Is there a Benefit from Reduced Regulation on Small Banks?

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Abstract

Beginning June 2015, several U.S. Bank Holding Companies (BHCs) have been newly classified as small banks by regulators, thus benefiting from a friendlier regulatory environment. We exploit this decrease in regulation in a difference-in-differences setting to show that less regulation on small BHCs boosts small business lending of the affiliated commercial banks. The increase in small business lending is stronger when the parent BHC is farther from the new regulatory asset threshold that identifies small banks. We do not find contemporaneous changes in risk-taking or opacity. Further, the regulatory relief has positive implications for the funding opportunities of affiliated commercial banks and has a real impact on the local economy. Overall, we show that the effects of the regulatory relief are in line with its desired objectives.

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1. Introduction

In the aftermath of the global financial crisis of 2007-09, various regulatory restrictions have been imposed on the banking sector (Acharya et al. 2012; Benoit et al. 2017; Bank for International Settlements 2017; Buchak et al. 2018; Gropp et al. 2018). Stricter regulatory standards are aimed at mitigating systemic threats to the financial system primarily posed by large banks. However, there are widespread concerns that a stricter regulatory framework may have unintended consequences for small banks, thus harming their business (Berger et al. 2017a; Federal Reserve 2017; Greenwood et al. 2017; Lux and Greene 2015).

The concerns above have been widely explicated in recent policy and regulatory forums that have recognized the importance of granting regulatory relief to small banks in the post-crisis period.[2] This view has taken ground amongst top policy makers, ranging from the Federal Reserve Chair Janet Yellen[3] to the FDIC Chairman Jelena McWilliams[4], and has prompted the U.S. Congress to pass the Economic Growth, Regulatory Relief and Consumer Protection Act in 2018 to roll back Dodd-Frank regulations for small and medium-sized banks. In a similar vein, the European Central Bank has recognized the need to subject smaller banks to reduced regulatory reporting requirements.[5]

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[2] See, for instance, Hearing on 'Regulatory relief for community banks and credit unions' before the Committee on Banking, Housing, and Urban Affairs (10 February 2015); and 'The destructive impact of regulatory burden on rural communities', Independent Community Bankers of America (9 June 2016).

[3] 'Yellen: Fed to consider treasury call for small-bank debt relief' Bloomberg BNA (12 July 2017): https://www.bna.com/yellen-fed-consider-n73014461642/.

[4] Remarks by Jelena McWiliams at the Federal Reserve Bank of Chicago Thirteenth Annual Community Bankers Symposium. "Back to Basics". Chicago, Illinois. (November 16, 2018).

[5] See for instance, speech by Vice-Chair of ECB's Supervisory board Sabine Lautenschläger (14 October 2017):
https://www.bankingsupervision.europa.eu/press/speeches/date/2017/html/ssm.sp171014.en.html.

The premise for a reduced regulation on small banks is primarily motivated by the purpose of safeguarding the key role of these banks in facilitating the access to finance for small firms that have otherwise limited funding opportunities (Behr et al. 2013; Berger et al. 2014; 2017a; Degryse and van Cayseele 2000; Elsas 2005). For instance, in 2016 U.S. banks with assets less than $1 billion held more than 25% of loans extended to small businesses although they only represented 7.4% of the total assets of the U.S. banking system (Conference of State Bank Supervisors and Federal Reserve 2017). This lending activity has significant real impact as U.S. small businesses have generated 2 out of 3 new private sector jobs in the last two decades, with a similar contribution to job creation observed also after the great recession (U.S. Small Business Administration 2017). Overall, via their lending to small firms, small banks contribute to the development of the local economy (Berger et al. 2017a; Hakenes et al. 2015) and to economic recovery after natural disasters (Cortés 2014). Therefore, overwhelming regulations that constrain how smaller banks operate might result in economic and social costs.

To date, however, there are no direct investigations to inform the ongoing debate on the potential positive effects of regulatory relief on the activity of small banks. In this paper, we provide novel evidence to show that a favorable regulatory setting facilitates small banks in executing their crucial role as funding providers in the small business market.

To implement our analysis, we take advantage of a change in the U.S. regulatory context that has led to an exogenous decrease in regulation for some small Bank Holding Companies (BHCs). More precisely, the Small Bank Holding Company Policy Statement, signed into Public Law 113-250 in December 2014 and enacted from June 2015, has raised the asset threshold for identifying small BHCs from $500 million to $1 billion. The small BHC status allows a BHC to be exempt from complex capital standards and reduces regulatory reporting costs by decreasing the frequency and quantity of information required by regulators. As noted by Thomas Hoenig (FDIC Vice Chairman) and Daniel Tarullo (Governor of Supervision and Regulation, Federal Reserve Board),

these are key areas of the overall regulatory burden for community bankers.[6] Notably, subsidiary commercial banks of the affected small BHCs are still subject to an unchanged regulatory framework. The regulatory change we examine, therefore, offers two unique opportunities. First, it allows us to assess the causal effect of a friendlier regulatory environment on the functioning of small banks under a difference-in-differences setting. Second, it offers the possibility to observe if the regulatory benefits at the parent-level are transferable to subsidiaries, as suggested by the literature on internal capital markets in banking (Ashcraft 2008; Campello 2002; Holod and Peek 2010; Houston et al. 1997).

Our analysis starts by comparing the small business lending activity of commercial banks affiliated with a "treated" BHC (i.e., a BHC newly qualified as a small bank from Q2 2015) to those affiliated with "untreated" BHCs (defined as affiliated commercial banks unaffected by the regulatory change and with consolidated assets below $5 billion) over the period 2013-2018. We find strong evidence of an increase in small business lending, defined as loans with a value up to $1 million (Berger et al. 2017b; Craig and Thomson 2000)[7], by the banks in the treated group after the regulatory change. This suggests that regulatory relief for small BHCs benefits small business lending by their subsidiaries. Our results are also economically relevant: post the regulatory change, the commercial banks in the treated group have increased their small business loans by 5% as

[6] See for instance, 'A Conversation about Regulatory Relief and the Community Bank' Remarks by FDIC Vice Chairman Thomas Hoenig, presented to the 24th Annual Hyman P. Minsky Conference, National Press Club, Washington, DC (April 15, 2015); 'Tailoring Community Bank Regulation and Supervision' Speech by Governor Daniel K Tarullo, At the Independent Community Bankers of America 2015 Washington Policy Summit, Washington, D.C. (April 30, 2015). Other examples include Independent Community Bankers of America (2015) `The nations voice for community banks' available at https://www.reginfo.gov/public/do/DownloadDocument?objectID=57558200.

[7] As per the Small Business Credit Survey (2019), over 92% of small businesses reported that they are looking for loans under $1 million. Our measure is also consistent with the the Federal Reserve's definition of loans to small businesses, see for instance, Federal Reserve guidelines for FFIEC 031, 032, 033 and 034 regulatory call reports available at https://www.fdic.gov/regulations/resources/call/crinst/698rc-c1.pdf..

compared to the banks in the control group. Our results further hold when we evaluate the impact of the regulatory change on other credit policies of the small banks such the usage of loan commitments to establish future lending relationships (Acharya and Mora 2015; Kashyap et al. 2002).

To rule out the possibility that our results depend on how we define small business lending, we next repeat the analysis using loan-level data from the Small Business Administration (SBA) 7a under its Preferred Lender Program where loans extended to small businesses, as in Brown and Earle (2017). The borrowers are typically small businesses that lack access to other sources of funding and use the funds for meeting operational needs (e.g. working capital and machinery) and real estate. By estimating the model at the borrower level, we again find an increase in the loans provided by commercial banks in the treated group after the regulatory shock. This test also controls for borrower-level county and industry fixed effects, thereby mitigating concerns that the potential heterogeneity in credit demand across banks may be contaminating our results. Our results remain similar under various alternative tests that account for demand-side interpretations.

Next, we assess the possibility that reduced regulation on small BHCs may result in negative effects for bank stability. For instance, the change in lending policy of the subsidiaries of small BHCs might reflect more risk-taking. In addition, the reduced scrutiny via lower reporting standards might lead to opportunistic behavior in terms of loan loss provisioning, thus lowering bank transparency and increasing risk (Beatty and Liao 2011; Bushman and Williams 2015; Costello et al. 2019). However, the fact that the regulatory relief we examine only applies at the parent holding company level should reduce the chances of negative effects at the subsidiary level. Along these lines, using several measures of credit risk (loan loss provisions, loan loss allowances and non-performing loans) we do not find any evidence of opportunistic risk-taking by commercial banks affiliated to a newly qualified small BHC. Furthermore, we do not find any evidence of a decreasing transparency in these banks.

Studies focusing on regulatory changes based on a size threshold have argued that firms nearer to the threshold engage in strategic behavior to benefit from such regulatory changes (Bouwman et al., 2018; Nicoletti et al., 2018). In a similar vein, banks nearer to the $1 billion threshold may be reluctant to increase loans and risk losing the small BHC status (and its associated benefits) by crossing the threshold. We document that the lending results are primarily driven by commercial banks affiliated with BHCs that are more distant from the size threshold and less likely to pass this threshold. Similarly, it could be argued that BHCs just above the $1 billion size threshold may also shrink their balance sheet in order to benefit from the regulatory relief. However, we do not find any supporting evidence for this.

Next, we examine how the regulatory change influences funding opportunities of small banks since the ability to expand loans should be closely related to the funding opportunities to support this expansion. The regulatory change we employ allows newly recognized small BHCs to hold higher debt in their funding structure that can then be invested as equity in their bank subsidiaries; namely, in those commercial banks that are included in our sample. Accordingly, one important driver of our results should be the increased ability of the parent small BHCs to offer larger equity support to the affiliated commercial banks. In a series of tests based on measures of equity support from the BHC to affiliated commercial banks, we find strong evidence in line with our initial conjecture.

Another source of funding for small banks is the deposit market. The literature has recently highlighted the interplay between lending growth and the flow of deposits (Bord et al. 2018; Disyatat 2011; Kishan and Opiela 2012). Dreschler et al. (2016) show that banks respond to increases in Fed funds rate by reducing retail deposit rates that further contracts their lending. Building on these studies, we argue that the regulatory change could have facilitated treated small banks in the deposit market. In fact, the decline in regulation due to the small banking status could make it economically sustainable for the affected banks to increase their deposit rates in an attempt

to acquire more funding. Using branch-level data, we document that the acquisition of the small banking status leads to an increase in $ volume of deposits and an increase in the % deposit rates by the affiliated commercial banks after the regulatory change.

The final part of our study examines the real impact of the small bank regulatory relief. Essentially, since small banks and their relationships with local firms are a key driver for economic development, an expansion of small business lending by these banks has the potential to benefit the local economy. We examine the validity of this argument by running county-level regressions based on measures of economic development, such as the (log of) annual establishments with less than 50 employees per thousand of population and the (log of) wages per capita, and consistently find evidence of stronger real effects post-regulatory change in counties with commercial banks affiliated with affected small BHCs.

Our findings are of relevance to the broader literature on the role of small banks and the disappearance of small banks due to consolidation is a source of social costs (Behr et al. 2013; Berger et al. 2014; 2017a; Cortés 2014; Berger et al. 2017a). Looking at this premise from a different perspective, we show that the regulatory relief on small banks examined here has facilitated small business lending, increased local deposits and made a real impact on the local economy, taking an important step in meeting its original objectives.[8] Overall, our analysis highlights the importance for the regulatory design to balance the need to contain systemic threats posed by the joint failures of small banks with the costs that an overwhelming regulation on these banks might generate.

Our paper is related to two streams of the literature. The first focuses on the implications of differences in the regulatory burden across different banks on lending (Acharya et al., 2018; Buchak et al. 2018; Bouwman et al. 2018; Chen et al. 2017; Gropp et al. 2018), acquisition behavior (Bindal et al. 2017; Nicoletti et al., 2018), and on financing and dividend policies (Cornett et al. 2018).

[8] See for instance, U.S. Congressional Record volume 160 (no. 67): https://www.congress.gov/congressional-record/2014/05/06/house-section/article/H3424-2

Differently from our setting, these studies have focused on an increase in regulation for large banks have negative implications for their general lending policy (Bouwman et al. 2018) and for their lending towards small businesses (Chen et al. 2017; Cortes et al., 2018). We extend these studies providing a direct test on whether the small business market can benefit from a friendlier regulatory environment for small banks and whether this generates any positive effect for the local economy.

Most closely related to our paper is the work of Bisetti (2019) who focuses on a similar regulatory shock for small banks that increased the asset threshold for small BHC status from $150 million to $500 million in 2006. This shock reduced the examination frequency of small banks from 12-month to 18-months, and the paper shows that this change implies lower regulatory monitoring and results in negative value effects for the shareholders of treated listed BHCs. Differently from Bisetti, however, we focus on the lending to small businesses since they are primarily dependent on bank financing (DeYoung et al., 2015). This setting is particularly relevant because small business lending levels continues to remain depressed relative to the pre-crisis level, while loans to large businesses have shown an upward trend by rising up by 50% higher (Bord et al., 2018; Cortes et al., 2018). Studying regulatory relief-driven shifts in credit availability for small businesses can have wider consequences for the economy.

Finally, our analysis contributes also to studies on the relationship between a BHC and its subsidiaries (Ashcraft 2006, 2008; Campello 2002; Gijle 2019; Holod and Peek 2010; Houston et al. 1997). These studies highlight that a BHC contributes to alleviating financial constraints of their subsidiaries and document that the loan growth of a subsidiary is more linked to the cash flow and capital of the parent holding company than to its own financial health. We show that a dual regulatory system consisting of a reduced regulation at the parent level, but an unchanged regulatory framework at the subsidiary level, benefits the business of the subsidiaries without generating negative effects in terms of their risk-taking and transparency.

The rest of the paper proceeds as follows. Section 2 describes the institutional setting related to the regulatory change on the small BHC status. Section 3 describes the data, the variables and the difference-in-differences approach employed in the empirical tests. Section 4 focuses on the empirical results whereas section 5 offers conclusions.

2. Institutional Background

Against the backdrop of increasing regulation faced by small banks after the 2007-09 financial crisis, the Small Bank Holding Company (SBHC) Policy Statement was signed into Public Law 113-250 in December 2014. It results in raising the asset threshold for qualifying BHCs as small entities from $500 million (threshold valid from 2006) to $1 billion.[9]

The small BHC status retracts various capital and reporting requirements that had resulted in over-burdening small banks. The first change takes the form of a less restrictive capital regulation at the parent holding company-level. Specifically, the parent holding company is exempt from risk-based and leverage capital rules under Basel III, although such rules remain applicable to the subsidiary commercial banks. This change allows newly formed small BHCs to increase their debt carrying capacity to a maximum of 300% debt-to-equity (Federal Reserve Register 2015). By contrast, BHCs above the asset threshold are not permitted to have such a high leverage and any debt issued can only be qualified as Tier-2 capital under restrictive conditions, such as having a minimum maturity of five years (Federal Reserve Bank of Richmond 2016).

Newly classified small BHCs can use their increased debt capacity to inject Tier-1 Capital into the subsidiary commercial banks and finance their credit expansion. Consistent with this, the debt

[9] Small bank holding companies are also required to meet qualitative conditions that stipulate such qualifying banks to not engage in significant non-banking activities through subsidiaries, not be engaged in significant off-balance sheet activities such as securitization, and not have substantial outstanding equity or debt that is registered with the SEC.

issuance by BHCs under $1 billion threshold has increased by more than 200% from $104 million in 2014 to $317 million in 2015 (S&P Market Intelligence Report 2016).

The second regulatory relief from the Act is the reduction in the frequency and quantity of regulatory reporting. Prior to the Act, all BHCs above $500 million were required to file quarterly FR-Y9C regulatory reports with over 2600 items and a length of 60 pages over our sample period. These banks had to also separately file a parent only FR-Y9 LP regulatory report (consisting of 186 items over 9 pages) filed semi-annually. However, after the act, all affected BHCs have to file only semi-annual parent-only financial statements (FR-Y9 SP). This decreases the reporting burden by more than 95% in terms of the number of items to be reported at the holding-company level. Moreover, with these exemptions affected BHCs have to no longer report complex capital items in the regulatory call reports.

Other related advantages of the Act include a longer period between on-site examinations since the newly recognized small BHCs now fall out of the Fed's peer group analyses. This change, however, is only applicable to well-capitalised BHCs and was effective from January 2017.

Overall, the Act grants regulatory relief to small BHCs in terms of capital regulation and lower regulatory reporting requirements. Such changes in turn can potentially free up more resources for small BHCs to be used to expand lending. Various anecdotal examples further lend weightage to these effects, such as the Independent Community Bankers of America and American Bankers Association stated that the SBHC Act should substantially reduce the reporting burden of community banks and allow them to raise more debt to increase lending.[10]

[10] See for instance, `The nations voice for community banks', Independent Community Bankers of America (2015) available at https://www.reginfo.gov/public/do/DownloadDocument?objectID=57558200; and 'Letters to Congress/Regulators' American Bankers Association (2014) available at https://www.aba.com/Advocacy/LetterstoCongress/Documents/HouseMemoreHR3329andHR2672050514.pdf

Notably, the Small Bank Holding Company Policy Statement of 2014 is not the first modification of the Small BHC definition that has occurred in the U.S. While the size threshold from 1986 to 2005 was set to $150 million in total consolidated assets, in March 2006, the Fed increased the threshold to $500 million. Bisetti (2019) shows this change implies lower regulatory monitoring and results in negative value effects for the shareholders of treated listed BHCs. Differently from Bisetti, however, we focus on the lending consequences for the affiliated commercial banks. As a result, we do not rely only on listed BHCs to implement our analysis. Moreover, majority of our sample banks are closely-held due to which shareholders act as de facto owners and therefore have lower risk-shifting incentives.

3. Sample and Data

Our sample consists of U.S. commercial banks that are affiliated with a parent BHC and covers the period 2013-2018. To conduct our analysis, we extract BHC accounting data from the Federal Reserve Regulatory dataset and commercial bank accounting data from the Federal Reserve's (FFIEC 031 and 041 filings) Report of Condition and Income. We also rely on state-level macroeconomic data that we gather from the Bureau of Labor Statistics and Bureau of Economic Analysis.

The implementation of our empirical analysis requires the categorization of affiliated commercial banks into two groups (treated and untreated) with respect to the impact of the Small Bank Holding Company Policy Statement of 2014 on the parent BHC. We require two conditions to be jointly satisfied in order to classify commercial banks affiliated with BHCs into the treated group. First, the parent BHC has switched from FR Y9C (i.e. quarterly) reporting to FR Y9-SP (semi-annual) reporting, as permitted by the small banking status. Second, the parent BHC falling in the sub-group of *new* Y-9 SP filers has consolidated assets more than $500 million over the sample period; namely, above the original assets threshold for being recognized as a small BHC.

Nevertheless, following Bouwman et al. (2018), we also account for the potential indirect effect of the regulatory change based on asset thresholds by including in the treated group banks with assets 30% below the initial $500 million threshold. Our choice is motivated by the fact that banks below the regulatory asset thresholds could also be (indirectly) affected, with implications for their incentives to grow (Bouwman et al. 2018). For instance, the increased asset threshold to $1 billion could have changed the behavior of banks that were previously near the initial asset threshold of $500 million and were cautious in their lending policy to avoid losing the small bank status[11]. Therefore, our final treated sample consists of 295 commercial banks and includes 24 commercial banks with assets 30% below the original $500 million threshold. Notably, in additional tests, reported in the Online Appendix, we exclude these banks from the analysis and show this exclusion does not affect our main findings.

All BHC-affiliated commercial banks that do not qualify as small banks under the new Small Bank Holding Company Act can be classified into the (untreated) control group. However, to ensure that our results are not due to large differences in size between the banks in the two groups, we further require that the banks in the control have consolidated assets less than $5 billion. As a result, our final sample consists of 295 treated commercial banks and 896 untreated commercial banks. In addition, as explained later, we conduct tests based on an even tighter matching between treated and untreated banks.

3.1. Empirical Setup

[11] Over our sample period, we observe that these banks grow their balance sheets substantially with the highest value of consolidated assets being $496 million and the lowest value being $405 million. This evidence further reiterates our stand that banks just below the $500 million threshold were also indirectly affected by the regulation.

We test the impact of the small BHC regulatory change on the lending policy of commercial banks affiliated to treated BHCs by employing a difference-in-differences design as shown in equation (1):

$$\text{Lending Policy}_{i,t} = \alpha + \beta \text{ Small Banks} * \text{Post-Shock} + \gamma \mathbf{BC}_{i,t-1} + \delta \mathbf{SC}_{s,t-1} + \Lambda \text{ Fixed Effects} + \varepsilon \quad (1)$$

The dependent variable is the log transformation of the dollar amount of loans with a value less than $1 million divided by bank total assets, similarly to Koetter et al. (2019).[12] Since small business loans data is only reported at the end of each June, our regressions are effectively run at annual frequency. Our measure of small business loans is consistent with Berger et al. (2017b) and the regulatory perspective. As highlighted by Berger et al. (2017b), this definition of small business lending, based on the loan amount and not borrower size, is only a proxy of the small business activity of a bank. Nevertheless, in our sample this proxy should be reliable as we only consider small banks that are likely to originate relationship-driven loans catering to small businesses operating in the local economy.[13] Along these lines, the CSBS-Federal Reserve 2017 National Survey shows that 98% of the small community banks surveyed were involved in making small business loans.

While some studies have relied on Community Reinvestment Act (CRA) data that reflects the $ value of loans originated for small businesses, banks in our sample are not required to report such data[14]. However, to rule out the possibility that our results depend on how we define small

[12] Our results remain qualitatively similar if we do not log transform the ratio between small loans and total assets.

[13] While the precise definition of small business loans is subject to some ambiguity, the US Small Business Credit Survey (2019) shows that over 92% of small businesses were seeking loans below $1 million.

[14] An alternative measure of small business loans could be the fraction of C&I loans. Based on the FDIC's 2018 Small Business Lending survey, nearly 77% small banks reported that they make largely all of their

business lending, we follow Brown and Earle (2017) and Dou (2018) in using detailed SBA 7A loan data to construct an additional measure of small lending policy. These data refer to small business loans originated by commercial banks to meet financing needs of start-ups and small firms and contain detailed loan characteristics and borrower characteristics.

The focus of our tests is the coefficient (β) of *Small Bank * Post-Shock*, where *Small Bank* is a dummy identifying treated banks and *Post-shock* is a dummy variable that equals one from Q2 2015 (when the SBHC Act was applied) to Q42017 and zero otherwise. A positive and significant β coefficient would reflect an increase in small loans by the subsidiaries of newly classified small BHCs after the regulatory shock as compared to the control group. The standalone coefficients *Small Bank* and *Post Shock* are absorbed in our fixed effects estimation.

BC (SC) consists of a vector of bank (state) controls identified in previous studies as potential determinants of a bank's lending policy (DeYoung et al. 2015). The vector of bank controls includes equity capital (total equity to assets), deposit base (total deposits to assets), profitability (net income to total assets), bank risk (the standard deviation of quarterly ROA over previous eight quarters), bank size (log of total assets), and asset quality (loan charge-offs to assets) for bank determinants. The vector of State controls includes the log of quarterly state GDP, per-capita income at the state-level, the log of unemployment rate, and the change in unemployed persons. We also include year, bank, and county fixed effects, depending on the model specification.

[Insert Table 1 here]

Panel A of Table 1 reports the descriptive statistics for the variables employed in the model. The amount of small business loans as a fraction of bank assets is 11.6%. Furthermore, the average bank in our sample has profitability of 0.9% and is typically funded with 82.8% of deposits.

C&I loans to small businesses, this value falls to just 37% of banks in the $1-$10 billion threshold. However, we do not find an increase in C&I loans measure likely because it overestimates the small business loans of the control group.

3.2. Comparing Untreated and Treated Banks and Parallel Trend Assumption

One of the key assumptions of our empirical setting is that the untreated group represents an adequate counterfactual. In this section, we present several stylized facts that confirm the validity of this assumption.

We start by highlighting whether commercial banks in the untreated and treated groups are sufficiently similar in their characteristics. Specifically, the first four columns of Panel B of Table 1 show summary statistics of bank controls for the control group and the treated group. More importantly, in column (5) we report the normalized difference in bank characteristics between the two groups of banks (Brown and Earle 2017; Nicoletti 2018). The difference is defined as follows:

$$NDIFF = \frac{\overline{X}_i - \overline{X}_j}{\sqrt{S_i^2 + S_j^2}} \qquad (2)$$

Where $\overline{X}_i$ (S_i^2) in the mean (variance) of a variable for one of the untreated groups and $\overline{X}_j$ (S_j^2) is the mean (variance) of the same variable for the treated group. Imbens and Wooldridge (2009) argue these differences should be below a threshold value of 0.25 because beyond this threshold regression models are unable to control for differences across the different groups of banks. We note that the differences between the control group and the treated group are below the threshold value with the exception of bank size.

The difference in size observed between the two groups of commercial banks raises the possibility that the control group includes banks that are (on average) different from those in the treated group. Accordingly, it could be argued that omitted bank characteristics (correlated with bank size) across the two groups may influence our results. To account for this, we conduct our analysis also using a more restricted control sample that we construct following prior studies (Brown and Earle 2017; Nicoletti 2018).

Specifically, we use propensity score matching and find the nearest one-to-one match without replacement between the commercial banks in the treated group and the commercial banks in our initial control sample. We base the matching on the bank and state covariates used in our regression model. Our results remain qualitatively similar if we instead match with replacement, or employ Mahanabolis distance for matched sample. As reported in the last column of Panel B, when we consider the control group after matching, we find that all differences (including the difference in terms of size) with the treated sample are well below the 0.25 threshold value. This confirms that our matching works effectively in removing differences across groups.

We next examine the validity of the *parallel trend assumption;* namely, an adequate counterfactual in a difference-in-differences setting requires that the banks in the two groups follow similar trends in their lending policy pre-regulatory shock. In this respect, Panel C tests for the presence of any pre-shock trend in our dependent variable. We estimate our regression specification with small business loans as the dependent variable and a deregulation dummy interacted with quarterly dummies (D_{jt}^{q}) for the q lags/leads of the period around the passage of the Small Bank Holding Company Policy Statement. The model includes bank, county and time fixed effects. As required by the parallel trend assumption, the coefficient on the interaction between *Small Banks* and pre-shock dummy variables is not statistically significant at conventional levels. This result rules out the presence of any pre-shock trend differential between the control and treatment group.

In summary, this section corroborates the validity of our setting to evaluate how the regulatory relief due to the change in the definition of small BHCs influences small business lending by the affiliated commercial banks.

4. Empirical Results

4.1. Small Business Lending and Regulatory Relief

Table 2 reports the results on whether the decline in regulatory constraints due to the small BHC Act affects small business lending by the treated banks. The first two columns show the results where we use the larger control group while the last two columns refer to the matched control group; namely, after we mitigate the potential influence on our results due to the heterogeneity between treated and untreated banks not removed by our model. For each analysis, we report the results without and with county fixed effects.

[Insert Table 2 here]

We consistently find an increase in small business lending by treated banks post-regulatory change. In particular, when we employ the matched control group in column (4), we find that the increase in lending post-shock is equivalent to an increase of 5% in our dependent variable post regulatory change. Furthermore, our results hold after the inclusion of county fixed effects to reduce concerns related to credit demand effects.

In the Online Appendix, we offer further support to our conclusion that a decline in regulatory constraints favors small business lending. First, following Albuquerque and Zhu (2013) and Rodnyansky and Darmouni (2017), we introduce in all specifications interaction terms between the dummy identifying banks in the treated group and the control variables. This is done because the control variables might play a differential impact on the treated group as compared to the control group. We again find that our results remain qualitatively similar.

Second, we exclude banks that are headquartered in counties that represent congressional Financial Services Committee members. This allows us to account for the view that the associated increases in small business lending might be the result of political pressure by the congressional Financial Services Committee members that were involved in passing the Act. Agarwal et al. (2017) show that banks were reluctant to recover delinquent home loans that were originated in congressional districts of the Financial Services Committee members. Excluding banks

headquartered in FSC members' congressional districts (representing only 1% of our sample banks) does not change our results[15].

Although our findings hold when we control for county fixed effects, it might still be suggested that we are not fully ruling out the potential influence of demand factors in the local banking markets whereas our analysis would imply a supply side story. Accordingly, we next further account for the demand factors in two additional tests.

First, we limit our sample to commercial banks that operate only in a single state. For these banks, it is more likely that the state controls we employ in the baseline models absorb the effects of credit demand. We identify "single state" commercial banks using information on the branch network that we take from the FDIC Summary of Deposits. Second, following DeYoung et al. (2015), we employ the Senior Loan Officer Opinion Survey (SLOOS) on bank lending practices to control for demand shifts in bank loans. More specifically, we extract Question 4b from the SLOOS survey. This question requires responses from loan officers on how the local demand for loans by small firms with less than $50 million sales has changed in the previous 3 months. The loan officers have five choices—substantially stronger, moderately stronger, about the same, moderately weaker, or substantially weaker—and the Federal Reserve reports the net percentage of loan officers reporting stronger loan demand each quarter.

To construct our demand shifters we follow DeYoung et al. (2015) and proceed in two steps. First, we regress the quarterly (seasonally adjusted) time series of state economic conditions (per-capita income, unemployment rate and % change in unemployed individuals) on the quarterly SLOOS measure of net business loan demand change. This first step is required because the supply of bank loans to small businesses will be also related to household income and employment. We

[15] We would like to thank Charles Stewart III and Jonathan Woon for making the data on Congressional Committee Assignments available online (accessed at: http://web.mit.edu/17.251/www/data_page.html#2)

then employ the fitted values from these regressions as controls in our small lending regression. The intuition is that these fitted demand shifters capture information on local economic conditions that is related directly to small business loan demand.

[Insert Table 3 here]

We report the results of the first test in the first two columns of Table 3 and the results of the second test in columns (3) and (4). We still consistently find an increase in small lending by commercial banks affiliated with small BHCs post the regulatory change.

Ultimately, our analysis offers strong evidence in favor of an increase in small business lending by commercial banks post the acquisition of the small bank status by the parent BHC (as compared to commercial banks affiliated with untreated BHCs).

4.1.1. Falsification Tests

In this section, we offer additional support for a causal role of the regulatory change in explaining our findings. To this end, we conduct several falsification tests by creating artificial settings characterized by ad hoc and false regulatory shocks. These false shocks should not lead to any change in the lending policy in the (falsely) defined group of "treated banks". We report the results of these falsification tests in Table 4.

[Insert Table 4 here]

We start by assuming that the regulatory change imposes an asset threshold of $5 billion and not of $1 billion. Consequently, we include in the treated group all the commercial banks affiliated with BHCs with an asset value between $1 billion and $5 billion, whereas the control group includes all commercial banks owned by BHCs with assets above $5 billion but below $10 billion. The results reported in the first two columns of Table 4 do not show any significant change in the lending policy of the "falsely treated" group after the simulated regulatory change.

Next, in columns (3) and (4) we modify the date of the regulatory change. Specifically, we assume that the adoption of the $1 billion threshold for small BHCs occurred in 2013 (two years earlier than the actual change) with the full sample period ending in 2015 (that is, before the actual regulatory change). We then repeat our initial tests for our original treated and untreated groups using this different time framework. Again, we do not find any difference in the lending policy of the two groups of banks.

Finally, in columns (5)-(6) we rely on the proposal contained in the Senate Bill (HR 3791) of October 2015 suggesting that the small BHC asset threshold should be increased from $1 billion to $5 billion. Essentially, this proposal represents a potential (never implemented), and not an actual, regulatory change. We use this regulatory proposal to repeat our main test. We assume that from October 2015, the asset threshold for regulatory relief increases to $5 billion. As a result, the post regulatory shock dummy takes the value of one after the date of the bill. Furthermore, the treated group consists of all commercial banks affiliated with a BHC with assets between $1 billion and $5 billion while the control group includes commercial banks affiliated with a BHC with asset values larger than $5 billion but below $10 billion. Essentially, as compared to the actual test, this falsification test results in a change of both a) the time period and a) the asset threshold. We still do not find any difference in small business lending between the newly "treated" and "untreated banks".

In general, the set of falsification tests we discuss in this section consistently support a causal interpretation of our initial results.

4.1.2. Alternative Lending Data: SBA 7a Loans

We next employ an alternative measure of small business lending for the sampled banks. We follow Brown and Earle (2017) and use loan-level origination data from the Small Business Administration (SBA) 7a loans under its Preferred Lender Program. These loans are granted to meet the external financing needs of start-ups and small businesses. Under the program, bank

loans are primarily restricted to a maximum amount of $5 million and are partially guaranteed (50% to 85%) by the SBA. The participation of depository institutions under this program and the approval of loan terms is largely the responsibility of the participating bank (Brown and Earle 2017). The borrowers are typically small businesses that lack access to other sources of funding and largely use the funds for meeting operational needs (e.g. working capital and machinery) and real estate.

The advantage of this setting is that our regressions reflect new loans originated by banks and the detailed borrower-level variables allow us to control for demand effects using borrower industry and borrower county fixed effects. Data on SBA 7a loans is available for 55 treated banks. Schüwer et al. (2018) also note that the data on SBA 7a loans restricts the analysis to a smaller subsample of banks (their sample decreases from 1,253 to 337 banks).

[Insert Table 5 here]

We estimate the model at the borrower level using as a dependent variable the log transformation of the dollar value of new loans granted by a bank. We use a similar set of controls as in our baseline model with the addition of loan characteristics as further explanatory variables. In particular, we control for *% Guaranteed* (fraction of gross loan guaranteed by the SBA), *Maturity* (maturity of the loan in months), and *Interest* (interest rate on loan origination). Panel A of Table 5 reports summary statistics for the dependent variable and the additional controls employed in this analysis. Furthermore, to account for omitted borrower characteristics, we include borrower-county fixed effects and borrower-industry fixed effects (defined at the 4-digit NAIC). Finally, multiple loan applications for the same borrower-bank-year observation are aggregated and cancelled loans are excluded from the sample.

We report the regression results in Panel B of Table 5. In all specifications, our results confirm the baseline findings; namely, commercial banks affiliated with BHCs that gain the small-banking status with the regulatory shock originate more small loans after the regulatory change. In

particular, using the specification in column (2), we find that the regulatory change results in an increase in new small loans by 21%. With the average $ loan originated in the pre-shock quarter equal to $908,653, the regulatory change results in increasing the loan amount by $190,817 for each borrower.

The results in this section are, therefore, consistent with our initial findings and highlight that our analysis does not depend on how we measure small business lending by the sampled banks.

4.1.3. Other Credit Arrangements by Small Banks: Loan Commitments

Small banks generally engage in relationship lending that rely on building long-term relationships with borrowers. One of the credit arrangements commonly utilized for this purpose is a loan commitment that reflects a future commitment to provide credit to borrowers (Acharya and Mora 2015; Kashyap et al. 2002). Such arrangements can be substantial for the banking industry (Strahan 2012) and are a key source of meeting short-term liquidity needs of small firms (Sufi 2009). While our lending policy variables employed in the previous sections reflect current lending arrangements, loan commitments are future credit arrangements and are not part of the balance sheet assets.

In this section, we assess if small banks also increase their loan commitments in response to the regulatory relief as an attempt to build relationship lending activities with their clients. We use two measures of loan commitments: total commitments consisting of unused loan commitments and letters of credit (financial, performance, and commercial), and unused loan commitments based on Acharya and Mora (2015) and Cornett et al. (2011). We compute these measures by scaling them by total assets and taking their log transformation. To remain consistent with our small business lending variables, we measure the commitment variables as of Q2 for each year.

[Insert Table 6 here]

We report the results in Table 6. The analysis confirms the impact of the regulatory change on the lending policies of treated banks: we consistently find that banks in the treated group increase total and unused loan commitments after the regulatory change.

The finding above indicate that the regulatory relief, and the related stronger support that affiliated commercial banks can receive from their parent BHC, favor these banks in adopting a more relationship-lending approach via the establishment of contractual commitments that can materialize in the form of additional lending over the longer term.

4.1.4. Are There Negative Effects from the Regulatory Change?

A friendlier regulation on small banks is not necessarily without negative implications. For instance, the propensity to expand bank lending is often accompanied by a decline in lending standards and this can raise risk-taking concerns for regulators and policy makers (Berger and Udell 2004; Fahlenbrach et al. 2017; Foos et al. 2010, Koetter et al. 2019). In this section, we initially examine whether increased lending by treated small banks is associated with deterioration in credit quality by these banks post-regulatory change.

[Insert Table 7 here]

We use three measures to quantify credit-risk taking in our sampled banks. The first variable is the ratio between loan loss provisions and total loans, the second is loan loss allowances scaled by total loans, whereas the third is the ratio between non-performing loans to total loans. As in the previous tests, we measure credit risk as of Q2 for each year. We then estimate similar models as those reported in Table 2 using these credit risk measures as dependent variables.

We report the results in Table 7 when we use both the full sample of untreated banks and the matched treated sample in the analysis. Overall, we do not find any evidence suggesting an increase in the credit-risk exposure of the treated banks post regulatory change. However, in interpreting this finding, we cannot fully exclude the possibility that our post-regulatory change period is not

sufficiently long to capture the longer term implications that the changes in the lending policy might have in terms of a bank's credit risk.

Finally, we focus on the possibility that the regulatory reform has favoured the opportunistic use of loan loss provisions with the purpose to inflate earnings and overstate equity capital (Beatty and Liao 2014; Cohen et al. 2014). Recently, Costello et al. (2019) show that banks supervised by lenient state regulators are associated with more earnings management. In the same vein, small banks may engage in discretionary LLP policies to take advantage of the exogenous decrease in regulatory scrutiny due to lower reporting standards. This might then result in lower transparency and higher bank risk (Beatty and Liao 2011; Bushman and Williams 2015).

To test this potential negative effect of the regulatory change, we follow Cohen et al. (2014) and Jiang et al. (2016) in computing the residual or abnormal level of LLP after accounting for the fundamental bank determinants. This is computed over two steps with the first-step running the following equation to estimate discretionary LLPs:

$$LLP_{i,t} = \alpha + \beta_1 \Delta NPL_{i,t+1} + \beta_2 \Delta NPL_{i,t} + \beta_3 \Delta NPL_{i,t-1} + \beta_4 \Delta NPL_{i,t-2} + \beta_5 EBLLP_{i,t} + \beta_6 Capital_{i,t-1} + \beta_7 Size_{i,t-1} + \beta_8 \Delta Loans_{i,t} + \lambda_t + \varepsilon_{i,t} \quad (2)$$

The second-step takes the logarithm of the absolute value of residuals obtained from the above model as the dependent variable. As shown in columns (7) and (8) of Table 7, we do not find any association between our key difference-in-differences coefficient and discretionary LLP.

Taken together, the results reported in Table 7 support the argument that the affiliated commercial banks of a newly qualified small BHC did not decrease portfolio quality or engage in aggressive earnings management to take advantage of the decreased regulation at the parent level.

4.1.5.Does the Distance from the Size Threshold Matter?

Our initial empirical tests assume that the regulatory change uniformly affects the lending policy of BHC-affiliated commercial banks below the $1 billion size threshold. However, originating more loans results in an increase in bank size. Consequently, it is likely that primarily BHCs more distant from the $1 billion asset threshold have benefits from increasing lending via their subsidiaries as they have a lower risk to lose the small banking status because of the expansion. In contrast, BHCs closer to the threshold may engage in strategic behavior leading to a more limited (if any) increase in lending because they still intend to benefit from a friendlier regulation that might be lost because of the growth strategy. Along these lines, Ben-David et al. (2018) show that European banks reduce lending and liquid assets to avoid passing the size threshold that would make them subject to the supervision of the European Central Bank (instead of national regulators) under the Single Supervisory Mechanism.

To assess the possibility of a heterogeneous impact of the regulatory change, we begin by dividing our sample of treated BHCs into quartiles based on their distance from the $1 billion threshold in the pre-shock quarter. Accordingly, commercial banks affiliated with BHCs in the first quartile, the closest to the threshold, should then have the lowest incentives to increase lending. By contrast, commercial banks affiliated with BHCs farthest from the threshold (Quartile 4) should have the strongest incentives to increase lending.

To understand the impact of the distance from the size threshold on our results, we then estimate the coefficient of the interaction *Small Banks * Post-Shock* in equation (1) by running four separate regressions. The first includes only commercial banks controlled by treated BHCs in the first quartile; namely, the BHCs closest to the asset threshold. We then estimate the remaining regression models by progressively adding commercial banks affiliated with BHCs in the other quartiles. Hence, the second estimation includes as treated banks in the first two quartiles and the last regression includes all treated banks.

[Insert Figure 1 here]

Figure 1 reports the estimated *Small Banks * Post-Shock* coefficient for each regression and the related confidence interval (for both the full control sample and the matched control sample). In line with our initial prediction, the effect of the regulatory shock is increasing as we move well below the $1 billion threshold. The β coefficient is not significant when we only consider banks in the first quartile in terms of distance from the asset threshold, but it becomes significant for the remaining models.

Next, we test for the incremental or marginal impact of each quartile of treated BHCs. Essentially, we assess the individual impact of each shocked bank quartile *q* instead of the cumulative effects as in Figure 1. Our regression setup now includes four different treated sub-groups (with one dummy for each quartile) simultaneously and estimates the *Small Banks * Post-Shock* interaction separately for each quartile. Following Ben-David et al. (2018), therefore, we employ a modified equation (1) as shown below:

$$\text{Lending Policy}_{i,t+1} = \alpha + \beta \sum_{q=1}^{4} \text{Shocked Bank Quartiles}_{q,i} * \text{Post-Shock} + \gamma \mathbf{BC}_{i,t-1} + \delta \mathbf{SC}_{s,t-1} + \Lambda \text{ Fixed Effects} + \varepsilon \quad (3)$$

where Shocked Bank Quartiles$_q$ has four sub-groups based on the distance of the shocked BHCs from the asset threshold.

[Insert Table 8 here]

As shown in Panel A of Table 8, we find that the estimated coefficients tend to increase moving from the first to the last group of banks. Furthermore, the coefficient is insignificant for the group of commercial banks affiliated with BHCs closest to the assess threshold and, as reported in Panel B the difference between the estimated coefficients for the first and last quartile is statistically significant at customary levels.

Ultimately, the results discussed above indicate that the changes in lending policies post regulatory shock are primarily driven by the commercial banks controlled by the smallest treated BHCs.

In unreported tests, we also assess the importance of the distance from the threshold for the group of untreated BHCs in order to account for possible indirect treatment effects (Bindal et al 2017; Bouwman et al. 2018). Our purpose is to account for possible strategic behavior by BHCs marginally above the size threshold, such shrinking the asset base to benefit from the regulatory shock. Specifically, we categorize all untreated BHCs above $1 billion by assets but less than the 30% above the asset threshold as "indirectly treated" and include the related dummy variable identifying their affiliated commercial banks as an additional bank group (*Indirectly Treated Banks*) in our regressions.

Two key findings emerge from this analysis: i) our primary results continue to hold for the treated sampled; ii) the coefficient on the interaction between post-shock and *Indirectly Treated Banks* is not significant. This latter finding, therefore, does not provide support for the presence of a strategic behavior by banks just above the $1 billion asset threshold.

4.2. Funding effects from alleviating regulatory constraints on small BHCs

4.2.1. Capital Infusion from the BHCs to the Subsidiaries

Our analysis has focused on the impact of a reduced regulation on a small bank's asset side. However, the ability to expand loans by small banks is closely related to their funding opportunities (Carlson et al. 2013; de Haas and Lelyveld 2010; Kishan and Opiela 2000). In essence, any growth in lending requires an increase in bank funding to support expansion. In this respect, one of the key purposes of the regulatory change was to allow newly recognized small BHCs to hold higher debt in their funding structure that can be potentially invested as equity in their bank subsidiaries.

One of the drivers behind our lending results should then be this increased ability of the parent BHCs to offer equity support to the affiliated commercial banks. In Table 9, we present

the results of several tests aimed at assessing the validity of this argument. We construct measures of equity capital infusion that the subsidiary commercial bank receives from its holding company and test whether these measures increase for commercial banks owned by treated BHCs post-regulatory change. In these regressions, the set of controls is the same we have employed in our lending tests.

[Insert Table 9 here]

Following Ashcraft (2008) and Nicoletti et al. (2018), we measure the equity infusion from a BHC to an affiliated commercial bank via the sum of net change in capital stock and other transactions with the holding company divided by the beginning-of-year equity. We multiply this value by the percentage of equity held by the holding company in the subsidiary. The results, reported in the first two columns, support the view that the regulatory change has favored the flow of equity from the parent bank to the subsidiary. We find similar results from column (3) to column (6) where we conduct the analysis separately for each component of our measure of equity infusion (*Issue of Stock* and *Other Transactions*).

In the last two columns, we repeat the analysis by employing an alternative measure of equity infusion based on Bressan (2018); namely, we use the equity stake of the holding company in the commercial bank divided by total consolidated assets of the BHC. We again find an increase in this measure for the subsidiary of treated BHCs after the regulatory change.

Overall, the results highlight the importance of an "equity channel" for the increase in small business lending post the regulatory change by affected commercial banks.

4.2.2. Effects on Deposit Flows and Deposit Rates

Another possible source of funding for small banks is the deposit market. Several studies highlight the nexus between lending and deposits policies (Bord et al. 2018; Disyatat 2011; Kishan and Opiela 2012). For instance, Bord et al. (2018) show that large banks less affected by the

collapse of real estate prices expanded lending to small business during the global financial crisis and simultaneously increased their deposits.

In the context of our analysis, treated BHCs can increase their deposit rates via subsidiary commercial banks to support the lending expansion. Along these lines, Ben-David et al. (2017) show that deposit rates, rather than reflecting market discipline, are strongly influenced by lending growth and therefore driven by the demand for funding by banks. Furthermore, Dreschler et al. (2016) highlight that deposits flow out of the banking system when banks increase the interest spreads they charge on deposits. In turn, this generates a contraction in lending.

To test if the regulatory change we examine also influences the deposit policy of the commercial banks affiliated with a treated BHC, we estimate the following regression model using branch level data:

$$\text{Deposit Policy}_{i,t} = \alpha + \beta\ \text{Small Banks} * \text{Post-Shock} + \gamma\ \mathbf{BC}_{i,t-1} + \delta\ \mathbf{SC}_{s,t-1} + \Lambda\ \text{Fixed Effects} + \varepsilon \quad (4)$$

The deposit policy variables refer to the level of deposit flows and to deposit rates. More precisely, the first dependent variable we employ is the log transformation of deposits scaled by total assets (*Deposits ($)*). We obtain deposit data from the FDIC Summary of Deposits that contains the branch-level deposits of depository institutions at annual frequency (Dreschler et al. 2016). We next measure *Deposit Rates (%)* via the branch-level deposit rates of U.S. commercial banks over the sample period via the monthly deposit rates provided by SNL Financial. Following previous studies (Ben-David et al. 2017; Dreschler et al. 2016) we focus on the deposit rates with highest frequency: $10,000 denominated Certificates of Deposit. The dependent variable is the log of deposit rates at branch-level and measured at monthly frequency.[16] For both analyses, we

[16] Our results remain qualitatively similar if we use the log of deposit rates in excess of the fed funds rate as the dependent variable.

include in the regression model the set of controls we have employed in the lending analysis and cluster the standard errors at the county level.

[Insert Table 10 here]

Table 10 reports the regression results. In the first four columns where the dependent variable is *Deposits ($)*, we generally find an increase in this ratio for commercial banks affiliated with treated BHCs after the implementation of the regulatory change. The results are similar when we employ the full sample of untreated banks or the matched sample as a control group. In terms of the economic significance of our results, the estimation results in column (4) imply that an increase in the growth of deposits of about 1.6% after the regulatory change for treated banks.

In the last four columns we examine whether the regulatory shock is followed by a change in the deposit rate policy of the treated banks. As in the initial test, we conduct the analysis using both the full sample and the matched sample of untreated banks. In line with the view that the decrease in the regulatory costs favors more aggressive deposit rate policies, we find a significant increase in deposit rates post-regulatory change for the commercial banks in the treated group. More precisely, using the estimation results in column (4), we find that the regulatory change results in increasing the deposit rates by about 5.33 percentage points.

Overall, the results above show that the release of regulatory constraints on small BHCs has significant implications for the deposit policies of their affiliated commercial banks.[17]

[17] It could be argued that treated banks may also have decreased their corporate loan rates to attract more business loans. This micro-level loan measure would help in exploring if treated banks were competing for business loans with other untreated banks instead of boosting aggregate lending. However, we do not have such detailed data on the distribution of loans quantity and loan rates by geography. As a crude approximation, we re-estimate our baseline model with the dependent variable calculated as the total interest income from C&I loans scaled by the volume of C&I loans. However, the difference-in-difference

4.4 Is there Any Positive Real Effect from the Regulatory Shock?

In this section we explore whether the small bank regulatory relief, and the related benefits for small banks, has had a real impact on the local economy. This additional test is motivated by the widely accepted view that the lending to small firms results in positive real effects for the local economy (Behr et al. 2013; Berger et al. 2014; 2017a; Cortés 2014; Degryse and van Cayseele 2000; Elsas 2005; Hakenes et al. 2015).

To conduct our analysis, we estimate county-level regressions where the dependent variables are constructed using data on local county economic outcomes (Danisewicz et al. 2017; Chen et al. 2017). More precisely, we use two dependent variables. The first variable is the log transformation of the annual establishments at county level with less than 50 employees per thousand of population. The second variable is the log transformation of the wages per capita. The data come from the County Business Patterns from the Census Business Register.

To understand the importance of the regulatory change in terms of county real effects, we construct a variable that measures the market share (in terms of deposits) of the treated BHCs at the county level (*Market Share Treated*). We then interact this variable with the post-shock dummy. The interaction term, therefore, shows whether the growth in business establishments and wages per capita is more pronounced in the post-shock period in counties with a larger influence of treated small BHCs. The regression models include several county controls to account for differences in the macroeconomic environment across counties: % unemployment rate, the change in unemployed persons, and the Log (establishments). We also control for the Log of the state GDP (as there are no data available on county GDP). Finally, we account for omitted county characteristics by adding county fixed effects to the model and cluster the standard errors at the county level.

term is not significant and therefore we do not find any evidence of banks cannibalizing market share by reducing their loan rates.

[Insert Table 11 here]

Table 11 reports the regression results. Throughout different specifications, we consistently find evidence of more positive real effects from the regulatory change in counties characterized by a larger market share of newly qualified small BHCs after the regulatory change. Essentially, we find that there are significant benefits for the local economy from a reduced regulation on small BHCs. This finding, therefore, supports the established view that small banking firms play a crucial role for the development of the surrounding real economy.

5. Conclusion

Recent debates among regulators and policy makers have placed emphasis on the potential benefits stemming from a reduced regulation on small banks. However, there is no direct empirical evidence on how, and whether, the benefits from a friendlier regulation materialize for small banks.

This paper offers novel evidence on the effects of less regulation on small banks by using a difference-in-differences setting based on the change in the definition of small BHCs in the U.S. banking industry from June 2015. This change significantly decreases regulation on BHCs with total consolidated assets above $500 mln but below $1bln that are newly qualified as small entities.

Using the setting above, we validate the claim that a reduced regulation should facilitate small banks in playing their pivotal role in the economy, and in particular their function as funding providers to the small business lending market with positive externalities for the local economy. Our study documents that the decline in regulatory constraints induces U.S. commercial banks affiliated with a treated BHC to increase their lending exposure towards small borrowers as compared to other commercial banks. This result holds under numerous different settings and under different definitions of small business lending. Additional tests show this effect is stronger when the parent BHC is farther away from the regulatory threshold, and as such less concerned that an increase in size might result in losing the regulatory benefits coming from the small banking status.

Furthermore, we find that the regulatory relief benefits extend beyond the lending policy of commercial banks affiliated with a (newly qualified) small BHC. We show that a reduced regulation has also facilitated these banks in obtaining equity support from their treated parent BHC (as auspicated by regulators), in acquiring more deposits and has benefited the local real economy.

Overall, while it is well known that small banks can potentially generate systemic threats when they are exposed to common shocks leading to joint failures, our analysis highlights the importance that the regulatory design for small banks accounts for the potential unintended consequences of an excessive regulation. Although, we acknowledge that finding the right balance between the two aspects mentioned earlier is not an easy task for regulators, our paper suggests that ignoring this issue and imposing excessive regulatory costs on small banks might significantly penalize their role in the small business lending market and result in imposing additional economic and social costs.

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Table 1: Sample Statistics

This table presents the summary statistics for our sample of commercial banks from 2011 to 2017. Panel A shows the descriptive statistics for the full sample. Panel B shows the trends in key characteristics of control and treatment groups in the quarter before the shock. Columns (1)-(2) of Panel B refer to the full sample and Columns (3)-(4) refer to the treated sample and columns (5)-(6) represent the matched sample. Normalized difference for sample *i* and *j* for a variable x is calculated as $\text{NDIFF}=\frac{\bar{X}_i-\bar{X}_j}{\sqrt{S_i^2+S_j^2}}$. Panel C shows the trend in bank lending and deposit policies in the pre-event and post-event window where the dependent variable is log of dollar amount of small loan denominations (< $ 1million) scaled by total assets. Dummy variable $D_{jt}{}^{q}$ corresponds to the q lags/leads of the time period around the passage of the Small Bank Holding Company Policy Statement. We use base year as Q4 2014 because the SBHC Policy Statement was signed and approved by the President in December 2014. Small Loans/TA is the ratio of dollar amount of small loan denominations (< $ 1million) to total assets. Equity/TA is total bank equity scaled by assets. Deposits/TA is bank deposits to assets. ROA is measured as the ratio of net income to total assets. SD(ROA) is standard deviation of ROA over an eight quarter window. Bank Size is the log of total bank assets. Charge-offs/TA is net charge-offs divided by total assets. State controls include the log of quarterly state GDP, per-capita income at the state-level, the log of unemployment rate, and the change in unemployed persons. Standard errors are clustered by bank and have been reported in parenthesis for Panel A. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels.

Panel A: Descriptive Statistics	**Mean**	**25th Percentile**	**Median**	**75th Percentile**	**Standard Deviation**
	(1)	(2)	(3)	(4)	(5)
Small Loans/TA	0.116	0.079	0.112	0.147	0.055
Equity/TA	0.107	0.093	0.104	0.118	0.023
Deposits/TA	0.828	0.797	0.838	0.872	0.060
ROA	0.009	0.006	0.009	0.012	0.006
SD(ROA)	0.001	0.000	0.001	0.001	0.002
Bank Size	13.618	13.212	13.638	14.162	0.883
Charge-offs/TA	0.001	0.000	0.000	0.001	0.001
Log(State GDP)	4.707	4.659	4.698	4.743	0.072
Per Capita Income ($)	46644.290	41876.000	46008.000	50531.000	6935.547
Log(Unempl. Rate)	5.634	4.500	5.400	6.700	1.599
%Change in unemployed	-0.026	-0.044	-0.029	-0.008	0.027

Table 1: Sample Statistics (continued)

	Full Untreated Sample (n=685)		Treated Sample (n=295)		Normalized Diff	Matched Untreated Sample (n=151)		Normalized Diff
Panel B: Control Group Differences	Mean	Std Dev.	Mean	Std Dev.		Mean	Std Dev.	
	(1)	(2)	(3)	(4)	(1)-(3)	(5)	(6)	(3)-(5)
Equity/TA	0.108	0.022	0.110	0.023	-0.070	0.110	0.025	0.002
Deposits/TA	0.823	0.061	0.830	0.056	-0.076	0.826	0.056	-0.051
ROA	0.010	0.005	0.008	0.006	0.163	0.009	0.005	0.043
SD(ROA)	0.001	0.002	0.001	0.002	-0.158	0.001	0.002	-0.044
Bank Size	13.761	0.868	13.161	0.581	**0.574**	13.334	0.743	0.183
Charge-offs/TA	0.001	0.001	0.001	0.001	-0.143	0.001	0.001	-0.059

	Full Untreated Sample	Matched Untreated Sample
Panel C: Parallel Trends Assumption	**(1)**	**(2)**
Small Bank * D_{jt}^{-2}	-0.024	-0.025
	(0.016)	(0.021)
Small Bank * D_{jt}^{-1}	-0.018	-0.016
	(0.013)	(0.016)
Small Bank * D_{jt}^{+1}	0.029**	0.032*
	(0.013)	(0.018)
Small Bank * D_{jt}^{+2}	0.070***	0.053**
	(0.017)	(0.025)
Small Bank * D_{jt}^{+3}	0.077***	0.049
	(0.022)	(0.031)
Time FE	YES	YES
Bank FE	YES	YES
County FE	YES	YES
Observations	5,200	2,475
Within R-squared	0.106	0.051

Table 2: Impact of Shock on Bank Lending Policy - Impact on Small Business Lending

This table reports results from a panel regression where the dependent variable is Small business lending, measured as the log of dollar amount of small loan denominations (< $ 1million) scaled by total assets in columns. All independent variables are as described in Table 1. Standard errors clustered at bank level are in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels.

	Full Untreated Sample	Full Untreated Sample	Matched Untreated Sample	Matched Untreated Sample
	(1)	(2)	(3)	(4)
Small Bank * Post-Shock	**0.057*** **	**0.057*** **	**0.050** **	**0.049** **
	(0.017)	**(0.017)**	**(0.024)**	**(0.024)**
Equity/TA	0.551	0.346	1.112*	0.988
	(0.447)	(0.421)	(0.609)	(0.618)
Deposits/TA	0.368**	0.330**	0.642***	0.664***
	(0.179)	(0.164)	(0.240)	(0.241)
ROA	-1.981**	-1.911**	-2.072*	-2.111*
	(0.921)	(0.908)	(1.177)	(1.162)
SD(ROA)	4.002	3.233	9.886***	9.409**
	(3.075)	(3.093)	(3.715)	(3.749)
Bank Size	-0.119***	-0.155***	-0.113**	-0.147***
	(0.034)	(0.032)	(0.051)	(0.049)
Charge-offs/TA	-2.962	-3.223	-3.750	-4.017
	(3.567)	(3.583)	(4.276)	(4.236)
Log(State GDP)	0.348	0.387	0.682*	0.663*
	(0.245)	(0.238)	(0.380)	(0.382)
Per Capita Income	-0.0002**	-0.0002***	-0.0002***	-0.0002***
	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Log(Unempl. Rate)	-0.003	-0.006	-0.012	-0.013
	(0.009)	(0.008)	(0.013)	(0.013)
%Change in unemployed	-0.110	-0.101	-0.063	-0.060
	(0.100)	(0.100)	(0.155)	(0.155)
Time FE	YES	YES	YES	YES
Bank FE	YES	YES	YES	YES
County FE	NO	YES	NO	YES
Observations	5,200	5,200	2,475	2,475
Within R-squared	0.096	0.138	0.079	0.107

Table 3: Small Banks and Small Business Lending - Additional Controls for Credit Demand
This table shows the results after controlling for various measures of loan demand: columns (1) and (2) control for single state banks while continuing to control for state macro-variables because banks within the same state may face similar loan demand than inter-state banks; columns (3) and (4) control for demand factors by following DeYoung et al. (2015). Specifically, we regress quarterly time series of state economic conditions (per capita income, unemployment rate, and % change in unemployed individuals, seasonally adjusted) on quarterly SLOOS measure that reflects how the demand for small business loans has changed. All independent variables are as described in Table 1. Standard errors clustered at bank level are in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels.

	Single State Banks		**Controlling for Demand Patterns**	
	Full Untreated Sample	Matched Untreated Sample	Full Untreated Sample	Matched Untreated Sample
	(1)	(2)	(3)	(4)
Small Bank * Post-Shock	**0.059*** **	**0.054** **	**0.056*** **	**0.044** **
	(0.017)	**(0.026)**	**(0.017)**	**(0.022)**
Equity/TA	0.067	0.871	0.461	1.012
	(0.508)	(0.699)	(0.431)	(0.640)
Deposits/TA	0.085	0.529**	0.347**	0.655***
	(0.188)	(0.261)	(0.164)	(0.244)
ROA	-1.609*	-1.983*	-2.081**	-2.298*
	(0.962)	(1.183)	(0.931)	(1.212)
SD(ROA)	2.219	7.241*	3.625	10.232***
	(3.390)	(4.155)	(3.078)	(3.740)
Bank Size	-0.166***	-0.157***	-0.163***	-0.163***
	(0.042)	(0.058)	(0.032)	(0.050)
Charge-offs/TA	-3.278	-3.012	-3.111	-4.189
	(4.418)	(4.577)	(3.642)	(4.333)
Log(State GDP)	0.520*	0.817*	0.382	0.423
	(0.290)	(0.423)	(0.280)	(0.382)
Per Capita Income	-0.0002***	-0.0002***		
	(0.0001)	(0.0001)		
Log(Unempl. Rate)	-0.010	-0.010		
	(0.010)	(0.014)		
%Change in unemployed	-0.151	-0.094		
	(0.124)	(0.175)		
Fitted_Per Capita Income			-0.000	-0.000
			(0.001)	(0.000)
Fitted_Log(Unempl. Rate)			0.026	0.027
			(0.064)	(0.103)
Fitted_%Change in unemployed			-0.539	-0.445
			(2.512)	(0.448)
Time FE	YES	YES	YES	YES
Bank FE	YES	YES	YES	YES
County FE	YES	YES	YES	YES
Observations	3,830	2,000	5,200	2,475
Within R-squared	0.132	0.122	0.132	0.084

Table 4: Small Banks and Small Business Lending - Falsification Tests

The table shows results for various pseudo shocks. Columns (1)-(2) falsely assume that the shock increased asset threshold for banks between $1 billion and $ 5 billion and treatment group is all banks below $ 10 billion. Columns (3)-(4) conduct the test using $ 1 billion threshold but falsely assuming that the shock happened two years prior in 2013, where the sample period now ranges from 2010 to 2015. Columns (5)-(6) follow a recent Senate Bill (HR 3791) that was introduced in October 2015 requiring small bank holding company asset threshold to be increased from $ 1 billion to $ 5 billion. All independent variables are as described in Table 1. Standard errors clustered at bank level are in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels.

	Pseudo Asset threshold		**Pseudo Time Shock**		**Pseudo Shock: 2015 Senate Bill (HR 3791)**	
	Full Untreated Sample	Matched Untreated Sample	Full Untreated Sample	Matched Untreated Sample	Full Untreated Sample	Matched Untreated Sample
	(1)	(2)	(3)	(4)	(5)	(6)
Small Banks * Post-shock	-0.005	0.031	-0.005	-0.006	-0.061	0.013
	(0.020)	(0.024)	(0.020)	(0.020)	(0.094)	(0.022)
Other Controls	YES	YES	YES	YES	YES	YES
Time FE	YES	YES	YES	YES	YES	YES
Bank FE	YES	YES	YES	YES	YES	YES
County FE	YES	YES	YES	YES	YES	YES
Observations	3,695	3,099	3,695	2,671	5,839	3,065
Within R-squared	0.205	0.217	0.205	0.098	0.104	0.216

Table 5: Impact of Shock on Small Business Loan Originations - Evidence from SBA 7A Program

This Table presents the results of Small Bank Shock on Small Business Loans 7a. Panel A shows the descriptive statistics for the SBA 7a loans in the form of Preferred Lender Program and Panel B shows the multivariate results. The dependent variable is Loan amount calculated as the log of loan amount. Columns (1) and (2) use the gross SBA loan amount while columns (3) and (4) use the net SBA loans originated after excluding the amount guaranteed by SBA. *% Guaranteed* is the proportion of loan amount guaranteed by the Small Business Administration. *Loan Maturity* is the number of months to maturity. *Interest* is total interest rate at origination. Borrower industry is based on 4-digit NAICS code. All independent variables are as described in Table 1. Standard errors clustered at bank level are in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels.

Panel A: Descriptive Statistics	**Mean**	**25th percentile**	**Median**	**75th percentile**	**SD**
Gross Loans	831907.800	223000.000	482000.000	1085000.000	887435.800
% Guaranteed	0.769	0.750	0.750	0.750	0.039
Loan Interest	5.737	5.250	5.750	6.250	0.743
Loan Maturity	177.699	120.000	123.000	300.000	89.077

	Gross SBA Loans		**Net SBA Loans**	
	Full Untreated Sample	Matched Untreated Sample	Full Untreated Sample	Matched Untreated Sample
Panel B: Multivariate Analyses	(1)	(2)	(3)	(4)
Small Banks * Post-shock	**0.176*** **	**0.206** **	**0.247** **	**0.320** **
	(0.065)	**(0.094)**	**(0.100)**	**(0.158)**
Loan Interest	-0.199***	-0.204***	-0.349***	-0.363***
	(0.021)	(0.049)	(0.071)	(0.082)
Loan Maturity	0.003***	0.003***	0.005***	0.005***
	(0.0001)	(0.0001)	(0.0003)	(0.0003)
Other Controls	YES	YES	YES	YES
Time FE	YES	YES	YES	YES
Bank FE	YES	YES	YES	YES
Borrower Industry and County FE	YES	YES	YES	YES
Bank County FE	YES	YES	YES	YES
Observations	18,513	5,063	18,513	5,063
Within R-squared	0.678	0.679	0.553	0.596

Table 6: Small Banks and Relationship Lending - Loan Commitments

The table shows results for the effect of small bank regulatory shock on relationship lending. The dependent variable is measured as the log of level of total (unused) loan commitments scaled by assets in columns (1) and (2) ((3) and (4)). The results in columns (1) and (3) correspond for the full sample and in columns (2) and (4) for the matched sample. All independent variables are as described in Table 1. Standard errors clustered at bank level are in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels.

	Total Loan Commitments		**Unused Loan Commitments**	
	Full Untreated Sample	Matched Untreated Sample	Full Untreated Sample	Matched Untreated Sample
	(1)	(2)	(3)	(4)
Small Banks * Post-shock	**0.069*** **	**0.065** **	**0.071*** **	**0.066** **
	(0.023)	**(0.031)**	**(0.023)**	**(0.031)**
Other Controls	YES	YES	YES	YES
Time FE	YES	YES	YES	YES
Bank FE	YES	YES	YES	YES
County FE	YES	YES	YES	YES
Observations	5,189	2,467	5,189	2,467
Within R-squared	0.170	0.186	0.173	0.188

Table 7: Does the Regulatory Change Produce Negative Effects on Lending Risk and Transparency?

The table shows results on the impact of the regulatory change on credit-risk taking by treated banks. In the first two columns the dependent variable is the ratio between loan loss provisions to total loans, while in columns (3) and (4) the dependent variable is loan loss allowances to total loans. In columns (5) and (6), the dependent variable is non-performing loans divided by total loans. The dependent variable in the last two columns is a measured of discretionary LLP calculated as the residuals obtained by regressing bank LLP over fundamental bank determinants from equation (2). All dependent variables are expressed in percentage. All independent variables are as described in Table 1. Standard errors clustered at bank level are in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels.

	LLP		**LLA**		**NPL**		**Discretionary LLP**	
	Full Untreated Sample	Matched Untreated Sample	Full Untreated Sample	Matched Untreated Sample	Full Untreated Sample	Matched Untreated Sample	Full Untreated Sample	Matched Untreated Sample
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Small Banks * Post-shock	-0.004	0.010	**-0.047***	-0.043	**-0.002*****	-0.001	-0.018	-0.009
	(0.012)	(0.014)	**(0.027)**	(0.035)	**(0.001)**	(0.001)	(0.018)	(0.026)
Other Controls	YES	YES	YES	YES	YES	YES	YES	YES
Time FE	YES	YES	YES	YES	YES	YES	YES	YES
Bank FE	YES	YES	YES	YES	YES	YES	YES	YES
County FE	YES	YES	YES	YES	YES	YES	YES	YES
Observations	4,565	2,885	4,478	2,118	5,200	2,475	4,465	2,115
Within R-squared	0.022	0.028	0.355	0.374	0.315	0.362	0.062	0.063

Table 8: Small Banks and Lending: Incremental/Independent Effect

The table shows results for sub-samples for marginal increases in asset size quartile of the treated group for full sample (column 1) and matched sample (column 2). Panel B shows the equality tests for Quartile1 and Quartile4 with the F-statistics reported. All independent variables are as described in Table 1. Standard errors clustered at bank level are in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels.

	Full Untreated Sample	Matched Untreated Sample
Panel A: Regression Results	(1)	(2)
Small Banks [Quartile 1] * Post-shock	0.024	0.013
	(0.022)	(0.027)
Small Banks [Quartile 2] * Post-shock	**0.058****	**0.050***
	(0.024)	**(0.029)**
Small Banks [Quartile 3] * Post-shock	**0.055***	0.053
	(0.033)	(0.041)
Small Banks [Quartile 4] * Post-shock	**0.093*****	**0.085****
	(0.033)	**(0.036)**
Other Controls	YES	YES
Time FE	YES	YES
Bank FE	YES	YES
County FE	YES	YES
Observations	5,200	2,475
Within R-squared	0.140	0.110
Panel B: Equality Tests		
Quartile 4=Quartile 1	3.48*	3.92**

Table 9: Small Banks and Equity Infusion

The table shows results for sub-samples over different bank outcome variables. The dependent variable in columns (1)-(8) is equity capital infusion that the subsidiary commercial bank received from its holding company. It is measured as the sum of net change in capital stock and other transactions with the holding company divided by beginning-of-year equity in columns (1)-(2). This is multiplied by the percentage of equity held by the holding company. Columns (3)-(4) and (5)-(6) decompose the equity infusion measure into two components: the changes in capital stock and other transactions with parent. Columns (7)-(8) develops a measure similar to Bressan (2018) where we divide the % equity stake of the holding company in the commercial bank divided by consolidated assets at the holding company level. All independent variables are as described in Table 1. Standard errors clustered at bank level are in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels.

	Equity Infusion		**Components of Equity Infusion**				**Alternative measure of Equity Infusion**	
			Issue of Stock		Transactions with Parent			
	Full Untreated Sample	Matched Untreated Sample	Full Untreated Sample	Matched Untreated Sample	Full Untreated Sample	Matched Untreated Sample	Full Untreated Sample	Matched Untreated Sample
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Small Banks * Post-shock	**0.010***	**0.017*****	**0.304****	**0.333***	**0.315****	**0.349***	**0.009*****	**0.009*****
	(0.005)	**(0.006)**	**(0.148)**	**(0.184)**	**(0.149)**	**(0.184)**	**(0.002)**	**(0.002)**
Other Controls	YES	YES	YES	YES	YES	YES	YES	YES
Time FE	YES	YES	YES	YES	YES	YES	YES	YES
Bank FE	YES	YES	YES	YES	YES	YES	YES	YES
County FE	YES	YES	YES	YES	YES	YES	YES	YES
Observations	4,429	2,094	4,429	2,094	4,429	2,094	4,429	2,094
Within R-squared	0.041	0.057	0.060	0.102	0.062	0.105	0.129	0.162

Table 10: Small Banks and Funding Implications - Deposit Flows and Deposit Rates

The dependent variable is the log of $ deposits scaled by assets in columns (1)-(4) and log of deposit rate for one year $10K Certificates of Deposit in columns (5)-(8). Both variables are calculated at the bank-branch level at annual frequency for deposit $ from FDIC Summary of Deposits and at monthly frequency for deposit rate from SNL Financial All independent variables are as described in Table 1. Standard errors clustered at bank level are in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels.

	Δ Deposit ($)				**Δ Deposit Rates**			
	Full Untreated Sample		Matched Untreated Sample		Full Untreated Sample		Matched Untreated Sample	
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**
Small Banks * Post-shock	**0.021*** **	**-0.003**	**0.044*** **	**0.024*** **	**0.042** **	**0.048*** **	**0.047***	**0.052** **
	(0.006)	**(0.006)**	**(0.008)**	**(0.008)**	**(0.017)**	**(0.017)**	**(0.025)**	**(0.025)**
Bank Controls	NO	YES	NO	YES	NO	YES	NO	YES
State Controls	YES	YES	YES	YES	YES	YES	YES	YES
Branch FE	YES	YES	YES	YES	YES	YES	YES	YES
Month FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Observations	68,370	68,092	20,339	20,280	860,699	857,896	245,724	245,274
R-squared	0.022	0.057	0.020	0.059	0.184	0.184	0.192	0.198

Table 11: Real Economic Outcomes

The dependent variable in columns (1) and (2) is the annual new establishments at county level with less than 50 employees per thousand of population (log transformation). The coefficient has been multiplied by 100 for ease of presentation. The dependent variable in columns (3) and (4) is the average annual wages per capita at county-level (log transformation). Standard errors clustered at bank level are in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels.

	Small Establishments per Capita		**Annual Wages per Capita**	
	Full Untreated Sample	Matched Untreated Sample	Full Untreated Sample	Matched Untreated Sample
	(1)	(4)	(1)	(4)
Market Share Treated * Post-shock	**0.021****	**0.015*****	**0.018*****	**0.021*****
	(0.008)	**(0.005)**	**(0.006)**	**(0.006)**
Market Share Treated	0.020	0.001	0.015	-0.021
	(0.048)	(0.032)	(0.044)	(0.042)
County Controls	YES	YES	YES	YES
Time FE	YES	YES	YES	YES
County FE	YES	YES	YES	YES
Observations	8,432	8,432	4,577	4,577
R-squared	0.033	0.503	0.043	0.513

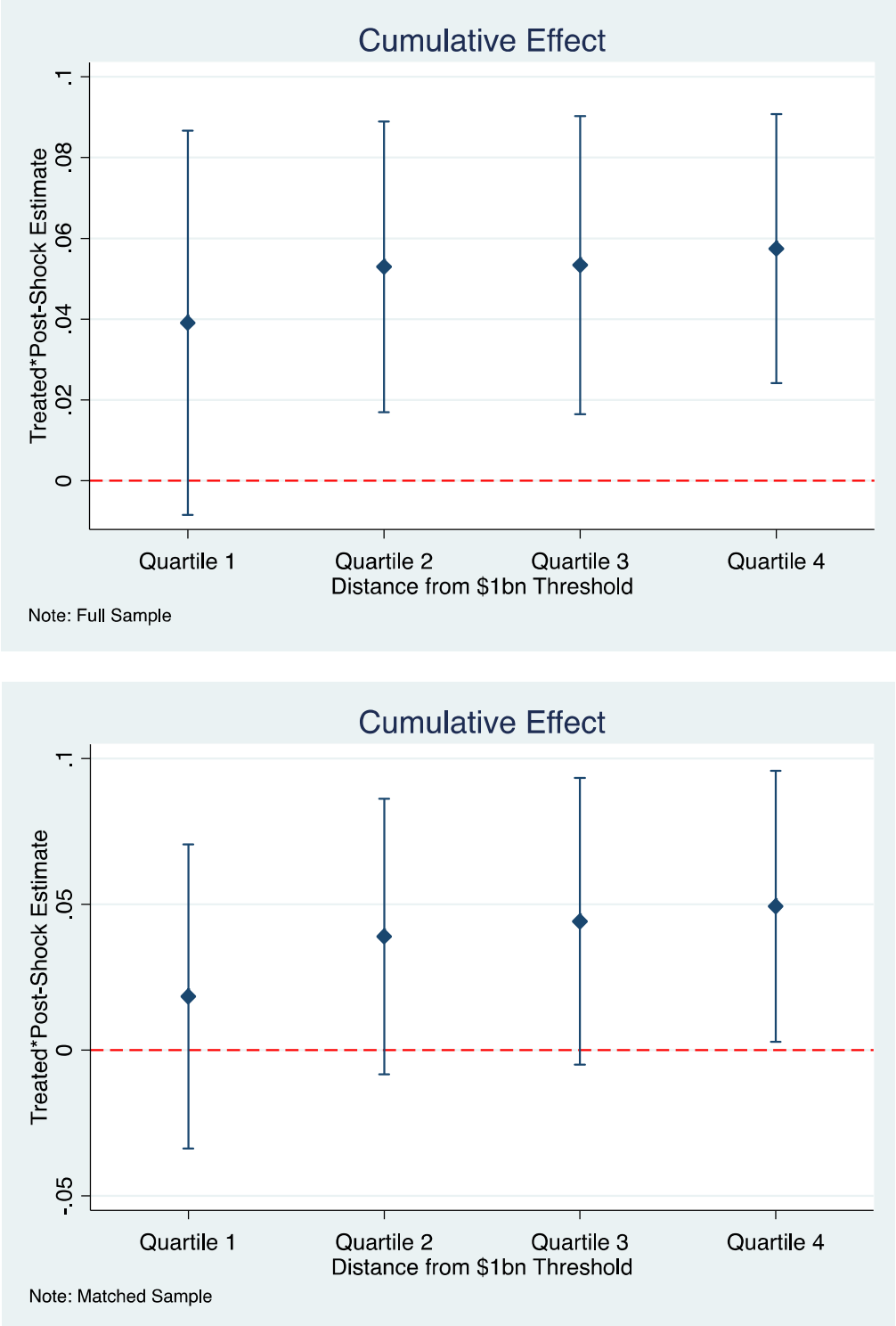

Figure 1: This figure reports the point estimate of the interaction effect Treated * Post-Shock for cumulative increases in asset size of the treated group for full sample (top) and matched sample (bottom). Therefore point estimate for Quartile 2 includes banks in Quartile 1 and Quartile 2 in terms of their distance from the threshold. X axis represents the distance of the treated bank from the $1 bn threshold such that Quartile 1 represents banks closest to the $ 1bn threshold and Quartile 4 represents the banks farthest from the threshold. Y axis shows the point estimate for the interaction term.

Online Appendix

Table 12: Additional Tests.

This table reports results after excluding all indirectly treated banks with consolidated assets less than $500 million in columns 1 and 2. The regression model in columns 3 and 4 accounts for the differential impact of control variables for treated banks. In columns 5 and 6, the regression model excludes all banks that are headquartered in congressional districts that represent congressional Financial Services Committee members. All independent variables are as described in Table 1. Standard errors clustered at bank level are in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels.

	Excluding Indirectly Treated Banks		**Accounting for Trends in Treated Sample**		**Excluding Congressional District HQ Banks**	
	(1)	(2)	(3)	(4)	(5)	(6)
Small Bank * Post-Shock	**0.054*** (0.017)**	**0.048** (0.024)**	**0.061*** (0.017)**	**0.060** (0.025)**	**0.058*** (0.017)**	**0.048** (0.023)**
Other Controls	YES	YES	YES	YES	YES	YES
Time FE	YES	YES	YES	YES	YES	YES
Bank FE	YES	YES	YES	YES	YES	YES
County FE	YES	YES	YES	YES	YES	YES
Observations	5,065	2,340	5,200	2,475	5,170	2,458
R-squared	0.142	0.111	0.146	0.111	0.138	0.106