Bank Audit, Regulatory Costs and Strategic Growth*

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Abstract

Section 36 of the Federal Deposit Insurance Corporation (FDIC) Act requires banks with asset size larger than $500 million to have a mandatory audit. We examine empirically whether banks close to the $500 million threshold strategically grow less quickly to avoid being audited and how they make cost-benefit trade-off decisions on their asset growth. We find that banks around the regulatory size cutoff strategically slow their asset growth, suggesting that they perceive a net cost of growing and being audited. In the cross section, we find less strategic growth behaviour in banks with higher cost of debt. The result implies that there is substitution effect between the monitoring from depositors and auditors and banks perceive it to be an audit benefit. In addition, we find the strategic growth behaviour is more prevalent in banks operating in poor-performing local economies and concentrated markets, implying that banks consider the opportunity costs of remaining small to be lower in those markets. The result also highlights the negative impact of the regulation on liquidity provision, especially in the concentrated and poor-performing markets. Finally, we find contagion effects of strategic growth among banks located in the same area, suggesting that banks learn the cost and benefit trade-off decisions from their peers and tend to grow similarly.

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1 Introduction

Size-dependent regulation is a common feature for firms around the world. Smaller firms, defined either in terms of size or number of employees, are often treated more generously and exempted from some compliance burdens on larger firms. Examples include the US Affordable Care Act ("Obamacare"), the Dodd-Frank Act, and SOX.[1] This regulatory treatment is often rationalized by economies of scale in compliance. A growing body of research in economics and accounting document the distortions from size-dependent regulation and the strategic behavior of firms (see Kaplow, 2019; Garicano et al., 2016; Gao et al., 2009). It is important to understand how firms respond to these size-dependent regulations and its implications to the economy.

In our paper, we exploit Section 36 of the Federal Deposit Insurance Corporation (FDIC) Act requiring banks with asset size larger than $500 million to have an annual audit of their financial statements. We are interested in this specific regulation because it provides an ideal setting to study banks' choice in using audit services given there are both costs and benefits of being audited. Specically, we examine whether banks around $500 million strategically choose to decrease their asset growth to avoid going over the size threshold and being audited. We further study whether those banks exhibit different growth behaviours when faced with differential incentives to grow past the regulatory size threshold.

It is ex ante unclear how banks around $500 million would respond to the mandatory audit requirement. We build on the assumption that growing past the size threshold and being audited is a joint decision for a bank. When deciding on whether to grow past the $500 million threshold, banks face trade-offs among costs of audit, benefits of audit, and costs of remaining small. Costs of audit could be both direct and indirect. Direct costs of audit are mainly audit fees paid to external auditors for their audit services. Due to the fixed element in audit and compliance costs, small firms are more likely to find such compliance costs disproportionate to the benefits (Eldridge and Kealey (2005)). Indirect costs of audit could be more conservative financial reporting required by strict

[1] See Garicano et al. (2016) and Braguinsky et al. (2011) for evidence from outside the US.

auditors, which could potentially increase the cost for banks to comply with other bank regulations such as capital requirement (Gunther and Moore (2003); Dahl et al. (1998)). Apart from audit costs, there are also benefits of audit. With the third-party verification of financial statements, banks are likely to have higher financial reporting reliability and lower information asymmetry with their stakeholders (Lo (2015); Lennox and Pittman (2011)). Lastly, there are costs of remaining small, for example, high opportunity costs of forgoing profitable lending opportunities. If banks perceive a net benefit in growing and being audited, it is likely that they continue to grow and subject themselves to mandatory audit. However, if they perceive a net cost, it is likely that they strategically grow less quickly to remain small and avoid being audited.

We collect bank-level data from U.S. Bank's Reports of Condition and Income (the "call reports") database. We obtain bank branch-level information from FDIC Summary of Deposits (SOD) database. We download home prices and macro-economics data from Federal Housing Finance Association (FHFA), Bureau of Labor Statistics (BLS), and Bureau of Economic Analysis (BEA) websites. Our sample period is 2000 to 2010. We require that sample banks to have at least $100 million but less than $1.5 billion in total assets. Our final sample consists of 32,339 unique bank-year observations.

Empirically, we perform several tests to study banks' response to the mandatory audit requirement. First, we compare the asset growth of bank-years that are just below and above the $500 million (i.e., banks in the range of $400 and $600 million in total assets) and rest of the bank-years in the sample. We add bank fixed effects and state times year fixed effects to control for bank characteristics and local economic trends that could drive the bank growth. We find that banks indeed strategically slow their asset growth when they are around the $500 million threshold. The asset growth for those bank-years is 0.53% lower, 40% of the mean asset growth for sample banks. The result suggests that banks around the size threshold, on average, perceive a net cost of growing and being audited. In addition, we find that the strategic growth behaviour is reflected in both sides of the balance sheet. Banks slow down asset growth by cutting down lending and reducing deposit-taking.

Next, we continue to study how banks evaluate cost-benefit trade-offs in their strategic growth decisions. We do so by identifying conditions where banks have differential incentives to grow and be audited. First, we conjecture that banks with higher cost of capital perceive higher benefits of audit since it could potentially lower the information asymmetry between banks and their investors, such as debtholders. Thus, we separate bank-years into high and low cost of capital subsamples. We find strategic growth for banks around $500 million with low cost of capital, but not in banks with high cost of debt. The results suggest that there is substitution effect of monitoring between auditors and debtholders.

Second, we conjecture that banks in low-growth environment perceive lower costs of remaining small to avoid audit. We measure local economic conditions using changes in housing price index, GDP, and unemployment rate. We find the strategic growth behaviour in banks around $500 million to be more severe in low-growth environment, suggesting that size-based audit requirement might exacerbate the worse local economic conditions through tightened bank lending.

Third, we examine how market structure affects banks' strategic growth decisions. We classify bank-years into competitive and concentrated markets based on the concentration of local branch-level bank deposits. We find evidence of more severe strategic growth in concentrated markets. In those markets, banks around $500 million grow 0.87% more slowly, 66% of mean asset growth for sample banks. The result suggests that banks perceive a lower cost of forgoing profitable lending opportunities in concentrated markets, thereby strategically reducing asset growth to avoid audit. The results also imply that firms in concentrated markets could be impacted more strongly by banks' cut in lending due to the size-based regulation.

Lastly, we study the peer effect on banks' strategic growth behaviour. We define peer banks as those operating in the same metropolitan statistical area (MSA) as the focal bank. We find contagion effects of lagged peer banks' strategic growth on focal bank's current growth. 1% increase in lagged peer growth leads to 0.15% increase in focal banks' current growth, one third of the baseline treatment effect. The result suggests that banks learn the trade-off decisions on strategic

growth from their peers and take similar actions, which is consistent with the literature on firms' learning from peers in making firm decisions (e.g., Roychowdhury et al. (2019)). The result could also reflect banks' strategic competition behaviour and the size-based regulation provides a credible commitment for banks to reduce lending quantity and be more profitable.

Our paper makes several contributions to the literature. First, it contributes to auditing literature on the value of audit services. Prior research examines the benefits of private firms using voluntary audits. For example, Lo (2015) finds that small non-public banks with voluntary audits can better access funds during periods of monetary tightening than non-audited banks. Lennox and Pittman (2011) find that private firms in U.K. with voluntary audits get an upgrade in credit ratings. Kim et al. (2011) find that private firms in Korea with voluntary audits pay lower interest rates on their debt than non-audited firms. Our paper utilizes mandatory audit requirement for banks above certain size threshold as a setting to identify banks' choice in growing and being audited. Our finding that banks around the regulatory size cutoff grow less quickly shows that small banks, on average, perceive a net cost of being audited. In addition, our finding that banks with high cost of capital do not exhibit strategic growth behaviour highlights the substitution effect of monitoring between auditors and investors.

Second, our paper contributes to the growing body of literature on unintended consequences (real effects) of disclosure regulation. Leuz and Wysocki (2016) provide a review of the empirical literature on the economic consequences of disclosure and financial reporting regulation. Granja (2018) exploit variation in the adoption of disclosure and supervisory regulation across U.S. states and find that the adoption of state-level requirements to report financial statements in local newspapers is associated with greater stability and development of commercial banks. Gao et al. (2009) examine the unintended consequences of SEC postponing compliance with Section 404 of the SOX for firms with public float less than $75 million between 2003 and 2008. They find that some of these firms remained small by taking real actions that inhibit growth, such as cutting investments, making more cash payouts to shareholders, and reporting lower earnings. Faulkender

and Yang (2013) study the 2006 SEC disclosure regulation requiring firms to disclose peer firms for CEO compensation. They find that strategic peer benchmarking did not disappear after the regulation but intensified in some firms, suggesting that firms respond by manipulating benchmark. We add to this literature by considering a novel setting in firms' compliance to mandatory audit regulation above certain size threshold, rather than disclosure requirement. We document that banks engage in avoidance strategies when their private costs from being audited are greater than the benefits of audit. We also document that this could potentially impact the access to credit in local markets, with banks decreasing their incentives to lend.

Third, our paper is related to the papers on banks' growth decisions in response to the accounting-based thresholds. Ballew et al. (2021) study changes in bank growth around the $10 billion asset threshold specified in the Dodd-Frank Act. They find that banks slow their asset growth as they approach the threshold and then accelerate as they cross the threshold. Bindal et al. (2020) also examine the $10 billion threshold of Dodd-Frank Act. They argue that the threshold can have an "indirect" effect on banks that are below the threshold by providing them with incentives to grow. They find that banks just below the threshold increase their acquisitions and the acquirers who cross the threshold do so more aggressively and continue their asset growth. In contrast to the above papers, we consider a different regulation with size threshold of $500 million. Small banks around $500 million potentially make different cost-benefit trade-off decisions on their asset growth compared to banks at $10 billion. We provide evidence that strategic behaviour not only exists in large banks but also in small banks. We also document the variation in banks' strategic growth when they are faced with differential incentives to grow and be audited. In addition to examining the accounting-based thresholds, we specifically focus on banks' response to the mandatory audit requirement. We find that banks that have high cost of capital do not strategically grow less quickly to avoid audit. The result implies substitution effect of monitoring between auditors and investors, which is one of the benefits of being audited.

The rest of the paper is organized as follows. Section 2 provides background and hypothesis.

Section 3 discusses data and descriptive statistics of the sample used in our analysis. Section 4 presents the results of our analysis, and Section 5 offers our conclusions.

2 Hypotheses Development

For all the publicly traded banks, they are required to receive an independent audit for their annual financial reports, however, there are different requirements for privately held institutions. The Federal Deposit Insurance Corporation (FDIC) Improvement Act of 1991 requires banks which have $500 million or more in total assets at the beginning of their fiscal year to receive an annual audit conducted in accordance with generally accepted auditing standards (GAAS). The main purpose of this regulation is "intended to mitigate information asymmetries between banks and their stakeholders by improving the quality and oversight of financial reporting" (LaFond and You (2010)). Since an external audit typically involves significantly extensive planning and procedures to verify financial report information and is costly to small banks, banks below $500 million are exempted from the FDIC requirement of engaging in external auditors and can choose from low-cost alternatives such as review or other agreed-upon procedures. This exemption from external audit is allowed for economic efficiency reasons. In this paper, we study whether banks around the regulatory size threshold of audit requirement strategically grow more slowly to avoid being externally audited. We further provide evidence of how banks around the regulatory size cutoff respond differently to the mandatory audit requirement through their asset growing behaviour as compared to other non-impacted banks.

For banks around the FDIC audit size threshold and are initially exempted from mandatory audit, they need to consider first the cost of growing past the size threshold and there are both direct and indirect cost of growing. For the direct cost, small banks need to incur high compliance and audit cost engaging in independent registered public accountants to verify their financial reporting. As a widely cited statistics from the American Electronics Association, Section 404 of SOX internal control regulation costs an average multibillion-dollar company 0.5% of its revenue and as much as

3% for small companies (Gao et al. (2009)). Due to the fixed element in audit and compliance costs, small firms are disproportionately affected relative to large firms (Eldridge and Kealey (2005)) and they might find costs of compliance disproportionate to the benefits. The indirect cost faced by small banks are likely to be significant as well. If they grow past the regulatory size threshold, they need to engage in external auditors to monitor them and verify their financial reports. For example, Gunther and Moore (2003) find that external audits can correct loan loss under-reporting and the impact is incremental to regulatory inspection; Dahl et al. (1998) find that external audits can ensure banks have more conservative (i.e. greater) loan loss provisioning. So, for a small banks to be audited, they are burdened with both high setup cost of external audit and monitoring cost from stringent third-party verification.

Having considered the cost of growing past the size threshold, banks are likely to weigh the benefit of growing with such cost. First, bank regulators routinely identify an independent external audit as the preferred choice of banks to enhance their financial reporting reliability and mitigate information asymmetries between banks and their stakeholders. Second, there are benefits of being audited as documented in prior papers. For example, Lo (2015) finds that small non-public banks which use external auditors voluntarily can better access funds during periods of monetary tightening than unaudited banks. Lennox and Pittman (2011) exploit a natural experiment in which voluntary audits replace mandatory audits for U.K. private companies and find that companies which voluntarily opt to be audited get an upgrade in their credit ratings because they send a positive signal when it is no longer legally required. Third, banks might still wish to grow and take advantage of profitable business opportunities when there is more demand for bank lending, absorbing the cost of audit. For example, if a bank around the regulatory size threshold operates in MSAs with booming economic conditions, it is more likely to take advantage of investment opportunities by expanding its loan portfolios, resulting in a higher asset growth. Fourth, banks can gain accounting expertise from auditors through establishing good internal control practices. For example, Altamuro and Beatty (2010) finds that mandated internal control requirements by

FDIC internal control provisions increased banks' loan-loss provision validity, earnings persistence and cash-flow predictability and reduced benchmark-beating and accounting conservatism. Finally, banks might react to how their peer banks are responding to this regulation reflected in their asset growth pattern and grow similarly as or differently from them.

3 Data and Descriptive Statistics

3.1 Sample

We use quarterly data covering all banks operating in the United States between 2000$Q1$ – 2010$Q4$. Bank's financial information is from the Bank's Reports of Condition and Income (the "call reports") submitted to the Federal Deposit Insurance Corporation (FDIC). For balance sheet items, we keep only the fourth-quarter observations in each year to calculate growth rate. To control for merger and acquisition effects, we exclude observations where the annual asset growth exceeds the 10% threshold (e.g. Gatev and Strahan (2006); Acharya and Mora (2015)). We also require that sample banks have at least $100 million but less than $1.5 billion in total assets.

We obtain bank branch-level deposit information from the Summary of Deposit (SOD) database provided by the FDIC. This dataset contains geographic information on all branches of depository institutions, including street address, state, ZIP code, and county. We use branch-level deposits to calculate market competition in local metropolitan statistical areas (MSAs).

We also collect quarterly macro-economic information for MSAs where bank headquarters are located. The unemployment data is from the Bureau of Labor Statistics (BLS). The GDP data is from the Bureau of Economic Analysis (BEA). The housing price index data is from the Federal House Financing Agency (FHFA).

3.2 Descriptive Statistics

Table 1 reports descriptive statistics of variables used in our analysis.[2] Panel A presents those in the full sample. The mean (median) size of sample banks is $320 ($220) million in total assets. The mean banks' share of real estate (consumer) loans is 74% (8%). The mean annual asset (loan) growth is 1.3% (0.9%). 12% of bank-years are in the treated category, that is when bank assets are between $400 and $600 million. The mean percentage of nonperforming loans is 1.5%. The profitability measure, net interest income scaled by assets, has a mean of 3.6%. The mean annual growth of housing price index (GDP) in bank headquarter MSAs is 2.8% (1.4%).

Panel B and panel C of Table 1 report summary statistics of variables in the treated and control banks separately. The mean asset size (deposits) of treated banks is greater than that of control banks. However, the standard deviation is greater in the control sample since our definition of control banks is those on either side of the treated bank size cutoff. The loan portfolio compositions are similar for treated and control banks, suggesting that they have similar risks in their portfolios. The local economic conditions are also similar for the treatment and control sample.

4 Empirical Results

4.1 Asset Threshold and Bank Growth

In this section, we examine how banks respond to the $500 million size threshold of mandatory audit and identify key channels through which banks respond.

We begin our analysis by estimating the following OLS regression model:

$$Y_{i,t+1} = \alpha + \beta Treat_{i,t} + \gamma X_{i,t} + Bank\,FEs + State \times Year\,FEs + \epsilon_{i,t}, \tag{4.1}$$

where i indexes banks, and t indexes years. The dependent variable $Y_{i,t+1}$ is one-year forward

[2] Appendix table Table A.1 describes the variable definitions

change in bank assets. The main independent variable of interest $Treat_{i,t}$ is a dummy variable equal to one when bank-year is in the size group of $400-600$ million, and zero otherwise.

Our treated bank definition is consistent with the approaches followed in Bindal et al. (2020) and Ballew et al. (2021). We include bank-years that have asset size just below the $500 million threshold ($400-500$ million banks) because these banks would incur audit costs should they increase beyond the threshold. If these banks perceive audit as costly, they would decrease their growth to continue exempted from being audited. We also include banks immediately-above the threshold ($400-500$ million banks). The basic intuition is that it is likely some banks that are above the 500 million would perceive the fixed and variable audit compliance as costly. Therefore, their behavior would be similar to the banks immediately-below the threshold, and strategically decrease their asset growth.[3] It is important to note here that our empirical analysis considers bank strategic growth around the threshold as an endogenous behavioural response, so we cannot apply a standard regression discontinuity design for our analysis (see for e.g., Almunia and Lopez-Rodriguez, 2018).

The variable $X_{i,t}$ refers to time-varying bank-level controls. We include total assets of the bank, bank loan portfolio composition, percentage of non-performing loans, and the Tier 1 capital that could affect bank growth. Our regression model also includes bank fixed effects to control for un-modelled bank-specific influences on asset growth that are constant over time and state times year fixed effects to control for states' time trends that affect bank growth. The coefficient β on our variable of interest $Treat_{i,t}$ estimates the difference in growth pattern of treated banks as compared to control banks.

Table 2 presents the results of bank asset growth around $500 million based on the regression model of Equation (4.1). Column (1) presents the results that only includes the dummy variable of treated banks. Column (2) also includes bank controls, bank fixed effects, and year fixed effects. In

[3]Our assumption is that banks' strategic behavior would persist immediately-below and immediately-above the $500 million. Part 363 Annual Report Requirements of the FDICIA stipulates that the banks' total assets are measured as of the beginning of its fiscal year and banks with at least $500 million in assets must be audited. Therefore it is indeed possible that banks could be above the $500 million over the course of the year, but may reduce their assets to below $500 million at the end of the year.

column (3), we also include bank's headquarter state fixed effects. column (4) is our preferred specification where we include bank controls, bank fixed effects, and state times year fixed effect. Across four columns, the coefficient on the treated bank is statistically significant and negative. The economic magnitude is also large. For our preferred specification in Column (4), the growth rate for treated banks is lower than control banks by −0.53%, 40% of the mean asset growth. The results are consistent with our hypothesis 1 that treated banks grow strategically by slowing their asset growth around the $500 million threshold to avoid high compliance costs of audit.

Next, we explore the channels through which banks strategically grow their asset size. We consider bank actions on either side of the balance sheet. First, treated banks are more likely to reduce their willingness to lend new loans to remain small in size, thus we might observe a decrease in loan growth around the regulatory size cutoff. Second, since there are synergies between bank lending and deposit-taking activities (Kashyap et al., 2002), it is possible that banks cannot decrease their loan growth in isolation but decrease their deposit-taking as well. Consequently, we would also expect to see a reduction in banks' deposits.

We empirically examine these two channels by estimating Equation (4.1) with dependent variable as loan growth and deposit growth separately. Panel A of Table 3 presents the results for loan growth as the dependent variable. Across three columns, the coefficient on *Treat* is statistically significant and negative. Similar to Table 2, Column (3) presents the results for our preferred specification which includes bank fixed effects and state times year fixed effects. From Column (3), the loan growth rate for treated banks is −0.48% lower than that for control banks, 50% of the mean loan growth. The result suggests that treated banks slow down asset growth by cutting on lending. Panel B of Table 3 reports the results of deposit growth for treated banks. Across three columns, the coefficient on *Treat* is statistically significant and negative. From Column (3), the deposit growth rate for treated banks is −0.54% lower than that for control banks, 24% of the mean deposit growth. The result suggests that treated banks slow down asset growth by reducing deposit-taking as well.

Overall, the findings in Table 2 and Table 3 provide evidence that banks around the mandatory audit size threshold strategically slow their asset growth to remain below the threshold. They do so by cutting down on lending and deposit-taking.

4.2 Is Asset Threshold Driving Bank Decisions?

There are potential concerns that the decrease in asset growth around $500 million may not be specifically due to the mandatory audit size threshold. In this section, we describe tests intended to assess the robustness of our findings in banks' behaviour around the threshold.

4.2.1 Returns to Scale

First, a potential concern with the analysis presented in 4 is the possibility that banks exhibit decreased returns to scale and therefore their unit costs increase as they grow. It would then follow that our results reflect the fact that banks tend to grow less quickly under any specific asset size threshold rather than driven by the high compliance costs of mandatory audit. We rule out this concern using the following arguments.

Several prior studies find evidence of increasing returns to scale for banks of all size categories. Hughes and Mester (2013) find large returns to scale in small banks and relatively larger returns to scale in large banks.[4]Similarly, Wheelock and Wilson (2018) use more recent data and find evidence consistent with increasing returns to scale for banks. Kovner et al. (2014) examine how the increase in size would affect banking costs, such as non-interest expense. They find that the costs over bank size decline as the size increases. Given the findings of these prior studies, it is unlikely that our results are entirely driven by returns to scale. We address this potential concern of bank size driving asset growth by controlling for bank size in our specifications.

[4]Other papers examining bank returns to scale include Berger and Mester (1997), Wheelock and Wilson (2009), Feng and Serletis (2010). On the other hand, Feng and Zhang (2014) find no clear pattern between asset size and returns to scale.

4.2.2 Placebo Tests

More directly, we empirically examine whether the strategic growth behaviour persists across other asset size categories that are less likely to be affected by the $500 million FDIC audit requirement. We estimate Equation (4.1) with alternative definitions of treated banks as our placebo tests.

We consider dummy variable equal to one based on whether the bank-year is within the particular size range, and zero otherwise. We use bank-years with asset size in the range of $600 – $800 million, $600 – $700 million, $700 – $800 million, and $650 – $750 million as placebo size groups. Table 4 presents the results with our preferred specifications that include bank controls, bank fixed effects, and state times year fixed effects. Across columns (1) – (5), we do not find significant relationship between the alternative definitions of treated banks and future asset growth. This evidence is further consistent with our finding of strategic growth being specific to the $500 million threshold of mandatory audit requirement.

While the above placebo tests use other size groups as treatment groups, it would be more persuasive to show that the same banks strategically slow their growth behaviour around the regulatory size cutoff, relative to other stages of their size. To this end, we restrict the sample by fixing the group of banks that we identified as treated in a particular year and examine their asset growth in the time series across our sample years. We estimate Equation (4.1) using this restricted sample. Appendix Table A.3 presents the results of the analysis. Note that our model includes bank fixed effects across all specifications, allowing us to exploit variation within each bank over time and use banks as their own controls. We find that the coefficient on *Treat* is significantly negative in columns (1) – (3). Using our preferred specification in Column (3), banks around the $500 million grow 0.51% slower relative to other stages of their asset size, 40% of mean asset growth. The result is similar to that in our main analysis in Table 2 and suggests that treatment banks do not perennially grow slowly, but exhibit slowing growth behaviour only around the audit threshold when compared to their own growth pattern.

4.2.3 Alternative Definition of Treatment Controlling for Past Audit Behavior

In the main analysis, we define treated bank-years as those with assets between $400 million and $600 million. We further examine whether our findings are sensitive to this measure of treatment by sharpening our definition more locally within our treated bank category. Specifically, we split our treatment variable into three categories: 1) banks within $400 – $500 million, 2) banks within $500 – $600 million, which were audited before and 3) banks within $500 – $600 million, which were not audited before. The intuition is that each of these three categories, which are very similar in their asset size, have varying incentive to strategically grow around the $500 million threshold. For example, it is possible that in evaluating the audit costs in the current period, a bank that has already been audited before would perceive the cost of being audited less than a bank that had not been audited before. Across these three bins, we expect a significant decrease in asset growth for bank-years in the category of $400 – $500 million.

The results of the analysis are presented in Table A.3. The coefficient on *Size400_500* is negative across all specifications. The result is consistent with our prediction that the $500 million threshold and audit costs induce some banks in this specific size category to grow strategically and remain below $500 million. In column (3), the coefficient on *Size500_600_audited* is negative and weakly significant at 10% while the coefficient on *Size500_600_noaudited* is negative but not statistically significant.[5] Taken together, the findings from the analysis suggest that we continue to find significant drop in asset growth in the asset range of $400 – $500 million, which primarily drive our results.

4.3 Cross-Sectional Tests

In this section, we examine how banks make cost-benefit trade-off growth decisions around the mandatory audit size threshold of $500 million. Banks face trade-offs among the benefits of audit,

[5]Note the increase in standard errors for *Size500_600_audited* and *Size500_600_noaudited*, suggesting the decrease in number of sample banks in these two categories.

costs of audit, and costs of remaining small to avoid being audited. We perform cross-sectional tests based on the costs and benefits perceived by banks.

4.3.1 Benefits of audit

Our first cross-sectional hypothesis is based on the variation in the benefits of being audited. We examine whether banks' strategic growth is less pronounced when they perceive higher benefits from audit. Banks are subject to external monitoring from various parties, such as external auditors, regulators, and depositors. Prior studies find that companies with voluntary audits enjoy lower cost of debt (Kim et al. (2011); Minnis (2011)). We conjecture that banks with high cost of capital might perceive a greater benefit of being audited in that an external audit could potentially bring down the monitoring cost from banks' depositors. Thus, we test our hypothesis that banks with higher cost of capital tend to grow less strategically around the $500 million threshold.

We use net interest income scaled by total assets as proxy for bank's cost of capital (e.g., Demirgüç-Kunt and Huizinga (1999)). We split the sample into *High* and *Low* net interest income scaled by assets for the observations that have above (below) median values of this variable and study treatment effect separately. In Panel A of Table 6, we present the results for bank-years that high net interest income scaled by assets. The coefficient on *Treat* is significantly negative for all specifications, suggesting that treated banks strategically grow less quickly whey they are around $500 million and have low cost of capital. On the other hand, in Panel B of Table 6, we do not observe such strategic growth behaviour for treated banks when they have high cost of debt. The results are consistent with our hypothesis that banks have less incentive to strategically grow if they perceive higher benefits of being audited. We find that banks perceive a substitution effect of monitoring between the auditors and depositors in that an external audit could potentially bring down the strong monitoring from debtholders.

4.3.2 Growth opportunities

Our second cross-sectional hypothesis is based on the variation in the costs of remaining small. We conjecture that, everything else equal, banks operating in MSAs with worse economic conditions have fewer profitable lending opportunities, thus having higher incentives to remain small and avoid audit.

To examine the hypothesis, we estimate the following OLS specification based on the model in Equation (4.1):

$$Y_{i,t+1} = \alpha + \beta_1 Treat_{i,t} + \beta_2 EconomicIndicator_{i,t} + \beta_3 Treat_{i,t} \times EconomicIndicator_{i,t} + \gamma X_{i,t} + Bank\,FEs + State \times Time\,FEs + \epsilon_{i,t}, \quad (4.2)$$

where i indexes banks, and t indexes years. $Y_{i,t+1}$ is one-year forward change in bank assets. The variable *Economic Indicator*$_{i,t+1}$ is a proxy for local economic conditions. We measure it using changes in local housing price indices (HPI), GDPs, and unemployment rates.

We present our results in Table 7 using HPI growth as the local economic indicator. The coefficient on *Treat* is negative, consistent with our main finding that the average treated bank strategically grows around the regulatory size threshold. In addition, the coefficient on *Treat * HPI growth* is positive, suggesting that treated banks operating in MSAs that have low growth in housing prices grow more strategically around the regulatory size thresold. The results imply a larger impact of the regulation on banks' tightened liquidity provision in worse-performing local economies.

In Table 8, we repeat the analysis in Equation (4.2) by using growth in GDP and unemployment rates as proxies for local economic conditions. We obtain similar results as in Table 7. Taken together, the findings of both Table 7 and Table 8 suggest that banks respond to mandatory audit requirement size threshold partly based on their opportunity costs of remaining small to avoid audit. In addition, the finding of more severe strategic growth behaviour in worse-performing local economies highlights the unintended consequences of the regulation.

4.3.3 Market structure

A large literature studies the role of competition in bank growth and lending (Petersen and Rajan (1995); Jayaratne and Strahan (1996)). We examine whether banks' strategic growth varies with local market competition. We conjecture that banks operating in concentrated markets have more discretion in their growth decision, and are therefore more likely to strategically grow around the regulatory size cutoff.

To examine this hypothesis, we consider variations in the competition at the bank headquarter MSA. Our measure of competition is based on the Herfindahl-Hirschman Index (HHI) of each MSA where bank headquarters are located. We calculate HHI for each MSA by summing the market share of each bank branch's deposits squared. We split the sample into *Competitive* and *Concentrated* market subsample based on the HHI index of bank headquarter MSA being lower (higher) than the sample median.

We present our subsample analysis results in Table 9. Panel A presents results for banks in competitive markets while Panel B presents results for banks in concentrated markets. In Panel A, the coefficient on *Treat* is marginally significant at 10% significance level, while in Panel B it is statistically significant at 1% and larger in economic magnitude. In concentrated markets, banks around the $500 million grow 0.87% more slowly, 66% of the mean asset growth, suggesting that strategic growth behaviour is more severe for banks in concentrated markets. The result is consistent with our hypothesis that when a bank is faced with lower opportunity costs of forgoing growth opportunity, it is more likely to remain small to avoid audit. The result also implies a larger impact of the regulation on banks' tightened liquidity provision in concentrated markets, similar to the findings in worse-performing local economies in Table 7 and Table 8 .

4.3.4 Audit status

Banks can voluntarily choose to be audited even when they are below the mandatory audit size threshold. Ex ante, it is reasonable to assume that these banks would not be induced to remain

below the regulatory size threshold. Thus, we expect no significant relationship in the asset growth pattern for banks with voluntary audits. On the other hand, for banks not using voluntary audits, we expect slowing growth pattern around $400 million to $600 million.

To empirically examine this hypothesis, we split our treatment variable into three categories based on their audit status: *Treat _audited* when the bank-year is in the size group of 400 − 600 million and audited, *Treat_nonaudited* when the bank-year is in the size group if 400 − 600 million and not audited, and finally *Size400_500_nonaudited* when bank-year is in the size group of 400 − 500 million and not audited. We then estimate Equation (4.1) by replacing treatment banks with each category of banks.

Table 10 presents the results on the asset growth of treatment banks of different audit status as compared to that of control banks. We add bank fixed effects and year fixed effects in Column (1), (3), and (5). We add bank fixed effects and state-year fixed effects in Column (2), (4), and (6). Consistent with our hypothesis, we do not find slowing growth for banks around $500 million when they are already audited. In column (2), the coefficient on *Treat_audited* is statistically insignificant. In contrast, we find slowing growth for treatment banks that are not already audited. In column (4), the coefficient on *Treat_noaudited* is statistically significant and negative, suggesting that treated banks that are not audited grow less quickly as compared to other control banks. Finally, column (5) - (6) present the results for the analysis with *Size400_500_noaudited*. We find that these non-audited banks in the range of $400 and $500 million exhibit a stronger negative growth around $500 million. The coefficient in column (6) is −0.80, which is statistically significant at 1% significance level and large in economic magnitude. Those treatment banks grow 0.8% less quickly than other control banks, 61% of mean asset growth. The result is consistent with our hypothesis that banks grow strategically because they are faced with high compliance and audit costs and have stronger incentives to remain small when they have not engaged in external auditors voluntarily.

In our robustness test, we exclude two groups of banks from our sample because they are likely to have different incentives as compared to other private banks. We present our robustness

test results in Table A.2. In Column (1) and (2), we exclude public banks that should already be mandatorily audit and find consistent results as in our main analysis. In Column (3) and (4), we exclude banks that are affiliated to the multi-holding banks. We exclude them because their financial statements are audited at the bank group level and they should be indifferent to the mandatory audit requirement. We also find consistent results as in the main analysis.

4.3.5 Peer influence

Lastly, we study the peer effect on banks' strategic growth behaviour. A growing body of literature suggests that firms learn from peer-firm disclosures in making investment decisions (e.g., Roychowdhury et al. (2019)). Other studies argue that this learning from peer-firm disclosure can result in both positive and negative externalities for a firm (Badertscher et al., 2013; Durnev and Mangen, 2009; Beatty et al., 2013; Li, 2016; McNichols and Stubben, 2015). We examine whether banks learn from their peers in their strategic growth behaviour and take actions to remain below the regulatory size threshold.

For this analysis, we define peer banks of a treated bank as other treated banks operating in the same MSA. Peer growth is calculated by averaging the lag-year asset growth of all the other treated banks in the same MSA but excluding that of the focal bank's. Table 11 presents the results of the analysis. The coefficient on *Treat*Peer growth* across all three specifications is statistically significant and positive. The economic magnitude is also large. In Column (3) with our preferred specification, 1% increase in lagged peer growth leads to 0.15% increase in focal bank's current growth, one third of the baseline treatment effect. The result suggests that there are contagion effects of lagged peer banks' strategic growth on focal bank's current growth. The result implies that banks learn the trade-off decisions on strategic growth from their peers and take similar actions, which is consistent with the literature on firms' learning from peers in making firm decisions. On the other hand, the result could also reflect banks' strategic competition behaviour and the size-based regulation provides a credible commitment for banks to reduce lending quantity and be more profitable.

4.4 Voluntary Audits

4.4.1 Determinants of Voluntary Audit Decisions

In this section, we study the behaviour of banks that voluntarily obtain an independent audit before crossing the the threshold. We restrict our analysis to the banks that are below $500 million in asset. We view the banks that avoid crossing the regulatory threshold and banks that voluntarily obtain an independent audit before crossing the threshold as mirror images of each other. From Table 12 Column 1, we find that small banks in the concentrated markets are less likely to voluntarily obtain an external audit, similar to the result in Table 9 that banks in concentrated markets strategically grow less quickly to avoid mandatory audit.

From Table 12 Column 2, we study the relationship between the cost of capital and voluntary audit choice. The profitability measure is measured by net interest income scaled by assets. The higher the value, the lower the cost of capital. We find that higher profitability (lower cost of capital) is negatively associated with the probability of voluntarily obtaining an audit. The result is consistent with banks with lower cost of debt are more likely to strategically grow less quickly to avoid mandatory audit in Table 6.

From Column 3, the results are consistent with prior research (Kim et al., 2011; Minnis, 2011). Banks are more likely to use voluntary audit when they have higher growth opportunities, consistent with the results in Table 7 that banks in high-growth area are less likely to strategically grow to avoid mandatory audit. Banks with larger size are more likely to use voluntary audit to mitigate potential information asymmetry. When banks have more non-performing loans, they tend to use more voluntary audit. When banks have sufficient own capital, they tend to use less voluntary audit. Overall, the results in Table 12 provide corroborating evidence to our mandatory audit results in the previous sections.

4.4.2 Consequence of Using voluntary Audits

In Table 13, we study the consequence of using voluntary audits for smaller banks under $500 million. We find that banks with a voluntary audit have higher net interest income scaled by asset, or equivalently, lower cost of capital. The result suggests the benefit of using audit services in bringing down cost of capital (Kim et al., 2011; Minnis, 2011). It is also consistent with the results in Table 6 where banks with higher cost of capital are less likely to strategically grow due to the perceived benefit of an audit in bringing down high cost of capital.

5 Conclusion

In our paper, we use Section 36 of the FDIC Act that requires banks with asset size larger than $500 million to be mandatorily audited as a setting to study banks' choice in growth and being audited.

We find that banks close to the $500 million size threshold indeed strategically behave and slow their asset growth to avoid audit. This behaviour is reflected in both sides of the balance sheet. Banks slow down their asset growth through cutting down lending and reducing deposit-taking. The results suggest that banks, on average, perceive a net cost of growing past the regulatory size cutoff and being audited.

In the cross-section, we also find evidence that banks make strategic growth decision based on the cost-benefit trade-offs. Banks tend to grow less strategically when they face high cost of capital, suggesting that one benefit of audit is to bring down high monitoring costs from banks' debt-holders. In addition, we find more severe strategic growth for banks operating in poor-performing areas and concentrated markets. The result suggests that banks have higher incentives to remain small when they perceive lower opportunity costs of forgoing lending opportunities. We also find that banks are influenced by their peers in making strategic growth decisions and tend to grow similarly.

Our results are likely to be of interest to both academics and policy-makers. First, our finding that banks strategically grow less quickly around the regulatory size cutoff adds to the studies on

unintended consequences of regulations. In addition, our finding that there is more severe strategic growth for banks operating in poor-performing and concentrated markets highlights the stronger negative impact of the regulation on liquidity provision of banks in those markets. Second, our finding that there is substitution effect of monitoring between auditors and depositors shows one of the benefits of audit and is new to the auditing literature. Third, our finding of banks acting similarly to the peers adds to the literature on learning, from the perspective of output decisions.

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Table 1: Summary Statistics

This table presents summary statistics for key variables in our sample, which consists of 32,229 bank-year observations for the period 2000-2010. Panel A presents summary statistics for key variables in the full sample. Panel B presents summary statistics for key variables in the treatment group and Panel C presents summary statistics for key variables in the control group. Treatment group is bank-years in the size group of $400-600$ million and control group is all the rest bank-years. Bank variables are from banks' call reports. Local economy variables are from the Bureau of Labor Statistics (BLS), Bureau of Economic Analysis (BEA), and Federal House Financing Agency (FHFA). Please refer to Table A.1 for detailed variable definitions.

Panel A. Summary Statistics for Key Variables in the Full Sample

Statistics	N	Mean	St. Dev.	P25	Median	P75
Bank variables						
Size	32,229	319.970	263.943	143.871	219.618	390.898
Deposits	32,229	254.526	205.935	117.547	178.651	311.302
Consumer loan perc	32,004	7.632	10.360	1.845	4.754	9.613
Real estate loan perc	32,084	74.332	18.035	65.101	76.954	87.279
Asset growth	32,229	1.306	7.376	−1.304	2.634	5.942
Loan growth	32,229	0.949	6.233	−2.310	1.407	4.989
Deposit growth	32,084	2.288	9.368	−1.873	3.310	8.037
Treat	32,229	0.116	0.321	0	0	0
Tier 1	32,149	30.608	29.136	13.709	20.855	36.491
NPL to lag loan	32,063	1.451	4.093	0.175	0.639	1.692
Net interest income/Asset	32,149	3.574	0.783	3.098	3.577	4.047
Local economy variables						
HPI growth	32,142	2.787	6.337	−0.479	3.210	5.566
GDP growth	27,659	1.440	3.351	−0.200	1.700	3.200
Unemployment growth	32,151	0.088	0.202	−0.053	0.049	0.201

Panel B. Summary Statistics for Key Variables in the Treatment Group

Statistics	N	Mean	St. Dev.	P25	Median	P75
Bank variables						
Size	3,753	485.591	57.005	435.499	478.933	532.102
Deposits	3,753	382.599	70.488	346.266	382.886	426.626
Consumer loan perc	3,720	6.574	11.768	1.081	3.181	7.503
Real estate loan perc	3,738	76.916	19.121	68.960	80.551	89.899
Asset growth	3,753	1.059	8.252	−1.480	2.744	6.086
Loan growth	3,753	0.834	6.523	−2.677	1.506	5.202
Deposit growth	3,738	2.163	9.769	−1.675	3.475	7.959
Tier 1	3,735	46.224	27.756	35.670	41.668	49.764
NPL to lag loan	3,734	1.573	2.999	0.250	0.702	1.803
Net interest income/Asset	3,735	3.473	0.815	2.981	3.471	3.928
Bank Headquarter MSA variables						
HPI growth	3,743	2.648	6.711	−0.826	3.053	5.866
GDP growth	3,303	1.404	3.399	−0.300	1.600	3.200
Unemployment growth	3,743	0.092	0.202	−0.056	0.046	0.210

Panel C. Summary Statistics for Key Variables in the Control Group

Statistic	N	Mean	St. Dev.	P25	Median	P75
Bank variables						
Size	28,476	298.142	272.631	137.242	197.967	305.774
Deposits	28,476	237.647	211.890	112.833	161.549	249.063
Consumer loan perc	28,284	7.771	10.152	1.989	4.970	9.859
Real estate loan perc	28,346	73.992	17.859	64.613	76.458	86.879
Asset growth	28,476	1.339	7.252	−1.282	2.617	5.926
Loan growth	28,476	0.965	6.193	−2.272	1.398	4.957
Deposit growth	28,346	2.305	9.314	−1.901	3.286	8.047
Tier 1	28,414	28.555	28.688	13.075	18.883	29.899
NPL to lag loan	28,329	1.434	4.216	0.167	0.631	1.677
Net interest income/Asset	28,414	3.587	0.778	3.112	3.591	4.057
Bank Headquarter MSA variables						
HPI growth	28,399	2.805	6.286	−0.372	3.238	5.520
GDP growth	24,356	1.445	3.344	−0.100	1.700	3.200
Unemployment growth	28,408	0.087	0.202	−0.053	0.049	0.198

Table 2: Mandatory Audit Size Threshold and Asset Growth

This table presents the relationship between bank asset growth and mandatory audit size threshold on a sample of 32,229 bank-year observations for the period 2000-2010. All the bank variables are obtained from call reports. The dependent variable is annual asset growth rate. *Treat* is a dummy variable equal to one when the bank-year is in size group of $400-600$ million, and zero otherwise. Please refer to Table A.1 for detailed variable definitions. Bank and year fixed effects are included in Column 2. Bank, year, and state fixed effects are included in Column 3. Bank and state times year fixed effects are included in Column 4. Standard errors in brackets are clustered by banks. *,**,*** indicate significance at the 10%, 5%, and 1% level, respectively.

	Dependent variable:			
	Asset growth			
	(1)	(2)	(3)	(4)
Treat	-0.28^{*}	-0.55^{***}	-0.54^{***}	-0.53^{***}
	(0.16)	(0.20)	(0.20)	(0.19)
Consumer loan perc		-0.06^{**}	-0.06^{**}	-0.05^{*}
		(0.03)	(0.03)	(0.03)
Real estate loan perc		-0.01	-0.01	-0.001
		(0.01)	(0.02)	(0.02)
Size		-0.01^{***}	-0.01^{***}	-0.01^{***}
		(0.002)	(0.002)	(0.002)
NPL to lag loan		-0.58^{***}	-0.58^{***}	-0.49^{***}
		(0.10)	(0.10)	(0.10)
Tier 1		0.04^{*}	0.04^{*}	0.05^{*}
		(0.02)	(0.02)	(0.02)
Bank FEs	No	Yes	Yes	Yes
Year FEs	No	Yes	Yes	No
State FEs	No	No	Yes	No
State*Year FEs	No	No	No	Yes
Observations	32,229	31,979	31,979	31,979
Adjusted R^2	0.0001	0.34	0.34	0.35

Table 3: Mandatory Audit Size Threshold and Loan (Deposit) Growth

This table presents the relationship between bank loan (deposit) growth and mandatory audit size threshold on a sample of 31,979 bank-year observations for the period 2000-2010. All the bank variables are obtained from call reports. Panel A (B) reports the results when the dependent variable is annual loan (deposit) growth rate. *Treat* is a dummy variable equal to one when the bank-year is in size group of 400 − 600 million, and zero otherwise. Please refer to Table A.1 for detailed variable definitions. Bank and year fixed effects are included in Column 1. Bank, year, and state fixed effects are included in Column 2. Bank and state times year fixed effects are included in Column 3. Standard errors in brackets are clustered by banks. *,**,*** indicate significance at the 10%, 5%, and 1% level, respectively.

Panel A: Mandatory Audit Size Threshold and Loan growth

	Dependent variable:		
	Loan growth		
	(1)	(2)	(3)
Treat	−0.45***	−0.46***	−0.48***
	(0.16)	(0.16)	(0.15)
Consumer loan perc	−0.06***	−0.06***	−0.06***
	(0.02)	(0.02)	(0.02)
Real estate loan perc	−0.03***	−0.03***	−0.02*
	(0.01)	(0.01)	(0.01)
Size	−0.01***	−0.01***	−0.01***
	(0.001)	(0.001)	(0.001)
NPL to lag loan	−0.68***	−0.68***	−0.61***
	(0.11)	(0.11)	(0.11)
Tier 1	0.01	0.01	0.01
	(0.01)	(0.01)	(0.01)
Bank FEs	Yes	Yes	Yes
Year FEs	Yes	Yes	No
State FEs	No	Yes	No
State*Year FEs	No	No	Yes
Observations	31,979	31,979	31,979
Adjusted R^2	0.35	0.35	0.37

Panel B: Mandatory Audit Size Threshold and Deposit growth

	Dependent variable:		
	Deposit growth		
	(1)	(2)	(3)
Treat	−0.52**	−0.53**	−0.54**
	(0.25)	(0.25)	(0.24)
Consumer loan perc	−0.06*	−0.07*	−0.05
	(0.04)	(0.04)	(0.04)
Real estate loan perc	−0.01	−0.01	0.001
	(0.02)	(0.02)	(0.02)
Size	−0.02***	−0.02***	−0.02***
	(0.002)	(0.002)	(0.002)
NPL to lag loan	−0.55***	−0.55***	−0.46***
	(0.11)	(0.11)	(0.11)
Tier 1	0.14***	0.14***	0.14***
	(0.02)	(0.02)	(0.02)
Bank FEs	Yes	Yes	Yes
Year FEs	Yes	Yes	No
State FEs	No	Yes	No
State*Year FEs	No	No	Yes
Observations	31,979	31,979	31,979
Adjusted R^2	0.22	0.22	0.24

Table 4: Other Size Groups and Asset Growth

This table presents the relationship between bank asset growth and other size groups on a sample of 31,979 bank-year observations for the period 2000-2010. All the bank variables are obtained from call reports. The dependent variable is annual asset growth rate. *Size600_800* (*Size600_700*, *Size700_800*, *Size650_750*) is a dummy variable equal to one when the bank-year is in size group of 600−800 (600−700, 700−800, 650−750) million, and zero otherwise. Please refer to Table A.1 for detailed variable definitions. Bank and state times year fixed effects are included in all the specifications. Standard errors in brackets are clustered by banks. *,**,*** indicate significance at the 10%, 5%, and 1% level, respectively.

	Dependent variable:				
	Asset growth				
	(1)	(2)	(3)	(4)	(5)
Size600_800	−0.20				
	(0.21)				
Size600_700		−0.22		−0.25	
		(0.25)		(0.25)	
Size700_800			−0.07	−0.14	
			(0.29)	(0.30)	
Size650_750					−0.26
					(0.25)
Consumer loan perc	−0.05*	−0.05*	−0.05*	−0.05*	−0.05*
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Real estate loan perc	−0.002	−0.002	−0.002	−0.002	−0.002
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Size	−0.01***	−0.01***	−0.01***	−0.01***	−0.01***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
NPL to lag loan	−0.49***	−0.49***	−0.49***	−0.49***	−0.49***
	(0.10)	(0.10)	(0.10)	(0.10)	(0.10)
Tier 1	0.05*	0.05*	0.05*	0.05*	0.05*
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Bank FEs	Yes	Yes	Yes	Yes	Yes
State*Year FEs	Yes	Yes	Yes	Yes	Yes
Observations	31,979	31,979	31,979	31,979	31,979
Adjusted R^2	0.35	0.35	0.35	0.35	0.35

Table 5: Size Groups Within Treatment Banks and Asset Growth

This table presents the results on asset growth for size groups within treatment banks on a sample of 31,979 bank-year observations for the period 2000-2010. All the bank variables are obtained from call reports. The dependent variable is annual asset growth rate. *Size400_500* is a dummy variable equal to one when the bank-year is in size group of 400 − 500 million, and zero otherwise. *Size500_600_audited* is a dummy variable equal to one when the bank-year is in size group of 500 − 600 million and used audit in any of the past 5 years, and zero otherwise. *Size500_600_noaudited* is a dummy variable equal to one when the bank-year is in size group of 500 − 600 million and never used audit in any of the past 5 years, and zero otherwise. Please refer to Table A.1 for detailed variable definitions. Bank and year fixed effects are included in Column 1. Bank, year, and state fixed effects are included in Column 2. Bank and state times year fixed effects are included in Column 3. Standard errors in brackets are clustered by banks. *,**,*** indicate significance at the 10%, 5%, and 1% level, respectively.

	Dependent variable:		
	Asset growth		
	(1)	(2)	(3)
Size400_500	−0.53**	−0.52**	−0.49**
	(0.21)	(0.21)	(0.21)
Size500_600_audited	−0.57*	−0.56*	−0.55*
	(0.31)	(0.31)	(0.30)
Size500_600_noaudited	−0.61	−0.61	−0.80
	(0.74)	(0.74)	(0.70)
Consumer loan perc	−0.06**	−0.06**	−0.05*
	(0.03)	(0.03)	(0.03)
Real estate loan perc	−0.01	−0.01	−0.001
	(0.01)	(0.01)	(0.02)
Size	−0.01***	−0.01***	−0.01***
	(0.002)	(0.002)	(0.002)
NPL to lag loan	−0.58***	−0.58***	−0.49***
	(0.10)	(0.10)	(0.10)
Tier 1	0.04*	0.04*	0.05*
	(0.02)	(0.02)	(0.02)
Bank FEs	Yes	Yes	Yes
Year FEs	Yes	Yes	No
State FEs	No	Yes	No
State*Year FEs	No	No	Yes
Observations	31,979	31,979	31,979
Adjusted R^2	0.34	0.34	0.35

Table 6: Mandatory Audit Size Threshold and Asset Growth on the High/Low Cost of Debt Subsample

This table presents the relationship between bank asset growth and mandatory audit size threshold on the high/low cost of debt subsample for the period 2000-2010. Panel A (B) reports the results on the subsample of bank-years with low (high) cost of debt proxied by high (low) net interest income/asset. All the bank variables are obtained from call reports. The dependent variable is annual asset growth rate. *Treat* is a dummy variable equal to one when the bank-year is in size group of 400 − 600 million. Please refer to Table A.1 for detailed variable definitions. Bank and year fixed effects are included in Column 1. Bank, year, and state fixed effects are included in Column 2. Bank and state times year fixed effects are included in Column 3. Standard errors in brackets are clustered by banks. *,**,*** indicate significance at the 10%, 5%, and 1% level, respectively.

Panel A: Low Cost of Debt Subsample

	Dependent variable:		
	Asset growth		
	(1)	(2)	(3)
Treat	−0.56**	−0.56**	−0.58**
	(0.26)	(0.26)	(0.25)
Consumer loan perc	0.002	0.002	0.02
	(0.03)	(0.03)	(0.03)
Real estate loan perc	−0.01	−0.01	−0.001
	(0.01)	(0.01)	(0.01)
Size	−0.01	−0.01	−0.01
	(0.004)	(0.004)	(0.005)
NPL to lag loan	−0.71***	−0.71***	−0.65***
	(0.06)	(0.06)	(0.06)
Tier 1	−0.02	−0.02	−0.02
	(0.04)	(0.04)	(0.04)
Bank FEs	Yes	Yes	Yes
Year FEs	Yes	Yes	No
State FEs	No	Yes	No
State*Year FEs	No	No	Yes
Observations	16,045	16,045	16,045
Adjusted R^2	0.36	0.35	0.38

Panel B: High Cost of Debt Subsample

	Dependent variable:		
	Asset growth		
	(1)	(2)	(3)
Treat	−0.21	−0.21	−0.19
	(0.30)	(0.30)	(0.27)
Consumer loan perc	−0.08	−0.08	−0.07
	(0.06)	(0.06)	(0.05)
Real estate loan perc	−0.01	−0.01	−0.0001
	(0.03)	(0.03)	(0.03)
Asset	−0.01***	−0.01***	−0.02***
	(0.002)	(0.002)	(0.002)
NPL to lag loan	−0.52***	−0.52***	−0.44***
	(0.12)	(0.12)	(0.11)
Tier 1	0.06**	0.06**	0.08***
	(0.03)	(0.03)	(0.02)
Bank FEs	Yes	Yes	Yes
Year FEs	Yes	Yes	No
State FEs	No	Yes	No
State*Year FEs	No	No	Yes
Observations	15,934	15,934	15,934
Adjusted R^2	0.37	0.37	0.39

Table 7: Mandatory Audit Size Threshold and Asset Growth Under Different Local Economic Conditions - Housing Price Index (HPI)

This table presents the relationship between bank asset growth and mandatory audit size threshold under different local housing market conditions on the sample of 31,947 bank-year observations for the period 2000-2010. All the bank variables are obtained from call reports. Housing price index is obtained from Federal House Financing Agency (FHFA). The dependent variable is annual asset growth rate. *Treat* is a dummy variable equal to one when the bank-year is in size group of 400 − 600 million. *HPI growth* is the annual growth rate of local housing price index. Please refer to Table A.1 for detailed variable definitions. Bank and year fixed effects are included in Column 1. Bank, year, and state fixed effects are included in Column 2. Bank and state times year fixed effects are included in Column 3. Standard errors in brackets are clustered by banks. *,**,*** indicate significance at the 10%, 5%, and 1% level, respectively.

	Dependent variable:		
	Asset growth		
	(1)	(2)	(3)
Treat	−0.69***	−0.69***	−0.69***
	(0.21)	(0.21)	(0.20)
HPI growth	0.04***	0.04***	0.04***
	(0.01)	(0.01)	(0.01)
Treat*HPI growth	0.05**	0.06**	0.06**
	(0.02)	(0.02)	(0.02)
Consumer loan perc	−0.06**	−0.06**	−0.05*
	(0.03)	(0.03)	(0.03)
Real estate loan perc	−0.01	−0.01	−0.001
	(0.01)	(0.02)	(0.02)
Size	−0.01***	−0.01***	−0.01***
	(0.002)	(0.002)	(0.002)
NPL to lag loan	−0.57***	−0.57***	−0.49***
	(0.09)	(0.09)	(0.09)
Tier 1	0.04*	0.04*	0.05*
	(0.02)	(0.02)	(0.02)
Bank FEs	Yes	Yes	Yes
Year FEs	Yes	Yes	No
State FEs	No	Yes	No
State*Year FEs	No	No	Yes
Observations	31,947	31,947	31,947
Adjusted R^2	0.34	0.34	0.35

Table 8: Mandatory Audit Size Threshold and Asset Growth Under Different Local Economic Conditions - Unemployment and GDP

This table presents the relationship between bank asset growth and mandatory audit size threshold under different local unemployment and GDP conditions for the period 2000-2010. All the bank variables are obtained from call reports. Unemployment data are obtained from Bureau of Labor Statistics (BLS). GDP data are obtained from Bureau of Economic Analysis (BEA). The dependent variable is annual asset growth rate. *Treat* is a dummy variable equal to one when the bank-year is in size group of 400 − 600 million. *Unemployment growth* is the difference in natural logarithm of annual unemployment rate from prior year to current year. *GDP growth* is the change in real GDP from prior year to current year, scaled by the real GDP in the prior year, times 100. Please refer to Table A.1 for detailed variable definitions. Bank and year fixed effects are included in Columns 1 and 3. Bank and state times year fixed effects are included in Columns 2 and 4. Standard errors in brackets are clustered by banks. *,**,*** indicate significance at the 10%, 5%, and 1% level, respectively.

	Dependent variable:			
	Asset growth			
	(1)	(2)	(3)	(4)
Treat	−0.44**	−0.40**	−0.74***	−0.73***
	(0.21)	(0.20)	(0.23)	(0.22)
Unemployment growth	0.03	−0.24		
	(0.30)	(0.38)		
Treat*Unemployment growth	−1.12**	−1.34**		
	(0.56)	(0.56)		
GDP growth			0.05***	0.03*
			(0.02)	(0.02)
Treat*GDP growth			0.08*	0.07*
			(0.04)	(0.04)
Consumer loan perc	−0.06**	−0.05*	−0.06*	−0.05
	(0.03)	(0.03)	(0.04)	(0.04)
Real estate loan perc	−0.01	−0.001	−0.01	0.003
	(0.01)	(0.02)	(0.02)	(0.02)
Size	−0.01***	−0.01***	−0.01***	−0.02***
	(0.002)	(0.002)	(0.003)	(0.003)
NPL to lag loan	−0.58***	−0.49***	−0.59***	−0.50***
	(0.10)	(0.10)	(0.09)	(0.09)
Tier 1	0.04*	0.05*	0.04	0.04
	(0.02)	(0.02)	(0.02)	(0.03)
Bank FEs	Yes	Yes	Yes	Yes
Year FEs	Yes	No	Yes	No
State FEs	No	No	No	No
State*Year FEs	No	Yes	No	Yes
Observations	31,956	31,956	27,492	27,492
Adjusted R^2	0.34	0.35	0.34	0.35

Table 9: Mandatory Audit Size Threshold and Asset Growth Under Different Local Market Structure

This table presents the relationship between bank asset growth and mandatory audit size threshold under different local market structure for the period 2000-2010. Market structure is constructed using the concentration of branch-level deposits within each metropolitan statistical area (MSA) where bank headquarters are located. Panel A (B) reports the results for the subsample of bank-years that have lower (higher) than median market concentration. All the bank variables are obtained from call reports. Branch-level deposits data are obtained from Summary of Deposits (SOD). The dependent variable is annual asset growth rate. *Treat* is a dummy variable equal to one when the bank-year is in size group of 400 − 600 million. Please refer to Table A.1 for detailed variable definitions. Bank and year fixed effects are included in Column 1. Bank, year, and state fixed effects are included in Column 2. Bank and state times year fixed effects are included in Column 3. Standard errors in brackets are clustered by banks. *,**,*** indicate significance at the 10%, 5%, and 1% level, respectively.

Panel A: Low Market Concentration Subsample

	Dependent variable:		
	Asset growth		
	(1)	(2)	(3)
Treat	−0.49*	−0.49*	−0.52*
	(0.28)	(0.28)	(0.27)
Consumer loan perc	−0.05	−0.05	−0.06
	(0.04)	(0.04)	(0.04)
Real estate loan perc	0.002	0.002	0.01
	(0.02)	(0.02)	(0.02)
Size	−0.01***	−0.01***	−0.01***
	(0.002)	(0.002)	(0.003)
NPL to lag loan	−0.48***	−0.48***	−0.40***
	(0.13)	(0.13)	(0.12)
Tier 1	0.04	0.04	0.04
	(0.03)	(0.03)	(0.03)
Bank FEs	Yes	Yes	Yes
Year FEs	Yes	Yes	No
State FEs	No	Yes	No
State*Year FEs	No	No	Yes
Observations	16,007	16,007	16,007
Adjusted R^2	0.34	0.34	0.36

Panel B: High Market Concentration Subsample

	Dependent variable:		
	Asset growth		
	(1)	(2)	(3)
Treat	−0.79***	−0.78***	−0.87***
	(0.30)	(0.30)	(0.28)
Consumer loan perc	−0.06	−0.06	−0.04
	(0.04)	(0.04)	(0.04)
Real estate loan perc	−0.02	−0.02	−0.01
	(0.02)	(0.02)	(0.02)
Size	−0.01**	−0.01**	−0.01***
	(0.004)	(0.004)	(0.004)
NPL to lag loan	−0.74***	−0.74***	−0.63***
	(0.06)	(0.06)	(0.06)
Tier 1	0.01	0.01	0.03
	(0.04)	(0.04)	(0.04)
Bank FEs	Yes	Yes	Yes
Year FEs	Yes	Yes	No
State FEs	No	Yes	No
State*Year FEs	No	No	Yes
Observations	15,972	15,972	15,972
Adjusted R^2	0.36	0.35	0.37

Table 10: Audit Status and Asset Growth

This table presents the results on asset growth for treatment banks with different audit status and that for control banks for the period 2000-2010. All the bank variables are obtained from call reports. The dependent variable is annual asset growth rate. *Treat_audited* is a dummy variable equal to one when the bank-year is in size group of 400 − 600 million and audited. *Treat_noaudited* is a dummy variable equal to one when the bank-year is in size group of 400 − 600 million and not audited. *Size400_500_noaudited* is a dummy variable equal to one when the bank-year is in size group of 400 − 500 million and not audited. Please refer to Table A.1 for detailed variable definitions. Bank and year fixed effects are included in Columns 1, 3, and 5. Bank and state times year fixed effects are included in Columns 2, 4, and 6. Standard errors in brackets are clustered by banks. *,**,*** indicate significance at the 10%, 5%, and 1% level, respectively.

	Dependent variable:					
	Asset growth					
	(1)	(2)	(3)	(4)	(5)	(6)
Treat_audited	−0.59*	−0.50				
	(0.33)	(0.32)				
Treat_noaudited			−0.55**	−0.48**		
			(0.23)	(0.22)		
Size400_500_noaudited					−0.83***	−0.80***
					(0.28)	(0.28)
Consumer loan perc	−0.08***	−0.06**	−0.07**	−0.06**	−0.06**	−0.05*
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Real estate loan perc	−0.004	0.004	−0.01	−0.004	−0.01	0.001
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Size	−0.01***	−0.01***	−0.01***	−0.01***	−0.01***	−0.01***
	(0.002)	(0.003)	(0.002)	(0.002)	(0.002)	(0.002)
NPL to lag loan	−0.56***	−0.48***	−0.63***	−0.55***	−0.63***	−0.55***
	(0.10)	(0.10)	(0.07)	(0.07)	(0.07)	(0.07)
Tier 1	0.04	0.04*	0.04*	0.05*	0.04*	0.04*
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Bank FEs	Yes	Yes	Yes	Yes	Yes	Yes
Year FEs	Yes	No	Yes	No	Yes	No
State FEs	No	No	No	No	No	No
State*Year FEs	No	Yes	No	Yes	No	Yes
Observations	29,608	29,608	30,209	30,209	29,461	29,461
Adjusted R^2	0.34	0.36	0.34	0.36	0.35	0.36

Table 11: Mandatory Audit Size Threshold and Asset Growth - Peer Influence

This table reports the results on asset growth of treatment banks influenced by peer growth for the period 2000-2010. All the bank variables are obtained from call reports. The dependent variable is annual asset growth rate. *Treat* is a dummy variable equal to one when the bank-year is in size group of $400-600$ million, and zero otherwise. *Peer growth* is the average lag-year asset growth of all the other *Treat* banks in the same MSA, excluding the focal bank. Please refer to Table A.1 for detailed variable definitions. Bank and year fixed effects are included in Column 1. Bank, year, and state fixed effects are included in Column 2. Bank and state times year fixed effects are included in Column 3. Standard errors in brackets are clustered by banks. *,**,*** indicate significance at the 10%, 5%, and 1% level, respectively.

	Dependent variable:		
	Asset growth		
	(1)	(2)	(3)
Treat	−0.45*	−0.45*	−0.46*
	(0.26)	(0.26)	(0.25)
Treat*Peer growth	0.16***	0.16***	0.15***
	(0.05)	(0.05)	(0.05)
Consumer loan perc	−0.02	−0.02	−0.03
	(0.03)	(0.03)	(0.02)
Real estate loan perc	0.005	0.004	0.01
	(0.02)	(0.02)	(0.02)
Size	−0.01***	−0.01***	−0.01***
	(0.003)	(0.003)	(0.003)
NPL to lag loan	−0.70***	−0.70***	−0.62***
	(0.06)	(0.06)	(0.06)
Tier 1	0.02	0.02	0.03
	(0.02)	(0.02)	(0.03)
Bank FEs	Yes	Yes	Yes
Year FEs	Yes	Yes	No
State FEs	No	Yes	No
State*Year FEs	No	No	Yes
Observations	23,606	23,606	23,606
Adjusted R^2	0.41	0.41	0.43

Table 12: Determinants of Voluntary Audit Decisions

This table presents the probit regression results on the determinants of voluntary audit decisions for banks under $500 million over the period 2000-2010. All the bank variables are obtained from call reports. Data on housing price index are obtained from Federal House Financing Agency (FHFA). Market concentration is constructed using local branch-level deposits data obtained from Summary of Deposits (SOD). The dependent variable *Audit* is a dummy variable equal to one if the bank voluntarily engages in external auditor in the year. Please refer to Table A.1 for detailed variable definitions. Standard errors in brackets are clustered by banks. *,**,*** indicate significance at the 10%, 5%, and 1% level, respectively.

	Dependent variable:		
	Audit		
	(1)	(2)	(3)
Concentrate	−0.08***		−0.07***
	(0.02)		(0.02)
Profitability		−0.03***	−0.02***
		(0.01)	(0.01)
HPI growth			0.004**
			(0.002)
Size			0.003***
			(0.0001)
NPL to Lag Loan			0.04***
			(0.005)
Tier 1			−0.01***
			(0.001)
Consumer loan perc			0.01***
			(0.001)
Real estate loan perc			−0.001
			(0.001)
Observations	26,726	26,672	26,524

Table 13: Consequence of Using Voluntary Audits

This table presents the results on the consequence of using voluntary audit for banks under $500 million over the period 2000-2010. All the bank variables are obtained from call reports. Data on housing price index are obtained from Federal House Financing Agency (FHFA). Market concentration is constructed using local branch-level deposits data obtained from Summary of Deposits (SOD). The dependent variable *Net interest income/Asset* is the ratio of annual net interest income to year-end total assets, times 100. *Audit* is a dummy variable equal to one if the bank voluntarily engages in external auditor in the year. Please refer to Table A.1 for detailed variable definitions. Year fixed effects are included. Standard errors in brackets are clustered by banks. *,**,*** indicate significance at the 10%, 5%, and 1% level, respectively.

	Dependent variable:	
	Net interest income/Asset	
	(1)	(2)
Audit	0.23***	0.24***
	(0.02)	(0.02)
Concentrated		0.06**
		(0.03)
HPI growth		0.01***
		(0.004)
Size		−0.001***
		(0.0004)
NPL to lag loan		−0.001
		(0.01)
Tier 1		0.01**
		(0.005)
Consumer loan perc		0.03***
		(0.01)
Real estate loan perc		−0.01***
		(0.001)
Year FEs	Yes	Yes
Observations	26,672	26,524
Adjusted R^2	0.02	0.12

A Appendix

A.1 Variable Definitions

Table A.1: Variable Definitions

Variable Name	Definition
Asset growth	Change in year-end total assets from current year to next year, scaled by total assets at current year-end, times 100
Consumer loan perc	Ratio of year-end consumer loans to year-end total loans, times 100
Deposits	Year-end total deposits in millions
Deposit growth	Change in year-end total deposits from current year to next year, scaled by total loans at current year-end, times 100
GDP growth	Change in real GDP from prior year to current year, scaled by the real GDP of prior year, times 100
HHI	The Herfindahl index of a metropolitan statistical area (MSA) in which bank headquarters are located, measured by the sum of market share of each bank branch's deposits squared within an MSA
HPI growth	Change in housing price index from prior year to current year, scaled by the housing price index of prior year, times 100
Loan growth	Change in year-end total loans from current year to next year, scaled by total loans at current year-end, times 100
Net interest income/Asset	The ratio of annual net interest income to year-end total assets, times 100
NPL to lag loan	Non-performing loans in current year, scaled by total loans at prior year-end, times 100
Peer growth	Average lag-year asset growth of all the other *Treat* banks in the same MSA, excluding the focal bank
Real estate loan perc	Ratio of year-end residential real estate loans to year-end total loans, times 100
Size	Year-end total assets in millions
Size600_800	Dummy variable equal to one when bank-year is in the size group of $600 to $800 million
Size600_700	Dummy variable equal to one when bank-year is in the size group of $600 to $700 million
Size700_800	Dummy variable equal to one when bank-year is in the size group of $700 to $800 million
Size650_750	Dummy variable equal to one when bank-year is in the size group of $650 to $750 million
Size400_500	Dummy variable equal to one when bank-year is in the size group of $400 to $500 million
Size500_600_audited	Dummy variable equal to one when bank-year is in the size group of $500 to $600 million and used audit in any of the past 5 years
Size500_600_noaudited	Dummy variable equal to one when bank-year is in the size group of $500 to $600 million and never used audit in any of the past 5 years
Size400_500_noaudited	Dummy variable equal to one when bank-year is in the size group of $400 to $500 million and not audited
Tier 1	Year-end tier 1 capital in millions
Treat	Dummy variable equal to one when bank-year is in the size group of $400 to $600 million
Treat_audited	Dummy variable equal to one when bank-year is in the size group of $400 to $600 million and audited
Treat_noaudited	Dummy variable equal to one when bank-year is in the size group of $400 to $600 million and not audited
Unemployment growth	Difference in natural logarithm of annual unemployment rate from prior year to current year

A.2 Robustness Tests

Table A.2: Results Excluding Multi-holding Affiliated Banks and Public Banks

This table presents the results on the relationship between mandatory audit size threshold and asset growth, excluding multi-holding affiliated banks and public banks over the period 2000-2010. Columns 1 and 2 exclude multi-holding affiliated banks from the sample. Columns 3 and 4 exclude public banks from the sample. All the bank variables are obtained from call reports. The dependent variable is annual asset growth rate. *Treat* is a dummy variable equal to one when the bank-year is in size group of $400-600$ million, and zero otherwise. Please refer to Table A.1 for detailed variable definitions. Bank and year fixed effects are included in Columns 1 and 3. Bank and state times year fixed effects are included in Columns 2 and 4. Standard errors in brackets are clustered by banks. *,**,*** indicate significance at the 10%, 5%, and 1% level, respectively.

	Dependent variable:			
	Asset growth			
	(1)	(2)	(3)	(4)
Treat	−0.49**	−0.49**	−0.45**	−0.44**
	(0.21)	(0.20)	(0.21)	(0.20)
Consumer loan perc	−0.11***	−0.10***	−0.09***	−0.07**
	(0.03)	(0.04)	(0.03)	(0.03)
Real estate loan perc	−0.01	−0.005	−0.01	−0.01
	(0.02)	(0.02)	(0.02)	(0.02)
Size	−0.01***	−0.01***	−0.01***	−0.01***
	(0.003)	(0.003)	(0.003)	(0.003)
NPL to lag loan	−0.73***	−0.64***	−0.59***	−0.51***
	(0.05)	(0.05)	(0.11)	(0.11)
Tier 1	0.04	0.05*	0.04	0.05*
	(0.03)	(0.03)	(0.03)	(0.03)
Bank FEs	Yes	Yes	Yes	Yes
Year FEs	Yes	No	Yes	No
State*Year FEs	No	Yes	No	Yes
Observations	26,045	26,045	28,589	28,589
Adjusted R^2	0.36	0.38	0.34	0.36

Table A.3: Results For the Banks That Ever Fall Into the Treated Bank-years

This table presents the results on the relationship between mandatory audit size threshold and asset growth, for the banks that ever fall into the treated bank-years over the period 2000-2010. All the bank variables are obtained from call reports. The dependent variable is annual asset growth rate. *Treat* is a dummy variable equal to one when the bank-year is in size group of 400 − 600 million, and zero otherwise. Please refer to Table A.1 for detailed variable definitions. Bank and year fixed effects are included in Column 1. Bank, year, and state fixed effects are included in Column 2. Bank and state times year fixed effects are included in Column 3. Standard errors in brackets are clustered by banks. *,**,*** indicate significance at the 10%, 5%, and 1% level, respectively.

	Dependent variable:		
	Asset growth		
	(1)	(2)	(3)
Treat	−0.49**	−0.49**	−0.51**
	(0.21)	(0.21)	(0.20)
Consumer loan perc	−0.03	−0.03	−0.01
	(0.05)	(0.05)	(0.04)
Real estate loan perc	−0.01	−0.01	0.01
	(0.04)	(0.04)	(0.03)
Size	−0.01***	−0.01***	−0.01***
	(0.004)	(0.004)	(0.004)
NPL to lag loan	−0.44**	−0.44**	−0.29*
	(0.19)	(0.19)	(0.16)
Tier 1	0.05	0.05	0.07**
	(0.04)	(0.04)	(0.04)
Bank FEs	Yes	Yes	Yes
Year FEs	Yes	Yes	No
State FEs	No	Yes	No
State*Year FEs	No	No	Yes
Observations	7,562	7,562	7,562
Adjusted R^2	0.38	0.38	0.41