

# Study of the relationship between income smoothing and governance in Brazilian individual credit unions

## *Estudo da relação do income smoothing e governança nas cooperativas de crédito singulares brasileiras*

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## Abstract

**Purpose:** This study investigates the influence of cooperative governance practices on earnings management through income smoothing in Brazilian singular credit unions between 2018 and 2021.

**Design/methodology/approach:** Application of the Weighted Least Squares (WLS) method with correction for heteroskedasticity, using a sample of 3,435 observations. Cooperative governance was operationalized through a binary variable, based on the criteria established by Central Bank Resolution No. 4,434/2015.

**Research, Practical & Social implications:** The study highlights the role of cooperative governance in reducing income smoothing practices, contributing to greater transparency and higher quality of accounting information in credit unions. The results provide valuable insights for academic literature, regulators, and industry managers.

**Originality/value:** By focusing on income smoothing in a specific class of financial institutions—Brazilian singular credit unions—this research addresses a gap in the literature. The empirical approach and contextual relevance of the cooperative sector highlight the study's originality and its potential impact on both governance and financial reporting discussions.

**Keywords:** income smoothing; cooperative governance; credit unions; earnings management.

## Resumo

**Objetivo:** Analisar a influência das práticas de governança cooperativa no gerenciamento de resultados na modalidade Income Smoothing nas cooperativas de crédito singulares brasileiras no período de 2018 a 2021.

**Método/abordagem:** Aplicação da técnica dos Mínimos Quadrados Ponderados (MQP) com correção para heterocedasticidade, utilizando uma amostra de 3.435 observações. A governança cooperativa foi operacionalizada por meio de uma variável dicotômica, conforme critérios da Resolução nº 4.434/2015 do Banco Central.

**Contribuições teóricas/práticas/sociais:** O estudo evidencia o papel da governança cooperativa na redução de práticas de suavização de resultados, contribuindo para maior transparência e qualidade da informação contábil nas cooperativas de crédito. Os resultados oferecem subsídios relevantes para a literatura, reguladores e gestores do setor.

**Originalidade/relevância:** A pesquisa avança na compreensão do *Income Smoothing* em cooperativas de crédito singulares, tema ainda pouco explorado no Brasil, ao relacionar governança com decisões contábeis gerenciais. Destaca-se pela abordagem empírica aplicada a uma categoria específica de instituições financeiras cooperativas.

**Palavras-chave:** *income smoothing*; governança cooperativa; cooperativa de crédito; gerenciamento de resultados.

## Introduction

One of the main issues in institutional management is the agency problem, which arises from delegating decision-making authority (Jensen & Meckling, 1976). Since agents may not always act in the principal's best interest, corporate governance provides a framework to manage this conflict by guiding agent behavior (Eisenhardt, 1989). Its principles can be adapted to fit the unique characteristics of each organization (BICG, 2015).

Brazilian credit unions are legally structured into three levels: individual (first-degree), central (second-degree), and confederations (third-degree), as established by Law No. 5,764/1971. For the purpose of this study, the focus lies on individual credit unions, which directly serve members and are the primary agents in applying governance practices and managing financial results.

Hence, as financial institutions with associative control, formed through voluntary adhesion to render services for common benefit, without the objective of profit (Brazil, 1971), effectively inserted in the National Financial System (NFS) as of Complementary Law - CL No.130/2009, the agency's main problem is that there is no clear separation between ownership and control (Branch & Baker, 2000), given the dual nature of the cooperative member who acts as both principal and agent, as well as owner and client (CBB, 2009).

The dual function of credit unions, acting as both savings intermediaries and loan "agencies," allows members to simultaneously be savers and borrowers. Since these institutions are owned and governed by their members, agency conflicts can arise between directors (who are also members) and agents, as well as between members who save and those who borrow. This dynamic emphasizes the importance of observing the dominant group within these entities, as the conflict between saving members and borrowing members is unique to credit unions and is not typically observed in traditional financial institutions (Fama & Jensen, 1983; Mercer, Póvoa, & Piccoli, 2019).

Cooperative governance in Brazil is shaped by a robust regulatory framework. Key milestones include Complementary Law No. 130/2009, which formally integrated credit unions into the National Financial System, and Resolutions No. 4,434/2015 and 5,051/2022, which established mandatory governance structures based on the institution's asset size. These regulations seek to promote transparency, risk management, and accountability within credit unions. However, implementing these rules poses practical challenges, especially for smaller entities, such as administrative costs and limited managerial capacity.

In terms of business management, credit unions, as financial institutions, classify their operations in increasing order of risk according to Resolution No. 2682/1999, which sets forth

criteria for classifying credit operations and rules for establishing the Loan Loss Provision (LLP) (NMC, 1999). The classification of risk levels (from AA to H) is the responsibility of the credit-holding institution and must be conducted using consistent and verifiable criteria, supported by both internal and external information. Consequently, when the balance of estimated losses on doubtful loans is insufficient to absorb the actual losses, greater recognition of such credit operations can lead financial institutions to potential liquidity issues, forcing them to reduce their financial slack and limit the level of loans granted (Olszak, Roszhowska, & Kowalska, 2018).

According to Maia, Bressan and Lamounier (2013), the disclosure of negative results, or with a large variability of the Brazilian credit unions, may denote a risky situation, referring the cooperative members an idea of inefficiency or even financial insecurity of the entity. Due to this issue, such institutions may be motivated to manage their results, either smoothing earnings or avoiding the reporting of losses, by applying discretionary (or arbitrary) criteria to conceal deficits or volatility. This concept aligns with the view that organizations are a nexus of contracts, which specify the rights of each agent within the organization, as well as the performance criteria used to evaluate these agents and determine their rewards (Fama & Jensen, 1983).

In this regard, in order to reduce the volatility of net income and taking

into account the various motivations involved, there are several management mechanisms, among which the income smoothing can be highlighted, which seeks, in the context of credit unions, to preserve the distribution of surplus to members or change the market's risk perceptions of the company, thereby being seen with more confidence by investors (Bressan, Souza, & Bressan, 2017).

Considering the abovementioned, credit unions would be able to manage their results by using this discretionary component through income smoothing at a level considered acceptable to their shareholders and cooperative members, given the principal-principal relationship. In addition, the creation of management tools that are compatible with this organizational model represents a great challenge for credit unions, which includes considering their accounting methodology that is different from other non-financial segments, their market value, supply and demand, investments and risk (Elnahass, Izzeldin, & Steele, 2018).

It is important to highlight that these institutions reach a large number of people, totaling almost 17.3 million members, equivalent to 7.2% of the country's population, representing 2.7 million legal entities and 14.7 million individuals. Furthermore, these credit unions have a significant share in the NFS, having shown a 23.5% increase in the sector's total assets, compared to a 10.5% growth in the NFS (CBB, 2023). In

this context, the study of these institutions has huge importance not only to improve the financial security of members, but also to strengthen the NFS.

Although, there are studies that examine the effects of governance on income smoothing in traditional companies and traditional banks (Gomes et al., 2021; Noga, Ribeiro, & Gerik, 2021; Pinto, Gaio, & Gonçalves, 2020; Skala, 2021; Ozili, 2024), it is noted that there is a gap in the literature addressing this topic in the context of credit unions. Thus, the following question becomes pertinent: **What is the relationship between cooperative governance and income smoothing in Brazilian singular credit unions?** In this sense, the objective of this study is to analyze the influence of cooperative governance practices on earnings management in the Income Smoothing modality in Brazilian singular credit unions from 2018 to 2021.

To achieve this objective, we analyzed a sample of Brazilian individual credit unions authorized by the CBB between 2018 and 2021 with available data. To capture the influence of governance on earnings management, we applied the Weighted Least Squares (WLS) model, using discretionary accruals as the dependent variable to test for income smoothing, following Maia, Bressan, and Lamounier (2013). Cooperative governance was measured using a dichotomous variable, assigning 1 to institutions with total deposits above BRL 50 million and 0 otherwise, per

Resolution No. 4,434/2015, later replaced by Resolution No. 5,051/2022 (NMC, 2015; 2022). The results suggest that cooperative governance negatively influences income smoothing, making the decision-making process more legitimate and improving financial statement quality. Thus, the article is divided into five topics, namely: introduction; theoretical framework; methodology; results; and final consideration.

## Theoretical Framework

This section discusses the main theories and concepts underpinning the relationship between cooperative governance and income smoothing.

### Corporate Governance and Earnings Management in Credit Unions

Corporate governance in cooperative institutions is a matter of public policy (Fontes Filho, Ventura, & Oliveira, 2008), since these institutions have peculiarities that involve society in their activities (Hedlund et al., 2021).

It is interesting to mention that corporate governance is conceptually very focused on protecting the investor's interest, which demands a well-structured legal system (La Porta, Lopez-de-Silanes, Shleifer, & Vishny, 1998, 2000). In this way, the proposal to discipline the behavior of those in-



volved is appropriate; after all, organizations are made up of people (Fontes Filho, Marucci, & Oliveira, 2008). In the Brazilian context, the Brazilian Institute of Corporate Governance (BICG) is a national and international reference on the topic, and through the Code of Best Practices in Corporate Governance, they emphasize that such principles and practices can be applied in all organizational contexts (BICG, 2015; Silva & Santos, 2018), which includes credit unions.

The core principles guiding governance practices are Transparency, Equity, Accountability, and Corporate Responsibility (BICG, 2015). Considering that credit unions are financial institutions managed and controlled by their members on a non-profit basis, providing services to the community that joins them (Brazil, 1971), and being part of the National Financial System (NFS) by virtue of Complementary Law No. 130/2009, supervised by the Central Bank of Brazil (CBB), the need to adapt traditional governance practices to the specific reality of these organizations was identified, giving rise to the concept of cooperative governance.

Although Cooperative governance has a more limited theoretical foundation than corporate governance, the two concepts are complementary (Jansen, Maehler, & Wegner, 2018). The Central Bank of Brazil (CBB) defines cooperative governance as "the set of internal and external mechanisms and controls that allow members to define

and ensure the execution of the cooperative's objectives, aiming for continuity and adherence to cooperative principles" (CBB, 2008, p. 7). Therefore, good cooperative governance seeks to legitimize the decision-making process within these organizations, grounded in the cooperative values of solidarity and democracy (Vilela, Ferraz, & Ferraz, 2015).

It is important to emphasize that the peculiarities of the cooperatives are not limited to the core business of these institutions, but to the highly regulated environment in which they operate. Law No. 5.764/1971 defines the National Cooperative Policy, as well as the legal regime of these institutions. Thus, credit unions are classified into three modalities: individual, central, and confederations. Individual credit unions, also called first-degree credit unions, offer services directly to members. The central ones, also called federations or second-degree unions, are fewer in number and provide services to the individual unions. Finally, the confederations, also called third-degree unions, act and coordinate the activities of the central ones (Brazil, 1971; CBB, 2009; Meinen & Port, 2014).

In view of this complex and well-structured system, the BCC developed, between 2006 and 2009, the "Cooperative Governance Project: guidelines and mechanisms to strengthen governance in credit unions". The purpose of the project was to gradually disseminate the theme and promote the sustainable growth of these institutions (CBB,

2009). Moreover, in the same period, credit unions became part of the NFS by virtue of Complementary Law No. 130/2009 (Brazil, 2009). Subsequently, in 2013 and 2014, the CBB conducted a survey with Brazilian credit unions to update the governance database of those institutions. Thus, based on a questionnaire consisting of 99 questions which reached 90% of the universe of Brazilian credit unions, totaling 1,004 individual credit unions that responded, several points for improvement on the subject in these institutions were highlighted (CBB, 2014). Thus, through Resolution No. 4,334/2015 governance was made mandatory for the cooperative segment, in addition to other measures, later replaced by Resolution No. 5,051/2022 (NMC, 2015; 2022).

It is worth mentioning that Resolution No. 4334/2015 classified individual credit unions according to the operations they carry out, resulting in three classifications: Full Service, Classic or Traditional and Loan-based Capital credit unions. Full Service individual credit unions are authorized to carry out almost all the financial operations that commercial banks carry out, while Classic or Traditional individual credit unions are authorized to carry out most of the operations carried out by Full Service credit unions and, finally, Loan-based Capital individual credit unions are the smallest, offer the least amount of financial services and cannot raise funds through demand de-

posits. These specifications were maintained and improved in some aspects by Resolution No. 5,051/2022 (NMC, 2015; 2022; Souza, 2021).

According to Resolution No. 5,051/2022, individual credit unions with average total assets equal to or above BRL 50 million are required to adopt a simplified governance structure. This includes the establishment of a Board of Directors and an Executive Board with clearly defined responsibilities, aiming to professionalize decision-making and reduce agency conflicts in cooperatives (NMC, 2022).

Given the growth of the credit union segment, in 2016 the Brazilian Cooperatives Organization (BCO) published the Handbook of Best Practices for Corporate Governance. This guide is based on principles of self-management, fairness, transparency, education, and sustainability. It identifies key governance agents, including cooperative members, the general assembly, the board of directors/executive board, the fiscal council, the advisory board, social or core committees, technical committees, independent auditors, and executive management (BCO, 2016). However, Law No. 5.764/71 mandates the creation of three specific bodies, outlined in the bylaws: the General Assembly, the Administrative Council, and the Fiscal Council (Brazil, 1971). The General Assembly, acting within the limits of the bylaws, is the sovereign body, through which members exercise their right to vote, ensuring member representation.

The Administrative Council, elected by the General Assembly, is tasked with proposing objectives aligned with the interests of members. Finally, the Fiscal Council, also elected by the General Assembly, has statutory and legal authority to oversee the actions of the cooperative's management, serving as an independent oversight mechanism. The Fiscal Council plays a key role in corporate governance, particularly in reviewing financial statements to ensure they accurately reflect the organization's financial health (BIGC, 2015; BCO, 2016).

In keeping with modernization efforts, Complementary Law No. 196/2022 was enacted to update the legal framework and adapt credit unions to the evolving dynamics of the NFS, without disregarding core cooperative principles. This law significantly amends Complementary Law No. 130/2009, enhancing governance structures and representing a milestone for the sector (Brazil, 2009, 2022).

Financial reports serve as essential tools for communicating the performance of financial institutions (Martinez, 2001; Zendersky, 2005). In credit unions, reporting positive results is critical, as surpluses are distributed among cooperative members (CBB, 2009). Conversely, negative results may also be apportioned among members (Brazil, 2009). Consequently, losses or highly volatile results tend to be poorly received by the cooperative community and can strongly motivate institutions to manage earnings to convey stability

and avoid reporting losses (Bressan, Bressan, & Silva Junior, 2015; Maia, Bressan, & Lamounier, 2013)

From this perspective, earnings management is a deliberate intervention by management in the financial reporting process to serve self-interest (Healy & Wahlen, 1999; Schipper, 1989), although it is carried out within the limits of legality (Dechow, Sloan, & Sweeney, 1996). Credit unions may utilize discretion permitted by accounting standards to adjust specific accounts in pursuit of these objectives (Bressan, Bressan, & Silva Junior, 2015).

Furthermore, literature suggests that the obligation to report to regulatory agencies and central cooperatives may prompt earnings management as a strategy to avoid signaling financial instability (Bressan, Bressan & Silva, 2016; Maia, Bressan & Lamounier, 2013). Among the various forms of earnings management, the strategy aimed at reducing result variability is known as income smoothing (Goulart, 2006; Martinez, 2001; Zendersky, 2005). In financial institutions, which operate under strict regulation due to the risks inherent in their activities (Dantas, Carvalho & Pereira, 2018), risk is composed of two types of losses: expected and unexpected. Expected losses are addressed through provisions or asset adjustments, while unexpected losses require capital allocation based on internal risk measures (Norden & Stoian, 2013).

Loan Loss Provisions (LLPs) are the primary accrual tool in the financial



sector and a key component of managerial discretion (Goulart, 2007). They represent one of the largest expense categories for banks, as they reduce both profit and capital while providing information on credit risk (Albuquerque, Morais, & Pinto, 2020). In Brazil, LLPs are regulated by Resolution No. 2,682/1999, which classifies risk into levels from AA to H, with provisions ranging from 0.5% for level A to 100% for level H. These provisions must be calculated monthly, and institutions are prohibited from provisioning below the regulatory minimum. However, the classification of credit risk remains at the discretion of the lending institution (NMC, 1999; Zendersky, 2007).

It is important to note that the LLPs function as a mechanism to protect against expected losses from lending operations. However, the amounts recognized in financial reports may or may not faithfully represent actual losses (NORDEN; STOIAN, 2013). This opens space for managerial discretion, as the standard specifies only a minimum (floor), without limiting provisioning above that amount (Bortoluzzo, Seng, & Gomes, 2016; Dantas et al., 2018; Faria Junior, Machado, & Dantas, 2021).

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minimum (floor), without limiting provisioning above that amount (Bortoluzzo, Seng, & Gomes, 2016; Dantas et al., 2018; Faria Junior, Machado, & Dantas, 2021). Thus, LLPs consist of both a required (regulatory) and a discretionary component, the latter being an additional provision beyond what is legally mandated (Dantas et al., 2018). This creates an environment conducive to earnings management, entirely within legal accounting boundaries. Ideally, provisions should reflect the true expectation of loss; otherwise, the exercise of discretion may distort the recognition of LLPs (Faria Junior et al., 2021).

Therefore, cooperative governance emerges as an important mechanism to enhance the quality of financial reporting. High levels of governance help restrict managerial opportunism and, consequently, reduce the frequency of earnings management (Piccoli, Souza, & Silva, 2014).

Given the above, we have the following research hypothesis:

**H1:** Cooperative governance negatively influences earnings management.

## Empirical Studies on Cooperative Governance and Income Smoothing

The financial system is the backbone of a country, and the proper functioning of its institutions reflects a stable economic environment (Chopra, 2018). Therefore, governance studies in

financial institutions are of paramount importance.

In Brazil, to examine mechanisms that constrain agents' actions, Araújo, Behr, and Momo (2018) analyzed the structure and content of the codes of conduct of financial sector companies listed on B3 (formerly BM&FBovespa) considering the IBGC *Code of Best Corporate Governance Practices*. Based on a sample of 20 banks, the authors reviewed the availability and updates of their codes of conduct/ethics on company websites between September 2015 and 2016. The findings revealed a 62% adherence rate to IBGC recommendations, signaling a growing, albeit still unsatisfactory, commitment to ethics and transparency. The study emphasized the role of codes of conduct as mediators of conflicts of interest.

Focusing on credit unions, Silva, Santos, Santos, and Ranciaro Neto (2022) sought to identify the association between governance and performance in 81 S<sub>4</sub> segmented credit unions in 2018. Governance was measured via an index composed of 15 binary items derived from the Central Bank's 2014 governance survey. Results indicated that 43% of the sample exhibited moderate to high governance levels. However, Adjusted Net Equity had a negative effect on governance, which the authors attributed to the high costs of implementing governance in a heavily regulated environment.

On earnings management, Maia, Bressan, and Lamounier (2013) con-

ducted the first empirical study on income smoothing in Brazilian credit unions. Analyzing quarterly data from 2001 to 2011 for individual cooperatives affiliated with the Sicoob system, they found evidence of income smoothing practices aimed at minimizing result fluctuations, which could otherwise signal economic fragility. These findings were corroborated by Bressan, Bressan, and Silva Júnior (2015), who investigated income smoothing among Sicredi-affiliated credit unions between 2000 and 2010.

Continuing this line of research, Bressan, Bressan, and Silva Júnior (2016) analyzed 149 Sicredi credit unions from 2001 to 2011. Their results confirmed the use of discretionary accounting practices to smooth earnings, consistent with the Central Bank of Brazil's perception that both banks and credit unions tend to engage in income smoothing. Similarly, Bressan, Souza, and Bressan (2017) studied income smoothing in credit unions affiliated with the National Confederation of Central Cooperatives – Unicred. The motivation was to reduce earnings variability and project stability to cooperative members.

In a broader context, Dantas, Carvalho, and Pereira (2018) examined whether Brazilian financial institutions used the discretionary component of Loan Loss Provisions (LLP) for capital management. Using quarterly data from 2000 to 2015 from the 50 largest financial conglomerates, they tested two

proxies for capital levels: the Basel Index and an accounting-based measure. Their findings showed no evidence that banks used LLP discretion for capital management purposes. However, the results supported previous domestic and international studies indicating the use of LLP discretion for earnings management.

In a more recent study, Diniz and Girão (2019) assessed the quality of accounting information in Brazilian credit unions, focusing on whether earnings management through LLPs was more prevalent in large versus small cooperatives. Cooperatives were divided by total assets above or below BRL 50 million. The results showed a significant negative relationship between LLPs and credit/lease operations, implying that larger loan volumes reduced LLP needs. When LLP expenses were excluded, a statistically significant negative relationship persisted, suggesting that LLPs were not used as a tool for earnings management, contrasting with earlier studies.

Faria Junior, Machado, and Dantas (2021) explored the relationship between corporate fraud and earnings management in 106 publicly and privately held banks from 2008 to 2017. Their econometric model found no evidence that banks used the discretionary portion of LLPs to manage earnings, nor a significant link between fraud indicators and LLP discretion. The authors recommended that future research incorporate corporate governance variables into the analysis.

Ozili (2024), in a UK-based study, examined the determinants of bank income smoothing between 1999 and 2017. He found that LLPs were used for earnings smoothing, particularly during periods of political and economic uncertainty. Factors such as the presence of foreign competitors, the adoption of both national (UK GAAP) and international (IFRS 9) accounting standards, and strong governance practices were identified as mitigating factors in reducing earnings smoothing.

Overall, these studies emphasize the crucial role of governance in financial institutions. However, implementing governance practices incurs costs that may be close to or even exceed the profitability index in credit unions. According to Trindade and Bialoskorski Neto (2014), such costs often go unnoticed by members. Nonetheless, the benefits of governance are clear, as improved management efficiency contributes to better overall performance, rendering governance an investment rather than a cost.

## Metodology

This study has a descriptive and exploratory nature, and the relationships analyzed between the studied variables are predominantly quantitative (Raupp & Beuren, 2004). The population comprises Brazilian credit unions authorized to operate by the Central Bank of Brazil (CBB). The sample consists of individual credit unions for the

years 2018 to 2021, with available data during the collection period, 3,435 observations total.

The selected period aligns with Resolution No. 4,553/2017, which established prudential regulation by classifying financial institutions into five segments ( $S_1$ ,  $S_2$ ,  $S_3$ ,  $S_4$ , and  $S_5$ ). The most complex and risk-intensive institutions fall under  $S_1$ , while smaller institutions with simplified risk profiles are categorized under  $S_5$ . Individual credit unions were primarily classified in segments  $S_4$  and  $S_5$  until 2022, after which some were reclassified into segment  $S_3$  (NMC, 2017; CBB, 2023).

The data used in this study are secondary and were collected from CBB databases that consolidate financial information on Brazilian credit unions. Specifically, the study uses the "IF.Data – Selected Data from Supervised Entities" (CBB, 2022) and the analytical trial balance and balance sheet files (CBB, 2022), all categorized according to the Accounting Plan for Institutions of the National Financial System (COSIF) (CBB, 1987). The operationalization of the study variables is described in Table 1.

Thus, accruals through the variation in net expenses with provisions for credit operations divided by total credit operations ( $VDLoc_{it}$ ) were adapted to the market and to the reality of the Brazilian credit unions. Considering that the literature indicates that the volume of credit granting impacts the

economic development of these institutions, those accruals may indicate signs of results management through income smoothing (Bressan, Souza & Bressan, 2017).

The variation in credit operations ( $VOC_{it}$ ), in turn, signals the variation in credit operations and the ( $RNDoc_{it}$ ) is the result prior to net expenses with provisions for credit operations divided by the total credit operations. According to Maia et al., (2013), when this indicator shows growth, the expectation is that there is also an increase in net provision expenses in view of the decrease in profit and final income smoothing.

The variable "CapEmp" ( $CapEmp_{it}$ ), refers to loan-based capital individual credit unions, whose resources are limited to the capital contributed by their members. These institutions are not authorized to raise funds, accept deposits, or conduct foreign currency transactions, according to the classification established by Resolution No. 4,434/2015, which was subsequently replaced by Resolution No. 5,051/2022, while maintaining the same regulatory provisions (NMC, 2015, 2022). This variable aims to assess whether the absence of such funding sources influences Loan Loss Provision (LLP) expenses. A value of 1 is assigned if the credit union reported no total deposits during the period, and 0 otherwise.

Variables		Operationalization	Expected Relation	Expected Signal
<i>Dependent Variable</i>				
VDLoc	Variation in net expenses with LLP	$VDLoc_{it} = \frac{\left( \frac{DLoc_{it} - DLoc_{it-1}}{DLoc_{it-1}} \times 100 \right)}{OC_{it}}$	Not applicable	Not applicable
<i>Independent Variables</i>				
VOC	Variation in the volume of credit operations	$VOC_{it} = \frac{VOC_t - VOC_{t-1}}{VOC_{t-1}}$	Positive	+
RNDoc	Non-discretionary result of credit operations	$RNDoc_{it} = \frac{RaDLoc_{it}}{OC_{it}}$	Positive	+
<i>Control Variables</i>				
CapEmp	Capital and Loan Cooperative	Dichotomous variable, assigning 1 (one) for institutions that do not present total deposits in the period (Cosif line 4.10.00.00-7), and 0 (zero) otherwise.	Positive	+
OpVenc	Overdue Operations	$OpVenc_{it} = \frac{Op. Vencidas_{it}}{Cart. Classif. Total_{it}}$	Negative	-
Spread	Difference between loan rates (GerOR) and funding rates (CustoCap)	$Spread = GerOR_{it} - CustoCap_{it}$	Positive	+
Desemp	Proxy ANW	Variation of the Adjusted Net Equity in relation to the previous year.	Negative	-
GovCoop	Cooperative Governance	Dichotomous variable, assigning 1 (one) for institutions that have total deposits higher than BRL 50 million (Cosif line 1.00.00.00-7 + 2.00.00.00-4), and 0 (zero) otherwise.	Negative	-

**Table 1.** Proposed Variables and Expected Relations

Legends:  $DLoc_{it}$ : Net expenses with provisions for credit operations at the beginning of cooperative period  $i$  in period  $t$ ;  $DLoc_{it-1}$ : Net expenses with provisions for credit operations at the beginning of cooperative period  $i$  in period  $t - 1$ ;  $VOC_{it}$ : Variation in the volume of credit operations of cooperative  $i$  in period  $t$ ;  $VOC_{it-1}$ : Variation in the volume of credit operations of cooperative  $i$  in period  $t - 1$ ;  $RaDLoc_{it}$ : Income before net expenses of cooperative provisions  $i$  in period  $t$ ;  $OC_{it}$ : Total credit operations of cooperative  $i$  in the period;  $GerOR_{it}$ : Cooperative loan rate  $i$  in the period;  $CustoCap_{it}$ : Cooperative fundraising rate  $i$  in the period.

In variable ( $OpVenc_{it}$ ) refers to overdue credit operations (from levels B to H), divided by the total classified portfolio. This variable is relevant for

estimating the probability of insolvency in Brazilian credit unions and for evaluating its association with the proposed



dependent variable, following the approach of Bressan, Bressan, and Silva Junior (2016). Like other financial institutions, the credit unions classify credit operations in an increasing order of risk in accordance with Resolution No. 2682/1999 (CBB, 1999) into levels AA, A, B, C, D, E, F, G, and H, defining a minimum level of provision for each level of risk - ranging from 0,5% for level A to 100% for level H - and establishing that the LLP must be made up of an amount at least equal to the sum of the provisions made for each of the risk levels. In this study, the overdue credit operations from levels B to H will be considered.

Variable (*Spread<sub>it</sub>*) is measured by the difference between the loan rates charged to borrowers and the funding rate paid to clients (Maia et al., 2013). It is interpreted as "the higher, the better". However, credit unions seek a balance between their economic and social performance, since for these institutions profits are in fact surpluses or surpluses calculated by the result of products and services provided to these same members. Therefore, the management challenge is then to identify which rates are advantageous to members and sufficient for the cooperative not to compromise their operational efficiency (Canassa & Costa, 2018), while ensuring that this trade-off does not compromise their results at the end of the period either. Thus, the higher the spread adopted by the credit union, the greater this excess tends to be, and potentially, the higher the net expenses for the LLP.

For the variable (*Desemp<sub>it</sub>*), the Adjusted Net Equity of the financial cooperatives (ANW) proxy was used. This is an important indicator for these institutions, as it relates the surpluses of the fiscal years to the increase in capital stock, reserves, and the payment of shares (Cordeiro et al., 2018; Maia et al., 2013; Vieira, 2016). To obtain this variable, the variation in adjusted net equity relative to the previous year will be used.

Finally, variable (*GCoop*) for cooperative governance was measured using a dichotomous variable, where 1 (one) was assigned to the credit unions whose total assets in the last three fiscal years are equal to or exceed BRL 50 million, and 0 (zero) otherwise. Thus, in accordance with Resolution No. 4.434/2015, which, as mentioned, was replaced by Resolution No. 5.051/2022, institutions fit into the individual Full Service and Classic credit union categories and have total assets meeting the threshold must adopt a simplified governance structure (NMC, 2015; 2022). In other words, the institutions have an administrative structure integrated by a management board and an executive board subordinated to the former. The resolution in question seeks to professionalize the management of these institutions with a view to a legitimate decision-making process.

Therefore, this study adopts the base model proposed in the seminal work by Maia, Bressan, and Lamounier (2013), employing discretionary accruals as the dependent variable to test for

income smoothing. Accordingly, econometric model 1 was applied. The proposed analysis was performed by means of linear regression because it allows the study of one or more explanatory variables. In developing the regression model, the Weighted Least Squares (WLS) model was used, which allows the identification of the possible existence of multicollinearity among estimators, assuming that, in the variance inflation factor (VIF) test, values closer to

1.0 highlight that the set of variables are not correlated, and that above 10.0 (in more conservative criteria, above 5.0 (Judge et al., 1982) they are correlated, which did not occur in any of the variables in this study. Moreover, considering the Central Limit Theorem and the use of 3.435 observations, it should be noted that the remaining tests for the diagnosis of the best model were performed by Gretl software.

$$\text{VDLoc}_{it} = \beta_0 + \beta_1 \text{VOC}_{it} + \beta_2 \text{RNDoc}_{it} + \beta_3 \text{CapEmp}_{it} + \beta_4 \text{OpVenc}_{it} + \beta_5 \text{Spread}_{it} + \beta_6 \text{Desemp}_{it} + \beta_7 \text{GovCoop}_{it} + \varepsilon_{it} \quad (1)$$

Where:  $\text{VDLoc}_{it}$ : Variation in LLP (Loan Loss Provisions) net expenses;  $\text{VOC}_{it}$ : Variation in the volume of credit operations;  $\text{RNDoc}_{it}$ : Non-discretionary result of credit operations;  $\text{CapEmp}_{it}$ : Loan-based capital individual credit unions;  $\text{OpVenc}_{it}$ : Overdue operations;  $\text{Spread}_{it}$ : Difference between loan rates and funding rates;  $\text{Desemp}_{it}$ : ANW proxy;  $\text{GovCoop}_{it}$ : Cooperative Governance;  $\varepsilon_{it}$ : Regression error term.

## Results

To analyze the results, the descriptive statistics of the non-dichotomous variables worked in the study are initially presented in Table 2.

that the descriptive statistics initially reveal that the variation of net expenses with LLP (VDLoc) of the individual credit unions represent, on average, 0,06% of the total credit operations of the institutions in the periods and years analyzed. Comparing the mean values of 0,006 and the median of 0,000, one notices that the data for this variable are not dispersed, and the minimum value of -0,020 and maximum of 1,950 indicate that there are no cooperatives with major variations in net expenses with LLP. Thus, a similar result can be found in the studies by Bressan, Souza

and Bressan (2017), whose mean was 0,006, median of 0.003, minimum of -0,201, and maximum of 0,003.

In relation to the variation in credit operations (VOC), the minimum value was 0,030 and the maximum 21,970, suggesting that in the sample there are cooperatives with very different realities from credit operations. However, since the mean value was 1,247 and the median 1,200, they demonstrate that most institutions have similar variability in credit operations among themselves, given the proximity of these values. Thus, it is possible to verify that in credit unions the variation in credit operations has a high amplitude, as observed in the study by Bressan, Bressan and Silva (2016), with a

minimum of -1 and a maximum of 63505,02; and Bressan, Souza and Bressan (2017), with a minimum of -0,971 and a maximum of 1747,76.

The non-discretionary result of credit operations (RNDoc), in turn, has a mean of 0,163, i.e., it represents on average 16,3% of credit operations. The minimum of 0,00 and the maximum of 6,940 points to the existence of cooperatives in the sample with different values from each other; however, these institutions did not influence the mean values of the sample, since the mean of 0,163 is very close to the median 0,140.

On the other hand, overdue operations (OpVenc) represent, on average, 43,3% of the total classified portfolio, which indicates that the credit unions in the sample have a little less than half of their credit operations within risk ranges from B to H. The minimum of 0,00 and the maximum of 1,00 indicate that the institutions that make up the sample have different risk levels and values close to the mean (0,433) and

median (0,470) indicate that the risk levels are similar among the cooperatives that make up the sample.

Variable "Spread" has a large amplitude, with a minimum of 0,330 and a maximum of 63,030, indicating that the difference between the lending and funding rate has major variations throughout the sample; however, the mean (1,896) and median (1,510) values are not influenced by this variation.

Finally, performance shows a wide range, with a minimum value of -0,290 and a maximum of 44,05, as expected, since the sample includes individual credit unions belonging to different categories, reflecting that these institutions face different realities; however, the mean (1,178) and median (1,110) values reveal that more than half of these institutions show the same level of performance.

To answer the research question, in Table 3, a Weighted Least Squares (WLS) regression was conducted.

Variable	Mean	Median	Standard Deviation	Minimum	Maximum	CV
VDLoc	0,006	0,000	0,055	-0,020	1,950	9,734
VOC	1,247	1,200	0,594	0,030	21,970	0,477
RNDoc	0,163	0,140	0,149	0,000	6,940	0,914
OpVenc	0,433	0,470	0,231	0,000	1,000	0,533
Spread	1,896	1,510	2,453	0,330	63,030	1,294
Desemp	1,178	1,110	0,811	-0,290	44,050	0,689

**Table 2.** Descriptive Statistics

Legends: VDLoc: Variation in LLP (Loan Loss Provisions) net expenses; VOC: Variation in the volume of credit operations; RNDoc: Non-discretionary result of credit operations; OpVenc: Overdue operations; Spread: Difference between lending and funding rates; Desemp: Performance expressed by the variation in the Adjusted Net Equity in relation to the previous year; CV

Variables	Coefficient	Standard Error	Statistics t	p-value
Constant	-0,00174340	0,000672337	-2,593	0,0096***
<i>VOC</i>	-0,00187768	0,000546712	-3,434	0,0006***
<i>RNDoc</i>	0,00714289	0,00320213	2,231	0,0258**
<i>CapEmp</i>	0,00160446	0,000556727	2,882	0,0040***
<i>OpVenc</i>	0,00407288	0,000779112	5,228	1,82e-07***
<i>Spread</i>	0,00325336	0,000151827	21,43	1,07e-095***
<i>Desemp</i>	-0,00100815	0,000457842	-2,202	0,0277**
<i>IGCoop</i>	-0,00207826	0,000328327	-6,330	2,77e-010***
R- square		0,821251	R- adjusted square	0,820886
F (7, 3427)		2249,311	p-value (F)	0,000000

**Table 3.** Regression Results by Weighted Least Squares (WLS)

Legends: VDLoc: Variation in net expenses with Loan Loss Provision; VOC: Variation in the volume of credit operations; RNDoc: Non-discretionary result of credit operations; CapEmp: Capital and loan co-operative; OpVenc: Overdue operations; Spread: difference between loan rates (GerOR) and funding (CustoCap); Desemp: Adjusted Net Equity growth; Classif: Dichotomous variable, assigning 1 for co-operatives classified as full and 0 (zero) for the classic ones; IGCoop: Cooperative governance proxy obtained by totaling the questionnaire. Significance: \*\*\*: 1%, \*\*: 5% \*: 10%.

The ordinary least squares (OLS) regression was tested, followed by the diagnosis to verify whether the best estimator of the model would be fixed effects or random effects. Thus, with the Chow test with p-value <0,00, the alternative hypothesis of the existence of fixed effects was accepted, ruling out the possibility of using regression by OLS. Next, through the Hausman test, with p-value <0,00, it was not possible to accept the null hypothesis that the random effects model is consistent, and the alternative hypothesis of the existence of fixed models was validated. The Shapiro-Wilk normality test with p-value <0,00 suggests a correction for

heteroscedasticity, finally opting for the Weighted Least Squares (WLS) method, according to Fávero and Belfiore (2017).

The use of WLS is a way to solve the violation of the assumption of homoscedasticity, since it corrects the errors in addition to raising the asymptotic efficiency (Fávero & Belfiore, 2017). Thus, in Table 2 we can observe that the variation in the volume of credit operations (VOC) showed statistical significance at 1% with a negative sign for the credit unions in the sample and year studied. A decrease in the stocks of the credit portfolio results in an increase in the level of LLP, which goes against what is observed in the

main literature on the subject, where a positive sign is attributed to the same variable (Bressan, Bressan, & Silva, 2016; Bressan, Souza, & Bressan, 2017; Maia, Bressan, & Lamounier, 2013; Santos & Santos, 2020). In this way, in the cooperative reality, one can attribute this result to moments of lower economic growth, where credit operations increase their risk and thus higher provisions are made, since it is the responsibility of the institution holding the credit to classify the level of risk (CBB, 1999; Zendersky, 2007).

The non-discretionary result of credit operations (RNDoc) showed significance at 5% with positive sign, being widely supported by the literature, indicating that higher non-discretionary result leads to higher net expenses with provisions for credit operations. Therefore, this result shows evidence of results management in the income smoothing modality, where the credit unions used the net expenses with provisions to smooth their annual results in the period in question (Bressan, Bressan, & Silva, 2016; Bressan, Souza, & Bressan, 2017; Maia, Bressan, & Lamounier, 2013; Santos & Santos, 2020).

Next, individual capital and loan cooperatives (CapEmp) are observed as significant at 1% and with a positive sign. These institutions do not raise funds through deposits, and consequently do not use these resources to finance themselves. However, as also observed by Santos and Santos (2020),

these institutions use income smoothing with the aim of controlling the volatility of results, increasing net expenses in a discretionary way for LLP.

Overdue credit operations (OpVenc) turned out to be positive and significant at 1%, indicating that the higher the proportion of credit operations, the higher the appropriation with net expenses of LLP. In other words, if the institution has a large part of its credit operations within risk ranges, which in this study is considered from levels B to H, the higher the net expenses with the LLP will be, which contradicts the findings of Santos and Santos (2020).

As for the difference between the lending and the funding rates (Spread), it was positive and significant. This result reflects that the higher the Spread, the higher the expenses with the LLP, which is also seen in the findings of Santos and Santos (2020).

The variable of interest, (IGCoop), was negative and statistically significant at the 1% level, indicating that more structured credit unions that adopt formal governance practices—whether simplified or comprehensive—tend to engage less in income smoothing through discretionary provisions. This result aligns with the notion that cooperative governance legitimizes decision-making processes and increases internal accountability (Vilela, Ferraz, & Ferraz, 2015). One possible mechanism behind this effect is that governance structures impose clearer role separations, stricter



oversight, and more standardized procedures, which reduce managerial discretion over accounting estimates. However, it is essential to acknowledge the practical challenges of implementing effective governance in credit unions, especially smaller ones. These include higher administrative costs, the need for qualified personnel, and cultural resistance to professionalized management (Silva, Santos, Santos, & Ranciaro Neto, 2022). Additionally, while governance improves transparency and risk management, it can lead to more conservative credit policies, potentially limiting the social and developmental role of the cooperative. Thus, the observed effect of governance on income smoothing should be seen not only as a sign of prudential advancement but also as part of a broader shift toward institutional formalization in a highly regulated environment (NMC, 2022).

## Final Considerations

This study aimed to analyze the influence of cooperative governance practices on earnings management through income smoothing in Brazilian credit unions between 2018 and 2021. Using the Weighted Least Squares (WLS) method with heteroskedasticity correction, the study analyzed 3,435 observations, employing a binary governance variable that distinguishes institutions with total assets equal to or exceeding BRL 50 million in the last three fiscal years.

The findings confirm that credit unions employ provisions to reduce earnings volatility, consistent with prior literature. Moreover, the results indicate that governance practices are associated with a statistically significant reduction in income smoothing. This suggests that more structured decision-making processes and internal controls tend to limit managerial discretion over accounting estimates.

These findings have practical implications. For cooperative managers, they highlight the importance of not only complying with regulatory governance structures but also fostering genuine governance culture, transparency, and accountability. For regulators and supervisory bodies, the evidence suggests that mandatory governance structures, while necessary, may not be sufficient in isolation. More effective monitoring mechanisms and qualitative assessments of governance practices might be needed. For policymakers, the results reinforce the value of strengthening institutional frameworks to enhance financial reporting quality and build stakeholder trust in the cooperative sector.

However, this study presents some limitations. First, the governance variable used was binary and based solely on asset thresholds, which does not fully capture the quality or depth of governance practices. Future research could address this limitation by constructing multidimensional governance indicators, incorporating aspects such as board composition, audit structures, and member participation. Additionally, while this study focused on income smoothing, it did not examine other dimensions of cooperative behavior under governance structures.

Finally, as the field evolves, future research should broaden the analysis to include ESG (Environmental, Social, and Governance) practices in cooperatives. Exploring how social and environmental responsibilities interact with governance mechanisms can provide a more comprehensive understanding of institutional transparency, sustainability, and resilience in the cooperative model.

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