The Value Relevance of Comprehensive Income (Ci) in Brazilian Banks

Maurício Soares de Faria Junior
Master's Degree in Accounting Sciences – UFG/GO
PhD Student in Accounting Sciences – University of Brasília (UnB)
https://orcid.org/0000-0002-9925-7687
SQS 413, Block G, Apartment 305 – Asa Sul
ZIP Code: 70.296-070 –
Brasília, Federal District (DF), Brazil
E-mail: msoaresdefariajunior@gmail.com

José Alves Dantas
PhD in Accounting Sciences – University of Brasília (UnB)
Professor of Accounting Sciences at the University of Brasília – UnB
https://orcid.org/0000-0002-0577-7340
Dary Ribeiro University Campus, Block A-2, 1st Floor – Asa Norte
ZIP Code: 70.910-900
Brasília, Federal District (DF), Brazil
E-mail: josealvesdantas@unb.br

Abstract
This study makes an assessment of the *value relevance* of comprehensive income (CI), other comprehensive income (OCI), and its components in the Brazilian banks listed in B3, and makes a comparison of this relevance with the net profit and market value for abnormal returns on stocks. Data were used for this purpose from 21 banks in the open capital market during the period 2002-2024. The results suggest that although the comprehensive income had relevance both for the market value and the abnormal stock returns, the net income remained the most significant metric result for the Brazilian capital market. The accumulated value of the OCI did not show relevance despite the fact that the specific components related to the X-Value Adjustments of the classified financial instruments measured by VJORA has proved to be a key means of explaining the behavior of market value and stock returns. The adjustments of external investments, compensated by the corresponding *hedge* funds, showed its residual importance for the market value. The study fills a gap in the literature on the question of *value relevance* with regard to specialist studies in the banking markets and seeks to provide some *insight* into the evolution of capital markets. It should also provide practical assistance for business managers, regulators, investors and analysts by demonstrating how the markets collate and process accounting information, as well as by underlining the limitations of comprehensive income as a broad measure of outcome.
Keywords: Net Profit; Comprehensive Income; Other Comprehensive Income; *Value Relevance*; Banks.

The research findings offer relevant contributions to accounting and financial practice by showing that, although comprehensive income (CI) and some of its components are relevant, their informational usefulness for investors is limited and residual. For analysts, managers, and

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regulators, this reinforces the need for greater clarity in the disclosure of CI components, supporting more well-informed decisions regarding banks' risk and performance.

1 Introduction

The purpose of this study is to assess the *value relevance* of Comprehensive Income, as well as the particular features of Other Comprehensive Income (OCI), and of the Brazilian banks of the capital market listed in the B3 Stock Exchange, as a means of determining the degree of relevance that investors attribute to this accounting information. In particular, an attempt is made to ascertain whether the Net Income (NI) recorded by financial institutions in Brazil, is valued by the capital market investors for the pricing of bank stocks.

This objective is based on the assumption that the CI which covers items that are not included in the financial outcome of the period – generally converted into net profit (NP) - has been a matter of interest and debate in the accounting and financial literature, although in the case of the banking sector, it is still in its early stages. This directly affects the net equity of an entity, such as the actuarial gains and losses in the defined benefit plan, fluctuations in the fair value measurement of financial instruments and exchange rate conversions, among other factors (Black, 2016; Khan, Bradury & Courtenay, 2018). In schematic terms, the CI corresponds to the sum of the NI of the period, together with the accumulated fluctuations of the OCI. The aim is to mirror the financial gains and losses of the period in their most complete form (Hendriksen & Van Breda, 1999).

The CI is recorded to allow a more comprehensive and transparent view of the performance of an entity, as well as to provide a traditional statement of the financial outcome of the period. Particular importance can be attached to the CI in the area of financial institutions which have a highly complex structure of assets and liabilities that is susceptible to changes in market conditions. Given the nature of their activities, banks often hold numerous types of financial instruments in which the changes in value are not recognized in the financial outcome, such as securities measured at fair value in other comprehensive income, external investments, post-employment benefits, cash flow hedge accounting and external investment.

These changes, which are usually influenced by macroeconomic factors such as interest and exchange rates, clearly reveal factors that have an effect on the solvency of the bank and its capacity to generate value. Thus, it can be reasonably assumed that the CI provides shareholders and analysts with a more comprehensive and reliable metric for economic performance and the risk of bank exposure that can complement the traditional NI, since this might not be enough to demonstrate the temporary, albeit significant, effect on the financial health of the bank.

When account is taken of these CI features in the financial institutions and the principles of the Efficient Market Hypothesis (EMH), laid down by Fama (1970), which posit that share prices reflect all the essential available information and the assertion by Beaver (1968) that, in so far as investors react to new accounting information that affects cash-flow and risk expectations, it is natural to expect that comprehesive income will have an impact on the price of bank shares.

Added to this is the signalling theory which is grounded on the belief that entities emit signals by means of accounting information, such as comprehensive income, to mitigate the risk of ′adverse selection′ in conveying information to shareholders about its economic position and sustainability (Akerlof, 1978). This signalling is of crucial importance in uncertain environments because when taking in items that affect net equity without passing through the income statement, the CI offers a broader metric for generating value and thus allows the market to make a distinction between entities of high quality and those with a less consistent financial outcome.

On the other hand, the significance of the CI might vary, depending on the regulatory environment, which is the case of the financial system and the particular accounting practices of each country (Barton, Hansen & Pownall, 2010). In the case of Brazil where the financial institutions play a key role in the market, investigating the *value relevance* of the CI can provide an insight into how to improve a) financial decision-making, b) the allocation of capital and c) the efficiency of the market. The bank´s assets comprise a large part of the financial instruments – since a proportion of them have fair value adjustments recorded as OCI – and thus much greater importance is attached to the comprehensive income in this sector than to the other entities, since it can lead to the exposure of banks to macroeconomic risks (Bao, Billett, Smith & Unlu, 2020; Hodder, Hopkins & Wahlen, 2006)

Although there has been an examination of the *value relevance* of CI in the international literature (Black 2016; Djaballah & Fortin, 2021; Harasheh, Doni, Franceschelli & Amaduzzi, 2021; Khan *et al*, 2018; Kanagaretnam, Mathieu & Shehata, 2009), in the case of Brazil there is a significant gap in the literature on this question. This is because the particular economic and regulatory features in Brazil can influence the financial outcome and, in general terms, the financial institutions were excluded from the national research projects related to the subject or else were studied in conjuction with the entities of other branches (Angotti, Macêdo & Bispo, 2016; Batista, Oliveira & Macedo, 2017; Madeira & Costa Junior, 2010), which made it impossible to determine exactly how the banking sector behaved.

In conducting empirical tests to assess whether the CI, OCI and its particular components were useful for shareholders when assessing the value of Brazilian financial institutions, data were used from 21 Brazilian banks listed in the B3 Stock Exchange in the period 2002-2024. In addition, the *value relevance* of CI and NI were compared, in a way that could determine the degree of importance attached by the investors to these two measures, when pricing the shares of these entities.

The results of the empirical tests revealed that, generally speaking, the CI possessed *value relevance* for the open capital banks in Brazil by recording the fact that it has an ´association´ both with the market value and return on assets, with the caveat that the NI registers coefficients of association with market variables higher than those of the CI, which confirms that it is regarded by shareholders as superior in terms of importance. On its own, the added proportion of the OCI is not statistically significant enough to influence the market value or feedback of the entities. However, a significant degree of fair value adjustment was found for the classified financial instruments such as VJORA with the market value and abnormal return on assets – determined by means of the Financial Index of the B3 Stock Exchange (IFNC) – and the adjustments of external Investments, offset by the hedge funds in one of the market value models.

This range of evidence shows that the comprehensive income of thje Brazilian banks has information value for investors although this can be largely attributed to the implications of accounting profit and, to a limited extent, to some of the individual components of the other comprehensive income.

This study seeks to make a contribution to the literature on the *value relevance* of accounting information, in particular CI, by filling a gap in the literature on this matter in the banking sector. As well as this, by analyzing the effects of the particular components of the OCI, it broadens the subject by taking account of the separate features of each item and providing information that can affect the expectations of the investor in several different ways. As a result, it can increase the efficiency of the financial market by assisting shareholders, regulators, analysts and business managers in their decision-making, through information divulged by accounting statements which signal the nature of the economic and financial situation of the banks.

With regard to current Brazilian research, our results complement the findings of Angotti *et al* (2016) and Batista *et al* (2017) who also found the NI is superior to CI in non-financial companies. However, the aim of this research is to focus specifically on the banking sector. In academic terms, it is designed to fill a gap in the literature on the subject in the context of Brazil by suggesting that, although the CI and some of its components continue to be relevant, the market gives priority to NI as a determining metric. The outcomes have an impact on regulators and business managers to the extent that they are able to simplify and convey the effect of CI with greater clarity and the same applies to analysts and investors who can supplement their analyses with the key components of CI since this can include information about the soundness and risks of the bank.

In summary, it is hoped that this article can offer valuable *insights* for researchers, regulators and marketing professionals by drawing attention to the way accounting information is assimilated by the shareholders in Brazilian banks. However, the results point out some limitations regarding the effectiveness of CI and its components as a decision-making tool and notes possible ways of making improvements in accounting disclosure.

2 The Theoretical Framework

In this section there will be a review of the previous literature regarding the *value relevance* of the CI and an investigation of the gap that can be found in studies that are specifically related to the banking sector, as well as a statement of the principles that underpin the research hypothesis.

2.1 Value Relevance of the Comprehensive Income

The purpose of accounting information is to be a useful means of assisting current or potential capital suppliers in their institutional decision-making in compliance with the recommendations of the Conceptual Framework for Financial Reports of the International Accounting Standards Board (IASB, 2021). Thus the fact that accounting information is useful for the capital market has aroused the interest of academics who are conducting research into *value relevance* (Angotti *et al*, 2016; Batista *et al*, 2017; Black, 2016; Cahan, Courtenay, Gronnewoller & Upton, 2000; Cheng *et al*, 1993; Djaballah & Fortin, 2021; Dhaliwal *et al*, 1999; Harasheh *et al*, 2021; Khan *et al*, 2018; Madeira & Costa Junior, 2015).

In the case of CI, since it displays greater volatility than the NI of the period, there have been discussions about its use for the shareholder, either for fixing the value of shares or forecasting future stock market outcomes, among other factors (Black, 2016; Harasheh *et al;* 2021). When addressing this issue, the research studies of *value relevance* have investigated the correlation between the CI, OCI and their respective components, with the stock prices and returns, while making a general comparison of this correlation with the net income, to find out whether there is any difference between the importance of this information for the shareholders (Batista *et al*, 2017; Black, 2016; Madeira & Costa Junior, 2015).

In light of this, the studies of *value relevance* describe the reporting function of the accounting compilations of financial information about the entity and allow shareholders to make an estimate of the most useful values for decision-making in the stock market (Black, 2016; Holthausen & Watts, 2001).

Holthausen and Watts (2001) divide the studies on *value relevance* into three categories: a) ¨relative degree of association¨ which compares the link between the stock price and alternative types of measurement; b) ¨incremental association¨, which examines whether a particular item of accounting information is useful for explaining prices and returns in the long term; and c) ¨marginal information¨, which investigates whether or not the number assigned to

an account adds to informational power. This research falls within the second category – the research studies concerned with incremental association.

When the concept of this line of incremental information is particularly applied to the object of study, the research studies are not only concerned with assessing the importance of CI and its components but also with comparing these outcomes with the *value relevance* of the NI, as a means of determining which of the two measures of outcome is more important for the shareholders (Batista *et al*; Cheng, Cheung & Gopalakrishnan, 1993; Dhaliwal, Subramanyam & Trezevant, 1999).

A considerable number of these research studies are based on the North American market and have not found signs of the ´relevance´ of comprehensive income and its components or a degree of marginal utility that might suggest NI is superior to CI as a *value relevance* (Cheng *et al*, 1993; Dhaliwal *et al*, 1999). Nonetheless, other research studies have suggested that CI, OCI and some particular components are significantly linked to the price or return and hence might hold significant information for the investor (Biddle & Choi, 2006; Chambers, Linsmeier, Shakespeare & Sougiannis, 2007; Lin, Martinez, Wang & Yang ,2018).

As well as these research studies into the US market, other studies have examined the *value relevance* of the CI in particular markets such as those of New Zealand (Cahan, Courtenay, Gronnewoller & Upton, 2000; Khan *et al*, 2018), Canada (Djaballah & Fortin, 2021; Kanagaretnam *et al*, 2009) and countries in Europe (Goncharov & Hodgson, 2011; Harasheh *et al*, 2021). Cahan *et al* (2000) and Khan *et al* (2018) have assessed the *value relevance* of the CI and its components in New Zealnd entities, and made a comparison with net income, while noting that the CI has a closer association with stock prices and returns than NI.

With regard to Canada, Kanagaretnam *et al*, (2009), pointed out that some individual components of the OCI are significantly linked to stock prices and returns. Yet Djaballah & Fortin (2021) concluded that with regard to Canada, there is no evidence that the CI is more relevant than the NI and that some components of the OCI have incremental value relevance.

In the European markets, Goncharov and Hodgson (2011), concluded that the NI has greater relevance than the CI and the OCI is linked to the stock prices and returns in a positive way. However, the findings of Harasheh *et al* (2021) suggest that there was no significant association between the OCI and the share prices. Evidence for this was provided by the negative and statistically weak relationship and the fact that there was a mixed association (positive or negative) depending on the model, in terms of the returns; this suggests that the relevance of this information to the market is limited and depends on factors which are specifically related to companies.

Research studies were carried out in Brazil related to the *value relevance* of the CI and the components of the OCI, especially in the initial stage when the *International Financial Reporting Standards* (IFRS) were first adopted in 2010 (Angotti *et al*, 2016; Batista *et al*, 2017; Madeira & Costa Junior, 2015). These studies were conducted on the basis of the data from the period 2010 - 2014 and reached the conclusion that in Brazil, the CI does not have any *value relevance*, when viewed in an aggregated form. However, they noted that some of the components of the OCI, such as the cash flow *hedge* reserve, might be a significant means of explaining the market value (Angotti *et al*, 2016; Batista *et al*, 2017; Madeira & Costa Junior, 2015).

2.2 The Value Relevance of Comprehensive Income in Banks

In the case of the financial sector, it can be seen that the entities have special features than can affect the relevance of the accounting information disclosed to the market. Thus the *value relevance* of the CI is important for the financial institutions in light of the specific

requirements of this economic sector, particularly owing to its regulations (Djaballah & Fortin, 2021).

In the international sphere, the evidence suggests that financial institutions differ from other economic entities with regard to the way the CI is correlated with the stock market prices and returns (Black, 2016; Djaballah & Fortin, 2021). Black (2016) points out that after the set of measures of Basel III were implemented, items from the OCI were incorporated in the capital of Tier 1 by the financial institutions, which makes the study of this information even more important in the banking sphere.

Djaballah and Fortin (2021) assessed the *value relevance* of the CI in the context of the Canadian market, and found that the financial institutions differ from the companies of other sectors in terms of the relations of some components of OCI had stock market prices and returns when no account was taken of the subprime financial crisis that broke out in 2008.

In the study carried out by Harasheh *et al* (2021), the financial entities were not excluded from the sample, although a control variable in operations management was incorporated to avoid any potential for bias. The authors only conducted additional tests for entities in the financial sector and did not discover any evidence that the performance of the sector was different from the others.

No studies were found in Brazil that specifically addressed the issue of the *value relevance* of CI in financial institutions. Generally speaking, the national studies on the subject left out the financial institutions from their samples on the grounds that they were subject to special regulations and had different trust settlements from the other entities; alternatively, they did incorporate these entities in the sample but assessed the results together, without including controls to check the diferences between the sectors. (Angotti *et al*, 2016; Batista *et al*, 2017; Madeira & Costa Júnior, 2015).

The following hypotheses were formulated in light of this and the fact that the activities of financial institutions must meet specific accounting criteria and be subject to the regulation and supervision of the market, which can also influence accounting practices. These were tested empirically with the aim of assessing the *value relevance* of comprehensive income and its relation with accounting profit:

***H1*:** The comprehensive income reported by Brazilian banks has *value relevance* for the capital market.

***H2*:** The comprehensive income reported by the Brazilian banks has *value relevance* lower than net income for the capital markets.

Methodological Procedures

This section sets out the methodological design that is adopted for carrying out the empirical tests related to the research hypotheses, including the formulation of the models, the specification of the variables and the definition of the data used in the estimates.

3.1 Models

The empirical tests that were carried out were based on the derivations of the Ohlson model (1995), by means of relativization applied to numbers (through a certain number of shareholdings) and relied on the methodology employed in previous research (Harasheh *et al*, 2021; Kanagaretnam *et al*, 2009; Khan *et al*, 2018):

$$VMa_{it} = \beta_0 + \beta_1 PLa_{i,t-1} + \beta_2 LLa_{i,t-1} + \varepsilon_{i,t} \quad (1)$$

$$VMa_{it} = \beta_0 + \beta_1 PLa_{i,t-1} + \beta_2 RAa_{i,t-1} + \varepsilon_{i,t} \quad (2)$$

$$VMa_{it} = \beta_0 + \beta 1 PLa_{i,t-1} + \beta 2 LLAa_{i,t-1} + \varepsilon_{i,t} \quad (3)$$

$$VMa_{it} = \beta_0 + \beta 1 PLa_{i,t-1} + \beta 2 RAAa_{i,t-1} + \varepsilon_{i,t} \quad (4)$$

Whereby:
VMa$_{it}$: market value by a shareholding of bank i, at time t;
PLa$_{i,t-1}$: net assets by a shareholding of bank i, at time t-1;
LLa$_{i,t-1}$: net income by a shareholding of bank i, at time t-1;
RAa$_{i,t-1}$: comprehensive income by a shareholding of bank i, at time t-1;
LLAa$_{i,t-1}$: abnormal earnings valuation – corresponding to the value of accounting profit which exceeds the cost of the net assets stemming from the risk-free rate [Selic – the basic interest rate defined by the Central Bank in Brazil] – through the shareholding of bank i, at time t-1;
RAAa$_{i,t-1}$: abnormal comprehensive income – corresponding to the sum total of abnoraml earnings valuation together with the other comprehensive income – by an action of bank i, at moment t-1; and,
ε_{it} : error term in regression model.

As can be seen, two profitability measures in accounting and comprehensive income can be tested alternately – nominal and abnormal – as a means of examining the different views about the way shareholders assign value to the outcome metrics. Another factor that is worth considering is the fact that the financial statements will be disclosed to the database later; this is based on the assumption that only the accounting information can influence the price and return in the period that follows; this accounts for the use of lagged explanatory variables with regard to the inclusion of dependent variables (Harasheh *et al*; 2021; Kanagaretnam *et al*, 2009).

While being based on the work of Kanagaretnam *et al* (2009) and Khan *et al.* (2018), the first research hypothesis (***H$_1$***) is corroborated by the relevance of the ***RAa*** and ***RAAa*** variables in models 2 and 4. This suggests that there is a link between the market value and the comprehensive income and hence it can be stated that the investors take account of the information in the price assessment. Since hypothesis ***H$_2$*** is corroborated by a comparison between the coefficients and the statistical significance of the measures for calculating accounting profit (***NIa*** and ***NIAa***) and the comprehensive income (***CIa*** and ***CIIa***), respectively, it was noted that the coefficients related to the NI are greater than those of the CI.

Estimates have been made of models 5 and 6 for a better understanding of the effects of CI on the market value which involves breaking down the CI into the areas of accounting profit (nominal and abnormal) and the other comprehensive income (OCI).

$$VMa_{i,t} = \beta_0 + \beta_1 PLa_{i,t-1} + \beta_2 LLa_{i,t-1} + \beta_3 ORAa_{i,t-1} + \varepsilon_{i,t-1} \quad (5)$$

$$VMa_{i,t} = \beta 0 + \beta_1 PLa_{i,t-1} + \beta_2 LLAa_{i,t-1} + \beta_3 ORAa_{i,t-1} + \varepsilon_{i,t-1} \quad (6)$$

Whereby:
ORAa$_{i,t-1}$: corresponds to other comprehensive income by bank shareholding *i*, in the period *t-1*.

The model based on the abnormal return on stocks is also employed a) to assess the strength of the financial outcome and b) comply with the previous literature (Harasheh *et al*, 2021; Kanagaretnam *et al*, 2009; Khan *et al*, 2018), with the aim of providing more extensive results for the hypotheses being tested. This procedure of combining different types of models for the price and stock returns are designed to avoid the kind of functional problems that can be found in both models (Khan *et al*, 2018).

$$RetAa_{i,t} = \beta_0 + \beta_1 LLAa_{i,t-1} + \beta_2 Tam_{i,t} + \beta_2 \Delta Selic_{i,t} + \beta_3 \Delta PIB_{i,t} + \varepsilon_{i,t} \quad (7)$$

$$RetAa_{i,t} = \beta_0 + \beta_1 RAAa_{i,t-1} + \beta_2 Tam_{i,t} + \beta_2 \Delta Selic_{i,t} + \beta_3 \Delta PIB_{i,t} + \varepsilon_{i,t} \quad (8)$$

Whereby:

$\boldsymbol{RetAa_{it}}$: is the abnormal return by bank *i* in quarter *t*, measured by the difference between the stock return (***Reta***) and the market shares – either represented by Ibovespa [Brazil Stock Market] (***RetA.IBOV***) or by the Financial Index of B3 (IFNC) (***RetA.IFNC***).

$\boldsymbol{Tam_{it}}$: represents the size of bank *i* in quarter *t*, measured by the natural logarithm of total assets.

$\Delta\boldsymbol{Selic_t}$: is the range of basic interest rates in the economy (Selic), in quarter *t*.

$\boldsymbol{\Delta PIB_t}$: is the range of the country´s current market value in the Gross Domestic Product in quarter *t*.

As in the case of the market value models, Model 9 is estimated for the return of stock, together with the aggregate range of the other comprehensive income (OCI).

$$RetAa_{i,t} = \beta 0 + \beta_1 PLa_{i,t-1} + \beta_2 LLAa_{i,t-1} + \beta_3 ORAa_{i,t-1} + \beta_4 Tam_{i,t} + \beta_5 \Delta Selic_{i,t} + \beta_6 \Delta PIB_{i,t} + \varepsilon_{i,t-1} \quad (9)$$

In addition, the derivations of the Models 5, 6 and 7 are re-estimated so that the *value relevance* of the particular components of the OCI can be examined, both with regard to market value (price) and the return of stock. This involves replacing the representative variable of the OCI with its particular components – the fair value adjustment of the financial instruments classified as VJORA [just value by means of other comprehensive income] through the shareholding of ***VJORAa***, the actuarial gains and losses of post-employment benefits defined by the shareholding of ***BDa***, the effects of a cash flow *hedge* by the shareholding of ***HFCa***, the adjustments of external investments, offset by the effects of foreign *hedge* investments through the sharehoding of ***HINVa*** – carried out in alternate ways.

The adjustments of foreign investments and the *hedge* adjustment needed for these investments were grouped together in a single variable because it was thought these items are complementary in accounting terms and the activities devoted to protection are designed to neutralize the effects of exchange rate fluctuations. The sum of these two items represents, as accurately as possible, the net effect of currency exposure in the net assets of the entity and reflect the real magnitude of signalling for shareholders.

On the basis of the findings of previous studies (Djaballah & Fortin,2021, Kanagaretnam *et al*,2009; Khan *et al*, 2018; Lin *et al*, 2018) the expected financial outcome for the components of OCI reflects the way the market interprets accounting information about the price and return of stock. A positive sign can be expected for the fair value adjustments of financial instruments that are designated fair value in the other income (***VJORAa***). This is owing to the fact that these adjustments represent unrealized gains in financial assets which show asset appreciation in line with the prevailing tendencies in the literature (Kanagaretnam *et al*, 2009; Khan *et al*, 2018; Lin *et al*, 2018), although Djaballah and Fortin (2021) found a negaive relationship with the stock returns from Canadian financial institutions.

A positive signal is expected for the adjustments of the post-employment benefits of the defined benefit (***BDa***), because a rise (reduction) in the actuarial assets (liabilities) has the potential to increase the net equity of the entities. Lin *et al* (2018) found a positive relation between the variations in the post-employment benefits and return on stock, which shows that positive (negative) adjustments are a sign that the entity has better (worse) conditions. Since Djaballah and Fortin (2021) noted a negative link with the price and a positive link with the stock returns, these signs have been reversed and the coefficients have become statistically non-significant in the case of the financial entities, which shows a difference in the behavior of these adjustments in this sector.

With regard to the adjustments of the cash flow *hedge* (***HFCa***), the expected signal remains undefined because both the gains and the losses can be interpreted by the market as positive in view of the fact that even losses can provide key information about risk management

(Kanagaretnam *et al* 2009). In previous research studies, the coefficients of a variable have usually proved to be non-significant (Djaballah & Fortin, 2021: Kanagaretnam *et al*, 2009; Khan *et al*, 2018). In the studies of Lin *et al* (2018), the variable had significant coefficients but they proved to be negative in the stock returns in the work of Djaballah and Fontin (2021) if the effect on the financial entities was not taken into account.

Studies in the previous literature (Djaballah & Fortin, 2021; Kanagaretnam *et al*, 2009; Khan *et al*, 2018) found that, owing to the signalling, even the losses with cash flow *hedges* (***HFCa***) can be positively linked to prices and returns of stock or in other words, the protective measures might show that the banks are proactively handling their risks, even though they result in losses.

Additional tests were conducted to examine this question which involved altering Equations 5, 6 and 9 to control the gain and loss positions of this variable (Kanagaretnam *et al*, 2009; Khan *et al*, 2018). As well as replacing the representative variable of the OCI with its particular components, other variables were added: ***GHFC***, which is a *dummy* variable with the value of 1 if the position of the cash flow *hedge* of bank i, at the moment t-1 led to a gain and 0 if it resulted in a loss; ***GHFC*HFCa***, which represents the positive adjustments of the cash flow *hedge*. According to Kanagaretnam *et al* (2009), if both the gains and losses in the positions were interpreted as positive signals, the coefficient of the variable ***HFCa*** must be negative and the sum of the coefficients of this variable which had an interaction, must be positive.

Finally, the expected signal is ambiguous in the case of adjustments to foreign investments when offset by *hedge* results (***HINVa***), owing to the fact that the effects of currency conversion are highly volatile and the gains and losses depend on an effective *hedge* framework which can have a positive impact on the assessment of the assets; this means the signal for this variable is indefinite (Kanagaretnam *et al*, 2009). The adjustments required for the conversion of foreign currency showed a negative signal when applied to the price of shares, as in the studies of Djaballah and Fortin (2021) and Khan *et al* (2018) and positive for the stock returns in the work of Lin *et al* (2018). In this last study, in contrast with the findings of the literature, the adjustments of foreign investments and the related *hedge* were examined together since it was thought that these components complemented each other.

3.2 Data

The research population of interest consists of 22 open capital banks, one of which was excluded because the market value of its data of interest was unavailable; four others were also left out as they lacked data on stock returns and thus the sample was left with 21 banks for the market value models and 18 for the stock return models.

The data of interest covered information from the individual and quarterly financial statements in the period 2002-2024. The reason why the year 2002 was defined as the initial date of interest for the research data, can be explained by the fact that accounting information and other comprehensive income was included by the Brazilian financial institutions from this period. This change came into force through Circular nº 3068, of 2021, issued by the Banco Central do Brasil (BCB).

The data were obtained for the research from the banking institutions through the Economática database and was supplemented with data from the IF.Data report and the balance sheets for institutions of interest available in the BCB site.

2 Analysis and Discussion of Results

As a prelude to model estimation, certain procedures were followed to ascertain the robustness and accuracy of the outcome. The data of the models were submitted to winsorization in 1% of the database, following the work of Hastings, Mosteller, Turkey and Winsor (1947), as a means of reducing the presence of *outliers*. The *variance inflation factor* (VIF) which tests a statistical measure used to detect collinearity in the series, showed that there was no multicollinearity in the explanatory variables.

Hausman and Breush-Pagan tests were conducted to determine what was the most suitable panel data method and the results suggested that the fixed effect model was the most appropriate for the regression models. The regression method with robust standard errors was used to mitigate the risk of heteroscedasticity and autocorrelation of the residuals.

4.1 Descriptive Statistics

This section sets out the descriptive statistics of the variables used in the study which encompass the accounting data, the market of the banks analyzed and the macroeconomic variables. The aim is to characterize the sample by highlighting central tendencies, dispersion, data distribution and other significant patterns that can provide an initial view of the variables for a better understanding of the stages that follow.

In Table 1, there is a summary of the descriptive statistics for the market value models used for the stock returns of the banks, with the database winsorized at 1%.

Table 1

Descriptive Statistics

Panel A – Accounting Variables of the banks

	Nº Obs.	Mean	Median	Minimum	Maximum	Standard Deviation
PLa	1.616	14,688	11,289	0,001	99,445	16,835
LLa	1.616	0,552	0,269	-0,985	5,929	0,982
LLAa	1,616	0,215	0,038	-1,751	3,684	0,711
RAa	1.616	0,550	0,261	-1,143	6,199	1,024
RAAa	1.616	0,215	0,031	-1,828	4,137	0,769
ORAa	1.616	0,010	0,000	-1,285	1,346	0,453
VJORAa	1.616	0,002	0,000	-1,294	1,284	0,443
BDa	735	-0,008	0,000	-6,125	6,288	1,228
HFCa	1.275	0,005	0,000	-0,777	0,794	0,215
HINVa	678	0,000	0,000	-0,575	0,584	0,114

Panel B – Market Variables of the banks

	Nº Obs	Mean	Median	Minimum	Maximum	Standard Deviation.
VMa	1.417	16,252	11,778	0,001	89,00	17,243
Reta	1.385	0,014	0,000	-0,645	0,687	0,203
RetA.IBOVa	1.385	-0,006	-0,014	-0,492	0,646	0,176
RetA.IFNCa	1.276	-0,016	-0,019	-0,509	0,674	0,178

Panel C – Macroeconomic and market variables

	Nº Obs.	Mean	Median	Minimum	Maximum	Standard Deviation
IBOV	1,385	0,021	0,029	-0,459	0,267	0,130
IFNC	1.276	0,028	0,044	-0,487	0,283	0,140
ΔSelic	1.385	-0,054	0,000	-3,510	3,000	1,155

ΔPIB	1.385	1,024	1,030	0,907	1,100	0,038
TAM	1,385	16,901	16,712	10,894	21,410	2,365

Whereby: ***VMa*** is the market value for the stock; ***Reta*** is the stock returns; ***RetA.IBOVa*** is the abnormal return of stock measured with reference to Ibovespa; ***RetA.IFNCa*** is the abnormal return of stock, measured in relation to the IFNC; ***PLa*** corresponds to the net equity per shareholder; ***LLa*** is the net profit per shareholder; ***LLAa*** represents the abnormal net profit per shareholder; ***RAa*** is the comprehensive income per shareholder; ***RAAa*** is the abnormal comprehensive income per shareholder; ***ORAa*** is the other comprehensive income per shareholder; ***VJORAa*** corresponds to the fair value adjustment of the financial instruments classified as VJORA; ***BDa*** are the actuarial gains and losses of the post-employment benefits of the benefit defined per shareholder; ***HFCa*** are the effects of cash flow *hedge* per shareholder; ***HINVa*** are the adjustments to foreign investment offset by the effects of overseas investment *hedging* strategies; ***ΔSelic*** corresponds to the range of basic interest rates in the economy (Selic); ***ΔPIB*** is the range of current GDP values; and ***TAM*** is the size of the banks.

The results of the descriptive statistics in the database provide evidence of a significant range in the accounting variables of the banks, even with winsorization, especially in the ***PLa*** variable, which shows equity dispersion per shareholder of the banks in the sample. The net equity and the comprehensive income show averages of approximately 0.552 and 0.550, which suggests that the OCI has not substantially altered the CI with regard to accounting profit, but has a considerable standard deviation. This shows that even though most banks achieved positive results, there are significant variations between them.

The measures of central tendency, mean and median, have significant differences in all the accounting variables analyzed, which indicates the presence of asymmetry in the distribution of the data and suggests that the averages are influenced by the extreme values. The comprehensive income (***RAa***) had a greater standard deviation than the net income (***NIa***), which confirms the expectation of greater volatility for the OCI (Black, 2016). The abnormal CI (***CIAa***) showed similar results with regard to abnormal net income (***NIAa***), and achieved 0.769 and 0.711.

In Panel B, it can be noted that both the market value per share (***VMa***) and the measures of stock return (***Reta***, ***RetA.IBOVa*** and ***RetA.IFNCa***) recorded a high degree of dispersion, and extreme points (minimum and maximum) , as well as differences between the mean and median, which is evidence of considerable volatility on the part of the market variables, which has an influence on the extreme values.

The abnormal stock returns reflected in the Ibovespa and IFNC (***RetA.IBOVa*** and ***RetA.IFNCa)*** had negative means which suggests that, on average, the performance of the Brazilian banks was below that of the market benchmark and their peers in the financial sector. As well as this , the standard deviations of these measures are slightly below those of the return of stock (***Reta***), which suggests that the index correction reduces some of the volatility that is inherent in the market.

4.2 Models used for Estimating Market Share

The first stage of the conclusive empirical tests for research hypotheses H_1 and H_2 involved calculating the determinants of the market share of Brazilian banks, in accordance with Models 1 to 4, so as to assess and compare the *value relevance* of the accounting profit measures and the comprehensive income in nominal and abnormal terms (as well as excluding the cost of equity). The results are displayed in Table 2.

Table 2

Calculation of the determinants of the market share (***VMa***) of the Brazilian banks from 2002/1 to 2024/4

Models	Mod (1)	Mod (2)	Mod (3)	Mod (4)	Mod (5)	Mod (6)
Const.	**5,595***** (0,000)	**5,551***** (0,000)	**5,629***** (0,000)	**5,590***** (0,000)	**5,588***** (0,000)	**5,622***** (0,000)
PLa(-1)	**0,540***** (0,000)	**0,583***** (0,000)	**0,636***** (0,000)	**0,656***** (0,000)	**0,538***** (0,000)	**0,635***** (0,000)
LLa(-1)	**4,279***** (0,000)				**4,321***** (0,000)	
RAa(-1)		**3,295***** (0,000)				
LLAa(-1)			**4,226***** (0,000)			**4,260***** (0,000)
RAAa(-1)				**3,205***** (0,000)		
ORAa(-1)					**0,811*** (0,086)	0,749 (0,105)
Nº Banks	21	21	21	21	21	21
Nº Observations	1.417	1.417	1.417	1.417	1.417	1.417
R^2	0,632	0,622	0,628	0,618	0,634	0,628
F Statistic	61,580	60,470	60,880	57,600	44,050	41,290
p-value (F)	(0,000)	(0,000)	(0,000)	(0,000)	(0,000)	(0,000)

Whereby: ***VMa*** is the market share value; ***PLa*** corresponds to the net assets per shareholder; NI***a*** is the net income per shareholder; CI***a*** is the comprehensive income per shareholder; N***IAa*** represents the abnormal net income per shareholding; CI***Aa*** is the abnormal comprehensive income per shareholding; and ***OCIa*** is the other comprehensive income per shareholder .

The P-values are between brackets. Level of significance : *90%; **95%; ***99%.

The results of Table 2 initially demonstrate that the net assets and accounting profit measures (nominal and abnormal) are positively combined with the market share value of the Brazilian banks. In the case of the ***PLa*** variable, the coefficients show that for each unit of variance in the net assets per share, the market value of this stock ranged between 0.54 and 0.66, while the accounting income or earnings per share (***NIa*** or ***NIAa***) increases the market value 4.2 to 4.3 times. These empirical findings are in line with those of Marques, Dalmacio and Rezende (2022), who, in their study of *value relevance* in Brazilian banks, in the period 2010-2018, stated that both the ***PLa*** and the ***NIa*** have significant coefficients, since ***NIa*** has a greater coefficient than the ***PLa,*** which is also the case in other research studies with non-financial companies (Angotti *et al*, 2016; Djaballah & Fortin, 2021; Harasheh *et al*, 2021; Khan *et al*, 2018).

With regard to the variable of interest in this study, the tests demonstrated that the comprehensive income - both nominal (***CIa***) and abnormal (***CIAa***) - had *value relevance* and could thus explain the market value per shareholding of the Brazilian banks. This corroborates the hypothesis of research study H_1, and is in line with the findings of Khan *et al* (2018) and Djaballah and Fortin (2021), which take note of the relevance of the comprehensive income in the markets of New Zealand and Canada respectively. The coefficients reveal that the variation in a ***CI*** unit increases the value of the shares 3.2 times. This evidence shows that, to a certain extent, the market recognizes other information apart from accounting profit.

A comparison of the coefficients related to ***CI*** (around 3.2) with those found for the ***NI*** variables (around 4.2), in turn, reveals that the market lays greater weight on accounting profit than the comprehensive income of Brazilian banks, which can be explained by its greater predictability - to the detriment of accounting adjustments of a more transitory and volatile kind. The greater explanatory power of the ***NI*** with regard to the ***CI*** has also been found by the coefficient of determination (R^2) of Models 1 and 3 (around 0.630) to be superior to Models 2 and 4 (around 0.620). These findings corroborate the expectations of hypothesis ***H₂*** and are in line with what was discovered by Djaballah and Fortin (2021) in the Canadian market, where the ***NI*** had a coefficient greater than the ***CI***. However, the results diverge from the findings of Khan *et al* (2018) in the New Zealand market where the CI had a coefficient greater than that of the ***NI***.

These findings are strengthened by the effects of the estimation of Models 5 and 6, which involve splitting ***CI*** into ***NI*** and ***OCI***. The serious repercussions of the accounting profit measures (nominal or abnormal) are highlighted, while the other comprehensive income shows significance in one of the estimates but has a much lower impact on the net profit. Whereas one unit of the accounting profit raises the value of shares 4.1 or 4.3 times, a unit from the other comprehensive income only increases the value of the market 0.8 times, which is evidence of the greater importance of accounting profit for stock pricing. These results corroborate the findings of Harasheh *et al* (2021) in the European market in which it has been found there is only a tenuous link between the OCI and the price of shares.

4.3 Estimation of Models for Stock Returns

In the second stage, we estimate the models by employing the abnormal stock return as a dependent variable, which is a means of confirming the results and giving them more robustness; this can be measured either by the difference between the return of stock or the benchmark indices of Ibovespa and IFNC. Table 3 collates the results obtained through the implementation of regressions, on the basis of Models 7, 8 and 9.

Table 3

Estimation of the determinants of abnormal stock returns (***RetAa***) in Brazilian banks from 2002/1 to 2024/4

Models	Mod (7) ***RetA.IBOVa***	Mod (8) ***RetA.IBOVa***	Mod. (7) ***RetA.IFNCa***	Mod. (8) ***RetA.IFNCa***	Mod. (9) ***RetA.IBOVa***	Mod (9) ***RetA.IFNCa***
Const.	**0,231*** (0,088)	0,216 (0,102)	0,054 (0,674)	0,042 (0,742)	**0,228*** (0,088)	0,055 (0,667)
LLAa(-1)	**0,038***** (0,001)		**0,042***** (0,001)		**0,038***** (0,001)	**0,042***** (0,001)
RAAa(-1)		**0,028***** (0,003)		**0,030***** (0,004)		
ORAa(-1)					-0,004 (0,718)	0,000 (0,964)
ΔSelic	0,000 (0,971)	0,000 (0,887)	**-0,010*** (0,060)	**-0,010*** (0,081)	0,000 (0,983)	**-0,010*** (0,060)
ΔGNP	**-0,157*** (0,089)	**-0,174*** (0,065)	-0,097 (0,299)	-0,117 (0,218)	**-1,155*** (0,089)	0,097 (0,299)
TAM	-0,005 (0,239)	-0,003 (0,449)	0,054 (0,674)	0,003 (0,575)	-0,005 (0,246)	0,000 (0,868)
Nº Banks	18	18	18	18	18	18

Nº Observ.	1.382	1.382	1.274	1.274	1.382	1.274
R^2	0,015	0,012	0,025	0,018	0,016	0,025
F Statistic	5,550	4,920	5,630	4,080	4,620	5,500
p-valor (F)	(0,004)	(0,008)	(0,004)	(0,017)	(0,007)	(0,003)

Whereby: ***RetA.IBOVa*** is the abnoraml stock returns, calculated in terms of the Ibovespa; ***RetA.IFNCa*** is the abnormal stock returns, measured in terms of the IFNC; NI***Aa*** represents abnormal net profit per shareholding; CI***Aa*** is abnormal comprehensive income per shareholding; ***OCIa*** is the other comprehensive income per shareholding; ***ΔSelic*** corresponds to the variation of basic interest rates; ***ΔGNP*** is a variation of GNP to current values; and ***TAM*** is the size of banks.
P-values between brackets. Level of significance: *90%; **95%; ***99%.

The results of Table 3 provide evidence of the *value relevance* of the comprehensive income of the Brazilian banks which corroborates the hypothesis (**H_1),** and also (with regard to the stock returns) supports the veracity of the findings concerning the models that have a market share value. The abnormal comprehensive income (***CIAa***) had a positive coefficient and was statistically significant with a level of significance of 99%. The result is in line with the findings of Khan *et al* (2018) and Djaballah and Fortin (2021), who point out the significance of the ***CI*** in the markets of New Zealand and Canada respectively.

The second hypothesis (***H_2***), which presupposes the superiority of net profit to comprehensive income in terms of *value relevance*, is also validated by the return models, because the ***NIAa*** variable has larger coefficients than ***CIAa*** which thus enables it to explain the abnormal stock returns of the Brazilian banks. As well as this, the ***NIAa*** is also superior in terms of having the explanatory power of the models – the models with profit accounting measures have a greater R^2 than the models with comprehensive income measures. Just as in the market share valuation models, the results are aligned with those of Djaballah and Fortin (2021), in which the ***NI*** had a coefficient and significance greater than that of the ***CI***, and diverged from the results of Khan *et al* (2018), who identified the results conversely.

In the same way as in the models with a market value per share, the estimating effects of Models 9, which involves splitting the ***CI*** into ***NI*** and ***OCI***, underlines the importance of net profit, given the fact that the other comprehensive income did not have significance in either of the two estimates. These results are aligned with the findings of Harasheh *et al* (2021), in the European market, in which a mixed combination was noted (positive and negative) and the weakness of the ***OCI*** with the stock returns.

ΔSelic had negative coefficients from its control variables and these were important in the models in which the abnormal stock return (***RetAa)*** was calculated in relation to the IFNC, and it was noted that the return of the bank is adversely affected by the variations in the basic interest rates of the economy. Even though the behavior was compared with the ***ΔGNP*** variable, it had negative coefficients in the models where the abnormal stock returns were measured in terms of the Ibovespa. Taken together, these findings suggested that the banks are affected in a distinct way by the macroeconomic variables; this can be linked to the fact that the business of financial intermediaries might be much more seriously affected by fluctuations in the interest rates of the economy than the other financial sectors, which is reflected in the IFNC. On the other hand, the Ibovespa Stock Exchange is largely made up of entities from the real economy which are more seriously affected by variations in the GNP, which is reflected in the index and explains the inverse relationship with the abnormal stock returns of the banks.

In summary, the findings of the models with abnormal stock returns corroborate the results found in the market value models and suggest that the ***CI*** only has a secondary use for the shareholders in Brazilian banks, possibly on account of the complexity and volatility of their components. The results confirm the findings of previous studies which drew attention to the predominance of net income in the formation of market value and stock returns of banks and in the ***CI*** and ***OCI*** play an ancillary role (Djaballah & Fortin, 2021; Harasheh *et al,* 2021).

4.4 Particular Effects of the Components of Other Comprehensive Income (OCI)

Following this, Models 5 and 6 and were modified so that an estimate could of the particular effects of each of the components of the ***OCI***, both with regard to market value per share (***VMa***) and the abnormal stock returns calculated by Ibovespa (***RetA.IBOV*a**) and by the Financial Index of B3 (***RetA.IFNCa***). Table 4 provides a summary of the results obtained from the application of the models.

Table 4

Estimates of the particular effects of the components of the OCI of the Brazilian banks with regard to the market share value and the abnormal stock returns from 2002/1 to 2024/4.

Model Dependent Var.	**Mod. (5)** ***VMa***	**Mod (6)** ***VMa***	**Mod. (9)** ***RetA.IBOVa***	**Mod (9)** ***RetA.IFNCa***
Const.	**5,955*** (0,054)	**5,766*** (0,061)	-0,043 (0,918)	-0,194 (0,645)
PLa(-1)	**0,575***** (0,001)	**0,637***** (0,000)		
LLa(-1)	**2,916***** (0,005)			
LLAa(-1)		**3,263**** (0,025)	**0,039**** (0,013)	**0,041**** (0,016)
VJORAa(-1)	**1,596*** (0,055)	**1,614**** (0,047)	**0,025*** (0,095)	**0,027*** (0,075)
BDa(-1)	0,101 (0,189)	0,097 (0,426)	0,000 (0,992)	-0,000 (0,926)
HFCa(-1)	-1,771 (0,210)	-1,789 (0,221)	-0,008 (0,495)	-0,009 (0,392)
HINVa(-1)	-4,067 (0,113)	**-4,261*** (0,099)	-0,050 (0,147)	-0,038 (0,110)
ΔSELIC			-0,008 (0,107)	**-0,010**** (0,049)
ΔPIB			-0,092 (0,651)	0,052 (0,794)
TAM			-0,006 (0,783)	0,006 (0,778)
Nº Banks	20	20	18	18
Nº Observations	586	586	577	577
R^2	0,683	0,685	0,029	0,028
F Statistic	67,25	35,40	2,990	2,570
p-value (F)	(0,000)	(0,000)	(0,027)	(0,048)

Whereby: ***VMa*** is the market share value; ***RetA.IBOVa*** is the stock returns calculated with reference to the Ibovespa Stock Exchange; ***RetA.IFNCa*** is the abnormal return of stock, calculated with reference to the IFNC; ***PLa*** corresponds to the net assets per share; NI***a*** is the abnormal net income per shareholding; NI***Aa*** represents the abnormal net profit per shareholding***; VJORAa*** corresponds to the fair value adjustment of the financial instruments which are classified as VJORA per shareholding; ***BDa*** are the actuarial gains and losses of the post-employment benefits of the benefit sharing; ***HFCa*** are the effects of cash flow *hedge*; *H**INVa*** are the adjustments of foreign Investments, offset by the effects of *hedge* on investment overseas. ***ΔSelic*** is the variation in the economy of the basic rates of interest; ***ΔGNP*** corresponds to the range of current valuations in the GNP; and ***TAM*** is the size of the banks.
P-values between brackets. Level of significance: *90%; **95%; ***99%.

The results showed that the fair value adjustments of the financial instruments classified as VJORA (***VJORAa***) proved to be useful in explaining the market share value and abnormal stock returns, particularly with regard to the components of OCI. It also signalled that each unit of variance in the abnormal stock returns led to a rise in the market value of around 1.600 and abnormal stock return of around 0.027, in line with the prevailing figures in the literature, such as the results obtained by Kanagaretnam *et al* (2009), Khan *et al* (2018) and Lin *et al* (2018). However, these findings are the opposite of those in Djaballah and Fortin (2021) who encountered a negative sign in the combination of VJORA instruments with the stock returns of Canadian financial institutions.

Another OCI component that recorded *value relevance,* albeit in a market value model, was the one that applied to the adjustments to foreign investments*,* offset by the corresponding *hedge* effects (***HINVa***). Although this signalling was found in all the models that were tested, it is consistent with the findings of Khan *et al* 2018 and Dejaballah and Fortin (2021) who discovered a significant and negative relationship involving foreign currency conversion adjustments that only applied to the pricing models.

In summary, the combination of results suggests that, even though the ***NI*** is viewed as the principal metric of income, some of the features of the ***OCI*** can be regarded as important for decision-making.

Finally, Models 5,6 and 9 were estimated to control the effects of gains and losses in the cash flow hedge frameworks and included the variable that controls gains and losses through the *hedge* activities (***GHFC***). The results are summarized in Table 5.

Table 5

Estimate of the particular effects of the OCI components of the Brazilian banks with regard to market value and abnormal stock returns, on the ability to control the gains and losses through cash flow *hedge*.

Model *Dependent Var.*	**Mod. (5)** ***VMa***	**Mod (6)** ***VMa***	**Mod. (9)** ***RetA.IBOVa***	**Mod (9)** ***RetA.IFNCa***
Const.	**6,059*** (0,063)	**5,879*** (0,068)	-0,043 (0,917)	-0,177 (0,674)
PLa(-1)	**0,574***** (0,001)	**0,637***** (0,000)		
LLa(-1)	**2,913***** (0,005)			
LLAa(-1)		**3,260**** (0,025)	**0,039**** (0,013)	**0,041**** (0,017)
VJORAa(-1)	**1,578**** (0,050)	**1,597**** (0,043)	**0,026*** (0,091)	**0,028*** (0,073)
BDa(-1)	0,102 (0,390)	0,098 (0,424)	-0,000 (0,996)	-0,000 (0,955)
HFCa(-1)	-1,405 (0,820)	-1,361 (0,820)	0,022 (0,633)	-0,054 (0,269)
GHFC	-0,945 (0,683)	-0,972 (0,666)	0,003 (0,879)	-0,013 (0,546)
*GHFC*HFCa(-1)*	1,102 (0,903)	1,038 (0,906)	-0,062 (0,374)	-0,093 (0,281)
HINVa(-1)	**-4,144*** (0,097)	**-4,339*** (0,085)	-0,049 (0,155)	-0,037 (0,075)
ΔSELIC			-0,008	**-0,104***

			(0,118)	(0,057)
ΔGNP			-0,090 (0,657)	0,049 (0,805)
TAM			-0,006 (0,783)	-0,006 (0,771)
Nº Banks	20	20	18	18
Nº Observations	586	586	577	577
R^2	0,682	0,685	0,032	0,030
F Statistic	49,620	27,760	4,300	2,450
p-value (F)	(0,000)	(0,000)	(0,004)	(0,050)

Whereby : ***VMa*** is the market share value; ***RetA.IBOVa*** is abnormal stock returns, calculated with reference to the Ibovespa; ***RetA.IFNCa*** is the abnormal stock returns calculated with reference to the IFNC; ***PLa*** corresponds to the net equity value per shareholding; NI***a*** is the net income per shareholding; NI***Aa*** represents the abnormal net income per shareholding***; VJORAa*** corresponds to the fair value adjustments of the financial instruments classified as VJORA per shareholding; ***BDa*** are the actuarial gains and losses of the post-employment benefits of the benefits defined by shareholdings; ***HFCa*** are the effects of the cash flow ; ***GHFC*** is the *dummy* variable that assumed a value of 1 if the cash flow *hedge* position resulted in a gain and 0 if it resulted in a loss ; ***GHFC*HFC*** is the interaction that represents the positive adjustments of the cash flow *hedge*; ***HINVa*** are the adjustments to foreign investment, offset by the effects of *hedge* on overseas investment; ***ΔSelic*** is the variation in the economy of the basic rate of interest; ***ΔGNP*** corresponds to the variation of the current GNP values; and ***TAM*** is the size of the banks.

P-values are shown in brackets. Level of significance: *90%; **95%; ***99%.

On the basis of the results displayed in Table 5, it can be seen that the adjustments related to the cash flow *hedge* (***HFCa***) had a negative signal in the market value models and total sum, together with the interaction variable (***GHFC*HFC***), which is positive, although it did not show significance in all the models that were tested. These results diverge from those of Kanagaretnam *et al* (2009) and Khan *et al* (2018), who confirmed the view that the loss in *hedge* positions can be regarded by the market as a positive signal. On the other hand, the results are in line with those of Dejaballah and Fortin (2021) who did not find any significant difference between gains and losses with the cash flow *hedge* for Canadian entities.

In the case of Brazilian banks, there is no evidence of any signalling effect or in other words, the market might react positively to adjustments in the cash flow *hedge*, even in the case of losses.

Conclusion

This research study has analyzed the *value relevance* of comprehensive income (CI) in Brazilian banks and investigated its influence on share prices and stock returns while making a comparison with net income (NI). For this purpose, an assessment was made of a combination of NI, CI and the components of other comprehensive income (OCI) to determine the significance of this information, for shareholders, which was based on data from the banks listed in the B3 from 2002 to 2024.

The results of the empirical tests clearly demonstrate that CI is a key factor for the market value and abnormal stock returns although it is less important than NI, and thus confirms the two hypotheses of the research. With regard to the aggregate value, it was pointed out that the OCI is not relevant for the market value or stock returns of Brazilian banks. On the question of the particular components of the OCI, the fair value adjstment of the financial instruments classified as VJORA, recorded relevance for the market share value and abnormal stock returns, calculated by Ibovespa and the Financial Index of the B3 (IFNC), while the adjustments of foreign Investments, that were offset by the effects of *hedge,* showed the significance of residuals in the market value models. In summary, this research study underlines the fact that in the Brazilian banking environment, net income remains the principal source of information

for shareholders involved in decision-making, while the CI and some of its components play an ancillary role in the value communication of the banks.

The practical implications of this research are evident for regulators, managers, analysts and shareholders. In the case of the regulators, the results underline the need to enhance the disclosure of the OCI components, by making them more informative. This is because the market seems to disregard items that contain useful information about the soundness of the banks, even in the long term, as in the case of adjustments to post-employment benefits and cash flow management strategies, as well as variations in foreign currency exchange investments.

In the case of bank managers, the research stresses the importance of conveying, as clearly as possible, how the OCI items affect the financial health of the bank by overcoming possible negative attitudes, highlighting the effects of non-realized outcomes on risk-taking behavior in the market, and ensuring the effectiveness of instruments used for the mitigation of risks. This is because analysts and shareholders can use these findings to give priority to certain metrics in their analyses, such as NI, without completely ignoring the signals sent by specific adjustments to the OCI, such as post-employment benefits and the *hedge* operations that protect the bank´s cash flow.

This study has sought to make an advance in the literature on *value relevance* by widening the scope of the evidence so that it includes the Brazilian context; this is because previous studies (both national and international) have failed to pay due attention to the Brazilian banking sector, on account of its regulatory features and ownership structure.

With regard to the methodological limitations of the research, attention should be drawn to the size of the sample which is confined to open capital banks in Brazil and does not cover the greater part of Brazilian financial institutions in which the corporate structure is privately held. Another limitation which should be taken into account is the difference in the volume of shares that are traded in the banks of the sample, which can have an impact on their price and the stock returns.

Future research could examine the effects of supplementary disclosure (such as explanatory notes) as it is understood by the shareholders. A further point that could be investigated is what impact the comprehensive income makes on the auditors, in view of the fact that items can be found among the components of the CI which are at the discretion of the manager, such as fair value adjustments and calculations about post-employment benefits which can be influenced by the standard of auditing. Another recommendation for future research is to broaden the scope to include other countries and use other models for the empirical tests. An additional feature of this research that remains to be explored is the persistence of the OCI and its ability to forecast future outcomes.

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