# Stress Tests & the Hawthorne Effect in Banking

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**Abstract**

This paper examines whether forward-looking disclosure requirements impact the behavior of firms in both the treated and control groups. We use the implementation of the Comprehensive Capital Analysis Review (CCAR) stress tests on US bank holding companies as our identification strategy. Using a difference-in-discontinuities design to exploit the quasi-experimental properties of the regulation around the policy threshold, we find evidence of consequential treatment of the non-treated. First, we find that banks in the control group reacted by increasing their capital and risk ratios up to 60% while the treated banks decrease them by almost a similar percentage. Second, reaction of the non-treated banks contributed up to 20% of the difference in lending, particularly in residential real estate loans and commercial and industrial loans. Third, tress tested banks seem to reduce bank risk by 16% while maintaining similar profitability to those banks in control group. However, when we controlling for different Hawthorne effect channels, the impact on bank risk turns statistically insignificant. The regulation itself does seem to increase residential real estate lending, bank federal funds, and net interest margin. Our findings are consistent with the *Hawthorne* effect literature in the social sciences and optimality conditions in banking.

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# 1 Introduction

Transparency disclosure requirements can directly or indirectly affect the behavior and performance of firms that are not required to comply with such requirements but that are in the same industry. We use the implementation of the Comprehensive Capital Analysis and Review stress tests (henceforth simply reffered as CCAR or stress tests), a key component of the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 (Dodd-Frank or DFAST), to examine how much of the average treatment effect of stress testing is due to changes in behavior of banks in the control group (banks immediately below the policy size threshold) versus those of the treated group (banks immediately above). Recent literature around this question has been almost non-existent.[1]

The existing empirical literature on bank behavior regulations tends to rely on difference-in-differences or event studies with bank fixed effects and market-level controls, largely ignoring the fact that multiple bank regulations use bank size (total assets) in defining their policy cut-offs. This leads to bias in the results since multiple banking regulations can have the same policy thresholds and as a result this can confound the effect of new regulations. Morevover, tougher regulatory capital requirements after the recent financial crises have forced large banks to adjust their risk taking behavior. The added attention from regulators on banks around the Dodd-Frank's bank size threshold of \$10B and \$50B can affect how those bank immediately below and above the thresholds react to the different capital requirements. The aim of this paper is to analyse, in a but-for scenario, how stress testing alter these banks' behavior. In order to do so, we employ a relative new identification strategy recently formalized by Grembi et al. (2016), a cousin of regression discontinuity (RD) called the difference-in-discontinuities design. We focus on investigating the effect around the \$50B threshold since we find that at the lower threshold of \$10B there exists a significant amount of self-selection in which small banks purposely and precisely manage their size in order to remain below the policy threshold and avoid having to comply with the stress testing requirements. As shown by our implementation of the McCrary (2008) test in Table 15 and Figure 5 this is not the case for large banks.

Importantly, our setting allows us to circumvent endogeneity concerns by exploiting the recent variation in stress test requirements for large banks (greater than \$50 billion in assets), due to the implementation of CCAR stress testing. It would be difficult to implement a difference-in-differences design since regional banks (between \$10 billion and \$50 billion in assets) and large banks are typically on differential trends with respect to variables such as

[1] One exception is a recent paper by Bouwman et al. (2018), in which the authors use a matching strategy to study the effects of Dodd-Frank on commercial loan pricing on small banks around the \$10B size threshold.

loan growth and pricing. A regression discontinuity design has pitfalls as well since other banking regulations change with bank size as well. Therefore, we combine the two different sources of variation and implement a difference-in-discontinuities design, following Grembi et al. (2016).

In a Modigliani-Miller world of perfect and efficient capital markets, a bank's lending decisions are independent of its financial structure. As the bank will always be able to find investors willing to finance any profitable lending opportunities, the level of bank capital is irrelevant to lending. However, in more realistic imperfect markets, this may not be the case. We ask the question of whether required capital levels affect banks' loan volume and risk. We test this from the standpoint of implied higher capital requirements from stress testing. Since the primary goal of stress tests is to ensure banks are sufficiently capitalized in projected times of distress, it should follow that stress tests can be viewed as a stricter version of the standard minimum capital requirements that all banks must meet at any point in time, Cornett et al. (2018).

Regulatory capital levels may impact lending in multiple ways. If capital levels increase funding costs, this cost will likely be passed on to borrowers in the form of decreased loan volume and/or increased lending rates. On the other hand, if capital levels decrease funding costs, there may be a positive effect on credit supply. Finally, in a Modigliani-Miller irrelevance world, capital levels may not affect funding costs or credit at all. Additionally, it's also possible that there is a positive effect of increased capital requirements on lending if confidence effects boost their resilience and capacity to lend. A vast literature attempts to answer this question of how capital constraints may suppress lending. Results indicate that there exists a positive relationship between the general balance sheet level of bank capital and lending (e.g. S. and Lown (1991); Berger and Udell (1994); Berrospide and Edge (2010)) especially during a crisis (Carlson et al. (2013); Berger and Bouwman (2013)). We complement these papers by addressing the endogenous decision of holding higher levels of capital, focusing our analysis on stress test induced capital requirements in order to do so. Specific to capital requirements from stress testing, it has been found that higher capital levels induced from regulatory stress testing appear to reduce credit supply or increase interest rates for risky borrowers for large corporate loans (Acharya et al. (2018)), small business loans (Chen et al. 2017; Cortes et al. 2018) and jump mortgages (Calem et al. (2017)). We ask instead how stress testing affects a bank's aggregate credit supply and which banks are supplying it. Most closely related to our research is that of Bassett and Berrospide (2017), who analyze banks' total lending response to stress tests and find no effect on total lending volume. Bassett and Berrospide (2017) construct a measure of the extra common equity tier 1 capital implied by the supervisory stress tests relative to the level implied by the banks' own models and find no evidence that this “capital gap” is unduly restricting loan growth. However, it is possible that the capital gap itself is endogenous to stress testing, as banks likely conduct their internal stress tests more rigorously in preparation for Federal Reserve conducted stress tests. Our difference-in-discontinuities design should circumvent this problem.

From the perspective of non-treated banks, the effect of stress tests on non-treated bank lending and risk taking behavior is an empirical question given the different channels bank behavior can be affected. Generally speaking we can break these channels into two broad categories, optimality channel or the Hawthorne effect channel. These two categories are not necessarily mutually exclusive. The optimality channel concerns profitability while the Hawthorne effect channel, according to the social science literature, refers to the reactivity in which banks modify some aspects of their behavior in response to current or potential monitoring by regulators.[2] For example, stress testing can serve as a mechanism that brings transparency and lowers risk which benefits investors. As a result, investors can penalize banks that fail the stress tests. Hence, banks in the control group have an incentive to mimic some of their counterparts behaviors in order to compete for capital (optimality channel) or in order to be in good standing with regulators (Hawthorne effect). In addition, banks in the control group can also find opportunities in areas where treated banks diminish their footprints due to compliance requirements (optimality effect).

According to Levitt and List (2011) there are at least three channels through which the Hawthorne effects might arise. In banking these channels are the following. First, ”the participation channel” in which added regulations let banks know they are being monitored or watched by regulatory bodies. Hence, the participation itself rather than the actual regulation changes or manipulation affects bank business patterns. Second, ”the experimental treatment channel” in which the the repeated manipulation of the stress tests might provide a reminder to the treated group of banks that they are being observed but not to the banks in the control group. Hence, any changes to the stress tests can result in augmented responses by the treated group. Third, “the experimenter’s demand-effects channel” in which the banks in the treated, control, or both groups try to appease regulators. These three effects are not mutually exclusive.

In this paper, we provide the first statistical analysis of Hawthorne effects in banking as a result of stress testing. To study the existence of potential Hawthorne effects, we follow the suggestions in Levitt and List (2011) and divide our data into three groups the control group, the Hawthorne-control group, and the treated group to address the participation channel discussed above. Hence, our ”unaware” control group is made out of banks that are far below the policy cut-off point of US$50B and are not part of the Hawthorne-control

[2]See Garcia (2018) for a more detail discussion.

group, which are those banks immediately below the threshold. The treated banks are those above the policy threshold that need to comply with the stress test transparency requirements. To address and quantify Hawthorne effects from the experimental treatment and the experimenter's demand-effect channels, we use the inclusion and exclusion of the different groups and their bank fixed effects by constructing three different samples: sample 1 (control and Hawthorne-control groups), sample 2 (control and treated groups) and sample 3 (Hawthorne-control and treated groups). Additionally, we control for political risk and sentiment variables in our design using the Hassan et al. (2019) data to better address some of the Hawthorne effects from these last two channels. To quantify the effects, the difference between the treated and the control in sample 2 and the difference between the Hawthorne-control and the treated groups would give us a measurement of the Hawthorne effect.

The data on political risks and sentiments were collected by Hassan et al (2019) using textual analysis of quarterly earnings conference-call transcripts to construct measures of firm-level political risks of firms listed in the United States and how it varies overtime. For example, the conference-call conversations tracts topics on regulation, ballot initiatives, government funding, etc.[3] These measures are highly correlated to aggregate measures of economic uncertainty as proposed by Baker et al. (2016). They claim that these measures are indicative of the risks as perceived by management and conference-call participants, which might differ from actual risk at the firm-level. Hence, the political risk or sentiments affect firm behavior in ways that are not formally reflected in theoretical or empirical models.

Our finding shows evidence of consequential treatment of the non-treated. First, we find that banks in the control group reacted by increasing their capital and risk ratios up to 60% while the treated banks decrease them by almost a similar percentage. Second, reaction of the non-treated banks contributed up to 20% of the difference in lending, particularly in residential real estate loans and commercial and industrial loans. Third, tress tested banks seem to reduce bank risk by 16% while maintaining similar profitability to those banks in control group. However, when we controlling for different Hawthorne effect channels, the impact on bank risk turns statistically insignificant. The regulation itself does seem to increase residential real estate lending, bank federal funds, and net interest margin. Our findings are consistent with the *Hawthorne* effect literature in the social sciences and optimality conditions in banking.

The remainder of this paper is organized as follows. Section 2 briefly describes the implementation of stress testing in the United States. Section 3 details data sources and provides summary statistics. Section 4 discusses the empirical methodology, with section 5

[3]For more information on how the different measures were constructed see Hassan et al (2019) and https://www.firmlevelrisk.com/

containing corresponding results. Section 6 concludes.

## 2 Stress Test Background

Minimum capital requirements have been in place in the United States since the 1980's, with a goal of protecting against unexpected losses. There are currently five capital requirements that banks must meet in the U.S. – the leverage ratio, supplemental leverage ratio, tier 1 risk-based ratio, the common equity tier 1 (CET1) ratio, and the capital ratio, as defined in Table 1.

In response to the financial crisis and in an increased effort to ensure that banks have enough capital to continue their operations through times of financial distress, large banks must also meet these requirements under projected adverse scenarios. The Federal Reserve first initiated stress tests that assessed capital ratios for all banks with at least $100 billion in assets as of 2008Q4 under simulated adverse macroeconomic conditions.[4] This was known as the Supervisory Capital Assessment Program (SCAP) and later evolved into the Comprehensive Capital Analysis and Review (CCAR) in 2010 which includes all BHCs with at least $50 billion or more in total assets (Goldstein 2017). In addition to CCAR, the Dodd Frank Act of 2010 requires additional annual Federal Reserve run stress tests (DFAST) for all BHCs with assets of at least $50 billion and bank-run stress tests for all BHCs with assets of at least $10 billion. Stress tests typically simulate baseline, adverse, and severely adverse scenarios based on a multitude of assumptions of distressed economic variables such as GDP, unemployment, equity prices, interest rates, housing prices, etc.[5]

DFAST and CCAR are complimentary exercises which have important distinctions. CCAR stress tests include a quantitative and qualitative test, whereas DFAST stress tests include only the former. The main difference in the quantitative portions of the stress tests is that DFAST considers capital distributions as fixed whereas CCAR includes the BHCs planned capital actions. Additionally, banks that do not pass CCAR stress tests must submit revised capital plans and are likely forced to limit dividend payouts or share repurchases, whereas no supervisory actions are attached to DFAST beyond the requirement that BHCs take results into account in their capital planning (Goldstein 2017). In addition to regulatory actions, a bank may also be penalized by investors. The distinctions between these stress tests suggest that CCAR may have a more significant effect on bank behavior due to the threat of disciplinary actions, which it is why we focus on studying only the CCAR stress

[4]Federal Reserve Report: The Supervisory Capital Assessment Program: Design and Implementation.

[5]The specifics of scenarios are subject to change each year in part to ensure that banks do not game the stress testing.

test effects on this study.

## 3 Data

The panel dataset in this analysis includes publicly traded bank holding company data in the United States from 2010 to 2016 at the annual level. Bank holding company financial statements are obtained from quarterly FR Y-9C reports. These are quarterly reports which we aggregate to the annual level by taking year-end balance sheet variables and summing income statement variables over the four quarters. All data are in 2010 real dollars and winsorized at the 1 and 99% level. Restricting our sample to all publicly traded bank holding companies with at least $10 billion in assets, which is more representative of the banks captured in our localized estimations, results in an unbalanced panel of 89 bank holding companies and 478 bank-years.

Table 2 shows the summary statistics for key variables broken down by control versus treated banks. The control group banks are those bank immediately below the $50B CCAR threshold and the treated banks are those right above such threshold. Generally speaking, the treated banks tend to have slightly larger means for profitability variables such as return on equity, return on assets, and net non-interest margin. They also tend to take more risk as evident based on their higher mean of their risk densities and have slightly lower tier 1 ratios. In terms of loans, treated banks tend to have lower loan percentage as a percent of total assets since regional banks (those in the control group) tend to concentrate more on traditional lending. Large banks tend to have larger percentage of off-balance sheet assets while non-treated banks have larger percentage of available for sale securities, hold to maturity securities, cash and deposits due, and federal funds.

The firm-level political risk and sentiment measures are from Hassan et al. (2019), which they update on their website quarterly.[6] According to their website, the political risk measures uses textual analysis to quantify the share of the earnings call devoted to discussing general risk and political risks associated with eight different topics such as economic policy, institution, tax, trade, security, health care, environment, and technology. The sentiment measures count positive and negative tone words used during the earnings call to measue the overall tone of the conversation, as well as the call participant's level of optimism associated with political and non-political topics.

[6]For more information on how each measure is constructed see Hassan et al. (2019) or their website at https://www.firmlevelrisk.com.

# 4 Empirical Strategy

The kernel-weighted local polynomial smoothing curves show that both the control and the treated banks move as a result of the implementation of CCAR, see Figures 1-4. They show substantial shifts in the before and after, below and above curves around the policy cutoff. In order to quantify these optimality and Hawthorne-like effects, we first implement a simple dummy regression and a difference-in-difference methodology as follow:

$$Y_{it} = \beta_0 + \beta_2 T_{it} + \boldsymbol{\delta} + \nu_{it}, \tag{1}$$

$$Y_{it} = \alpha_0 + \alpha_1 T_{it} * C_{it} + \alpha_2 T_{it} + \alpha_3 C_{it} + \boldsymbol{\delta} + \zeta_{it}, \tag{2}$$

where, $Y_{it}$ is one of our dependent variables of interest (such as a return on equity, tier 1 ratio, loan percentage, etc.) for bank $i$ at time $t$. $T_{it}$ is a dummy equals to 1 for the CCAR period (2013-2016) and zero otherwise. $C_{it}$ is a dummy variable equal to 1 if total bank assets (size) is equal to or larger than the policy cutoff of \$50B in total assets. $\boldsymbol{\delta}$ is a vector of fixed effects that includes bank and year fixed effects. Regression (1) helps identify the directional movement of each of the groups for before and after the CCAR implementation, while regression (2) helps in testing whether the differential in magnitude is statistically significant. We first implement regression (1) separately, one for the banks immediately below the cutoff and another one for the banks immediately above. We then implement regression (2) once for all banks in our sample.

To net out some of the effects due to comovements of the control and treated groups and to overcome the shortcomings mentioned above, we closely follow Garcia (2018) and Grembi et al. (2016) and by combining the RD design with the standard difference-in-difference approach. This methodology will allow us to compare BHCs behavior before CCAR, our pre-treatment period (2010-2012), and the post-treatment period (2013-2016). We execute a diff-in-disc design, which was first formalized by Grembi et al. (2016).[7] When the possibility of observing how agents in the control and treated group behave in the pre-treatment period exists, the diff-in-disc is a better method to use than the standard RD design since it addresses some of the potential optimality and *Hawthorne* effects that are unobserved in the standard RD framework. In these cases, the diff-in-disc is applicable independent of having other policies change sharply at the same cutoff point.[8]

[7]Previous literature have executed similar empirical strategies (see Lalive (2008), Camp (2011), Leonardi and Pica (2013), Casas-Arce and Saiz (2015), Dickert-Conlin and Elder (2010), and Gagliarducci and Nannicini (2013)).

[8]Grembi et al. (2016) applied the diff-in-disc in a setup where there were multiple policies, the fiscal rule, and mayor compensation, change at the same cutoff but this no need to be the case for diff-in-disc to apply.

In this paper, we use panel data to obtain the diff-in-disc coefficient: $\gamma_{it} = (Y_{it}^a - Y_{it}^b) - (\tilde{Y_{it}^a} - \tilde{Y_{it}^b})$. This econometric identification subtracts the discontinuity that existed before from the discontinuity that existed after Dodd-Frank. The same assumptions that apply to the DiD and RD designs also apply to the diff-in-disc design using a local regression. There are a couple of additional diff-in-disc assumptions. First, it is assumed that in the pre-CCAR period BHCs right below and above the thresholds were on similar trend; that during CCAR there are no sorting or manipulation of the running variable (bank size); and that these trends are constant over time. Second, it is assumed that the effect of the treatment does not depend on any other policy or that around the policy cutoff any other policy would affect BHCs below and above the cutoff in a very similar way. The econometric specification is the following diff-in-disc regression.

$$\begin{aligned} Y_{it} = \gamma_0 + \gamma_1 T_{it} * C_{it} + \gamma_2 T_{it} * C_{it}(L_{it} - c) + \gamma_3 T_{it} * C_{it}(L_{it} - c)^2 + \gamma_4 T_{it} + \gamma_5 C_{it} \\ + \gamma_6 (L_{it} - c) + \gamma_7 (L_{it} - c)^2 + \gamma_8 T_{it}(L_{it} - c) + \gamma_9 C_{it}(L_{it} - c) \\ + \gamma_{10} T_{it}(L_{it} - c)^2 + \gamma_{11} C_{it}(L_{it} - c)^2 + \boldsymbol{\delta} + \epsilon_{it}, \end{aligned} \tag{3}$$

where $C_{it}$ is a dummy variable equal to 1 if bank assets (size), $L_{it}$, is larger than the policy cutoff, $c$, of \$50B or more in total assets. Both $L_{it}$ and $c$ are measured in natural logs. $T_{it}$ is a dummy equals to 1 for the CCAR period (2013-2016) and zero otherwise. $L_{it} - c$ is the normalized assets and the $(L_{it} - c)^2$ is the square of the normalized assets. $\boldsymbol{\delta}$ is a vector of fixed effects that includes bank and year fixed effects. The coefficient for the interaction term $\gamma_1 T_{it} * C_{it}$, $\gamma_1$, is our coefficient of interest, the diff-in-disc coefficient. The quadratic term with the respective iteration terms allows for functional form flexibility such that the estimation of $\gamma_1$ is analogous to estimating four separate regressions - two on each side of the policy threshold and taking the difference of each of the discontinuities of each pair of contemporaneous regressions at the cutoff point.

As in a fully randomized experiment, including covariates in RD is not necessary. However, it is common to include them to reduce variability in the estimation (Lee and Lemieux (2010)). As a robustness check we include $\mathbf{X}_{it}$, a vector of bank characteristics and macroeconomic covariates, in the above equation, Eg. (3). For example, it is, arguably, useful to include the covariates if these are pre-assignment observations that might be highly correlated with the post-assignment outcome variables of interest. Hence, for robustness check purposes we include some of the baseline covariates since it has been widely documented that bank behavior may be affected by internal and external shocks.

In executing Equation 3, we run a non-parametric local quadratic kernel regression, not assuming any underline functional form to avoid misspecification as suggested by Gelman and Imbens (2014), Hahn et al. (2001), Lee and Lemieux (2010). Taking Gelman and Imbens (2014) recommendation, we do not use higher-order polynomials since as shown in Gelman and Imbens (2014) the estimation using those methods can be misleading. Instead, we use a nonparametric local quadratic estimation of the RD design. To avoid the 'boundary problem' since we are estimating the discontinuities at the cutoff, we use triangular weights equal to $1/(L_{it} - c)$ with the purpose of giving more importance to the observations closer to the policy cutoff. This is similar to a triangular kernel that works best at the boundary. Fan and Gijbels (1996) have shown that a triangular kernel reduces bias in kernel regression methods.

Furthermore, we follow standard RD design practices by reporting diff-in-disc regression results with different bandwidths to analyze the bandwidth size sensitivity of the results. We show results using two different measures of optimal bandwidths. The first of these is the mean square error (MSE) optimal bandwidth, which it is estimated by taking the minimum optimal bandwidth of the most common MSE-optimal procedures as described in Imbens and Kalyanaraman (2012), Calonico et al. (2014), and in the cross-validation algorithm proposed by Ludwig and Miller (2007). The other is the coverage error (CER) optimal bandwidth, which is the minimum bandwidth of the different coverage error procedures following Calonico et al. (2016).

# 5 Results

Figures 1-4 illustrate substantial inter-temporal shifts in the below and above populations around the policy cutoff. As discussed above these movements are mainly driven by two sources the optimality effects and Hawthorne effects. The Hawthorne effects can be further broken down into three channels: participation channel, the experimental treatment channel, and the experimenter's demand-effect channels. We first implement regressions (1) and (2) using our three different samples constructed as described above. Tables 3-12 show the respective results.

## 5.1 Directional Responsiveness to Bank Stress Testing

Table 3 shows the comparison of bank risk and capital ratios around the regulation threshold of \$50B for each of the three samples described above. As expected, the localized comparison between the effect-free control and the Hawthorne-control banks show no statistically differences among those banks. Sample 2 compares our effect-free control group with the treated group of banks, the effects are our upper bound. It shows that the treated banks significantly decrease their risk-weighted assets, leverage ratio, and capital ratio as a result of the CCAR implementation. In sample 3, we compare both the treated group and the Hawthorne-control group. In this sample, the Hawthorne-control group generally reacted by increasing risks as well as their tier 1 equity, tier 1 ratio, leverage ratio and capital ratio, although statistically significance is only observe for the last two ratios, while treated banks reacted the opposite way. This difference in reactions, generated statistically significant differences. For example, treated banks increase their risk weighted assets by 2% compare to an increase of 0.7% for banks in the control group (although no statistically significant) creating a statistically significant difference of 2.7% at 99% level, implying that over 25% of the gap was due to the reaction from the banks in the control group. In the case of the leverage and the capital ratios, we see that the control group highly reacted by increasing their respective ratios to 38.2% and 63.8% respectively while treated banks decrease their ratios by 33.4% (no statistically significant) and 44.9% respectively, generating negative differences of 71.6% and 108.7%, respectively, over 50% of which is attributed to the control group behavior. Importantly, when comparing samples 1 and 2, we see that the impact on risk-weighted assets shrinks from -4.2% to -2.7%, a reduction of 35.7% that we can assign to the Hawthorne effect.

On Table 4 we control for political risk. The results in sample 2 show the directional effects on the treated group loses their statistical significance suggesting that treated banks where reacting to the added political attention rather then the actual stress test. In sample 3, the leverage ratio loses significance for the treated group, which erazes the significance for the difference between the Hawthorne-control and the treated group. Additional, when we control for sentiments, On Table 5 the results show that all directional effects on both samples 2 and 3 are not significant, with the exception of of the risk-weighted assets.

In terms of bank lending, Table 6 shows that control and the Hawthorne-control groups behave very similar showing no significant difference for total loans, commercial real estate, residential real estate, commercial, or consumer loans. While differences in lending behavior are seen between the control and the treated groups, and the Hawthorne-control and the treated group, for both of of samples 2 and 3, most of the reactions originate in the treated group. For example, in sample 3 the treated banks decrease the percent of total loans by 1.8% and consumer loans by 1.3% while increasing commercial real estate loans by 1%, residential real estate loans by 3.2%, and commercial & industrial loans by 2.7%. This behavior creates significant difference for total, residential real estate, commercial and industrial, and consumer loans, of which up to 20% is due to Hawthorne-control group within-sample reactions and the cross-sample Hawthorne effect of around 37.5% for total loans differences.

When we control for both political risk and sentiments in Tables 7 and 8, the difference in total lending becomes no significant, while the other lending behavior remains significant.

When analyzing the entire portfolio, the results in Table 9 show that most of the significant reactions originated in the treated group. For example, in sample 2 treated banks show an increase in held for sale loans, available for sale securities and cash and deposits. When comparing the treated group to the Hawthorne-control group, the evidence shaow that only held to maturity securities and available for sales securities maintain their directional significance for the treated group. While no directional signficance is shown for the Hawthorne-control group. However, held to maturity securities has statistically significant difference since an increase in Hawthorn-control banks and a decrease for treated banks of almost similar magnitude creates the only significant negative difference of 1.2%. These results are consistent when we control for both political risk and sentiments, Tables10 and 11, which suggests that changes in the aggregate bank portfolio categories are not mainly driven by Hawthorne effects but by the stress test regulation itself.

In terms of the bank performance variables, the findings on Table 12 show that for the most part the reaction to the regulation is mostly from the treated group showing a reduction on return on equity, return on assets, and on net non-interest margin when compared to the control group. However, only the difference on return on asset is negative and slightly significant. When we compare the Hawthorne-control group and the treated group, in sample 3, none of the differences are significant. These results indicate that in terms of profitability banks around the policy threshold behave in similar patterns. Generally speaking these results hold when we control for both political risk and sentiments, with the only exemption being that the difference between the Hawthorne-control and the treated groups on return on assets becomes slightly significant when we control for sentiments but not when we control for political risk.

## 5.2 Isolating the True Effects of Stress Testing on Bank Behavior

What are the real impacts of stress testing on bank behavior and performance when taking into account some of the Hawthorne effects? In order to answer this question we are going to rely on local regression results from our identification design, difference-in-discontinuities (diff-in-disc). Since we are interested in analyzing the effects around the bank-size policy threshold of US$50B, our diff-in-disc results incorporate the differential effects of the treated and the Hawthorne-control groups by definition.

The results from the implementation the difference-in-discontinuities approach, which normalizes the running variable and uses both local linear and quadratic regressions for robustness check purposes, for the capital and risk ratios are presented on Table 16. The results show that the risk density (or risk-weighted assets over total assets) decreases for the treated banks relative to the Hawthorne-control group of banks. This means that under CCAR, treated banks reduce their risks at a larger magnitude. The net effect on the discontinuity for equity over assets, tier 1 ratio, leverage ratio, and capital ratio is not significant. This suggests that the over reaction of non-treated banks in the control group did not cause enough gap in the discontinuity after controlling for the normalization of the running variable, year, and bank fixed effects. However, when we control for political risk and sentiments, the significance on the risk-weighted assets disappears suggesting strong evidence of Hawthorne effects in the risk reduction of banks under stress testing. This means that the added attention and the bank's trying to appease regulators, rather than the regulation itself is important in reducing bank-level risk.

In the case of lending, we find that, although not statistically significant, treated banks did increase their total loans (Table 19) relative to the Hawthorne-control group. Such increase in discontinuity results mainly from significant increases in residential real estate loans and commercial and industrial loans, while there seems to be some weak decrease in commercial real estate lending. When controlling for political risk and sentiments, Tables 20 and 21, the only dependent variable that remains significant and positive is residential real estate lending which increases in the range of 6% to 19%.

Further analysis of the bank entire portfolio at first suggests that treated banks decrease their risks by shifting some of their assets relative to the Hawthorne-control banks. For example, evidence show that the treated banks decrease their held to maturity securities as a percentage of total assets while increasing the percentage of cash and deposits due and federal funds by 3.7% and 3.6%, respectively, relative to the control group (see Table 22) . However, when we control for the political firm-level risk and sentiments, Tables 23 and 24, we find that those effects become insignificant with only the increase in federal funds remaining significant.

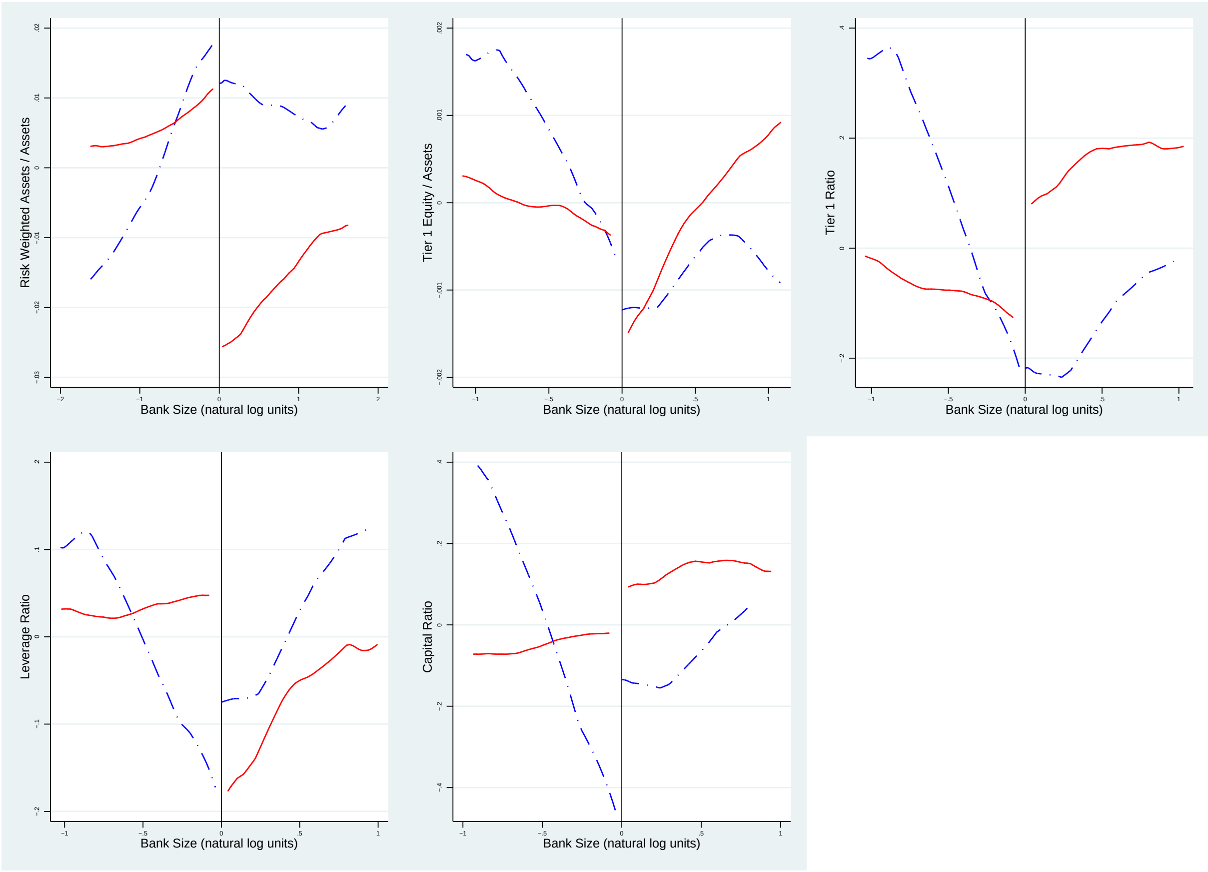
For overall bank performance, the results show that the diff-in-disc coefficient is not significant for the bank performance variables such as return on equity, return on assets, net interest margin, and net non-interest margin (see Table 25). This suggest that when accounting for normalization and weighting the observations closer to the cutoff of $50B as in a triangular kernel, both groups of banks reacted the same way as to maintained the preexisted continuities as before, as expected from the overreaction results from Table 12. Interestingly enough, when we control for bank-level political risk and sentiments, Table 26 and 27, net interest margin becomes weakly significant and positive, which it is consistent with the fact that banks increase their lending in residential real estate.

# 6 Conclusion

This paper analyzes whether forward-looking disclosure requirements indirectly impact the behavior of firms that are not mandated to comply with such requirements. We use the implementation of the Comprehensive Capital Analysis Review (CCAR) stress test on US bank holding companies as our identification strategy. We find evidence of consequential treatment of the non-treated. First, we find that banks in the control group reacted by increasing their capital and risk ratios up to 60% while the treated banks decrease them by almost a similar percentage. Second, reaction of the non-treated banks contributed up to 20% of the difference in lending, particularly in residential real estate loans and commercial and industrial loans. Third, tress tested banks seem to reduce bank risk by 16% while maintaining similar profitability to those banks in control group. However, when we controlling for different Hawthorne effect channels, the impact on bank risk turns statistically insignificant. The regulation itself does seem to increase residential real estate lending, bank federal funds, and net interest margin. Our findings are consistent with the *Hawthorne* effect literature in the social sciences and optimality conditions in banking.

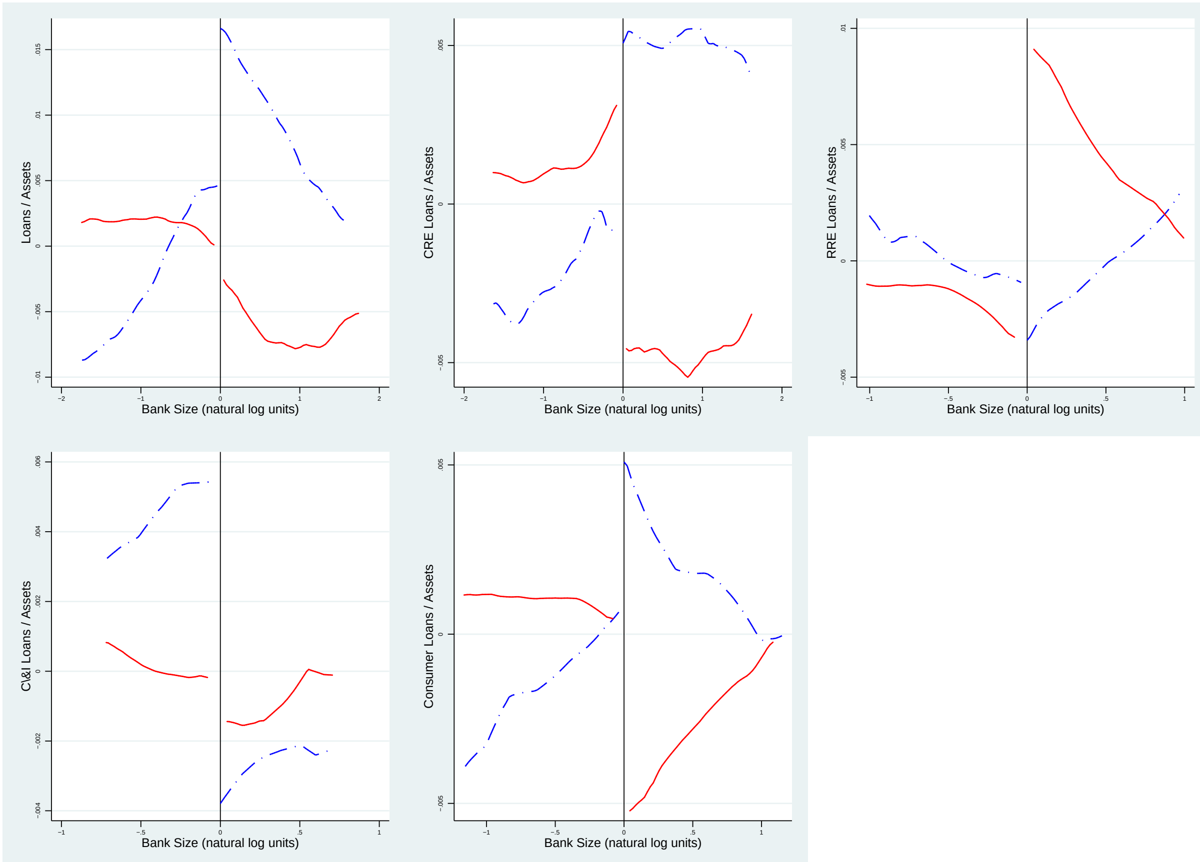
These results highlight some policy implications. Our results suggest that stress tests are effective at reducing moral hazard and bank risk but only through the added attention of the regulators in form of political risk and sentiments. Specifically, we find that as opposed to simply causing banks to increase capital levels holding asset structure constant, the risk reduction occurs through an asset risk shifting mechanism which arises via risk weighted capital requirements and the simulated tests that stress various assets. Additionally, we find that stress tests have consequential effect increasing capital ratios in non-treated banks.

# 7 Figures



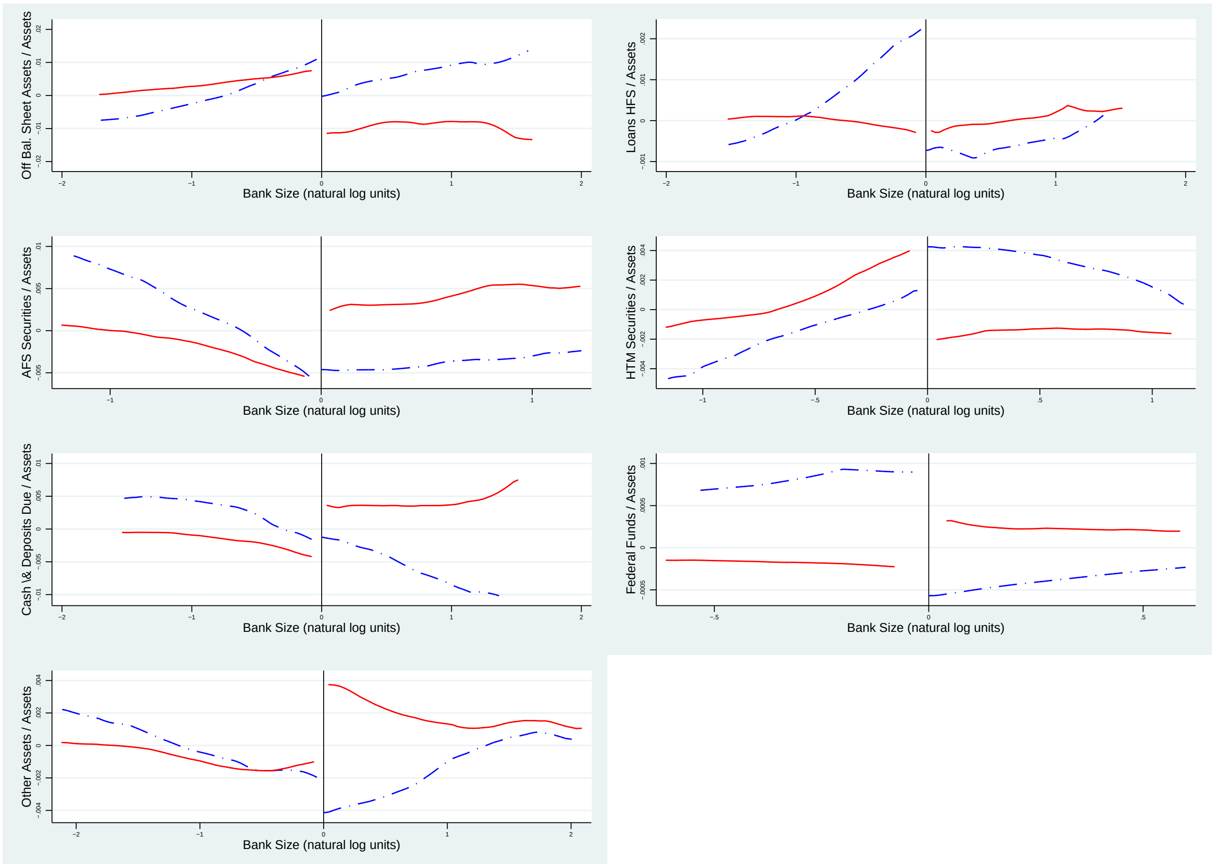

Notes: Kernel-weighted local polynomial smoothing discontinuities for both the pre-treatment period (dash lines) and the post-treatment period (solid lines). These are local-mean smoothing (degree of smoothing is zero) with a triangular kernel. The bandwidth is the average MSE optimal bandwidth size for both the below and above the threshold populations. The number of points used for the smoothing was the minimum between the number of observations within the bandwidth and 50.

Figure 1: Bank Capital & Risk Ratios Kernel-Weighted Local Polynomial Smoothing Discontinuities at the $50-Billion Threshold



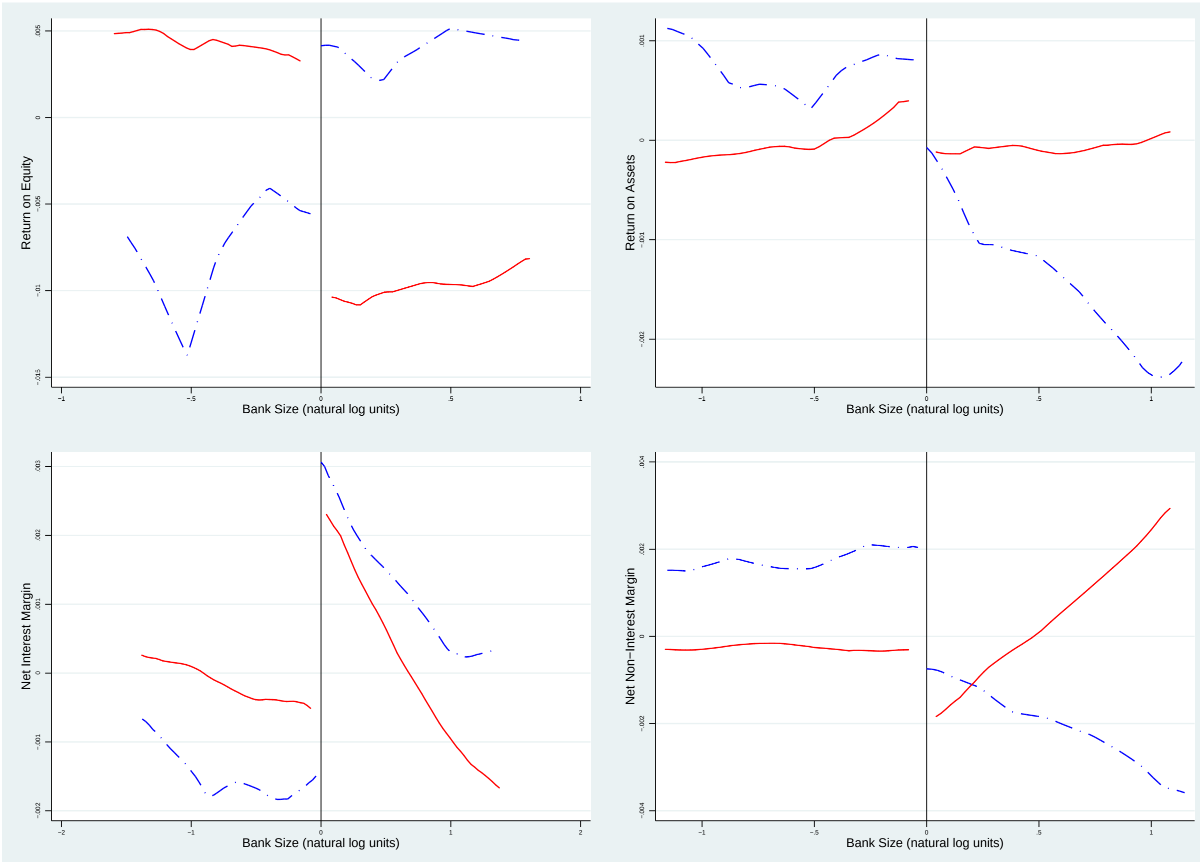

Notes: Kernel-weighted local polynomial smoothing discontinuities for both the pre-treatment period (dash lines) and the post-treatment period (solid lines). These are local-mean smoothing (degree of smoothing is zero) with a triangular kernel. The bandwidth is the average MSE optimal bandwidth size for both the below and above the threshold populations. The number of points used for the smoothing was the minimum between the number of observations within the bandwidth and 50.

Figure 2: Bank Loans Kernel-Weighted Local Polynomial Smoothing Discontinuities at the $50-Billion Threshold



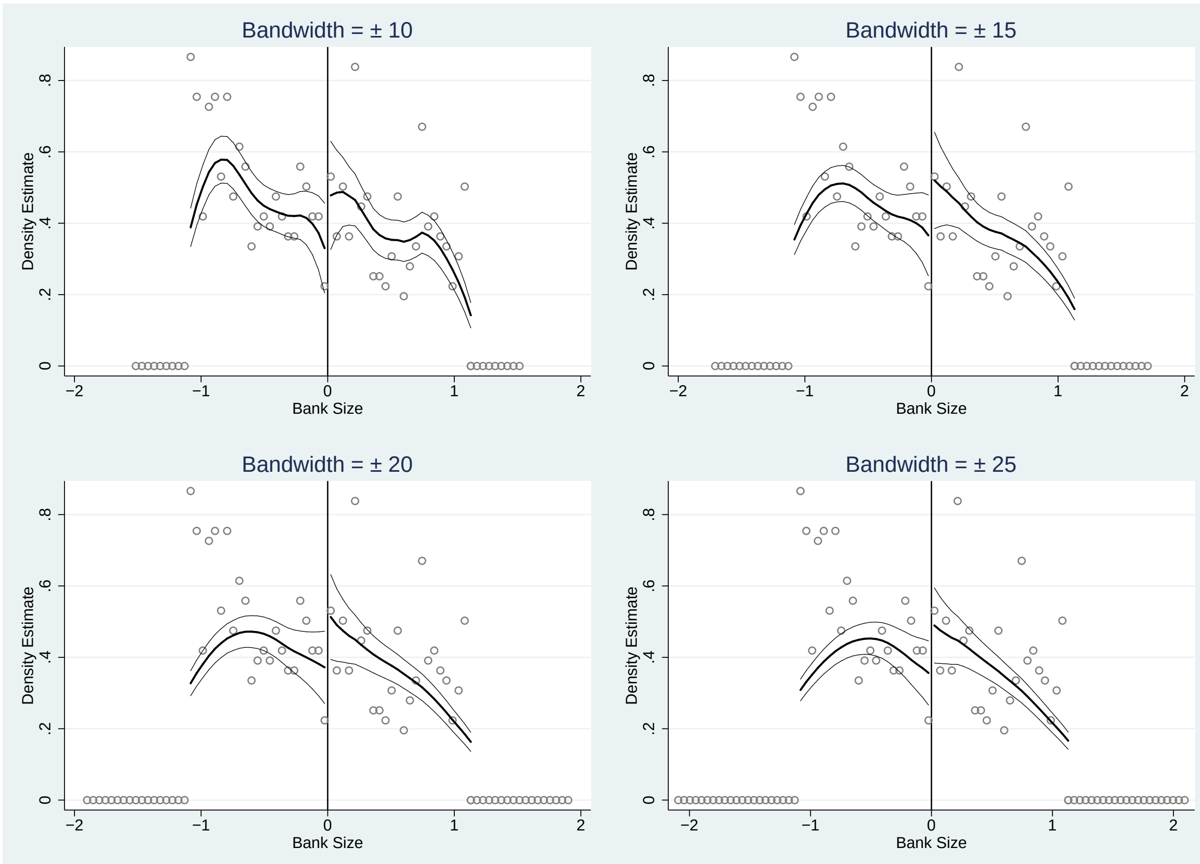

Notes: Kernel-weighted local polynomial smoothing discontinuities for both the pre-treatment period (dash lines) and the post-treatment period (solid lines). These are local-mean smoothing (degree of smoothing is zero) with a triangular kernel. The bandwidth is the average MSE optimal bandwidth size for both the below and above the threshold populations. The number of points used for the smoothing was the minimum between the number of observations within the bandwidth and 50.

Figure 3: Bank Entire Portfolio Variables Kernel-Weighted Local Polynomial Smoothing Discontinuities at the $50-Billion Threshold




Notes: Kernel-weighted local polynomial smoothing discontinuities for both the pre-treatment period (dash lines) and the post-treatment period (solid lines). These are local-mean smoothing (degree of smoothing is zero) with a triangular kernel. The bandwidth is the average MSE optimal bandwidth size for both the below and above the threshold populations. The number of points used for the smoothing was the minimum between the number of observations within the bandwidth and 50.

Figure 4: Bank Performance Kernel-Weighted Local Polynomial Smoothing Discontinuities at the $50-Billion Threshold




*Notes:* The McCrary discontinuity results are shown above for each of the corresponding bandwidths. The McCrary test estimates the density of the running variable separately on both sides of the policy cutoff and tests for a discontinuity at the cutoff. It first partitions the assignment variable into bins and calculates frequencies (number of observations) in each bin. It then treats those frequency counts as a dependent variable in a local linear regression with a triangular kernel and an optimal bin size as in McCrary (2008). Circles are the estimated density within each bin. Solid black lines are estimates from the local linear regressions in various bandwidths and Light gray lines are confidence interval bands, also as calculated in McCrary (2008).

Figure 5: McCrary(2008) Test Graphs Around the $50B Threshold for 2011-2016

# 8 Tables

Table 1: US Bank Capital Requirements

| Requirement Name | Requirement Details |
|---|---|
| Leverage Ratio | Tier 1 Capital / Total Assets |
| Supplemental Leverage Ratio | Tier 1 Capital / Total Leverage Exposure |
| Tier 1 Ratio | Tier 1 Capital / Risk Weighted Assets |
| CET1 Ratio | Tier 1 Common Equity / Risk Weighted Assets |
| Capital Ratio | Total Capital / Risk Weighted Assets |

Table 2: Summary Statistics

| | All Banks | | | Non-Treated Banks | | | Treated Banks | | |
|---|---|---|---|---|---|---|---|---|---|
| VARIABLES | Mean | Std. Dev | N | Mean | Std. Dev | N | Mean | Std. Dev | N |
| Return on Equity | 0.186 | 0.170 | 478 | 0.163 | 0.179 | 305 | 0.227 | 0.143 | 173 |
| Return on Assets | 0.0238 | 0.0344 | 478 | 0.0228 | 0.0408 | 305 | 0.0255 | 0.0184 | 173 |
| Net Interest Margin | 0.0688 | 0.0286 | 478 | 0.0705 | 0.0199 | 305 | 0.0659 | 0.0395 | 173 |
| Net Non-Interest Margin | -0.0252 | 0.0509 | 478 | -0.0295 | 0.0603 | 305 | -0.0177 | 0.0259 | 173 |
| Leverage Ratio | 9.731 | 2.238 | 461 | 9.923 | 2.409 | 288 | 9.411 | 1.882 | 173 |
| Tie1 1 Ratio | 13.45 | 3.684 | 461 | 13.77 | 4.315 | 288 | 12.92 | 2.184 | 173 |
| Risk Density | 0.710 | 0.151 | 461 | 0.711 | 0.124 | 288 | 0.708 | 0.187 | 173 |
| Loans / Assets | 0.534 | 0.192 | 450 | 0.583 | 0.150 | 283 | 0.452 | 0.226 | 167 |
| CRE Loans / Assets | 0.180 | 0.137 | 478 | 0.233 | 0.132 | 305 | 0.0872 | 0.0880 | 173 |
| RRE Loans / Assets | 0.158 | 0.110 | 478 | 0.179 | 0.117 | 305 | 0.122 | 0.0856 | 173 |
| C&I Loans / Assets | 0.131 | 0.0856 | 478 | 0.137 | 0.0830 | 305 | 0.122 | 0.0895 | 173 |
| Consumer Loans / Assets | 0.0524 | 0.0645 | 478 | 0.0313 | 0.0349 | 305 | 0.0896 | 0.0849 | 173 |
| Off Balance Sheet Assets / Assets | 0.139 | 0.125 | 450 | 0.0888 | 0.0663 | 283 | 0.225 | 0.152 | 167 |
| Other Assets / Assets | 0.0608 | 0.0318 | 450 | 0.0596 | 0.0336 | 283 | 0.0629 | 0.0284 | 167 |
| Loans HFS / Assets | 0.00747 | 0.0160 | 450 | 0.00767 | 0.0186 | 283 | 0.00712 | 0.0101 | 167 |
| AFS Securities / Assets | 0.142 | 0.0975 | 450 | 0.159 | 0.111 | 283 | 0.112 | 0.0574 | 167 |
| HTM Securities / Assets | 0.0371 | 0.0606 | 450 | 0.0468 | 0.0720 | 283 | 0.0206 | 0.0263 | 167 |
| Cash & Deposits Due / Assets | 0.0539 | 0.0441 | 450 | 0.0433 | 0.0335 | 283 | 0.0718 | 0.0533 | 167 |
| Federal Funds / Assets | 0.00869 | 0.0254 | 450 | 0.00326 | 0.00949 | 283 | 0.0179 | 0.0382 | 167 |

Table 3: Bank Risk & Capital Ratios: Treated vs Non-Treated Banks

| | Sample 1 | | | Sample 2 | | | Sample 3 | | |
|---|---|---|---|---|---|---|---|---|---|
| Variables | Control | Hawthorne-Control | Difference | Control | Treated | Difference | Hawthorne-Control | Treated | Difference |
| Risk Weighted Assets / Assets | 0.001 | 0.002 | 0.000 | 0.008 | -0.043*** | -0.042*** | 0.007 | -0.020*** | -0.027*** |
| | (0.006) | (0.006) | (0.000) | (0.006) | (0.006) | (0.009) | (0.008) | (0.005) | (0.010) |
| | [711] | [259] | [970] | [711] | [99] | [1,069] | [259] | [99] | [358] |
| Tier 1 Equity / Assets | 0.001 | -0.002 | 0.000 | 0.001 | -0.002 | -0.002 | 0.001 | -0.002 | -0.003 |
| | (0.002) | (0.003) | (0.000) | (0.002) | (0.002) | (0.003) | (0.003) | (0.001) | (0.003) |
| | [351] | [155] | [506] | [351] | [78] | [584] | [155] | [78] | [233] |
| Tier 1 Ratio | 0.147 | -0.220 | 0.000 | 0.090 | -0.319 | -0.331 | 0.119 | -0.193 | -0.312 |
| | (0.363) | (0.303) | (0.000) | (0.363) | (0.211) | (0.293) | (0.321) | (0.211) | (0.332) |
| | [300] | [129] | [429] | [300] | [69] | [498] | [129] | [69] | [198] |
| Leverage Ratio | 0.089 | -0.243 | 0.000 | 0.196 | -0.869*** | -0.902*** | 0.382* | -0.334 | -0.716** |
| | (0.198) | (0.194) | (0.000) | (0.198) | (0.225) | (0.277) | (0.220) | (0.217) | (0.312) |
| | [286] | [125] | [411] | [286] | [68] | [479] | [125] | [68] | [193] |
| Capital Ratio | 0.283 | -0.106 | 0.000 | 0.252 | -0.415** | -0.840** | 0.638* | -0.449** | -1.087*** |
| | (0.283) | (0.315) | (0.000) | (0.285) | (0.167) | (0.334) | (0.364) | (0.167) | (0.363) |
| | [226] | [110] | [336] | [226] | [63] | [399] | [110] | [63] | [173] |

*Notes:* The table shows the directional responsiveness of the three different groups as a result of stress test implementation. Treated banks are banks immediately above the policy threshold and and within one MSE optimal bandwidth. The Hawthorne-Control banks are those immediately below the policy threshold and within one MSE optimal bandwidth. The Control banks are banks below the policy threshold that are between (-2*MSE optimal, -MSE optimal) from the policy threshold. Sample 1 is composed of control and Hawthorne-control banks only, Sample 2 is composed of control and treated banks only, and Sample 3 is composed of Hawthorne-control and treated banks only. All regressions include bank and year fixed effects. Robust standard errors are clustered at the bank level and are reported below the coefficients in parenthesis. The total number of observations are shown in brackets for the respective average MSE optimal bandwidth size. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 4: Controlling for Political Risks: Bank Risk & Capital Ratios

| | Sample 1 | | | Sample 2 | | | Sample 3 | | |
|---|---|---|---|---|---|---|---|---|---|
| Variables | Control | Hawthorne-Control | Difference | Control | Treated | Difference | Hawthorne-Control | Treated | Difference |
| Risk Weighted Assets / Assets | -0.000 | 0.002 | 0.000 | 0.007 | -0.038*** | -0.036*** | 0.006 | -0.017* | -0.023* |
| | (0.006) | (0.006) | (0.000) | (0.006) | (0.009) | (0.013) | (0.010) | (0.009) | (0.014) |
| | [394] | [215] | [609] | [394] | [88] | [697] | [215] | [88] | [303] |
| Tier 1 Equity / Assets | 0.001 | -0.002 | 0.000 | 0.001 | -0.001 | -0.001 | 0.001 | -0.001 | -0.002 |
| | (0.002) | (0.003) | (0.000) | (0.002) | (0.002) | (0.003) | (0.003) | (0.002) | (0.003) |
| | [270] | [136] | [406] | [270] | [69] | [475] | [136] | [69] | [205] |
| Tier 1 Ratio | 0.101 | -0.108 | 0.000 | 0.003 | 0.096 | -0.068 | 0.127 | -0.006 | -0.133 |
| | (0.215) | (0.309) | (0.000) | (0.216) | (0.271) | (0.314) | (0.304) | (0.256) | (0.334) |
| | [237] | [113] | [350] | [237] | [60] | [410] | [113] | [60] | [173] |
| Leverage Ratio | 0.016 | -0.047 | 0.000 | 0.064 | -0.521 | -0.685* | 0.373* | -0.246 | -0.619 |
| | (0.126) | (0.192) | (0.000) | (0.126) | (0.353) | (0.391) | (0.211) | (0.312) | (0.386) |
| | [228] | [109] | [337] | [228] | [59] | [396] | [109] | [59] | [168] |
| Capital Ratio | 0.237 | 0.008 | 0.000 | 0.199 | -0.383 | -0.907*** | 0.619** | -0.471** | -1.090*** |
| | (0.241) | (0.310) | (0.000) | (0.244) | (0.236) | (0.338) | (0.301) | (0.216) | (0.314) |
| | [180] | [96] | [276] | [180] | [55] | [331] | [96] | [55] | [151] |

*Notes:* The table shows the directional responsiveness of the three different groups as a result of stress test implementation when controlling for both firm-level political risk and non-political risks as measured in Hassan et al. (2019). Treated banks are banks immediately above the policy threshold and and within one MSE optimal bandwidth. The Hawthorne-Control banks are those immediately below the policy threshold and within one MSE optimal bandwidth. The Control banks are banks below the policy threshold that are between (-2*MSE optimal, -MSE optimal) from the policy threshold. Sample 1 is composed of control and Hawthorne-control banks only, Sample 2 is composed of control and treated banks only, and Sample 3 is composed of Hawthorne-control and treated banks only. All regressions include bank and year fixed effects. Robust standard errors are clustered at the bank level and are reported below the coefficients in parenthesis. The total number of observations are shown in brackets for the respective average MSE optimal bandwidth size. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 5: Controlling for Sentiments: Bank Risk & Capital Ratios

| | Sample 1 | | | Sample 2 | | | Sample 3 | | |
|---|---|---|---|---|---|---|---|---|---|
| Variables | Control | Hawthorne-Control | Difference | Control | Treated | Difference | Hawthorne-Control | Treated | Difference |
| Risk Weighted Assets / Assets | 0.000 | 0.002 | 0.000 | 0.007 | -0.042*** | -0.040*** | 0.009 | -0.019*** | -0.028** |
| | (0.006) | (0.006) | (0.000) | (0.006) | (0.008) | (0.012) | (0.010) | (0.006) | (0.013) |
| | [397] | [215] | [612] | [397] | [88] | [700] | [215] | [88] | [303] |
| Tier 1 Equity / Assets | 0.001 | -0.001 | 0.000 | 0.000 | -0.001 | -0.002 | 0.001 | -0.002 | -0.003 |
| | (0.001) | (0.003) | (0.000) | (0.001) | (0.002) | (0.003) | (0.003) | (0.002) | (0.003) |
| | [271] | [136] | [407] | [271] | [69] | [476] | [136] | [69] | [205] |
| Tier 1 Ratio | 0.091 | -0.079 | 0.000 | -0.017 | 0.163 | -0.002 | 0.052 | -0.065 | -0.117 |
| | (0.217) | (0.318) | (0.000) | (0.219) | (0.279) | (0.326) | (0.353) | (0.297) | (0.390) |
| | [238] | [113] | [351] | [238] | [60] | [411] | [113] | [60] | [173] |
| Leverage Ratio | 0.013 | -0.026 | 0.000 | 0.063 | -0.531 | -0.698* | 0.348 | -0.255 | -0.604 |
| | (0.125) | (0.187) | (0.000) | (0.125) | (0.350) | (0.387) | (0.217) | (0.345) | (0.417) |
| | [229] | [109] | [338] | [229] | [59] | [397] | [109] | [59] | [168] |
| Capital Ratio | 0.254 | -0.026 | 0.000 | 0.206 | -0.350 | -0.820** | 0.632 | -0.402 | -1.034** |
| | (0.247) | (0.343) | (0.000) | (0.247) | (0.276) | (0.371) | (0.395) | (0.302) | (0.420) |
| | [181] | [96] | [277] | [181] | [55] | [332] | [96] | [55] | [151] |

*Notes:* The table shows the directional responsiveness of the three different groups as a result of stress test implementation when controlling for both firm-level political sentiments risk and non-political sentiments. Treated banks are banks immediately above the policy threshold and and within one MSE optimal bandwidth. The Hawthorne-Control banks are those immediately below the policy threshold and within one MSE optimal bandwidth. The Control banks are banks below the policy threshold that are between (-2*MSE optimal, -MSE optimal) from the policy threshold. Sample 1 is composed of control and Hawthorne-control banks only, Sample 2 is composed of control and treated banks only, and Sample 3 is composed of Hawthorne-control and treated banks only. All regressions include bank and year fixed effects. Robust standard errors are clustered at the bank level and are reported below the coefficients in parenthesis. The total number of observations are shown in brackets for the respective average MSE optimal bandwidth size. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 6: Bank Lending: Treated vs Non-Treated Banks

| | Sample 1 | | | Sample 2 | | | Sample 3 | | |
|---|---|---|---|---|---|---|---|---|---|
| Variables | Control | Hawthorne-Control | Difference | Control | Treated | Difference | Hawthorne-Control | Treated | Difference |
| Loans / Assets | 0.001 | -0.002 | 0.000 | 0.004 | -0.034*** | -0.032*** | 0.002 | -0.018*** | -0.020** |
| | (0.006) | (0.004) | (0.000) | (0.006) | (0.004) | (0.007) | (0.006) | (0.005) | (0.009) |
| | [821] | [289] | [1,110] | [821] | [98] | [1,208] | [289] | [98] | [387] |
| CRE Loans / Assets | 0.002 | 0.003 | 0.000 | 0.004 | 0.001 | -0.001 | 0.008 | 0.010** | 0.002 |
| | (0.004) | (0.009) | (0.000) | (0.004) | (0.004) | (0.007) | (0.009) | (0.005) | (0.010) |
| | [773] | [274] | [1,047] | [773] | [99] | [1,146] | [274] | [99] | [373] |
| RRE / Assets | 0.003 | -0.007 | 0.000 | 0.002 | 0.031*** | 0.036*** | -0.008 | 0.032*** | 0.040*** |
| | (0.004) | (0.007) | (0.000) | (0.004) | (0.006) | (0.008) | (0.007) | (0.006) | (0.010) |
| | [299] | [132] | [431] | [299] | [68] | [499] | [132] | [68] | [200] |
| C&I Loans / Assets | 0.002 | -0.005 | 0.000 | 0.001 | 0.029*** | 0.032*** | -0.005 | 0.027*** | 0.032*** |
| | (0.005) | (0.004) | (0.000) | (0.005) | (0.004) | (0.005) | (0.003) | (0.003) | (0.005) |
| | [160] | [71] | [231] | [160] | [47] | [278] | [71] | [47] | [118] |
| Consumer Loans / Assets | 0.000 | -0.003 | 0.000 | 0.002 | -0.018*** | -0.016*** | 0.000 | -0.013** | -0.013*** |
| | (0.002) | (0.004) | (0.000) | (0.002) | (0.005) | (0.004) | (0.004) | (0.006) | (0.004) |
| | [383] | [166] | [549] | [383] | [81] | [630] | [166] | [81] | [247] |

*Notes:* The table shows the directional responsiveness of the three different groups as a result of stress test implementation. Treated banks are banks immediately above the policy threshold and and within one MSE optimal bandwidth. The Hawthorne-Control banks are those immediately below the policy threshold and within one MSE optimal bandwidth. The Control banks are banks below the policy threshold that are between (-2*MSE optimal, -MSE optimal) from the policy threshold. Sample 1 is composed of control and Hawthorne-control banks only, Sample 2 is composed of control and treated banks only, and Sample 3 is composed of Hawthorne-control and treated banks only. All regressions include bank and year fixed effects. Robust standard errors are clustered at the bank level and are reported below the coefficients in parenthesis. The total number of observations are shown in brackets for the respective average MSE optimal bandwidth size. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 7: Controlling for Political Risks: Bank Lending

| | Sample 1 | | | Sample 2 | | | Sample 3 | | |
|---|---|---|---|---|---|---|---|---|---|
| Variables | Control | Hawthorne-Control | Difference | Control | Treated | Difference | Hawthorne-Control | Treated | Difference |
| Loans / Assets | 0.002 | -0.003 | 0.000 | 0.006 | -0.034*** | -0.030*** | 0.003 | -0.014* | -0.017 |
| | (0.007) | (0.005) | (0.000) | (0.007) | (0.007) | (0.010) | (0.007) | (0.007) | (0.012) |
| | [413] | [240] | [653] | [413] | [87] | [740] | [240] | [87] | [327] |
| CRE Loans / Assets | 0.000 | 0.007 | 0.000 | 0.002 | 0.007 | 0.004 | 0.008 | 0.013** | 0.006 |
| | (0.004) | (0.010) | (0.000) | (0.004) | (0.005) | (0.008) | (0.010) | (0.005) | (0.011) |
| | [424] | [227] | [651] | [424] | [88] | [739] | [227] | [88] | [315] |
| RRE / Assets | 0.003 | -0.009 | 0.000 | 0.003 | 0.032** | 0.037*** | -0.008 | 0.033*** | 0.041*** |
| | (0.004) | (0.008) | (0.000) | (0.004) | (0.011) | (0.013) | (0.007) | (0.011) | (0.014) |
| | [239] | [113] | [352] | [239] | [59] | [411] | [113] | [59] | [172] |
| C&I Loans / Assets | 0.002 | -0.006 | 0.000 | 0.003 | 0.024*** | 0.027*** | -0.004 | 0.023*** | 0.027*** |
| | (0.005) | (0.004) | (0.000) | (0.005) | (0.005) | (0.007) | (0.003) | (0.004) | (0.006) |
| | [135] | [63] | [198] | [135] | [41] | [239] | [63] | [41] | [104] |
| Consumer Loans / Assets | -0.000 | -0.003 | 0.000 | 0.001 | -0.019** | -0.018** | -0.000 | -0.015* | -0.014** |
| | (0.002) | (0.004) | (0.000) | (0.002) | (0.009) | (0.007) | (0.004) | (0.008) | (0.006) |
| | [282] | [147] | [429] | [282] | [71] | [500] | [147] | [71] | [218] |

*Notes:* The table shows the directional responsiveness of the three different groups as a result of stress test implementation when controlling for both firm-level political risk and non-political risks as measured in Hassan et al. (2019). Treated banks are banks immediately above the policy threshold and and within one MSE optimal bandwidth. The Hawthorne-Control banks are those immediately below the policy threshold and within one MSE optimal bandwidth. The Control banks are banks below the policy threshold that are between (-2*MSE optimal, -MSE optimal) from the policy threshold. Sample 1 is composed of control and Hawthorne-control banks only, Sample 2 is composed of control and treated banks only, and Sample 3 is composed of Hawthorne-control and treated banks only. All regressions include bank and year fixed effects. Robust standard errors are clustered at the bank level and are reported below the coefficients in parenthesis. The total number of observations are shown in brackets for the respective average MSE optimal bandwidth size. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 8: Controlling for Sentiments: Bank Lending

| | Sample 1 | | | Sample 2 | | | Sample 3 | | |
|---|---|---|---|---|---|---|---|---|---|
| Variables | Control | Hawthorne-Control | Difference | Control | Treated | Difference | Hawthorne-Control | Treated | Difference |
| Loans / Assets | 0.002 | -0.004 | 0.000 | 0.007 | -0.036*** | -0.031*** | 0.002 | -0.015* | -0.016 |
| | (0.007) | (0.005) | (0.000) | (0.007) | (0.007) | (0.010) | (0.007) | (0.008) | (0.012) |
| | [415] | [241] | [656] | [415] | [87] | [743] | [241] | [87] | [328] |
| CRE Loans / Assets | 0.000 | 0.006 | 0.000 | 0.002 | 0.007 | 0.005 | 0.007 | 0.014** | 0.007 |
| | (0.004) | (0.009) | (0.000) | (0.004) | (0.005) | (0.008) | (0.010) | (0.005) | (0.011) |
| | [427] | [227] | [654] | [427] | [88] | [742] | [227] | [88] | [315] |
| RRE / Assets | 0.003 | -0.009 | 0.000 | 0.003 | 0.030** | 0.037*** | -0.010 | 0.033*** | 0.044*** |
| | (0.004) | (0.008) | (0.000) | (0.004) | (0.011) | (0.013) | (0.008) | (0.010) | (0.014) |
| | [240] | [113] | [353] | [240] | [59] | [412] | [113] | [59] | [172] |
| C&I Loans / Assets | 0.003 | -0.006 | 0.000 | 0.003 | 0.024*** | 0.027*** | -0.004 | 0.024*** | 0.027*** |
| | (0.004) | (0.004) | (0.000) | (0.005) | (0.004) | (0.006) | (0.003) | (0.003) | (0.005) |
| | [135] | [63] | [198] | [135] | [41] | [239] | [63] | [41] | [104] |
| Consumer Loans / Assets | -0.001 | -0.002 | 0.000 | 0.001 | -0.020** | -0.019*** | 0.000 | -0.016* | -0.017** |
| | (0.002) | (0.004) | (0.000) | (0.002) | (0.008) | (0.007) | (0.004) | (0.008) | (0.006) |
| | [283] | [147] | [430] | [283] | [71] | [501] | [147] | [71] | [218] |

*Notes:* The table shows the directional responsiveness of the three different groups as a result of stress test implementation when controlling for both firm-level political sentiments risk and non-political sentiments. Treated banks are banks immediately above the policy threshold and and within one MSE optimal bandwidth. The Hawthorne-Control banks are those immediately below the policy threshold and within one MSE optimal bandwidth. The Control banks are banks below the policy threshold that are between (-2*MSE optimal, -MSE optimal) from the policy threshold. Sample 1 is composed of control and Hawthorne-control banks only, Sample 2 is composed of control and treated banks only, and Sample 3 is composed of Hawthorne-control and treated banks only. All regressions include bank and year fixed effects. Robust standard errors are clustered at the bank level and are reported below the coefficients in parenthesis. The total number of observations are shown in brackets for the respective average MSE optimal bandwidth size. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 9: Bank Portfolio: Treated vs Non-Treated Banks

| | Sample 1 | | | Sample 2 | | | Sample 3 | | |
|---|---|---|---|---|---|---|---|---|---|
| Variables | Control | Hawthorne-Control | Difference | Control | Treated | Difference | Hawthorne-Control | Treated | Difference |
| Off Balance Sheet Assets/Assets | -0.002 | 0.002 | 0.000 | 0.001 | -0.006 | -0.002 | -0.006 | -0.002 | 0.004 |
| | (0.002) | (0.003) | (0.000) | (0.002) | (0.009) | (0.011) | (0.009) | (0.009) | (0.013) |
| | [786] | [272] | [1,058] | [786] | [96] | [1,154] | [272] | [96] | [368] |
| Held For Sale Loans/Assets | 0.000 | -0.002 | 0.000 | 0.000 | 0.003*** | 0.003* | -0.001 | 0.001* | 0.002 |
| | (0.002) | (0.002) | (0.000) | (0.002) | (0.001) | (0.002) | (0.002) | (0.001) | (0.002) |
| | [631] | [232] | [863] | [631] | [94] | [957] | [232] | [94] | [326] |
| Available for Sale Securities/Assets | -0.002 | 0.004 | 0.000 | -0.006 | 0.026*** | 0.022*** | 0.000 | 0.007*** | 0.007 |
| | (0.006) | (0.009) | (0.000) | (0.006) | (0.002) | (0.007) | (0.008) | (0.002) | (0.008) |
| | [406] | [164] | [570] | [406] | [84] | [654] | [164] | [84] | [248] |
| Held to Maturity Securities/Assets | -0.002 | 0.007 | 0.000 | -0.002 | -0.003 | -0.008 | 0.005 | -0.006 | -0.012** |
| | (0.005) | (0.006) | (0.000) | (0.005) | (0.004) | (0.006) | (0.005) | (0.004) | (0.005) |
| | [355] | [156] | [511] | [355] | [78] | [589] | [156] | [78] | [234] |
| Cash & Deposits Due/Assets | -0.002 | 0.002 | 0.000 | -0.005** | 0.009*** | 0.008*** | -0.006 | -0.003 | 0.003 |
| | (0.002) | (0.004) | (0.000) | (0.002) | (0.002) | (0.003) | (0.005) | (0.002) | (0.004) |
| | [635] | [235] | [870] | [635] | [94] | [964] | [235] | [94] | [329] |
| Federal Funds/Assets | 0.001 | -0.002 | 0.000 | -0.000 | 0.001 | 0.001 | -0.001 | 0.001 | 0.002 |
| | (0.000) | (0.001) | (0.000) | (0.001) | (0.001) | (0.001) | (0.001) | (0.001) | (0.001) |
| | [122] | [43] | [165] | [122] | [44] | [209] | [43] | [44] | [87] |
| Other/Assets | 0.001 | -0.000 | 0.000 | 0.000 | 0.004 | 0.003 | 0.002 | 0.002 | 0.000 |
| | (0.001) | (0.002) | (0.000) | (0.001) | (0.003) | (0.003) | (0.002) | (0.003) | (0.003) |
| | [1,160] | [441] | [1,601] | [1,160] | [115] | [1,716] | [441] | [115] | [556] |

*Notes:* The table shows the directional responsiveness of the three different groups as a result of stress test implementation. Treated banks are banks immediately above the policy threshold and and within one MSE optimal bandwidth. The Hawthorne-Control banks are those immediately below the policy threshold and within one MSE optimal bandwidth. The Control banks are banks below the policy threshold that are between (-2*MSE optimal, -MSE optimal) from the policy threshold. Sample 1 is composed of control and Hawthorne-control banks only, Sample 2 is composed of control and treated banks only, and Sample 3 is composed of Hawthorne-control and treated banks only. All regressions include bank and year fixed effects. Robust standard errors are clustered at the bank level and are reported below the coefficients in parenthesis. The total number of observations are shown in brackets for the respective average MSE optimal bandwidth size. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 10: Controlling for Political Risks: Bank Portfolio

| | Sample 1 | | | Sample 2 | | | Sample 3 | | |
|---|---|---|---|---|---|---|---|---|---|
| Variables | Control | Hawthorne-Control | Difference | Control | Treated | Difference | Hawthorne-Control | Treated | Difference |
| Off Balance Sheet Assets/Assets | -0.002 | -0.001 | 0.000 | 0.002 | -0.014 | -0.008 | -0.006 | -0.008 | -0.001 |
| | (0.003) | (0.004) | (0.000) | (0.003) | (0.012) | (0.015) | (0.009) | (0.012) | (0.016) |
| | [412] | [224] | [636] | [412] | [85] | [721] | [224] | [85] | [309] |
| Held For Sale Loans/Assets | 0.001 | -0.002 | 0.000 | 0.000 | 0.003*** | 0.004 | -0.001 | 0.001 | 0.002 |
| | (0.002) | (0.002) | (0.000) | (0.002) | (0.001) | (0.002) | (0.003) | (0.001) | (0.002) |
| | [368] | [197] | [565] | [368] | [83] | [648] | [197] | [83] | [280] |
| Available for Sale Securities/Assets | -0.002 | 0.003 | 0.000 | -0.005 | 0.025*** | 0.021** | 0.001 | 0.011*** | 0.010 |
| | (0.006) | (0.009) | (0.000) | (0.006) | (0.005) | (0.008) | (0.008) | (0.003) | (0.008) |
| | [295] | [146] | [441] | [295] | [73] | [514] | [146] | [73] | [219] |
| Held to Maturity Securities/Assets | -0.002 | 0.007 | 0.000 | -0.002 | 0.003 | -0.003 | 0.004 | -0.006 | -0.010* |
| | (0.006) | (0.006) | (0.000) | (0.006) | (0.004) | (0.006) | (0.005) | (0.004) | (0.005) |
| | [263] | [140] | [403] | [263] | [68] | [471] | [140] | [68] | [208] |
| Cash & Deposits Due/Assets | -0.002 | -0.001 | 0.000 | -0.005** | 0.007* | 0.007* | -0.007 | -0.003 | 0.003 |
| | (0.003) | (0.004) | (0.000) | (0.003) | (0.003) | (0.004) | (0.005) | (0.003) | (0.005) |
| | [369] | [199] | [568] | [369] | [83] | [651] | [199] | [83] | [282] |
| Federal Funds/Assets | 0.001 | -0.001 | 0.000 | 0.000 | 0.000 | 0.001 | -0.001 | -0.001** | 0.000 |
| | (0.001) | (0.001) | (0.000) | (0.001) | (0.000) | (0.001) | (0.001) | (0.000) | (0.001) |
| | [106] | [40] | [146] | [106] | [38] | [184] | [40] | [38] | [78] |
| Other/Assets | 0.001 | 0.002 | 0.000 | -0.000 | 0.007** | 0.005 | 0.003 | 0.005 | 0.002 |
| | (0.002) | (0.002) | (0.000) | (0.002) | (0.003) | (0.004) | (0.002) | (0.003) | (0.004) |
| | [375] | [357] | [732] | [375] | [104] | [836] | [357] | [104] | [461] |

*Notes:* The table shows the directional responsiveness of the three different groups as a result of stress test implementation when controlling for both firm-level political risk and non-political risks as measured in Hassan et al. (2019). Treated banks are banks immediately above the policy threshold and and within one MSE optimal bandwidth. The Hawthorne-Control banks are those immediately below the policy threshold and within one MSE optimal bandwidth. The Control banks are banks below the policy threshold that are between (-2*MSE optimal, -MSE optimal) from the policy threshold. Sample 1 is composed of control and Hawthorne-control banks only, Sample 2 is composed of control and treated banks only, and Sample 3 is composed of Hawthorne-control and treated banks only. All regressions include bank and year fixed effects. Robust standard errors are clustered at the bank level and are reported below the coefficients in parenthesis. The total number of observations are shown in brackets for the respective average MSE optimal bandwidth size. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 11: Controlling for Sentiments: Bank Portfolio

| | Sample 1 | | | Sample 2 | | | Sample 3 | | |
|---|---|---|---|---|---|---|---|---|---|
| Variables | Control | Hawthorne-Control | Difference | Control | Treated | Difference | Hawthorne-Control | Treated | Difference |
| Off Balance Sheet Assets/Assets | -0.002 | -0.000 | 0.000 | 0.001 | -0.013 | -0.007 | -0.005 | -0.008 | -0.002 |
| | (0.003) | (0.004) | (0.000) | (0.003) | (0.012) | (0.015) | (0.010) | (0.011) | (0.016) |
| | [414] | [225] | [639] | [414] | [85] | [724] | [225] | [85] | [310] |
| Held For Sale Loans/Assets | 0.000 | -0.002 | 0.000 | 0.000 | 0.003** | 0.003 | -0.001 | 0.001 | 0.002 |
| | (0.002) | (0.002) | (0.000) | (0.002) | (0.001) | (0.002) | (0.003) | (0.001) | (0.003) |
| | [371] | [197] | [568] | [371] | [83] | [651] | [197] | [83] | [280] |
| Available for Sale Securities/Assets | -0.002 | 0.006 | 0.000 | -0.006 | 0.027*** | 0.022*** | 0.004 | 0.008** | 0.004 |
| | (0.007) | (0.010) | (0.000) | (0.007) | (0.003) | (0.008) | (0.008) | (0.003) | (0.009) |
| | [296] | [146] | [442] | [296] | [73] | [515] | [146] | [73] | [219] |
| Held to Maturity Securities/Assets | -0.001 | 0.006 | 0.000 | -0.001 | -0.001 | -0.006 | 0.004 | -0.006 | -0.010* |
| | (0.007) | (0.006) | (0.000) | (0.007) | (0.003) | (0.006) | (0.005) | (0.003) | (0.005) |
| | [264] | [140] | [404] | [264] | [68] | [472] | [140] | [68] | [208] |
| Cash & Deposits Due/Assets | -0.001 | -0.001 | 0.000 | -0.005* | 0.007** | 0.008** | -0.006 | -0.004 | 0.002 |
| | (0.003) | (0.004) | (0.000) | (0.003) | (0.003) | (0.004) | (0.005) | (0.003) | (0.005) |
| | [372] | [199] | [571] | [372] | [83] | [654] | [199] | [83] | [282] |
| Federal Funds/Assets | 0.001 | -0.002 | 0.000 | 0.000 | 0.001** | 0.002 | -0.001 | -0.001*** | 0.000 |
| | (0.001) | (0.001) | (0.000) | (0.001) | (0.000) | (0.001) | (0.001) | (0.000) | (0.001) |
| | [106] | [40] | [146] | [106] | [38] | [184] | [40] | [38] | [78] |
| Other/Assets | 0.001 | 0.001 | 0.000 | -0.000 | 0.007** | 0.005 | 0.002 | 0.005 | 0.003 |
| | (0.002) | (0.002) | (0.000) | (0.002) | (0.003) | (0.004) | (0.003) | (0.003) | (0.004) |
| | [378] | [358] | [736] | [378] | [104] | [840] | [358] | [104] | [462] |

*Notes:* The table shows the directional responsiveness of the three different groups as a result of stress test implementation when controlling for both firm-level political sentiments risk and non-political sentiments. Treated banks are banks immediately above the policy threshold and and within one MSE optimal bandwidth. The Hawthorne-Control banks are those immediately below the policy threshold and within one MSE optimal bandwidth. The Control banks are banks below the policy threshold that are between (-2*MSE optimal, -MSE optimal) from the policy threshold. Sample 1 is composed of control and Hawthorne-control banks only, Sample 2 is composed of control and treated banks only, and Sample 3 is composed of Hawthorne-control and treated banks only. All regressions include bank and year fixed effects. Robust standard errors are clustered at the bank level and are reported below the coefficients in parenthesis. The total number of observations are shown in brackets for the respective average MSE optimal bandwidth size. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 12: Bank Performance: Treated vs Non-Treated Banks

| | Sample 1 | | | Sample 2 | | | Sample 3 | | |
|---|---|---|---|---|---|---|---|---|---|
| Variables | Control | Hawthorne-Control | Difference | Control | Treated | Difference | Hawthorne-Control | Treated | Difference |
| Return on Equity | -0.006 | 0.007 | 0.000 | -0.001 | -0.022*** | -0.026 | 0.013 | -0.011 | -0.024 |
| | (0.024) | (0.033) | (0.000) | (0.025) | (0.007) | (0.027) | (0.035) | (0.015) | (0.039) |
| | [184] | [84] | [268] | [184] | [55] | [323] | [84] | [55] | [139] |
| Return on Assets | 0.001 | -0.000 | 0.000 | 0.001 | -0.006*** | -0.005* | 0.000 | -0.006*** | -0.006 |
| | (0.002) | (0.004) | (0.000) | (0.002) | (0.001) | (0.003) | (0.004) | (0.001) | (0.004) |
| | [383] | [166] | [549] | [383] | [81] | [630] | [166] | [81] | [247] |
| Net Interest Margin | 0.000 | 0.001 | 0.000 | 0.001 | -0.000 | -0.001 | 0.001 | -0.001 | -0.002 |
| | (0.001) | (0.003) | (0.000) | (0.001) | (0.002) | (0.002) | (0.002) | (0.002) | (0.002) |
| | [550] | [213] | [763] | [550] | [94] | [857] | [213] | [94] | [307] |
| Net Non-Interest Margin | 0.001 | -0.004 | 0.000 | 0.002 | -0.005* | -0.004 | -0.001 | -0.002 | -0.001 |
| | (0.002) | (0.003) | (0.000) | (0.002) | (0.003) | (0.003) | (0.003) | (0.002) | (0.003) |
| | [382] | [166] | [548] | [382] | [81] | [629] | [166] | [81] | [247] |

*Notes:* The table shows the directional responsiveness of the three different groups as a result of stress test implementation. Treated banks are banks immediately above the policy threshold and and within one MSE optimal bandwidth. The Hawthorne-Control banks are those immediately below the policy threshold and within one MSE optimal bandwidth. The Control banks are banks below the policy threshold that are between (-2*MSE optimal, -MSE optimal) from the policy threshold. Sample 1 is composed of control and Hawthorne-control banks only, Sample 2 is composed of control and treated banks only, and Sample 3 is composed of Hawthorne-control and treated banks only. All regressions include bank and year fixed effects. Robust standard errors are clustered at the bank level and are reported below the coefficients in parenthesis. The total number of observations are shown in brackets for the respective average MSE optimal bandwidth size. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 13: Controlling for Political Risks: Bank Performance

| | Sample 1 | | | Sample 2 | | | Sample 3 | | |
|---|---|---|---|---|---|---|---|---|---|
| Variables | Control | Hawthorne-Control | Difference | Control | Treated | Difference | Hawthorne-Control | Treated | Difference |
| Return on Equity | -0.012 | 0.014 | 0.000 | -0.005 | -0.034*** | -0.039 | 0.009 | -0.019 | -0.029 |
| | (0.017) | (0.036) | (0.000) | (0.018) | (0.004) | (0.028) | (0.040) | (0.019) | (0.047) |
| | [150] | [73] | [223] | [150] | [49] | [272] | [73] | [49] | [122] |
| Return on Assets | 0.000 | -0.000 | 0.000 | 0.001 | -0.007*** | -0.006* | -0.000 | -0.006*** | -0.006 |
| | (0.002) | (0.004) | (0.000) | (0.002) | (0.001) | (0.003) | (0.005) | (0.001) | (0.005) |
| | [282] | [147] | [429] | [282] | [71] | [500] | [147] | [71] | [218] |
| Net Interest Margin | 0.000 | 0.001 | 0.000 | 0.000 | 0.003 | 0.002 | 0.001 | 0.000 | -0.001 |
| | (0.001) | (0.004) | (0.000) | (0.001) | (0.004) | (0.003) | (0.003) | (0.004) | (0.002) |
| | [354] | [184] | [538] | [354] | [83] | [621] | [184] | [83] | [267] |
| Net Non-Interest Margin | 0.002 | -0.005 | 0.000 | 0.002 | -0.008* | -0.006 | -0.000 | -0.003 | -0.003 |
| | (0.002) | (0.003) | (0.000) | (0.002) | (0.004) | (0.004) | (0.003) | (0.004) | (0.004) |
| | [281] | [147] | [428] | [281] | [71] | [499] | [147] | [71] | [218] |

*Notes:* The table shows the directional responsiveness of the three different groups as a result of stress test implementation when controlling for both firm-level political risk and non-political risks as measured in Hassan et al. (2019). Treated banks are banks immediately above the policy threshold and and within one MSE optimal bandwidth. The Hawthorne-Control banks are those immediately below the policy threshold and within one MSE optimal bandwidth. The Control banks are banks below the policy threshold that are between (-2*MSE optimal, -MSE optimal) from the policy threshold. Sample 1 is composed of control and Hawthorne-control banks only, Sample 2 is composed of control and treated banks only, and Sample 3 is composed of Hawthorne-control and treated banks only. All regressions include bank and year fixed effects. Robust standard errors are clustered at the bank level and are reported below the coefficients in parenthesis. The total number of observations are shown in brackets for the respective average MSE optimal bandwidth size. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 14: Controlling for Sentiments: Bank Performance

| | Sample 1 | | | Sample 2 | | | Sample 3 | | |
|---|---|---|---|---|---|---|---|---|---|
| Variables | Control | Hawthorne-Control | Difference | Control | Treated | Difference | Hawthorne-Control | Treated | Difference |
| Return on Equity | -0.014 | 0.021 | 0.000 | -0.005 | -0.038*** | -0.046* | 0.018 | -0.027 | -0.046 |
| | (0.017) | (0.035) | (0.000) | (0.019) | (0.004) | (0.026) | (0.036) | (0.019) | (0.043) |
| | [150] | [73] | [223] | [150] | [49] | [272] | [73] | [49] | [122] |
| Return on Assets | -0.000 | 0.001 | 0.000 | 0.001 | -0.007*** | -0.008** | 0.000 | -0.008*** | -0.008* |
| | (0.002) | (0.004) | (0.000) | (0.002) | (0.001) | (0.003) | (0.004) | (0.001) | (0.005) |
| | [283] | [147] | [430] | [283] | [71] | [501] | [147] | [71] | [218] |
| Net Interest Margin | 0.000 | 0.001 | 0.000 | 0.001 | 0.002 | 0.002 | 0.000 | -0.001 | -0.001 |
| | (0.001) | (0.003) | (0.000) | (0.001) | (0.003) | (0.002) | (0.003) | (0.003) | (0.002) |
| | [355] | [184] | [539] | [355] | [83] | [622] | [184] | [83] | [267] |
| Net Non-Interest Margin | 0.002 | -0.004 | 0.000 | 0.002 | -0.008** | -0.007* | 0.000 | -0.003 | -0.004 |
| | (0.002) | (0.003) | (0.000) | (0.002) | (0.004) | (0.004) | (0.003) | (0.004) | (0.004) |
| | [282] | [147] | [429] | [282] | [71] | [500] | [147] | [71] | [218] |

*Notes:* The table shows the directional responsiveness of the three different groups as a result of stress test implementation when controlling for both firm-level political sentiments risk and non-political sentiments. Treated banks are banks immediately above the policy threshold and and within one MSE optimal bandwidth. The Hawthorne-Control banks are those immediately below the policy threshold and within one MSE optimal bandwidth. The Control banks are banks below the policy threshold that are between (-2*MSE optimal, -MSE optimal) from the policy threshold. Sample 1 is composed of control and Hawthorne-control banks only, Sample 2 is composed of control and treated banks only, and Sample 3 is composed of Hawthorne-control and treated banks only. All regressions include bank and year fixed effects. Robust standard errors are clustered at the bank level and are reported below the coefficients in parenthesis. The total number of observations are shown in brackets for the respective average MSE optimal bandwidth size. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 15: McCrary(2008) Manipulation Test Around the $50B Threshold for 2011-2016

| | ±10% | ±15% | ±20% | ±25% |
|---|---|---|---|---|
| Discontinuity | 0.453 | 0.394 | 0.353 | 0.346 |
| Standard errors | 0.298 | 0.227 | 0.195 | 0.179 |
| t-stat | 1.519 | 1.733 | 1.814 | 1.934 |
| Bin size | 0.019 | 0.019 | 0.019 | 0.019 |
| $N$ | 47 | 77 | 116 | 173 |

*Notes:* The McCrary discontinuity coefficients are shown above for each of the corresponding bandwidths together with the standard errors, t-statistics, and the optimal bin size as in McCrary (2008). The McCrary test estimates the density of the running variable separately on both sides of the policy cutoff and tests for a discontinuity at the cutoff. It first partitions the assignment variable into bins and calculates frequencies (number of observations) in each bin. It then treats those frequency counts as a dependent variable in a local linear regression with a triangular kernel and an optimal bin size as in McCrary (2008).* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 16: Stress Testing, Bank Risk, & Capital Ratios

| | Linear | | Quadratic | |
|---|---|---|---|---|
| Variable | MSE Optimal | CER Optimal | MSE Optimal | CER Optimal |
| Risk Weighted Assets / Assets | -0.146*** | -0.155** | -0.169*** | -0.163** |
| | (0.052) | (0.059) | (0.063) | (0.072) |
| | [358] | [224] | [358] | [224] |
| Tier 1 Equity / Assets | -0.011 | -0.008 | -0.013 | -0.001 |
| | (0.012) | (0.014) | (0.013) | (0.019) |
| | [233] | [122] | [233] | [122] |
| Tier 1 Ratio | -0.066 | -0.494 | -1.083 | 2.784 |
| | (1.165) | (1.691) | (1.418) | (1.948) |
| | [198] | [109] | [198] | [109] |
| Leverage Ratio | -2.307* | -2.143 | -3.207* | -2.387 |
| | (1.282) | (1.605) | (1.666) | (2.126) |
| | [193] | [105] | [193] | [105] |
| Capital Ratio | -1.992 | -1.855 | -2.455* | 1.505 |
| | (1.499) | (2.117) | (1.283) | (2.088) |
| | [173] | [90] | [173] | [90] |

*Note:* This table reports the difference in discontinuities (TC) using a local quadratic regression for various dependent variables and two optimal bandwidths (MSE and the CER), given in the first and second column respectively for each variable of interest. All regressions include bank and year fixed effects. Standard errors are clustered at the bank level and are reported in parentheses. $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 17: Controlling for Political Risks: Stress Testing, Bank Risk, & Capital Ratios

| | Linear | | Quadratic | |
|---|---|---|---|---|
| Variable | MSE Optimal | CER Optimal | MSE Optimal | CER Optimal |
| Risk Weighted Assets / Assets | -0.105* | -0.112* | -0.116* | -0.116* |
| | (0.063) | (0.067) | (0.069) | (0.062) |
| | [303] | [199] | [303] | [199] |
| Tier 1 Equity / Assets | -0.005 | -0.003 | -0.012 | -0.009 |
| | (0.014) | (0.015) | (0.017) | (0.024) |
| | [205] | [107] | [205] | [107] |
| Tier 1 Ratio | -0.177 | -0.388 | -2.414 | -2.332 |
| | (1.711) | (1.931) | (2.155) | (2.338) |
| | [173] | [97] | [173] | [97] |
| Leverage Ratio | -1.826 | -1.622 | -3.425 | -3.589 |
| | (1.622) | (1.915) | (2.085) | (2.681) |
| | [168] | [93] | [168] | [93] |
| Capital Ratio | -2.445 | -2.092 | -3.738** | -2.841 |
| | (1.546) | (2.115) | (1.595) | (2.313) |
| | [151] | [81] | [151] | [81] |

*Note:* This table reports the difference in discontinuities (TC) using a local quadratic regression for various dependent variables and two optimal bandwidths (MSE and the CER), given in the first and second column respectively for each variable of interest. All regressions include bank and year fixed effects. Standard errors are clustered at the bank level and are reported in parentheses. $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 18: Controlling for Sentiments: Stress Testing, Bank Risk, & Capital Ratios

| | Linear | | Quadratic | |
|---|---|---|---|---|
| Variable | MSE Optimal | CER Optimal | MSE Optimal | CER Optimal |
| Risk Weighted Assets / Assets | -0.090 | -0.095 | -0.092 | -0.085 |
| | (0.066) | (0.072) | (0.069) | (0.074) |
| | [303] | [199] | [303] | [199] |
| Tier 1 Equity / Assets | -0.007 | -0.007 | -0.013 | -0.008 |
| | (0.014) | (0.016) | (0.018) | (0.025) |
| | [205] | [107] | [205] | [107] |
| Tier 1 Ratio | -0.457 | -0.959 | -2.133 | -0.565 |
| | (2.055) | (2.382) | (2.543) | (3.172) |
| | [173] | [97] | [173] | [97] |
| Leverage Ratio | -1.651 | -1.460 | -2.706 | -1.953 |
| | (1.694) | (1.908) | (2.267) | (3.020) |
| | [168] | [93] | [168] | [93] |
| Capital Ratio | -2.944 | -2.800 | -3.180 | -1.589 |
| | (2.086) | (2.831) | (1.909) | (3.135) |
| | [151] | [81] | [151] | [81] |

*Note:* This table reports the difference in discontinuities (TC) using a local quadratic regression for various dependent variables and two optimal bandwidths (MSE and the CER), given in the first and second column respectively for each variable of interest. All regressions include bank and year fixed effects. Standard errors are clustered at the bank level and are reported in parentheses. $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 19: Stress Testing & Bank Lending

| | Linear | | Quadratic | |
|---|---|---|---|---|
| Variable | MSE Optimal | CER Optimal | MSE Optimal | CER Optimal |
| Loans / Assets | 0.023 | 0.026 | 0.026 | 0.015 |
| | (0.040) | (0.048) | (0.053) | (0.063) |
| | [387] | [238] | [387] | [238] |
| CRE Loans / Assets | -0.081 | -0.094 | -0.108* | -0.126* |
| | (0.051) | (0.060) | (0.065) | (0.068) |
| | [373] | [234] | [373] | [234] |
| RRE / Assets | 0.064* | 0.102*** | 0.107*** | 0.095** |
| | (0.034) | (0.032) | (0.027) | (0.037) |
| | [200] | [110] | [200] | [110] |
| C&I Loans / Assets | 0.040** | 0.026 | 0.053*** | 0.091*** |
| | (0.015) | (0.032) | (0.019) | (0.017) |
| | [118] | [68] | [118] | [68] |
| Consumer Loans / Assets | 0.021 | 0.013 | 0.026 | 0.066 |
| | (0.032) | (0.040) | (0.039) | (0.051) |
| | [247] | [135] | [247] | [135] |

*Note:* This table reports the difference in discontinuities (TC) using a local quadratic regression for various dependent variables and two optimal bandwidths (MSE and the CER), given in the first and second column respectively for each variable of interest. All regressions include bank and year fixed effects. Standard errors are clustered at the bank level and are reported in parentheses. $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 20: Controlling for Political Risks: Stress Testing & Bank Lending

| | Linear | | Quadratic | |
|---|---|---|---|---|
| Variable | MSE Optimal | CER Optimal | MSE Optimal | CER Optimal |
| Loans / Assets | 0.027 | 0.037 | 0.048 | 0.045 |
| | (0.043) | (0.051) | (0.055) | (0.065) |
| | [327] | [211] | [327] | [211] |
| CRE Loans / Assets | -0.040 | -0.049 | -0.051 | -0.063 |
| | (0.054) | (0.062) | (0.068) | (0.080) |
| | [315] | [206] | [315] | [206] |
| RRE / Assets | 0.074 | 0.111** | 0.149*** | 0.193** |
| | (0.048) | (0.044) | (0.055) | (0.078) |
| | [172] | [96] | [172] | [96] |
| C&I Loans / Assets | 0.024 | 0.021 | 0.010 | 0.035 |
| | (0.017) | (0.043) | (0.039) | (0.052) |
| | [104] | [60] | [104] | [60] |
| Consumer Loans / Assets | -0.012 | -0.014 | -0.032 | -0.068 |
| | (0.042) | (0.045) | (0.054) | (0.069) |
| | [218] | [119] | [218] | [119] |

*Note:* This table reports the difference in discontinuities (TC) using a local quadratic regression for various dependent variables and two optimal bandwidths (MSE and the CER), given in the first and second column respectively for each variable of interest. All regressions include bank and year fixed effects. Standard errors are clustered at the bank level and are reported in parentheses. $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 21: Controlling for Sentiments: Stress Testing & Bank Lending

| | Linear | | Quadratic | |
|---|---|---|---|---|
| Variable | MSE Optimal | CER Optimal | MSE Optimal | CER Optimal |
| Loans / Assets | 0.029 | 0.040 | 0.050 | 0.048 |
| | (0.041) | (0.047) | (0.052) | (0.061) |
| | [328] | [211] | [328] | [211] |
| CRE Loans / Assets | -0.032 | -0.041 | -0.041 | -0.053 |
| | (0.055) | (0.062) | (0.068) | (0.076) |
| | [315] | [206] | [315] | [206] |
| RRE / Assets | 0.078 | 0.123** | 0.143** | 0.170* |
| | (0.058) | (0.060) | (0.066) | (0.089) |
| | [172] | [96] | [172] | [96] |
| C&I Loans / Assets | 0.027 | 0.006 | 0.029 | 0.044 |
| | (0.020) | (0.036) | (0.047) | (0.049) |
| | [104] | [60] | [104] | [60] |
| Consumer Loans / Assets | -0.021 | -0.029 | -0.037 | -0.053 |
| | (0.057) | (0.065) | (0.074) | (0.095) |
| | [218] | [119] | [218] | [119] |

*Note:* This table reports the difference in discontinuities (TC) using a local quadratic regression for various dependent variables and two optimal bandwidths (MSE and the CER), given in the first and second column respectively for each variable of interest. All regressions include bank and year fixed effects. Standard errors are clustered at the bank level and are reported in parentheses. $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 22: Stress Testing & Entire Asset Porfolio

| | Linear | | Quadratic | |
|---|---|---|---|---|
| Variable | MSE Optimal | CER Optimal | MSE Optimal | CER Optimal |
| Off Balance Sheet Assets/Assets | -0.028 | -0.032 | -0.027 | 0.001 |
| | (0.034) | (0.037) | (0.040) | (0.038) |
| | [368] | [234] | [368] | [234] |
| Held For Sale Loans/Assets | 0.003 | 0.004 | 0.004 | -0.000 |
| | (0.011) | (0.013) | (0.015) | (0.019) |
| | [326] | [195] | [326] | [195] |
| Available for Sale Securities/Assets | 0.006 | 0.003 | 0.011 | -0.003 |
| | (0.025) | (0.030) | (0.034) | (0.036) |
| | [248] | [145] | [248] | [145] |
| Held to Maturity Securities/Assets | -0.033** | -0.037** | -0.049** | -0.034 |
| | (0.015) | (0.017) | (0.020) | (0.029) |
| | [234] | [129] | [234] | [129] |
| Cash & Deposits Due/Assets | 0.026* | 0.022 | 0.037** | 0.040 |
| | (0.015) | (0.019) | (0.018) | (0.024) |
| | [329] | [196] | [329] | [196] |
| Federal Funds/Assets | 0.014* | 0.025*** | 0.021* | 0.036*** |
| | (0.008) | (0.005) | (0.010) | (0.008) |
| | [87] | [55] | [87] | [55] |
| Other/Assets | -0.004 | -0.005 | -0.010 | -0.022 |
| | (0.013) | (0.015) | (0.015) | (0.018) |
| | [556] | [304] | [556] | [304] |

*Note:* This table reports the difference in discontinuities (TC) using a local quadratic regression for various dependent variables and two optimal bandwidths (MSE and the CER), given in the first and second column respectively for each variable of interest. All regressions include bank and year fixed effects. Standard errors are clustered at the bank level and are reported in parentheses. $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 23: Controlling for Political Risks: Stress Testing & Entire Asset Porfolio

| | Linear | | Quadratic | |
|---|---|---|---|---|
| Variable | MSE Optimal | CER Optimal | MSE Optimal | CER Optimal |
| Off Balance Sheet Assets/Assets | -0.053 | -0.067 | -0.083 | -0.073 |
| | (0.039) | (0.041) | (0.050) | (0.045) |
| | [309] | [208] | [309] | [208] |
| Held For Sale Loans/Assets | 0.003 | 0.005 | 0.003 | -0.001 |
| | (0.010) | (0.012) | (0.014) | (0.016) |
| | [280] | [170] | [280] | [170] |
| Available for Sale Securities/Assets | -0.012 | -0.014 | -0.005 | 0.004 |
| | (0.024) | (0.025) | (0.035) | (0.045) |
| | [219] | [129] | [219] | [129] |
| Held to Maturity Securities/Assets | -0.008 | -0.010 | -0.014 | 0.027 |
| | (0.018) | (0.020) | (0.027) | (0.041) |
| | [208] | [115] | [208] | [115] |
| Cash & Deposits Due/Assets | 0.025 | 0.027 | 0.040 | 0.023 |
| | (0.018) | (0.019) | (0.025) | (0.027) |
| | [282] | [171] | [282] | [171] |
| Federal Funds/Assets | 0.008 | 0.016*** | 0.011 | 0.023* |
| | (0.008) | (0.003) | (0.010) | (0.011) |
| | [78] | [49] | [78] | [49] |
| Other/Assets | 0.012 | 0.014 | 0.011 | 0.007 |
| | (0.015) | (0.016) | (0.020) | (0.023) |
| | [461] | [265] | [461] | [265] |

*Note:* This table reports the difference in discontinuities (TC) using a local quadratic regression for various dependent variables and two optimal bandwidths (MSE and the CER), given in the first and second column respectively for each variable of interest. All regressions include bank and year fixed effects. Standard errors are clustered at the bank level and are reported in parentheses. $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 24: Controlling for Sentiments: Stress Testing & Entire Asset Porfolio

| | Linear | | Quadratic | |
|---|---|---|---|---|
| Variable | MSE Optimal | CER Optimal | MSE Optimal | CER Optimal |
| Off Balance Sheet Assets/Assets | -0.048 | -0.059 | -0.073 | -0.051 |
| | (0.041) | (0.043) | (0.051) | (0.052) |
| | [310] | [208] | [310] | [208] |
| Held For Sale Loans/Assets | 0.005 | 0.005 | 0.004 | -0.003 |
| | (0.012) | (0.014) | (0.016) | (0.019) |
| | [280] | [170] | [280] | [170] |
| Available for Sale Securities/Assets | -0.019 | -0.025 | -0.016 | -0.006 |
| | (0.026) | (0.028) | (0.036) | (0.047) |
| | [219] | [129] | [219] | [129] |
| Held to Maturity Securities/Assets | -0.011 | -0.014 | -0.018 | 0.015 |
| | (0.019) | (0.021) | (0.027) | (0.040) |
| | [208] | [115] | [208] | [115] |
| Cash & Deposits Due/Assets | 0.021 | 0.021 | 0.034 | 0.012 |
| | (0.020) | (0.021) | (0.026) | (0.027) |
| | [282] | [171] | [282] | [171] |
| Federal Funds/Assets | 0.009 | 0.017*** | 0.009 | 0.041* |
| | (0.008) | (0.004) | (0.009) | (0.022) |
| | [78] | [49] | [78] | [49] |
| Other/Assets | 0.015 | 0.017 | 0.014 | 0.010 |
| | (0.020) | (0.023) | (0.027) | (0.031) |
| | [462] | [265] | [462] | [265] |

*Note:* This table reports the difference in discontinuities (TC) using a local quadratic regression for various dependent variables and two optimal bandwidths (MSE and the CER), given in the first and second column respectively for each variable of interest. All regressions include bank and year fixed effects. Standard errors are clustered at the bank level and are reported in parentheses. $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 25: Stress Testing & Bank Performance

| | Linear | | Quadratic | |
|---|---|---|---|---|
| Variable | MSE Optimal | CER Optimal | MSE Optimal | CER Optimal |
| Return on Equity | 0.102 | -0.028 | 0.236 | 0.322 |
| | (0.143) | (0.243) | (0.252) | (0.301) |
| | [139] | [79] | [139] | [79] |
| Return on Assets | 0.010 | 0.011 | 0.013 | 0.027 |
| | (0.017) | (0.021) | (0.024) | (0.035) |
| | [247] | [135] | [247] | [135] |
| Net Interest Margin | 0.010 | 0.015 | 0.011 | 0.002 |
| | (0.008) | (0.011) | (0.007) | (0.013) |
| | [307] | [183] | [307] | [183] |
| Net Non-Interest Margin | 0.004 | 0.007 | 0.010 | -0.001 |
| | (0.016) | (0.015) | (0.011) | (0.017) |
| | [247] | [135] | [247] | [135] |

*Notes:* This table reports the difference in discontinuities (TC) using a local quadratic regression for various dependent variables and two optimal bandwidths (MSE and the CER), given in the first and second column respectively for each variable of interest. All regressions include bank and year fixed effects. Standard errors are clustered at the bank level and are reported in parentheses. $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 26: Controlling for Political Risks: Stress Testing & Bank Performance

| | Linear | | Quadratic | |
|---|---|---|---|---|
| Variable | MSE Optimal | CER Optimal | MSE Optimal | CER Optimal |
| Return on Equity | 0.021 | -0.072 | -0.159 | -0.090 |
| | (0.155) | (0.205) | (0.278) | (0.332) |
| | [122] | [70] | [122] | [70] |
| Return on Assets | -0.005 | -0.001 | -0.013 | -0.037 |
| | (0.018) | (0.022) | (0.027) | (0.039) |
| | [218] | [119] | [218] | [119] |
| Net Interest Margin | 0.013* | 0.019* | 0.014* | 0.004 |
| | (0.007) | (0.010) | (0.009) | (0.011) |
| | [267] | [159] | [267] | [159] |
| Net Non-Interest Margin | -0.013 | -0.009 | -0.009 | -0.037 |
| | (0.018) | (0.017) | (0.023) | (0.036) |
| | [218] | [119] | [218] | [119] |

*Notes:* This table reports the difference in discontinuities (TC) using a local quadratic regression for various dependent variables and two optimal bandwidths (MSE and the CER), given in the first and second column respectively for each variable of interest. All regressions include bank and year fixed effects. Standard errors are clustered at the bank level and are reported in parentheses. $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 27: Controlling for Sentiments: Stress Testing & Bank Performance

| | Linear | | Quadratic | |
|---|---|---|---|---|
| Variable | MSE Optimal | CER Optimal | MSE Optimal | CER Optimal |
| Return on Equity | -0.006 | -0.231 | -0.151 | -0.189 |
| | (0.148) | (0.305) | (0.293) | (0.397) |
| | [122] | [70] | [122] | [70] |
| Return on Assets | -0.008 | -0.006 | -0.014 | -0.037 |
| | (0.017) | (0.022) | (0.026) | (0.042) |
| | [218] | [119] | [218] | [119] |
| Net Interest Margin | 0.011 | 0.016* | 0.012 | 0.003 |
| | (0.009) | (0.009) | (0.008) | (0.012) |
| | [267] | [159] | [267] | [159] |
| Net Non-Interest Margin | -0.013 | -0.010 | -0.009 | -0.039 |
| | (0.017) | (0.017) | (0.021) | (0.035) |
| | [218] | [119] | [218] | [119] |

*Notes:* This table reports the difference in discontinuities (TC) using a local quadratic regression for various dependent variables and two optimal bandwidths (MSE and the CER), given in the first and second column respectively for each variable of interest. All regressions include bank and year fixed effects. Standard errors are clustered at the bank level and are reported in parentheses. $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

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