

**CUE315 - EXPECTED OR INCURRED LOSSES, WHICH ONE IS BEST?
EVIDENCE FROM THE BRAZILIAN BANKING INDUSTRY****AUTORIA****ROBSON NASCIMENTO FRANÇA**FUNDAÇÃO INSTITUTO CAPIXABA DE PESQUISAS EM CONTABILIDADE, ECONOMIA
E FINANÇAS**FERNANDO CAIO GALDI**FUNDAÇÃO INSTITUTO CAPIXABA DE PESQUISAS EM CONTABILIDADE, ECONOMIA
E FINANÇAS**ANDRE AROLDI FREITAS DE MOURA**

FUCAPE PESQUISA ENSINO E PARTICIPAÇÕES LIMITADA

Resumo

Brazilian Banks have to report financial statements under two different accounting regimes. This simultaneous preparation required by the Central Bank of Brazil generates the opportunity to assess how different accounting standards are implemented by the same firm operating under the same environment. We benefit from this situation to analyze the recognition of loan loss provisions considering the requirements of IAS39, which is based on the model of incurred losses, and the requirements of the Brazilian Central Bank GAAP, called COSIF, that considers both, incurred and expected losses. We have two objectives. First, this paper seeks to identify which Loan Loss Provision (LLP) model presents a higher quality in terms of predictability, thus demonstrating greater capacity to incorporate the requirements contained in these standards and to evidence intentional acts of management. Second, we evaluate which model does a better job in mitigating earnings management. We find that the COSIF model presents higher quality in its task of predictability as a quality factor, largely due to the default of the loan portfolio as the main variable used by managers. However, it was observed that macroeconomic and renegotiation indicators were relevant in explaining LLP under IAS 39, demonstrating that managers use these objective evidences of losses according to what IAS 39 requires. We could not find results for earnings management, however we find evidence of discretionary action in private banks in both accounting standards and reduction of this action only in IFRS for banks whose shares are traded in the public market.

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ABSTRACT

Brazilian Banks have to report financial statements under two different accounting regimes. This simultaneous preparation required by the Central Bank of Brazil generates the opportunity to assess how different accounting standards are implemented by the same firm operating under the same environment. We benefit from this situation to analyze the recognition of loan loss provisions considering the requirements of IAS39, which is based on the model of incurred losses, and the requirements of the Brazilian Central Bank GAAP, called COSIF, that considers both, incurred and expected losses. We have two objectives. First, this paper seeks to identify which Loan Loss Provision (LLP) model presents a higher quality in terms of predictability, thus demonstrating greater capacity to incorporate the requirements contained in these standards and to evidence intentional acts of management. Second, we evaluate which model does a better job in mitigating earnings management. We find that the COSIF model presents higher quality in its task of predictability as a quality factor, largely due to the default of the loan portfolio as the main variable used by managers. However, it was observed that macroeconomic and renegotiation indicators were relevant in explaining LLP under IAS 39, demonstrating that managers use these objective evidences of losses according to what IAS 39 requires. We could not find results for earnings management, however we find evidence of discretionary action in private banks in both accounting standards and reduction of this action only in IFRS for banks whose shares are traded in the public market.

Keywords: Incurred losses; Expected losses; Loan loss provision; Earnings management; IAS 39.

1. INTRODUCTION

Lately, literature regarding the factors that contribute to determine how managers price their bank's expected losses has gained momentum (Alessi, Colli & Lopes, 2014; Harris, Khan & Nissin, 2018). Apart from the reasons that affect the pricing of loan loss provision, hereafter LLP, previous literature has investigated the role of LLP and earnings management (Greenawalt & Sinkey, 1988; Gebhardt & Novotny-Farkas, 2011; Jin, Kanagaretnam, & Lobo, 2016), the role of different models regarding whether they are based on incurred versus predicted losses (Balla e Mckenna, 2009), *value relevance* (Beaver & Engel, 1996), and others. We build on the evidence of Balla and Mckenna (2009), Alessi et al. (2014) and Harris et al. (2018) by investigating the role of different accounting standards on the quality of LLP and earnings management.

Exploiting the unique feature that the Brazilian financial system, hereafter COSIF, under the enforcement of the Brazilian Central Bank (BACEN), requires financial institutions to report simultaneously LLP under a mixed model (incurred and expected losses) (Araújo, 2014; Caneca, 2015), as well as according to IAS 39 (incurred losses), we have a perfect setting to investigate the role of LLP. That is, all macroeconomic factors, periods, firms and institutional environment are steady, the only difference is the adoption of a different standard, which allows us to examine perfectly the impact of this accounting choice in terms of quality and on earnings management. Additionally, as the COSIF is a mixed model which relies partly on expected losses, it can be a good proxy in the forthcoming discussions about the impact of IFRS 9, which is solely based on expected losses and thus it may be subject to higher management discretion.

We investigate two issues. First, we investigate which model has higher quality in terms of predictability, and second which model mitigates earnings management behaviour. Previous research in Brazil has only investigated the effects of LLP in economic cycles (Araújo, 2014;

Caneca, 2015) as well as evaluated whether macroeconomic variables and characteristics of the quality of the loan portfolio improved the measure of LLP (Dantas, Medeiros & Lustosa, 2013).

This is of particular interest of regulators as well as from the International Accounting Standards Board (IASB). This is of further interest to Brazilian regulators as firms recently had implemented IFRS 9 concerning financial instruments, and its capacity of anticipating future losses, which may reduce its impact in the economic cycle of a country, answering the market criticism after the financial crisis of 2008 (Ozili, 2017).

We investigate 43 banks required to publish LLP under the norms of the BACEN as well as IAS 39 between the span of 2010 and 2017. We control for several factors such as the quality of the loan portfolio, economic cycles, as well as qualitative measures. We evaluate which model is better in explaining the non-discretionary part of the LLP and also use the Vuong test (1989) to compare the two different accounting regimes. Next, we examine which factors affect the discretionary part of the LLP, as well as we compare which accounting model does a better job in mitigating managers' discretion.

The results indicate that the mixed model from COSIF present higher quality in terms of predictability. This, however, is mainly due to the default of loan portfolio as the main variable utilized by managers in pricing LLP. Although we find no evidence of earnings management via management of regulatory capital, there is evidence that managers of private banks undertake more earnings management practices than public banks. Additionally, we find evidence that being listed on the Brazilian stock exchange reduces the degree of earnings management.

We contribute to the existing literature in at least three ways. First, we examine the direct impact of two different accounting standards in a perfect setting, and thus can provide evidence on the impact of the factors that affect the pricing of LLP as well as the impact of the adoption of two different standards on earnings management behaviour more accurately than previous research (Alessi et al., 2014; Harris et al., 2018)¹. Second, we contribute to the discussion regarding which standard (incurred or expected losses) is best in terms of quality as well as in mitigating earnings management. Lastly, we provide evidence from an emerging country that should be of interest of the IASB.

The remainder of this paper is organised as follows. Section 2 reviews the relevant literature and develops this paper's hypotheses. Section 3 illustrates the data, and sampling procedures. Section 4 presents the research design. Section 5 reports our empirical results, and Section 6 concludes.

2 LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

We start our literature review by firstly discussing briefly the process of IFRS adoption in Brazil, then we present the differences between the IAS 39 and the COSIF model. Lastly, we discuss relevant literature regarding accounting quality and LLP and present our hypotheses.

2.1 The Differences Between COSIF and IAS 39

The IFRS adoption in Brazil was done in two-phases. The first phase carried out in 2008 was only a partial adoption, and it was only in 2010 that there was a full adoption. In contrast with non-financial firms, the norm 3.786/2009 from the Brazilian monetary council, hereafter CMN, establishes the mandatory adoption of IFRS in addition to those already existent (COSIF) for financial institutions that are public or those that need an audit committee. Therefore, financial institutions in Brazil are required to report under these two different accounting GAAPs. Although these are two different standards for LLP recognition, they share some

¹ Although the main objectives of the authors listed here is different than ours, they have also tried to point out to the factors that affect the provision of losses.

common features such as qualitative and quantitative measures related to delays, evaluation of debtors.

To report under IFRS Brazilian Banks use IAS 39, based on incurred losses (losses in the loan portfolio that may affect future cash flows). Apart from being based on incurred losses, the norm also requires the manager to analyze, in the date of financial reporting, national or local economic conditions, unemployment rates, changes in property prices as well as adverse conditions in industry that may affect credit default. On the other hand, the COSIF (CMN 2682/1999) is based in a mix of incurred and expected losses (often known, as a mixed or hybrid model). It requires financial institutions to classify credit operations into increasing degrees of risk, as well as to revise delays in payment annually. Similar to IAS 39, the Brazilian Central Bank also defined rules to be taken in account when calculating the LLP such as: economic and financial situation, industrial sector and liquidity of warrants from entities, as well as income and net equity from the public² (Dantas et al. 2013). Lastly, it is worth noting that this standard has been in force since 1999 for financial institutions.

2.2 Accounting Quality and LLP

There are at least three main avenues of research in the Banking industry: valuation and risk relevance of accounting information, discretion regarding earnings management and regulatory capital, and the evaluation of bank's economic decisions under different accounting regimes (Betty & Liao, 2014). We focus on the third avenue of research as we try to shed light on the implications of banks' choices to price their LLP under different accounting regimes on accounting quality.

Early studies on the topic by Wall and Kock (2000) suggest three main features surrounding the aim of LLP: i) economic vision regarding the expected losses in case of credit default, ii) concerns of accounting regulators regarding accurate financial performance of a company, and iii) in terms of regulatory capital, the use of LLP as a type of reserve to be constituted on growing economic cycles in order to absorb losses during recession periods. Benston and Wall (2005) argue that the most important feature of banks' assets is to illustrate its real economic value, bringing to the fore the relevance of LLP as a way of achieving that purpose. This also causes caution for different group of users such as investors, accountants and bankers as each one of them have a different view on how the LLP should be calculated (Benston and Wall, 2005). However, as the LLP can be accounted for according to different inputs, it can highly suffer from the discretion of managers. This discretion may be of high interest to accounting regulators and investors in the banking industry, in particular, for capital regulatory needs, as banks have a distinguished role in securing solvency and reliability of the economy (Betty & Liao, 2014).

The studies that have investigated whether managers utilize their discretion to manage the LLP are mainly related to three features: earnings management, management of regulatory capital, and procyclical behaviour.

First, previous studies show that banks' managers utilize their discretion to manage earnings (Greenawalt & Sinkey, 1988; Kanagaretnam et al., 2003; Gebhardt & Novotny-Farkas, 2011; Packer & Zhu, 2012; Jin, Kanagaretnam, & Lobo, 2016), and that the factors that determine the earnings management and the LLP depend on the difference among institutions, regulation, enforcement as well as financial structure (Fonseca & Gonzales, 2008).

Second, another stream of research shows that managers manage the regulatory capital (Ahmed et al., 1999; Betty & Liao, 2014).

Third, concerning procyclical behaviour, De Lis et al. (2001) show that the credit market in Spain is extremely forward-looking, therefore the authors argue that the LLP should be

² Under COSIF, if a debt has been renegotiated, and it is considered of lower risk, it can be downgraded accordingly to the new level of risk.

constituted using a methodology of expected losses. This would also reduce the effects of economic-cyclicality during times of financial crises. Other studies also find procyclical behaviour in the LLP of banks (Bikker & Metzmakers, 2005; Khoury, 2009); Bouvatier & Lepetit, 2008; Araújo, 2014; Caneca, 2015), indicating that this is related to the method of provision as well as the restriction on regulatory capital, and subject to earnings management even during the financial crisis (Packer & Zhu, 2012). Betty and Liao (2014) find that the LLP affects the economic activities in banks, finding evidence of procyclical behaviour during the financial crises. They also find that there was a dramatic reduction in the loans during the financial crisis, which raised concerns over the accounting practices of provisioning, and it may also affect future economic cycles.

2.3 Hypotheses Development

Firstly, we aim to investigate which model is better in explaining the LLP. As presented before, several issues (quality of the loan portfolio, procyclical behaviour, other qualitative terms according to each standard, etc) need to be taken into account when evaluating the LLP. On the one hand, one could expect that the COSIF model is better in explaining the LLP, because it is the basis model for payment of dividends, payment of tax and for normative purposes. So, managers would appropriately recognize the LLP as they are upon the scrutiny of the Brazilian Central Bank and investors. On the other hand, one could also expect that, as this is the model basis for tax, managers would utilize their discretion to pay fewer taxes, and therefore, this model would not outperform the IAS 39 as the latter is based solely on incurred losses and could be trackable by experienced analysts and investors. Thus, which model is better in terms of predicting the LLP is an empirical question, and our hypotheses is presented in its null form:

H1: There is no difference between the predictability power of the COSIF or IAS 39 in explaining the LLP.

Next, we aim to uncover which model does a better job in mitigating the managers' discretion, and therefore mitigates earnings management practices. This comes to the fore as the LLP is the most significant accrual in the banking industry (Ahmed et al., 1999), and it affects significantly banks' profits (Gebhardt & Novotny-Farkas, 2011), therefore it might be related to earnings management practices (Packer & Zhu, 2012; Jin, Kanagaretnam, & Lobo, 2016) as well as management of regulatory capital (Ahmed et al., 1999; Betty and Liao, 2014). Similar to our first hypothesis, we present our second hypothesis in its null form, as it is an empirical question:

H2: There is no difference between the COSIF and IAS 39 in terms of earnings management and management of regulatory capital.

3 DATA AND SAMPLING PROCEDURES

We hand-collect financial information from the financial statements of 43 banks according to the model of COSIF as well as IFRS for the period from 2010 to 2017. We include in the sample only those banks which have information available on both models, which resulted in 302 observations. From the 43 banks, 25 have data for all the period of this study, however, 18 did not present information for all the years. We can highlight some factors such as business combinations (HSBC), delisting at the Brazilian Stock Exchange (SOFISA), or the information was simply not available. A few banks such as bank of Amazônia, Patagônia, Estate of Pará and Modal did not present financial statements in IFRS. Our sample is presented in table 1.

TABLE 1: SAMPLE

Name	Observations	Period
ABC Brasil, Bank of Estate of Sergipe, Bank of Estate of Espírito Santo, Bank of estate of Rio Grande do Sul, Bank of Brazil, Bank Industrial of Brasil, BMG, BNDES, BNP Pariba, Bradesco, Bank of Brasília, Caixa Econômica Federal, Citibank, Daycoval, GMAC, Indusval, Itau Unibanco, JP Morgan, Banco Mercantil Brasil, Ouroinvest, Paraná Banco, Pine, Santander, Soci�t� G�n�rale Brazil e Votorantim	200	2010 - 2017
Bank Alfa of Investment, Bank Cooperative of Brasil, Bank Fator, Bank Mercedes-Benz of Brasil, Bank of America Merrill Lynch, Bank Pan, Safra	49	2011 - 2017
Bank of Development of Minas Gerais and BTG Pactual	14	2010 - 2016
Deutsche Bank, Bank Tokyo e Bank Volkswagen	18	2012 - 2017
HSBC	6	2010 - 2015
Bank Sofisa	5	2011 - 2015
Bank of Investment Credit Suisse	3	2015 - 2017
Bank Fibra	3	2011 - 2013
Bank Credit Agricole and Bank of Nordeste	4	2010 - 2011

4. RESEARCH DESIGN

To address H1, we follow Bushman and Williams (2012) to segregate the discretionary and non-discretionary provisions.³

$$\begin{aligned}
 LLP_{i,t} = & \beta_0 + \beta_1 NCO_{i,t} + \beta_2 \Delta NPL_{i,t} + \beta_3 RENE G_{i,t} + \beta_4 \Delta CART_{i,t} + \beta_5 CART_AT_{i,t} \\
 & + \beta_6 ALL_{i,t-1} + \beta_7 JUR_{i,t} + \beta_8 \Delta GDP_t + \beta_9 SELIC_t + \beta_{10} \Delta RISCBR_t \\
 & + \beta_{11} \Delta CAMBIO_t + \beta_{12} UNEMPLOY_t + \beta_{13} ICD_t + \beta_{14} \Delta IGMC_t \\
 & + \beta_{15} VENC_CP_{i,t} + \beta_{16} \Delta CARTHOMOG_{i,t} + \beta_{17} d_{RAT_ESPEC_{i,t}} + \varepsilon_{i,t}
 \end{aligned} \quad (1)$$

Where:

$LLP_{i,t}$: is the loan loss provision scaled by total loan portfolio at the initial period t for bank i , according to each accounting model (COSIF or IAS 39); $NCO_{i,t}$: is the volume of credit operations written-off, net of any credit recovery of bank i at time t , scaled by total loan portfolio at the beginning of t according to each accounting model (COSIF or IAS 39); $\Delta NPL_{i,t}$: is the change in non-performing loans of bank i in period t , scaled by total loan portfolio at the beginning of period t ; $RENE G_{i,t}$: is the volume of renegotiated credit operations of bank i on time t , scaled by total loans according to each accounting model (COSIF and IAS 39); $\Delta CART_{i,t}$: variation in the amount of credit operations scaled by the amount of loan portfolio of bank i at time t , according to each accounting model (COSIF and IAS 39); $CART_AT_{i,t}$: is the loan portfolio over total assets of bank i at time t according to each accounting model (COSIF and IAS 39); $ALL_{i,t-1}$: is the provision for loss over the total loan portfolio of bank i at time $t-1$ according to each accounting model (COSIF and IAS 39); $JUR_{i,t}$: interest rate over credit operation over total loan portfolio of bank i at time t according to each accounting model (COSIF and IAS 39); ΔGDP_t : Variation in yearly gross domestic product, at time t ; $SELIC_t$: Interest rate as issued by the Brazilian central Bank deflated by the inflation of the period, at time t ; $\Delta RISCBR_t$: variation in yearly debt securities index (EMBI+) at time t , gathered from Ipeadata;

$\Delta USDBRL_t$: interest rate variation deflated by inflation index at time t , sourced from the Brazilian Central Bank; $UNEMPLOY_t$: unemployment variation at time t , sourced from The Brazilian Institute of Geography and Statistics (IBGE); ICD_t : index of credit default of the national credit loan portfolio at time t , obtained from the Brazilian Central Bank; $\Delta IGMC_t$: variation in the rentability index of properties (IGMI-C), at time t , obtained from the Get lio Vargas Foundation (FGV); $VENC_CP_{i,t}$: Ratio of the loan portfolio maturing in the short-term (up to one year) from bank i , at time t ; $\Delta CARTHOMOG_{i,t}$: variation in the loan portfolio of bank i at time t regarding loans to citizens, financial institutions, public sector and real estate; divided by total loan portfolio at $t-1$; $d_{RAT_ESPEC_{i,t}}$: dummy variable to control for ratings of credit risk agencies S&P (Standard and Poors), (we use Moodys and Fitch, if S&P is missing). It is equal to 1 for ratings with a speculative degree and 0 to those ratings of mid and high level; $\varepsilon_{i,t}$: discretionary error of LLP of bank i , at time t .

We consider several variables according to previous research (Alessi et al., 2014; Bouvatier & Lepetit, 2008, Kanagaretnam et al., 2003; Kanagaretnam et al., 2010; Jin et al.,

³ We adopt firm-fixed effects as well as year-fixed effects in our estimations.

2016), as well as we include macroeconomic variables to control for the various events in the local and global economy.

We include variables that impact directly the LLP, such as the volume of written-off credit operations (NCO), and the change in non-performing loans (Δ NPL). This is because these variables are metrics for the quality of the loan portfolio, controlling for losses and for expectations of future credit defaults (Beaver & Engel, 1996; Kim & Kross, 1998; Zenderski, 2005; Liao & Beatty, 2009; Kanagaretman, 2010; Bushman & Williams, 2012; Packer & Zhu, 2012; Alessi et al., 2014). We expect the coefficients of NCO and Δ NPL to be positive as these are directly related to the amount of LLP.

Second, regarding the variation in the amount of the portfolio (Δ CART) is also directly related to the amount of LLP (Bouvatier & Lepetit, 2012), as the bigger the portfolio grows, the bigger the provisions are (Kanagaretnam et al., 2010; Dantas, 2013). We include the variable (RENEG), as a proxy for future default as it measures the volume of renegotiated loans. This will affect the risk classification of the loan as well as may increase the LLP.

Third, we include variables to denote for the mix of the portfolio regarding other assets, amount of losses and risks (CART_AT, ALL_{t-1}, JUR). We expect positive signals of coefficients of CART_AT, ALL_{t-1} and JUR as LLP has a direct relationship with these variables (Dantas, 2013).

We include a *dummy* variable (d_RAT ESPEC) to reflect the perception by the market regarding whether the financial institution is a speculative investment. This rating is obtained from external credit agencies, and thus non-discretionary.

To control for macroeconomic aspects, which will affect the amount of LLP (IAS 39), as well as variables related to revision of risks' classification (COSIF), we include the changes in the following variables: GDP, SELIC, USDBRL (affecting part of the loan that is affected by a foreign currency), UNEMPLOY and ICD to represent part of the portfolio related to loans to citizens.

We also control for aspects regarding the composition of the portfolio, relating to the real estate sector as well as different civil and private groups in the portfolio, namely Δ IGMC and Δ CARTHOMOG (Kanagaretnam et al., 2010; Bushman & Williams, 2012; Jin et al., 2016).

We also include the variation of the portfolio that is expected to mature in the short-term VENC_CP, defined as less than a year (Dantas, 2013).

It is worth noting that Beatty and Liao (2014) indicate that there is a lack of consensus among researchers regarding the best model to identify the discretionary part of the provision. As such, we have attempted to include as many independent variables as possible in order to reflect the quality of the loan portfolio. To mitigate problems of heteroskedasticity, we scale the variables by either total assets or total loan portfolio.

4.1 Testing Earnings Management *H2*

In order to test *H2*, regarding whether there is any difference in earnings management practices between the 2 models, we use the residuals (LLPDISC) of equation 1 of each accounting model in the equation 2 presented below. The residuals are in absolute values, as we are interested whether there was any kind of earnings management both towards to higher or lower net income.

$$LLPDISC_{i,t} = \beta_0 + \beta_1 LAIMP_{i,t} + \beta_2 PR + \beta_3 SIZE_{i,t} + \beta_4 SECTOR_{i,t} + \beta_5 BVMF_{i,t} + \varepsilon \quad (2)$$

Where:

$LLPDISC_{i,t}$: Error term from equation 1 obtained according to each accounting model (COSIF and IAS 39); $LAIMP_{i,t}$: Profits before tax and expense of loan loss provisions (LLP) scaled by total assets of bank *i*, at time *t*, according to each accounting model (COSIF and IAS 39); $PR_{i,t}$: Basile index of bank *i* at time *t*; $SIZE_{i,t}$: natural logarithm of total assets of bank *i* at time *t*, according to each accounting model (COSIF and IAS 39); $SECTOR_{i,t}$:

dummy variable which is equal to 1 if it is a private sector, and 0 otherwise; $BVMF_{i,t}$: *dummy* variable, which is equal to 1 for the banks traded on the Brazilian Stock Exchange (B3) and 0 otherwise.

We investigate two issues, one by earnings management via *income smoothing* (LAIMP), and attending degrees of regulatory capital (PR). We include variables related to the characteristics of the firms, such as SIZE, SECTOR (private and public) and corporate governance aspects (BVMF).

We evaluate whether the magnitude of the coefficients β_1 and β_2 will be different between the accounting model of COSIF or IAS39. The coefficients of the independent variables will indicate whether managers use their discretion to manage earnings.

5 RESULTS

5.1 Descriptive Statistics

In this section, we present descriptive statistics regarding our variables. It is noteworthy that 75% of the banks in our sample are from the private sector. Additionally, 22% of the banks have their stocks traded on the Brazilian Stock Exchange (B3).

One interesting feature of our sample is that only 25,2% of Brazilian Banks present higher loan loss provision when reporting under IAS 39 in comparison to COSIF, showing that the hybrid model of impairment used by the Brazilian Central Bank is more forward looking (and more conservative) than the incurred loss model used by IAS 39.

TABLE 2: DESCRIPTIVE STATISTICS

	Mean	S.D	Mínimum	Median	Maximun
LLP_Cosif	0.0350	0.0290	-0.0921	0.0319	0.1777
LLP_IAS 39	0.0318	0.0447	-0.1072	0.0275	0.5014
NCO_Cosif	0.0230	0.0266	-0.0517	0.0185	0.2130
NCO_IAS 39	0.0196	0.0243	-0.0562	0.0161	0.1444
ΔNPL _Cosif	0.0007	0.0253	-0.2779	0.0004	0.0917
ΔNPL _IAS 39	0.0021	0.0278	-0.3094	0.0008	0.0981
RENEG_Cosif	0.0554	0.1095	0	0.0210	0.7606
RENEG_IAS 39	0.0509	0.0979	0	0.0197	0.7606
Δ CART_Cosif	0.1527	0.7193	-0.8675	0.0759	11.2799
Δ CART_IAS 39	0.1361	0.7065	-0.8675	0.0758	11.2799
CART_AT_Cosif	0.4394	0.2376	0.0183	0.4614	0.9586
CART_AT_IAS 39	0.4680	0.2351	0.0182	0.4694	0.9696
ALL_{t-1} _Cosif	0.0451	0.0321	0	0.0446	0.2783
ALL_{t-1} _IAS 39	0.0404	0.0328	0	0.0335	0.2083
JUR_Cosif	0.1542	0.0769	0.0019	0.1508	0.4410
JUR_IAS 39	0.1545	0.0765	0	0.1527	0.5540
VENC_CP	0.5892	0.1856	0.1654	0.5842	1
LAIMP_Cosif	0.0337	0.0244	-0.0285	0.0302	0.1514
LAIMP_IAS 39	0.0334	0.0252	-0.0312	0.0305	0.2527
PR	0.1778	0.0599	0.0211	0.1622	0.6110
SECTOR	0.7549	0.4308	0	1	1
BVMF	0.2218	0.4162	0	0	1
d_IFRS_sup_Cosif	0.2517	0.4347	0	0	1

Note: $LLP_{i,t}$: is the loan loss provision scaled by total loan portfolio at the initial period t for bank i , according to each accounting model (COSIF or IAS 39); $NCO_{i,t}$: is the volume of credit operations written-off, net of any credit recovery of bank i at time t , scaled by total loan portfolio at the beginning of t according to each accounting model (COSIF or IAS 39); $\Delta NPL_{i,t}$: is the change in non-performing loans of bank i in period t , scaled by total loan portfolio at the beginning of period t ; $RENEG_{i,t}$: is the volume of renegotiated credit operations of bank i on time t , scaled by total loans according to each accounting model (COSIF and IAS 39); Δ CART $_{i,t}$: variation in the amount of credit operations scaled by the amount of loan portfolio of bank i at time t , according to each accounting model (COSIF and IAS 39); $CART_AT_{i,t}$: is the loan portfolio over total assets of bank i at time t according to each accounting model (COSIF and IAS 39); $ALL_{i,t}$: is the provision for loss over the total loan portfolio of bank i at

time t according to each accounting model (COSIF and IAS 39); $JUR_{i,t}$: interest rate over credit operation over total loan portfolio of bank i at time t according to each accounting model (COSIF and IAS 39); $VEN_{CP_{i,t}}$: Ratio of the loan portfolio maturing in the short-term (up to one year) from bank i , at time t ; $LAIM_{i,t}$: Profits before tax and expense of loan loss provisions (LLP) scaled by total assets of bank i , at time t , according to each accounting model (COSIF and IAS 39); $SECTOR_{i,t}$: dummy variable which is equal to 1 if it is a private sector, and 0 otherwise; $BVMF_{i,t}$: dummy variable, which is equal to 1 for the banks traded on the Brazilian Stock Exchange (B3) and 0 otherwise. $d_IFRS_SUP_BR_{i,t}$: dummy variable to control the relative amount COSIF LLP versus LLP IAS 39. $d_IFRS_SUP_BR_{i,t}$ equals 1 for LLP IAS 39 higher or equal to LLP COSIF and 0 otherwise; ε_{Cosif} : Error term from model 1, which represents the discretionary part according to accounting standards of COSIF; ε_{IFRS} : Error term from model 1, which represents the discretionary part according to accounting standards of IAS 39.

The LLP under the norms of COSIF has a mean of (3.5%), which is higher than under IFRS (3.2%), mainly due to the minimum requirements of provisions established by the Brazilian Central Bank, which does not happen on IFRS. The standard deviation of LLP under IFRS is almost 50% higher than that under COSIF. This shows that LLP under IFRS is somewhat looser than under COSIF, which entails that the LLP under COSIF is more homogeneous in relation to IFRS.

Regarding the volume of credit operations written-off (NCO), and the change during the period (ΔNPL), it is worth noting that under the Brazilian standard, the financial institutions have written-off more losses in their loan portfolio (2.3% under COSIF versus 1.9% under IFRS, on average), had lower variation of defaults (0.07% under COSIF versus 0.2% under IFRS, on average). Additionally, the volume of renegotiation has been roughly the same under both standards (close to 5%) for the sampling period.

The average volume of renegotiated loans is above the average of written-off and credit defaults. The renegotiation is established in the standards as a moment to review the degree of risk (COSIF), or as an input for the objective evaluation of losses (IFRS).

We highlight that 58.9% of the banks' loan portfolio mature in the short-term (up to one year). The standard deviation of LLP under IAS 39 is slightly higher than that of the COSIF. This might indicate that there is higher discretion on IAS 39 than under COSIF, although one would expect the opposite.

Lastly, the banks presented higher levels of reserves in comparison to what the Brazilian Central Bank establishes of 11%.

5.2 Testing the Explanatory Power of COSIF and IFRS Regarding LLP (H1)

In this section, we aim to test $H1$, which concerns whether IFRS or COSIF has higher quality in terms of modelling the LLP according to equation 1. Similar to previous research (Bushman & Williams, 2015), we rely on the adjusted R^2 of both models (COSIF and IFRS), to evaluate which model has higher quality. A higher R^2 implies that a model is better in capturing the non-discretionary part, and therefore, minimizes the discretionary part. Thus, the model which has a lower discretionary part is deemed as being of higher quality. We also do the Vuong test (Vuong, 1989) in order to test which model is a better fit to the LLP. The results are presented in table 3.

TABLE 3: RESULTS OF PANEL DATA - QUALITY

Indep	Cosif	IAS 39
ONSTANT	-0.0269	-0.2476
NCO	0.4448**	0.5541***
ΔNPL	0.4106***	0.1845
RENEG	0.0241	0.0412**
$\Delta CART$	0.0153***	0.0387***
CART_AT	-0.0166	-0.0676
ALL_{t-1}	-0.0907	-0.4678*

JUR	0.0401	0.0230
Δ GDP	0.1461	0.0490
SELIC	0.5065	2.4806
Δ RISCBR	-0.0037	0.0057
Δ USDBRL	0.1445	0.5981*
UNEMPLOY	0.3343	2.2439**
ICD	-0.3940	-3.8018**
Δ IGMC	0.2406	1.6762**
VENC_CP	-0.0110	-0.0240
Δ CARTHOMOG	0.0001**	0.0001
d_RAT_ESPEC	-0.0267	-0.0019
R ²	0.4675	0.1712
Nº Banks	43	43
Nº Obs	302	302
	R ²	Z Stat
R ² - Cosif	0.4675	
R ² - IAS 39	0.1712	
Difference	0.2963	-2.96

Robust t-statistics in parentheses

*** p<0.01, ** p<0.05, * p<0.1

$LLP_{i,t}$: is the loan loss provision scaled by total loan portfolio at the initial period t for bank i , according to each accounting model (COSIF or IAS 39); $NCO_{i,t}$: is the volume of credit operations written-off, net of any credit recovery of bank i at time t , scaled by total loan portfolio at the beginning of t according to each accounting model (COSIF or IAS 39); $\Delta NPL_{i,t}$: is the change in non-performing loans of bank i in period t , scaled by total loan portfolio at the beginning of period t . $RENEG_{i,t}$: is the volume of renegotiated credit operations of bank i on time t , scaled by total loans according to each accounting model (COSIF and IAS 39); $\Delta CART_{i,t}$: variation in the amount of credit operations scaled by the amount of loan portfolio of bank i at time t , according to each accounting model (COSIF and IAS 39); $CART_{AT_{i,t}}$: is the loan portfolio over total assets of bank i at time t according to each accounting model (COSIF and IAS 39); $ALL_{i,t-1}$: is the provision for loss over the total loan portfolio of bank i at time $t-1$ according to each accounting model (COSIF and IAS 39); $JUR_{i,t}$: interest rate over credit operation over total loan portfolio of bank i at time t according to each accounting model (COSIF and IAS 39); ΔGDP_t : Variation in yearly gross domestic product, at time t ; $SELIC_t$: Interest rate as issued by the Brazilian central bank deflated by the inflation of the period, at time t ; $\Delta RISCBR_t$: variation in yearly debt securities index (EMBI+) at time t , gathered from Ipeadata; $\Delta USDBRL_t$: interest rate variation deflated by inflation index at time t , sourced from the Brazilian Central Bank; $UNEMPLOY_t$: unemployment variation at time t , sourced from The Brazilian Institute of Geography and Statistics (IBGE); ICD_t : index of credit default of the national credit loan portfolio at time t , obtained from the Brazilian Central Bank; $\Delta IGMC_t$: variation in the rentability index of properties (IGMI-C), at time t , obtained from the Getúlio Vargas Foundation (FGV); $VENC_{CP_{i,t}}$: Ratio of the loan portfolio maturing in the short-term (up to one year) from bank i , at time t ; $\Delta CARTHOMOG_{i,t}$: variation in the loan portfolio of bank i at time t regarding loans to citizens, financial institutions, public sector and real estate; divided by total loan portfolio at $t-1$; $d_RAT_ESPEC_{i,t}$: dummy variable to control for ratings of credit risk agencies S&P (Standard and Poors), (we use Moodys and Fitch, if S&P is missing). It is equal to 1 for ratings with a speculative degree and 0 to those ratings of mid and high level.

The variables NCO and Δ CART are significantly positive in both models, which indicates that LLP take account of written-offs and changes in the volume of credit operations, in line with previous research (Dantas et al., 2013). Δ NPL and Δ CARTHOMOG are significantly positive only in the COSIF standard, thus managers take into account non-performing loans and changes in the composition of the loan portfolio to adjust LLP in the national standard. Previous studies have also found that changes in the composition of the loan portfolio did not affect the LLP under IAS 39. This may be due to the requirements of IAS 39, which asks managers to take into account the renegotiations happened during the period in order to reflect an objective evidence of loss. This corroborates with our variable RENEG, which is positively significant at 5% only under IAS 39.

Regarding provision of previous losses ($ALL_{i,t-1}$), under IAS 39 this variable is significant in explaining the current LLP. Thus, if there was a large loss recognized in the previous period, in this period there may not be such large loss, which is compensated by the recognition of previous large losses, consistent with a negative relationship found in previous research (Kanagaretnam, 2010).

Regarding macroeconomic indicators, we find that under IFRS the variables USDBRL, UNEMPLOY, and the IGMC are significant but not on the COSIF.⁴

Regarding H1, we compare the R^2 of the two models in order to evaluate which model does a better job in modelling the non-discretionary part. The R^2 of the COSIF (0.4675) is higher than the R^2 of IFRS (0.1712). Following Bushman and Williams (2012), we also do the Vuong test to compare the two models, and it shows that the COSIF is really the better model in modelling the LLP at 1% significance level. It is worth noting that managers preparing the LLP under COSIF rely mainly on the delay of the loan portfolio, as it is a proxy for expected losses, whereas this is not significant under IAS 39, which is based in incurred losses.

5.3 Results for Earnings Management (H2)

Next, we investigate whether there is any difference concerning earnings management between the models of COSIF and IFRS.

TABLE 4: RESULTS OF PANEL DATA – EARNINGS MANAGEMENT

Independent Variables	Cosif	IAS 39
CONSTANT	0.0199	0.0284
LAIMP	-0.0456	-0.0896
PR	0.0081	0.0563
SIZE	-0.0004	-0.0008
d_SETOR	0.0049**	0.0120***
d_BVMF	-0.0019	-0.0123***
R^2	0.0468	0.0892
N. of Banks	43	43
N. Observations	302	302

Robust t-statistics in parentheses

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

$LAIMP_{i,t}$: Profits before tax and expense of loan loss provisions (LLP) scaled by total assets of bank i , at time t , according to each accounting model (COSIF and IAS 39); $PR_{i,t}$: Basile index of bank i at time t ; $SIZE_{i,t}$: natural logarithm of total assets of bank i at time t , according to each accounting model (COSIF and IAS 39); $SECTOR_{i,t}$: dummy variable which is equal to 1 if it is a private sector, and 0 otherwise; $BVMF_{i,t}$: dummy variable, which is equal to 1 for the banks traded on the Brazilian Stock Exchange (B3) and 0 otherwise.

According to table 3, the variables related to profits and regulatory capital as well as size are not significant. Thus, we cannot claim that banks manage earnings via regulatory capital. This may be due to banks already complying to a level of regulatory capital higher than the requirements of the Brazilian Central Bank as illustrated in table 2. We find evidence that managers of private banks manage earnings more than the other banks and that this is exacerbated under IFRS, however there is also earnings management under the COSIF. Lastly, we document that under IFRS, banks which are traded on the stock market have a lower degree of earnings management. This confirms that scrutiny arising from the market mitigates opportunistic behaviour from managers.

⁴ We have run the VIF test for multicollinearity as well as have analysed the correlation matrix and there are no problems of multicollinearity in our results.

6 CONCLUSION

Based on the requirement that Brazilian financial institutions need to prepare financial statements under two different accounting standards (IFRS and COSIF), we provide evidence to which standard has higher quality (in terms of predictability) and less earnings management.

Our results reveal that the model of COSIF has higher explanatory power regarding the LLP in comparison to IAS 39, hence revealing higher quality in terms of predictability. It is worth noting though that several variables related to macroeconomic factors as well as renegotiation were significant under IAS 39.

Regarding our second objective, the results show that there is no difference in terms of earnings management between both standards. Moreover, we could not find that regulatory capital and other bank characteristics were significant in explaining the LLP. We however find that managers from private banks might involve in more earnings management practices in comparison to managers of public banks. Test results also reveal reduced discretion of managers for banks listed on the B3. Therefore, this suggests that scrutiny arising from debtholders and investors help to mitigate earnings management.

Lately, the factors surrounding the pricing of expected losses have gained momentum for both academics and investors (Khan et al., 2018). We contribute to the literature by showing which factors are considered by managers when calculating the LLP under two different standards, which might be of use to regulators in to the investment community. We also suggest that there might be other factors that affect the LLP, such as the discretion upon the degrees of risk regarding the debtor or guarantor as required by norm 2682/99.

We suggest future studies to evaluate the quality of the warranties in terms of different levels (to be defined by researchers) as there are is not uniformity regarding this item in banks financial statements.

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