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Deferred tax assets, earnings quality and their effects on bank results: Evidence from Brazil

Ativos fiscais diferidos, qualidade de lucros e seus efeitos nos resultados dos bancos: Evidências no Brasil

Activos por impuestos diferidos, calidad de las ganancias y sus efectos en los resultados bancários: Evidencia de Brasil

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ABSTRACT
Background: Deferred Tax Assets (DTA) can pollute the quality of earnings by their use, as the reported earnings will be inflated by these assets, resulting from discretionary financial operations.
Purpose: This study aimed to identify the effects of DTA on the perspective of earnings quality of banks, using the proxy's earnings persistence, earnings smoothing and Earning Response Coefficient (ERC).
Method: The empirical tests were based on information from the financial reports of the banks, Brazilian Central Bank (BACEN), Bloomberg and Economatica® from 2017 to 2021, being estimated using panel data.
Results: The results suggest that the larger the DTA, the greater the earnings persistence and unexpected earnings by the ERC, and the lower the earnings smoothing.
Conclusions: The profit quality perspective shown in the results highlights the validation of the proposed models, contributing not only to the DTA theme and the quality of profits, but also the association of the discretionary use of these assets as generators of polluting results for banks, being verified , in this study, the medium ones showed significance in the use of DTA for the persistence of profits, and the small ones for the persistence and smoothing of profits, benefiting from the movements of loans granted and DTA stocks, making them more persistent and smoothed over the sample period.
Keywords: banks; deferred tax assets; earnings quality; taxes; Brazil.

RESUMO
Contextualização: Os Ativos Fiscais Diferidos (AFD) podem tornar a qualidade de lucros poluída pelo seu uso, pois, os lucros apresentados estarão inflados por esses ativos, resultantes de operações financeiras discricionárias.
Objetivo: Esse estudo teve por objetivo identificar os efeitos dos AFD na perspectiva de qualidade de lucros dos bancos, sendo utilizadas as *proxies* persistência de lucros, alisamento de lucros e *Earning Response Coefficient* (ERC).
Método: Os testes empíricos tiveram por base as informações dos relatórios financeiros dos bancos, Banco Central do Brasil (BACEN), Bloomberg e Economatica® de 2017 a 2021, sendo estimados por dados em painel.
Resultados: Os resultados sugerem que, quanto maiores os AFD, maiores serão a persistência de lucros e os lucros inesperados pelo ERC e, menor será o alisamento de lucros.
Conclusões: A perspectiva de qualidade de lucros exibida nos resultados evidencia a validação dos modelos propostos, contribuindo não somente para o tema AFD e a qualidade de lucros, mas, também, a associação do uso discricionário desses ativos como geradores de resultados poluidores dos bancos, sendo constatados, nesse estudo que, os médios apresentaram significância no uso dos AFD para a persistência de lucros, e os pequenos para a persistência e o alisamento de lucros, sendo beneficiados quanto às movimentações de empréstimos concedidos e de estoques de AFD, tornando-os mais persistentes e alisados ao longo do período amostral.
Palavras-chave: bancos; ativos fiscais diferidos; qualidade de lucros; tributos; Brasil.

RESUMEN
Contextualización: Los Activos por Impuestos Diferidos (AID) pueden contaminar la calidad de las ganancias por su uso, ya que las ganancias reportadas serán infladas por estos activos, resultantes de operaciones financieras discrecionales.
Objetivo: Este estudio tuvo como objetivo identificar los efectos de AID en la perspectiva de la calidad de las ganancias de los bancos, utilizando los proxies de persistencia de ganancias, suavización de ganancias y *Earning Response Coefficient* (ERC).

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Método: Las pruebas empíricas se basaron en información de los informes financieros de los bancos, Banco Central de Brasil (BACEN), Bloomberg y Economatica® de 2017 a 2021, estimados con datos de panel.
Resultados: Los resultados sugieren que cuanto mayor sea la AID, mayor será la persistencia de las ganancias y las ganancias inesperadas por parte de la ERC, y menor la suavización de las ganancias.
Conclusiones: La perspectiva de la calidad de las ganancias mostrada en los resultados destaca la validación de los modelos propuestos, contribuyendo no sólo al tema de la AID y a la calidad de las ganancias, sino también a la asociación del uso discrecional de estos activos como generadores de resultados contaminantes para los bancos, siendo verificada, en este estudio, las medianas mostraron importancia en el uso de la AID para la persistencia de las ganancias, y las pequeñas para la persistencia y suavización de las ganancias, beneficiándose de los movimientos de los préstamos concedidos y de los stocks de la AID, haciéndolos más persistentes y suavizados. durante el período de la muestra.
Palabras clave: bancos; activos por impuestos diferidos; calidad de las ganancias; impuestos; Brasil.

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1 INTRODUCTION

Deferred Tax Assets (DTA) represent the adjustment value of the calculation basis for taxes on profit, related to future offsets of losses and future tax credits and deductible temporary differences (Ferreira, 2021). Furthermore, stocks of this asset are produced through deductible temporary differences and, if there is no future taxable result that could reduce tax credits, DTA will be recognized as tax loss credits (Ahnan & Murwaningsari, 2019). In Brazil, there is an intense debate about the association between the use of DTA and the quality of profits in the Brazilian banking sector (Cumming, Tingle, & Zhan, 2021). On the one hand, DTA directly impact bank results, polluting the quality of profits published in their financial statements, without economic materiality and, rather, the discretionary use of the laws that govern these assets (Kotsupatriy, Ksonzhyk, Skrypnyk, Shepel, & Koval, 2020). On the other hand, doubts are generated from the control of the use of DTA to meet a persistence of future profits, or the smoothing of profits, to maintain reported profits at the same level, generating specific benefits in the short term and, also, to capture unexpected profits from the financial market, as the results presented do not originate from financial intermediations, further compromising the principle of reliability of reported results (Faria & Amaral, 2015, Zanon & Dantas, 2020, Ferreira, 2021).

From the perspective of using DTA for the persistence of profits, these assets can increase or decrease the persistence of future profits, according to the volume of DTA presented by banks, and the larger the stock, the lower the persistence of profits (Batten & Vo, 2019). From the perspective of smoothing profits, DTA can become an even more common practice, as they are values resulting from banks' own financial operations, such as grants of unreceived credits or tax losses, with any bank being able to generate the stocks of these assets, if they are in these situations (Batten & Vo, 2019). From the perspective of capturing unexpected profits through the Earning Response Coefficient (ERC), Jin, Kanagaretnam and Lobo (2018) revealed that DTA can be used as a measure for the quality of profits in the banking sector and its flexibility could capture unexpected profits.

It is not clear, however, the role played by DTA on the quality of profit in the banking sector. Given this scenario, this article answers the following question: what are the effects of DTA on the quality of profits of banks belonging to the National Financial System (NFS)? Given this question, the objective of the investigation is to identify the effects of DTA from the perspective of profit quality of NFS banks. The benefit of studying the banking sector is that focusing on a single homogeneous industry removes the challenges of defining the market in which a company competes, thereby excluding the potential bias of companies that are defined too broadly or unduly narrowly (Kotsupatriy, Ksonzhyk, Skrypnyk, Shepel, & Koval, 2020).

The motivation for the topic can be justified by the DTA's discretion to influence banks' results, without even creating Financial Intermediation Revenue and, the financial benefits could inflate Net Profits (NP) and, the quality of profits can be increased or diminished by the discretionary use of these assets (Faria & Amaral, 2015). And the results of the empirical tests suggest that the higher the DTA, the greater the persistence of profits and unexpected profits by the ERC and the lower the profit smoothing. The consistency of the results allows us to indicate that DTA can make the quality of profits polluted by their use, as they inflate banks' results with discretionary financial operations decisions.

The practical contribution of this study lies in the discretionary use of DTA for the persistence and smoothing of profits by bank size, and from the results presented, it becomes possible to identify that small banks were significant for the use of DTA as earnings quality component for earnings persistence and smoothing, and the average for earnings persistence. These assets, however, can generate more benefits for small banks as they present significant results, therefore favorable, regarding the movement of loans granted and DTA stocks, which are components for identifying persistent and smoothed profits, however, the association of discretionary use of these assets, such as persistent and straighteners, may be polluting the profits of small banks.

2 THEORETICAL FOUNDATION

2.1 Quality of profits

Earnings quality can provide information about characteristics of a bank's financial and economic performance, relevant to a strategic decision made by a strategic decision maker (Silva, Bonfim, Niyama, & Silva, 2017). Characteristics are observed regarding the definition of profit quality: conditioning to the relevance of the information for the decision, informative about the company's financial performance and, joint determination of the relevance of the financial results underlying the decision making, with the accounting system having the capacity to recognize and measure this performance (Gao, Gao, & Wang, 2017). Proxies for earnings quality that involve earnings, that is, properties such as persistence, smoothing and detection of unexpected earnings, have at their core earnings based on the competence of reported numbers (Dechow, Ge, & Schrand, 2010). And these proxies are affected by the fundamental performance of the bank and the measurement of its performance (Bouwman, 2014).

Profit persistence indicates the change in profits that are expected in the future, being based on information that generated current profits and that may persist so that future profits are realized (Cumming, Tingle, & Zhan, 2021). This measure reveals the non-transitory nature of profits, which is a useful attribute for users of financial statements, both internally and externally, such as: board of directors, investors, creditors and interested parties or other interests

(Souza, Flach, Borba, & Broietti, 2020). Profit is useful for decision as it improves the results of equity valuation and is normally scaled by assets, although some researchers examine the scale by sales or scale by number of shares (Nicoletti, 2018).

Earnings persistence is measured as a proxy for earnings quality and provides information about the company's financial performance features that are relevant to value. The common extension is to decompose the total gains into components and determine whether such decomposition helps to predict this persistence (Silva, Bonfim, Niyama, & Silva, 2017). In relation to the banking sector, the role of profit persistence is reinforced, and this characteristic of the quality of accounting information may be relevant for the maintenance and stability of the financial system (Hung, Jiang, Liu, & Tu, 2018). Accounting studies implicitly suggest that persistence describes the quality of a company's profits and shows how profits can be maintained from time to time (Martinez, Souza, & Monte-Mor, 2016). When the company is unable to increase profits, or the profit obtained by the company tends to decrease persistence, it becomes unfavorable news for investors, because the real profit is lower than the company's expectations and, as a consequence, reduces the attractiveness of investors (Aguguom & Salawu, 2019). In the banking sector, profit persistence plays an important role in the stability of the entire financial system and has attracted a growing debate about the factors that drive this phenomenon (Gao, Gao, & Wang, 2017; Cumming, Tingle, & Zhan, 2021).

Profit smoothing aims to maintain reported profits at the same level proposed by the bank, avoiding excessive fluctuations in results, generating short-term benefits for investors (Faria & Amaral, 2015). This practice is adopted in the face of adverse events, which generate variability in profits, but do not necessarily impact the company's operational and financial performance, and, to avoid a higher perception of risk, banks promote a stabilization of results during the occurrence. of these events, generating a balanced profit after the adverse effects are realized (Beatty & Liao, 2014).

Managers when smoothing results report profits that are sometimes higher than economic gains and sometimes lower, and there is no rule of reporting only an increase in profits with smoothing (Bouwman, 2014). Schrand and Wong (2003) showed that managers who incorrectly disclosed earnings tend to be optimistic about banks' performance and may follow low variations, initially unintentional, with intentional variations if optimistic expectations are not met. Profit smoothing neutralizes the transitory effects of profitability or eliminates banks' unfavorable performances, sustaining constant growth over the short term (Faria & Amaral, 2015). Beatty and Liao (2014) compared profit smoothing behavior based on Estimated Bad Debt Losses (EBDL) of listed and unlisted banks on the Australian stock exchange and found evidence that listed banks use EBDL to smooth profits, for financial market reasons, more than those not listed (Bouwman, 2014). The question of whether banks use EBDL to manipulate reported profits is examined by a large empirical literature and the conclusions presented have been mixed (Ozili, 2017).

The ERC is used as a proxy for identifying unexpected profits in the financial market, generally being measured by the slope of the abnormal return coefficient and regression of unexpected profits, evaluating the quality of profits based on the market's reaction to published information about the profits (Bouwman, 2014). Investor responsiveness to earnings, commonly measured by ERC, has been used to test a variety of predictions about the determinants of earnings informativeness, including the effects of accounting methods (Dechow, Ge, & Schrand, 2010). The logic is that investors do not observe the quality of existing earnings and must rely on a subjective assessment of the earnings context to form expectations, and high-incentive companies lead to a greater perception of earnings uncertainty and greater combination of information. not only between the bank and investors, but also between investors (Batten & Vo, 2019).

ERC is lower for loss-making companies, which is consistent with those that are uninformative about future cash flows, and this prediction follows because banks have an opt-out option, and should not continue to be involved. in activities that generate losses (Aguguom & Salawu, 2019). Although this relationship is consistent with ERC as a proxy for identifying unexpected profits. Evidence in Batten and Vo (2019) concludes that, investors tend to overlap losses, gesturing that they expect a faster reversal than they actually do and, earnings persistence is a firm characteristic associated with fundamentals and indirect evidence on ERC as unexpected profit identifier (Imhoff & Lobo, 1992).

2.2 DTA and development of hypotheses

The DTA reported in the financial statements are caused by temporary differences between income tax expenses and income taxes payable (Ahnan & Murwaningsari, 2019). Temporary differences are differences between the carrying value of an asset or liability in the Balance Sheet and its taxable base and result in the unsustainability of profits, because these profits contain transitory items that are not repeated in the future (CPC, 2009, Pereira, 2017). DTA provide useful incremental information about earnings persistence, and tax legislation allows less discretion in accounting choices than Generally Accepted Accounting Principles (GAAP), with large positive differences between accounting and taxable profit being informative about management. of results (Pereira, 2017, França, 2018). Pereira and Tavares (2021) stated that there are several factors that support and show that DTA can demonstrate information about the quality of earnings and, in their studies, they showed that, for company-years with large differences in DTA, it is less persistent in future profits than for firm-years with small DTA differences. Zanon and Dantas (2020) showed in their studies that companies with a high volume (low volume) of DTA stock have a large

(small) effect on earnings persistence and can be used as a proxy for earnings quality.

The effect of DTA on profit persistence occurs due to differences in recognition between accounting rules and tax regulations related to certain revenues and expenses and arise when certain revenues and expenses recognized by accounting principles are not based on tax regulations (Martinez, Souza, & Monte-Mor, 2016). And these differences can detect earnings persistence, as they can separate discretionary and non-discretionary management activity. Furthermore, there is an assumption that the company prefers to manage profits by increasing them without any consequences of increasing taxes (Aguguom & Salawu, 2019). Therefore, the following hypothesis was tested:

H1: The larger (smaller) the DTA, the greater (smaller) the persistence of profits.

For profit smoothing, Dantas, Galdi, Capelletto and Medeiros (2013) defined a special case of inadequate disclosure of information in financial statements and this technique implies some type of deliberate effort to disclose this information, with with the aim of artificially reducing the variation in profit flows. It is possible for the bank to have a stable financial result, if it has reached maturity in its development and, the relevant economic environment of the company allows for a smoothing of profits from variability over time (Faria & Amaral, 2015).

DTA become the most common means of smoothing bank profits after the launch of Accounting Pronouncement Committee No. 32 (CPC 32), as it requires companies to evaluate at fair values, both assets and total liabilities in the Balance Sheet (Zanon & Dantas, 2020). Beatty and Liao (2014) used the DTA model to measure banks' earnings smoothing. Therefore, the following hypothesis was tested:

H2: The larger (smaller) the DTA, the greater (smaller) the profit smoothing will be.

The current period's unexpected earnings are informative for analysts in that they cause a forecast revision, which can make earnings with higher quality and the best outcome for the ERC, and the degree to which the ERC captures the decision utility is sensitive to the degree of heterogeneity in the correlation between unexpected earnings and forecast revisions within the sample (Zanon & Dantas, 2020), with the dispersion of the analyst forecast as a measure of inherent uncertainty associated with company operations (Imhoff & Lobo, 1992). Thus, more uncertain operations are associated with a lower quality of profits (Jin, Kanagaretnam & Lobo, 2018). Souza, Flach, Borba and Broietti (2020) showed in their research that the ERC decreases as the risk of default increases for stock returns, but the opposite result is valid for bond returns. Jin, Kanagaretnam and Lobo (2018) revealed that, DTA is a tool used as a measure for the quality of earnings in the banking sector, and to determine the value of DTA requires a lot of management consideration which tends to be subjective (Nicoletti, 2018) and, its flexibility could capture unexpected profits (Batten & Vo, 2019).

From the perspective of using DTA to capture unexpected profits, Zanon and Dantas (2020) suggest that, to measure unexpected profits in the financial market, the assessment of the ERC must be considered and the investor will appreciate the information more and produce higher ERC , meaning that, the bank produces high-quality earnings but, if the investor assumes that the profit contains less information, he will not appreciate the information and will produce lower ERC, which means that the bank produces low-quality earnings (Batten & Vo, 2019). Therefore, the following hypothesis was tested:

H3: The larger (smaller) the DTA, the larger (smaller) the ERC will be.

Previous studies, such as Kanagaretnam, Krishnan and Lobo (2010), Beatty and Liao (2014), Kanagaretnam, Lim and Lobo (2014) and Batten and Vo (2019) presented evidence of persistence of profits in banking institutions, but did not associate the use of DTA as a metric for persistence by bank size. Atwood, Drake and Myers (2010) showed earnings persistence results relating company size as being significant for profits to persist, but they did not use DTA as a metric for their persistence. Ozili (2017) presented evidence of profit smoothing in banking institutions, but did not associate the use of DTA as a metric for smoothing by bank sizes. Kanagaretnam, Lim and Lobo (2014) showed profit smoothing results relating bank sizes being significant for profits to be smoothed by EBDL, however, they did not use DTA as a metric for their smoothing. From the perspective of capturing unexpected profits by ERC, Jin, Kanagaretnam and Lobo (2018) revealed that DTA can be used as a measure for the quality of profits in the banking sector and, their flexibility could capture unexpected profits.

In view of the above, this research advances and differs from other previous studies because it used models and variables suitable for NFS banks, providing the use of DTA from the perspective of profit quality, having as proxies: profit persistence, profit smoothing and the capture of unexpected profits from the banking market by the ERC and its effects on financial institutions. Likewise, there are few studies that explored the quality of profits, through persistence and smoothing, in the banking context by bank size.

3 METHODOLOGICAL PROCEDURES

3.1 Population and sample

To carry out this research, data were collected between the first half of 2017 and the second half of 2021 from the semi-annual financial reports by the NFS Institutions Accounting Plan (COSIF) published by banks, also data collected from Brazilian Central Bank (BACEN), Bloomberg and Economatica®. These companies are classified into multiple, commercial, investment, development and savings banks, and, of the total of 343 banks presented by BACEN, 222 did not present DTA stocks, therefore representing the sample for this study, 121 banks.

To capture information from large, medium and small banks, Equations (1) and (2) were regressed again with the database separated by bank classifications (Table 1), which follow BACEN guidelines, relating to relative participation of the total assets of each institution with the sum of the total assets of all institutions considered (Instituto ASSAF, 2012).

The banks were classified in descending order of their individual shares in the total assets of the sample and these shares are accumulated, providing cuts when this accumulation reaches 70%, 95% and 100% of assets (Instituto ASSAF, 2012). Banks that make up the range of up to and including 70% of the amount of accumulated participation are considered large; those that make up the range above 70% to 95% are medium-sized, and those that make up the range above 95% to 100% are considered small (Instituto ASSAF, 2012).

Table 1
Number of banks used in the sample and separated by large, medium and small sizes from 2017 to 2021.

Bank	2017/1	2017/2	2018/1	2018/2	2019/1	2019/2	2020/1	2020/2	2021/1	2021/2
Large	5	5	5	5	5	5	5	5	5	5
Medium	17	17	17	17	17	17	17	17	17	17
Small	99	99	99	99	99	99	99	99	99	99
Total	121	121	121	121	121	121	121	121	121	121

Source: Developed by the authors.

3.2 Econometric Models

The models to be presented were run using panel data, in Stata 17, using fixed and random effects. And to verify the most efficient method for each model, the Chow F, Hausman and Breusch-Pagan LM tests were performed.

3.2.1 Profit persistence

The model for profit persistence is adapted from studies by Beatty and Liao (2014), Kanagaretnam, Lim and Lobo (2014) and Batten and Vo (2019) using the dependent variables of future profit to capture profit in the persistent period, discretionary measures of current profit, the absolute value of DTA and the one that represents the capture of DTA as a discretionary metric for profit persistence. The control variables presented in the model are: loan size (Kanagaretnam, Krishnan, & Lobo, 2010), which are profitable assets; default rate (Batten & Vo, 2019), considered as the risk of reduced profits; Net Equity (NE) ratio over total assets and customer deposits over total assets (Beatty & Liao, 2014), representing reputation, financial structure and tolerance risk; operating expense index (Atwood, Drake, Myers, & Myers, 2012), which is the effectiveness of corporate governance, and PIB, reflects macroeconomic conditions or trends in the economic cycle (Kanagaretnam, Lim, & Lobo, 2014), being the model represented in Equation (1):

$$EARN_{t+1} = \beta_0 + \beta_1 EARN_{it} + \beta_2 DTA_{it} + \beta_3 EARN_{it}*DTA_{it} + \beta_4 LOGEMP_{it} + \beta_5 \Delta PDC_{t-1} + \beta_6 CUSTOOP_{it} + \beta_7 PATRIMONIO_{it} + \beta_8 DEPOSITOS_{it} + \beta_9 \Delta PIB_t + \varepsilon_{it} \quad (1)$$

With the model represented by Equation (1), it becomes possible to verify whether the increase in DTA is associated with greater persistence of profits, according to H1, with the variable $EARN_{it}*DTA_{it}$ being of interest for identifying the use of these assets in period t and the result of future profit t+1, because, if the future profit has been inflated by the DTA, it makes it less discretionary in its financial operations, and yes, polluted by the increase in these assets, thus expecting a positive coefficient (Schrand & Wong, 2003). The $EARN_{it}$ variable represents the bank's profitability in the current period and is controlled to maintain the persistence of future profits, with a positive coefficient being expected (Atwood, Drake, Myers, & Myers, 2012).

The variables $LOGEMP_{it}$, ΔPDC_{t-1}, $CUSTOOP_{it}$, $PATRIMONIO_{it}$, $DEPOSITOS_{it}$ are variables included in the model to control the impact of specific factors on the bank's profitability. Theoretically, loan values ($LOGEMP_{it}$) reflect the bank's main profitable assets, therefore, there will be a positive relationship with persistent profits (Kanagaretnam, Krishnan, & Lobo, 2010). The Provision for Doubtful Credit (ΔPDC_{t-1}) reflects an increase or reduction in bank profitability, expecting a positive coefficient, because, when the bank grants credit, its profitability is realized through the receipt of loans plus interest, however, when there is an increase in PDC, which means that profit will be provisioned in a future period, being a management variable to signal the current reduction in profit (Kanagaretnam, Krishnan, & Lobo, 2010). While the operating cost ($CUSTOOP_{it}$) reflects the cost management capacity, reducing banks' profitability and, therefore, the coefficient is expected to be negative (Batten & Vo, 2019, Pereira & Tavares, 2021).

A high ratio of NE to total assets ($PATRIMONIO_{it}$) indicates strong financial strength and possibly better profitability. However, when the equity ratio is high, the debt ratio is low and the ability to amplify the operating result reduces. Therefore, the coefficient is expected to be negative (Pereira & Tavares, 2021). The relationship between customer deposits and total assets ($DEPOSITOS_{it}$) represents the capacity to attract resources from the population, that is, if the mobilization capacity of a population is limited, banks will have to use alternative capital from the interbank market with rates of higher interest rates. In other words, if the ratio between customer deposits and total assets is high, it means that the bank has good management of deposit costs and greater profitability. The coefficient is expected to be positive (Beatty & Liao, 2014). And ΔPIB_t reflects the trend cycle of the national economy and changes in macroeconomic factors that can generate changes in profits at certain times, being a non-discretionary event and, what is expected, is a negative sign

in the coefficient (Bikker & Metzemakers, 2005).

3.2.2 Profit smoothing

Following the models of Kanagaretnam, Lim and Lobo (2014) and Ozili (2017), it is possible to verify whether the increase in DTA is associated with the increase in profit smoothing, as per H2, using PDC_{it} as a proxy for the dependent variable, current profit and DTA as discretionary variables, in addition to the variable that captures DTA as a discretionary measure for profit smoothing (H2). The control variables are presented by: size, non-performing loans, loan growth, bank's Share Capital, future profit and PIB growth rate, with the model represented by Equation (2):

$$PDC_{it} = \beta_0 + \beta_1 EARN_{it} + \beta_2 DTA_{it} + \beta_3 EARN_{it}*DTA_{it} + \beta_4 SIZE_{it} + \beta_5 PDCINITIAL_{it} + \beta_6 BAIXAEMPR_{it} + \beta_7 EINADIN_{t-1} + \beta_8 LOGEMP_{t-1} + \beta_9 CAPITAL_{it} + \beta_{10} \Delta LUCRO_{t+1} + \beta_{11} \Delta PIB_t + \varepsilon_{it} \quad (2)$$

The profit smoothing variable of interest is $EARN_{it}*DTA_{it}$. A positive sign in the coefficient is indicative of profit smoothing of banking results through PDC (Schrand & Wong, 2003), as the expected relationship is that DTA are differences made by the initial and final balances of PDC and, the higher the DTA values to reduce the tax calculation base on profits, the lower the stock value of PDC will be, making profit smoothing less discretionary in its financial operations, and yes, polluted by the increase in these assets. The $EARN_{it}$ variable represents the bank's profitability in the current period and is controlled to maintain profit smoothing, with a positive coefficient expected (Atwood, Drake, Myers, & Myers, 2012).

The control variable $SIZE_{it}$, which represents the size of the bank by total assets, may suggest that large banks have higher levels of business activity, therefore, they may constitute higher provisions to correspond to their high levels of activity in relation to smaller banks, with a positive sign in their coefficient expected (Ozili, 2017). The variable $PDCINITIAL_{it}$ represents the initial balance of PDC, and the higher the initial PDC, the greater the requirement for a lower PDC in the current period, for profit smoothing to occur (Ozili, 2017). Defaulted loans capture the risk of the bank loan portfolio and current loan charges ($BAIXAEMPR_{it}$) can provide information about future loan defaults and are expected to be negatively correlated with PDCit which, by definition, contains information about future defaults (Beaver & Engel, 1996). Because higher levels of initial nonperforming loans ($EINADIN_{t-1}$) during the current period will require a larger provision in the current period, $EINADIN_{t-1}$ is expected to have a negative relationship with PDC_{it}.

Loan growth is a proxy for contemporary credit risk (Pereira & Tavares, 2021). The size of the loan portfolio related to total assets may vary between banks, with those with more assets in the form of loans at the beginning of the period having a higher $LOGEMP_{t-1}$. Furthermore, PDC_{it} may be positively or negatively related to the change in loan value during the year, depending on the level of default risk associated with incremental loans, and the supply of loans increases due to contemporary credit risk concerns. However, Lobo and Yang (2001) point out that a negative relationship can be expected if banks reduce provisions due to the improvement in the quality of incremental loans.

The use of PDC_{it} for the management of Social Capital ($CAPITAL_{it}$) and variation of the next NP period ($\Delta LUCRO_{t+1}$), respectively, were controlled. Banks with lower Social Capital have more incentives to increase PDCit to maintain minimum capital ratios (Ahmed, Takeda, & Thomas, 1999). Therefore, a positive coefficient on capital is expected and, to the extent that banks use PDCit to signal future profitability, PDC_{it} is expected to be positively related to the variable $\Delta LUCRO_{t+1}$ (Healy & Wahlen, 1999). And finally, the variable ΔPIB which represents the control of the development of the economic cycle (Bikker & Metzemakers, 2005) and, according to its result, could change the supply of bank credits and, consequently, the index of PDC, therefore, a negative sign in the coefficient is expected.

3.2.3 ERC

To identify the ERC, the models of Imhoff and Lobo (1992) and Teoh and Wong (1993) were used, making it possible to verify whether the increase in DTA is associated with the increase in ERC, according to H3. UE_{it} was used as the dependent variable, which represents the unexpected profits for the shares of bank i, calculated by the difference between the realized share price and the share price predicted by analysts, scaled by the realized share price. The share price is predicted monthly, while the sample period is six months; For this purpose, the monthly average of share price forecasts was calculated. The same happened with the price of the share held, however, this occurs daily; if necessary, the daily average of share price realizations.

The discretionary variables are represented by unexpected profits, by DTA and also by the variable that captures the association of DTA with the ERC. The control variables are represented by: dollar exchange rate, market index, loans, liquidity index, change in default, solvency risk and industrial development index, with the model represented by Equation (3):

$$UE_{it} = \beta_0 + \beta_1 LUCROSIN_{it} + \beta_2 DTA_{it} + \beta_3 LUCROSIN_{it}*DTA_{it} + \beta_4 DOLAR_t + \beta_5 ACOES_t + \beta_6 EMDEP_{it} + \beta_7 RLIQ_{it} + \beta_8 \Delta PDC_{t-1} + \beta_9 RSOL_{it} + \beta_{10} BAIXAEMPR_{it} + \beta_{11} EINADIN_{t-1} + \beta_{12} LOGEMP_{t-1} + \beta_{13} \Delta PIB_t + \varepsilon_{it} \quad (3)$$

The variable $LUCROSIN_{it}$ represents the unexpected profits of bank i, being calculated by the difference between the profits realized at the end of the sample period and the profits predicted by analysts at the beginning of that period, with the expected coefficient being positive. $LUCROSIN_{it}*DTA_{it}$ identifies the association of DTA with unexpected profits and the positive sign in the coefficient

represents the increase in ERC through unexpected stock profits (Ozili, 2017). The expected relationship is that DTA make up bank profits, the greater this composition, the greater the unexpected profit. And as a market reaction, their stock prices will trend upward, generating a greater unexpected profit in their prices compared to predicted values (Teoh & Wong, 1993). The increase in the exchange rate ($DOLAR_t$) means that the appreciation of the national currency would make currency holdings less valuable, therefore, a negative effect on bank share prices is expected, therefore a negative coefficient is expected (Ariff, Fah, & Ni, 2013). And the volatility of the stock market ($ACOES_{it}$) increases the risk and return of stocks, as a consequence, the positive sign is expected in the coefficient in relation to the ERC (Ariff, Fah, & Ni, 2013).

The next four bank-specific factors have the following effects: interest risk, being the loan/deposit ratio ($EMDEP_{it}$). And the higher this ratio, the greater the default, thus reducing share prices, and the expected coefficient is negative (Hapsari, 2011). The second factor is liquidity risk ($RLIQ_{it}$), with a positive sign expected in the coefficient, as the greater liquidity, the lower the risk for banks not to obtain unexpected profits in share prices (Teoh & Wong, 1993). The third factor is credit risk (ΔPDC_{t-1}), and the higher the PDC, the lower the profit, consequently, the lower the share price, with a negative coefficient being expected (Ozili, 2017). The last factor is solvency risk, with the relationship that the greater the capital adequacy (RSOLit), the lower the risk and the higher the share prices, expecting a positive coefficient (Holthausen & Verrecchia, 1988).

Windfall profits can arise from defaulted loans, through interest received and current loan charges, and the control variable $BAIXAEMPR_{it}$ can provide information about future loan defaults and are expected to be negatively correlated with PDC_{it} (Beaver & Engel, 1996). Therefore, higher levels of initial non-performing loans ($EINADIN_{t-1}$) during the current period will require a larger provision in the current period. $EINADIN_{t-1}$ is expected to have a negative relationship with PDC_{it}. The size of the loan portfolio, related to total assets, may vary between banks, and those with larger volumes of assets in the form of loans at the beginning of the period should have higher $LOGEMP_{t-1}$, being positively related or negative with PDCit, however, Lobo and Yang (2001) point out that a negative relationship can be expected if banks reduce provisions due to the improvement in the quality of incremental loans. And ΔPIB_t reflects the trend cycle of the national economy and changes in macroeconomic factors that can generate changes in profits at certain times, being a non-discretionary event (Bikker & Metzemakers, 2005), expecting a negative sign on the coefficient.

3.3 Summary of variables

Table 2 presents the variables used by the models for H1, H2 and H3, as well as their descriptions, expected signs and researched sources.

Table 2
Summary of H1, H2 and H3 Variables

Variable	Description	Expected signal	Source
$EARN_{t+1}$	Dependent variable that represents the LL of bank i period t+1 scaled by total assets at the beginning of the period.	(+)	Atwood, Drake and Myers (2010) and Dantas, Medeiros, Galdi and Costa (2013)
$EARN_{it}$	Discretionary variable that represents the LL of bank i year t scaled by total assets at the beginning of the period.	(+)	Atwood, Drake e Myers (2010) and Dantas, Medeiros, Galdi and Costa (2013)
DTA_{it}	Discretionary variable that represents the absolute value of DTA scaled by total assets at the beginning of the period.	(+)	Schrand and Wong (2003)
$EARN_{it}*DTA_{it}$	Variable that represents the persistence of profits per DTA of bank i year t scaled by total assets at the beginning of the period.	(+)	Atwood, Drake and Myers (2010) and Atwood, Drake, Myers and Myers (2012)
ΔPDC_{t-1}	Control variable that represents the change in PDC scaled by total assets at the beginning of the period.	(+)	Beaver and Engel (1996)
$LOGEMP_{it}$	Control variable that represents the logarithm of loans to customers of bank i period t.	(+)	Kanagaretnam, Lim and Lobo (2010)
$CUSTOOP_{it}$	Control variable that represents the ratio between the operating expenses of bank i period t and total assets at the beginning of the period.	(-)	Batten and Vo (2019)
$PATRIMONIO_{it}$	Control variable that represents the ratio between the NE of bank i period t and total assets at the beginning of the period.	(-)	Dantas, Medeiros, Galdi and Costa (2013) and Kanagaretnam, Lim and Lobo (2014)
$DEPOSITOS_{it}$	Control variable that represents customer deposits of bank i period t scaled by total assets at the beginning of the period.	(+)	Beatty and Liao (2014)
ΔPIB_t	Macroeconomic control variable for the country's industrial development.	(-)	Bikker and Metzemakers (2005) and Kanagaretnam, Lim and Lobo (2010)

PDC_{it}	Dependent variable that represents the PDC value scaled by total assets at the beginning of the period.	(-)	Kanagaretnam, Lim and Lobo (2014) and Ozili (2017)
$SIZE_{it}$	Control variable that represents the natural logarithm of total assets of bank i period t.	(+)	Dantas, Medeiros, Galdi and Costa (2013)
$PDCINITIAL_{it}$	Control variable that represents the initial PDC of bank i period t scaled by initial total assets.	(-)	Ozili (2017)
$BAIXAEMPR_{it}$	Control variable that represents loan write-offs of bank i period t scaled by initial total assets.	(-)	Beaver and Engel (1996)
$EINADIN_{t-1}$	Control variable representing initial non-performing loans of bank i period t-1 scaled by initial total assets.	(-)	Beaver and Engel (1996) and Dantas, Medeiros, Galdi and Costa (2013)
$LOGEMP_{t-1}$	Control variable that represents the logarithm of loans to customers of bank i period t-1.	(-)	Dantas, Medeiros, Galdi and Costa (2013)
$CAPITAL_{it}$	Control variable that represents the natural logarithm of the Social Capital of bank i period t.	(+)	Ahmed, Takeda and Thomas (1999) and Dantas, Medeiros, Galdi and Costa (2013)
$\Delta LUCRO_{t+1}$	Control variable that represents the change from semester t to t+1 of bank i's LL scaled by initial total assets.	(+)	Healy and Wahlen (1999)
UE_{it}	Dependent variable that represents the unexpected share profits of bank i period t, being the difference between the realized share price (-) the share price predicted by analysts, scaled by the realized share price.	(+)	Teoh and Wong (1993)
$LUCROSIN_{it}$	Discretionary variable that represents the unexpected profits of bank i period t, being the difference between the realized profits (-) the profits predicted by analysts scaled by the total assets at the beginning of the period.	(+)	Teoh and Wong (1993)
$LUCROSIN_{it}*DTA_{it}$	Variable that represents the association of DTA with the unexpected profits of bank i year t scaled by total assets at the beginning of the period.	(+)	Teoh and Wong (1993) and Ozili (2017)
$DOLAR_{t}$	Control variable that represents the dollar exchange rate in period t.	(-)	Ariff, Fah and Ni (2013)
$ACOES_{t}$	Control variable that represents the market index of period t.	(+)	Ariff, Fah and Ni (2013)
$EMDEP_{it}$	Control variable that represents the value of loans scaled by deposits from bank i period t.	(-)	Hapsari (2011)
$RLIQ_{it}$	Control variable that represents the liquidity index, calculated by dividing total current assets by total assets of bank i period t.	(+)	Teoh and Wong (1993)
$RSOL_{it}$	Control variable that represents the solvency risk, calculated by dividing the PL by the total assets of bank i period t.	(+)	Holthausen and Verrecchia (1988)
ε_{it}	Represents the error term.	(+/-)	-

Source: Developed by the authors.

4 DESCRIPTIVE STATISTICS AND MULTIVARIATE ANALYSIS

Table 3 presents the results of the descriptive statistics of the main variables of the models that provide evidence of the discretion of DTA as components of earnings quality (persistence, smoothing and ERC) of banks.

Regarding Panel A, which displays the descriptive statistics of the profit persistence and smoothing variables, the variables $EARN_{t+1}$, $EARN_{it}$ and $\Delta LUCRO_{t+1}$, which represent the profitability variables, these exhibited a high standard deviation (0.0152, 0.0152 and 0.0157) compared to the average (0.0043, 0.0043 and 0.0003), suggesting that the banks in the sample showed high dispersion between profits from maximum values (0.2188, 0.2188 and 0.2098) and minimum values (-0.1652, -0.1652 and - 0.1998), and the minimum values, due to their proximity to the averages, made banks with a lower profitability index more persistent and smoothed their profits. This result presented is consistent with Beatty and Liao (2014), Kanagaretnam, Lim and Lobo (2014) and Batten and Vo (2019).

The DTA_{it} presented a high dispersion in its standard deviation (0.0347), and a low average (0.0004), meaning that, while the banks in the sample presented DTA for the reduction of the calculation base for Corporate Income Tax (IRPJ) and Social Contribution on Net Income (CSLL), which can be observed by the value maximum (0.3910), other banks did not reduce their calculation base, that is, PDCit, which presented an average of -0.0083, was reduced semester by semester for these banks, impacting the quality of profits, making it more discretionary with financial intermediation operations, this result being consistent with Schrand and Wong (2003) and Ozili (2017).

The discretionary variable for profit persistence and smoothing ($EARN_{it}*DTA_{it}$) exhibited a high standard deviation (0.0018), and the dispersion tended to be close to the maximum value (0.0142), suggesting that persistence and smoothing of profits may have occurred for banks that obtained a higher volume of DTA stocks and level of profitability, with this result being consistent with Beatty and Liao (2014), Kanagaretnam, Lim and Lobo (2014) and Batten and Vo (2019).

Table 3
Descriptive statistics

This table presents descriptive statistics in Panel A of the dependent, discretionary and control variables of H1 and H2, with the values scaled by total assets at the beginning of the period, except for the absolute indicators of $LOGEMP_{it}$, $CAPITAL_{it}$, $SIZE_{it}$, $DOLAR_t$, $ACOES_t$ and ΔPIB_t. The sample is identified by 121 NFS banks, collecting data from the financial reports of the banks and BACEN, referring to the period from 2017 to 2021. Panel B presents the descriptive statistics of the dependent, discretionary and control variables of H3, being the values scaled by total assets at the beginning of the period, except the absolute indicators of $LOGEMP_{t-1}$, $DOLAR_t$, $ACOES_t$ and ΔPIB_t. The sample is identified by 46 NFS banks, collecting data from the banks' financial reports, from BACEN, Bloomberg and Economatica®, for the period from 2017 to 2021.

Panel A: Descriptive Statistics for earnings persistence (H1) and earnings smoothing (H2)				
	Mean	**Std. dev.**	**Min**	**Max**
$EARN_{t+1}$	0.0043	0.0152	-0.1652	0.2188
DTA_{it}	0.0004	0.0347	-0.3698	0.3910
$EARN_{it}$	0.0043	0.0152	-0.1652	0.2188
$EARN_{it}$*DTA_{it}	-0.0001	0.0018	-0.0401	0.0142
$LOGEMP_{it}$	20.9541	2.6530	9.5814	27.4303
ΔPDC_{t-1}	0.0007	0.0147	-0.4732	0.1014
$CUSTOOP_{it}$	-0.0487	0.0887	-2.2503	-0.0012
$PATRIMONIO_{it}$	0.0726	0.1459	-0.0039	2.8839
$DEPOSITOS_{it}$	0.1168	0.1964	0.0000	2.1343
PDC_{it}	-0.0083	0.0290	-0.4869	0.0000
$PDCINITIAL_{it}$	-0.0083	0.0288	-0.4627	0.0000
$BAIXAEMPR_{it}$	0.0111	0.1238	-0.1547	3.0794
$EINADIN_{t-1}$	0.0003	0.0106	-0.1092	0.3146
$LOGEMP_{t-1}$	0.1075	0.1729	0.0000	3.3178
$CAPITAL_{it}$	20.3964	1.7904	16.7599	25.2995
$\Delta LUCRO_{t+1}$	0.0003	0.0157	-0.1998	0.2098
ΔPIB_t	-0.8282	0.9312	-2.6550	0.5650
$SIZE_{it}$	23.9216	2.4449	17.1410	30.6160
Number of observation	1.210			
Panel B: Descriptive Statistics for unexpected profits by ERC (H3)				
	Mean	**Std. dev.**	**Min**	**Max**
UE_{it}	-0.0006	0.0054	-0.0331	0.0178
$LUCROSIN_{it}$	-6.65e-07	6.38e-06	-0.00007	0.00002
DTA_{it}	0.0006	0.0080	-0.1053	0.1108
$LUCROSIN_{it}$*DTA_{it}	1.48e-09	3.96e-08	-1.81e-07	7.79e-07
$EMDEP_{it}$	3.5212	9.7224	0.0237	10.1035
$RLIQ_{it}$	0.2222	0.1012	0.0156	0.5145
$RSOL_{it}$	0.0455	0.0818	0.0026	0.7171
ΔPDC_{t-1}	0.0001	0.0028	-0.0285	0.0288
$BAIXAEMPR_{it}$	0.0076	0.0712	-0.1547	1.4488
$EINADIN_{t-1}$	-0.0001	0.0020	-0.0231	0.0228
$LOGEMP_{t-1}$	0.0899	0.1357	0.0002	11.881
$DOLAR_t$	4.3140	0.8612	3.2400	5.4800
$ACOES_t$	93034	16536	64555	118941
ΔPIB_t	-0.8282	0.9318	-26.550	0.5650
Number of observation	460			

Source: Developed by the authors.
Legend: $EARN_{t+1}$ = Net Profit t+1. $EARN_{it}$ = Net Profit. DTA_{it} = Deferred Tax Assets. $EARN_{it}$*DTA_{it} = Profit Persistence. ΔPDC_{t-1} = Change in PDC. $LOGEMP_{it}$ = Logarithm of loans. $CUSTOOP_{it}$ = Ratio between operating expenses and total assets. $PATRIMONIO_{it}$ = Ratio between NE and total assets. $DEPOSITOS_{it}$ = Ratio between customer deposits and total assets. ΔPIB_t = Change in PIB. PDC_{it} = Provision for Doubtful Credits. $SIZE_{it}$ = Logarithm of total assets. $PDCINITIAL_{it}$ = PDC at the beginning of the year. $BAIXAEMPR_{it}$ = Write-off of loans. $EINADIN_{t-1}$ = Defaulted loans at the beginning of the year. $LOGEMP_{t-1}$ = Logarithm of loans. $CAPITAL_{it}$ = Logarithm of Social Capital. $\Delta LUCRO_{t+1}$ = Change in NP. UE_{it} = Unexpected equity profits. $LUCROSIN_{it}$ = Unexpected profits from banks. $LUCROSIN_{it}$*DTA_{it} = Association of DTA with unexpected profits. $DOLAR_t$ = Dollar exchange rate. $ACOES_t$ = Market index. $EMDEP_{it}$ = Value of loans. $RLIQ_{it}$ = Liquidity index. $RSOL_{it}$ = Solvency risk.

In relation to Panel B, which displays the descriptive statistics of the variables capturing unexpected profits, the variable that captured unexpected profits through the values of bank shares (UE_{it}) exhibited an average of -0.0006, closer to the maximum value (0.0178) compared to the minimum value (-0.0331), suggesting that banks tended to have the maximum abnormal financial return on shares. The variable that represents the value of unexpected profit ($LUCROSIN_{it}$), presented in its results an average of -6.65e-07, closer to the minimum value (-0.00007) compared to the maximum value (0.00002), suggesting that banks tended to have the minimum unexpected profit, unlike the UE_{it} variable. The results presented were consistent with Hapsari (2011) and Ariff, Fah and Ni (2013).

The discretionary variable for capturing abnormal profit by the ERC using DTA as a metric ($LUCROSIN_{it}$*DTA_{it}) exhibited a high standard deviation (3.96e-08), and the dispersion tended to be close to the maximum value (7.79e -07), suggesting that the unexpected profit from the ERC may have occurred for banks that obtained a greater volume of DTA stocks, which presented an average of 0.0006 and a high standard deviation (0.0080), and profitability level, which is result presented consistent with Teoh and Wong (1993).

Panels A and B displayed DTA inventory values and profitability levels that may contribute to profit persistence, profit smoothing, and bank windfalls from the ERC. The values of loans granted to account holders suggest that profits will be increased by receiving embedded interest and DTA will also increase, due to the default of not receiving these loans, generating a greater tendency for persistence and smoothing of profits. And the increase in DTA will increase unexpected profits from banking sector shares, which makes it possible to identify DTA from the perspective of earnings quality (Ferreira, 2021).

4.1 Empirical Results

The results presented in Table 4 provide evidence on the effects of DTA on the earnings quality perspective of NFS banks, using three proxies: earnings persistence (H1), earnings smoothing (H2) and ERC (H3) to measure DTA as components of unexpected profits.

Table 4
DTA as a bank earnings quality metric

This table presents the results of the H1, H2 and H3 regressions. The linear regression of the hypothesis panel data made it possible to identify the effects of DTA from the perspective of NFS earnings quality, using three proxies: earnings persistence (H1), earnings smoothing (H2) and unexpected earnings from the ERC (H3). The Chow, Hausman and Breusch-Pagan LM tests were considered, with the fixed effect being the most appropriate for H1, H2 and H3. The Pearson Correlation test was performed between the PDC_{it} and DTA_{it} variables and the result showed low correlation for H2 (Appendix A).

	$EARN_{t+1}$		PDC_{it}		UE_{it}	
		F(9,1197) = 31.51		F(11,1197) = 5276.02		F(13,436) = 5.36
		R-squared = 0.1915		R-squared = 0.9798		R-squared = 0.1377
		Prob>F = 0.0000		Prob>F = 0.0000		Prob>F = 0.0000
	Coefficient	P-Value	Coefficient	P-Value	Coefficient	P-Value
DTA_{it}	-0.0299	***(0.010)	-0.0190	***(0.000)	0.0004	(0.991)
$EARN_{it}$	0.3591	***(0.000)	0.0221	**(0.049)		
$EARN_{it}$*DTA_{it}	2.0944	***(0.000)	-0.6454	***(0.000)		
$LOGEMP_{it}$	-0.0001	(0.653)				
ΔPDC_{t-1}	0.0151	(0.575)			-0.0875	(0.362)
$CUSTOOP_{it}$	-0.0006	(0.898)				
$PATRIMONIO_{it}$	0.0055	*(0.076)				
$DEPOSITOS_{it}$	0.0141	***(0.000)				
ΔPIB_{t}	-0.0001	(0.735)	-0.0003	***(0.007)	0.0001	(0.913)
$SIZE_{it}$			-0.0004	***(0.001)		
$PDCINITIAL_{it}$			1.0251	***(0.000)		
$BAIXAEMPR_{it}$			-0.0164	***(0.000)	-0.0118	***(0.001)
$EINADIN_{t-1}$			-0.0530	***(0.000)	0.1435	(0.264)
$LOGEMP_{t-1}$			-0.0007	(0.408)	-0.0039	(0.296)
$CAPITAL_{it}$			0.0004	**(0.012)		
$\Delta LUCRO_{t+1}$			-0.0137	(0.196)		
$LUCROSIN_{it}$					0.3127	***(0.000)
$LUCROSIN_{it}$*DTA_{it}					1.4858	**(0.030)
$DOLAR_{t}$					0.0002	(0.755)
$ACOES_{it}$					-2.41e-08	(0.499)
$EMDEP_{it}$					-7.86e-07	(0.977)
$RLIQ_{it}$					-0.0021	(0.412)
$RSOL_{it}$					0.0078	(0.200)
Number of observation	1.210		1.210		460	

Source: Developed by the authors.
The data from the models were run in a panel with significance at 5%. Significance levels: ***(1%), **(5%) and *(10%).
Legend: $EARN_{t+1}$ = Net Profit t+1. $EARN_{it}$ = Net Profit. DTA_{it} = Deferred Tax Assets. $EARN_{it}$*DTA_{it} = Profit Persistence. ΔPDC_{t-1} = Change in PDC. $LOGEMP_{it}$ = Logarithm of loans. $CUSTOOP_{it}$ = Ratio between operating expenses and total assets. $PATRIMONIO_{it}$ = Ratio between NE and total assets. $DEPOSITOS_{it}$ = Ratio between customer deposits and total assets. ΔPIB_{t} = Change in PIB. PDC_{it} = Provision for Doubtful Credits. $SIZE_{it}$ = Logarithm of total assets. $PDCINITIAL_{it}$ = PDC at the beginning of the year. $BAIXAEMPR_{It}$ = Write-off of loans. $EINADIN_{t-1}$ = Defaulted loans at the beginning of the year. $LOGEMP_{t-1}$ = Logarithm of loans. $CAPITAL_{it}$ = Logarithm of Social Capital. $\Delta LUCRO_{t+1}$ = Change in NP. UE_{it} = Unexpected equity profits. $LUCROSIN_{it}$ = Unexpected profits from banks. $LUCROSIN_{it}$*DTA_{it} = Association of DTA with unexpected profits. $DOLAR_{t}$ = Dollar exchange rate. $ACOES_{t}$ = Market index. $EMDEP_{it}$ = Value of loans. $RLIQ_{it}$ = Liquidity index. $RSOL_{it}$ = Solvency risk.

Regarding the first set of results ($EARN_{t+1}$), the coefficient on DTAit was negative (-0.0299) and significant at 5% (p>0.010), suggesting that for every R$1.00 increase in DTA, there will be a reduction of R$ 0.03 in the NP of the following period for the persistence of profits. The variables $EARN_{it}$ and $DEPOSITOS_{it}$ had positive coefficients (0.3591 and 0.0141) and significant at 5% (p>0.000 and p>0.000), suggesting that the greater the NP of the period and the value of deposits made by account holders, the greater the discretion will be of banks to use the NP of the following period as profit persistence. The discretionary variable that responds to H1 ($EARN_{it}$*DTA_{it}) exhibited a positive coefficient (2.0944) and significant at 5% (p>0.000), suggesting that the increase in DTA will increase together with current profits the persistence of future profits.

The variables $LOGEMP_{it}$, ΔPIB_{t} and $CUSTOOP_{it}$ presented negative and non-significant coefficients, and the variables ΔPDC_{t-1} and $PATRIMONIO_{it}$ presented positive and non-significant coefficients. The results presented were consistent with Kanagaretnam, Lim and Lobo (2014), Beatty

and Liao (2014) and Batten and Vo (2019).

For the second set of results (PDC_{it}), the coefficient on DTA_{it} was negative (-0.0190) and significant at 5% (p>0.000), suggesting that for every R$1.00 increase in DTA there will be a reduction of R$ 0.02 of PDC for profit smoothing, as well as the variables ΔPIB_t, $SIZE_{it}$, $BAIXAEMPR_{lt}$, $EINADIN_{t-1}$ which presented negative coefficients (-0.0003, -0.0004, -0.0164, -0.0530) and significant at 5% (p> 0.007, p>0.001, p>0.000 and p>0.000), representing the same level of DTA adjustment in the model to reduce profit smoothing due to PDC.

The variables $EARN_{it}$, $PDCINITIAL_{it}$ and $CAPITAL_{it}$ presented positive coefficients (0.0221, 1.0251 and 0.0004) and significant at 5% (p>0.049, p>0.000 and p>0.012), suggesting that the higher the values of current profits, the initial PDC ($PDCINITIAL_{it}$) and Social Capital ($CAPITAL_{it}$), the higher the PDC levels will be used as a metric for profit smoothing.

The discretionary variable that responds to H2 ($EARN_{it}$*DTA_{it}) exhibited a negative coefficient (-0.6454) and significant at 5% (p>0.000), suggesting that the increase in DTA will reduce, together with current profits, the smoothing of profits by PDC. The variables $LOGEMP_{t-1}$ and $\Delta LUCRO_{t+1}$ exhibited negative and non-significant coefficients. The results presented were consistent with Bikker and Metzemakers (2005) and Ozili (2017).

Regarding the third set of results (UE_{it}), the coefficient on $LUCROSIN_{it}$, which represents the ERC used as a metric for earnings quality, was positive (0.3127) and significant at 5% (p>0.000), suggesting that unexpected stock profits increases at the same level as unexpected banking profits, as well, occurring with the discretionary variable that responds to H3 ($LUCROSIN_t$*DTA_{it}), which presented a positive coefficient (1.4858) and significant at 5% (p>0.030), suggesting that the increase in DTA will increase, together with financial windfalls, the stock windfall of the banking sector.

The variable $BAIXAEMPR_{it}$ displayed a negative coefficient (-0.0118) and significant at 5% (p>0.001), suggesting that with each increase in loan write-offs, the unexpected stock profit will be reduced. The variables DTA_{it}, ΔPIB_t, $EINADIN_{t-1}$, $DOLAR_t$, $RSOL_{it}$ exhibited positive and non-significant coefficients at 5%, and the variables ΔPDC_{t-1}, $LOGEMP_{t-1}$, $ACOES_{it}$, $EMDEP_{it}$, $RLIQ_{it}$ exhibited negative and non-significant coefficients at 5%. The results were consistent with Hapsari (2011) and Ariff, Fah and Ni (2013).

The empirical results presented in Table 4 suggest that the effects of DTA from the perspective of earnings quality for earnings persistence (H1) and unexpected profit by ERC (H2) increase when DTA are increased and, for earnings smoothing (H3), decreases when DTA are increased. Taken together, the results suggest that DTA are being used in a discretionary manner, in accordance with relevant legislation, and managers can make them persistent, smooth and with the prospect of unexpected profits to obtain financial benefits, whether by improving profitability or, increasing value. of its actions and also in the maintenance of DTA for the continuity of these benefits.

4.1.1 Empirical results by bank sizes

The results presented in Table 5 provide evidence on the discretion of DTA as components of earnings quality and the possible impacts for large, medium and small NFS banks, using two proxies: earnings persistence (H1) and profit smoothing. profits (H2). The ERC proxy was not used due to the number of banks in the sample, which would tend only to large and medium-sized banks, not achieving the objective of identifying the behavior of banks by size of large, medium and small banks.

The first set of results is shown in the left column with the dependent variable $EARN_{t+1}$ being used to capture the NP in the persistent period (Atwood, Drake, & Myers, 2010). The second set of results is shown by the dependent variable PDC_{it}, being used to capture the loans granted that will influence the smoothing of profits due to their receipts and, in case of non-receipts, will increase the stock of DTA and reduce the smoothing (Kanagaretnam, Lim, & Lobo, 2014, Ozili, 2017). Therefore, the results make it possible to verify whether the increase in DTA is associated with the increase in earnings quality levels for H1 and H2.

Regarding the first set of results ($EARN_{t+1}$), which represents the persistence of profits, the DTA_{it} variable exhibited significant results at 5% for large (p>0.010) and small banks (p>0.041), however, a positive coefficient for large banks (0.6441) and negative for small banks (-0.0259). Suggesting that the increase in DTA for large banks will follow from an increase in the following period's NP for the persistence of profits, making these profits more polluted by the discretionary use of these assets. While for small banks, the increase in DTA will reduce the NP of the following period, making them with a higher quality of profits and less discretionary for their persistence. The $EARN_{it}$ variable showed a significant result at 5% for small banks (p>0.000) and a positive coefficient (0.3891), suggesting that the increase in NP in the current period will increase NP in the following period by 38.91%, making them discretionary in the persistence of profits.

For medium-sized banks, the $LOGEMP_{it}$ variable presented a significant result at 5% (p>0.021) and the positive coefficient (0.0010), suggesting that the increase in loans to customers in the current period will increase the NP in the following period, and the the risk of default increases when more loans are granted and, as a consequence, DTA stocks will increase and, with their use, NP will increase, making them more persistent. The discretionary variable that responds to H1 ($EARN_{it}$*DTA_{it}) exhibited positive coefficients (8.5067 and 2.3194) and significant at 5% (p>0.000 and p>0.000) for medium and small banks, suggesting that the increase in DTA will increase together with current profits the persistence of future profits of these banks.

Table 5
DTA with profit quality metrics for large, medium and small banks

This table presents the results of regressions for large, medium and small banks, following the BACEN classification. Linear regressions of H1 and H2 panel data made it possible to identify the effects of DTA from the perspective of NFS earnings quality, using two proxies: earnings persistence (H1) and earnings smoothing (H2). The Chow, Hausman and Breusch-Pagan LM tests were considered, with the fixed effect being the most appropriate for H1 and H2. The Pearson Correlation test was performed between the PDC_{it} and DTA_{it} variables of the profit smoothing model (H2) and the result showed low correlation for large and small banks, for medium-sized banks (Appendix B).

	$EARN_{t+1}$			PDC_{it}		
	Large	Medium	Small	Large	Medium	Small
	F(9,40) = 3.15 R-squared = 0.4150 Prob>F = 0.0058	F(9,160) = 30.16 R-squared = 0.6291 Prob>F = 0.0000	F(9,977) = 21.56 R-squared = 0.1657 Prob>F = 0.0000	F(11,38) = 177.16 R-squared = 0.9809 Prob>F = 0.0000	F(11,158) = 7790 R-squared = 0.9982 Prob>F = 0.0000	F(11,977) = 4094.13 R-squared = 0.9788 Prob>F = 0.0000
DTA_{it}	0.6441	-0.0837	-0.0259	-0.1907	0.0032	-0.0204
	***(0.010)	(0.231)	**(0.041)	***(0.001)	(0.691)	***(0.000)
$EARN_{it}$	0.2151	-0.1342	0.3891	0.1493	0.0073	0.0185
	(0.276)	(0.134)	***(0.000)	***(0.001)	(0.573)	(0.153)
$EARN_{it}$*DTA_{it}	-1.739	8.5067	2.3194	1.8735	-0.1095	-0.7008
	(0.171)	***(0.000)	***(0.000)	(0.441)	(0.525)	***(0.000)
$LOGEMP_{it}$	-0.0007	0.0010	-0.0001			
	*(0.060)	**(0.021)	(0.839)			
ΔPDC_{t-1}	-0.9169	-1.4308	0.0223			
	**(0.033)	***(0.000)	(0.443)			
$CUSTOOP_{it}$	-0.0011	-0.0087	-0.0005			
	(0.138)	(0.551)	(0.936)			
$PATRIMONIO_{it}$	-0.0640	0.0466	0.0058			
	(0.110)	(0.124)	*(0.094)			
$DEPOSITOS_{it}$	0.0271	0.0064	0.0166			
	**(0.049)	(0.507)	***(0.000)			
ΔPIB_{t}	-0.0004	0.0007	-0.0002	-0.0001	0.0001	-0.0004
	**(0.020)	(0.286)	(0.626)	(0.873)	(0.809)	***(0.008)
$SIZE_{it}$				0.0004	0.0001	-0.0004
				***(0.002)	(0.355)	***(0.003)
$PDCINITIAL_{it}$				0.7207	1.0069	1.0273
				***(0.000)	***(0.000)	***(0.000)
$BAIXAEMPR_{it}$				-0.0147	-0.0092	-0.0164
				(0.324)	**(0.021)	***(0.000)
$EINADIN_{t-1}$				0.1617	0.1220	-0.0539
				(0.214)	(0.148)	***(0.000)
$LOGEMP_{t-1}$				-0.0131	0.0012	-0.0010
				***(0.002)	(0.527)	(0.337)
$CAPITAL_{it}$				-0.0003	-0.0002	0.0004
				**(0.013)	(0.163)	**(0.050)
$\Delta LUCRO_{t+1}$				-0.0983	0.0006	-0.0157
				***(0.000)	(0.938)	(0.200)
Number of observation	50	170	990	50	170	990

Source: Developed by the authors.
The data from the models were run in a panel with significance at 5%. Significance levels: ***(1%), **(5%) and *(10%).
Legend: $EARN_{t+1}$ = Net Profit t+1. $EARN_{it}$ = Net Profit. DTA_{it} = Deferred Tax Assets. $EARN_{it}$*DTA_{it} = Profit Persistence. ΔPDC_{t-1} = Change in PDC. $LOGEMP_{it}$ = Logarithm of loans. $CUSTOOP_{it}$ = Ratio between operating expenses and total assets. $PATRIMONIO_{it}$ = Ratio between NE and total assets. $DEPOSITOS_{it}$ = Ratio between customer deposits and total assets. ΔPIB_{t} = Change in PIB. PDC_{it} = Provision for Doubtful Credits. $SIZE_{it}$ = Logarithm of total assets. $PDCINITIAL_{it}$ = PDC at the beginning of the year. $BAIXAEMPR_{it}$ = Write-off of loans. $EINADIN_{t-1}$ = Defaulted loans at the beginning of the year. $LOGEMP_{t-1}$ = Logarithm of loans. $CAPITAL_{it}$ = Logarithm of Social Capital. $\Delta LUCRO_{t+1}$ = Change in NP.

The change in PDC from the previous to the current period (ΔPDC_{t-1}) showed significant results at 5% for large (p>0.033) and medium-sized banks (p>0.000) and negative coefficients (-0.9169 and -1.4308), suggesting that, the NP of future periods reduce the levels of profit persistence when the PDC changes increase from one period to the next. The variable $DEPOSITOS_{it}$ presented significant results at 5% for large (p>0.049) and small banks (p>0.000) and positive coefficients (0.0271 and 0.0166). Suggesting that the increase in bank deposits by account holders increases the level of persistence of profits by $EARN_{t+1}$, it can be explained that part of the amounts deposited will be used for loans to be granted, generating greater volumes of profits, by receiving interest on these loans.

The variable ΔPIB_{t} showed a significant result for large banks (p>0.020) and a negative coefficient (-0.0004), suggesting that the increase in the country's economic development from the previous period to the current period reduces the level of persistence by 0.04% of profits per $EARN_{t+1}$. The variables $CUSTOOP_{it}$ and $PATRIMONIO_{it}$ did not present significant results at 5% for large, medium and small banks.

Regarding the second set of results (PDC_{it}), which represents profit smoothing, the variable DTA_{it} exhibited significant results at 5% for large (p>0.001) and small banks (p>0.000) and negative coefficients (-0.1907 and -0.0204). Suggesting that the increase in DTA for large and small banks will be followed by a reduction in PDC, making profits less smoothed by PDC and more discretionary due to the results of receiving loans that generate profits due to the interest received.

The $EARN_{it}$ variable showed a significant result at 5% for large banks (p>0.001) and a positive coefficient (0.1493), suggesting that the increase in NP in the current period will increase NP in the following period by 14.93%, making them discretionary in profit smoothing. The discretionary variable that responds to H2 ($EARN_{it}$*DTA_{it}) exhibited a negative coefficient (-0.7008) and significant at 5% (p>0.000) for small banks, suggesting that the increase in DTA will reduce, together with current profits, the smoothing of profits by PDC of these banks.

The variable ΔPIB_t showed a significant result for small banks (p>0.008) and a negative coefficient (-0.0004), suggesting that the increase in the country's economic development from the previous period to the current period reduces the level of smoothing by 0.04% of profits by PDC_{it}. The size of banks' total assets ($SIZE_{it}$) showed significant results at 5% for large (p>0.002) and small banks (p>0.003) and positive coefficients for large banks (0.0004) and negative for small banks (- 0.0004), meaning that, increasing total assets, the level of profit smoothing by PDC will increase for large banks, and reduce it for small banks. This is due to the fact that small companies have results of writing off initial loans from the previous period ($EINADIN_{t-1}$) significant at 5% (p>0.000) and the increase in these write-offs reduces the PDC by 5.39%, which are being used as a profit smoothing metric. While the large banks did not show significant results at 5%.

In relation to the other loan variables, $BAIXAEMPR_{it}$ and $LOGEMP_{t-1}$, the variable that represents loan write-offs for the period ($BAIXAEMPR_{it}$) exhibited significant results at 5% for medium-sized (p>0.021) and small banks (p>0.000) and negative coefficients (-0.0092 and -0.0164). Likewise, for the variable of initial total loans ($LOGEMP_{t-1}$), which presented a negative coefficient, however, for large banks (-0.0131) and a significant result at 5% (p>0.002), suggesting that the increase in levels of the variables $BAIXAEMPR_{it}$, for medium and small banks, and $LOGEMP_{t-1}$ for large banks, will reduce the level of profit smoothing by PDC, and the relationships are found in the fact of profit generation and profit smoothing occurred by loan financial transactions. And the longer the time it takes to receive the loans, the longer the time it will take to generate profits through interest receipts and the smoothing will occur over a shorter period of time for receipts, which is why write-offs over a shorter period of time are significant for the smoothing.

The variable $PDCINITIAL_{it}$ exhibited significant results at 5% for large (p>0.000), medium (p>0.000) and small banks (p>0.000) and positive coefficients (0.7207, 1.0069 and 1.0273), suggesting that the increase in Initial PDC for banks becomes the highest profit smoothing level per PDC for the period. In summary, the PDC stocks being increased period by period, becomes an instrument for smoothing profits, however, not an instrument for leveraging profits, after all, the PDC stock being increased means that the banks are increasing concessions of loans, however, does not mean that loans are being received and, as a consequence, bank profitability may be increased or reduced.

The change variable from the current NP to the NP of the following period ($\Delta LUCRO_{t+1}$) presented a significant result at 5% for large banks (p>0.000) and a negative coefficient (-0.0983), suggesting that the increase in $\Delta LUCRO_{t+1}$ will reduce the level of profit smoothing by PDC, because, as banks use PDC_{it} to signal future profitability, it is expected that PDC_{it} will be negatively related to the variable $\Delta LUCRO_{t+1}$. The $CAPITAL_{it}$ variable presented a negative coefficient (-0.0003) for large banks and positive (0.0004) for small banks and significant at 5% (p>0.013 and p>0.050), suggesting that the higher the Social Capital values, the lower it will be for for large banks and higher for small banks, PDC levels are used as a metric for profit smoothing.

4.2 Discussion of results

The theoretical-practical contribution in H1 was to provide the use of DTA from the perspective of profit quality, using the profit persistence proxy and its effects on financial institutions, differentiating from the study presented by Hung, Jiang, Liu and Tu (2018) which, showed significant results for the persistence of profits in the banking sector, however, without using DTA as a metric. In H2, the result shown indicates significance in the use of DTA for earnings quality, using the profit smoothing proxy, differentiating itself from the study presented by Aguguom and Salawu (2019), in which they exhibited significant profit smoothing results for the banking sector, however, not using DTA as a metric.

For H3, this study showed a significant result in the use of DTA to capture unexpected profits from the banking market by the ERC, being different from the study presented by Ariff, Fah and Ni (2013), in which they presented significant results in the banking sector, however, not included DTA as a coefficient metric, providing this study with the advancement of literature by including DTA as a metric for the ERC of the banking sector.

The results presented reinforce the effects of DTA in a positive way, from the perspective of earnings quality, both in earnings persistence (H1) and in earnings smoothing (H2) and in capturing unexpected profits through the ERC (H3); and negative, as the use of these assets is circumstantial to the use of laws that govern them, and not financial intermediation operations, and may generate a certain “distrust” in the banking market, as it is not a generator of its own results.

The results by bank size made it possible to identify

that small and medium-sized banks were significant in the use of DTA as profits, and the greater the use of these assets and profits reported jointly, the greater the persistence and the lower the smoothing of profits for banks. small and the greater the persistence of profits for medium-sized banks. However, the results presented by small banks benefit from movements in loans granted and DTA stocks, making them more persistent and smoothed over the sample period.

In view of this, a reassessment of DTA legislation should be considered, so that banks can reduce the impacts generated by these assets on the quality of profits, either initially through a legal review, generating possible changes to existing laws, as occurred in the USA that, from the fourth quarter of 2017, banks had to reevaluate DTA stocks according to the new reduced tax rate, making large, medium and small banks competitive due to the reduced interest rates and the tax effect. Or even, in the constitution of an DTA reserve, represented by a part of the DTA stocks, since, in the event of judicial recovery or bankruptcy, the fund could be used to guarantee compensation for taxes of other natures, such as financial operations and social contributions.

5 CONCLUSIONS

The quality of earnings is used as a source of information on a bank's financial performance, being relevant for management decision-making, and DTA can “pollute” the quality of these profits when they become inflated by the use of these assets to obtain better financial results. Building on evidence of earnings quality in Kanagaretnam, Lim and Lobo (2014), Beatty and Liao (2014), Ozili (2017) and Batten and Vo (2019), we investigated the effects of DTA from the perspective of earnings quality. profits, using the proxy’s earnings persistence, profit smoothing and the banks' ERC.

This article is in line with research carried out by Batten and Vo (2019), showing that investors seek to identify the determinants of profit persistence to better understand the relationship between current income and permanent gains. França (2018) reported that companies can benefit from profit smoothing due to the greater appreciation they obtain for shares and a lower cost of equity capital. Beatty and Liao (2014) presented the relationship between leverage and ERC, which appears to result from the variation in the rate of capitalization of earnings news in price as a function of leverage, rather than an association between leverage and decision utility. of earnings to predict expected cash flows.

The results presented in this article indicate that the effects of DTA, from the perspective of quality of profits measured by proxy, the greater the DTA, the greater the persistence of profits (H1) and the unexpected profits by ERC (H3) and, the lower will be profit smoothing (H2). Due to the size of the banks, the medium-sized banks showed significant results in the use of DTA for the persistence of profits and the small ones, for the persistence and smoothing of profits, being the most benefited in terms of the movement of loans granted and stocks of these assets, making -more persistent and smoothed over time.

The consistency of the results allows us to indicate that DTA are used in accordance with the relevant legislation by banking institutions, however, not favoring their use equally across all banks. These assets can make the quality of profits polluted by their use, inflating banks' results with discretionary financial operations decisions.

As for limitations, the study is restricted to a few that can be highlighted: (i) the period in which digital banks began their activities after 2017, therefore not being able to participate in this sampling, (ii) banks that did not present DTA values , thus reducing the population of 343 banks to the sample of 121 banks and, (iii) the difficulties implicit in research on the quality of profits and unexpected profits in the financial market, regarding the ability of possible statistical models to identify and measure the discretion of DTA.

Finally, future research may also consider (i) modeling the use of DTA as a discretionary metric as a component for earnings quality in digital banks, using proxies for earnings persistence and earnings smoothing, (ii) identifying the discretionary component of DTA in the quality of profits of digital banks opting for quarterly Real Profit compared to annual Real Profit and, (iii) modeling the use of DTA as a discretionary component for the quality of profits and unexpected profits in the financial market of digital banks, compared to non-banks digital.

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APPENDIX A – Pearson Correlation Matrix (H2)

Table 6

Pearson Correlation Matrix (H2)

This table presents the correlations between the variables for H2. The sample is identified by 121 banks, and data is collected from the banks' and BACEN's financial reports, covering the period from 2017 to 2021.

	PDC_{it}	$EARN_{it}$	DTA_{it}	$EARN_{it}*DTA_{it}$	$PDCINITIAL_{it}$	$BAIXAEMPR_{it}$	$EINADIN_{t-1}$	$LOGEMP_{t-1}$
PDC_{it}	1.0000							
$EARN_{it}$	-0.3636	1.0000						
DTA_{it}	0.2659	-0.1374	1.0000					
$EARN_{it}*DTA_{it}$	0.3851	-0.4736	0.0600	1.0000				
$PDCINITIAL_{it}$	*0.9861	-0.3928	0.2848	0.4272	1.0000			
$BAIXAEMPR_{it}$	-0.0475	-0.0773	-0.0185	0.0588	0.0235	1.0000		
$EINADIN_{t-1}$	0.0046	-0.0244	-0.0684	0.1083	0.0248	0.0177	1.0000	
$LOGEMP_{t-1}$	-0.5328	0.2140	0.0422	-0.1133	*-0.8336	-0.0235	-0.1704	1.0000

Source: Developed by the authors.
Significance level: *(5%).

APPENDIX B – Pearson Correlation Matrix (H2 for large, medium and small banks)

Table 7

Pearson Correlation Matrix (H2)

This table presents the correlations between the variables for H2 for large, medium and small banks. The samples are made up of 5 large banks, 17 medium-sized banks and 99 small banks, collecting data from the banks' and BACEN's financial reports, covering the period from 2017 to 2021.

Panel A: Large banks

	PDC_{it}	$EARN_{it}$	DTA_{it}	$EARN_{it}*DTA_{it}$	$PDCINITIAL_{it}$	$BAIXAEMPR_{it}$	$EINADIN_{t-1}$	$LOGEMP_{t-1}$
PDC_{it}	1.0000							
$EARN_{it}$	-0.4506	1.0000						
DTA_{it}	-0.2560	-0.1376	1.0000					
$EARN_{it}*DTA_{it}$	0.2098	-0.3459	0.0456	1.0000				
$PDCINITIAL_{it}$	0.8954	-0.4506	0.3049	0.2309	1.0000			
$BAIXAEMPR_{it}$	-0.0874	-0.0456	-0.0240	0.0565	0.0345	1.0000		
$EINADIN_{t-1}$	0.0036	-0.0850	-0.0875	0.2304	0.0983	0.0296	1.0000	
$LOGEMP_{t-1}$	*-0.6709	0.1029	0.0560	-0.1092	-0.3409	-0.0354	-0.1029	1.0000

Panel B: Medium banks

	PDC_{it}	$EARN_{it}$	DTA_{it}	$EARN_{it}*DTA_{it}$	$PDCINITIAL_{it}$	$BAIXAEMPR_{it}$	$EINADIN_{t-1}$	$LOGEMP_{t-1}$
PDC_{it}	1.0000							
$EARN_{it}$	-0.2039	1.0000						
DTA_{it}	-0.4309	-0.1509	1.0000					
$EARN_{it}*DTA_{it}$	0.3409	-0.2098	0.0678	1.0000				
$PDCINITIAL_{it}$	0.5697	-0.3098	0.4509	0.1230	1.0000			
$BAIXAEMPR_{it}$	-0.0987	-0.0560	-0.0124	0.0785	0.0439	1.0000		
$EINADIN_{t-1}$	0.0097	-0.0670	-0.0450	0.2094	0.0845	0.0187	1.0000	
$LOGEMP_{t-1}$	-0.3450	0.1540	0.0387	-0.0954	*-0.7509	-0.0298	-0.1456	1.0000

Panel C: Small bancos

	PDC_{it}	$EARN_{it}$	DTA_{it}	$EARN_{it}*DTA_{it}$	$PDCINITIAL_{it}$	$BAIXAEMPR_{it}$	$EINADIN_{t-1}$	$LOGEMP_{t-1}$
PDC_{it}	1.0000							
$EARN_{it}$	-0.3092	1.0000						
DTA_{it}	0.2234	0.0949	1.0000					
$EARN_{it}*DTA_{it}$	0.2956	-0.1985	0.0895	1.0000				
$PDCINITIAL_{it}$	0.3459	-0.3948	*0.7904	0.1984	1.0000			
$BAIXAEMPR_{it}$	-0.0894	-0.0784	-0.0294	0.0569	0.0394	1.0000		
$EINADIN_{t-1}$	0.0197	-0.0560	-0.0598	0.2398	0.0398	0.0239	1.0000	
$LOGEMP_{t-1}$	-0.2398	*0.7987	0.0596	-0.0495	-0.1956	-0.0194	-0.1298	1.0000

Source: Developed by the authors.
Significance level: *(5%).

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