

The negative effect of external auditing in the banking industry

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Research proposal

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I examine whether the presence of external auditors affects bank managers' choices between accrual-based and real management and whether this choice differs according to the ex-ante probability of receiving a penalization from the prudential supervisor. I focus on accretive abnormal loan loss provision (ALLP) that is the most important accrual for banks and, accretive realized gain and losses (RGL) on available for sale securities as one form of real management. I consider that banks have two main objectives: i) be above 10% of the regulatory capital threshold and, ii) smooth earnings. Real management is an intended action, in this case selling securities, to alter reported regulatory capital and earnings in a particular direction which might be suboptimal. Accrual-based management, in this paper, is achieved by changing the accounting estimates of loan loss provisions when presenting the financial statements. Bank managers can increase earnings and Tier 1 regulatory capital by understating loan loss provision or by realizing gains on available for sale securities.

Prior studies provide evidence that high audit quality reduces accruals management (Becker, DeFond, Jiambalvo, and Subramanyam, 1998; Balsam, Krishnan, and Yang, 2003; Krishnan, 2003; Cohen, Dey, and Lys, 2008; Zang, 2012) and, when firms are constrained by the auditor to use accruals they are more likely to use real tools (Cohen and Zarowin, 2010; Burnett, Cripe, Martin, and McAllister, 2012) because the cost of using accrual is higher. However, it is not clear whether

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previous results generalized to the banking industry. Unlike the rest of the firms, banks have prudential supervisors as their main monitoring agent (FDIC, OCC, and FRB). In the interest of protecting the safety and soundness of the financial system, supervisors might disapprove and deter real management practices. There is evidence that real earnings management is more likely to affect firm performance compared to discretionary accruals (Graham, Harvey, and Rajgopal, 2005; Cohen and Zarowin, 2010). Additionally, banks have two objectives to target: i) regulatory capital, and ii) earnings. As shown in previous literature, banks have the incentives to be above 10% of regulatory capital (Orozco and Rubio, 2018) and to smooth earnings (Beatty and Liao, 2014; Barth, Gomez-Biscarri, Kasznik, and López-Espinosa, 2017; Osma, Mora, and Porcuna, 2019). So, in this setting, there are banks with two objectives (regulatory capital and earnings), two instruments (accounting and real management) and two monitoring agents (prudential supervisors and the external auditor) that in some situations might align their incentives and, in some others, differ. Therefore, it is an empirical question whether the presence of an auditor affects banks' preference for real rather accrual-based management to increase regulatory capital and/or to smooth earnings. I intend to explore different settings in which the objectives, the instruments, and the monitoring agents play a different role to observe whether there is a trade-off between accrual versus real management.

While supervisors in their monitoring role rely on inputs from accounting numbers, external auditors provide assurance of transparency and credibility of the financial reports (Chaney and Philipich, 2002; DeFond and Zhang, 2014; Bertomeu, Mahieux, and Sapra, 2018; Ghosh, Jarva, and Ryan, 2018). There is an overlap in terms of the activities both agents carry out in order to evaluate banks' earnings, allowance for loans losses, and internal controls (Nicoletti, 2018; Ghosh et al., 2018). However, unlike the auditors, supervisors prefer the use of the expected loss model in the accounting of loan loss allowances that permits bank the overstatement of impairments that helps to smooth earnings (Nicoletti, 2018; Osma et al., 2019). On the contrary, it is not an auditors' responsibility to scrutinize real accounting management. They ensure that financial statements faithfully represent the real operations of the firm, but they are not required to make an assessment for the motivation of the manager decision of real activities.

Publicly traded banks and insured institutions with \$500 million or more in total assets are required to have an external audit of their financial statements. Additionally, banks who are not required to have audited financial statements might choose to do so. I expect that the presence of

the auditor will preclude or reduce the use of accruals to manage regulatory capital and smooth earnings. Therefore, if banks want to manage these targets, in the presence of an auditor, we should see a higher effect on real tools. However, if banks do not have more scope to take risky actions in the present without attracting the supervisor’s attention, I expect banks to use less of real instruments to increase regulatory capital and manage earnings. In this sense, supervisors lower the effect of auditors in bank managers choices of instruments to manage regulatory capital and earnings.

Because regulatory capital ratio is used broadly by supervisors to evaluate banks’ financial health and determine supervisory intervention in problem banks (Peek and Rosengren, 1996; Benston and Kaufman, 1997; Berger, Kyle, and Scalise, 2001; Van den Heuvel, 2002), I expect that banks consider a priority to have sufficiently high regulatory capital over earnings smoothing. Therefore, if there is a situation in which there is a need to increase regulatory capital and reduce earnings, banks will focus on managing regulatory capital upwards. In a situation when the bank has low regulatory capital and low earning, with the instruments can reach booth targets (underestimate LLP or increase RGL leads to an increase in regulatory capital and earnings).

I base the analysis on the universe of FDIC-insured commercial banks in the US (listed and non-listed) for the period 1996-Q1 to 2013-Q4. Firstly, I document that banks with accretive RGL have a higher probability of receiving an enforcement action from the supervisor than banks with accretive ALLP. Moreover, banks with accretive ALLP have a lower probability of receiving an enforcement action.¹ The latter supports the idea that supervisors penalize real accounting management and prefer banks smoothing earnings through the management of accruals (see Table 2).

Secondly, to analyzed banks trade-off between real and accrual management in the presence of the auditor and taking into account both targets, I perform a split sample analysis. I run an OLS regression on accretive RGL and ALLP for a sample of banks that have incentives to decrease earnings (*HighEarnings*) and for a sample of banks that have the incentives to increase earnings (*LowEarnings*) with respect to the previous quarter. I find that banks who have audited financial statements and low regulatory capital before RGL (regulatory capital excluding RGL is below 10%)

¹In untabulated results, I consider only the period previous to Basel III and I find that banks with accretive RGL (ALLP) have a significantly higher (lower) probability of receiving an enforcement action.

have more real management in both sub-samples. I do not find a significant effect for banks who have audited financial statements and low regulatory capital before ALLP in any of the samples. For the sub-sample of banks with high earnings, I find that there is a positive and significant relationship between accretive RGL and non-audited banks with low regulatory capital.² I find a negative relationship between accretive RGL and audited banks with high regulatory capital, which is consistent with earnings smoothing behavior. For the sub-sample of banks with low earnings, I find a positive and significant relationship between non-audited banks with low regulatory capital and accretive RGL. Evidence suggests that audited banks real management to increase regulatory capital when need it (see Table 3).

Finally, I explore a setting in which banks have an ex-ante high or low probability of receiving an enforcement action and audited or non-audited financial statements. If ex-ante banks have a high probability of receiving an enforcement action, banks do not have more scope to take risky actions in the present without attracting the supervisor’s attention. In that case, I expect banks to use less of real instruments to increase regulatory capital and manage earnings. Similar to [Dechow, Ge, Larson, and Sloan \(2011\)](#), I estimate the probability to receive an enforcement action as a function of accounting variables and regulatory ratios for the period 1996-2000, results are shown in Table 4, Panel A. The output of this model is a scale logistic probability for each bank-quarter that I term E-Score. An E-Score of one indicates that the bank has the same probability of enforcement as the unconditional expectation. E-Scores greater than one indicates higher probabilities of enforcement than the unconditional expectation. Results show that 61.9% of enforced banks are in quintile 5, compared to the expected level of 20%. I evaluate the quality of the model and determine Type I and Type II error rates for an E-score cutoff of 1.00. The Type I and II error rates are 32.95% and 27.47%, respectively.³

From the E-Score I split samples in banks who on average have a high probability of receiving enforcement action (fourth and fifth quintile) and banks who have a low probability of receiving an enforcement (first and second quintile). Banks with an ex-ante high probability of enforcement, audited financial statements and low regulatory capital before RGL do not have a significant relationship with accretive RGL. However, when the ex-ante probability of enforcement is low the

²The later coefficient is lower (but not significant) than the coefficient for banks with audited financial statements.

³Type I error occurs when the model incorrectly classifies a non-enforced bank as an enforced bank. Type II error occurs when the model incorrectly classifies an enforced bank as a non-enforced bank.

coefficient is positive and significant. Additionally, banks with an ex-ante high probability of enforcement realize significantly fewer securities with gains when audited and non-audited. Finally, I find that banks who have an ex-ante low probability of enforcement action audited financial statements and low regulatory capital before ALLP have a negative relation with accretive ALLP, only significant at 11% level (see Table 5).

I intend to contribute to the literature in documenting a trade-off between real and accrual-based management to increase regulatory capital and manage earnings in different settings in which the auditor and supervisor play different roles. I also contribute to lighting the relation between the prudential supervisor and the external auditor. Results suggest that supervisors lower the effects of auditors. Overall, results have regulatory implications, as auditors curtail accrual-based management, regulators should be aware that managers may substitute accretive RGL to manage earnings and/or regulatory capital.

1 Sample and variables definition

1.1 Sample

The data-set includes the universe of listed and non-listed insured commercial banks from 1996 to 2013. I begin in 1996 because data on total risk-based capital is only available from 1996. I collect quarterly accounting information from Call Reports. In addition, I use hand-collect data on all formal enforcement actions imposed by the FDIC, OCC, and FRB on commercial banks over the sample period. Formal enforcement actions are publicly available since 1990 and usually take place when banks engage in inadequate loan loss provisions, insider abuses, or unsound underwriting practices (Curry, O’Keefe, Coburn, and Montgomery, 1999).⁴

I drop banks with negative values of total assets and loans. I winsorize all continuous variables, except for regulatory capital, at the 1 and 99% level to reduce the influence of outliers. In the case of regulatory capital, I winsorize it at 0.1 and 99.9% level. These thresholds differ from the classical considered in the literature. However, if I winsorize at the 1% level, the minimum regulatory capital is above 8% and lose the variation coming from cases that are of interest to this

⁴These actions normally take place when the institution receives a CAMELS rating of 4 or 5 or at times 3 (Delis, Staikouras, and Tsoumas, 2016; Danisewicz, McGowan, Onali, and Schaeck, 2018; Curry et al., 1999).

paper. Federal Deposit Insurance Act requires insured institutions with \$500 million or more in total assets to have an external audit of their financial statements. The sample contains 501,509 bank-quarter observations from 11,362 unique banks out of which 9,600 have at least one year of audited financial statements.

1.2 Variables definition

The main variable of interest used along the paper is an audit indicator variable. *Audited* takes the value 1 when the bank has audited financial statements in the year, and 0 otherwise. The reported regulatory capital, *RegCap*, is measured as the sum of Tier 1 and Tier 2 capital normalized by risk-weighted assets. In addition, *Low_RegCap* is a dummy variable that is equal to one if *RegCap* is below 10%, and zero otherwise. I measure *Earnings* as income before taxes, RGL, and LLP over lagged assets. *Reported_Earnings* is income before taxes over lagged assets. I define *High_Earnings* = 1 if the difference $\Delta Earnings_t - \Delta Reported_Earnings_{t-1}$ is in the quintile 4 or 5. A bank has low earnings (*High_Earnings* = 0) if the difference $\Delta Earnings_t - \Delta Reported_Earnings_{t-1}$ is in the quintile 1 or 2. In the first case, banks have the incentives to overstate LLP and/or reduce RGL to smooth earnings. When earnings in this quarter are low compared to the previously reported earnings, banks have the incentives to understate LLP and/or increase RGL to smooth earnings.

I explore two accounting tools that banks can use to manage earning and regulatory capital. In the spirit of Hribar, Jenkins, and Johnson (2006) and Almeida, Fos, and Kronlund (2016) I identify ALLP and RGL that would have allowed banks to increase earnings and regulatory capital by at least 0.1%, as follows:

$$Accretive_RGL = 1 \quad \text{if} \quad (1 - \tau)RGL \geq 0.1\% \quad (1)$$

$$Accretive_ALLP = 1 \quad \text{if} \quad (1 - \tau)ALLP \leq -0.1\% \quad (2)$$

where *Accretive_X* is an indicator for executing Accretive RGL or ALLP to increase regulatory capital through Tier 1 and earnings by at least 0.1%.⁵ τ is the bank marginal tax rate.⁶

Banks can use *Accretive_RGL* and *Accretive_ALLP* to smooth earnings and to increase regula-

⁵I have the intention to use different cutoffs for robustness in the future.

⁶I estimate the banks' marginal tax rate following Graham and Mills (2008) specification except for S-corporations that I use the reported income taxes over income before taxes.

tory capital. Both instruments are costly and banks trade off real management versus accrual-based management as a function of their relative costliness. With the presence of the supervisor, for banks, it is more costly to do real management not only because they actually need to sell their securities when it might not be the optimal time but because supervisors perceive it as a riskier action. At the same time, when banks sell securities the regulatory capital ratio is affected in the numerator through income and the denominator through risk-weighted assets. If they convert the securities into a less risky asset than the security they are selling, the increase in the ratio more than one to one (without considering marginal tax rate). However, if they convert the security in a more risky asset, the change in the ratio is less than one to one and can even be negative. Using RGL to smooth earnings have one to one effect on earnings.

Using accruals to manage the targets is less costly for the bank especially if financial statements are not audited. It involves changes in the accounting estimates, in this paper over or underestimates loan loss provisions. However, accruals have limited flexibility because they revert in the following periods. Banks' ability to manage earnings and regulatory capital with accruals in the current period is constrained by accrual management activities in previous periods. Loan loss provisions affect both, earnings and regulatory capital, in a one to one relationship (without considering marginal tax rate).

ALLP is estimated using the preferred [Beatty and Liao \(2014\)](#) model as a benchmark normalized by risk-weighted assets.⁷ *RGL* is calculated as realized gains and losses on available for sale securities normalized by risk-weighted assets like [Barth et al. \(2017\)](#).

I create a dummy variable, *Enforcement*, that takes the value one if there is enforcement action against a bank in the quarter, and 0 otherwise.⁸

Following previous literature, I include a set of control variables, $Controls_{i,t-1}$ ([Beatty and Liao, 2014](#); [Ng and Roychowdhury, 2014](#); [Duchin and Sosyura, 2014](#); [Lim et al., 2016](#); [Barth et al., 2017](#); [Berger, El Ghouli, Guedhami, and Roman, 2018](#); [Delis et al., 2016](#); [Gropp, Mosk, Ongena,](#)

⁷This model has been widely used in accounting literature as a benchmark model (e.g., [Jiang, Levine, and Lin, 2016](#); [Lim, Hagendorff, and Armitage, 2016](#)). In the model, loan loss provisions are estimated as a function of the change in current and future (one and two lagged) non-performing assets to reflect the possibility that banks use forward-looking (past) information on non-performing loans. It also includes size, loan growth, and macro-economic variables.

⁸*Enforcement* is a noisy proxy of supervision because we only observe examinations that ended up in a formal enforcement action. Informal enforcement (including board resolutions, approved safety and soundness plans, and memorandum of understanding) are not legally binding and are not disclosed to the public, therefore, they are not included in my sample.

and Wix, 2018; Kandrac and Schlusche, 2018). *Size* is the natural logarithm of total assets. *Loan* is total loans normalized by total assets at the beginning of the quarter. *Sd_ROA* is the standard deviation of return on assets. *Public* is a dummy variable that takes value 1 if the bank is publicly traded. Following Duchin and Sosyura (2014), Berger et al. (2018) and Delis et al. (2016) I include proxies of the CAMELS examination ratings. CAMELS rating is a weighted average of six components: Capital adequacy, Asset quality, Management quality, Earnings, Liquidity, and Sensitivity to market risk. The rating has a scale of 1 to 5, in which 1 is considered a satisfactory condition and 5 represents an extreme level of regulatory concern. These ratings are strictly confidential, and the weights are set according to the personal judgment of the examiner. I use as a proxy of capital adequacy *RegCap* only when it is not the main variable of interest. As a proxy of asset quality I use loan loss allowance *LLA*, management quality is proxy by *Noninterest_Expenses*, *Reported_Earnings* is only used as a control when earnings is not the main variable of interest. As a proxy for liquidity, I use *Cash*, and sensitivity to market risk is proxy by *Noninterest_Income*, all variables are normalized by the beginning of quarter total assets. All control variables are lagged. Because real and accruals management may substitutes each other (Zang, 2012), I include the current value in each other regression.

Finally, to estimate weather a bank has ex-ante low or high probability of receiving an enforcement action *Pr_Enforcement*, I perform the following logistic regression for the period 1996 to 2000:

$$\begin{aligned}
Enforcement_{it} = & \beta_1 RegCap_{i,t-1} + \beta_2 LLA_{i,t-1} + \beta_3 Noninteres_Expenses_{i,t-1} + \beta_4 Reported_Earnings_{i,t-1} \\
& + \beta_5 Cash_{i,t-1} + \beta_6 Noninterest_Income_{i,t-1} + \beta_7 ROA_{i,t-1} + \beta_8 Sd_ROA_{i,t-1} + \beta_9 AFS_{i,t-1} + \beta_{10} NPL_{i,t-1} \\
& + \beta_{11} Loans_{i,t-1} + \beta_{12} Size_{i,t-1} + \theta_t + \varsigma_j + \gamma_k + \epsilon_{it}
\end{aligned} \tag{3}$$

where *AFS* is available for sale securities, *NPL* non-performing loans and *ROA* is returns on assets. θ are year-quarter fixed effects to account for time trends, ς are supervisory agency fixed effects to account for permanent differences among agencies and, γ are state fixed effects. From previous regression, I get predicted values and calculate the *E-Score* as the estimated probability over the unconditional probability of receiving an enforcement action. I use the fourth and fifth quintile of the average of the five years E-Score to classify banks as *HighExantePrEnforcement*

and, first and second quintile to consider banks as low ex-ante probability of enforcement action.

2 Research design

2.1 Splitting by earnings

I estimate Eq. (4) and (5) to determine whether banks use accretive realized gains and losses on AFS securities and accretive abnormal loan loss provisions to smooth earnings and increase regulatory capital. I perform a split sample analysis. I run an OLS regression on accretive RGL and ALLP for a sample of banks that have incentives to decrease earnings ($High_Earnings = 1$) and for a sample of banks that have the incentives to increase earnings ($High_Earnings = 0$) with respect to the previous quarter.

$$\begin{aligned}
 Accretive_RGL_{i,t} = & \beta_1 Audited_{i,t} \times Low_RegCap_RGL_{i,t} + \beta_2 Audited_{i,t} + \beta_3 Low_RegCap_RGL_{i,t} \\
 & + \beta_4 ALLP_{i,t} + \gamma Controls_{i,t-1} + \eta_{kt} + \varsigma_j + \lambda_i + \epsilon_{it}
 \end{aligned} \tag{4}$$

$$\begin{aligned}
 Accretive_ALLP_{i,t} = & \beta_1 Audited_{i,t} \times Low_RegCap_ALLP_{i,t} + \beta_2 Audited_{i,t} + \beta_4 Low_RegCap_ALLP_{i,t} \\
 & + \beta_5 RGL_{i,t} + \gamma Controls_{i,t-1} + \eta_{kt} + \varsigma_j + \lambda_i + \epsilon_{it}
 \end{aligned} \tag{5}$$

where the dependent variable is either $Accretive_ALLP$ or $Accretive_RGL$. Low_RegCap_X is a dummy variable that takes the value one if the *unmanaged* regulatory capital is below 10% level and zero otherwise. In all specifications, I include state-time fixed effects, η_{kt} , to account for time trends varying at the state level, supervisor fixed effects, ς_j , to account for permanent differences among supervisory agencies and bank fixed effects, λ_i .

I expect that the presence of an external auditor changes bank managers behavior. As auditors constrain the use of accrual management, banks would turn to use more real instruments. In Eq. (4), for the sub-sample of banks with $High_Earnings$, I expect β_1 to be positive to increase regulatory capital, reflecting that is a first order concern for banks. I predict β_2 to be negative to smooth earnings when regulatory capital is not a concern. I expect β_3 to be positive but smaller than β_1 . The difference in magnitudes reflects the effect of the external auditor. In Eq. (4), for the

sub-sample of banks with *Low_Earnings*, I expect β_1 , β_2 , and β_3 to be positive. In this situation banks' targets are aligned, there is a need to increase regulatory capital and earnings. However, if increasing earnings is not a concern for the bank, β_2 might not be positive.

As said before, the presence of the auditor will preclude or reduce the use of accruals-based management. In Eq. (5), for the sub-sample of banks with *High_Earnings*, audited banks with low regulatory capital should use less accretive ALLP; however, I do not expect to find a significant effect in β_1 and β_2 . I expect to find a positive effect in β_3 to reflect that in the absence of the auditor, banks use accretive ALLP to increase low regulatory capital. In Eq. (5), for the sub-sample of banks with *Low_Earnings*, I do not expect to find a significant effect in β_1 and β_2 but a positive and significant effect in β_3 .

2.2 Splitting by ex-ante probability of enforcement action

I explore a setting in which banks have an ex-ante high or low probability of receiving an enforcement action and audited or non-audited financial statements. If ex-ante banks have a high probability of receiving an enforcement action, banks do not have more scope to take risky actions in the present without attracting the supervisor's attention. I estimate the following equations splitting the samples in banks with a high and low ex-ante probability of enforcement action.

$$\begin{aligned}
 \text{Accretive_RGL}_{i,t} = & \beta_1 \text{Audited}_{i,t} \times \text{Low_RegCap_RGL}_{i,t} + \beta_2 \text{Audited}_{i,t} \times \text{High_Earnings}_{i,t} \\
 & + \beta_3 \text{Low_RegCap_RGL}_{i,t} + \beta_4 \text{High_Earnings}_{i,t} + \beta_5 \text{Audited}_{i,t} + \beta_6 \text{ALLP}_{i,t} + \gamma \text{Controls}_{i,t-1} \\
 & + \eta_{kt} + \varsigma_j + \lambda_i + \epsilon_{it}
 \end{aligned} \tag{6}$$

$$\begin{aligned}
 \text{Accretive_ALLP}_{i,t} = & \beta_1 \text{Audited}_{i,t} \times \text{Low_RegCap_ALLP}_{i,t} + \beta_2 \text{Audited}_{i,t} \times \text{High_Earnings}_{i,t} \\
 & + \beta_3 \text{Low_RegCap_ALLP}_{i,t} + \beta_4 \text{High_Earnings}_{i,t} + \beta_5 \text{Audited}_{i,t} + \beta_6 \text{RGL}_{i,t} + \gamma \text{Controls}_{i,t-1} \\
 & + \eta_{kt} + \varsigma_j + \lambda_i + \epsilon_{it}
 \end{aligned} \tag{7}$$

In Eq.(6), with a scenario in which banks have a high ex-ante probability of enforcement, I expect banks to use less of real instruments to increase regulatory capital and manage earnings. Therefore, I should not observe an effect on β_1 and β_3 . When earnings are high I expect banks to

realize fewer securities, negative β_2 and β_4 . In Eq.(6), with a scenario in which banks have a low ex-ante probability of enforcement, I expect banks to have more scope to use real instruments to increase regulatory capital and smooth earnings without attracting supervisors' attention. I expect β_1 and β_3 to be positive and β_2 and β_4 to be negative.

In Eq.(7), with a scenario in which banks have a high ex-ante probability of enforcement, I expect banks to use more of accrual instruments to increase regulatory capital and manage earnings. Therefore, I should observe a positive effect on β_1 and negative in β_2 if supervisors effects prevail over auditors. The effects might also compensate. When banks do not have audited financial statements, I expect to find a positive β_3 and negative β_4 . In Eq.(7), with a scenario in which banks have a low ex-ante probability of enforcement, I expect auditors influence to play a more important role. I expect no significant effect in β_1 and β_2 .

3 Conclusions

In this proposal, I intend to analyze settings in which there is a trade-off between real and accrual management for the universe of commercial banks. In particular, how does the presence of an external auditor affects banks choices. Banks have unique characteristics that differ from the rest of the firms. In this setting, banks have two objectives, earnings smoothing, and regulatory capital; two instruments to accomplish the objectives, real and accrual instruments; and in some cases, two agents monitoring, the supervisor that is the main agent and the external auditor. The later play a role for banks with more than 500 million assets or are publicly traded banks or the bank internally choose to have an auditor. It is an empirical question whether the presence of the auditor in all these possible settings affects managers choices in terms of real or accrual-based instruments to smooth earnings or increase regulatory capital. There is evidence that real management is more likely to affect firm performance compared to discretionary accruals (Graham et al., 2005; Cohen and Zarowin, 2010). I find evidence that there is a negative effect of external auditors on banks' behavior: banks use more real instruments rather than accruals to manage regulatory capital and earnings.

In the future, I will perform a study using regulatory scrutiny. The later gives variations on the quality of the supervisor which allows to observe the effect on banks behavior when audited or

not. In particular, I identify state banks located in states with relatively “strict” state regulators (greater regulatory scrutiny) or “lenient” state regulators (lower regulatory scrutiny). I will rely on the state-level regulatory index constructed by [Agarwal, Lucca, Seru, and Trebbi \(2014\)](#), which uses private Federal Reserve Board data and the fact that state-chartered banks are examined in alternating fashion by their federal regulator and state regulator. Like [Nicoletti \(2018\)](#) national banks, who always have the same quality of regulator (the OCC), are going to be used as control group.

References

- Agarwal, S., D. Lucca, A. Seru, and F. Trebbi. 2014. Inconsistent regulators: Evidence from banking. *The Quarterly Journal of Economics* 129:889–938.
- Almeida, H., V. Fos, and M. Kronlund. 2016. The real effects of share repurchases. *Journal of Financial Economics* 119:168–185.
- Balsam, S., J. Krishnan, and J. S. Yang. 2003. Auditor industry specialization and earnings quality. *Auditing: A journal of practice & Theory* 22:71–97.
- Barth, M. E., J. Gomez-Biscarri, R. Kasznik, and G. López-Espinosa. 2017. Bank earnings and regulatory capital management using available for sale securities. *Review of Accounting Studies* 22:1761–1792.
- Beatty, A., and S. Liao. 2014. Financial accounting in the banking industry: A review of the empirical literature. *Journal of Accounting and Economics* 58:339–383.
- Becker, C. L., M. L. DeFond, J. Jiambalvo, and K. Subramanyam. 1998. The effect of audit quality on earnings management. *Contemporary accounting research* 15:1–24.
- Benston, G. J., and G. G. Kaufman. 1997. FDICIA after five years. *Journal of Economic Perspectives* 11:139–158.
- Berger, A., S. El Ghouli, O. Guedhami, and R. Roman. 2018. Competition and Banks' Cost of Capital: Evidence from Relatively Exogenous Differences in Regulation .
- Berger, A. N., M. K. Kyle, and J. M. Scalise. 2001. Did US bank supervisors get tougher during the credit crunch? Did they get easier during the banking boom? Did it matter to bank lending? In *Prudential supervision: What works and what doesn't*, pp. 301–356. University of Chicago Press.
- Bertomeu, J., L. Mahieux, and H. Saprà. 2018. Accounting versus prudential regulation. *Available at SSRN 3266348* .
- Burnett, B. M., B. M. Cripe, G. W. Martin, and B. P. McAllister. 2012. Audit quality and the trade-off between accretive stock repurchases and accrual-based earnings management. *The Accounting Review* 87:1861–1884.
- Chaney, P. K., and K. L. Philipich. 2002. Shredded reputation: The cost of audit failure. *Journal of accounting research* 40:1221–1245.
- Cohen, D. A., A. Dey, and T. Z. Lys. 2008. Real and accrual-based earnings management in the pre-and post-Sarbanes-Oxley periods. *The accounting review* 83:757–787.
- Cohen, D. A., and P. Zarowin. 2010. Accrual-based and real earnings management activities around seasoned equity offerings. *Journal of accounting and Economics* 50:2–19.
- Curry, T. J., J. P. O'Keefe, J. Coburn, and L. Montgomery. 1999. Financially distressed banks: How effective are enforcement actions in the supervision process. *FDIC Banking Rev.* 12:1.
- Danisewicz, P., D. McGowan, E. Onali, and K. Schaeck. 2018. The real effects of banking supervision: Evidence from enforcement actions. *Journal of Financial Intermediation* (forthcoming).

- Dechow, P. M., W. Ge, C. R. Larson, and R. G. Sloan. 2011. Predicting material accounting misstatements. *Contemporary accounting research* 28:17–82.
- DeFond, M., and J. Zhang. 2014. A review of archival auditing research. *Journal of Accounting and Economics* 58:275–326.
- Delis, M. D., P. K. Staikouras, and C. Tsoumas. 2016. Formal enforcement actions and bank behavior. *Management Science* 63:959–987.
- Duchin, R., and D. Sosyura. 2014. Safer ratios, riskier portfolios: Banks’ response to government aid. *Journal of Financial Economics* 113:1–28.
- Ghosh, A. A., H. Jarva, and S. G. Ryan. 2018. Do Bank Regulation and Supervision Substitute for Bank Auditing? Available at SSRN 3043327 .
- Graham, J. R., C. R. Harvey, and S. Rajgopal. 2005. The economic implications of corporate financial reporting. *Journal of accounting and economics* 40:3–73.
- Graham, J. R., and L. F. Mills. 2008. Using tax return data to simulate corporate marginal tax rates. *Journal of Accounting and Economics* 46:366–388.
- Gropp, R., T. C. Mosk, S. Ongena, and C. Wix. 2018. Bank response to higher capital requirements: Evidence from a quasi-natural experiment. *The Review of Financial Studies* 0:1–34.
- Hribar, P., N. T. Jenkins, and W. B. Johnson. 2006. Stock repurchases as an earnings management device. *Journal of Accounting and Economics* 41:3–27.
- Jiang, L., R. Levine, and C. Lin. 2016. Competition and bank opacity. *Review of Financial Studies* 29:1911–1942.
- Kandrac, J., and B. Schlusche. 2018. The effect of bank supervision on risk taking: Evidence from a natural experiment Available at SSRN 2938039.
- Krishnan, G. V. 2003. Does Big 6 auditor industry expertise constrain earnings management? *Accounting horizons* 17:1–17.
- Lim, I., J. Hagendorff, and S. Armitage. 2016. Does Distance Impede Regulatory Monitoring? Evidence from the Banking Industry Available at SSRN 2807421.
- Ng, J., and S. Roychowdhury. 2014. Do loan loss reserves behave like capital? Evidence from recent bank failures. *Review of Accounting Studies* 19:1234–1279.
- Nicoletti, A. 2018. The effects of bank regulators and external auditors on loan loss provisions. *Journal of Accounting and Economics* 66:244–265.
- Orozco, L., and S. Rubio. 2018. Regulatory capital management to exceed thresholds. Available at SSRN 3234652 .
- Osma, B. G., A. Mora, and L. Porcuna. 2019. Prudential Supervisors’ Independence and Income Smoothing in European Banks. *Journal of Banking & Finance* .
- Peek, J., and E. S. Rosengren. 1996. The use of capital ratios to trigger intervention in problem banks: Too little, too late. *New England Economic Review* pp. 49–58.

Van den Heuvel, S. J. 2002. Does bank capital matter for monetary transmission? *Economic Policy Review* 8:259–265.

Zang, A. Y. 2012. Evidence on the trade-off between real activities manipulation and accrual-based earnings management. *The Accounting Review* 87:675–703.

A Variables definition

Variable Name	Description	Call Report Code
Accretive ALLP_T1	Dummy variable that takes the value one when ALLP net of taxes increase regulatory capital through Tier 1 by at least 0.1%, and zero otherwise.	
Accretive RGL	Dummy variable that takes the value one when RGL net of taxes increase regulatory capital by at least 0.1%, and zero otherwise.	
AFS	Total fair value of available-for-sale securities normalized by lagged total assets.	RCFD1773, RCFD2170
ALLP	Abnormal component of LLP (following Beatty2014) multiplied by lagged total assets normalized net risk weighted assets	RCFD2170, RCFDA223
Audited	Dummy variable that takes the value one when financial statements are audited by an external auditor at subsidiary level or consolidated, and zero otherwise.	RCFD6724
Cash	Cash normalized by lagged total assets.	RCFD0010, RCFD2170
Earnings	Income before taxes net of RGL and LLP normalized by lagged total assets.	RIAD4301, RIAD3196, RCFD2170
Enforcements	Dummy variable that takes the value if there is at least one enforcement action against the bank in the following quarter, and zero otherwise.	Hand collected
LLA	Loan loss allowance normalized by lagged total assets.	RCFD3123, RCFD2170
LLP	Loan loss provision of the quarter normalized by lagged total assets.	RIAD4230, RCFD2170
Loan	Total loans normalized by lagged total assets.	RCFD2122, RCFD2170
Low_RegCap_ALLP	Dummy variable that takes the value one when RegCap_ALLP is lower than 10%, and zero otherwise.	
Low_RegCap_RGL	Dummy variable that takes the value one when RegCap_RGL is lower than 10%, and zero otherwise.	
Non-interest Expenses	Non interest expenses normalized by lagged total assets.	RIAD4093, RCFD2170
Non-interest Income	Non interest income normalized by lagged total assets.	RIAD4079, RCFD2170
NPA	Includes the outstanding balances of loans and lease financing receivables that the bank has placed in non-accrual status plus restructured loans and lease plus loans and lease financing receivables on which payment is due and unpaid for 90 days or more, normalized by lagged total assets.	RCFD1403, RCFD1407, RCFD2170
Public	Dummy variable that takes the value of one if the bank or the parent company is publicly traded, and zero otherwise.	
RegCap	The sum of Tier 1 and Tier 2 capital normalized by net risk weighted assets.	RCFD8274, RCFD8274, RCFDA223
RGL	Realized gains and losses on available for sale securities normalized by net risk weighted assets.	RIAD3196, RCFDA223
ROA Volatility	Change of standard deviation of return on assets in the following four quarters, relative to the previous four quarters.	RIAD4340, RCFD2170
Size	Natural logarithm of total assets.	RCFD2170

Table 1: Summary statistics

	Full sample			Non-Audited		Audited		T-Stat (8)
	Obs (1)	Mean (2)	S.D. (3)	Obs (4)	Mean (5)	Obs (6)	Mean (7)	
Audited	509699	65.108	47.663					
RegCap	509699	17.166	8.009	178,154	18.645	331,545	16.374	97.66
Reported Earnings	509699	0.307	0.343	178,154	0.329	331,545	0.296	33.32
Accretive_ALLP_T1	509699	8.428	27.781	178,154	8.208	331,545	8.546	-4.38
Accretive_RGL	509699	2.454	15.471	178,154	2.249	331,545	2.563	-6.80
Enforcement	509699	0.89	9.394	178,154	0.589	331,545	1.052	-16.61
ALLP	509699	-0.015	0.23	178,154	-0.019	331,545	-0.012	-9.34
LLP	509699	0.082	0.165	178,154	0.058	331,545	0.095	-75.65
RGL	509699	0.008	0.038	178,154	0.006	331,545	0.008	-22.18
AFS	509699	19.613	14.356	178,154	20.917	331,545	18.915	47.69
Equity Capital	509699	10.909	3.976	178,154	11.239	331,545	10.732	44.18
LLA	509699	0.958	0.483	178,154	0.910	331,545	0.984	-52.03
Non Interest Expenses	509699	0.817	0.334	178,154	0.765	331,545	0.845	-81.45
Cash	509699	5.855	5.291	178,154	6.084	331,545	5.733	22.18
Non Interest Income	509699	0.211	0.225	178,154	0.170	331,545	0.234	-98.17
Sd_ROA	509699	0.148	1.895	178,154	0.133	331,545	0.156	-4.23
Loan	509699	63.792	15.926	178,154	60.755	331,545	65.419	-100.00
Size	509699	11.6231	1.22726	178,154	10.892	331,545	12.015	-350.00
Public	509699	11.301	31.661	178,154	0.539	331,545	17.068	-180.00
NPL	509699	0.86	1.2	178,154	0.786	331,545	0.900	-32.74

The table shows descriptive statistics for commercial banks used in this paper. Sample period 1996–2013. Columns (1) to (3) present summary statistics for the full sample. Column (4) to (8) provides a comparative between banks that have and do not have audited financial statements. All variables, except for *Size*, are multiplied by 100 for expositional convenience. All variables are defined in Appendix A.

Table 2: Probability of receiving an enforcement action for banks with accruals and real management

<i>Panel A: T-test Accretive ALLP vs RGL</i>					
	Accretive ALLP		Accretive RGL		
	Obs	Mean	Obs	Mean	T-Stat
Enforcement	40,686	1.209	12,305	2.040	-6.869

<i>Panel B: Probability of receiving an enforcement action</i>		
	Enforcement	
	(1)	(2)
Accretive_RGL	0.004 (4.627)	0.004 (4.633)
Accretive_ALLP_T1	-0.002 (-3.321)	-0.002 (-3.330)
Audited		-0.002 (-4.850)
RegCap	-0.031 (-14.498)	-0.031 (-14.555)
LLA	1.490 (45.476)	1.491 (45.509)
Noninterest_Expenses	-1.354 (-18.958)	-1.341 (-18.766)
Reported_Earnings	-3.286 (-61.117)	-3.298 (-61.278)
Cash	-0.003 (-1.029)	-0.003 (-1.023)
Noninterest_Income	2.066 (20.462)	2.070 (20.493)
Sd_ROA	0.040 (5.620)	0.040 (5.615)
Loan	-0.008 (-6.978)	-0.008 (-6.740)
Size	0.003 (17.004)	0.003 (17.683)
Public	-0.003 (-5.748)	-0.003 (-5.661)
Supervisor Fe	Yes	Yes
State x Time Fe	Yes	Yes
Observations	501,509	501,509
Adj R-squared	0.030	0.030

The table shows the probability of receiving an enforcement action as a function of accretive RGL and ALLP. Panel A, provides comparative statistics of the probability of enforcement for banks that have Accretive ALLP versus RGL. Panel (B) present a linear regression of the probability of enforcement action. Column (2) includes audit indicator. All variables are defined in Appendix A. Standard errors are bootstrapped. Robust t-values are reported below the coefficient estimates.

Table 3: Real and accrual based management in the presence of the auditor - split by earnings

	Pred Sign	Accretive_RGL		Pred Sign	(2)	Pred Sign	Accretive_ALLP		
		(1)	Pred Sign				(3)	Pred Sign	(4)
Audited x Low_RegCap_beforeX	+	0.011 (2.550)	+	0.015 (2.973)	-	-0.004 (-0.627)	-	-0.008 (-1.284)	
Audited	-	-0.003 (-1.838)	+	-0.003 (-1.676)	Not sign	0.004 (1.185)	Not sign	0.002 (0.481)	
Low_RegCap_beforeX	+	0.007 (1.304)	+	0.016 (2.349)	+	-0.007 (-0.845)	+	0.007 (0.742)	
LLA		0.210 (1.442)		0.103 (0.641)		10.825 (37.218)		10.070 (34.024)	
Noninterest_Expenses		1.241 (5.619)		2.384 (9.031)		0.147 (0.365)		1.293 (2.812)	
Cash		-0.118 (-9.617)		-0.142 (-10.382)		0.106 (4.417)		0.096 (4.151)	
Noninterest_Income		-1.684 (-4.017)		-2.049 (-5.819)		0.062 (0.080)		0.562 (0.974)	
Sd_ROA		0.017 (1.101)		0.020 (1.210)		0.040 (0.642)		0.019 (0.220)	
Loan		-0.132 (-20.978)		-0.155 (-21.862)		-0.342 (-31.858)		-0.338 (-32.091)	
Size		0.006 (3.925)		0.010 (5.956)		-0.006 (-1.975)		-0.002 (-0.551)	
Public		-0.005 (-1.451)		-0.007 (-1.629)		0.006 (0.853)		0.009 (1.389)	
ALLP		2.602 (10.509)		2.073 (8.690)					
RGL						-0.388 (-0.190)			
Sample Split		High Earnings		Low Earnings		High Earnings		Low Earnings	
Bank Fe		Yes		Yes		Yes		Yes	
Supervisor Fe		Yes		Yes		Yes		Yes	
State x Time Fe		Yes		Yes		Yes		Yes	
Observations		200,954		197,867		200,954		197,867	
Adj R-squared		0.091		0.105		0.181		0.171	

The table reports the probability of having accretive RGL and ALPP in the presence of the auditor when the regulatory capital is low and splitting the sample in banks with high and low earnings. All variables are defined in Appendix A. Sample period 1996-2013. Standard errors are clustered at bank level. Robust t-values are reported below the coefficient estimates.

Table 4: Logistic regression and development of the E-Score*Panel A: Logistic regression examining the bank determinants of enforcement actions*

	Enforcement
	(1)
RegCap	-5.862 (-4.416)
LLA	38.525 (3.901)
Noninterest_Expenses	-10.659 (-0.913)
Reported_Earnings	-69.375 (-5.464)
Cash	-1.227 (-0.880)
Sd_ROA	187.475 (8.856)
AFS	-0.972 (-2.303)
Loan	-1.894 (-4.270)
Size	0.045 (1.022)
NPA	31.718 (6.137)
Supervisor Fe	Yes
State Fe	Yes
Time Fe	Yes
Observations	161,299
Pseudo R2	0.120

Panel B: Examination of detection rates of enforcement and non-enforcement actions of model reported en Panel A

	Obs	Mean E-Score	Min E-Score	Max E-Score	% of total
Quintile 1					
Enforcement Firms	16	0.195	0.058	0.297	2.9%
Non-Enforcement Firms	32,268	0.195	0.004	0.306	18.3%
Quintile 2					
Enforcement Firms	39	0.402	0.306	0.490	7.0%
Non-Enforcement Firms	32,245	0.401	0.306	0.496	18.3%
Quintile 3					
Enforcement Firms	51	0.632	0.500	0.739	9.2%
Non-Enforcement Firms	32,233	0.610	0.496	0.740	18.2%
Quintile 4					
Enforcement Firms	87	0.972	0.740	1.197	15.6%
Non-Enforcement Firms	32,197	0.935	0.740	1.198	18.2%
Quintile 5					
Enforcement Firms	345	10.982	1.202	130.339	61.9%
Non-Enforcement Firms	31,939	3.080	1.198	150.636	18.1%

Panel C: E-Score cutoff set at 1.00

Observed	Model 1 Predicted		Total
	Enforcement	Non-Enforcement	
Enforcement	404	153	557
Non-Enforcement	58,207	118,465	176,672
Total	58,611	118,618	177,229
Correct clasification		67.07%	
Sensitivity		72.53%	
Specificity		67.05%	
Type I error		32.95%	
Type II error		27.47%	
ROC		0.80	

Panel (A) shows the logistic regression examining banks determinants of enforcement actions. From this model is obtain the predicted probability of enforcement. Panel (B) presents an examination of detection rates of enforcement and non-enforcement actions of model reported en Panel (A). Finally, Panel (C) present an analysis of the quality of the model. All variables are defined in Appendix A. Sample period 1996-2000. Standard errors are clustered at bank level. Robust t-values are reported below the coefficient estimates.

Table 5: Regulatory capital and earnings management by the ex-ante probability of enforcement action

	Accretive_RGL		Accretive_ALLP	
	(1)	(2)	(3)	(4)
<i>Audited</i> × <i>Low_RegCap.beforeX</i>	0.010 (1.211)	0.019 (1.705)	0.017 (1.310)	-0.020 (-1.592)
<i>Audited</i> × <i>High_Earnings</i>	-0.006 (-2.043)	-4.2E-04 (-0.206)	-0.006 (-1.257)	1.7E-04 (0.057)
<i>Low_RegCap.beforeX</i>	0.021 (1.744)	-1.7E-04 (-0.019)	-0.012 (-0.651)	-0.004 (-0.212)
<i>High_Earnings</i>	-0.007 (-2.905)	-0.009 (-5.869)	-0.001 (-0.221)	-0.002 (-0.649)
<i>Audited</i>	-0.001 (-0.128)	-0.005 (-1.353)	0.015 (1.724)	0.004 (0.690)
<i>LLA</i>	-0.243 (-0.931)	0.200 (0.719)	11.335 (20.255)	13.840 (23.553)
<i>Noninterest_Expenses</i>	2.233 (5.153)	2.399 (5.511)	1.380 (1.618)	1.580 (2.209)
<i>Cash</i>	-0.160 (-7.404)	-0.159 (-7.545)	0.065 (1.388)	0.116 (3.064)
<i>Noninterest_Income</i>	-1.695 (-2.913)	-2.911 (-4.223)	0.137 (0.117)	1.195 (0.980)
<i>Sd_ROA</i>	-0.123 (-0.504)	0.474 (1.629)	-1.437 (-2.826)	-1.310 (-2.761)
<i>Loan</i>	-0.179 (-12.687)	-0.177 (-13.495)	-0.391 (-14.733)	-0.431 (-21.029)
<i>Size</i>	0.009 (2.383)	0.004 (0.860)	0.000 (0.004)	0.004 (0.682)
<i>Public</i>	-0.004 (-0.500)	-0.006 (-0.626)	-0.024 (-1.450)	0.008 (0.508)
<i>ALLP</i>	2.253 (5.583)	3.081 (8.246)		
<i>RGL</i>			1.479 (0.430)	-3.461 (-1.411)
<i>Ex – antePrEnfôrçement</i>	High	Low	High	Low
<i>Bank Fe</i>	Yes	Yes	Yes	Yes
<i>Supervisor Fe</i>	Yes	Yes	Yes	Yes
<i>State x Time Fe</i>	Yes	Yes	Yes	Yes
<i>Observations</i>	63,947	121,849	63,947	121,849
<i>Adj R-squared</i>	0.096	0.116	0.192	0.228

The table reports the probability of having accretive RGL and ALPP in the presence of the auditor and splitting the sample in banks with high and low ex-ante probability of enforcement action. All variables are defined in Appendix A. Sample period 2001-2013. Standard errors are clustered at bank level. Robust t-values are reported below the coefficient estimates.