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Remuneration as a Motivation of Earnings Management in Credit Unions

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ABSTRACT

This paper analyzes whether remuneration, of owners and employees, is a driving factor of earnings management practices in credit unions. We start by providing what we believe to be the first comprehensive analysis of the use of earnings management by credit unions through discretionary charges to the loan loss provision. We also provide evidence that this discretionary use of income is consistent with strategies of income smoothing, big baths, loss avoidance/benchmarking and management of a capital ratio similar to those of other financial institutions. We then link the use of earnings management to remuneration objectives and show that the credit unions which use more earnings discretion manage to increase the remuneration of their member-owners and, in the long run, that of credit union workers, significantly more than those which use less discretionary income.

Keywords: credit unions, earnings management, remuneration, dividends, salaries.
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1. Introduction

The US credit union sector has gone through a period of steady growth in recent years. In 1994, credit unions (CUs) managed around $295B assets (mostly loans) and $260B in shares and deposits. In 2018, these figures had risen to $1,450B and $1,140B, respectively, when CUs accounted for around 12% of the deposits and 10% of the loans in the financial system.[1] However, our understanding of the way these financial cooperatives work has not evolved in a parallel manner. The early literature on credit unions (going back more than thirty years) focused on the main implications of their peculiar organizational and governance mechanisms but, given their not-for-profit character and the relative low sophistication of credit union operations, little attention was paid to issues of financial transparency and, more specifically, to the possible use of accounting (earnings) discretion. In this paper we provide what, to our knowledge, is the first comprehensive analysis of the use of earnings management strategies by CUs and of a potential motivation for such practices. In particular, we postulate that this earnings discretion may be, at least partly, explained by remuneration objectives: CUs maximize value for their owners-members by offering them higher remuneration through the interest (dividend) paid on their deposits. This remuneration may be related to CU fundamentals directly through explicit regulatory limits based on the net worth of the credit union or indirectly, since poorly performing CUs may be disciplined by its owners through reduced deposits or increases in cost of capital. This motivation is parallel to the compensation (dividends and salaries) motives analyzed in the literature of for-profit institutions and, therefore, the earnings management strategies that CUs use may be more similar to those of banks than one would expect of a not-for-profit institution. In our empirical analyses we first show that credit unions use discretionary charges to the loan loss provision in order to carry out strategies of income smoothing, big baths, loss avoidance and management of regulatory ratios similar to those of other financial institutions. We then take on the motivation dimension and examine the relationship between earnings discretion and remuneration to CU members (through dividends but, also, through salaries paid to CU employees) using a battery of descriptive and quasi-experimental analyses. The results of our tests suggest that the CUs which use more discretionary income are those that are "saver oriented", i.e., those which care more about offering high remuneration to their owners. These CUs manage to increase the remuneration of their member-owners (via interest or dividends on deposits) and, in the long run, that of employees, significantly more than the CUs which use the least discretionary income.

[1] NCUA Industry at a glance https://www.ncua.gov/files/publications/analysis/industry-at-a-glance-december-2018.pdf. This growth of the CU sector is comparable to that of commercial banks.

The (relatively mature) literature on CUs focused on their peculiar features and on the implications of credit-union-specific regulations, emphasizing the issues that set CUs apart from other for-profit depository institutions. Examples of these differentiating issues were the maximization problem of credit unions (given the dual character of depositors as owners), including the saver and/or borrower orientation or "bias" of CU operations (Frame et al., 2003; Fried et al., 1993, 1999; Smith et al., 1981; Smith, 1984), the consequences of the tax exemption and cooperative character on competition and interest rates (Feinberg, 2001; Hannan, 2003), the implications of field of membership restrictions on CU behavior (Black and Dugger, 1981; Ely, 2014; Goddard et al., 2002) or the analysis of CU performance (Bauer, 2008; Fried et al., 1993; Goddard et al., 2008; Wilcox, 2005, 2006) and risk-taking strategies (Bauer et al., 2009; Ely, 2014; Fiordelisi and Mare, 2014). This emphasis on the idiosyncrasies of CUs may have led to a certain neglect of some topics which seemed to be less relevant for CUs than for other depository institutions. Examples of such topics are the pressure or discipline exercised by depositors or the financial transparency of CUs. In particular, we are not aware of analyses centered on whether, and how, CU managers exercise discretion over their accounting information and, more specifically, on the motivations which might be behind this discretionary use of accounting.

In this paper we examine both issues and attempt to show evidence of the use of earnings management (EM) strategies by CUs and to link these strategies to the objective of offering a high remuneration to CU member/owners. In order to carry out these research objectives, we put together a database of US credit union accounting information. Our quarterly data cover all CUs with assets greater than \$50M for the period 1994-2015. We identify EM practices with the use of discretionary levels of the loan loss provision (LLP), which we justify as the main tool available for CUs to apply accounting discretion.

We offer two main sets of results. We first use descriptive and regression analyses to describe the EM behavior of CUs. In particular, we show how CUs use discretionary charges to the LLP to carry out EM strategies similar to those identified for banks: we show significant evidence of income smoothing, of loss avoidance and of big baths when earnings before discretion are positive, negative but close to zero and negative but large in absolute value, respectively. We also show that the EM behavior of CUs may be consistent with benchmarking relative not only to zero income (as in loss avoidance) but also to measures of past income, which provide a natural benchmark around which to manage earnings. Finally, we provide evidence that regulatory thresholds on net worth that limit the ability of the CU to increase dividends also become relevant benchmarks around which to manage earnings.

Our second set of results focuses on linking the use of discretionary income (EM) to increases in remuneration of CU members through dividends and salaries. We first show that the CUs which use most discretionary income have the characteristics of being "saver oriented": they have higher levels of deposits and pay and charge higher interest rates on their deposits and loans, respectively. This finding is in line with remuneration being a motivation for the use of EM. We then design a set of matching analyses where we attempt to estimate the effects on remuneration of high use of discretionary income. For this purpose, we identify appropriate "treatment" and "control" groups of CUs that can be adequately compared and which differ in their use of discretion. To achieve this, we follow two alternative strategies. We take the overall sample and sort CUs on the basis of the size of our proxy of discretionary income and compare subsequent remuneration performance of the CUs which used the most discretion with that of the CUs which used the least discretion. As an alternative strategy, we take the cases of loss avoidance and of meeting the regulatory threshold for net worth. We believe that in these two settings the EM strategy or the intent to manage earnings can be more cleanly identified. We compare the remuneration performance of CUs which avoided losses with comparable CUs which did not avoid the loss and the dividend performance of CUs which used EM to meet the regulatory threshold on net worth with that of CUs which did not. In all three analyses we find that the CUs which managed their earnings achieved significantly higher growth rates of the remuneration components (overall EM, loss avoidance) or of dividends (threshold on net worth). The effects for dividends are estimated to be in ranges of 2%-4% additional growth of dividends at the quarterly level or 4%-12% at the annual level for general EM strategies, of 3%-4% for loss avoidance and of 15%-25% (but in horizons longer than one year) for the meeting of net worth thresholds. The effect on salaries is shown to be significant only for horizons beyond two years –the magnitudes being in the range of 1%-3%, thus suggesting that salaries may be a more secondary motivation for EM. For loss avoidance, however, we do observe a short-term effect on salaries of a 1.4%-2% larger increase for loss avoiding CUs. In order to provide some final evidence, we use diff-in-diff estimators around a local exogenous shock which significantly affected CU behavior and fundamentals. The design of this quasi-experimental analysis allows us to alleviate the concerns of endogeneity of EM practices and to offer additional evidence suggestive of the effectiveness of EM in affecting remuneration. We focus on the CUs located in the areas most affected by the shock and show how the CUs which increased their earnings (and, consequently, net worth) through the use of low charges to the LLP managed to achieve significantly higher growth rates of dividends and salaries in the year following the shock. The effects are estimated at between 9%-20% higher growth of dividends and, less robust, at between 7%-12% higher growth of salaries.

Our paper has significant contributions in two main areas. First, to our knowledge, we provide the first comprehensive analysis of how CUs carry out strategies of earnings management similar to those used by other financial institutions. Taken as a whole, these results contribute significantly to our understanding of the behavior of a particular type of depository institution (CUs) along a dimension that had been relatively overlooked by the previous literature. Second, and more importantly, our analysis of remuneration effects has implications related to the supervision and regulation of the financial system, in general, and to the interplay between accounting regulation and the real economy, in particular. This latter conclusion rests on what we believe is the key result in our paper, namely that accounting discretion by CUs allows them to increase significantly the remuneration to their members and, consequently, to have a positive impact on the financing side of the CU.

The remainder of the paper is as follows. In section 2 we link the peculiarities of CUs to the remuneration motivation for earnings management. This section motivates the analyses in the paper and presents our expected findings. In Section 3 we briefly describe our data. In Section 4 we show a first set of results where we uncover evidence of how CUs follow similar EM strategies to those documented for banks. In Section 5 we use matching analyses to show evidence that the CUs which use more discretionary income have characteristics of being saver oriented and that the use of discretionary income is correlated with subsequent increases in remuneration. In Section 6 we show the results of a quasi-experimental analysis designed around a large exogenous shock which allows us to draw further conclusions indicative of the causal link between EM and remuneration. In Section 7 we summarize and offer some concluding comments.

2. Remuneration in credit unions and earnings management

Credit unions are financial cooperative associations which serve a limited group of members determined by a defined field of membership. This typically limits the size which an individual credit union can reach, but the combined assets, loans and deposits of the credit union sector represents a significant part of the overall financial system (see Section 1). Despite this importance of CUs, there is, to our knowledge, no in-depth study which examines financial transparency, in general, and earnings management, in particular, in CUs. The likely reason for this lack of attention in the literature may be that CU managers do not share many of the motivations that public firms or banks have to manage earnings (and, as a consequence, capital): tax avoidance or pressure from equity markets or from non-deposit debt markets seem not to be a concern for CUs (in the case of the first two) or to be of minor importance (in the case of the latter).

However, credit unions have particular features which still provide with a motivation to manage or distort their level of earnings. Apart from the tax exemption which CUs, as cooperatives, benefit from, the CUs have a unique structure of ownership where members are at the same time owners and customers (depositors and loan recipients) of the credit union. The owners' shares are not listed in any market or traded as securities: instead, shares are treated as deposits for which members receive an interest rate (also called a dividend rate) which is paid out of earnings (i.e. it is subtracted before computing bottomline income).[2] This ownership structure leads to a peculiar maximization problem (Smith et al., 1981; Bauer, 2008; Smith, 1984; Smith, 1988): apart from facilitating the access to financial services (mostly, by implementing lower credit constraints on loans) CUs maximize the value of their members by (1) paying higher interest rates on their savings ("dividends on shares") and/or (2) setting lower interest rates on loans. However, since a CU cannot simultaneously maximize its dividend rate for savers and minimize its loan rate for borrowers, it will typically choose to emphasize one of the two channels (Smith et al., 1981). Thus, a CU may be "saver oriented" (setting high loan rates to maximize the surplus and then using the surplus to pay the highest possible dividend rate to the largest level of deposits) or "borrower oriented" (setting low rates on loans to increase access to loans but, as a consequence, also lowering dividend rates).

For "saver oriented" CUs, the emphasis on remuneration of members through high savings rates becomes a potential motivation for earnings management strategies, given the direct relationship between earnings and remuneration of members. In particular, the tax exemption of the CU increases the elasticity of dividends to changes in pre-dividend earnings. Also, the general ability of the CU to remunerate its member/owners via interest (dividends) on their deposits depends on the level of earnings or of net worth of the CU in two ways:

1) indirectly, in that CUs may be disciplined by their member/owners if dividend increases are not linked to earnings increases or if the stream of dividends is not stable;
2) directly, since explicit regulations link the ability of the CU to pay dividends on measures of net worth: NCUA regulation (702.403 Payment of Dividends) allows CUs to use undivided earnings to pay dividends. However, if this account is depleted a well-capitalized CU may use regular reserves as long as the amount of dividends paid does not cause the net worth classification to fall below the "adequately capitalized" category (net worth over assets ratio between 6% and 6.99%).

[2] Under specific conditions CUs may also pay traditional dividends (See §1763 of The Federal Credit Union Act). This reinforces the remuneration motivation for EM, since such dividends are subject to limits based on the CU's net-worth.

These links between CU fundamentals and remuneration provide a justification for CU managers – especially of saver oriented CUs- to manage earnings (and net worth) much in the same way as banks do. Indeed, the literature has shown a link between EM and remuneration of shareholders. Kasanen et al. (1996) or Daniel et al. (2008) both showed that dividend-paying firms tend to manage earnings upward when their earnings would otherwise fall short of expected dividend levels, thus implying that target dividend levels generates earnings thresholds which motivate EM strategies (see also Kim et al., 2017, who critique the target dividend level motivation but suggest an earnings benchmarking argument, in that firms try to avoid reporting earnings declines and then adjust the dividend level: in the case of a CU, these would be equivalent strategies).

Given that managers and employees of the CU are typically also members of the CU (and, therefore, owners) a study of remuneration motives in CUs should also examine the possibility that EM could be related to the objective of increasing manager and employee compensation, a relationship for which the literature has found abundant evidence, especially when compensation is based on accounting measures of performance (Healy, 1985; Guidry et al., 1999; Lambert, 2001; Cheng and Warfield, 2005; Bergstresser and Philippon, 2006; Burns and Kedia, 2006; Cornett et al., 2008; Dechow et al., 2010).

In the light of the previous arguments, we hypothesize that:

a) CUs carry out earnings management strategies that may be motivated by remuneration objectives. Specifically, remuneration of shareholders via dividends may motivate both income and net-worth increasing strategies (loss avoidance or benchmarking with past income levels) and income decreasing strategies that have intertemporal implications of dividend smoothing (income smoothing and also, potentially, big baths, to try to keep smooth dividends over time: see Floyd et al., 2015). Remuneration of managers and employees also may provide a –secondary- motivation for EM, typically in the form of income increasing strategies.
b) Saver oriented CUs are likely to carry out significant EM due to this remuneration motivation.
c) The use of EM by CUs should be correlated with subsequent increases in remuneration.

3. Data

Our analyses use a large dataset of quarterly credit union balance-sheet and income statement information which covers the period from 1994Q1 to 2015Q4.[3] These data were collected from the CU call reports

[3] We opted for stopping the sample in 2015 to prevent our results from being affected by several regulations which passed or were being discussed in 2016 (especially, 81 FR 13530 of March 14. 2016, on business loans, and the regulation we cite in footnote 6 on securitization of loans).

available at the National Credit Unions Administration (NCUA). We selected CUs with assets greater than $50 million because before 2002Q3 only such CUs reported quarterly financial statements, while smaller CUs reported semiannually. This subsampling strategy yielded a maximum of 158,238 usable quarterly observations corresponding to a total of 2,293 CUs. Appendix A lists the main variables used throughout all our analyses, some of which we review more explicitly as we move ahead.[4] In order to avoid problems with outliers, continuous CU variables were winsorized at the 0.5% level in each tail. Tables 1 and 2 show some descriptive statistics and correlations of the main CU-level variables. We do not comment on these statistics, which are mostly self-explanatory, although we refer to some of them throughout the paper.

We also collected information on variables which allow us to control for macroeconomic conditions. In particular, given that most CUs concentrate their operations in one state we collect two macro variables, personal income per capita and the unemployment rate, measured at the state level. Given that in our regressions the time fixed effects control for macroeconomic factors of a national/global character, these state-level variables are intended to control for common economic factors of a local nature which may, in fact, be more relevant for the relatively local operations of CUs. Data on these variables were obtained from the Federal Reserve of Saint Louis (FRED) and from the Bureau of Labor Statistics.

In Section 6 we use the destruction caused by Hurricane Katrina in August 2005 as an exogenous shock which allows us to construct a matched sample and offer a final set of quasi-experimental results. In order to identify the credit unions affected by this local "shock" we use the county where the headquarters of the credit union is located, extracted from the "FOICU" files of the NCUA. For the list of counties affected by Katrina we considered those designated by FEMA (Federal Emergency Management Agency) as "Individual assistance areas".[5]

4. A descriptive look at earnings management in credit unions

We first look for evidence of whether CUs engage in EM behavior. For that, we use a battery of graphical and statistical analyses similar to those used in the bank accounting literature.

4.1 The LLP as the EM tool for credit unions

The accounting literature on earnings and capital management in financial institutions, mainly banks, is quite large (see Beatty and Liao, 2014, for a review). One reason behind this interest on the banking sector

[4] Variables generated to be used in specific sections of our analysis are explained both in the text of that particular section and, if results are shown in a table, in the table caption.
[5] https://www.fema.gov/disaster/1603/designated-areas

is that banks have at their disposal a discretionary accrual (the loan loss provision, LLP hereafter) and several types of transactions which are natural candidates to be used as EM tools. In particular, an extensive part of the literature has focused on the analysis of the use of the LLP for income smoothing (Ma, 1988; Beatty et al., 1995; Collins et al., 1995; Ahmed et al., 1999; Laeven and Majnoni, 2006) or for non-linear strategies which suggest big-bath and loss avoidance behavior for banks reporting losses (Laeven and Majnoni, 2006; Bouvatier and Lepetit, 2008; Balboa et al., 2013). Sales of securities, especially of AFS securities (Beatty et al., 1995, or Barth et al., 2017), and asset securitizations (Dechow and Shakespeare, 2009; Dechow et al., 2010) are transactions that have been found to be effective tools which afford banks ample room for discretion. We expect, however, that the LLP is the most likely tool that CUs will use if they want to carry out EM strategies. CUs have relatively low amounts of securities (the median holdings of AFS securities in the CUs in our sample is only 2.74% of total assets, whereas it is between 15%-20% in banks throughout a comparable sample period: see Nissim and Penman, 2007) and, during our sample period, CUs were not authorized to carry out securitizations.[6] Consequently, we focus our analysis exclusively on the use of discretion in the periodic charges to the LLP. The tax exemption that CUs enjoy reinforces this choice: the LLP is deducted in full terms (not net of taxes) so the impact on net income of the discretionary part of the LLP is potentially higher than in commercial banks. Thus, EM through the LLP may, in fact, be more effective in CUs.

Periodic charges to the LLP are one of the largest items in the income statement of a CU. These charges stem from the estimated changes in the health of the loan portfolio. In order to focus on the intent to manage earnings, we need to identify the part of the total charge to the LLP that is discretionary. We construct a proxy of discretionary LLP (*DLLP*) and, as a byproduct, of income before discretion (or "core income") *NIBD*, using a regression-based approach similar to that used in the banking literature. In particular, we estimate a regression model for the LLP as a function of three main determinants:

$$LLP_i = \beta_0 + \beta_1 NPL_i + \beta_2 \Delta NPL_i + \beta_3 loans_i + \varepsilon_{i,} \qquad (1)$$

The independent variables in equation (1) are non-performing loans (*NPL*), the change in non-performing loans (ΔNPL) and the total level of loans (*loans*).[7] All variables used in this regression are deflated by

[6] In June 2014, the NCUA proposed a rule that would allow qualified CUs to securitize loans: https://www.ncua.gov/newsroom/Pages/news-2014-june-ncua-proposes-allowing-credit-unions-securitize-own-assets.aspx. However, as of the end of our sample in December 2015, the rule had not been approved yet (See: https://www.ecfr.gov/cgi-bin/text-idx?SID=340ad1205fe7b94131975f1cef30df71&mc=true&tpl=/ecfrbrowse/Title12/12CVIIsubchapA.tpl).

[7] These three variables are widely used in the literature as proxies for credit risk of the loan portfolio. We are aware that some models use additional variables such as charge offs and the value of the loan loss allowance, LLA (see Beatty and Liao, 2014). We constructed an alternative measure of DLLP where we include charge offs in equation (1) for robustness and used this

total assets.[8] The regression was estimated cross-sectionally quarter by quarter in order to control for cyclical variations in the cross-sectional quality of the loan portfolios of CUs.[9] Throughout the paper we measure the LLP as a positive number, so a higher value implies a larger charge to the provision and, therefore, a reduction of earnings (and viceversa). Hence, we take the estimated residual $\hat{\varepsilon}_i$ from (1) as the quarter-by-quarter value of the discretionary LLP for each CU:

$$DLLP_{it} = \hat{\varepsilon}_i \text{ , from the regression of quarter } t, \quad (2)$$

and calculate net income before discretionary earnings as

$$NIBD_{it} = NI_{it} + DLLP_{it}. \quad (3)$$

Tables 1 and 2 include the basic descriptive statistics and correlations of both *DLLP* and *NIBD*. In particular, Panel B of Table 1 contains the descriptives of *LLP* and *DLLP* both unconditional and conditional on the sign of pre-discretion earnings *NIBD*. We refer to these descriptives later in the paper.

4.2 Evidence of EM strategies: income smoothing, big baths, loss avoidance and benchmarking

In order to show evidence that our proxy of discretionary income is indeed capturing the intent of affecting bottomline earnings via EM strategies, we first consider how the behavior of *NI* and *NIBD* would differ if *DLLP* were indeed measuring discretion. Given the findings in the literature for banks, we expect this comparison to uncover several features: if EM is used for income smoothing, the volatility of *NI* will be lower than that of *NIBD*; if EM is used for loss avoidance, we expect that the distribution of *NIBD* will be relatively normal, whereas the distribution of *NI* will show a "discontinuity" around zero (Burgstahler and Dichev, 1997); finally, if EM is used for big baths (loss decreasing strategies in the presence of large losses) we expect to observe a large asymmetry in the distribution of discretionary income, especially for CUs with negative *NIBD*. Note that these comparisons may be carried out at the cross-sectional (quarter) or time series (CU) dimension or for the overall sample. We choose to do the latter, to provide overall evidence of the use of discretion.

We first use the approach in Burgstahler and Dichev (1997) and compare the (unconditional) distributions of net income (*NI*) and of income before discretion (*NIBD*) computed at the quarterly and annual

alternative definition for the analyses in figures 1 to 3 and for the regressions in table 3. The results did not change significantly and are available upon request. With respect to LLA, we include it as one of the main controls in equation (4).

[8] See Appendix A for more detailed variable definitions.

[9] Part of the nondiscretionary LLP stems from provisioning reserves to cover the expected level of future credit losses in the bank's loan portfolio. This component of the provision is driven by company-specific characteristics and by the macroeconomic

conditions that determine credit quality. As a result, the LLP typically exhibits a strong cyclical component which is negatively correlated to business cycle indicators: see, e.g., Bikker and Metzemakers (2005) and Laeven and Majnoni (2006).

frequencies. The distributions are shown in Figures 1-2.[10] For more convenient visualization, we omitted from the distributions the 0.5% winsorized observations in each tail. We also plot in Figure 3 the distribution of *DLLP*, along with its distribution for two subsamples conditional on the sign of *NIBD* (i.e. we distinguish the behavior of *DLLP* for CUs with "core" losses and CUs with "core" profits). The distributions in Figures 1-3, and the results of additional untabulated statistical tests, show the following:

1) The variance of *NI* is significantly lower than that of *NIBD*, a finding suggestive of unconditional *income smoothing*. This result holds even though the range of the distribution (particularly in the left tail) is larger for *NI*; an un-tabulated test for the difference of variances of the two distributions allows us to reject the null hypothesis of equality of the variances at the 1% significance level both in the quarterly and in the annual distributions (quarterly unconditional variances are 1.6% and 1.7% for *NI* and *NIBD*, respectively; annual variances are 6.9% and 7.8%, respectively).[11]

2) The distribution of *NI*, especially in Figure 2 (annual measures), shows a kink or discontinuity around zero, suggestive of *loss avoidance* (which is spread out unevenly throughout the year). Un-tabulated chi-square tests constructed by using the expected frequencies in intervals around zero (we tried different widths for robustness and the results were consistent) always show that the frequency of observations of *NI* to the left (right) of zero is lower (higher) than expected given the distribution of *NIBD*. These tests are significant at the 1% level. As we move away from zero on both sides the tests stop rejecting the null of equal distributions, suggesting that the main difference between the two distributions corresponds to the discontinuity around zero.[12]

3) *Big bath* behavior (loss decreasing strategies in the face of losses) can be inferred from the graphs by comparing the left tail of the distributions of *NI* and *NIBD*: note that, despite *NI* having a lower variance than *NIBD*, the left tail of its distribution is longer, suggesting that some CUs increase their losses by overcharging to the LLP. This behavior is also apparent in Figure 3, where the right tail (high charges to the LLP) of the distribution of *DLLP* is thicker for the CUs with negative *NIBD* (panel B). Interestingly, the percentage of observations with positive *DLLP* (i.e., which overcharge to the LLP) is 31.42% conditional on having negative *NIBD* (it is 46.23% for *NIBD* > 0) and, as Table 1 Panel B shows, the mean value of *DLLP* for that group is significantly lower than the median (-0.0001 vs -0.0003). These two

[10] In order to make our analysis parallel to Burgstahler and Dichev (1997), the variables shown in the distributional graphs are scaled by total net worth instead of total assets.
[11] Given that *NI* = *NIBD* **-** *DLLP*, this result requires a positive covariance between *NIBD* and *DLLP*, which is likely not a mechanical correlation –thus suggesting the validity of *DLLP*- and which becomes a first sign of intent to distort income.
[12] All these chi-square-type tests are available upon request.

statistics together suggest that the distribution of *DLLP* for CUs with pre-discretion losses contains a number of large positive values, which we interpret to be suggestive of big bath strategies.

The previous analyses, though visually appealing, are unconditional in nature. We refine our inferences by estimating regression models where we formally test for the different EM strategies described while controlling for CU characteristics. We set up a series of models where we use as dependent variable our proxy of the discretionary part of the LLP.[13] Our baseline regression model is as follows:

$$DLLP_{it} = \beta_1 NIBD_{it} + CU\ Controls + Macro\ Controls + \alpha_i + \delta_t + \varepsilon_{it}. \quad (4)$$

CU controls include the lagged net worth over total assets (*NW*) as a proxy for the capital adequacy of the CU, the lagged value of the loan loss allowance (*LLA*) as a proxy for CU reserves for expected losses, a proxy for size (*size*, log of total CU assets), the proportion of securities over total assets (*SEC*) as a proxy for the business model of the CU and a measure of unfunded commitments of credits (*unfunded*) as a proxy for asset risk.[14] We also include the lagged value of *DLLP* as a control for persistence of discretionary earnings and two macro variables measured at the state level that control for local cyclical effects: personal income and unemployment rates.[15] Finally, we include CU fixed effects to control for unobserved idiosyncratic factors of the CU and quarter fixed effects to control for changes in general macroeconomic conditions.

We build up our analysis by starting with a baseline model which only includes *NIBD* (our main regressor of interest) along with the controls and then estimate more elaborate models with additional terms which depend on the sign and size of *NIBD*. This allows us to provide evidence of the different EM strategies, that is, of the different ways in which discretionary income is used conditional on pre-discretion ("core") income *NIBD*. The different models estimated are shown in Table 3. Column 1 contains the results of the baseline model where we expect to find a positive and significant coefficient of *NIBD*. This would indicate that CUs charge a higher value of the discretionary LLP when "core" (pre-discretion) earnings are higher, a finding suggestive of income smoothing. Indeed, we obtain a positive, statistically significant coefficient (0.034, t-stat of 4.08), which suggests that CUs smooth 3.4% of their core earnings by over (under) charging to the LLP in quarters where core earnings are high (low). As a robustness check, in column 2

[13] Alternative models with the full value of the LLP as the dependent variable but which included NPL, the change in NPL and loans over assets as additional controls were also estimated for robustness. The results did not differ significantly.
[14] Net worth over total assets is used by the NCUA to establish the capital adequacy of CUs, see: 702.102 Statutory net worth categories https://www.law.cornell.edu/cfr/text/12/702.102. Net worth over total assets is also used commonly in the literature as a capital ratio measure for CUs (Ely, 2014; Goddard et al., 2008)
[15] Given the length of our panel the inclusion of the dynamic term has a minor effect on the consistency of our estimates (Wooldridge, 2002).

we estimate the same model using an alternative measure of "core earnings", namely profit before the discretionary loan loss provision and before interest on shares and deposits (*NIBDI*). We use this measure to control for the fact that CUs distribute earnings via dividends (interests) on shares and deposits (see Bauer, 2008), but these dividends are deducted from regular income. The results are comparable.

Model (4) postulates a linear relationship between the use of discretionary income and pre-discretion income. The EM literature, however, has identified different EM strategies that firms (banks) would use depending on the level of pre-discretion income and other variables (for example, the availability of discretionary buffers: Barth et al., 2017). These strategies would imply a more complex (nonlinear) relationship between *DLLP* and *NIBD*. As a first approach to the detection of such nonlinearities, we extend our baseline model (4) by including a quadratic term on *NIBD*

$$[illegible]_{it} = [illegible]_{it} + \beta_1 [illegible]^2_{it} + [illegible] + [illegible] + [illegible]_i + [illegible]_t + \varepsilon_{it}. \quad (5)$$

Instead of showing the results of model (5) in Table 3, we plot in Figure 4 the relation between *DLLP* and *NIBD* implied by the coefficient estimates, evaluated at the median values of all other controls (we also used the average, but the results, available upon request, were equivalent). Interestingly, the estimated relationship approximately encompasses the main strategies identified in the literature: first, for CUs with the largest "core" losses the *DLLP* takes positive (and potentially large) values which increase the loss ("big bath" strategies: income decreasing discretionary charges to the LLP in the presence of losses); we then observe an area around zero where *DLLP* is used for income increasing, which corresponds to "loss avoidance" strategies (income increasing discretionary charges which eliminate a pre-discretion loss); for the CUs with larger *NIBD* the *DLLP* is again income decreasing and positively related to the size of the core profit: this area is suggestive of "income smoothing" strategies. In view of this nonlinearity, the results in columns 1-2 of Table 3 reflect that our sample contains mostly CUs in the "income smoothing" area, that is, CUs with core profits. In order to refine the analysis, we next construct models which can more adequately capture the effect of the non-uniform distribution of CUs along *NIBD*. In column 3 of Table 3 we estimate an expanded version of model (4) where we include a dummy variable *NEG*, defined as a one for CUs with negative *NIBD*, and its interaction with *NIBD*. The coefficient estimate suggests that CUs with negative core earnings tend to use loss increasing strategies and overcharge to the LLP (note the negative and significant coefficient of the interaction *NEG*×*NIBD*). Specifically, we now observe that income smoothing is mostly a positive *NIBD* phenomenon (i.e. higher charges to the LLP are made when core earnings are positive: the estimated coefficient suggests that 8.2% of *NIBD* is reduced by using

DLLP) whereas CUs with core losses tend to increase them by 6.2% (the sum of the two coefficients on

NIBD). This big bath behavior is usually justified in the presence of a relatively large loss which cannot be reversed: by overcharging to the LLP in a "very bad quarter" the CU may save for the future and implement lower future charges to increase income when losses are lower. This suggests that the size of the loss may be relevant, since small losses may be reversed ("avoided") by using discretionary earnings (a negative discretionary charge to the LLP) whereas large losses may be increased. We examine this possibility in columns 4 and 5, where we now include two new dummies: *lowloss* is a one for the CUs with core losses (negative *NIBD*) in the upper 5% of the distribution (i.e., the smallest losses in absolute value); *highloss* is a one for the rest of observations of CUs with core losses (i.e., the CUs with larger losses in absolute value). In column 4 we include in the baseline model *lowloss* and its interaction with *NIBD*. Note that the estimated coefficient of the interaction *lowloss*×*NIBD* suggests that CUs with small losses reverse them by undercharging to the LLP: the coefficient is larger than one, suggesting a full reversal of the loss, and statistically significant. In column 5 we include both *lowloss* and *highloss*, and their interactions with *NIBD*. This specification gives us the full picture. We observe significant income smoothing (8.2% of the core earnings) for CUs with positive *NIBD*, loss avoidance of the CUs with small losses (97.1% of the core loss, which is not statistically different from full avoidance) and big bath behavior for CUs with large losses (6.0% increase of the core loss by overcharging to the LLP).[16]

4.3 Evidence of earnings management strategies: earnings benchmarks

The literature on bank earnings management has also looked at the possibility of earnings management induced by benchmarking (see, e.g., Barth et al., 2017; Kim et al., 2017): managers may have explicit or implicit benchmarks for earnings (Healey, 1985) or capital (Moyer, 1990) which generate incentives to manipulate earnings around the benchmark (loss avoidance being the most obvious case of benchmarking). In order to show evidence of the use of such benchmarking strategies by CUs, we set up two models which describe the behavior of discretionary earnings around an earnings and a (regulatory) capital benchmark.

We identify the earnings benchmark with past values of net income (Kim et al., 2017). In order to implement this idea, we construct the variable *BENCH* as the difference between pre-discretion cumulative income of each quarter and the previous year's cumulative income. Specifically, *BENCH* is equal to $NIBD_t - NI_{t-4}$ in the first quarter, $(NIBD_t + NI_{t-1}) - (NI_{t-4} + NI_{t-5})$ in the second quarter, $(NIBD_t +$

[16] We examined the possibility that our results regarding CUs with losses might be particularly affected by the financial crisis. As a robustness check, we re-estimated the regressions in Table 3 eliminating the period of the financial crisis (as defined by the NBER recession dating committee). The results, available upon request, remained unchanged.

NI_{t-1} + NI_{t-2}) – (NI_{t-4} + NI_{t-5} + NI_{t-6}) in the third quarter and ($NIBD_t$ + NI_{t-1} + NI_{t-2} + NI_{t-3}) – (NI_{t-4} + NI_{t-5} + NI_{t-6} + NI_{t-7}) in the fourth quarter. We then split the variable *BENCH* into two further variables: *NEG_BENCH* is the value of *BENCH* if *BENCH*<0, and 0 otherwise, and *POS_BENCH* is the value of *BENCH* if *BENCH*>0, and 0 otherwise. We also construct the variable *BENCH_MET* which is a dummy equal to one if *BENCH*>0, and 0 otherwise. We then estimate the baseline benchmarking model:

$$□□□□_{it} = \beta_1 □□□□□\_□□□_{it} + \beta_2 □□□\_□□□□□_{it} + \beta_3 □□□\_□□□□□_{it} + □□\ □□□□□□l□ + □a□□\ □□□□□□l□ + □_i + □_t + \varepsilon_{it}. \quad (6)$$

Results of this model are shown in Table 4, column 1. The coefficient estimates suggest that when the CU has beaten the benchmark, income is smoothed (positive coefficient of *POS_BENCH* of 0.017, t-stat of 5.52) but, when the CU is not meeting the benchmark, the estimated coefficient (-0.022, t-stat of -2.46) suggests a big-bath type of strategy. In order to gain a finer understanding of the behavior around the benchmarks, we define four dummy variables which control for the distance to/from the benchmark:

- *LO_NEGBENCH* is a dummy that takes value 1 when *NEG_BENCH* is below the 5% percentile (a CU whose results are below and very far from the benchmark) and zero otherwise;

- *VC_NEGBENCH* is a dummy that takes value 1 when *NEG_BENCH* is above the 95% percentile of the distribution of non-zero values (a CU whose results are below, but very close to the benchmark) and zero otherwise;

- *HI_POSBENCH* is a dummy that takes value 1 when *POS_BENCH* is above the 95% percentile and zero otherwise (a CU whose results are above and very far from the benchmark).

- *VC_POSBENCH* is a dummy that takes value 1 when *POS_BENCH* is below the 5% percentile of the distribution of non-zero values and zero otherwise (a CU whose results are above but close to the benchmark).

The results of this complete model are shown in column 2 of Table 4. There is now evidence of big bath strategies for those CUs that have a negative benchmark result (negative and significant coefficient of *NEG_BENCH*) which is exacerbated when the distance from the benchmarket is large (negative and significant coefficient of the interaction with *LO_NEGBENCH*). However, if the negative distance from the benchmark is small, income is increased to get closer to the benchmark (positive and large coefficient of the interaction *NEG_BENCH*×*VC_NEGBENCH*). For CUs with results above the benchmark, we only find an overall result –regardless of distance to the benchmark- of income smoothing relative to the benchmark (positive and significant coefficient of *POS_BENCH*).

4.4 Evidence of earnings management strategies: the net worth threshold for a well capitalized CU

Our discussion in Section 2 reviewed the regulatory limit on CU dividends based on net worth and used this limit as a potential justification for (net worth increasing) earnings management. The existence of this net worth threshold allows us to provide a final piece of evidence of EM in CUs, namely, the potential for CUs which are below the threshold to be considered “well capitalized” to carry out earnings increasing strategies that allow them to be above the minimum threshold. This net worth threshold becomes a “capital” benchmark similar to the regulatory capital ratios of banks.

We construct three variables which try to identify the CUs that are below “well capitalized” and, therefore, which have the incentives to manage their earnings upwards. *NW_GAP* is constructed as the difference between the regulatory threshold and the net worth of the CU after core income has been considered. That is, *NW_GAP* = Threshold – ($NW_{t-1}+NIBD_t$). We also define two alternative variables, namely *POS_GAP* which is equal to *NW_GAP* if positive and 0 otherwise and *DUMMY_GAP* which is an indicator equal to one if *NW_GAP* is positive. We use two different values of the threshold in our definition of three proxies for the capitalization status of the CU: first, we use 7% which is the explicit threshold defined in the regulation; second, we use 8% to account for the fact that a CU which manages its net worth upwards in order to pay dividends, should take a number higher than 7% as the target (otherwise the payment of the dividend would take the CU below the regulatory limit again).[17] We then show in Table 5 the results of the following model applied to both quarterly and annual data:

$$\square\square\square\square_{it} = \beta_1 \square\square\square\square\square\square\square\square\square\square\square\square_{it} + \square\square\ \square\square\square\square\square\square l\square + \square a\square\square\square\ \square\square\square\square\square\square l\square + \square_i + \square_t + \varepsilon_{it}, \qquad (7)$$

where $GAPVARIABLE_{it}$ is one of the three proxies defined above for a “below well capitalized” CU.[18]

The results in Table 5 are quite inconclusive for quarterly data: the evidence does not support that the gap with respect to the threshold for being well capitalized is significantly correlated with the discretionary charges to the *LLP*. However, the annual results are more robust. Regardless of the definition of the gap

[17] Our sample contains only 3.8% of observations that are below well capitalized relative to the 7% threshold. This suggests that CUs tend to be well capitalized and that our analyses may not have much power to uncover significant EM behavior. The 8% threshold gives us some additional power in the nonlinear specifications of *GAPVARIABLE*.

[18] Note that the results of model (7) for *NW_GAP* (linear proxy of the gap) are the same independently of the threshold used to define the gap: only the estimates of the CU fixed effects are affected. Thus, in Table 5 we only include one column for the results of the linear proxy. Also, since *NW_GAP* is linear in *NIBD* and *NW*, we omit in this case the control for *NW*, since, otherwise, by construction the coefficient of *NW_GAP* is the negative of the coefficient of *NIBD* in Table 3, column 1.

variable, we find that CUs which are “below well capitalized” tend to increase their earnings by undercharging to the *LLP* (negative correlation of the gap variable with *DLLP*). The effects are more noticeable when we use a threshold value which is slightly above the regulatory 7% (which also gives us larger variation of the nonlinear proxies for the gap), but in any case the evidence points at the “net worth gap” being related to the EM behavior of CUs at least when we look at annual numbers.

5. Remuneration as a motivation for earnings management: descriptive analysis

The evidence we have presented strongly suggests that CUs use EM strategies (especially of loss avoidance / benchmarking and income smoothing) similar to those of other depository institutions. The next, and more important, question is why they do so. Indeed, CUs seem to lack most of the motivations that other depository institutions have to manage earnings: tax avoidance or pressure from equity markets or from non-deposit debt markets seem not to be a concern for CUs (in the case of the first two) or to be of minor importance (in the case of the latter). However, as reviewed in Section 2, a saver orientation by the CU –the maximization of owner value by paying high rates on deposits- may provide a motivation for EM. Indeed, the general ability of the CU to remunerate its member/owners via interest (dividends) on their deposits may depend on the level of earnings or of net worth: this dependence may be direct, because of the explicit regulation that links the ability of the CU to pay dividends on net worth or indirect, in that low performing CUs may be disciplined by their member/owners. We offer in this section descriptive evidence of a general link between the use of discretionary income –regardless of how such discretion is used- and subsequent remuneration increases and between the use of particular EM strategies which can be cleanly identified and subsequent remuneration increases.

5.1. Saver oriented CUs and discretionary income

Even though other motivations for EM may coexist, we believe the remuneration motive implies that among the CUs which use highest levels of discretionary income we should find those that are more “saver oriented”. Saver oriented CUs tend to present higher levels of deposits, higher interest rates on loans and higher saving rates on deposits. This helps us provide some descriptive evidence that supports that saver oriented CUs may be among those using more discretion. Given that saver/borrower orientation is a strategic decision, we designed an analysis based on average characteristics over the full sample period. We first sorted the CUs by the level of discretionary income proxied by the average of |*DLLP*| throughout the sample period. We considered that the CUs above the 90% (alternatively, 75%) percentile are those that use the most discretionary income and CUs below the 10% (alternatively, 25%) percentile are those that use the least discretionary income. We then computed the average values of deposits/assets, saving rates on member deposits and interest rates on loans over the sample period for each CU. We performed significance tests of the difference of these three variables between the group of high-EM CUs and the group of low-EM CUs. Table 6 shows the results of these comparisons: high-EM CUs have significantly higher levels of deposits and, most importantly, pay significantly higher rates on member deposits (the difference being estimated at 10-11 basis points) and charge significantly higher rates on loans (40-70 basis points).[19] As alternative (untabulated) analysis, we performed rank correlations between the average level of |*DLLP*| and the average levels of the three variables for the full set of CUs. In all three cases we found a significantly positive correlation between average use of EM and the "saver oriented" characteristic. We believe these descriptive results provide a good starting point to our analysis of the remuneration effects of discretionary income, in that they point out that the CUs whose characteristics suggest that are more concerned with remuneration also tend to be the ones which use the most discretionary income.

5.2. The effect of discretionary income on total remuneration and components

We now relate the use of discretionary income to changes in total remuneration and in the two main components of remuneration (dividends and salaries). In order to do that, we design an empirical analysis where we control for CU characteristics and for the use of discretionary income (*DLLP*) in a way that may be consistent with the existence of EM strategies, that is, with the fact that discretionary income may be used in both an income increasing or income decreasing direction. We compute a set of matching estimators where we select our "treatment" and "control" groups based on past use of *DLLP*. In particular, we estimate three sets of matching estimators which examine the difference in average growth (over horizons of 1-4 quarters) of three measures of remuneration: total remuneration ((salaries + dividends) / total assets), dividends on shares and salaries. The estimators are based on matched samples, where matching is performed by requiring exact matching by CU type (state or federal), quarter and state and nearest-neighbor matching on the following CU characteristics: *NW*, *NPL*, *S&D*, *size* and *unfunded*. The main elements of our design are the way in which the "treated" observations are identified and the pool from which the potential "control" matches are selected. In particular, we define three different treatment groups, which lead to the three panels of results in Table 7:

[19] As measure of deposit rates we use only the average interest paid on member deposits. Interestingly, when using all interest payments over all deposits (including those of non-members) the difference is not significant anymore, a result which we think is consistent with our hypothesis that it is member remuneration which is behind EM.

- In Panel A, we focus on total use of discretionary income, regardless of sign. Thus, we use the absolute value of the *DLLP* to define our treated units. We take the quarter-by-quarter distribution of |*DLLP*| (for Treatment 1) and the quarter-by-quarter distribution of the cumulative sum of |*DLLP*| over the previous four-quarters (Treatment 2) and identify as "treated" observations those above the 90% percentile. In other words, we identify as treated those units which have used (in the previous quarter or in the previous four quarters) the most discretionary income, regardless of sign. "Control" observations are then drawn via nearest-neighbor matching from the observations below the 10% percentile.

- In Panel B, we examine income decreasing use of EM and look for large positive values of the *DLLP* to define our treated units. For that, we take the quarter-by-quarter distribution of *DLLP* (for Treatment 1) and the quarter-by-quarter distribution of the cumulative sum of *DLLP* over the previous four-quarters (Treatment 2) and identify as "treated" observations those above the 90% percentile. In other words, we identify as treated those units which have used (in the previous quarter or in the previous four quarters) the most negative discretionary income (positive *DLLP*). "Control" observations are then drawn via nearest-neighbor matching from the observations below the 10% percentile *of the distribution of* |*DLLP*|, so the controls are CUs which have used the lowest discretion, regardless of sign.

- In Panel C, we examine income increasing use of EM and look for large negative values of the *DLLP* to define our treated units. For that, we take the quarter-by-quarter distribution of *DLLP* (for Treatment 1) and the quarter-by-quarter distribution of the cumulative sum of *DLLP* over the previous four-quarters (Treatment 2) and identify as "treated" observations those below the 10% percentile. In other words, we identify as treated those units which have used (in the previous quarter or in the previous four quarters) the most positive discretionary income (negative *DLLP*). "Control" observations are, as in Panel B, drawn via nearest-neighbor matching from the observations below the 10% percentile *of the distribution of* |*DLLP*|, so the controls are CUs which have used the lowest discretion, regardless of sign.

Once we have identified "comparable" treated and control units in each of the three panels, we use the Average Treatment Effect on the Treated (ATT, Abadie and Imbens, 2011) to compare the average rates of growth of the three variables of interest (total remuneration, dividends and salaries) for the treatment and control observations. Table 7 contains the results of these differences, along with the p-values of the significance tests. We comment first on the results on dividend growth, shown in columns 3-4: the estimated effect on dividend growth is almost always significantly positive, and of a magnitude that ranges from 1.6%-1.9% for one-quarter-ahead growth to 2%-7% for four-quarter-ahead growth. Interestingly, the results for income decreasing strategies are still significantly positive, except for the one-quarter ahead case, but of lower magnitude. This makes sense in that within income decreasing strategies we not only have income smoothing but also big baths, that most likely take longer to generate the possibility of increased dividends. Results for growth in salaries (columns 5-6) do not suggest that EM seems to be related with significant increases in salaries, as they are not consistent (note that Treatment 1 results tend to show a negative, sometimes significant, effect, whereas Treatment 2 results are positive and significant for the longer horizons). The results for total remuneration (columns 1-2) are a sort of average of the results of the other two variables, but the effect on dividends seems to dominate, in that mostly we find significant and positive differences in total remuneration growth at all horizons, except, again, in the shorter horizons for income decreasing strategies. The magnitudes range from 0.3%-1.7% at the shorter horizons to 1.6%-3.2% at the longer horizons.

In Table 8 we replicate the analysis in Table 7 using, instead, growth variables computed at the annual frequency (and annual horizons of 1-4 years). These estimators capture the possibility that the effects on remuneration may be more long-term. The table contains only results corresponding to Treatment 2, i.e., the sums of the value or absolute value of the *DLLP* which identify the "treated" units are computed over a period of a full year. The results now are more robust. For dividends (column 2) we always find positive and significant effects in the range from 3.1% to 11.8% over the different horizons. Growth in salaries (column 3) is generally not significant for the shorter horizons of 1-2 years –a result consistent with Table 7- but for longer horizons (years three-five) we find positive and significant effects on salaries in the range of 1.7%-3.3%. Total remuneration (column 1), as a consequence, shows significant effects at all horizons in the range of 1.4%-4.6%.

The results in Tables 7-8 suggest that CUs which use more EM manage to offer higher remuneration to their member/owners over short-term horizons and for as long as five years. This applies to overall EM and to the use of income decreasing or income increasing strategies. The effects on salaries are only noticeable in medium-to-long horizons beyond two years, whereas in the short term the results on salaries are inconclusive. Growth in total remuneration follows the results on dividends, and it is significantly higher at all horizons for the CUs which use discretion.

5.3. Loss avoidance strategies

The analyses in Tables 7-8 took a direct approach to the identification of the effectiveness of EM strategies by focusing on overall use of discretionary income, as proxied by *DLLP*. As such, the conclusions rely on the confidence that our proxy indeed captures "intent" to manage earnings, i.e., it measures a part of the

LLP that is discretionary. One way in which we can try to fine-tune our analysis is to detect situations where intent may be more obvious or where an EM strategy is more likely to have been implemented. This, we believe, is the case with the strategy of loss avoidance. In cases of pre-discretion losses (in our notation, for CUs with *NIBD* < 0), those CUs which use the *DLLP* to turn the pre-discretion loss into a post-discretion profit are more likely to have explicitly implemented a discretionary charge to the LLP with intent to manage earnings. This cleaner identification of loss avoidance strategies gives us a setting where it may be easier to defend that the results are a consequence of intent to distort earnings and, therefore, indicative of the effectiveness of EM in affecting subsequent remuneration. We define now the treated units ("loss avoiders") as the CUs with *NIBD* < 0 and with *NI* > 0 (i.e, where *DLLP* is a negative number enough to reverse the loss). The control units are drawn from the CUs with *NIBD* < 0 and *NI* < 0, but using a matching strategy to ameliorate potential differences in CU characteristics: our sample contains 18,879 observations with *NIBD* < 0, a third of which (35.83%) are loss avoiders ("treated" group) and the rest are the group of potential controls. As before, we match contemporaneously same-type (state/federal) CUs located in the same state and use *NW*, *NPL*, *S&D*, *size* and *unfunded* as characteristics for nearest-neighbor matching. We show in Table 9 the estimated differences in total remuneration, dividends and salaries using the ATT bias-adjusted estimators with different numbers of matches (M = 1, 2, 3). In all cases, loss avoiders manage to offer significantly higher remuneration (total, dividends and salaries) than the CUs with losses that do not avoid the loss. The effects range from 1.2% to 1.9% for salaries at different horizons and from 2.6% to 4.4% for dividends. The results at the different horizons are quite similar, which suggests that the effects of loss avoidance are relatively immediate, with the exception of dividends, where the comparison of the three and one-quarter ahead results suggests a longer lasting effect (one-quarter effects are estimated at 2.6%-2.8% whereas three quarter effects range from 3.7% to 4.4%).

5.4. The effects of becoming a well capitalized CU

We provide further evidence of the remuneration motive for EM by examining whether the CUs which manage their earnings upwards to meet the regulatory threshold for "well capitalized" end up paying higher dividends than those which do not. In this analysis we do not look at salaries or total remuneration, given that the threshold for well capitalized only affects directly the ability of CUs to pay large dividends. We design matching estimators similar to those in the previous two subsections. In this case, our Treatment group is composed of the CUs that use the *DLLP* to avoid being below well capitalized: an observation is defined as treated if $(NWTA_{t-1} + NIBD_t) < 0.07$, $DLLP_t < 0$ and $NWTA_t >= 0.07$. Control observations are then extracted via nearest-neighbor matching from the CUs that do not use the *DLLP* to avoid being below well capitalized: an observation is defined as a potential control if ($NWTA_{t-1}$ + $NIBD_t$) < 0.07 and $NWTA_t$ < 0.07. The exact and nearest-neighbor matching variables are the same as in Table 9. Table 10 shows the results of the matching estimators computed with data at both the quarterly and annual frequencies. Interestingly, the results for the quarterly frequency show positive effects on dividends for the treated units only for the larger horizon (4 quarters). At the annual frequency the result for one year is not significant but the results for 2-4 years are significant and suggest that CUs which use discretionary income to be above the threshold for well capitalized manage to increase more their dividends. This effect is not immediate, a result which is consistent with the findings of Table 5, where threshold management seemed to be a decision made only at the annual frequency (and which, therefore, would take horizons larger than a year to take effect). The estimated effect is that CUs which use EM to beat regulatory threshold manage to obtain annual dividend growth rates 15%-25% larger than those of the CUs which do not manage earnings.

6. The remuneration effects of earnings management: an analysis around a large shock

We carry out now a quasi-experimental analysis that gives additional identification of causal effects (i.e. of the effectiveness of EM in affecting remuneration). Given the difficulty in finding exogenous shocks to earnings management capability that can define comparable treatment and control groups, we use an alternative strategy to design a setting where we can apply diff-in-diff estimators to groups that are, in our view, as comparable as possible. In particular, we take advantage of an exogenous (and unexpected) large shock to credit union fundamentals and show how the CUs which used the most discretionary earnings in the aftermath of the shock managed to achieve higher rates of remuneration growth than those which did not use discretion. The nature and size of the shock allows us to construct a sample of CUs which are matched on fundamentals, so that the effect of CU heterogeneity is controlled for, and it also gives us a context in which pre-existing heterogeneity may be less relevant, given the massive size of the shock.

Our analysis focuses on the aftermath of Hurricane Katrina, which hit the Gulf Coast of the US in August 2005. This hurricane is one of the costliest natural disasters in the history of the US and, by far, the costliest in the period for which we have local banking information. More importantly, the damage caused by the hurricane was concentrated in four states (all counties in Louisiana and Mississippi, twenty-two counties in Alabama and eleven in Florida). This local character of the shock allows us to design an empirical strategy focused on the response to the hurricane of CUs located in the affected counties. The small geographic spread of most CUs allows for a cleaner identification of the effects: the local CUs are likely to be similar and were all hit by a common negative shock to local economic conditions which was exogenous to the previous fundamentals of the CU. If EM is used as a tool which can have an impact on remuneration, the Katrina shock gave CUs common exogenous incentives to manage earnings and reduce the impact of the shock so remuneration could stay high or grow.

We use data from CUs which have their headquarters located in the counties which, according to the information provided by FEMA, were most affected by Katrina.[20] For that set of CUs we use *DLLP* to construct an indicator variable *Treat* which works as a "treatment": in particular, we define as "treated" (*Treat* = 1) those CUs with highest absolute value of the *DLLP* in the last quarter of 2005 (which is also the quarter after Katrina). The control group (*Treat* = 0) includes the CUs located in the "Katrina counties" with the lowest absolute value of the *DLLP* in 2005Q4. Hence, our treated CUs are those which use more discretionary income, for either income increasing or income decreasing strategies, in the aftermath of Katrina. The control CUs, on the other hand, are those that use the smallest (in size) *DLLP*, so the CUS which used the least amount of discretionary income. We compute two different versions of the *Treat* variable. In Treatment 1 (Treatment 2) we identify as treated, so *Treat* = 1 for those CUs throughout the sample period whose 2005Q4 value of *DLLP* is above the 90% percentile (75% percentile) of the cross-sectional distribution of |*DLLP*| in 2005Q4 for CUs located in the Katrina counties. In Treatment 1 (Treatment 2) we identify as controls, so *Treat* = 0 for those CUs throughout the sample period whose 2005Q4 value of |*DLLP*| is below the 10% percentile (25% percentile) of the cross-sectional distribution of |*DLLP*| in 2005Q4 for CUs located in the Katrina counties. All other "Katrina CUs" are eliminated from the analysis. Note that this is not strictly a diff-in-diffs setting but, rather, our procedure leads to a sample of matched CUs where CU characteristics and the economic environment, including a large shock with major impact on the activity of the CUs, are comparable to the fullest extent possible.

Table 11 shows a comparison of the average value of our main control variables for the two groups defined by *Treat* (Treatment 1 in Panel A and Treatment 2 in Panel B) in the semester before the "shock". As it can be seen, the two groups are quite similar in their observable characteristics, although some differences exist: treated CUs in Treatment 1 are larger in size and have more unfunded commitments; treated CUs in Treatment 2 also have larger unfunded commitments, larger proportions of NPLs and slightly larger remuneration levels. Despite these differences, we believe the evidence in the table suggests that the two "matched" groups are sufficiently similar to rule out that pre-Katrina differences may be behind the potential effects we uncover in subsequent analyses. In any case, we include a set of regressors in our

[20] We consider those counties designated by FEMA (Federal Emergency Management Agency) as "Individual assistance areas".

"matched regressions" to control for such differences. In particular, we control for *NW*, *loans*, *NPL*, *ROA*, *size*, *SEC*, *unfunded* and *INT*.

Once we have identified the treated and control groups, our estimators are based on models of the form:

$$Y_{it} = \beta_0 + \beta_1 \text{□□□}a\text{□}_{it} + \beta_2 \text{□□□□}_{it} + \beta_3 \text{□□□}a\text{□}_{it} \times \text{□□□□}_{it} + \text{□□ □□□□□□}l\text{□} + \varepsilon_{it}, \quad (8)$$

where Y_{it} is one of six dependent variables of interest related to change in remunerations after the Katrina shock: in Table 12 we look at total remuneration effects so the dependent variables are $\Delta rem3Q_{it}$ and $\Delta rem4Q_{it}$, the three and four-quarter-ahead cumulative growth in total remuneration; in Table 13 we look at dividend effects so the dependent variables are $\Delta Div3Q_{it}$ and $\Delta Div4Q_{it}$, the three and four-quarter-ahead cumulative growth in dividends; finally, in Table 14 we look at salaries so the dependent variables are $\Delta Salaries3Q_{it}$ and $\Delta Salaries4Q_{it}$, the three and four-quarter-ahead cumulative growth in salaries. Each of the three tables contains two panels which use two alternative window widths around the shock: Panel A defines the "pre" and "post" periods as *Post* = 1 for 2005Q3-2006Q2, *Post* = 0 for 2004Q3-2005Q2; Panel B, on the other hand, excludes the quarter of Katrina (2005Q3) and defines the "pre" and "post" periods as *Post* = 1 for 2005Q4-2006Q3, *Post* = 0 for 2004Q3-2005Q2. Our main coefficient of interest is β_3, which measures the difference in the changes in the dependent variable between the treatment and control groups in the post period, that is, a sort of "treatment effect".

The results of the diff-in-diff regressions suggest that the CUs which used the highest amount of discretionary income in the quarter of the shock managed to increase significantly more the remuneration of both member/owners and employees. Table 12 looks at total remuneration: the estimated treatment effects range from 11.3% to 22% for three-quarter ahead changes and from 16.7% to 30% for four quarter ahead changes, depending on the treatment definition and sample window. Results in Table 13 refer to dividend growth and, again, the estimated treatment effects range from 8.7% to 17.3% for three-quarter ahead changes and from 18.2% to 25% for four quarter ahead changes, depending on the treatment definition and sample window. Results for salaries in Table 14 are, as in the general analyses of Table 7, less clear and we find some significant and positive effects for Treatment 1 (i.e., for the 10% CUs which used the largest discretionary increases in income) but no results for Treatment 2.

One potential criticism of our analysis is that *DLLP* might really stem from CUs whose loan portfolios perform significantly better, so the CUs with largest absolute values of *DLLP* are really the CUs with most negative values of *DLLP*. Thus, the effect we would be identifying is not stemming from discretionary income, but from a better performance of the loan portfolio. We have three responses to this criticism.

First, the group of treated CUs both in Treatment 1 and 2 is, in fact, composed only of CUs with positive *DLLP* (i.e. CUs which carried out an income decreasing strategy: the distribution of *DLLP* for Katrina CUs is available upon request). Second, but related to the first, the descriptives in Table 11 suggest that, if anything, the units we identify as treated have worse loan portfolios (note the significantly larger value of *NPL* in both treatments for the *Treat* = 1 group) but they have not significantly overprovisioned for those loans (no significant differences in *LLA*). Third, we have repeated the analyses in Tables 12-14 using only CUs which implemented income increasing strategies as in Table 7, panel C. The results were not clear on total remuneration. However, for dividends we obtained a significant increase, of slightly smaller magnitude than that of Table 13, and for salaries we obtained a more robust and significant positive effect –at both three and four quarter horizons- of similar magnitude to those in Table 14 (we make these available upon request).

As in the general analyses of Section 5, we believe that the takeout from these results is that CUs seem to have member/owner remuneration as a motivation for earnings management. As a consequence, those CUs which use more discretionary income manage to significantly increase the dividends they pay on their member shares. Employee remuneration also appears to be a significant motivation for earnings management, albeit secondary to dividends and more long term in nature.

7. Summary and concluding remarks

In this paper we have provided what we believe to be the first comprehensive analysis of earnings management strategies and on the potential motivations of such strategies in the credit union sector. Despite the relatively low sophistication of credit union operations and of their depositor base, we hypothesize that a potential motivation for earnings management may stem from an objective of increasing remuneration of the member/owners (saver orientation of the CU) and, maybe more secondarily, of CU employees, who typically are also members of the CU. A basis for our hypothesis is the fact that CUs have regulatory limits on the compensation they can provide to members based on the strength of the CU fundamentals but also on the indirect effects that low performance may have on the capacity of the CU to increase remuneration. Our results show robust evidence that credit unions take advantage of earnings discretion following strategies similar to those of other financial institutions. In particular, credit unions use discretion in the quarterly charges to the loan loss provision and carry out smoothing of income, avoidance of losses/benchmarking, big baths and the management of a net worth ratio (similar to the regulatory ratios of banks). We then offer descriptive and causal evidence suggestive that indeed CUs which manage their earnings have characteristics consistent with being more saver oriented and are able to achieve higher subsequent remuneration to their member/owners and, in the medium-to-long term, to their employees.

Our paper contributes to two streams of literature. First, we contribute to the literature on cooperative banking by showing comprehensive evidence that CUs carry out earnings management strategies similar to those of banks. We suggest a potential motivation for such activities based on the saver/borrower orientation of CUs and on regulatory limits for compensation. Our empirical evidence aligns with this hypothesis. Second, we contribute to the literature on the effects of earnings management behavior by providing evidence of how earnings management practices may contribute to keeping the financing side of a depository institution more stable, in that higher remunerations are likely to keep current members invested in the CU and to attract further members, given field of membership restrictions.

The implications of our analysis for overall financial stability are quite far reaching. Our results suggest that earnings management may provide CUs with flexibility to increase remuneration of their main financing source and, therefore, to affect positively the financing side. This sort of “positive externality” of accounting discretion should be kept in mind by the regulators in the design of both accounting and financial regulation: in turbulent times, it may be the case that flexibility in accounting can contribute to maintaining the stability of the financial system and, thus, to preventing overreactions from investors.

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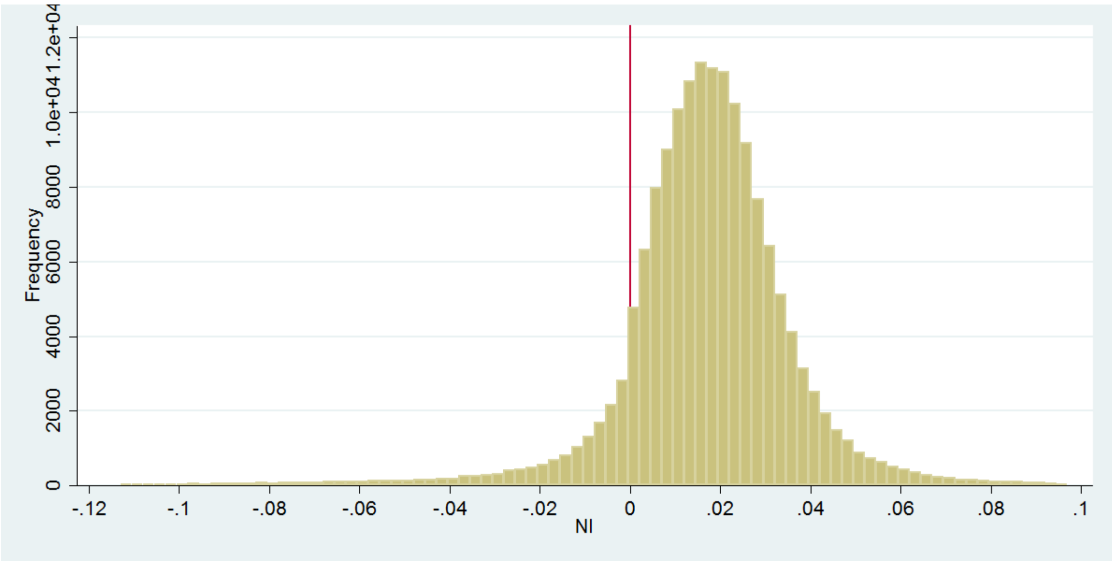
Appendix A: Main variable definitions

	Variable	Definition
Main dependent variables	$DLLP_t$	Quarterly discretionary loan loss provision (LLP) in quarter t.
	$Remuneration_t$	(Total salary expenses + Total dividends on shares) / Total assets
	$Divshares_t$	Total dividends on shares / Total shares (amount)
	$Avg.\ salaries_t$	Total salary expenses / Number of employees.
	Δrem_t	Quarter-on-quarter (year-on-year) growth of *Remuneration* in quarter (year) t.
	ΔDiv_t	Quarter-on-quarter (year-on-year) growth of *Divshares* in quarter (year) t.
	$\Delta salaries_t$	Quarter-on-quarter (year-on-year) growth of *Avg.salaries* in quarter (year) t.
Determinants	$NIBD_t$	Net income before discretionary LLP in quarter t deflated by total assets.
	$NIBDI_t$	Net income before discretionary LLP and interest on shares and deposits, in quarter t, deflated by total assets.
Controls	NW_{t-1}	Net worth (undivided earnings, regular and other reserves, subordinated debt included in net worth, net income, adjusted retained earnings acquired through business combinations) over total assets in quarter t-1.
	LLA_{t-1}	Loan loss allowance in quarter t-1.
	$size_{t-1}$	Natural logarithm of total assets of the CU in quarter t-1.
	SEC_{t-1}	(Trading securities + available for sale securities + held to maturity securities) over total assets in quarter t-1
	$unfunded_{t-1}$	(Revolving open-end lines secured by family residential properties + Credit card lines + Unsecured share draft lines of credit) / total assets in quarter t-1.
	$loans_{t-1}$	Loans over total assets in quarter t-1.
	NPL_{t-1}	Non-performing loans over total assets in quarter t-1.
	$S\&D_{t-1}$	Total shares and deposits of the CU in quarter t-1.
	INT_{t-1}	Average spread between interest rates on total shares and deposits paid by the CU and the 3-month Treasury Bill, in quarter t-1 (federal and state CUs)
	ROA_{t-1}	Return on Assets in quarter t-1.
	NI_{t-1}	Net income over total assets in quarter t-1
Macro variables	$pinc\_s_t$	Change in quarterly personal income in the state where the CU headquarters are located.
	$unemp\_s_t$	Unemployment rate in the state where the CU headquarters are located.

Figure 1. Evidence on loss avoidance: quarterly income

Panel A shows the unconditional full sample distribution of quarterly net income, *NI*. Panel B shows the unconditional full-sample distribution of quarterly net income before the discretionary loan loss provision, *NIBD*.

Panel A: (quarterly) Net Income



Panel B: (quarterly) Net Income before Discretionary Loan Loss Provision

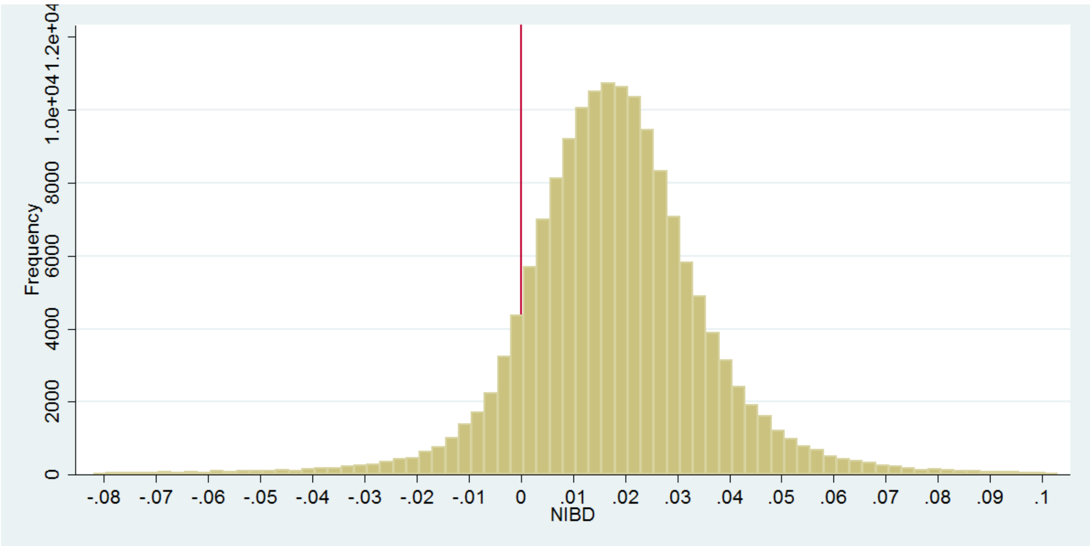
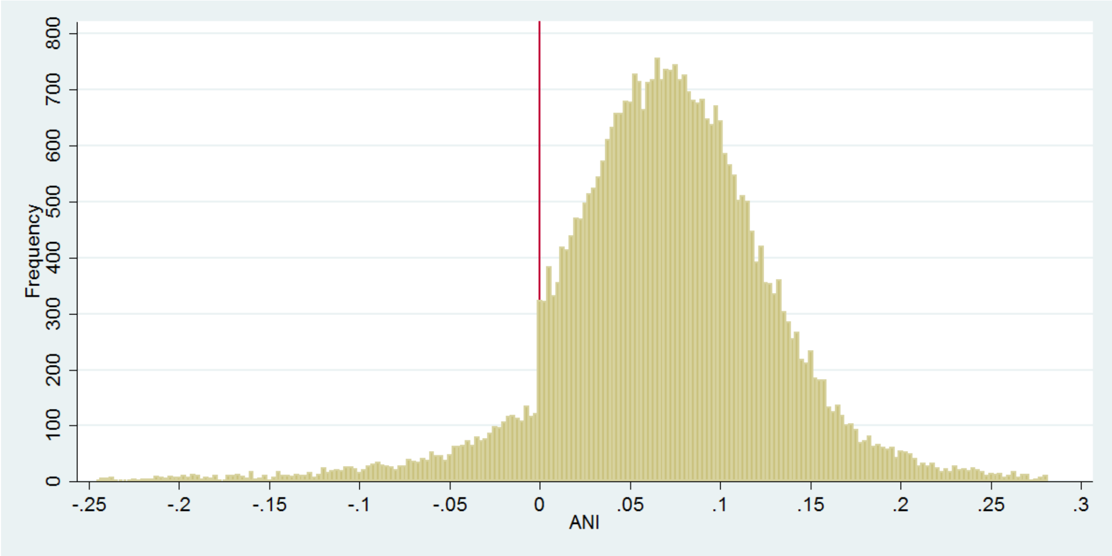


Figure 2. Evidence on loss avoidance: annual income

Panel A shows the unconditional full sample distribution of annual net income. Panel B shows the unconditional full sample distribution of annual net income before the discretionary loan loss provision.

Panel A: (annual) Net Income



Panel B: (annual) Net Income before Discretionary Loan Loss Provision

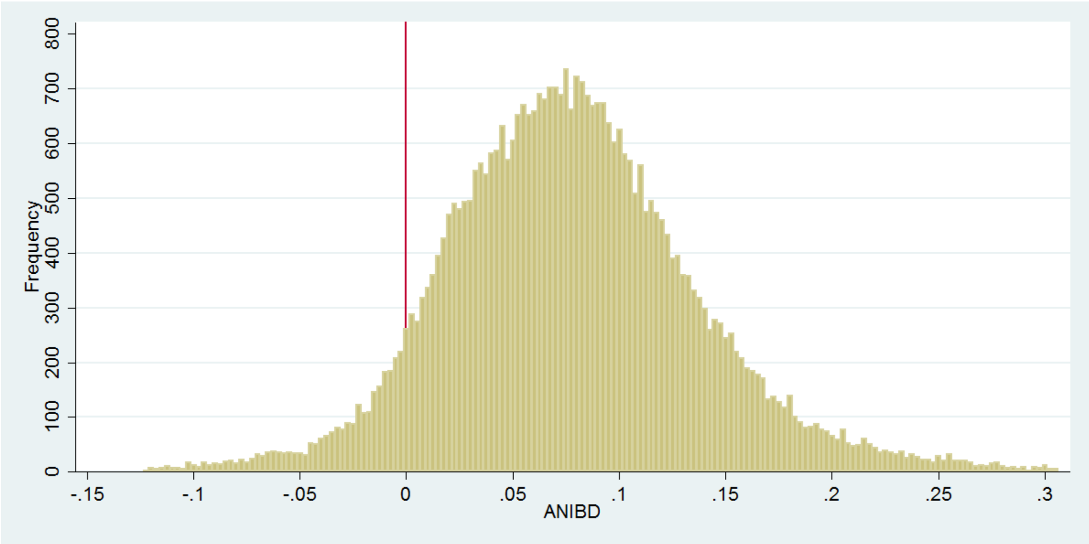
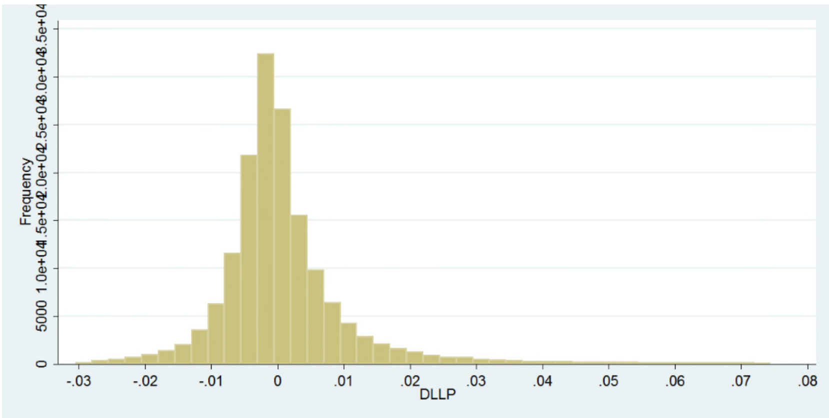


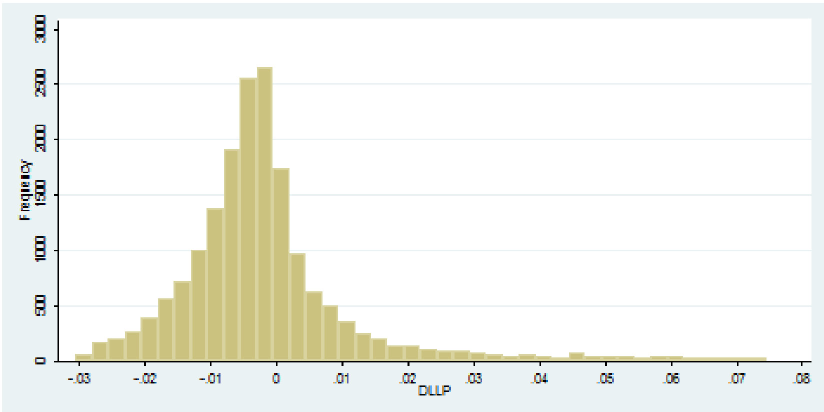
Figure 3. Distribution of our measure of the Discretionary Loan Loss Provision

Panel A shows the unconditional full-sample distribution of our measure of the quarterly discretionary loan loss provision, *DLLP*. Panel B shows the full-sample distribution of the quarterly discretionary loan loss provision *DLLP* conditional on net income before discretionary loan loss provision being negative (*NIBD* < 0). Panel C shows the full-sample distribution of the quarterly discretionary loan loss provision *DLLP* conditional on net income before discretionary loan loss provision being positive (*NIBD* > 0).

Panel A: (quarterly) Discretionary Loan Loss Provision, *DLLP*



Panel B: (quarterly) Discretionary Loan Loss Provision *DLLP*, conditional on *NIBD* < 0



Panel C: (quarterly) Discretionary Loan Loss Provision *DLLP*, conditional on *NIBD* > 0

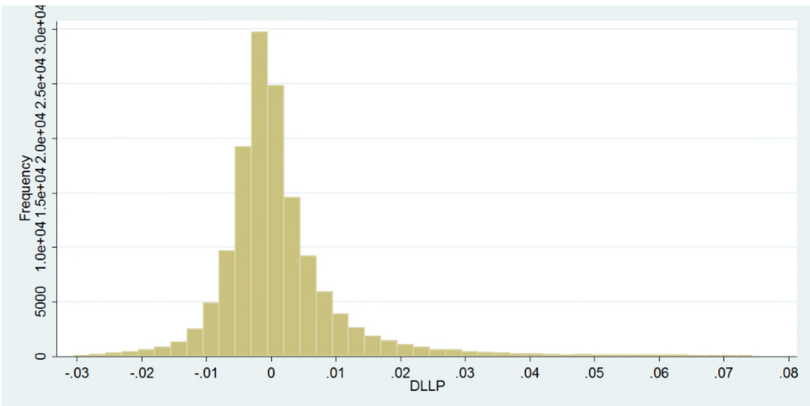


Figure 4. The relationship between the discretionary part of the loan loss provision *DLLP* and pre-discretion income *NIBD*

The graph shows the predicted values of *DLLP* as a function of *NIBD* (evaluated at the median values of all other controls) implied by the results of the following quadratic regression estimated for the full sample: □□□□$_{it} = \beta_{0i} + \beta_1$□□□□$_{it} +$ β_1□□□□$_{it}^2$ $+$ □□ □□□□□□*l*□ $+$ □*a*□□□ □□□□□□*l*□ $+$ □$_i$ $+$ □$_t$ $+ \varepsilon_{i,t}$. Controls included in the regression are NW_{t-1}, $DLLP_{t-1}$, LLA_{t-1}, $size_t$, SEC_t, $unfunded_t$, $pinc\_s_t$ and $unemp\_s_t$ (see Appendix A for variable definitions). The location of the parabola identifies three areas which correspond to the earnings management strategies of big baths (income decreasing strategies in the presence of large losses), loss avoidance (income increasing strategies around zero *NIBD*) and income smoothing (income decreasing strategies in the presence of large profits).

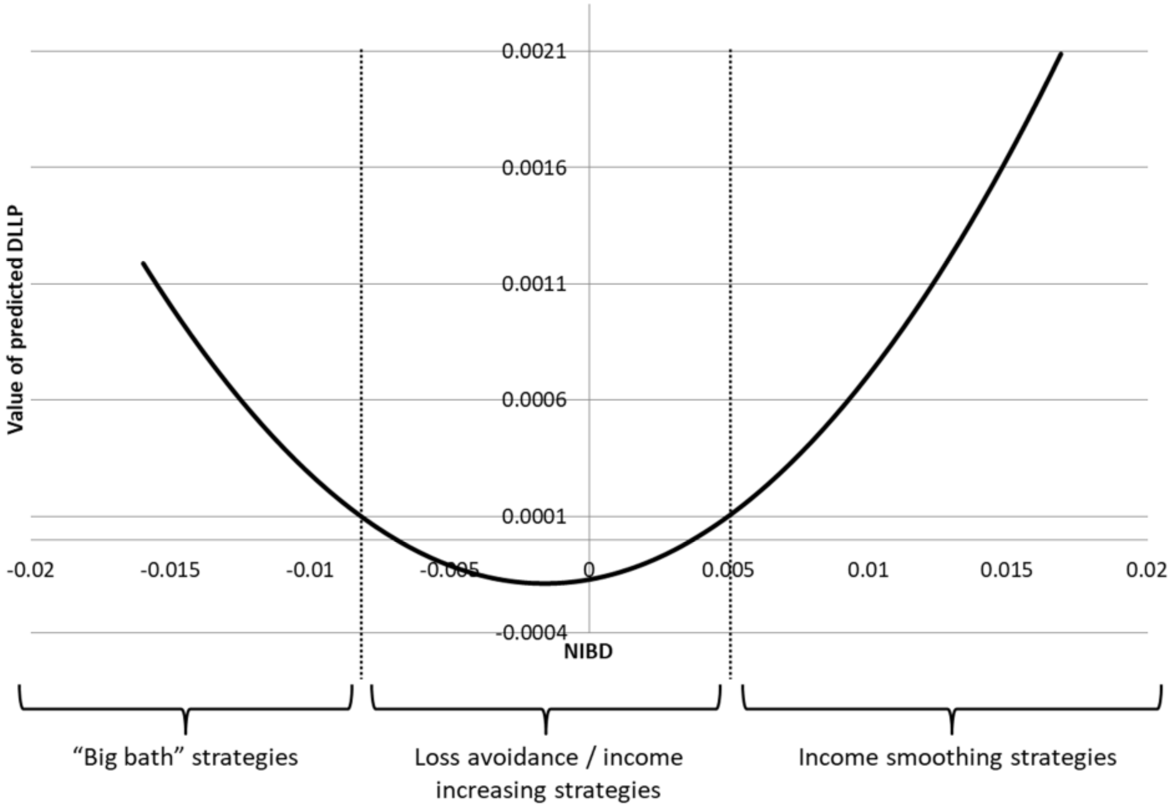


Table 1 - Descriptive statistics

Panel A: descriptives of the variables used in the main regressions. See Appendix A for variable definitions. The sample comprises credit unions with total assets higher than $50,000,000 observed through the period 1994Q1to 2015Q4, excluding the quarter-CU observations in which a CU went through a merger. This yields a total of 155,283 credit union-quarter observations for all credit union specific variables. Credit union variables which are continuous have been winsorized at the 0.5% level in each tail. Macroeconomic controls are variables measured at the level of the state where the CU headquarters are located. Panel B: some detailed descriptives of the *LLP*, unconditional and conditional on the sign of *NIBD*.

Panel A: Descriptives of the variables used in the main regressions

Variables		Mean	Median	StdDev	Min	Max
Main dependent variables (quarterly data)	*DLLP*	0.000	-0.000	0.001	-0.006	0.009
	Remuneration	0.008	0.008	0.003	0.002	0.016
	Δrem	-0.001	-0.006	0.130	-0.512	1.129
	Divshares	0.005	0.004	0.004	0.000	0.014
	ΔDiv	-0.026	-0.022	0.160	-0.914	1.200
	Avg. salaries	12,781	12,345	4,014	0.000	28,537
	Δsalaries	0.014	0.008	0.108	-0.387	0.555
Dependent annual variables	*Δrem*	-0.031	-0.034	0.120	-0.441	0.528
	ΔDiv	-0.092	-0.113	0.251	-0.874	1.261
	Δsalaries	0.040	0.038	0.088	-0.241	0.403
Determinants	*NIBD*	0.002	0.002	0.002	-0.016	0.016
	NIBDI	0.006	0.006	0.004	-0.014	0.023
Controls	*NW*	0.108	0.103	0.030	0.049	0.242
	LLA	0.006	0.005	0.004	0.000	0.033
	size	18.909	18.672	0.964	17.72	24.99
	SEC	0.144	0.102	0.148	0.000	0.669
	Unfunded	0.126	0.109	0.090	0.000	0.494
	NPL	0.010	0.007	0.010	0.000	0.353
	S&D	0.873	0.882	0.042	0.675	0.942
	INT	-0.017	-0.010	0.019	-0.051	0.005
	NI	0.002	0.002	0.002	-0.010	0.008
Macro-state variables	*pinc_s*	0.011	0.011	0.012	-0.071	0.117
	unemp_s	0.061	0.057	0.020	0.021	0.146

Panel B: Descriptives of the LLP and the DLLP

Variables		Mean	Median	StdDev	Q1	Q3
LLP	*LLP*	0.0010	0.0006	0.0013	0.0002	0.0012
	LLP (*NIBD>0*)	0.0009	0.0006	0.0011	0.0003	0.0012
	LLP (*NIBD<0*)	0.0013	0.0006	0.0021	0.0002	0.0015
DLLP	*DLLP*	0.0001	-0.0001	0.0011	-0.0004	0.0004
	DLLP (*NIBD>0*)	0.0001	-0.0000	0.0010	-0.0004	0.0004
	DLLP (*NIBD<0*)	-0.0001	-0.0003	0.0019	-0.0009	0.0003

Table 2 - Correlation matrix

Spearman (Pearson) correlation coefficients of the variables as included in the regression models are shown above (below) the diagonal. Only correlations between dependent and continuous explanatory variables are included. All correlations are significant at the 1% level. (1): *DLLP*; (2): *Δrem*; (3): *ΔDiv*; (4): *Δsalaries*; (5) *NIBD*; (6): *NIBDI*; (7): *NI*; (8): *NW*; (9): *LLA*; (10): *size*; (11): *SEC*; (12) *unfunded;* (13) *NPL.*

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
DLLP	1,000	-0,047	-0,054	-0,010	0,262	0,129	-0,064	-0,051	0,227	0,134	0,053	0,125	-0,080
Δrem	-0,016	1,000	0,701	0,496	-0,025	0,060	-0,010	0,054	-0,012	-0,022	0,002	0,027	-0,050
ΔDiv	-0,032	0,615	1,000	0,021	0,114	0,242	0,095	0,088	-0,054	-0,018	0,006	0,059	-0,130
Δsalaries	0,000	0,521	0,074	1,000	-0,061	-0,012	-0,037	-0,001	-0,002	0,001	-0,005	0,007	-0,007
NIBD	0,132	-0,055	0,031	-0,065	1,000	0,659	0,671	0,124	0,126	0,165	0,025	0,102	-0,231
NIBDI	0,076	0,031	0,131	-0,014	0,660	1,000	0,416	0,064	0,058	0,033	0,023	0,177	-0,190
NI	-0,060	-0,017	0,000	-0,010	0,206	0,093	1,000	0,070	0,034	0,652	0,172	0,142	-0,230
NW	-0,082	0,030	0,048	0,006	0,122	0,059	0,005	1,000	-0,177	-0,069	0,134	-0,197	-0,072
LLA	0,297	-0,008	-0,050	-0,002	0,036	-0,009	-0,005	-0,149	1,000	0,098	-0,116	0,083	0,432
size	0,083	-0,012	-0,001	-0,003	0,136	0,022	0,368	-0,091	0,088	1,000	0,256	0,187	-0,100
SEC	-0,019	0,002	0,005	-0,004	0,029	0,037	0,063	0,160	-0,130	0,211	1,000	-0,003	-0,063
unfunded	0,081	0,010	0,026	0,002	0,069	0,168	0,057	-0,215	0,026	0,168	-0,066	1,000	-0,104
NPL	-0,025	-0,023	-0,071	-0,002	-0,288	-0,238	-0,070	-0,050	0,484	-0,069	-0,043	-0,124	1,000

Table 3 - The use of the discretionary loan loss provision: earnings management strategies

Fixed effects regressions of the use of the *DLLP* as a function of the level of pre-discretionary income *NIBD*. *NIBDI* is defined as net income before discretionary LLP and interest on shares and deposits, in quarter t, deflated by total assets; *lowloss* is a dummy that takes value 1 if the CU has negative *NIBD* in the upper 5% of the distribution (i.e., it identifies CUs with the smallest losses in absolute value) and 0 otherwise; *highloss* is a dummy that takes value 1 if the CU has negative *NIBD* in the lower 95% of the distribution (i.e., it identifies CUs with the largest losses in absolute value) and 0 otherwise; *NEG* is a dummy that takes value 1 if NIBD<0 and 0 otherwise. Columns 1-2 show the results of models designed to analyze evidence of income smoothing strategies. Columns 3-5 show the results of models designed to analyze evidence of big bath and loss avoidance strategies. CU controls: NW_{t-1}, $DLLP_{t-1}$, LLA_{t-1}, $size_t$, SEC_t and $unfunded_t$. Macro controls: $pinc\_s_t$ and $unemp\_s_t$. See Appendix A for variable definitions. *t*-statistics are based on standard errors clustered by CU and time. *, **, *** denote significance (based on two-tailed tests) at 10%, 5% and 1% level.

		Income smoothing				Big bath and loss avoidance					
		(1)		(2)		(3)		(4)		(5)	
Dependent variable		$DLLP_{it}$		$DLLP_{it}$		$DLLP_{it}$		$DLLP_{it}$		$DLLP_{it}$	
Variables	Prediction	Coefficient	t-stat	Coefficient	t-stat	Coefficient	t-stat	Coefficient	t-stat	Coefficient	t-stat
$NIBD_t$	+	0.034***	(4.08)			0.082***	(9.89)	0.034***	(4.069)	0.082***	(9.88)
$NIBDI_t$	+			0.036***	(5.10)						
$lowloss_t$	+							-0.000	(-1.20)	0.000	(0.78)
$lowloss_t \times NIBD_t$	+							1.684***	(7.75)	0.889***	(2.82)
NEG_t	-					0.000	(0.40)				
$NEG_t \times NIBD_t$	-					-0.144***	(-4.29)				
highloss	-									0.000	(0.43)
$highloss_t \times NIBD_t$	-									-0.142***	(-3.99)
Observations		155,283		155,283		155,283		155,283		155,283	
CU and Time FE		YES		YES		YES		YES		YES	
CU and Macro controls		YES		YES		YES		YES		YES	
Adj. R-squared		0.195		0.196		0.201		0.196		0.201	

Table 4 - The use of the discretionary loan loss provision: benchmarking behavior

Fixed-effects regressions of the use of the *DLLP* as a function of earnings benchmarks. The benchmarks are defined as follows: *BENCH* is $NIBD_t – NI_{t-4}$ if quarter = 1; $(NIBD_t + NI_{t-1}) – (NI_{t-4} + NI_{t-5})$ if quarter = 2; $(NIBD_t + NI_{t-1}+ NI_{t-2}) – (NI_{t-4} + NI_{t-5} + NI_{t-6})$ if quarter = 3; $(NIBD_t + NI_{t-1}+ NI_{t-2} + NI_{t-3}) – (NI_{t-4} + NI_{t-5} + NI_{t-6} + NI_{t-7})$ if quarter = 4. *BENCH_MET* is a dummy that takes value 1 when when BENCH>0 and 0 otherwise. *NEG_BENCH:* value of *BENCH* when *BENCH<0* and 0 otherwise; *POS_BENCH* is the value of *BENCH*, when *BENCH*>0 and 0 otherwise; *LO_NEGBENCH* is a dummy that takes value 1 when the negative value of *BENCH* is below the 5% percentile (so it is a one for observations which are below and very far from beating the benchmark) and 0 otherwise. *VC_NEGBENCH* is a dummy that takes value 1 when the negative value of *BENCH* is above the 95% percentile (so it identifies observations which are below but very close to beating the benchmark) and 0 otherwise. *HI_POSBENCH* is a dummy that takes value 1 when the positive value of *BENCH* is above the 95% percentile (so it identifies observations that are beating the benchmark by a large magnitude) and 0 otherwise. *VC_POSBENCH* is a dummy that takes value 1 when the positive value of *BENCH* is below the 5% percentile (so it identifies observations that are beating the benchmark by the smallest amount) and 0 otherwise. CU controls: NW_{t-1}, $DLLP_{t-1}$, LLA_{t-1}, $size_t$, SEC_t and $unfunded_t$. Macro controls: $pinc\_s_t$ and $unemp\_s_t$. See Appendix A for other variable definitions. *t*-statistics are based on standard errors clustered by CU and time. *, **, *** denote significance (based on two-tailed tests) at 10%, 5% and 1% level.

		(1)		(2)	
Dependent variable		$DLLP_{it}$		$DLLP_{it}$	
Variables	Prediction	Coefficient	t-stat	Coefficient	t-stat
BENCH_MET		0.000***	(8.13)	0.000	(0.44)
NEG_BENCH	-	-0.022**	(-2.46)	-0.015*	(-1.74)
POS_BENCH	+	0.017***	(5.52)	0.021***	(5.33)
LO_NEGBENCH	-			-0.000***	(-4.06)
VC_NEGBENCH	+			0.000***	(5.27)
HI_POSBENCH	-			0.000	(0.40)
VC_POSBENCH	+			0.000	(0.50)
NEG_BENCH × *LO_NEGBENCH*	-			-0.044***	(-3.43)
NEG_BENCH × *VC _NEGBENCH*	+			0.679***	(3.05)
POS_BENCH × *HI_POSBENCH*	+			-0.009	(-1.36)
POS_BENCH× *VC_POSBENCH*	+			-0.317	(-1.64)
Observations		147,939		147,825	
CU and Time FE		YES		YES	
CU and Macro controls		YES		YES	
Adj. R-squared		0.198		0.200	

Table 5 - The use of the discretionary loan loss provision: beating the threshold for "well capitalized"

Fixed-effects regressions of the use of the *DLLP* as a function of earnings benchmarks. *NW_GAP* is defined as (Threshold – NW_{t-1} – $NIBD_t$); *POS_GAP* is equal to *NW_GAP* if *NW_GAP* > 0 and 0 otherwise; *DUMMY_GAP* is a dummy equal to one when *NW_GAP* > 0 and 0 otherwise. Panel A: quarterly data are used so the capital adequacy is checked quarter by quarter using quarterly *NIBD*. Panel B: annual data are used, so the capital adequacy is checked year by year using annual *NIBD*. The threshold is set at 7% (columns 2-3) and 8% (columns 4-5). Note that the results of *NW_GAP* are the same regardless of the threshold used: only the intercepts (or CU FEs) are affected. CU controls: NW_{t-1}, $DLLP_{t-1}$, LLA_{t-1}, $size_t$, SEC_t and $unfunded_t$. Macro controls: $pinc\_s_t$ and $unemp\_s_t$. See Appendix A for other variable definitions. *t*-statistics are based on standard errors clustered by CU and time. *, **, *** denote significance (based on two-tailed tests) at 10%, 5% and 1% level.

		(1)		(2)		(3)		(4)		(5)	
		Panel A: Quarterly data									
				Threshold set at 7%				Threshold set at 8%			
Dependent variable		$DLLP_{it}$		$DLLP_{it}$		$DLLP_{it}$		$DLLP_{it}$		$DLLP_{it}$	
Variables	Prediction	Coefficient	t-stat	Coefficient	t-stat	Coefficient	t-stat	Coefficient	t-stat	Coefficient	t-stat
NW_GAP	-	-0.001	(-0.05)								
POS_GAP	-			0.004	(0.93)			0.002	(0.76)		
DUMMY_GAP	-					0.001	(1.25)			-0.001	(-0.19)
Observations		155,283		155,283		155,283		155,283		155,283	
CU and Time FE		YES		YES		YES		YES		YES	
CU and Macro controls		YES / no *NW*		YES		YES		YES		YES	
Adj. R-squared		0.196		0.193		0.193		0.193		0.193	
		Panel B: Annual data									
				Threshold set at 7%				Threshold set at 8%			
Dependent variable		$DLLP_{it}$		$DLLP_{it}$		$DLLP_{it}$		$DLLP_{it}$		$DLLP_{it}$	
Variables	Prediction	Coefficient	t-stat	Coefficient	t-stat	Coefficient	t-stat	Coefficient	t-stat	Coefficient	t-stat
NW_GAP	-	-0.005**	(-2.12)								
POS_GAP	-			-0.068	(-1.22)			-0.054**	(-2.42)		
DUMMY_GAP	-					-0.001*	(-1.88)			-0.001***	(-3.90)
Observations		35,326		35,326		35,326		35,326		35,326	
CU and Time FE		YES		YES		YES		YES		YES	
CU and Macro controls		YES / no *NW*		YES		YES		YES		YES	
Adj. R-squared		0.245		0.245		0.245		0.245			
0.246											

Table 6 - The saver orientation profile of "earnings managing" CUs

Test statistics of the difference in average values of three characteristics of saver oriented CUs between the group of CUs which use most discretionary income and the group of CUs which use the least discretionary income over our sample period. CUs are sorted by the average level of |*DLLP*| over the full sample period. The CUs above the 90% (alternatively, 75%) percentile are considered to be "High-EM" CUs whereas the CUs below the 10% (alternatively, 25%) percentile are considered to be "Low-EM" CUs. The tables then show the average values over the full sample and significance tests of the differences for the two groups of three characteristics of saver oriented CUs: deposits/assets (Panel A), saving rates on member deposits (Panel B) and loan rates (Panel C). *, **, *** denote significance (based on two-tailed tests) at 10%, 5% and 1% level.

	(1)		(2)	
	Panel A: Deposits / Assets			
	Groups defined on 10%/90% percentiles		Groups defined on 25%/75% percentiles	
	High-EM	Low-EM	High-EM	Low-EM
Average value	0.8752	0.8693	0.8693	0.8725
Difference	0.0062***		0.0032***	
p-value	0.0000		0.0000	
	Panel B: saving rates on member deposits			
	Groups defined on 10%/90% percentiles		Groups defined on 25%/75% percentiles	
	High-EM	Low-EM	High-EM	Low-EM
Average value	0.0207	0.0197	0.0206	0.0198
Difference	0.0011***		0.001***	
p-value	0.0049		0.0010	
	Panel C: interest rates charged on loans			
	Groups defined on 10%/90% percentiles		Groups defined on 25%/75% percentiles	
	High-EM	Low-EM	High-EM	Low-EM
Average value	0.0723	0.0652	0.0696	0.0652
Difference	0.0071***		0.0044***	
p-value	0.0000		0.0000	

Table 7 - Quarterly effects of the discretionary loan loss provision on total remuneration, dividends and salaries

Matching estimators of the effect of discretionary income on cumulative quarterly growth on total remuneration ((total salaries + dividends) / total assets) (columns 1-2), dividends (columns 3-4) and salaries (columns 5-6). Panel A: treated units are the observations above the 90% percentile of the quarter-by-quarter distribution of the absolute value of the *DLLP* (Treatment 1) and the observations above the 90% percentile of the quarter-by-quarter distribution of the cumulative sum of the absolute value of the *DLLP* over the previous four quarters (Treatment 2). Panel B: treated units are the observations above the 90% percentile of the quarter-by-quarter distribution of the value of the *DLLP* (Treatment 1) and the observations above the 90% percentile of the quarter-by-quarter distribution of the cumulative sum of the value of the *DLLP* over the previous four quarters (Treatment 2). Panel C: treated units are the observations below the 10% percentile of the quarter-by-quarter distribution of the value of the *DLLP* (Treatment 1) and the observations below the 10% percentile of the quarter-by-quarter distribution of the cumulative sum of the value of the *DLLP* over the previous four quarters (Treatment 2). All panels: control group are the observations below the 10% percentile in the quarter-by-quarter distribution of the absolute value of the *DLLP* (Treatment 1) and the observations below the 10% percentile in the quarter-by-quarter distribution of the cumulative sum of the absolute value of the *DLLP* over the previous four quarters (Treatment 2). Matching variables: NW_t, NPL_t, $S\&D_t$, $size_t$ and $unfunded_t$. Exact matching required by credit union type (state or federal chartered), by quarter and by state. Two matches per observation (M = 2). Estimates shown correspond to the bias-adjusted estimator of the Average Treatment Effect on the Treated of Abadie and Imbens (2011). *, **, *** denote significance (based on two-tailed tests) at 10%, 5% and 1% level. See Appendix A for other variable definitions.

	(1)		(2)		(3)		(4)		(5)		(6)	
	Panel A: Treated units defined on the absolute value of DLLP											
	Quarterly growth in total remuneration				Quarterly growth in dividends				Quarterly growth in salaries			
	Treatment 1		Treatment 2		Treatment 1		Treatment 2		Treatment 1		Treatment 2	
Quarters	Difference	p-value	Difference	p-value	Difference	p-value	Difference	p-value	Difference	p-value	Difference	p-value
1	0.015***	0.004	0.017***	0.004	0.016***	0.000	0.019***	0.000	-0.003*	0.093	0.004	0.129
2	0.020***	0.000	0.024***	0.000	0.030***	0.000	0.027***	0.000	-0.007***	0.001	0.001	0.549
3	0.030***	0.000	0.030***	0.000	0.041***	0.000	0.043***	0.000	-0.002	0.354	0.008***	0.001
4	0.030***	0.000	0.032***	0.000	0.069***	0.000	0.050***	0.000	-0.002	0.469	0.005**	0.043
	Panel B: Treated units defined on income decreasing use of the DLLP											
	Quarterly growth in total remuneration				Quarterly growth in dividends				Quarterly growth in salaries			
	Treatment 1		Treatment 2		Treatment 1		Treatment 2		Treatment 1		Treatment 2	
Quarters	Difference	p-value	Difference	p-value	Difference	p-value	Difference	p-value	Difference	p-value	Difference	p-value
1	0.004	0.359	0.003	0.501	0.005*	0.055	0.002	0.541	-0.001	0.705	0.002	0.283
2	0.006*	0.096	0.007*	0.088	0.010***	0.000	0.014***	0.000	-0.004**	0.036	0.003	0.197
3	0.015***	0.000	0.011**	0.015	0.018***	0.000	0.023***	0.000	-0.000	0.945	0.004	0.125
4	0.016***	0.000	0.016***	0.000	0.021***	0.000	0.029***	0.000	0.001	0.739	0.010***	0.000
	Panel C: Treated units defined on income increasing use of the DLLP											
	Quarterly growth in total remuneration				Quarterly growth in dividends				Quarterly growth in salaries			
	Treatment 1		Treatment 2		Treatment 1		Treatment 2		Treatment 1		Treatment 2	
Quarters	Difference	p-value	Difference	p-value	Difference	p-value	Difference	p-value	Difference	p-value	Difference	p-value
1	0.015**	0.012	0.005	0.291	0.019***	0.000	0.016***	0.000	-0.008***	0.000	-0.001	0.712
2	0.024***	0.000	0.010*	0.059	0.034***	0.000	0.029***	0.000	-0.007***	0.001	0.003	0.243
3	0.030***	0.000	0.015***	0.000	0.044***	0.000	0.038***	0.000	-0.003	0.134	0.004*	0.082
4	0.028***	0.000	0.017***	0.000	0.049***	0.000	0.046***	0.000	-0.006***	0.002	0.005**	0.020

Table 8 – Annual effects of the discretionary loan loss provision on total remuneration, dividends and salaries

Matching estimators of the effect of discretionary income on cumulative annual growth on total remuneration (total salaries + dividends) / total assets) (column 1), dividends (column 2) and average salaries (column 3). Panel A: treated units are the observations above the 90% percentile of the year-by-year distribution of the absolute value of the *DLLP*. Panel B: treated units are the observations above the 90% percentile of the year-by-year distribution of the value of the *DLLP*. Panel C: treated units are the observations below the 10% percentile of the year-by-year distribution of the value of the *DLLP*. All panels: control observations are extracted from the observations below the 10% percentile in the year-by-year distribution of the absolute value of the *DLLP*. Matching variables: NW_t, NPL_t, $S\&D_t$, $size_t$ and $unfunded_t$. Exact matching required by credit union type (state or federal chartered), by year and by state. Two matches per treated unit (M = 2). Estimates shown correspond to the bias-adjusted estimator of the Average Treatment Effect on the Treated of Abadie and Imbens (2011). *, **, *** denote significance (based on two-tailed tests) at 10%, 5% and 1% level. See Appendix A for other variable definitions.

	(1)		(2)		(3)	
	Panel A: Treated units defined on the absolute value of DLLP					
	Growth in total remuneration		Growth in dividends		Growth in in salaries	
Year	Difference	p-value	Difference	p-value	Difference	p-value
1	0.017***	0.000	0.046***	0.000	0.004	0.256
2	0.030***	0.000	0.082***	0.000	0.006	0.156
3	0.046***	0.000	0.113***	0.000	0.027***	0.000
4	0.039***	0.000	0.118***	0.000	0.033***	0.000
5	0.034***	0.000	0.117***	0.000	0.019***	0.003
	Panel B: Treated units defined on income decreasing use of the DLLP					
	Growth in total remuneration		Growth in dividends		Growth in in salaries	
Year	Difference	p-value	Difference	p-value	Difference	p-value
1	0.014***	0.001	0.031***	0.000	0.003	0.345
2	0.025***	0.000	0.059***	0.000	0.005	0.225
3	0.034***	0.000	0.076***	0.000	0.022***	0.000
4	0.030***	0.000	0.080***	0.000	0.029***	0.000
5	0.026***	0.001	0.076***	0.000	0.019***	0.004
	Panel C: Treated units defined on income increasing use of the DLLP					
	Growth in total remuneration		Growth in dividends		Growth in in salaries	
Year	Difference	p-value	Difference	p-value	Difference	p-value
1	0.020***	0.000	0.042***	0.000	0.008***	0.007
2	0.024***	0.000	0.071***	0.000	0.006*	0.066
3	0.033***	0.000	0.095***	0.000	0.022***	0.000
4	0.034***	0.000	0.109***	0.000	0.021***	0.000
5	0.034***	0.000	0.113***	0.000	0.017***	0.003

Table 9 - The effect of loss avoidance on total remuneration, dividends and salaries

Matching estimators of the effect of loss avoidance on cumulative quarterly growth on: total remuneration, dividends and average salaries. Panel A: matching estimator of the difference in future annual growth of total remuneration between treatment and control groups. Panel B: matching estimator of the difference in future annual growth of dividends between treatment and control groups. Panel C: matching estimator of the difference in future annual growth of average salaries between treatment and control groups. All panels: Treatment group are the credit unions that do loss avoidance (NIBD<0 and NI>=0); control observations are extracted from the credit unions that have losses but do not avoid them (NIBD<0 and NI<0). Matching variables: NW_t, NPL_t, $S\&D_t$, $size_t$ and $unfunded_t$. Exact matching: credit union type (state or federal chartered) quarter-year, state. M is the number of matches found for each treated unit. Estimates shown correspond to the bias-adjusted estimator of the Average Treatment Effect on the Treated of Abadie and Imbens (2011). *, **, *** denote significance (based on two-tailed tests) at 10%, 5% and 1% level. See Appendix A for other variable definitions.

		(1)		(2)		(3)	
Panel A: Effect of loss avoidance on growth of total remuneration							
		M=1		M=2		M=3	
Quarter	Q	Difference	p-value	Difference	p-value	Difference	p-value
1	+	0.038***	0.000	0.037***	0.000	0.034***	0.000
2	+	0.033***	0.000	0.034***	0.000	0.033***	0.000
3	+	0.034***	0.000	0.033***	0.000	0.031***	0.000
4	+	0.028***	0.000	0.027***	0.000	0.024***	0.000
Panel B: Effect of loss avoidance on growth of dividends							
		M=1		M=2		M=3	
Quarter	Prediction	Difference	p-value	Difference	p-value	Difference	p-value
1	+	0.026***	0.000	0.028***	0.000	0.028***	0.000
2	+	0.032***	0.000	0.036***	0.000	0.037***	0.000
3	+	0.037***	0.000	0.043***	0.000	0.044***	0.000
4	+	0.030***	0.000	0.034***	0.000	0.037***	0.000
Panel C: Effect of loss avoidance on growth of average salaries							
		M=1		M=2		M=3	
Quarter	Prediction	Difference	p-value	Difference	p-value	Difference	p-value
1	+	0.017***	0.000	0.017***	0.000	0.016***	0.000
2	+	0.019***	0.000	0.019***	0.000	0.019***	0.000
3	+	0.015***	0.000	0.015***	0.000	0.016***	0.000
4	+	0.012***	0.000	0.012***	0.000	0.014***	0.000

Table 10 - The effect of reaching the "well capitalized" threshold on dividends

Matching estimators of the effect on dividend growth of using income increasing charges to the *LLP* to avoid undercapitalization. Panel A: effects computed using quarterly data and 1-4 quarter horizons. Panel B: effects computed using annual data and 1-4 annual horizons. Treatment group are the credit unions that use the *DLLP* to avoid being below well capitalized levels: an observation is defined as treated if ($NWTA_{t-1}$ + $NIBD_t$) < 0.07, $DLLP_t$ < 0 and $NWTA_t$ >=0.07. Control observations are extracted from the CUs that do not use the *DLLP* to avoid being below well capitalized: an observation is defined as a potential control if ($NWTA_{t-1}$ + $NIBD_t$) < 0.07 and $NWTA_t$ < 0.07. Matching variables: NW_t, NPL_t, $S\&D_t$, $size_t$ and $unfunded_t$. Exact matching: credit union type (state or federal chartered) quarter-year, state. M is the number of matches found for each treated unit. Estimates shown correspond to the bias-adjusted estimator of the Average Treatment Effect on the Treated of Abadie and Imbens (2011). *, **, *** denote significance (based on two-tailed tests) at 10%, 5% and 1% level. See Appendix A for other variable definitions.

		(1)		(2)		(3)	
Panel A: Effect of reaching the threshold on growth of dividends – quarterly data							
		M = 1		M = 2		M = 3	
Quarter	Q	Difference	p-value	Difference	p-value	Difference	p-value
1	+	0.004	0.711	0.001	0.920	0.010	0.210
2	+	0.001	0.888	0.017	0.139	0.000	0.981
3	+	0.016	0.147	0.002	0.903	0.013	0.153
4	+	0.030**	0.042	0.041**	0.032	0.009	0.287
Panel B: Effect of reaching the threshold on growth of dividends – annual data							
		M = 1		M = 2		M = 3	
Year	Prediction	Difference	p-value	Difference	p-value	Difference	p-value
1	+	0.011	0.754	-0.023	0.515	0.017	0.627
2	+	0.233***	0.004	0.144*	0.088	0.153*	0.070
3	+	0.259***	0.000	0.129**	0.044	0.148***	0.009
4	+	0.355***	0.001	0.236***	0.007	0.245***	0.001

Table 11 - Descriptives of the matched groups in the Katrina analysis

Descriptive statistics of control variables. The table shows the average value of each corresponding variable in the semester before Katrina (2005Q1-2005Q2) for CUs with headquarters located in counties affected by Katrina. Panel A: Treatment group (*Treat*=1) are the CUs with absolute value of discretionary loan loss provision above the 90% percentile; control group (*Treat*=0) are the CUs with absolute value of the discretionary loan loss provision below the 10% percentile. Panel B: Treatment group (*Treat*=1) are the CUs with absolute value of discretionary loan loss provision above the 75% percentile of the population; control group (*Treat*=0) are the CUs with absolute value of the discretionary loan loss provision below the 25% percentile. The last row of each subpanel shows the p-value of a t-test of significance in the difference in means of the two groups.

	(1)	(2)	(3)	(4)	(5)
Panel A: Treatment 1 – treated units in the upper 10% of EM usage / control units in the lower 10%					
	LLA	*NW*	*SIZE*	*unfunded*	*ROA*
Treat = 0	0.008	0.101	18.303	0.086	0.002
Treat = 1	0.006	0.124	19.281	0.166	0.003
difference	0.002	-0.023	-0.978	-0.081	-0.001
t-test (p-value)	0.266	0.331	0.013	0.050	0.232
	Remuneration	*Divshares*	*Avg. salaries*	*NPL*	*S&D*
Treat = 0	0.007	0.003	9,764	0.009	0.897
Treat = 1	0.012	0.003	11,144	0.014	0.860
difference	-0.005	-0.000	-1,380	-0.005	0.038
t-test (p-value)	0.110	0.422	0.160	0.097	0.171
Panel B: Treatment 2 – treated units in the upper 25% of EM usage / control units in the lower 25%					
	LLA	*NW*	*SIZE*	*unfunded*	*ROA*
Treat = 0	0.006	0.127	18.466	0.069	0.002
Treat = 1	0.008	0.122	18.715	0.110	0.002
difference	-0.002	0.005	-0.249	-0.041	-0.000
t-test (p-value)	0.132	0.364	0.235	0.044	0.389
	Remuneration	*Divshares*	*Avg. salaries*	*NPL*	*S&D*
Treat = 0	0.007	0.004	10,523	0.007	0.868
Treat = 1	0.010	0.004	11,305	0.012	0.874
difference	-0.003	0.000	-782	-0.005	-0.006
t-test (p-value)	0.015	0.303	0.137	0.043	0.330

Table 12 -The discretionary loan loss provision and Hurricane Katrina: diff-in-diffs estimators of the effect on total remuneration

Panel estimators based on treatment and control groups designed on the set of CUs with headquarters located in counties affected by Katrina. Dependent variable is the cumulative quarterly growth on remuneration ((total salaries + dividends)/Total assets) between quarter t and t+3 (*Δrem3Q*) or t+4 (*Δrem4Q*). Treatment group (*Treat* = 1): Treatment 1 (Treatment 2) contains the CUs with absolute value of the discretionary loan loss provision above the 90% (75%) percentile of the population; control group (*Treat* = 0): control group in Treatment 1 (Treatment 2) contains the CUs with absolute value of the discretionary loan loss provision below the 10% (25%) percentile of the population. Panel A: *Post* (post-treatment) is defined as *Post* = 1 for 2005Q3-2006Q2, 0 for 2004Q3-2005Q2. Panel B: *Post* (post-treatment) is defined as *Post* = 1 for 2005Q4-2006Q3, 0 for 2004Q3-2005Q2. Panels A and B: CU controls: NW_{t-1}, $loans_{t-1}$, NPL_{t-1}, ROA_{t-1}, $size_{t-1}$, SEC_{t-1}, $unfunded_{t-1}$ and INT_{t-1}. See Appendix A for variable definitions. *, **, *** denote significance (based on two-tailed tests) at 10%, 5% and 1% level. T-stats based on Driscoll-Kraay standard errors with lag length 4.

		(1)		(2)		(3)		(4)	
Panel A: Including Hurricane Katrina quarter									
Dependent variable		$\Delta rem3Q_{it}$				$\Delta rem4Q_{it}$			
		Treatment 1		Treatment 2		Treatment 1		Treatment 2	
Variables	Prediction	Coefficient	t-stat	Coefficient	t-stat	Coefficient	t-stat	Coefficient	t-stat
Treat	?	-0.141	(-1.69)	-0.062	(-1.30)	-0.178***	(-4.52)	-0.103**	(-2.43)
Post	?	0.085***	(3.62)	0.066***	(4.46)	0.103***	(6.51)	0.074***	(6.17)
Treat × Post	+	0.175***	(3.40)	0.113***	(3.34)	0.258***	(9.97)	0.167***	(6.89)
CU Controls		YES		YES		YES		YES	
Observations		54		150		54		150	
R-squared		0.392		0.210		0.525		0.351	
Panel B: Excluding Hurricane Katrina quarter									
Dependent variable		$\Delta rem3Q_{it}$				$\Delta rem4Q_{it}$			
		Treatment 1		Treatment 2		Treatment 1		Treatment 2	
Variables		Coefficient	t-stat	Coefficient	t-stat	Coefficient	t-stat	Coefficient	t-stat
Treat	?	-0.219*	(-1.91)	-0.067	(-1.37)	-0.223***	(-4.33)	-0.111**	(-2.49)
Post	?	0.065**	(2.53)	0.060**	(2.08)	0.075***	(3.66)	0.049**	(1.99)
Treat × Post	+	0.220***	(3.13)	0.134***	(3.65)	0.300***	(7.95)	0.192***	(7.17)
CU Controls		YES		YES		YES		YES	
Observations		56		152		56		152	
R-squared		0.360		0.214		0.464		0.315	

Table 13 -The discretionary loan loss provision and Hurricane Katrina: diff-in-diffs estimators of the effect on dividends

Panel estimators based on treatment and control groups designed on the set of CUs with headquarters located in counties affected by Katrina. Dependent variable is the cumulative quarterly growth of dividends on shares and deposits between quarter t and t+3 (*ΔDiv3Q*) or t+4 (*ΔDiv4Q*). Treatment group (*Treat* = 1): Treatment group (*Treat* = 1): Treatment 1 (Treatment 2) contains the CUs with absolute value of the discretionary loan loss provision above the 90% (75%) percentile of the population; control group (*Treat* = 0): control group in Treatment 1 (Treatment 2) contains the CUs with absolute value of the discretionary loan loss provision below the 10% (25%) percentile of the population. Panel A: *Post* (post-treatment) is defined as *Post* = 1 for 2005Q3-2006Q2, 0 for 2004Q3-2005Q2. Panel B: *Post* (post-treatment) is defined as *Post* = 1 for 2005Q4-2006Q3, 0 for 2004Q3-2005Q2. Panels A and B: CU controls: NW_{t-1}, $loans_{t-1}$, NPL_{t-1}, ROA_{t-1}, $size_{t-1}$, SEC_{t-1}, $unfunded_{t-1}$ and INT_{t-1}. See Appendix A for variable definitions. *, **, *** denote significance (based on two-tailed tests) at 10%, 5% and 1% level. T-stats based on Driscoll-Kraay standard errors with lag length 4.

		(1)		(2)		(3)		(4)	
Panel A: Including Hurricane Katrina quarter									
		$\Delta Div3Q_{it}$				$\Delta Div4Q_{it}$			
Dependent variable		Treatment 1		Treatment 2		Treatment 1		Treatment 2	
Variables	Prediction	Coefficient	t-stat	Coefficient	t-stat	Coefficient	t-stat	Coefficient	t-stat
Treat	?	-0.017	(-0.33)	-0.102**	(-2.17)	-0.096**	(-2.16)	-0.155***	(-4.87)
Post	?	0.027	(0.83)	0.047**	(2.17)	0.015	(0.65)	0.042**	(3.48)
Treat × *Post*	+	0.087**	(2.00)	0.155***	(4.16)	0.182***	(5.26)	0.232***	(8.46)
CU Controls		YES		YES		YES		YES	
Observations		54		150		54		150	
R-squared		0.301		0.227		0.319		0.261	
Panel B: Excluding Hurricane Katrina quarter									
		$\Delta Div3Q_{it}$				$\Delta Div4Q_{it}$			
Dependent variable		Treatment 1		Treatment 2		Treatment 1		Treatment 2	
Variables		Coefficient	t-stat	Coefficient	t-stat	Coefficient	t-stat	Coefficient	t-stat
Treat	?	-0.117*	(-1.79)	-0.095**	(-1.98)	-0.164***	(-3.56)	-0.147***	(-4.59)
Post	?	-0.012	(-0.52)	0.029	(0.97)	-0.032	(-1.82)	0.002	(0.10)
Treat × *Post*	+	0.162***	(2.74)	0.173***	(3.78)	0.250***	(4.66)	0.249***	(9.79)
CU Controls		YES		YES		YES		YES	
Observations		56		152		56		152	
R-squared		0.381		0.202		0.342		0.205	

Table 14 - The discretionary loan loss provision and Hurricane Katrina: diff-in-diffs estimators of the effect on salaries

Panel estimators based on treatment and control groups designed on the set of CUs with headquarters located in counties affected by Katrina. Dependent variable is the cumulative quarterly growth of average employees' salaries between quarter t and t+3 (*ΔSalaries3Q*) or t+4 (*ΔSalaries4Q* Treatment group (*Treat* = 1): Treatment 1 (Treatment 2) contains the CUs with absolute value of the discretionary loan loss provision above the 90% (75%) percentile of the population; control group (*Treat* = 0): control group in Treatment 1 (Treatment 2) contains the CUs with absolute value of the discretionary loan loss provision below the 10% (25%) percentile of the population. Panel A: *Post* (post-treatment) is defined as *Post* = 1 for 2005Q3-2006Q2, 0 for 2004Q3-2005Q2. Panel B: *Post* (post-treatment) is defined as *Post* = 1 for 2005Q4-2006Q3, 0 for 2004Q3-2005Q2. Panels A and B: CU controls: NW_{t-1}, $loans_{t-1}$, NPL_{t-1}, ROA_{t-1}, $size_{t-1}$, SEC_{t-1}, $unfunded_{t-1}$ and INT_{t-1}. See Appendix A for variable definitions. *, **, *** denote significance (based on two-tailed tests) at 10%, 5% and 1% level. T-stats based on Driscoll-Kraay standard errors with lag length 4.

		(1)		(2)		(3)		(4)	
Panel A: Including Hurricane Katrina quarter									
		ΔSalaries3Q$_{it}$				*ΔSalaries4Q*$_{it}$			
Dependent variable		Treatment 1		Treatment 2		Treatment 1		Treatment 2	
Variables	Prediction	Coefficient	t-stat	Coefficient	t-stat	Coefficient	t-stat	Coefficient	t-stat
Treat	?	-0.127**	(-2.15)	-0.021	(-0.72)	-0.109**	(-3.19)	-0.032	(-0.79)
Post	?	-0.005	(-0.47)	-0.022	(-1.02)	0.002	(0.21)	-0.006	(-0.45)
Treat × Post	+	0.089**	(2.24)	-0.035	(-1.59)	0.115***	(5.53)	-0.045	(-1.59)
CU Controls		YES		YES		YES		YES	
Observations		54		150		54		150	
R-squared		0.170		0.049		0.212		0.059	
Panel B: Excluding Hurricane Katrina quarter									
		ΔSalaries3Q$_{it}$				*ΔSalaries4Q*$_{it}$			
Dependent variable		Treatment 1		Treatment 2		Treatment 1		Treatment 2	
Variables		Coefficient	t-stat	Coefficient	t-stat	Coefficient	t-stat	Coefficient	t-stat
Treat	?	-0.108	(-1.03)	-0.019	(-0.77)	-0.062	(-1.16)	-0.037	(-0.95)
Post	?	0.010	(0.56)	-0.003	(-0.27)	0.028***	(2.83)	0.002	(0.28)
Treat × Post	+	0.066	(1.08)	-0.030	(-1.21)	0.071**	(2.53)	-0.032	(-1.06)
CU Controls		YES		YES		YES		YES	
Observations		56		152		56		152	
R-squared		0.169		0.029		0.309		0.067	

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