ARTICLE

IFRS vs Bacen Gaap: Accounting Information's Value Relevance of the Brazilian Financial Institutions

Mariana Titoto Marques[1]
marianatitoto@gmail.com | ⓘ 0000-0002-8671-2978

Flávia Zóboli Dalmacio[1]
flaviazd@usp.br| ⓘ 0000-0001-7776-1041

Amaury José Rezende[1]
amauryj@usp.br| ⓘ 0000-0003-3057-6097

ABSTRACT

Brazilian financial institutions that have an Audit Committee and/or are listed on the Stock Exchange are obliged to disclose their financial statements in Bacen GAAP and IFRS. This study compares their relevanceusing the Ohlson Model (1995) adding control variables for the years 2010 to 2018. Two models were estimated, one for each set of standards, and the analysis of relevance was based on the R^2 values. The results were consistent with the expectations and they suggest that IFRS information (EPS and BVPS) is more value relevant to the investor when making investment decisions, suggesting a positive effect in the adoption of IFRS for Brazil. On the other hand, equity has a higher explanatory power than profit. Thus, as the disclosure of information is not necessarily simultaneous in Bacen and IFRS, although there is an influence of Bacen's previous information in IFRS price, the results show an incremental information contained in IFRS information. All results show the positive effect of adopting international accounting standards, which is an information aimed at the investor. It seems that the central bank has already has already recognized the positive effect. After all, from in was the CMN Resolution No. 4818 which instituted the IFRS model as the only accounting standard for consolidated statements from 2021 onwards, while Bacen standard will be restricted to individual statements.

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 a countries' accounting standards - IFRS.

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, especially when it comes to financial instruments, which are the main components of these firms' balance sheet reports.

Some studies highlighted the value relevance of fair value in banks (M. E. Barth, 1994; M. E. Barth, Beaver, & Landsman, 1996; Chiqueto, Silva, Colossal, & Carvalho, 2015; Grillo, Lachini, Baioco, Reina, & Neto, 2016; Sayed & Salotti, 2015). Others showed the value relevance in the context of conservatism (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 focused on value relevance. So, 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.

The results were consistent with the expectations and they suggest that IFRS information is more value relevant to the investor when making investment decisions. Furthermore, the results indicate BVPS, both in IFRS and Bacen, has a higher explanatory power about that the changes in share prices. Furthermore, as the disclosure of information is not necessarily simultaneous in Bacen and IFRS, although there is an influence of Bacen's previous information in IFRS prices, the results show an incremental information contained in IFRS information.

In comparison to previous studies, this article focuses on financial institutions, considering they are an essential part of the economic system and are ina highly representative sector of the Brazilian market. 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 like Cunha et. al, 2016, 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

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 tso numerous research works.

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.

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 results and the book value as explanatory variables in the valuation of American firms. The results 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 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). 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).

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 for 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 the greater value relevance ofthe IFRS rather than in US-GAAPs in regards to price, but less in regards to 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.

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, 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

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 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, 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.

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 (IFRS). 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 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.

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. On the other hand, greater transparency does not necessarily mean that there has been an increase in 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. 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 loan loss provisions increased substantially during the crisis, while the levels of these provisions about equity remained modest. 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. 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, 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 B3, 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. 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 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:

- **H_1:** Financial statements using the IFRS are more value relevant to the capital market than the information presented according to the Bacen-GAAP.
- **H_2:** 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.
- **H_3:** 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.

However, the disclosure of information is not necessarily simultaneous in Bacen and IFRS. Based on CVM data, it was seen that the Bacen's information is (in most cases, but there are cases in which disclosure is simultaneous) released before than IFRS. So, when the banks release their IFRS financial statements there is a portion of information contained in prices due to previous release of Bacen financial statements. Considering that is expected that IFRS information is more relevant to investors when making market decisions, is expected that release of IFRS financial statements add information when it occurs in a different date of Bacen. This assumption led to formulate another hypothesis:

- **H$_4$:** The release of IFRS financial statements add information when it occurs in a different date of Bacen.

3. METHODOLOGY

3.1. Sample

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. 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.

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, and ends in 2018, totalizing 126 observations. 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. The analysis of these criteria led to a final sample of 14 financial institutions, according to Table 1:

Table 1
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:

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

$$P_{i,t} = \alpha0 + \alpha1 * EPS_{i,t} + \varepsilon_{i,t} \qquad (2)$$

$$P_{i,t} = \alpha0 + \alpha1 * BVPS_{i,t} + \varepsilon_{i,t} \qquad (3)$$

$P_{i,t}$ = 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, according to equation 4:

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

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 2. 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.

All the variables, with exception of GDP, are calculated using both information. So, in IFRS model were used variables according IFRS information and Bacen model were used variables according Bacen information. However, in the model used to investigate the additional IFRS information, the price on the date of release of IFRS information was kept as dependent variable even in Bacen model, from the perspective of analyzing whether the variables calculated with Bacen's information continue to influence the IFRS disclosure date and if there is an incremental information contained in IFRS information.

Table 2
Variables of the model

Variable	Type	Description/ Calculation	Expected Signal	Justification and literature	Fonte
$P_{i,t}$ (Price)	Dependent	Closing price on the date of release of information		*Proxy* 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)	CVM
$BVPS_{i,t-1}$ (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)	CVM
$Size_{i,t-1}$	Control	Natural logarithm of the asset	+	Smaller banks are more likely to report losses in comparison to big banks, who are more profitable, which affects price and increases value. (Anandarajan et al., 2011; Bignotto & Rodrigues, 2005; Hayn, 1995)	CVM
$GDP_{i,t-1}$	Control	Variation of the GDP at the end of the fiscal year	+	The value relevance of profit and equity is influenced by the GDP. When GDP grows companies become more profiting, which would take the increase in stock price (Burgstahler & Dichev, 1997; Dontoh et al., 2004)	IBGE
$Lev_{i,t-1}$	Control	Relation between liabilities and equity	-	High leverage reduces value relevance (Manganaris et al., 2015). Leverage have a negative effect on price and value firm because it increases the risk of financial distress and bankruptcy (Maury & Pajuste, 2005. Indebtedness increases agency costs and the risk of insolvency, increasing the risk of the business (Vinhado & Divino, 2013).	CVM

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 3.

Table 3
Descriptive statistics

Variable	Observations	Mean	Standard deviation	Minimum value	Maximum value
price_ifrs	126	12.4730	10.6295	1.3331	48.2789
price_bacen	126	12.2995	10.4538	1.3326	45.2529
eps_ifrs	126	1.6135	1.9256	-3.4319	8.3919
bvps_ifrs	126	11.7815	7.1627	-1.6173	27.8575
bvps_bacen	126	11.5147	6.7158	0.1337	26.0774
eps_bacen	126	1.5042	1.8020	-2.8726	8.1792
size_ifrs	126	17.5045	2.0662	14.2504	21.0844
size_bacen	126	17.1338	1.9070	14.2697	20.8002
lev_ifrs	126	11.0108	5.5917	5.4716	61.6745
lev_bacen	126	9.5426	5.8412	0.2174	54.6329
gdp	126	0.0208	0.0528	-0.0621	0.1020

Source: Elaborated by the authors.

Table 3 shows that the values measured according to the Bacen standards are, on average, always lower when compared to IFRS. The mean values of EPS and BVPS for IFRS are respectively 1.6135 and 11.7815, while the EPS for Bacen is 1.5042 and BVPS is 11.5147. 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. Panel data estimation – Bacen model

After F test and Breusch-Pagan, results indicated pooled model in all cases. So, Table 4 shows the result of pooled estimation by firms for the model in which the interest variables were measured according to the data using the Bacen standard. 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.

By the criterion of R^2, BVPS_bacen seems to be more value relevant than EPS_bacen: adjusted R^2 for BVPS_bacen is 23.96%, against 17.66% of the EPS_bacen. This implies that equity is

more value relevant than profit for investors' decision making based on information produced according to the Bacen standard. However, in case of control variables, 'size_bacen,' 'lev_bacen' and 'gdp' were not statistically significant in the Bacen model.

Table 4

Outcomes of pooled estimation - Bacen model

	Bacen model – complete			Bacen model – only BVPS			Bacen model – only EPS		
	Coef.	t	P>|t|	Coef.	t	P>|t|	Coef.	t	P>|t|
bvps_bacen	0.5873391	3.60	0.000***	0.7716071	6.36	0,000***			
eps_bacen	1.042815	1.70	0.092*				2.483091	5.27	0.000***
size_bacen	-0.406687	-0.94	0.350						
lev_bacen	-0.006343	-0.05	0.964						
gdp	-3.791559	-0.24	0.809						
_cons	4.107115	1.90	0.060	3.414653	2.11	0.037**	8.564325	7.77	0.000***
Number of observations	126			126			16		
F	8.82			40.4			27.81		
Prob > F	0.0000			0.0000			0.0000		
R-squared	26.86%			24.57%			18.32%		
Adj R-squared	23.82%			23.96%			17.66%		

Source: Elaborated by the authors.

4.3. PANEL DATA ESTIMATION – IFRS MODEL

Table 5 shows the outcomes of the pooled estimation for the model in which the interest variables were measured according to data using the IFRS standard. By the values of the test t, 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 5 results showed that both variables, BVPS and EPS are relevant to explain the behavior of prices. This finding contradicts Lopes (2001) who indicated, in Brazil, the explanation for share prices is based on equity and not on profit. In addition, all control variables were not significant, same result that Bacen model.It is interesting to observe that, similarly to Bacen, the adjusted R^2 of IFRS regression, since this is higher in the BVPS model than in the EPS, suggesting that investors holding shares of the financial institutions listed in B3 rely more on equity than profit to make their investment decisions, when the data is using the IFRS standard.

Table 5
Outcomes of pooled estimation - IFRS model

	IFRS model - complete			IFRS model – only BVPS			IFRS model - only EPS		
	Coef.	t	P>|t|	Coef.	t	P>|t|	Coef.	t	P>|t|
bvps_ifrs	0.795091	4.56	0.000***	0.8456583	7.72	0.000***			
eps_ifrs	1.0662805	1.57	0.000***				2.576699	5.9	0.000***
size_ifrs	-0.305653	-0.79	0.431						
lev_ifrs	-0.177539	-1.25	0.216						
gdp	0.2038383	0.01	0.989						
_cons	9.815513	1.43	0.154	2.509854	1.66	0.099*	8.315488	7.6	0.000***
Number of observations	126			126			126		
F	12.33			54.63			34.54		
Prob > F	0.0000			0.0000			0.0000		
R-squared	33.94%			32.47%			21.79%		
Adj R-squared	31.19%			31.93%			21.16%		

Source: Elaborated by the authors.

4.4. COMPARATIVE ANALYSIS BETWEEN IFRS VS. BACEN AND IFRS ADITIONAL INFORMATION

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 information that uses 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.

However, like the release of information is not necessarily simultaneous in Bacen and IFRS, is possible that there is a portion of information contained in prices due to previous release of Bacen financial statements. From that context and to investigate this, a model – named "IFRS additional information" was tested with price on the date of release of IFRS information was kept as dependent variable even in Bacen model. The results are summarized in Table 6, including a comparison between IFRS e Bacen model.

The data presented in Table 6, shows that, in the complete model, adjusted R^2 is 31,19%, for IFRS and 23,82% for Bacen. In another words, the IFRS model presents values higher than the Bacen model. This implies that H_1 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.

Table 6

Comparison IFRS model vs Bacen model and Bacen additional information

	Bacen model - complete			Bacen model – only BVPS			Bacen model - only EPS		
	Coef.	t	P>|t|	Coef.	t	P>|t|	Coef.	t	P>|t|
bvps_bacen	0.5873391	3.60	0.000***	0.7716071	6.36	0,000***			
eps_bacen	1.042815	1.70	0.092*				2.483091	5.27	0.000***
_cons	4.107115	1.90	0.060*	3.414653	2.11	0.037**	8.564325	7.77	0.000***
Number of observations	126			126			126		
F	8.82			40.4			27.81		
Prob > F	0.0000			0.0000			0.0000		
R-squared	26.86%			24.57%			18.32%		
Adj R-squared	23.82%			23.96%			17.66%		
	IFRS model - complete			IFRS model – only BVPS			IFRS model - only EPS		
	Coef.	t	P>|t|	Coef.	t	P>|t|	Coef.	t	P>|t|
bvps_ifrs	0.795091	4.56	0.000***	0.8456583	7.72	0.000***			
eps_ifrs	1.0662805	1.57	0.000***				2.576699	5.9	0.000***
_cons	9.815513	1.43	0.154	2.509854	1.66	0.099*	8.315488	7.6	0.000***
Number of observations	126			126			126		
F	12.33			54.63			34.54		
Prob > F	0.0000			0.0000			0.0000		
R-squared	33.94%			32.47%			21.79%		
Adj R-squared	31.19%			31.93%			21.16%		
	Bacen add info model – complete			Bacen add info model – only BVPS			Bacen add info model – only EPS		
	Coef.	t	P>|t|	Coef.	t	P>|t|	Coef.	t	P>|t|
bvps_bacen	0.5215314	3.11	0.002***	0.7522741	6.02	0.000***			
eps_bacen	1.344775	2.11	0.037**				2.558389	5.4	0.000***
_cons	9.753622	1.24	0.216	3.810721	2.29	0.024**	8.62451	7.7	0.000***
Number of observations	126			126			126		
F	8.2			36.19			28.73		
Prob > F	0.0000			0.0000			0.0000		
R-squared	25.47%			224.59%			18.81%		
Adj R-squared	22.36%			21.97%			18.16%		

Source: Elaborated by the authors.

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 more explained by the BVPS than EPS. In the comparison between EPS_Bacen and EPS_IFRS, the adjusted R^2 values indicate that EPS_IFRS has more explanatory

power for share prices, which implies that H_2 cannot be rejected. When analyzing equity, the adjusted R^2 value is higher in IFRS than Bacen, which implies that H_3 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.

Besides that, analyzing adjusted R^2 and the coefficients of IFRS additional information model, it is possible to observe influence of Bacen's previous information in IFRS price. However, in comparison with adjusted R^2 of IFRS model, the results suggest an incremental information contained in IFRS information since the value of adjusted R^2 is 31.19%, against only 22.36% for the other model. This increase in information both cases: EPS and BVPS, where the value of adjusted R^2 is higher in IFRS than Bacen additional model. This implies that H_4 cannot be rejected and, consequently, the release of IFRS financial statements add information when it occurs in a different date of Bacen. 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.

5. CONCLUSION

This research compared the value relevance of accounting information provided according to IFRS and Bacen standards. The methodology adopted panel data analysis of 14 financial institutions and was used the Ohlson model (1995). The results were consistent with the expectations and they suggest that IFRS information is more value relevant to the investor when making investment decisions. Furthermore, the results indicate BVPS, both in IFRS and Bacen, has a higher explanatory power than EPS about that the changes in share prices. The results remain both EPS and BVPS, indicating that these two types of information, when measured based on IFRS, are used by investors in their process of making decisions. Thus, there may be a positive effect in the adoption of the IFRS 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.

Additionally, as the disclosure of information is not necessarily simultaneous in Bacen and IFRS, the results of this research also suggest influence of Bacen's previous information in IFRS price. In comparison with adjusted R_2 of IFRS model, the results show an incremental information contained in IFRS information: both EPS and BVPS, where the value of adjusted R_2 is higher in IFRS than Bacen additional model. This result shows the positive effect of adopting international accounting standards, which is an information aimed at the investor.

It should be noted that the sample of 14 financial institutions is quite small. Therefore, the results were based on a total of only 126 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. The study indicates the positive effects of the adoption of international standards. It is important to note that seems that the Central Bank has already realized positioned itself on this since, from the CMN Resolution No. 4818 was instituted the IFRS model as the only accounting standard for consolidated statements from 2021 onwards, while Bacen standard will be restricted to individual statements.

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.

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.

Armstrong, C., Guay, W. R., & Weber, J. P. (2010). The role of information and financial repor- ting in corporate governance and debt contracting. *Journal of Accounting and Economics, 50*(2), 179–234.

Barth, M. E. (1994). Fair value accounting: Evidence from investment securities and the market valuation of banks. *Accounting Review*, *69*(1), 1–25.

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.

Ball, R. (2006). International financial reporting standards (IFRS): pros and cons for investors. *Accounting and Business Research*, *36* (Supl 1), 5–27.

Ball, R., & Brown, P. (1968). An empirical evaluation of accounting income numbers. *Journal of Accounting Research*, *6*(2),159–178.

Barth, M. E., Beaver, W. H., & Landsman, W. R. (2001). The relevance of the value relevance literature for financial accounting standard setting: another view. *Journal of Accounting and Economics, 31*(1), 77–104.

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., 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.

Beaver, W. (1968). The information content of annual earnings announcements. *Journal of Accounting Research*, *6*, 67–92.

Beaver, W. (1998). *Financial reporting: an accounting revolution* (P. Hall, Ed.). NJ: Englewood Cliffs.

Bhattacharya, S., Boot, A. W. A., & Thakor, A. V. (1998). The economics of bank regulation. *Journal of Money, Credit and Banking*, *30*(4), 745–770.

Bignotto, F.G., & Rodrigues, E. A. S. (2005) *Fatores de risco e o spread bancário no Brasil*. Relatório de Economia Bancária e Crédito. Banco Central do Brasil. Disponível em: <http://www.bcb.gov.br/?SPREAD>. Acesso em: 29 abr. 2018.

Bozdongan. H. (1987). Model selection and Akaike's Information Criterion (AIC): The general theory and its analytical extensions. *Psychometrika. 52*(3), 345-370.

Burgstahler, D. C., & Dichev, I. D. (1997). Earnings, adaptation and equity value. *Accounting Review*, *72*(2), 187–215.

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.

Chiqueto, F., Silva, R. L. M., Colossal, G., & Carvalho, L. N. G. (2015). Relevance of fair value of brazilian banks securities in the financial crisis. *International Journal of Emerging Markets, 10*(4), 684–696.

Christensen, H. B. (2012). Why do firms rarely adopt IFRS voluntarily? Academics find significant benefits and the costs appear to be low. *Review of Accounting Studies, 17*(3), 518–525.

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.

Dontoh, A., Radhakrishnan, S. & Ronen, J. (2004). The declining value-relevance of accounting information and non-information-based trading: an empirical analysis. *Contemporary Accounting Research*, *21*(4), 795-812.

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.

Farias, J. B., Ponte, V. M. R., Oliveira, M. C., & De Luca, M. M. M. (2014). Impactos da adoção das IFRS nas demonstrações consolidadas dos bancos listados na bm&fbovespa. *Revista Universo Contábil, 10*(2), 63–83.

Fé Junior, A. L. D., Nakao, S. H., & Souza Ribeiro, M. (2015). Reações do mercado acionário brasileiro na primeira divulgação financeira em IFRS do setor bancário brasileiro: Um estudo de evento. *Contextus-Revista Contemporânea de Economia e Gestão, 13*(3), 81–110.

Fiechter, P., & Novotny-Farkas, Z. (2016). The impact of the institutional environment on the value relevance of fair values. *Review of Accounting Studies*, *22*(1), 1–38.

Grillo, F. F., Lachini, T. C., Baioco, V. G., Reina, D., & Sarlo Neto, A. (2016). Value relevance: Análise dos efeitos da avaliação a valor justo. *ConTexto, 16*(32), 94–109.

Harris, M. S., & Muller III, K. A. (1999). The market valuation of IAS versus US-GAAP accounting measures using Form 20-F reconciliations1. *Journal of Accounting and Economics, 26*(1-3), 285-312.

Hayn, C. (1995). The information content of losse. *Journal of Accounting and Economics, 20*, 125–153

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.

Iudicibus, S., & Lopes, A. B. (2004). T*eoria avançada da contabilidade*. São Paulo: Atlas.

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.

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.

Lopes, A. B. (2001). *A relevância da informação contábil para o mercado de capitais: o modelo de ohlson aplicado à bovespa* (Doutorado em Contabilidade). Departamento de Contabilidade e Atuária da Faculdade de Economia, Administração e Contabilidade da Universidade de São Paulo, São Paulo.

Lopes, A. B., & Martins, E. (2007). *Teoria da contabilidade: uma nova abordagem*. Atlas.

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. *Revsita de Administração – RAUSP*, *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.

Macêdo, F. F. R. R., Bezerra, F. A., & Klann, R. C. (2014). Value relevance da informação contábil com base na demonstração das origens e aplicações de recursos e na demonstração dos fluxos de caixa: Um estudo nas empresas listadas nos níveis de governança corporativa e no mercado tradicional da bm&fbovespa. *RIC-Revista de Informação Contábil, 7*(4), 55–73.

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.

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.

Maury, B. & Pajuste, A. (2005). Multiple Large Shareholders and Firm Value. *Journal of Banking & Finance*, 29, 1813-1834.

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.

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.). Editora Prentice Hall.

Van Tendeloo, B., & Vanstraelen, A. (2005). Earnings management under german gaap versus IFRS. *European Accounting Review, 14*(1), 155–180.

CONFLICTS OF INTEREST

The authors declare there is no conflict of interests.

AUTHOR'S CONTRIBUTION

Author 1: Conceptualization (Lead)
Data curation (Lead)
Formal analysis (Lead)
Funding acquisition (Lead)
Investigation (Lead)
Methodology (Lead)
Project administration (Lead)
Resources (Lead)
Software (Lead)
Supervision (Lead)
Validation (Lead)
Visualization (Lead)
Writing-original draft (Lead)
Writing-review & editing (Lead)
Author 2: Conceptualization (Supporting)
Investigation (Supporting)
Resources (Supporting)
Supervision (Supporting)
Visualization (Supporting)
Writing-review & editing (Supporting)
Author 3: Resources (Supporting)
Supervision (Supporting)
Validation (Supporting)
Visualization (Supporting)
Writing-review & editing (Supporting)