B., Hasan, I., & John, K. (2011). Value relevance of banks: global evidence. *Review of Quantitative Finance and Accounting*, 36(1), 33–55.
- Arce, M., & Mora, A. (2002). Empirical evidence of the effect of European accounting differences on the stock market valuation of earnings and book value. *European Accounting Review*, 11(3), 573-599.
- Armstrong, C., Guay, W. R., & Weber, J. P. (2010). The role of information and financial reporting in corporate governance and debt contracting. *Journal of Accounting and Economics*, 50(2), 179–234.
- Ball, R. (2006). International financial reporting standards (IFRS): pros and cons for investors. *Accounting and Business Research*, 36(sup1), 5–27.
- Ball, R. (1992). The earnings-price anomaly. *Journal of Accounting and Economics*, 15(2-3), 319–345.
- Ball, R., & Brown, P. (1968). An empirical evaluation of accounting income numbers. *Journal of Accounting Research*, 159–178.
- Balsam, S., & Lipka, R. (1998). Share prices and alternative measures of earnings per share.
- Barth, J. R., Caprio Jr, G., & Levine, R. (2013). Bank regulation and supervision in 180 countries from 1999 to 2011. *Journal of Financial Economic Policy*, 5(2), 111–219.
- Barth, M. E., Beaver, W. H., & Landsman, W. R. (1996). Value-relevance of banks' fair value disclosures under sfas 107. *Accounting Review*, 71(4), 513–537.
- Barth, M. E., Landsman, W. R., & Lang, M. H. (2008). International accounting standards and accounting quality. *Journal of Accounting Research*, 46(3), 467–498.
- Barth, M. E., Landsman, W. R., Lang, M., & Williams, C. (2012). Are IFRS-based and us gaap-based accounting amounts comparable? *Journal of Accounting and Economics*, 54(1), 68–93.
- Barth, M. E., Landsman, W. R., Young, D., & Zhuang, Z. (2014). Relevance of differences between net income based on IFRS and domestic standards for european firms. *Journal of Business Finance & Accounting*, 41(3-4), 297–327.
- Bartov, E., Goldberg, S. R., & Kim, M. (2005). Comparative value relevance among German, US, and international accounting standards: A German stock market perspective. *Journal of Accounting, Auditing & Finance*, 20(2), 95-119.
- Beatty, A., & Liao, S. (2014). Financial accounting in the banking industry: A review of the empirical literature. *Journal of Accounting and Economics*, 58(2), 339–383.
- Beaver, W. (1968). The information content of annual earnings announcements. *Journal of Accounting Research*, 67–92.
- Bushman, R. M. (2014). Thoughts on financial accounting and the banking industry. *Journal of Accounting and Economics*, 58(2), 384–395.
- Callao, S., Jarne, J. I., & Laínez, J. A. (2007). Adoption of IFRS in Spain: Effect on the comparability and relevance of financial reporting. *Journal of International Accounting, Auditing and Taxation*, 16(2), 148-178.
- Chalmers, K., Clinch, G., & Godfrey, J. M. (2011). Changes in value relevance of accounting information upon IFRS adoption: Evidence from Australia. *Australian Journal of Management*, 36(2), 151–173.
- Choi, J.-H., Kim, J.-B., & Lee, J. J. (2011). Value relevance of discretionary accruals in the asian financial crisis of 1997–1998. *Journal of Accounting and Public Policy*, 30(2), 166–187.

- Choi, W. (2007). Bank relationships and the value relevance of the income statement: Evidence from income-statement conservatism. *Journal of Business Finance & Accounting*, 34(7-8), 1051–1072.
- Christensen, H. B., Nikolaev, V. V., & Wittenberg-Moerman, R. (2016). Accounting information in financial contracting: The incomplete contract theory perspective. *Journal of Accounting Research*, 54(2), 397–435.
- Chua, Y. L., Cheong, C. S., & Gould, G. (2012). The impact of mandatory IFRS adoption on accounting quality: Evidence from Australia. *Journal of International Accounting Research*, 11(1), 119–146.
- Collins, D. W., Maydew, E. L., & Weiss, I. S. (1997). Changes in the value-relevance of earnings and book values over the past forty years. *Journal of Accounting and Economics*, 24(1), 39–67.
- Cunha, E. S., Dantas, J. A., & Medeiros, O. R. (2016). Dois modelos contemporâneos de divulgação financeira na indústria bancária brasileira: Qual é mais conservador? *Advances in Scientific and Applied Accounting*, 9(3), 301–317.
- Dantas, J. A., Rodrigues, F. F., Niyama, J. K., & de Melo Mendes, P. C. (2010). Normatização contábil baseada em princípios ou em regras? Benefícios, custos, oportunidades e riscos. *Revista de Contabilidade e Organizações*, 4(9), 3–29.
- Daske, H., Hail, L., Leuz, C., & Verdi, R. (2013). Adopting a label: Heterogeneity in the economic consequences around IAS/IFRS adoptions. *Journal of Accounting Research*, 51(3), 495–547.
- Dhaliwal, D., Subramanyam, K. R., & Trezevant, R. (1999). Is comprehensive income superior to net income as a measure of firm performance? *Journal of Accounting and Economics*, 26(1), 43–67.
- Eccher, E. A., Ramesh, K., & Thiagarajan, S. R. (1996). Fair value disclosures by bank holding companies. *Journal of Accounting and Economics*, 22(1), 79–117.
- Elbakry, A. E., Nwachukwu, J. C., Abdou, H. A., & Elshandidy, T. (2017). Comparative evidence on the value relevance of IFRS - based accounting information in Germany and the UK. *Journal of International Accounting, Auditing and Taxation*, 28, 10–30.
- Fávero, L. P., & Fávero, P. (2016). *Análise de dados: modelos de regressão com Excel®, Stata® e SPSS®* (Vol. 1). Elsevier Brasil.
- Fiechter, P., & Novotny-Farkas, Z. (2016). The impact of the institutional environment on the value relevance of fair values. *Review of Accounting Studies*, 1–38.
- Gujarati, D. N., & Porter, D. C. (2011). *Econometria Básica-5*. Amgh Editora.
- Hail, L., Leuz, C., & Wysocki, P. (2010). Global accounting convergence and the potential adoption of IFRS by the us (part i): Conceptual underpinnings and economic analysis. *Accounting Horizons*, 24(3), 355–394.
- Harris, M. S., & Muller III, K. A. (1999). The market valuation of IAS versus US-GAAP accounting measures using Form 20-F reconciliations. *Journal of Accounting and Economics*, 26(1-3), 285–312.
- Holthausen, R. W., & Watts, R. L. (2001). The relevance of the value-relevance literature for financial accounting standard setting. *Journal of Accounting and Economics*, 31(1), 3–75.
- Horton, J., & Serafeim, G. (2006). Market response to and the value relevance of reconciliation adjustments from UK GAAP to IFRS GAAP: First evidence from the UK. Available at SSRN 923582.
- Hung, M. Y. (2001). Information and trading risks in global investing: an empirical analysis of research location and pacific mutual fund performance. *Journal of International Financial Management and Accounting*, 12(1), 1–23.
- Ismail, W., Adibah, W., Dunstan, K., & Van Zijl, T. (2010). Earnings quality and corporate governance following the implementation of Malaysian code of corporate governance.

- Jeanjean, T., & Stolowy, H. (2008). Do accounting standards matter? an exploratory analysis of earnings management before and after IFRS adoption. *Journal of Accounting and Public Policy*, 27(6), 480–494.
- Joos, P., & Lang, M. (1994). The effects of accounting diversity: Evidence from the european union. *Journal of Accounting Research*, 141–168.
- Kaya, D., & Pillhofer, J. A. (2013). Potential adoption of IFRS by the united states: a critical view. *Accounting Horizons*, 27(2), 271–299.
- Kennedy, P. (2008). *A guide to econometrics*. MIT press.
- Kothari, S. P., & Sloan, R. G. (1992). Information in prices about future earnings: Implications for earnings response coefficients. *Journal of Accounting and Economics*, 15(2-3), 143–171.
- Lambert, R. (1996). *Financial reporting research and standard setting*. (Unpublished Working Paper)
- Leuz, C. (2010). Different approaches to corporate reporting regulation: How jurisdictions differ and why. *Accounting and Business Research*, 40(3), 229–256.
- Lim, C. Y., Lim, C. Y., & Lobo, G. J. (2013). Ias 39 reclassification choice and analyst earnings forecast properties. *Journal of Accounting and Public Policy*, 32(5), 342–356.
- Lima Duarte, F. C., Girão, L. F. d. A. P., & Paulo, E. (2017). Avaliando modelos lineares de value relevance: Eles captam o que deveriam captar? *Revista de Administração Contemporânea*, 21, 110.
- Lindsey, C. & Sheather, S. (2010). Variable selection in linear regression. *The Stata Journal*. 10(4), 650–669.
- Lopes, A. B., Sant’Anna, D. P., & Costa, F. M. A. (2007). A relevância das informações contábeis na bovespa a partir do arcabouço teórico de ohlson: avaliação dos modelos de residual income valuation e abnormal earnings growth. *R.Adm.*, 42(4), 497-510.
- Lourenço, I., & Branco, M. d. A. (2015). Principais consequências da adoção das IFRS: análise da literatura existente e sugestões para investigação futura. *Revista Contabilidade & Finanças*, 26(68), 126–139.
- Manganaris, P., Spathis, C., & Dasilas, A. (2016). How institutional factors and IFRS affect the value relevance of conservative and non-conservative banks. *Journal of Applied Accounting Research*, 17(2), 211–236.
- Manganaris, P., Spathis, C., & Dasilas, A. (2015). The effects of mandatory IFRS adoption and conditional conservatism on european bank values. *Journal of International Accounting, Auditing and Taxation*, 24, 72–81.
- Minnis, M., & Sutherland, A. (2017). Financial statements as monitoring mechanisms: Evidence
- Morris, R. D., Kang, H., & Jie, J. (2016). The determinants and value relevance of banks’ discretionary loan loss provisions during the financial crisis. *Journal of Contemporary Accounting & Economics*, 12(2), 176–190.
- Ohlson, J. A. (1995). Earnings, book values, and dividends in equity valuation. *Contemporary Accounting Research*, 11(2), 661–687.
- Osma, B. G., & Pope, P. F. (2011). *Strategic balance sheet adjustments under first-time IFRS adoption and the consequences for earnings quality* (Tech. Rep.). Retrieved from <http://ssrn.com/abstract=1735009>
- Paulo, E., de Carvalho, L. N. G., & Girão, L. F. d. A. P. (2014). Algumas questões sobre a normatização contábil baseada em princípios, regras e objetivos. *Revista Evidenciação Contábil & Finanças*, 2(2), 24–39.
- Rezaee, Z., Smith, L. M., & Szendi, J. Z. (2010). Convergence in accounting standards: Insights from academicians and practitioners. *Advances in Accounting*, 26(1), 142–154.
- Sayed, S., & Salotti, B. M. (2015). O uso do valor justo e suas relações com os valores de mercado das instituições financeiras. *Contabilidade Vista & Revista*, 25(3), 15–37.
- Scott, W. R. (2012). *Financial Accounting Theory* (6th ed.).

- Sobral, T. E. L. & Barreto, G. (2016). Utilização dos critérios de informação na seleção de modelos de regressão linear. *Proceeding series of the Brazilian Society of Applied and Computational Mathematics*, 4(1), 1-7.
- Soderstrom, N. S., & Sun, K. J. (2007). IFRS adoption and accounting quality: a review. *European Accounting Review*, 16(4), 675–702.
- Song, C. J., Thomas, W. B., & Yi, H. (2010). Value relevance of fas no. 157 fair value hierarchy information and the impact of corporate governance mechanisms. *The Accounting Review*, 85(4), 1375–1410.
- Vincent, L. (1999). The information content of funds from operations (ffo) for real estate investment trusts (reits). *Journal of Accounting and Economics*, 26(1), 69–104.
- Wooldridge, J. M. (2010). *Econometric analysis of cross section and panel data*. MIT press.