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EARNINGS MANAGEMENT AND INCOME SMOOTHING PRACTICES: A PANEL DATA REGRESSION MODEL WITH BRAZILIAN CREDIT COOPERATIVES

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Abstract

This paper aims to analyze if there is evidence of Earnings Management practices, related to losses from credit operations of Brazilian credit unions. The research uses a quantitative and inferential approach, with regression analysis using panel data analysis, with a sample of 670 single credit unions regulated by the Brazilian Central Bank. These credit unions were observed between the first quarter of 2010 and the last quarter of 2019, totalizing an amount of 26800 observations. The results indicate that credit unions manage their results in the Income Smoothing modality to avoid their variability, to give greater confidence and solidity to the market. Data also shows that changes in the regulatory standards influence Earnings Management practices by setting up an allowance for loan losses. Results show that free admission cooperatives are more likely to manage their results through credit loss provisions when compared to restricted admission cooperatives. Thus, it is possible to conclude that there is earnings management in credit unions, and therefore the need for greater control by the governance bodies of these entities.

Palavras-chave: Earnings Management; Income Smoothing; Provisions.

Resumo

Este trabalho tem como objetivo analisar se há evidências de práticas de Gerenciamento de Resultado, relacionadas às perdas em operações de crédito das cooperativas de crédito brasileiras. A pesquisa usa uma abordagem quantitativa e inferencial, com análise de regressão usando análise de dados em painel, com amostra de 670 cooperativas de crédito individuais. Essas cooperativas foram observadas entre o primeiro trimestre de 2010 e o último de 2019, totalizando um montante de 26800 observações. Os resultados indicam que as cooperativas de crédito gerenciam seus resultados na modalidade Income Smoothing para evitar sua variabilidade, e para maior confiança e solidez ao mercado. Os dados também mostram que as mudanças nas normas regulatórias influenciam as práticas de gerenciamento de resultados ao estabelecer uma provisão para créditos de liquidação duvidosa. Os resultados mostram que as cooperativas de livre admissão são mais propensas a administrar seus resultados por meio de provisões para perdas com crédito, quando comparadas às cooperativas de admissão restrita. Assim, é possível concluir pela existência de gerenciamento de resultados nas cooperativas de crédito, e, portanto, a necessidade de maior controle dos órgãos de governança dessas entidades.

Keywords: Gerenciamento de Resultados; Income Smoothing; Provisões.

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INTRODUCTION

Studies on earnings management in credit unions are still few and with inconclusive results, especially at the international level. In Brazil, there are still few studies that address earnings management in credit unions. These studies point to the use of Income Smoothing in specific cooperative groups, but do not show a general view of the entire cooperative system. Recent research was carried out in specific institutions such as Sicredi, Sicoob and Unicred, indicating evidence of earnings management in Income Smoothing modality through the discretion in the constitution of PCLD - Provision for loan losses.

In the context of credit unions, it is important to highlight the relationship between individuals, where managers who are associate members must direct the institution for the benefit of others. The managers of financial institutions are inclined to choose discretionary attitudes due to specific characteristics such as: meeting member's expectations of results, passing an image of a solid institution, adapting to the regulations of the financial sector or even due to the opportunity of the accounting standard.

Unlike commercial banks, the relationship between individuals in credit unions is more complex since besides the conflict of interest between managing associate members with other associates, there is still a conflicting relationship between borrowing and saving savers, where the cost of capital for the first represents the return expected by the second. So, this is a fine line for earnings management practice, especially when the intention is meeting the interests of associates or internal groups.

This study has the main goal of analyzing evidence of earnings management practices, related to losses in credit operations in Brazilian credit unions, in the period between the year 2010 and 2019. Compared to other studies on this subject, the present study is justified by the sample studied, which will comprehend all the singular cooperatives regulated by the central bank, since the few existing research investigates only a cooperative system or a specific selection.

Although the majority of studies on earnings management practices are concentrated in the capital market, few studies have been found are dedicated to exploring earnings management practices in credit unions, especially in Brazil, where credit cooperatives play a major role in the national financial system. Credit unions exerts great social influence through the development promoted in the regions where they operate. These institutions normally work to promote small entrepreneurs, who are the majority in the country. Small local businesses find it easier to access credit, with lower rates when compared to commercial banks, and in this way the cooperative encourages small business entrepreneurship, generating employment and income for its members.

The research will use data from 670 singular Brazilian credit cooperatives obtained from the Central Bank of Brazil. Regression analysis using panel data analysis will be used for the analysis. Thus, the manuscript will be composed of this introduction, a chapter of theoretical framework to support the hypotheses, followed by a chapter demonstrating the methodological approaches and techniques. After analyzing the data, they will be presented in a data analysis chapter and finally in a conclusion and recommendations chapter.

DETERMINANTS AND CHARACTERISTICS OF EARNING MANAGEMENT

Income Smoothing

Earnings management emerged with the work of Schipper (1989), who conceptualized earnings management as a purposeful intervention in the process of communicating the results of companies for private benefit. Earnings management occurs when managers use accounting mechanisms in order to present better results than the company is actually capable of producing (GRAHAM; HARVEY; RAJGOPAL, 2005). Healy and Wahlen (1999) point out that earnings management occurs when managers use changes in the financial statements to manipulate related parties on the organization's economic performance through accounting entries. This is very dangerous because these cooperative entities have great social and economic relevance in the communities in which they operate (GEROSO; MANGUATE, 2023).

The term Income Smoothing is used to describe the practice of earnings management when the motivation is to avoid seasonality of the results of an organization (COPELAND, 1968). The variability of results is hardly positively interpreted by stakeholders, who seek stable and recurring results since they see lower risks in projects with this characteristic (MATSUMOTO; PARREIRA, 2007). In credit unions it is no different, the results must meet the expectations of the members who invest in the cooperative and of the member who borrows resources in the cooperative.

Both in commercial banks and in cooperatives, disclosing negative results or a large variability may suggest inefficiency in management or represent imminent risk to the institution's assets. For these reasons, these financial institutions can be motivated to soften their results to avoid reporting situations of poor economic and financial performance (MAIA *et al*., 2013). Cheng, Warfield and Ye (2011) highlight that the smooth functioning of banking system is essential to the economy, as any problems in these institutions would result in serious risks to users and would decrease their trust in the transparency inherent in these institutions.

Regarding the operationalization of earnings smoothing, Kraemer (2005) mentions some practices: handling expense accounts by increasing or reducing expenses, anticipating or postponing expenses, handling depreciation assets terms, increasing or reducing expenses in the period, the use of conservatism as a moderator for the recognition of income and expenses, the use of allowance for doubtful accounts and non-operating income and expenses, the increase or reduction of asset accounts such as inventory accounts and the recognition of investments made. These are risky behaviors that put cooperative organizations in a state of vulnerability (RUFIN; ARCEÑO, 2023; SALISE, 2024)

Much research aimed to investigate the practice of earnings management in financial institutions and confirmed this condition in the form of earnings smoothing (DECHOW; MYERS; SHAKESPEARE, 2010; BOUVATIER; LEPETIT; STROBEL, 2014; HILLER *et al*., 2008; MOYER, 1990; OZILI; ARUN, 2017). Bortoluzzo, Sheng and Gomes (2016) researched the practice of earnings management in a sample of 123 Brazilian banks between 2001 and 2012. The authors' hypothesis was that banks used the provisioning rules imposed by Resolution 2682/99 of the National Monetary Council to manage results through the provision for doubtful debts. The results showed that credit provisioning is an instrument used by banks to manage results in order to smooth net income (Income Smoothing).

Ozili (2017) found evidence that European financial institutions use their fee and commission fee revenues to manage their results. When investigating European banks, the author concludes that these institutions are likely to manage their results using other revenues, especially when analyzing large banks in post-crisis times. These findings indicate that the practice of income smoothing is more frequent in larger institutions.

When it comes to credit unions, there is a peculiarity when compared to commercial banks. Bank ownership is usually linked to large corporate groups and some minority shareholders, and these groups often have different interests. In cooperatives, ownership is shared by all members, who have rights and interests in generated financial flows and, therefore, cooperatives should not maximize their results like banks, since the pressure is on recurring results, not aggressive results. The search for recurring results and not for aggressive results originates the practice of Income Smoothing (BARROSO; BIALOSKORSKI NETO, 2010). Maia *et al*. (2013) evidenced the practice of smoothing results in cooperatives linked to Sicoob. Bressan, Bressan and Silva (2013) showed the practice in cooperatives linked to the Sicredi system. Souza and Bressan (2017) evidenced the smoothing of results in cooperatives linked to Unicred.

Other research has been applied recently in Brazilian cooperatives, but with a sample not limited to a cooperative system, a market that has evolved in recent decades (ARESTIS; PHELPS, 2023; HEISSLER *et al*., 2018). Dantas, Borges and Fernandes (2018) showed the practice of Income

Smoothing when they investigated the 500 largest Brazilian cooperatives. Porto *et al*. (2020) investigated credit unions in the state of Rondônia and concluded that they also practice earnings smoothing. The present research meets the exposed by the Brazilian authors since it investigates the practice of Income Smoothing in all the singular Brazilian cooperatives active between the year 2010 and 2019.

Regulatory standard and capital requirements

Financial institutions in Brazil are regulated by the Central Bank, which is the maximum regulatory institution of the National Financial System (SFN). The set of rules imposed by the SFN is influenced by the Basel Committee on Banking Supervision (BCBS) which was created in 1974 and aims to supervise and adapt the best banking practices to guarantee the stability of the financial system. It is composed of 45 monetary and supervisory authorities of 28 jurisdictions (BACEN) and is responsible for promulgating the Basel Accords. In addition to the Basel Accords, other recommendations and improvements are made through resolutions and circular letters. In this context, Basel III was improved, as shown in Chart 1.

Chart 1 - Improvement of Basel III

Norm	Description
Resolution 4.192/2013	It introduced the concepts of main capital, level I and establishes a methodology for calculating the Reference Equity (PR), which must be determined by financial institutions and other institutions authorized to operate by the Central Bank of Brazil.
Resolution 4.193/2013	It addresses the determination of minimum requirements for Reference Equity (PR), Level I and Principal Capital and establishes the Additional Principal Capital.
Resolution 3.640/2013	Establishes the procedures to calculate the portion of risk-weighted assets (RWA), relative to the calculation of the capital required for operational risk using a standardized approach.

Source: BACEN (2022).

In this sense, the improvement of regulatory standards is an element highlighted by the literature as motivators for the practice of earnings management. It is observed in the research of Moyer (1990) where the author observed the practice of earnings management in 142 North American banks aiming the capital adequacy in relation to risk. In this research, it is possible to see that the provision for credit losses was the element used to practice earnings management for the benefit of capital adequacy. Ahmed *et al*. (1999) analyzed American institutions after the changes that occurred in the 1990s and found evidence that these institutions also managed their results to increase capital and consequently meet the requirements of the American regulatory agency. It can be seen, then, that the standards imposed on the institutions are motivators to the management of results.

Cummings and Durrani (2016) investigated a group of Australian banks to check the effects of the Basel Accord's capital requirements of provisioning practices on loan loss. The results suggest that

bank managers use their discretion to influence provisions to mitigate the impact of fluctuations in earnings and consequently meet regulatory capital requirements. In the case of credit unions, Hiller *et al*. (2008) analyzed 137 credit unions in Australia and showed that these institutions used accounting strategies through the recognition of losses from credit operations to deviate from the minimum levels of regulatory capital in order to avoid eventual inspection.

Hessou (2017) analyzed the 100 largest credit unions in Canada, from 1996 to 2014, regarding the capital improvements proposed by the Basel III agreement. Based on the results, the authors suggest that cooperatives that are close to the limit established for RWA adjust their results so that they can satisfy the established capital standards, which is 5% of risk-weighted assets (RWA), which reinforces the thesis that credit unions can manage results to meet regulatory standards.

In Brazil, Maia *et al*. (2013) investigated 409 singular credit unions belonging to Sicoob, which represented 60% of the credit unions in the refereed system to verify whether these institutions managed their results to meet regulatory capital standards. When managing their results, these institutions adapted to the required reference equity and consequently had Basel ratios within the limits of the Basel Committee. The findings pointed out that the singular cooperatives linked to the Sicoob system do not manage their results with the purpose of adapting to the regulatory capital. The result of the research of Maia *et al.* (2013) meets the findings of Brown and Davis (2008) who analyzed credit unions in Australia after the improvement of that country's capital norms and showed that those institutions were able to meet their demand of capital, with no earnings management found to comply with regulatory norms.

Free admission

When created, or in the course of their existence, credit unions can choose for free admission or restricted admission of their members, depending on the purpose of the institution (LIMA; AMARAL, 2011). The fact is that it is becoming more and more accessible to become a member of a cooperative institution. With this, especially the one with free admission, greatly increase their customer portfolio and consequently the volume of credit operations, as there are associates from different origins and economic groups and this expansion and diversification of portfolio can increase the credit risk and this way change how cooperatives deal with credit risk management and constitution of provisions for credit losses (LIMA; AMARAL, 2011).

Gonçalves *et al*. (2014) evaluated the credit risk of a credit cooperative in Minas Gerais, from 2004 to 2011, regarding the impacts generated by the free admission of members. However, the authors

found no evidence to prove that the free admission of members was a motivating factor for a greater constitution of provisions for credit losses.

Freitas, Amaral and Braga (2008) investigated the process of converting a rural credit cooperative with restricted admission into a free admission cooperative. The research concluded that the fact that the cooperative became a free admission type, caused it to increase the volume of credit offered and, as a consequence, its liquidity indicators were reduced, leading the cooperative to subsequent periods to convert to the situation of non- operational disqualification. Operational disqualification or imminence is one of the factors that lead to the practice of earnings management (MAIA *et al*., 2013).

In recent research on earnings management in credit unions it is also possible to infer that the type of "free admission" cooperatives has a positive influence in relation to the constitution of allowance for loan losses, which is the proxy used in most of research that aim to verify the occurrence of earnings management in financial institutions (BRESSAN *et al*., 2016; BRESSAN *et al*., 2017). An adverse result was found by Maia *et al*. (2013) who did not find statistical significance in the variable "LA", free admission, to certify that the type of free admission cooperatives has an influence on the constitution of allowance for loan losses in credit cooperatives linked to the Sicoob system.

Previous Studies

In Chart 2, brings research based on the practice of earnings management in credit unions.

Chart 2 - Previous studies on earnings management in Credit Unions

Author/year	Sample	Results
Brown and Davis (2008)	190 australian credit unions	Did not find evidence of earnings management for capital adequacy
Hillier *et al.* (2008)	137 australian credit unions	Evidences of earnings management for capital adequacy
Maia *et al.* (2013)	409 Sicoob credit unions	Evidences of *Income Smoothing* practices and not evidences of earnings management for capital adequacy
Bressan, Bressan and Silva Junior (2015)	149 cooperatives, credit cooperatives affiliated to Sicredi between 2001 and 2011	Showed that the analyzed financial institutions use accounting discretion to smooth the results.
Bressan *et al*. (2017)	113 cooperatives linked to the National Confederation of Central Cooperatives - Unicred	Cooperatives affiliated to Unicred make use of the practice of earnings management, for *Income Smoothing* modality.
Santos and Guerra (2017)	90 cooperatives from 2009 to 2014 linked to Unicred	The results indicated that there is a connection between earnings management to avoid disclosing losses and efficiency scores in credit unions
Dantas, Borges and Fernandes (2018)	500 largest Brazilian credit unions between 2013 and 2017	Cooperatives practiced earnings management in the *Income Smoothing* modality.
Porto *et al.* (2020)	19 credit unions in the state of Rondônia	Pointed the practice of earnings management to control the level of credit quality
Sallaberry *et al.* (2024)	938 singular cooperatives from 2010 to 2018	Pointed out earnings management by Income Smoothing with significant variation in defaults

Source: Self elaboration.

It is possible to identify from the studies performed that, with the exception of Brown and Davis (2008), the others practice some type of earnings management, either to smooth results or to adjust the regulatory standards.

METHODOLOGICAL PROCEDURES

Research Method

This research is characterized as Hypothetical-Deductive, Quantitative, Confirmatory, with analysis of secondary data through data panel (FÁVERO; BELFIORE, 2017). Data collection took place using the Central Bank's open data platform, available on the institution's website. Additional data necessary for the classification of cooperatives was also collected on the web portal of the Guarantee Fund for Financial Cooperatives (FGCoop) and Bank Data. The data includes financial statements and registration information of the institutions. Total data were collected from 1451 cooperatives between the first quarter of 2010 and the last quarter of 2019. The choice of period avoids the problems of the 2009 economic crisis (SALLABERRY; MEDEIROS, 2009).

The cooperatives that will be used in this study will be singular cooperatives, except of the "capital and loan" type, independent of the linked cooperative system. The reason for choosing singular cooperatives is because central cooperatives and cooperative systems have different operational characteristics than singular cooperatives, which can distort the research results. Same procedure was also used by Maia *et al.* (2013), Bressan *et al*. (2017). It was also decided to use the singular cooperatives that were active throughout the analyzed period. That is, those that at some point ceased to exist or were constituted between the first quarter of 2010 and the last quarter of 2019 were not considered. The distribution of singular cooperatives, those active throughout the study period, excluding the ones of "capital and loans" type, are described in Table 1.

Table 1 - Singular Credit Unions active in the period, except for the type "Capital and Loan"

System	Singulars
Not affiliated	101
Sicoob	351
Cresol	75
Sicredi	108
Unicred	35
Total	**670**

Source: FGCoop (2022); BACEN (2022).

Therefore, of the total of 1,451 cooperatives, it was excluded confederations and cooperative centers, totaling 1,413 cooperatives. There are 849 active assets over the period, excluding those classified as "Capital and loan" according to Resolution 4,434/2015, it remains 670. Thus, the sample uses data from 670 singular cooperatives, with 15.07% of them being independent, 52.39% affiliated to the Sicoob system, 11.19% affiliated to the Cresol system, 16.12% affiliated to the Sicredi system and 5.22% to the Unicred system. The sample comprehends 78.92% of the cooperatives active in the period.

Regression with Panel Data

Panel data regression is widely used in research in the accounting and administration areas since data from individuals, companies, municipalities, etc. is getting more available. in several cross-sections (FÁVERO; BELFIORE, 2017). The regression using the data panel has different models to combine data from time series and cross-section. The best known are the common intercept model, the fixed effects model and the random effects model.

In this research, all the steps suggested by Fávero and Belfiore (2017) were applied for data analysis using panel data regression, aiming to identify the model that is best suited to the data obtained for investigating the practice of earnings management in credit unions from Brazil.

Variables in the Research

The data model applied in the present study is based on the model proposed by Ahmed *et al*. (1999), Brown and Davis (2008), Hillier *et al*. (2008), Maia *et al*. (2013), Bressan *et al*. (2016), and Porto *et al*. (2020). The variables used in the present study are described in Chart 3:

Chart 3 - Variables

Variable	Description	Authors	Expected Signal
VDL	Variation in net expenses for provisions / Credit Operations at the beginning of the period	Hillier *et al.* (2008), Brown and Davis (2008), Maia *et al.* (2013), Ozili (2017)	Dependent
VOC	Variantion in the volume of credit operations	Ahmed *et al*. (1999), Bressan *et al*. (2017)	+
IPCA	Broad consumer index price rate	Dantas *et al*. (2013) and Bressan, Souza e Bressan *et al*. (2017)	+
PRE	Reference equity	Shrieve and Dahl (2003), Maia *et al.* (2013)	+/-
SELIC	Basic interest rate of the economy	Araújo, Lustosa and Paulo (2018), Modena (2017)	+
RND	Non-discretionary result	Gray e Clarke (2004), Bressan *et al*. (2017)	+
VRT	Quarterly variation in operating revenues	Almeida, Lopes and Corrar (2011)	+
TAM	Total assets logarithm	Zang (2012), Joosten (2012), Dantas *et al* (2013)	+
EC	Loans on Capital Stock	Bressan, Braga and Bressan (2012)	+/-
LA	Binary variable for free admission	Maia *et al.* (2013), Bressan *et al*. (2017)	+/-
BAS	Binary variable adjustment for Basel III	Maia *et al.* (2013)	+/-
IDBAS	Basel Index	Shrieve and Dahl (2003)	+/-

Source: Self elaboration.

After describing the variables, the following research hypotheses are formulated to be tested empirically.

H1: Brazilian credit unions practice earnings management in the Income Smoothing modality through provisions for credit losses.

$$VDL = \alpha + \beta_1 selic_{it} + \beta_2 vrt_{it} + \beta_3 Ec_{it} + \beta_4 tam_{it} + \beta_5 voc_{it} + \beta_6 rnd_{it} + ci + \varepsilon_{it} \quad (1)$$

The variable non-discretionary result, which represents the result before the provision for losses, it is used to verify the practice of earnings management in the Income Smoothing modality. It is expected that this variable will present statistical significance and a positive result, since when the non-discretionary result is positive, it is expected that there will also be an increase in net expenses for allowance for loan losses in order to minimize the variability of results. This interpretation is shared by the research by Ahmed *et al*. (1999), Maia *et al*. (2013), Bressan *et al*. (2017) and similar to what was exposed by Peterson and Arun (2018). Therefore, when there is an intention to avoid the variability of results, the net expenses for credit provisions increase when the non-discretionary result increases and decrease.

H2: The adjustment of the Basel III agreement is a motivating factor for credit unions to make use of earnings management.

$$VDL = \alpha + \beta_1 TAM_{it} + \beta_2 PRE_{it} + \beta_3 IPCA_{it} + \beta_4 SELIC_{it} + \beta_5 IDBAS_{it} + \beta_6 VOC_{it} + \beta_7 EC_{it} + \beta_7 BAS_{it} + ci + \varepsilon_{it} \quad (2)$$

Innumerous research report that the regulatory capital norms required by regulatory institutions are motivators for the practice of capital management (AHMED *et al*., 1999; MAIA *et al*., 2013; PETERSON; ARUN, 2018; SHRIEVES; DAHL, 2003). Those norms are improved over time, usually provided by the Basel committee. The Basel III agreement was adjusted by Resolution 4,193/2013, which ratified the minimum requirements for Reference Equity (PR), Level I and Principal Capital and establishes the Additional Principal Capital, improving the capital requirements that financial institutions, even credit unions, must maintain.

The BAS variable can be considered the dummy type, assuming a value of 0 for periods prior to Resolution 4,193 / 2013 and assuming a value of 1 for periods after that resolution. The tendency is that

the adjustment proposed by the referred resolution it will influence the decrease in net expenses with allowance for loan losses, since the result is a greater influence on the net worth of cooperatives, which is part of the reference equity mentioned by referred resolution. Therefore, a negative signal is expected in this variable.

H3: Free admission credit unions are more likely to manage their results according to the volume of credit offered when compared to restricted admission.

$$VDL = \alpha + \beta_1 TAM_{it} + \beta_2 VOC_{it} + \beta_3 IPCA_{it} + \beta_4 SELIC_{it} + \beta_5 VRT_{it} + \beta_6 LA_{it} + ci + \varepsilon_{it} \quad (3)$$

The variable LA is one of the binary types assuming '0' (zero) for restricted admission and '1' (one) for free admission. This variable has already been included in models proposed by Amaral and Braga (2008), Maia *et al*. (2013), Bressan *et al*. (2016) in order to verify the influence this variable has on the practice of earnings management. The permission of free associates in credit unions starting with Resolution CMN 3,106/03 increased the credit portfolio offered by these institutions and, consequently, the credit risk from associated members. So, a positive signal is expected since the level of provisions for losses on credit operations will be higher.

DESCRIPTION AND ANALYSIS OF RESULTS

Descriptive Statistics

Table 2 presents the descriptive statistics for the variables used in the research. There are 26,800 observations distributed in a balanced data panel. Participating in this research, the amount of 670 singular credit unions active between the first quarter of 2010 and the last quarter of 2019, totaling 40 quarters. This study reached 670 singular active credit unions between the first quarter of 2010 and the last quarter of 2019, totaling 40 quarters.

Table 2 - Descriptive Statistics

Statistics	Minimum	Maximum	Median	Average	Standard deviation
VDL	-0,09338871	2,046268	-0,0017647	-0,0021453	0,0321452
VOC	-0,9865624	10,17941	0,0410553	0,0526702	0,1452996
RNd	-0,3601916	28,93729	0,0568958	0,0707882	0,2032962
VRt	-3,480702	25,56766	0,0420571	0,0516398	0,313474
TAM	2,797198	9,488143	7,469569	7,474056	0,6865464
EC	-0,7471096	1,637014	-0,0014109	-0,001716	0,0257162
IDBAS	-0,0564241	51,98665	0,3665227	0,5005019	0,6873536

Source: Self elaboration.
Note*:* VDL - Variation in net expenses for provisions, VOC - Variation in the volume of credit operations, RND - Non-discretionary result, VRT - Quarterly variation in operating revenues, TAM - Total assets logarithm, EC - Loans on Capital Stock, IDBAS – Basel Index; 26,800 observations.

Table 2 shows an average of the dependent variable VDL of -0.0021 (-0.21%) and standard deviation 0.0321, representing a higher dispersion in relation to the average, which is an indicative for heterogeneity in the analyzed credit unions, also present in other research. The median of -0.17% and the average of -0.21% allows to deduce that the listed institutions in the analysis reduced the net expense from credit operations in relationship to the total of credit operations in the previous period. The negative minimum value of -0.093% indicates that expenses net of provisions decreased, possibly due to a greater volume of reversal of expenses with provisions. These results are in line with those presented by Bressan *et al*. (2016), who investigated earnings management practices, and partially aligned with results from Maia (2013).

The non-discretionary results represented by the variable RND showed an average equal to 7.07% and a median of 5.68%, representing that, in a generic term, the credit unions present in this sample increased their results before the n*et al*lowances for loan losses. The standard deviation of 20.32% points to the diversity of characteristics of institutions in this sample. Even though other research on earnings management were placed in a single credit union system, different from the present research that did not limit a single system, all the other research pointed to the diversity of characteristics of the institutions, even the ones belonging to the same conglomerate (BRESSAN *et al*., 2017; PORTO *et al*., 2020; XAVIER, 2017).

The size variable (TAM) represented by the logarithm of total assets has dispersed values, as reported due to the difference in scale of institutions. It is possible to observe in Table 5 that the minimum values of 2,797, maximum of 9,488 and standard deviation of 0.6865 corroborate to this statement. Through the IDBAS variable that represents the Basel index, it is noticeable that the capital management of credit unions is quite different, as shown by the minimum values -0.0564 and maximum 51.98. This finding is also shared by Maia (2013) who analyzed the practice of earnings management in Sicoob credit unions. This variability can also be seen when analyzing the standard deviation for the IDBAS variable, which is 0.687.

Analysis of Practice of Income Smoothing

To investigate earnings management practices in the Income Smoothing modality, it was applied as a dependent variable VDL and as a variable of interest RND, which represents the non-discretionary result of the institution. This data outputs are described in Table 3:

Table 3 - Data panel for investigation of Income Smoothing practices

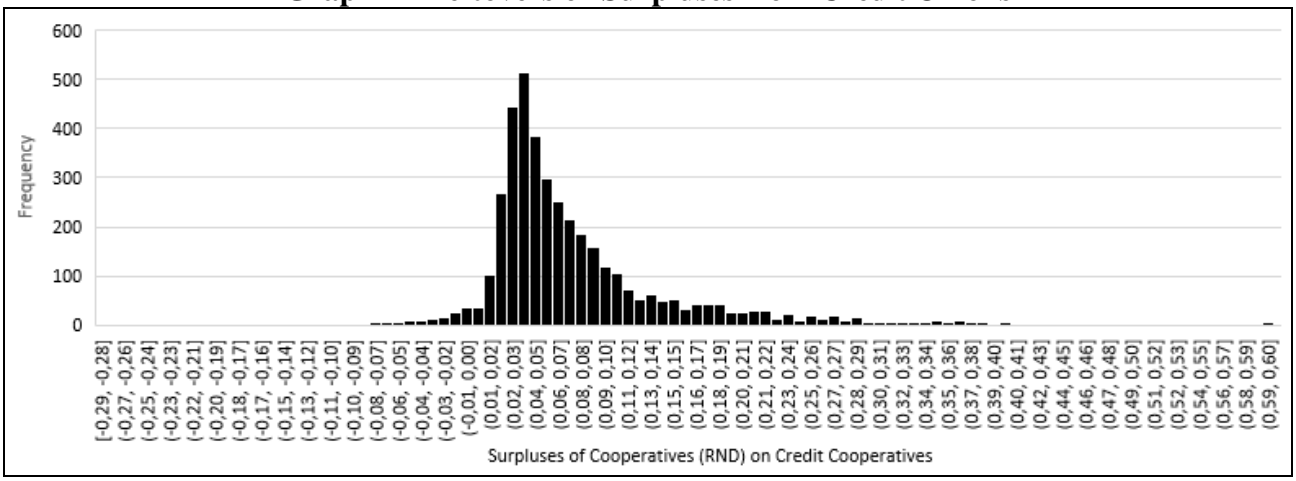
Variable	Coefficient	Standard Error	P-Value
VOC	0,0287235	0,0279467	0,304
IPCA	-0,186592	0,0194023	0,000
SELIC	0,4507423	0,0694737	0,000
VRT	0,0070768	0,0026368	0,007
TAM	-0,0047156	0,0022777	0,039
EC	-0,05119465	0,0306198	0,000
RND	0,0150928	0,001604	0,000
Coefficient	0,032001	0,0157053	0,042

Source: Self elaboration.
Note*:* Dependent Variable: VDL – Variation in net expenses for provisions / Credit Operations at the beginning of the period; Number of observations 26800 (Group 670 x Observation per group 40); Data panel estimated by fixed models Fixed Effects with Robust Clustered Standard Errors assuming heteroscedasticity and serial autocorrelation detected in operational procedures; Wald $\chi 2 = 141,30$; Prob > $\chi 2 = 0,00$.

The variable of interest when investigating Income Smoothing practices in singular credit unions is the non-discretionary result (RND). The RND variable showed statistical significance and a positive coefficient of 0.1519. This indicates that the increase in the non-discretionary result is preceded by an increase in the provision for credit losses. This parameter indicates that the singular credit unions analyzed used net provisions for credit losses to smooth their results and thus minimize their variability, characterizing the practice of Income Smoothing.

The results corroborate with other research that also evaluated the Income Smoothing practices based on the non-discretionary result of credit unions (BRESSAN *et al*., 2016; BRESSAN *et al*., 2017; MAIA *et al*., 2013; PORTO *et al*. 2020). The results also meet what was presented by Santos and Guerra (2017), Bortoluzzo, Sheng and Gomes (2017) regarding the existence of earnings management in financial institutions. Graph 1 shows the frequency distribution for the RND variable.

Graph 1 - Leftovers or Surpluses from Credit Unions



Source: Self elaboration.

It is possible to see in Graph 1 that few credit unions report negative results. Most of these institutions have shown positive results, as can be seen with the large frequency variation in the range immediately above 0.00. These results are similar to those reported by Maia *et al*. (2013) that evidenced the practice of earnings management from the analysis of histograms. Therefore, in relation to hypothesis H1, the data indicates that Brazilian credit unions practice earnings management in the Income Smoothing modality through provisions for credit losses.

Results Management to Meet Regulatory Standards

The need to meet regulatory institutions is a motivating factor for earnings management practice (MAIA *et al*., 2013). The variable VDL was used as a dependent variable since it is often used in models that aim to investigate the practice of earnings management in financial institutions, consisting of a proxy in the section. The explanatory variable to capture the practice of earnings management due to the adequacy of capital to regulatory standards is BAS, which represents the improvement of regulatory standards based on Resolution 4,193/2013, which ratified the minimum requirements for Reference Equity (RE), Tier I and Principal Capital and institutes the Additional Principal Capital. The model was estimated using fixed effects with robust clustered standard errors assuming adversities of heteroscedasticity and autocorrelation.

Table 4 - Panel data for Basel III adjustment

Variable	Coefficient	Standard Error	P-Value
TAM	-0,0086263	0,0010546	0,000
PRE	-0,0228974	0,0013719	0,000
IPCA	-0,2251727	0,0240157	0,000
SELIC	0,05554149	0,0850476	0,000
IDBAS	0,0019968	0,0003939	0,000
VOC	0,0400126	0,0013487	0,000
EC	-0,490383	0,0069891	0,000
BAS	0,0027296	0,000536	0,000
Coefficient	0,0610976	0,0077698	0,000

Source: Author´s elaboration.
Note*:* Dependent Variable: VDL – Variation in net expenses for provisions / Credit Operations at the beginning of the period; Number of observations 26800 (Group 670 x Observation per group 40); Data panel estimated by fixed models Fixed Effects with Robust Clustered Standard Errors assuming heteroscedasticity and serial autocorrelation detected in operational procedures; Wald $\chi 2 = 769,68$; Prob > $\chi 2 = 0,00$

The variable of interest BAS showed statistical significance and a positive coefficient of 0.0027, suggesting that the adjustment of the regulatory standards proposed by resolution 4,193/2013 increases the provision levels. A negative coefficient was expected because, on the verge of adjusting the institutions' equity to that proposed by the aforementioned resolution, it was expected that the levels of

PCLD would decrease. It was expected a negative coefficient since, on the verge of adjusting the institutions' equity to that proposed by the mentioned resolution, it was expected that the PCLD levels would decrease.

Santos (2007) also found evidence that Brazilian financial institutions manage results to adapt to regulatory standards. However, Maia *et al*. (2013) used a variable similar to BAS to examine whether regulatory requirements would motivate capital management in Sicoob cooperatives, it did not obtain statistical significance, contradicting what was expected. Consequently, in relation to hypothesis H2, the data indicate that the adjustment of Basel III agreement is a motivating factor for credit unions to benefit from earnings management.

The Effect of the Free Admission of Members on the Results Management Practice

By becoming freely admitted, cooperative institutions increase credit risk, while increasing the number of members to which they are accountable. The explanatory variable is LA, binary, assuming 1 for free admission cooperatives and 0 for restricted admission cooperatives. Table 5 presents the results of the estimation in a data panel to assess whether the singular credit unions presented in the sample are more likely to manage their results.

Table 5 - Panel data for free admission credit unions

Variable	Coefficient	Standard Error	P-Value
TAM	-0,0011424	0,0008381	0,173
VOC	0,0312504	0,0308364	0,311
IPCA	-0,1400986	0,0224789	0,000
SELIC	0,1634596	0,0768884	0,034
VRT	0,0100469	0,0026693	0,000
LA	0,0011023	0,0004127	0,008
Coefficient	0,0069329	0,0049794	0,164

Source: Author´s elaboration.
Note*:* Dependent Variable: VDL – Variation in net expenses for provisions / Credit Operations at the beginning of the period; 26800 observations (Group 670 x Observation per group 40); Data panel estimated by fixed models Fixed Effects with Robust Clustered Standard Errors assuming heteroscedasticity and serial autocorrelation detected in operational procedures; Wald $\chi 2 = 30,8$; Prob > $\chi 2 = 0,00$.

The variable of interest LA that represents the cooperatives of free admission, which means, those that accepts members from any regions and segments, showed statistical significance in the estimated model, in line with the research of Bressan *et al*. (2013) for Sicredi's cooperatives and corroborates the results of Amaral and Braga (2008) who report that free admission cooperatives increase credit risk and therefore have higher levels of allowance for loan losses. However, the results are contradictory to what was reported by Maia *et al*. (2013) for Sicoob credit unions. Therefore, the

evidence does not reject hypothesis H3: Free admission credit unions are more likely to manage their results depending on the volume of credit offered when compared to restricted admission.

CONCLUSIONS AND RECOMMENDATIONS

This research investigated evidence of earnings management practices in Brazilian credit unions. It is important to note that earnings management has nothing to do with accounting fraud, which occurs when institutions violate the law, while earnings management comes from accounting choices. The main goal of this research was to analyze evidence of earnings management practices, related to losses in credit operations in Brazilian credit unions, between the year 2010 and 2019. The research confirmed the practice of earnings management in these institutions. For that, it was used the regression model with panel data evaluating 670 active singular credit unions in the analyzed period.

The model used was preceded by auxiliary tests to adjust the data and the chosen dependent variable, n*et al*lowance for doubtful accounts, which is widely used in the accounting literature to investigate earnings management practices in financial institutions. The research showed that the credit unions analyzed practice earnings management. This finding is similar to those pointed out in other studies who identified that, based on the flexibility of the accounting norm, managers use provisions for credit losses as a proxy for earnings management.

The research highlights that the institutions in this study practiced earnings management to decrease the variability of earnings, which in the literature is known as Income Smoothing practices. The results showed that free admission cooperatives are more likely to practice earnings management due to the influence of the number of members and the volume of operations that increase exponentially and when these institutions are no longer “restricted admission” and become “free admission”. Previous research carried out in specific credit unions groups indicates that free admission would be a motivator for the practice of earnings management. It was also possible to certify that the regulatory standards, such as resolution 4,193/2013, have an influence on the constitution of provisions for credit losses, suggesting that the credit unions in this sample manage their results to meet the requirements of the regulatory environment.

The results presented an overview of earnings management in Brazilian credit unions, since there was no limitation to one specific cooperative system, unlike other research performed so far. One important point is that the analysis included quarterly data different from most studies in the area that deal with annual data. It is important to highlight that, as in any econometric model, there are margins of error to be considered, as well as limitations associated with the sample.

As a limitation of this research, the selection criteria of the sample that eliminated cooperatives that were not in operation during the studied period, from 2010 to 2019, stand out as well the exclusion of the sample of credit cooperatives of "capital and loan" type, since that these credit unions have different operational characteristics from the others. Data collection was not only from the database of the Central Bank, which is an institutional body, it was necessary to gather characteristics of the cooperatives through sectoral associations and confederations in order to offer greater robustness to the data analyzed.

For future research, it is suggested to investigate the practice of earnings management in independent credit unions, once the studies so far are concentrated in a single cooperative system and the present research addresses an overview of earnings management in singular credit unions. Another suggestion as a research, and it is one of the concerns associated with the theme of earnings management is about the choice and adaptation of the econometric model to the Brazilian reality, which suggests more in-depth research, using other relevant models in the literature, in order to improve them in a national context of financial institutions. There is also an opportunity to investigate why earnings management occurs and whether the characteristics of the management group is a determinant of Income Smoothing management.

Lastly, credit unions have a relevant role for regional development, including the popularization of credit and support for micro and small entrepreneurs. In addition to the financial bias, these institutions develop important social support for members by providing essential financial products and services. In addition, these institutions develop important social support for members by providing products and essential financial services. Credit unions are known for the democratization of credit, low interest rates, proximity to small families, in addition to making the owner of the business members who participate in the distribution of leftovers. More research is needed to investigate the role and performance of these institutions, since they absorb a huge share of the credit market in the country.

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