Banking on Trust: Supervisory Transparency in Developing Economies*

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Abstract

We explore the role of trust in public institutions in influencing depositors' reactions to the disclosure of bank supervisory actions in a developing economy. Utilizing branch-level data on the deposits of commercial banks in India, we find that news of supervisory penalties on some banks leads depositors to withdraw funds from offending and neighboring nonoffending branches. Relative to regions with higher trust in public institutions, such withdrawals are more pronounced in regions with lower trust, including trust in the local governments, courts, and banks. We explore the determinants of such trust and find it strongly associated with information access and the quality of local services. Credit access and economic activity also decline in regions that witness deposit withdrawals. Our findings could inform regulators' decisions to disclose the outcome of their supervisory efforts in developing markets with weak enforcement and low trust in public institutions.

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1. Introduction

Bank regulators in developing countries often cite international best practices as motivation for their supervisory actions.[1] While this approach might be beneficial in areas such as capital adequacy frameworks or accounting and reporting systems, it may be less desirable regarding policies around bank transparency, particularly regulators' decisions to disclose the outcome of supervisory actions. Bank regulators disclose the outcomes of supervisory actions mainly to impose market discipline and share the burden of supervision with capital providers who may reallocate their capital based on this information (Calomiris & Kahn, 1991; Diamond & Rajan, 2001). In addition, disclosure holds regulators accountable and reduces capital providers' concerns that the regulator might be privately forbearing (Goldstein & Sapra, 2014; Kleymenova & Tomy, 2022). However, such disclosure also entails costs—it could result in increased fragility of the banking system if it leads to bank runs or could reduce ex ante risk-sharing opportunities (Allen & Gale, 2000; Diamond & Dybvig, 1983; Morris & Shin, 2002). Such disclosure may also limit the regulator's ability to forbear and thus make banks less likely to collaborate with the regulator.

Policies related to the disclosure of supervisory actions that work in developed economies may be ineffective in developing countries because market discipline presumes a certain degree of trust in the underlying institutions, which is generally low in developing countries. If trust in the regulator and associated institutions is low, then capital providers may view negative supervisory news for some banks as a signal of significant issues with all banks' management and supervision, thereby precipitating bank runs. Instead of reallocating their capital based on the supervisory disclosures, capital providers may remove their capital from the banking system altogether. This paper explores the role of trust in institutions

[1]For example, in 2021, the banking regulator in India (the Reserve Bank of India or RBI) asked banks to align their internal audit function with international best practices ("RBI ask banks to align internal audit function with global best practices," *Economic Times*, January 8, 2021). In 2004, citing international best practices, the RBI decided to disclose the penalties imposed on banks ("Enhancement of transparency on bank's affairs through disclosures," *RBI Press Release No.:RBI/2004-05/226*, July 15, 2013).

in influencing depositors' reactions to negative supervisory actions. We use the setting of a developing country—India—where trust in public institutions is generally low; however, there is significant within-country variation in such trust.

The Reserve Bank of India (RBI) regulates India's commercial banks, which make up 91% of the assets of the banking sector (RBI, 2022). The RBI can issue enforcement actions and monetary penalties against errant commercial banks. However, enforcement actions against commercial banks are infrequent, and the regulator generally uses penalties as its primary enforcement tool. In fact, at the time of our study, no commercial banks were subject to enforcement actions; thus, the imposition of penalties was of significant consequence. These penalties have been publicly disclosed starting November 2004, in RBI press releases and footnote disclosures in banks' annual reports. With the disclosure regime change in 2004, RBI also released information on penalties imposed prior to the date of disclosure. While most penalties were issued against nonbanking financial institutions and small cooperative banks, a few penalties were also issued against commercial banks. However, these penalties were generally minor, ranging from ₹0.5 million to ₹1.5 million.

It was only in 2013 that the RBI imposed large and significant penalties of ₹10 million and above on commercial banks following investigative reporting by the news media. Specifically, in 2013, the news website *Cobrapost* investigated three major private sector banks and unveiled videos where top executives and staff from these banks advised an undercover journalist on money laundering techniques. The public's uproar over this revelation led the RBI to thoroughly examine *all* commercial banks' financial records, internal controls, and compliance mechanisms at their main offices and several branches.[2] As opposed to other types of bank disclosures, these penalties were unprecedented and large and had significant media coverage. Therefore, this setting provides an ideal laboratory to study depositors' reactions to supervisory disclosures. If depositors were ever predisposed to respond to supervisory

[2]See, for example, "*Cobrapost* expose: Reserve Bank slaps fine on three banks," *The Hindu*, June 10, 2013.

interventions, this particular context would elicit a reaction.

We utilize granular, branch-level deposit data for the universe of commercial banks in India to study depositors' responses to the disclosure of these large regulatory penalties. Our headline results show that depositors react to the imposition of these penalties. Specifically, we find that total deposits at the branches of banks that receive penalties (treated banks) declined by 15%–17% relative to the branches of banks that did not receive penalties. These results are robust to including branch and year-specific fixed effects, time-varying bank-specific controls, and district × year fixed effects to control for any time-varying changes in the local demand for deposits.[3]

An important concern is that penalties are not randomly assigned. Therefore, unobserved bank or region-specific factors could drive the decline in deposits. To address this concern, we utilize the fact that branch location is quasi-random and driven by regulatory policy promoting the social cause of financial inclusion. For example, the RBI required banks to set up branches in rural areas if they expanded to urban regions. Therefore, a district's exposure to penalties is quasi-random. Consistent with our baseline results, district-level deposits declined by 7.3% in districts with high exposure to treated banks relative to the pre-treatment period and districts with low exposure to treated banks. These results allay concerns that our findings could be driven by unobserved factors unrelated to the penalties.

While we cannot distinguish between insured and uninsured deposits, it is worth noting that deposit insurance is not very effective. Although deposit insurance exists in India, the limit was low at ₹100,000 for our sample years, and was increased to ₹500,000 only in 2020. Importantly, there are significant frictions and delays in accessing deposit insurance. If a bank is in crisis, the regulator generally imposes restrictions on deposit withdrawals. Depositors may be allowed nominal withdrawals, which could be capped at as low as ₹1000.[4] Given

[3]Districts are local administrative units similar to counties in the United States.

[4]See, for example, "RBI puts PMC Bank under watch, customers can't withdraw more than ₹1,000 for 6 months," *India TV News*, September 24, 2019; and "Another PMC Bank: RBI steps in to curb withdrawal limit, assures depositors at the same time," *Financial Express*, January 14, 2020.

the frictions to accessing insured deposits, deposit insurance is less meaningful, especially for smaller depositors with low savings and limited means of buffering themselves against liquidity shocks. Thus, it is likely that insured depositors would behave similarly to uninsured depositors. This conjecture is consistent with research suggesting that developing countries' banks are particularly vulnerable to speculative runs (Acharya et al., 2022; Rojas-Suarez & Weisbrod, 1996).

Public institutions are generally weak in developing economies; therefore, an important concern with disclosing information on supervisory actions is that negative news about some banks could cause depositors to lose trust in the entire banking system if such news is perceived to be indicative of systemic deficiencies in the management and supervision of banks. Consistent with this idea, we find that depositors also withdraw their funds from the branches of nonoffending banks located in the vicinity of the offending banks' branches, indicating a broader loss of trust in the banking system. Specifically, following news of penalties, deposits of nonoffending bank branches located in the same zip code as the offending bank branches declined by 3%–10% relative to nonoffending and nonneighboring branches. It is reasonable to expect that depositors of neighboring branches would be more likely to learn about issues at the offending bank than depositors of nonneighboring branches—they could directly observe depositors of the offending banks withdrawing their funds, or rely on word-of-mouth channels. We also confirm that districts where offending and nonoffending branches are located are not systematically different along economic characteristics, mitigating concerns that regional differences might be driving our results.

To evaluate whether a lack of trust in public institutions is the mechanism that drives the responses of depositors of neighboring nonoffending branches, we rely on the India Human Development Survey (IHDS), which is a nationally representative survey of 42,152 households. We utilize responses related to trust in several crucial public institutions—politicians (to fulfill promises), state governments (to look after the people), local governments (to implement public projects), courts (to deliver justice), and banks (to keep money safe). Consis-

tent with a trust mechanism at work, we find that relative to states with lower trust in local governments, offending banks' branches in states with higher trust witness a lower decline in deposits. Furthermore, relative to states with lower trust in courts and banks, neighboring nonoffending branches in states with higher trust in courts and banks also witness a lower decline in deposits. In terms of economic magnitude, for a one standard deviation increase in trust in local governments, deposits at treated branches decline by 16% whereas, for a one standard deviation decrease in such trust, deposits decline by 29%. Similarly, for a one standard deviation increase in trust in courts, deposits at neighboring nonoffending branches decline by 6% whereas for a one standard deviation decrease such trust, deposits decline by 14%. Finally, for a one standard deviation increase in trust in banks, deposits at neighboring nonoffending branches decline by 3% whereas for a one standard deviation decrease in such trust, deposits decline by 12%.

We explore the determinants of trust in institutions using high-dimensional data on the predictors of trust that include the effectiveness of enforcement; ethnic, religious, and political conflict; social cohesion (shared values and community bonds); access to reliable information (access to news and confidence in the news media to report truthfully); the quality of local services such as hospitals, schools, and local government; corruption; crime; demographics (e.g., education levels); and economic indicators. Using principal component analysis to reduce the dimensionality of the data, we find that information access and the quality of local services are the most important determinants of trust in institutions. We test whether depositors react to these two determinants and find that they do, thereby delineating the channels underlying trust in public institutions.

Depositors may withdraw funds due to liquidity needs, deteriorating bank fundamentals (including signals of poor supervision), or beliefs about the behavior of other depositors (Artavanis et al., 2022; Iyer & Puri, 2012; Iyer et al., 2016). We account for changes in liquidity needs by including district $\times$ year fixed effects and using a well-defined control sample—it is unlikely that liquidity demands would vary systematically for depositors of

offending and nonoffending banks in the same district and year. Our results related to trust in institutions suggests that depositors view penalties as a signal of larger issues with the management and supervision of banks. These results, particularly that information access and the quality of local services underlies such trust and influences depositors' actions, suggests that our results are unlikely to be driven by depositors' expectations of others' responses.

Given the decline in deposits, we next investigate the local market effects of regulators disclosing penalties and depositors withdrawing funds. While we find no change in the credit disbursed at offending branches, neighboring branches see a decline in their lending activity by 3%–7%. Offending banks may have taken actions in anticipation to reduce the impact of deposit withdrawals on credit disbursed. On the other hand, nonoffending neighboring branches are less likely to have anticipated deposit withdrawals.

We also explore whether local economic activity is affected by the decline in deposits and loans. Following prior research, we use nighttime light intensity as a measure of economic activity (Asher et al., 2021; Henderson et al., 2011). As opposed to GDP data, which are only available at the district level, human-generated nighttime light intensity allows us to measure economic activity at the more granular town/village level. We find that, following the issuance of penalties, nighttime light intensity declines significantly in towns and villages that are more exposed to offending banks relative to areas that are less exposed. In particular, for a one percent increase in exposure to offending bank branches, town/village-level nighttime light intensity declines by 0.03%–0.04% in the years following the issuance of penalties. These results suggest that the disclosure of regulatory penalties had a net negative impact on credit disbursal and local economic activity, consistent with the idea that banks play a unique intermediation role in the economy (Diamond & Rajan, 2001).

We also explore where the deposits that leave the offending and neighboring branches go. Acharya et al. (2022) find that in times of crises, depositors move their deposits from private to public sector (state-owned) banks, which have an implicit state guarantee. However, we

do not find a flight of deposits to large public sector banks, potentially because 52% of the cases of large penalties were issued against public sector banks. Instead, our evidence suggests that at least some deposits flee to small regional banks (i.e., regional rural banks). Similar to the large public sector banks, regional rural banks are also government-owned and have an implicit state guarantee; however, they operate locally and tend to be smaller than the public sector banks that received penalties. Furthermore, unlike the officers at large public sector banks, drawn from a national talent pool and rotated out regularly, the officers at regional rural banks tend to belong to the local community, speak the local language, and are not rotated, making them more trusted. We find that deposits at regional rural banks increase by 14.5% in districts with high exposure to treated banks, relative to the pre-treatment period and to districts with a low exposure to treated banks.

Our work makes several contributions to the literature. Regulators disclose the outcomes of their supervisory actions to impose market discipline. Prior work that examines the impact of such regulatory disclosures focuses on developed markets and generally finds a reallocation of capital away from offending banks (e.g., Gopalan, 2022; Jordan et al., 2000; Kleymenova & Tomy, 2022). However, market discipline presumes a certain degree of trust in the underlying public institutions—that these institutions are competent, not captured by vested interests, and enforce laws effectively. Developing markets are marked by low trust in public institutions which could influence the efficacy of market discipline as a policy instrument. Consistent with low trust, using data that covers the entirety of the banking sector of a developing country, we find that depositors withdraw funds not only from offending banks, but also from neighboring nonoffending banks' branches. Further, the extent of withdrawal depends on the trust in public institutions in the region. Our findings underscore the importance of such trust as critical to the reallocation of capital and the imposition of market discipline.

Our work also contributes more generally to the literature on bank transparency and financial system stability (Acharya & Ryan, 2016; Anbil, 2018; Bushman & Williams, 2012;

Chen et al., 2022; Flannery, 1998; Flannery et al., 2013; Granja, 2018; Ryan, 2018). While regulators may disclose negative information to impose market discipline, such disclosure could also increase the risk of bank runs and financial system instability. Our results suggest that the risk of financial instability in response to greater transparency is high in the developing market context where trust in public institutions is weak, and speculative runs are not uncommon (Acharya et al., 2022; Rojas-Suarez & Weisbrod, 1996).

Finally, we contribute to the literature on trust (Alesina & La Ferrara, 2002; Guiso et al., 2009; La Porta et al., 1997; Sapienza et al., 2013). We explore the antecedents of trust in institutions in developing markets as they relate to depositors' actions. We find that information access and the quality of local services determine such trust.

2. Background and institutional setting

The banking sector in India includes scheduled and nonscheduled banks. Inclusion in the Second Schedule of the Reserve Bank of India Act of 1934 defines scheduled banks. These banks are classified as commercial or cooperative banks. Commercial banks are further classified into public sector banks (state-owned), private sector banks, and foreign banks. Cooperative banks can be classified into urban and rural cooperative banks and are similar to community banks in the United States. To be included in the Second Schedule of the RBI Act, a bank must satisfy specific criteria, such as maintaining certain thresholds of paid-up capital and reserves and having a track record of sound banking operations. Scheduled banks have access to credit facilities from the RBI, are eligible to participate in government-sponsored development programs, and have access to interbank funds. Nonscheduled banks are not included in the Second Schedule of RBI Act of 1934. Unlike scheduled banks, they are not eligible for certain facilities, such as access to the RBI's borrowing facilities or participation in government-sponsored development programs. Nonscheduled banks can offer various financial services but are not subject to the same regulatory oversight as scheduled banks. Scheduled commercial banks account for over 91% of the assets of the banking sector

(RBI, 2022). Our sample is comprised of these scheduled commercial banks.

The Reserve Bank of India, the country's central bank, is the primary regulator of scheduled commercial banks and is mandated to ensure financial stability and consumer and depositor protection. The Deposit Insurance and Credit Guarantee Corporation (DICGC), a subsidiary of the RBI, provides deposit insurance. The deposit insurance scheme in India was introduced in 1961 and has been revised several times since. In 1993, the deposit insurance limit was ₹100,000. It 2020, it was increased to ₹500,000.[5] However, significant delays to accessing deposit insurance exist (Iyer & Puri, 2012). Notably, the RBI suspends the convertibility of deposits in case of bank failure, resulting in a loss of liquidity for depositors. For example, insured depositors of PMC Bank, which failed in 2019, could not access their deposits even two years later.[6] Small depositors generally have lower wealth, and delays in accessing deposits could significantly affect them. For example, small depositors have limited savings and cannot buffer themselves against income shocks. Because they are likely to have fewer assets to use as collateral, their access to credit is limited, and they would face high borrowing costs. Therefore, small depositors worried about liquidity may not consider the existence of deposit insurance when deciding to withdraw their funds from troubled banks.

The RBI supervises banks and can impose enforcement actions and penalties on violating banks. No banks in our sample period were under an enforcement order, and imposing penalties was the primary tool that the regulator used against errant banks. The disclosure of penalties occurs in two ways: A press release issued by the regulator giving details of the circumstances under which it imposed the fines and a footnote disclosure in the banks' following annual report. The RBI decided to adopt a policy of greater transparency concerning the banks it supervised following the stock market scams of the early 2000s, based on the recommendations of a parliamentary committee to investigate these scams.[7] After weighing

[5]For further details, please see the "Deposit Insurance and Credit Guarantee Act 1961"(https://rbidocs.rbi.org.in/rdocs/Publications/PDFs/dicgc_act.pdf).

[6]See, "PMC Bank depositors in limbo. Depositors of PMC Bank still await clarity on withdrawals," *Hindu BusinessLine*, August 20, 2021.

[7]See, for example, "Scams that rocked the markets," *Hindu BusinessLine*, August 15, 2022.

the pros and cons of disclosure, and international best practices, the RBI decided to disclose details of penalties levied on banks.[8] Disclosure of penalties became effective as of November 1, 2004. However, most fines were against individuals, nonbanking financial corporations, or small cooperative banks rather than against commercial banks. The few fines that were issued against commercial banks were small and relatively insignificant, ranging from ₹0.5 million to ₹1.5 million.[9]

It was only in 2013 that there was a steep change in enforcement when the regulator imposed penalties of over ₹10 million on errant banks.[10] The average penalty amount in 2013 was significantly higher than in the previous years and stood at ₹21 million. The mean penalty amount in 2013 as a share of total revenue (profit after tax) was 0.04% (0.12%). The maximum penalty as a share of total revenue (profit after tax) was 0.15% (2.33%).

This steep change in enforcement followed an investigative piece by the news website *Cobrapost* in early 2013, spotlighting three large private sector banks. *Cobrapost* released video footage showing high-ranking officials and employees of the three banks suggesting methods for laundering money to an undercover reporter. Following the public outcry related to this exposé, the RBI inspected the books of accounts, internal control, and compliance systems of the three banks at their corporate offices and some branches. The inspection revealed several violations of know your customer (KYC) and anti–money laundering guidelines, leading to unprecedentedly large penalties on the order of ₹10–₹50 million against these banks. Importantly, the RBI stated that their investigation did not reveal any prima facie evidence of money laundering, which they could only determine after inspections by tax and enforcement agencies. Also, the RBI's press release related to these violations did not provide details of the specific violations at each bank but rather a summary of the violations

[8]Please see RBI Press Release No.:2004-05/226 issued on October 19, 2004.

[9]This translates to $6,048–$18,143 at an exchange rate of 82.67 INR/USD. In untabulated analysis, we find no change in deposits following these smaller penalties.

[10]Dr. Raghuram Rajan took over as the governor of RBI in September 2013. These penalties were publicly disclosed in June–August 2013, and were imposed towards the end of the previous RBI governor's tenure.

at all three banks.[11]

RBI inspected several other banks in the following months and issued penalties against an additional 28 banks. Similar to before, the RBI disclosures only contained a summary of the violations by these banks and little detail related to the specific violations of each bank. These violations included noncompliance with KYC norms and anti–money laundering guidelines, including customer identification procedures and risk categorization, failure to file cash transaction reports, nonadherence to instructions on monitoring transactions in customer accounts, and classification of accounts as inoperative or dormant. The banks also violated instructions on the upper limit for remittances and repatriation of funds, import of gold on a consignment basis, acceptance of cash above ₹50,000 from customers for the sale of gold coins, and the issue of demand drafts.[12]

3. Data and sample

3.1. Branch and bank-level data

We source branch-level deposit and credit data from the RBI's "Basic Statistical Returns" (BSR) dataset. Other studies have used this dataset, including Cole (2009) and Acharya et al. (2022). We have access to this data from 2000 to 2014. The data are annual as of March 31, the fiscal year-end date for all banks. The data contain deposits at the branch level, split by gender. This dataset also includes details such as the number of officers and subordinates employed at a branch. We require the branches to have existed for all 15 years to mitigate concerns that variation in sample size over time might be driving the results. We further exclude branches with zero deposit balances and high volatility which removes close to 3% of branches. Our final sample consists of 41,377 branches for 45 banks. Bank-level data comes from the Centre for Monitoring Indian Economy (CMIE) Prowess database, which contains the audited financial statements for all Indian companies.

[11] We provide RBI's press release related to these penalties in Appendix A.2.
[12] We provide RBI's press release related to these penalties in Appendix A.3 and Appendix A.4.

Table 1, Panel A, presents descriptive statistics related to the branch-year, bank and geographic-level variables. Table 1, Panel B, shows the difference in means between banks that received large penalties (*Treatment*) and those that did not (*Control*), in the year before the penalties were issued. The table shows that *Treatment* banks are larger than *Control* banks but similar in other bank characteristics, including capital ratio, nonperforming assets ratio, and return on assets. We winsorize all continuous variables at the 1% and 99% tails of their respective distributions in each sample year and provide detailed definitions of all variables used in our analyses in Appendix A.

3.2. Data on regulatory penalties

We source data on monetary penalties issued by the RBI against individuals and banks from the database Watchoutinvestors.com. This database compiles cases of fraud and non-compliance with regulations against individuals and companies and contains information on regulatory actions by 43 regulators across industries. Watchoutinvestors.com states the following as its mission: "To prevent unscrupulous entities/persons from harming investors and thereby help build public confidence in the financial system, enabling greater flow of public investment to the right avenues." As discussed in Section 2, the RBI decided to disclose information on fines starting in November 2004. However, most fines were against individuals, nonbanking financial corporations, or small cooperative banks rather than against commercial banks.

3.3. Other data

We source demographic and spatial characteristics data from the 2011 Census of India, and the India Human Development Survey (IHDS). We further source district-level GDP data from Indicus Analytics. Following recent research, we use nighttime luminosity as a proxy for local economic activity (Asher et al., 2021; Chodorow-Reich et al., 2020; Henderson et al., 2011; Majilla & Das, 2022). The nighttime light intensity data have several advantages—they can be measured at a more granular level and are devoid of GDP measurement issues

(Martinez, 2022). Data on nighttime light intensity are a consistently processed time series of annual global nighttime lights produced from monthly cloud-free average radiance grids. The data are collected by satellite and filtered to measure the quantity of artificial light in an area. We source this data from the Socioeconomic High-Resolution Rural-Urban Geographic Platform for India (SHRUG). These data are available from 2012 to 2021 and include the minimum, maximum, and mean light intensity at the town/village level.

4. Depositors' reactions to regulatory penalties

Our main specification uses a difference-in-differences design where the treated units consist of banks that received large penalties in 2013, whereas the control units include all other banks. Figure 1 presents the spatial distribution of treated and control bank branches and shows that the spread of branches is geographically extensive and not concentrated.[13] We estimate variations of the following model:

$$Y_{it} = \beta_0 + \beta_1 Treatment_i + \beta_2 Post_t + \beta_3 Treatment_i \times Post_t + \gamma X_{it-1} + \alpha_i + \delta_t + \epsilon_{it}, \tag{1}$$

where i indexes the bank branch and t the year. The variable Y_{it} represents the natural logarithm of total savings deposits at the branch-year level; *Treatment* is an indicator for banks that received large penalties; X is vector of bank-specific controls measured in the year prior to the treatment year and includes size (the natural log of total assets), capital ratio, nonperforming assets ratio, and return on assets; α_i represents bank-branch fixed effects; δ_t represents year fixed effects; ϵ is the error term. With the inclusion of branch and year fixed effects, the main effects on *Treatment* and *Post* are subsumed. In an additional specification, we include district and year fixed effects but drop branch fixed effects. We also estimate a further specification with district $\times$ year fixed effects to account for any time-varying changes

[13] Our results hold on including district fixed effects, which should account for any geographic clustering of treated and control branches.

in the demand for deposits.

We present results from the estimation of Equation 1 in Table 2, Panel A. Column (1) includes branch and year fixed effects, whereas column (2) includes district and year fixed effects. The results indicate that banks that receive large penalties witness a 17% decline in deposits following the penalty year relative to the control sample. In column (3), we include district $\times$ year fixed effects to account for any localized time-varying changes in the demand for deposits. The results are similar: treated bank branches see a 15% decline in total deposits. The coefficient estimates across all three columns are stable, suggesting that omitted variables are unlikely to bias our results.

We also assess the validity of the parallel trends assumption, which is required to draw credible inferences from a difference-in-differences design. Figure 2 shows the conditional trend from a regression where the dependent variable is total deposits at the branch-year level and the base year is 2000, the first year for which we have data. The regression includes branch fixed effects, year indicators, bank-specific controls, and the interaction of *Treatment* with year indicators. The figure plots the coefficients from the interaction of *Treatment* with the year indicators and shows a distinct decline in total deposits of the treated banks relative to the control banks in 2014, the year following the large monetary penalties.

Figure 2 also shows an increase in the volatility of deposits following the 2007–2008 financial crisis. India witnessed an average GDP growth rate of over 8% from 2002 to 2008, which led to an increase in household savings. As a result, bank deposits grew consistently during this period and reached an annual growth of 30% by 2008. Subsequently, the global financial crisis decelerated India's growth momentum, and GDP and income growth fell. Although government stimulus plans helped rebound growth, recovery remained uneven. As a result, deposit growth slowed and became more volatile. This increase in volatility is also consistent with the findings in Acharya et al. (2022) that speculative bank runs in India increased following the financial crisis.

A concern with our inferences from Table 2, Panel A, is that the regulator does not

randomly assign penalties. Although Table 1, Panel B, shows that treated and control banks are similar along performance characteristics such as nonperforming assets and return on assets, treated banks could be worse performers along other dimensions or there could be other unobserved factors that drive the assignment of penalties. Therefore, we might see a decline in deposits regardless of the penalties. We conduct an additional analysis to address this concern and make a causal link between the issuance of penalties and the subsequent decline in deposits. In this analysis, we utilize the fact that even though penalties are nonrandom, a district's exposure to penalties is quasi-random because regulatory policy partly determines the distribution of bank branches over districts. Even though treatment assignment is at the bank level, districts are treated differently based on the location of branches. Branch location is quasi-random because the RBI has maintained a licensing policy that mandates banks to open a certain percentage of their branches in rural and unbanked areas to promote financial inclusion. For instance, guidelines stipulated that out of every four new branches a bank opens, at least one should be in a rural area (Burgess & Pande, 2005). Given the institutional features that support the exogeneity of treatment at the district level, we estimate the following OLS model at the district-year level:

$$\begin{aligned} Y_{dt} = \beta_0 + \beta_1 Exposure_d + \beta_2 Post_t + \beta_3 Post_t \times Exposure_d + \alpha_d \\ + \delta_t + \epsilon_{dt}, \end{aligned} \tag{2}$$

where d indexes the district. The variable *Exposure* is the number of branches of offending banks scaled by the total number of branches in a district, expressed as a percentage and measured prior to the imposition of large penalties. In an additional specification, we define *Exposure* as an indicator variable which equals one for values above the median and zero otherwise. α_d represents district fixed effects. The remaining terms are as defined before. With the inclusion of district and year-fixed effects, the main effects of *Exposure* and *Post* are subsumed.

We present results from the estimation of Equation 2 in Table 2, Panel B. Columns (1)

and (2) of the table show that a one percent increase in *Exposure* is associated with a 0.2% decline in district-level deposits. In columns (3) and (4), *Exposure* is defined as an indicator variable. These columns show that district-level deposits decline by 7.3% in districts with high exposure to treated banks, relative to the pre-treatment period and to districts with low exposure to treated banks. These results further support our inference that the imposition of penalties resulted in an outflow of deposits from treated banks.

An additional concern is that pre-existing differences in the locations of treated and control branches could be driving our results. However, because we compare treated and control branches within a district, such pre-existing differences are unlikely to confound our results. Nonetheless, we conduct additional analysis to address this concern. Specifically, we study whether local economic conditions were different prior to treatment in districts where treated and control branches are located, using district-level GDP data. A district generally contains both treated and control branches. Therefore, we estimate the conditional trend from a regression where the dependent variable is per capita GDP at the district-year level and the base year is 2002, the first year for which we have the GDP data. The regression includes branch fixed effects, year indicators, bank-specific controls, and the interaction of *Treatment* with year indicators. Figure 3 shows the plot of coefficients from the interaction of *Treatment* with the year indicators and shows no differences in GDP for districts where treated and control branches are located prior to the treatment year, or in the three years following treatment.

5. Trust in institutions and depositors' actions

5.1. Deposits at nonoffending branches and the role of trust

We conjecture that trust in institutions plays a key role in determining depositors' actions in developing markets. Developing markets have weaker institutions and a lower trust in them. Therefore, depositors of banks that did not receive penalties but know about them might also react to news of the penalties. On the one hand, if depositors believe that penalties

at some banks are indicative of systemic deficiencies in the management and supervision of all banks, they may withdraw their funds from nonoffending banks as well. However, on the other hand, if they believe that the regulator correctly identified and disciplined bad banks, they may transfer their funds to the nonoffending banks. The behavior of depositors will depend crucially on the confidence they place in the regulatory authority and the entities responsible for appointing and empowering the regulator to fulfill its obligations effectively.

To delineate the role of trust in institutions, we focus on the deposits at branches of nonoffending banks in the vicinity of the offending banks. We focus on these neighboring nonoffending branches because depositors located near treated branches are more likely to know about the penalties—they could directly observe the actions of depositors at the offending bank. For example, Figure OA1 in Appendix A shows the crowd build-up during a bank run at Sri Guru Raghavendra Sahakara Bank in 2020. Depositors could also learn about penalties through word-of-mouth channels or social network effects, which likely operate in the local neighborhood of the treated banks. The literature has shown that social networks can influence individuals' decisions to withdraw their deposits from troubled banks (Bikhchandani et al., 1992; Iyer & Puri, 2012; Iyer et al., 2016; Kelly & Ó Gráda, 2000; Kiss et al., 2014). For example, Kelly & Ó Gráda (2000) find evidence of depositors' networks playing a crucial role in their decision to withdraw deposits from a bank in New York during two waves of panic in the 1850s. They use the county of origin of recent Irish immigrants to construct their network measures. Iyer & Puri (2012), in their study of a bank run in India, also find that depositors' social networks are relevant in predicting their decision to run. They measure social networks spatially as depositors' neighborhoods and based on information about who referred the depositor to the bank.

Based on these arguments, we test whether depositors of neighboring nonoffending branches react to the news of penalties. Specifically, we estimate variations of the following equation

using OLS:

$$Y_{it} = \beta_0 + \beta_1 Treatment_i + \beta_2 Neighbor + \beta_3 Post_t + \beta_4 Treatment_i \times Post_t + \beta_5 Neighbor_i \times Post_t + \gamma X_{it-1} + \alpha_i + \delta_t + \epsilon_{it}, \tag{3}$$

where *Neighbor* is an indicator that equals one for nonoffending banks' branches located in the offending bank's zip code. The remaining variables are as defined before. With the inclusion of branch and year fixed effects, the main effects on *Treatment*, *Neighbor*, and *Post* are subsumed.

Table 3 presents the results from the estimation of Equation 3. Column (1) of the table includes branch and year fixed effects, column (2) includes district and year fixed effects, and column (3) includes district × year fixed effects. The coefficients of *Neighbor*×*Post* across all columns show a decline in deposits. Specifcially, the deposits of nonoffending branches that are located in the same zip code as offending branches witness a 3%–10% decline in the deposits in the post-treatment period, relative to nonoffending and nonneighboring branches.

As discussed above, we hypothesize that the mechanism behind the depositors of neighboring branches withdrawing their deposits is a lack of trust in public institutions. Depositors may think that penalties imposed on certain banks suggest broader management and oversight issues in the banking sector, leading them to also pull their funds from nearby branches. To test this hypothesis, we use several measures of institutional trust, that vary by region.

We begin by utilizing survey data from the India Human Development Survey, which is a nationally representative survey of 42,152 households.[14] The survey covers questions related to several social and economic topics. We use data from IHDS-II for 2011–12. Specifically, we rely on the questions related to confidence in institutions. Survey respondents were asked: *I am going to name some institutions in the country. As far as the people running these institutions are concerned, would you say you have (1) A great deal of confidence, (2)*

[14]This survey is designed and administered by the University of Maryland and the National Council of Applied Economic Research (NCAER). For further details please see Desai et al. (2010).

Only some confidence, and (3) Hardly any confidence at all. We utilize responses related to the following institutions: politicians (to fulfil promises), state government (to look after the people), village panchayats (to implement public projects), courts (to deliver justice), and banks (to keep money safe).[15] We create an indicator variable that takes a value of one if respondents have "A great deal of confidence," and zero otherwise. Given the fewer number of observations at the district level, we aggregate the indicators to the state level. We then standardize these state-level aggregates to compare the various measures across states. The resulting measures of *Trust (Politicians)*, *Trust (State Government)*, *Trust (Village Panchayats)*, *Trust (Courts)*, and *Trust (Banks)*, are continuous with larger values representing greater levels of trust. Table 1, Panel A, presents descriptive statistics for these measures.

To evaluate whether trust in institutions plays a role in depositors' decisions to withdraw their funds, we estimate variations of the following equation:

$$\begin{aligned} Y_{it} = {} & \beta_0 + \beta_1 Treatment_i + \beta_2 Neighbor_i + \beta_3 Post_t + \beta_4 Trust_s \\ & + \beta_5 (Treatment_i \times Post_t) + \beta_6 (Neighbor_i \times Post_t) \\ & + \beta_7 (Treatment_i \times Post_t \times Trust_s) + \beta_8 (Neighbor_i \times Post_t \times Trust_s) \\ & + \gamma X_{it-1} + \alpha_i + \delta_t + \epsilon_{it}, \end{aligned} \tag{4}$$

where *Trust* represents the state-level (s) measures *Trust (Politicians)*, *Trust (State Government)*, *Trust (Village Panchayat)*, *Trust (Courts)*, and *Trust (Banks)* described above. The main effects on *Treatment, Neighbor, Post*, and *Trust* are subsumed with the inclusion of branch and year fixed effects. The remaining variables are as described before. In an additional specification, we include bank-fixed effects instead of branch-fixed effects. This specification allows us to estimate the effects within a bank—that is, how deposits at various

[15] Panchayats are a form of local government or village council primarily found in rural areas and play a crucial role in grassroots-level governance.

branches of the same bank change with exposure to high and low-trust regions.[16]

Results from the estimation of Equation 4 are presented in Table 4. The odd-numbered columns include branch and year-fixed effects, whereas the even-numbered columns include bank and year-fixed effects. Remarkably, the coefficient estimates are stable and not influenced by the inclusion of bank or branch fixed effects, suggesting that omitted variable bias is not a big concern in our setting. Columns (1)–(4) of the table show that trust in politicians and the state government does not significantly affect depositors' decisions to withdraw their funds. However, columns (5) and (6) of the table show that treated branches located in states with relatively higher levels of trust in the local government (village panchayats) witness a lower decline in deposits relative to treated branches in states with low levels of trust. In terms of economic magnitude, for a one standard deviation increase in *Trust (Village Panchayat)*, deposits at treated branches decline by 16% whereas, for a one standard deviation decrease in *Trust (Village Panchayat)*, deposits decline by 29%. Village panchayats play a key role in local governance and are the unit of government that most depositors would interact with and would, therefore, inform their perception of trust in public institutions. For the same reason, trust in politicians and the state government does not feature in either treated or neighboring branches' depositors' decisions to withdraw funds as these government units are more removed, and depositors may not interact much with them.

Columns (7)–(10) of Table 4 show that trust in courts and banks plays a significant role in the withdrawal decisions of depositors of neighboring nonoffending branches. In terms of economic magnitude, for a one standard deviation increase in *Trust (Courts)*, deposits at neighboring nonoffending branches decline by 6% whereas for a one standard deviation decrease in *Trust (Courts)*, deposits decline by 14%. Similarly, for a one standard deviation increase in *Trust (Banks)*, deposits at neighboring nonoffending branches decline by 3%

[16]In addition, for the tests related to *Trust (Banks)* we control for variation in financial inclusion at the district level using the Crisil Inclusix index of financial inclusion. The index combines various parameters of financial inclusion, including deposits, credit, bank branch, and insurance penetration. We also interact the Inclusix index with *Trust (Banks)* because financial inclusion is likely to be higher in districts with higher trust in banks.

whereas for a one standard deviation decrease in *Trust (Banks)*, deposits decline by four times of that at 12%. These findings suggest that a lack of trust in public institutions is one reason why depositors withdraw their funds from neighboring, nonoffending branches.

5.2. What determines trust in institutions?

Having established that trust in institutions plays an important role in depositors' decisions to withdraw their funds, we next dig into the factors that drive the variation in perceptions of trust to better understand the motivations behind depositors' actions. Specifically, we estimate variations of the following equation:

$$\begin{aligned} Trust_s = \beta_0 &+ \beta_1 Enforcement_s + \beta_2 Conflict_s + \beta_3 Social\ Cohesion_s + \beta_4 Information\ Access_s \\ &+ \beta_5 Quality\ of\ Local\ Services_s + \beta_6 Corruption_s + \beta_7 Crime_s \\ &+ \beta_8 Demographics_s + \beta_9 Macro_s + \epsilon_s. \end{aligned} \tag{5}$$

The dependent variable *Trust* represents the measures of *Trust (Village Panchayat)*, *Trust (Courts)*, and *Trust (Banks)* described above. The nine predictor variables in Equation 5 are also measured at the state level and capture various dimensions of trust in institutions. We include several measures of these predictor variables for 43 measures in total. We briefly describe these measures below and include detailed definitions and sources in Appendix B. Finally, given the high-dimensional data (i.e., 43 predictor variables), we use Principal Component Analysis (PCA) to reduce the dimensionality of the data.[17]

The variable *Enforcement* represents the strength of enforcement. We expect trust in institutions to be higher in states that better enforce laws. Indian courts are notoriously slow, driven by judicial vacancies, inefficiency, and resource constraints (Datta & Rai, 2021). Therefore, following the literature, we utilize data on the average age of pending civil cases in Indian high courts to measure the strength of enforcement (Boehm & Oberfield, 2020).

[17] In most cases, we use data before the treatment. In cases where this is not possible, we use the best available alternative, which could be more recent data. However, the constructs we measure (e.g., enforcement or conflict) persist over time in states, making this less of a concern.

The variable *Conflict* represents the extent of ongoing ethnic or religious conflict. We expect trust in institutions to be low in regions with high conflict, particularly if opposing groups perceive those institutions as partisan (Rohner et al., 2013). We measure *Conflict* using various proxies. First, we use the number of conflicts from the Armed Conflict Location and Event Dataset (ACLED), which captures political conflict events in the country (Raleigh et al., 2010). Second, we use the incidence of Hindu-Muslim riots from the Inter-University Consortium for Political and Social Research (ICPSR). While cases of political violence can vary over time and geography, the distribution of Hindu-Muslim conflict over states is generally persistent over time (Iyer & Shrivastava, 2018; Varshney, 2003). Such persistence suggests that Hindu-Muslim conflict may be a function of entrenched institutions and, therefore, more closely associated with trust in institutions. Third, we utilize survey data on perceptions of conflict in the neighborhood and local community from the IHDS. Finally, we include data on riots reported by the National Crime Records Bureau (NCRB). Using PCA, we generate the first component representing the maximum variation from these conflict variables. Our final measure of *Conflict* is the first PCA component.

Social Cohesion represents strong community bonds and shared values—factors that should be associated with higher trust in public institutions. Strong community bonds and shared values are associated with high social capital, defined as the features of social organization, such as networks, norms, and trust, that facilitate coordination and cooperation for mutual benefit (Putnam, 1993). Studies have associated trust and social capital with higher civic engagement and cooperation, higher voter turnout, and efficient institutions promoting growth and development (Banfield, 1967; La Porta et al., 1997; Putnam, 2000; Sapienza et al., 2013). We utilize survey data on membership in local social and political associations and responses related to the strength of community bonds as measures of social cohesion. As described in Appendix B, the IHDS reports 18 such variables.

In addition, social capital and trust are likely to be higher in regions with greater population homogeneity as people are more likely to interact with others who are similar to

them, and increased interaction builds trust (Alesina & La Ferrara, 2000; Guiso et al., 2004). Therefore, we also proxy for the construct of *Social Cohesion* using two measures of religious diversity in the population (Shanon-Weiner Diversity Index and Gini-Simpson Diversity Index). Our final measure of *Social Cohesion* is the first principal component of these 20 variables related to social cohesion.

Access to timely and accurate information on important local issues such as education, elections, the environment, or the functioning of the local government can influence trust in institutions. Accurate and timely information allows the electorate to hold officials and politicians responsible for their actions. We measure access to information using local news circulation and survey data on the perceived confidence in the news media to disseminate the truth. *Information Access* is the first principal component of these variables. Relatedly, the quality of local services such as health, education, and the police can influence trust in public institutions. We measure this construct using survey data on the confidence in police (to enforce the law), hospitals (to provide good treatment), and schools (to provide good education). As before, *Quality of Local Services* is the first principal component of these variables.

Corruption and crime can lead to a loss of credibility and confidence in public institutions, leading to lower trust. We use data on corruption and crime cases reported by the NCRB. We also use the incidence of electricity theft as an additional measure of corruption (Gaur & Gupta, 2016). We use the first principal components of these variables related to corruption and crime as our final measures of *Corruption* and *Crime*. Finally, we control for demographic and economic characteristics using the proportion of individuals with a college degree, unemployment rate, and state-level per capita GDP.

Results from the estimation of Equation 5 presented in Table 5. Columns (1) and (2) of the table show that access to information is significantly associated with trust in the local government and courts, whereas column (3) shows that the quality of local services is significantly associated with trust in banks. With an adjusted R^2 of 25.6%–48.5%, our

model appears to capture key attributes associated with trust in local government, courts, and banks.

To assess whether depositors respond to these two dimensions of trust (i.e., information access and the quality of local services), we reestimate Equation 4 after replacing *Trust* with the variables *Information Access* and *Quality of Local Services*. Results from this estimation are presented in Table 6. Column (1) of the table shows that *Information Access* significantly predicts the decline in deposits at neighboring nonoffending branches. In terms of economic magnitude, for a one standard deviation increase in *Information Access*, deposits at neighboring nonoffending branches decline by 5%, whereas for a one standard deviation decrease in *Information Access*, deposits decline by 14%. Column (2) of Table 6 shows that the *Quality of Local Services* also significantly predicts the decline in deposits at neighboring nonoffending branches. In terms of economic magnitude, for a one standard deviation increase in *Information Access*, deposits at neighboring nonoffending branches decline by 7%, whereas for a one standard deviation decrease in *Information Access*, deposits decline by 13%.

Overall, the results in this section show that trust in public institutions, including trust in the local government, courts, and banks, significantly predict depositors' reactions to regulatory penalties. Furthermore, the underlying determinants of such trust are access to information and the quality of local services.

6. Changes in credit and economic activity

6.1. Changes in credit

We next examine whether the decline in deposits at treated and neighboring branches is associated with changes in credit provision in the local market. Bank branches in India can source deposits from one region and lend them out to other regions. Some branches are designated explicitly as deposit-taking branches and do not give out much credit. Furthermore, although deposit rates are set at the headquarters level, branches have considerable flexibil-

ity in setting loan rates, particularly for retail loans. Banks could also switch to wholesale sources of funding. These factors suggest that a decline in deposits need not translate to decreased credit access at the local level.

In Table 7, we present results from estimating changes in credit at the branch-year level. Specifically, we re-estimate Equation 1, where the dependent variable now represents the natural logarithm of total credit at the branch-year level. As the table shows, neighboring banks witness a 3%–7% decline in total outstanding loans following the penalty year relative to the control sample of nonoffending and nonneighboring branches. In contrast, offending branches do not see a decline in credit, suggesting that they may have taken actions in anticipation. Neighboring nonoffending banks are less likely to have anticipated deposit withdrawals.

6.2. Changes in economic activity

We also explore the impact of the decline in deposits and credit on local economic activity. Although we find no changes in district-level GDP following the imposition of penalties (Figure 3), GDP may not capture changes in productive activity at the micro level, that is, within various areas in a district. Therefore, following prior work, we use nighttime light intensity as a measure of economic activity (Asher et al., 2021; Henderson et al., 2011), which allows us to measure changes in economic activity at the more granular town/village level. Specifically, we estimate variations of the following model at the town/village-year level:

$$\begin{aligned} Night\ Luminosity_{vt} = \beta_0 + \beta_1 Exposure\ (Town/Village)_v + \beta_2 Post_t \\ + \beta_3 Post_t \times Exposure\ (Town/Village)_v + \delta_t + \omega_v + \epsilon_{vt}, \end{aligned} \tag{6}$$

where *Night Luminosity* is the natural logarithm of the mean and maximum nighttime light intensity aggregated at the town/village(v)-year level.[18] The variable *Exposure (Town/Village)* represents a town/village's exposure to offending banks and is measured as the number of

[18]We do not include the minimum light intensity as these mostly consist of zeros.

branches of offending banks scaled by the total number of branches in that town/village, expressed as a percentage and measured in the year prior to the imposition of large penalties. ω_v represents town/village fixed effects. The remaining variables are as defined before. With the inclusion of town/village and year-fixed effects, the main effects of *Exposure (Town/Village)* and *Post* are subsumed.

Results from the estimation of Equation 6 are presented in Table 8. Columns (1) and (3) include only year fixed effects whereas the remaining columns include year and town/village fixed effects. Across all specifications, we find that a one percent increase in *Exposure* is associated with a 0.03%–0.04% decline in nightlights luminosity. Given data limitations, the sample for this analysis begins in 2012. Also, the decline in economic activity may only manifest in the long run; therefore, we extend the sample for this estimation to 2021. These results suggest that the decline in deposits and loans through greater exposure to offending banks' branches is associated with a long-term decline in productive activity.

7. Additional analysis

7.1. Where do the withdrawn deposits go?

We next explore where the deposits that leave the commercial banks following the imposition of regulatory penalties go. Research finds that during crisis times, deposits move to public sector banks which are state-owned and whose obligations are expected to be fulfilled by the government in case of bank failure (Acharya et al., 2022). In our sample, 52% of all large penalties were issued against public sector banks, making it unlikely that deposits would flee to these banks. Consistent with this, in untabulated analysis, we do not find any evidence that deposits flee to public sector banks following the disclosure of large penalties.

We also study changes in the deposits of regional rural banks. These banks are also state-owned but are smaller than the public sector banks that receive penalties. Regional rural banks operate more locally relative to public sector banks—they have greater local expertise and bank officers who belong to the local community. Unlike the officers at large

public banks, drawn from a national pool and rotated out regularly, the officers at regional rural banks are not rotated and are more likely to speak the local language and to be aware of local customs, making them more trusted.

To assess whether deposits move to regional rural banks, we estimate variations of the following model at the district level:

$$Y_{dt} = \beta_0 + \beta_1 Exposure_d + \beta_2 Post_t + \beta_3 Post_t \times Exposure_d + \delta_t + \omega_d + \epsilon_{it}, \tag{7}$$

where Y_{dt} is the natural logarithm of total deposits of regional rural banks at the district and year level. The remaining variables are as defined before. With the inclusion of district and year-fixed effects, the main effects of *Exposure* and *Post* are subsumed.

Results from the estimation of Equation 7 are presented in Table 9. Columns (1) and (3) do not include district fixed effects, whereas columns (2) and (4) do. The results in Column (2) shows that total deposits at regional rural banks in districts that are more exposed to offending banks increase, relative to districts that are less exposed. In particular, for a one percent increase in exposure to offending branches, deposits of regional rural banks increase by a relative 0.3%. However, the coefficient is not significant at conventional levels (p-value of 0.124). In columns (3) and (4), *Exposure* is defined as an indicator variable. Column (4) shows that deposits at regional rural banks increase by 14.5% in districts with high exposure to treated banks, relative to the pre-treatment period and to districts with a low exposure to treated banks. These results suggest that deposits that leave offending banks move to smaller, more trusted regional banks.

8. Conclusion

In this paper, we examine the consequences of the disclosure of bank supervisory actions in developing economies, focusing on the case of India. Bank regulators disclose the outcomes of their supervisory activities to promote market discipline and share supervision responsibility with capital providers who may discipline offending banks by reallocating their capital.

However, market discipline presumes a certain degree of trust in the underlying institutions, that these institutions are competent, not captured by vested interests, and enforce laws effectively. Supervisory disclosures could increase the fragility of the banking system and the probability of bank runs, especially in developing markets where institutions are weak, and trust in the formal sector is low.

We explore the role of trust in institutions in determining depositors' responses to regulatory penalties. We find that depositors respond to the imposition of regulatory penalties and withdraw deposits from the branches of penalized banks. Importantly, depositors also withdraw funds from the branches of nonoffending banks near the offending banks, indicating a loss of trust in the banking system. Depositors at nonoffending neighboring branches are more likely to learn about the penalties than depositors at nonneighboring branches through word-of-mouth channels or direct observation.

To examine whether a lack of trust is the mechanism that drives depositors' actions, we utilize survey data on trust in public institutions. We find that trust in local governments, courts, and banks plays a significant role in depositors' decisions to withdraw funds. Digging deeper, we find that such trust in institutions is explained by information access (measured as news circulation and confidence in the news media to report news truthfully) and the quality of local services (measured as confidence in hospitals, schools, and the police).

We also study whether the decline in deposits influences local economic activity. We find a decline in credit disbursed at neighboring nonoffending branches. Furthermore, the decline in deposits and loans affects local economic activity, as indicated by a more significant reduction in nighttime light intensity in towns and villages that are more exposed to offending banks.

Finally, we also investigate where the withdrawn deposits go and find evidence that some deposits move to regional rural banks that are government-owned but smaller than the public sector commercial banks. Unlike commercial banks, officers at regional rural banks are drawn from the local community and are not periodically rotated out. Therefore, regional rural

banks are likely to be more trusted, further reinforcing our results that depositors' actions are influenced by trust.

Overall, our study sheds light on regulators' challenges, especially in developing markets, when disclosing negative information about banks. We find that in developing economies where institutions are weak, trust in public institutions plays a crucial role in depositors' responses to the disclosure of supervisory action.

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Appendix A. Variable definitions

Variable	Definition	Source
Dependent Variables		
Deposits (Total)	Natural logarithm of the total amount of deposits in savings accounts at branch-year level, winsorized at 1^{st} and 99^{th} percentile	BSR data from RBI
Deposits (Regional Rural)	Natural logarithm of the total amount of deposits in regional rural banks at district-year level, winsorized at 1^{st} and 99^{th} percentile	BSR data from RBI
Loans (Total)	Natural logarithm of the total amount of loans disbursed at branch-year level, winsorized at 1^{st} and 99^{th} percentile	BSR data from RBI
Night Luminosity	Natural logarithm of the mean and maximum nighttime light intensity aggregated at the town/village-year level	SHRUG, VIIRS
Independent Variables		
Capital Ratio	Capital adequacy ratio (in percent) of a given bank, measured in 2012, the year before the treatment year; in percentages	Prowess database
College Degree	The proportion of men or women at or above the age of 20 in a district who hold a college degree or higher	2011 Census of India
Conflict	First Principal Component score derived from all the variables in the "Conflict" category defined in Appendix B	Authors' calculations
Enforcement	Average age of pending cases (measured in days) in High Courts in 2016	Boehm & Oberfield (2020)
Corruption	First Principal Component score derived from all the variables in the "Corruption" category defined in Appendix B	Authors' calculations
Crime	First Principal Component score derived from all the variables in the "Crime" category defined in Appendix B	Authors' calculations
Exposure	Number of branches of offending banks scaled by the total number of branches in that district, expressed as a percent and measured in the year prior to treatment	BSR data, Authors' calculations
Exposure (indicator)	Indicator variable that takes the value of 1 if the number of branches of offending banks scaled by the total number of branches in that district is above the sample median and 0 otherwise	BSR data, Author's calculations

Exposure (Town/Village)	Number of branches of offending banks scaled by the total number of branches in that town/village, expressed as a percent and measured in the year prior to treatment	BSR data, Authors' calculations
Per Capita GDP	Per Capita GDP at state level	Indicus Analytics
Information Access	First Principal Component score derived from all the variables in the "Information Access" category defined in Appendix B	Authors' calculations
Neighbor	Indicator variable which takes the value of 1 for branches located in the same zip code of a branch of offending banks and 0 otherwise	Authors' calculations
Nonperforming Assets Ratio	Net non-performing assets to net advances ratio of a given bank, measured in 2012, the year before the treatment year; in percentages	Prowess database
Post	Indicator variable which takes the value of 1 for the period following the imposition of regulatory penalties $\geq$ ₹10 million, and 0 otherwise	Authors' calculations
Quality of Local Services	First Principal Component score derived from all the variables in the "Quality of Local Services" category defined in Appendix B	Authors' calculations
Return on Assets	Return on total assets of a given bank, measured in 2012, the year before the treatment year; in percentages	Prowess database
Size	Natural logarithm of the total assets of a given bank, measured in 2012, the year before the treatment year	Prowess database
Social Cohesion	First Principal Component score derived from all the variables in the "Social Cohesion" category defined in Appendix B	Authors' calculations
Treatment	Indicator variable which takes the value of 1 for banks that received a monetary penalty of $\geq$ ₹10 million and 0 otherwise	Watchoutinvestors dataset, Authors' calculations
Trust (Banks)	The state-wise average of an indicator variable that takes the value of 1 if the survey respondent has "a great deal of confidence" in banks and 0 otherwise, demeaned and scaled by its standard deviation	IHDS-2, Authors' calculations
Trust (Courts)	The state-wise average of an indicator variable that takes the value of 1 if the survey respondent has "a great deal of confidence" in courts and 0 otherwise, demeaned and scaled by its standard deviation	IHDS-2, Authors' calculations

Trust (Politicians)	The state-wise average of an indicator variable that takes the value of 1 if the survey respondent has "a great deal of confidence" in politicians and 0 otherwise, demeaned and scaled by its standard deviation	IHDS-2, Authors' calculations
Trust (State Government)	The state-wise average of an indicator variable that takes the value of 1 if the survey respondent has "a great deal of confidence" in state governments and 0 otherwise, demeaned and scaled by its standard deviation	IHDS-2, Authors' calculations
Trust (Village Panchayat)	The state-wise average of an indicator variable that takes the value of 1 if the survey respondent has "a great deal of confidence" in village panchayats and 0 otherwise, demeaned and scaled by its standard deviation	IHDS-2, Authors' calculations
Unemployment Rate	Unemployment rate at state level	2011 Census of India

Appendix B. Determinants of trust in institutions

Variable category	Variable description	Source
Conflict	Average number of conflicts scaled by population (per 1000); 2016-2022	ACLED
Conflict	Total number of Hindu-Muslim conflicts, scaled by population (per 1000); 1950-1995	Varshney-Wilkinson Dataset on Hindu-Muslim Violence in India, ICPSR
Conflict	Incidence of a lot of conflict in the village/urban neighborhood; 2011-2012	IHDS-2
Conflict	Incidence of a lot of conflict among the communities/jatis in the village/urban neighborhood; 2011-2012	IHDS-2
Conflict	Number of riots scaled by population (per 1000 people); 2012	NCRB
Corruption	Number of corruption cases scaled by population (per million); 2021	NCRB
Corruption	Percentage of electricity loss; 2009	Gaur & Gupta (2016)
Crime	Incidence of someone in the household having their belongings stolen in the last 12 months; 2011-2012	IHDS-2
Crime	Incidence of break-ins or illegal entry into homes in the last 12 months; 2011-2012	IHDS-2
Crime	Incidence of attacks or threats against someone in the household in the last 12 months; 2011-2012	IHDS-2
Crime	Number of murder cases scaled by population (per 1000); 2012	NCRB
Crime	Total number of crimes scaled by population (per 1000); 2012	NCRB
Demographics	Proportion of individuals who hold a college degree or higher; 2011	Census of India
Enforcement	Average age of pending cases (measured in days) in High Courts; 2016	Boehm & Oberfield (2020)
Information Access	The number of reported circulations of daily publications in a given state scaled by the total population of that state; 2013-2014	Office of Registrar of Newspapers for India
Information Access	Incidence of a great deal of confidence in the news media to print/broadcast the truth; 2011-2012	IHDS-2
Quality of Local Services	Incidence of a great deal of confidence in the police to enforce the law; 2011-2012	IHDS-2
Quality of Local Services	Incidence of a great deal of confidence in government schools to provide good education; 2011-2012	IHDS-2
Quality of Local Services	Incidence of a great deal of confidence in private schools to provide good education; 2011-2012	IHDS-2
Quality of Local Services	Incidence of a great deal of confidence in government hospitals to provide good treatment; 2011-2012	IHDS-2
Quality of Local Services	Incidence of a great deal of confidence in private hospitals to provide good treatment; 2011-2012	IHDS-2

Macro	Unemployment rate; 2011	Census of India
Macro	Per Capita GDP; 2012	Indicus Analytics
Social Cohesion	Shanon Weiner measure of population diversity (using religion); 2011	Census of India
Social Cohesion	Gini Simpson measure of population diversity (using religion); 2011	Census of India
Social Cohesion	Incidence of someone in the household belonging to a mahila mandal (women's social service club); 2011-2012	IHDS-2
Social Cohesion	Incidence of someone in the household belonging to a youth club/sports group/reading room; 2011-2012	IHDS-2
Social Cohesion	Incidence of someone in the household belonging to an employee union/professional group; 2011-2012	IHDS-2
Social Cohesion	Incidence of someone in the household belonging to a self-help group; 2011-2012	IHDS-2
Social Cohesion	Incidence of someone in the household belonging to a credit/savings group; 2011-2012	IHDS-2
Social Cohesion	Incidence of someone in the household belonging to a religious group; 2011-2012	IHDS-2
Social Cohesion	Incidence of someone in the household belonging to a social group/festival society; 2011-2012	IHDS-2
Social Cohesion	Incidence of someone in the household belonging to a caste association; 2011-2012	IHDS-2
Social Cohesion	Incidence of someone in the household belonging to a development group/NGO; 2011-2012	IHDS-2
Social Cohesion	Incidence of someone in the household belonging to an agricultural/milk/other cooperative; 2011-2012	IHDS-2
Social Cohesion	Incidence of someone in the household belonging to a political party; 2011-2012	IHDS-2
Social Cohesion	Incidence of someone in the household belonging to a lions/rotary club; 2011-2012	IHDS-2
Social Cohesion	Total number of aforementioned groups to which someone in the household belongs; 2011-2012	IHDS-2
Social Cohesion	Incidence of someone in the household belonging to at least one of the aforementioned groups; 2011-2012	IHDS-2
Social Cohesion	Incidence of someone in the household participating in a public meeting called by the village panchayat/nagarpalika/ward committee (local government) in the last year; 2011-2012	IHDS-2
Social Cohesion	Incidence that someone in the household is a member/official of the village panchayat/nagarpalika/ward committee (local government); 2011-2012	IHDS-2
Social Cohesion	Incidence that someone close to the household is a member/official of the village panchayat/nagarpalika/ward committee (local government); 2011-2012	IHDS-2
Social Cohesion	Incidence that people in the community bond together to solve problems; 2011-2012	IHDS-2

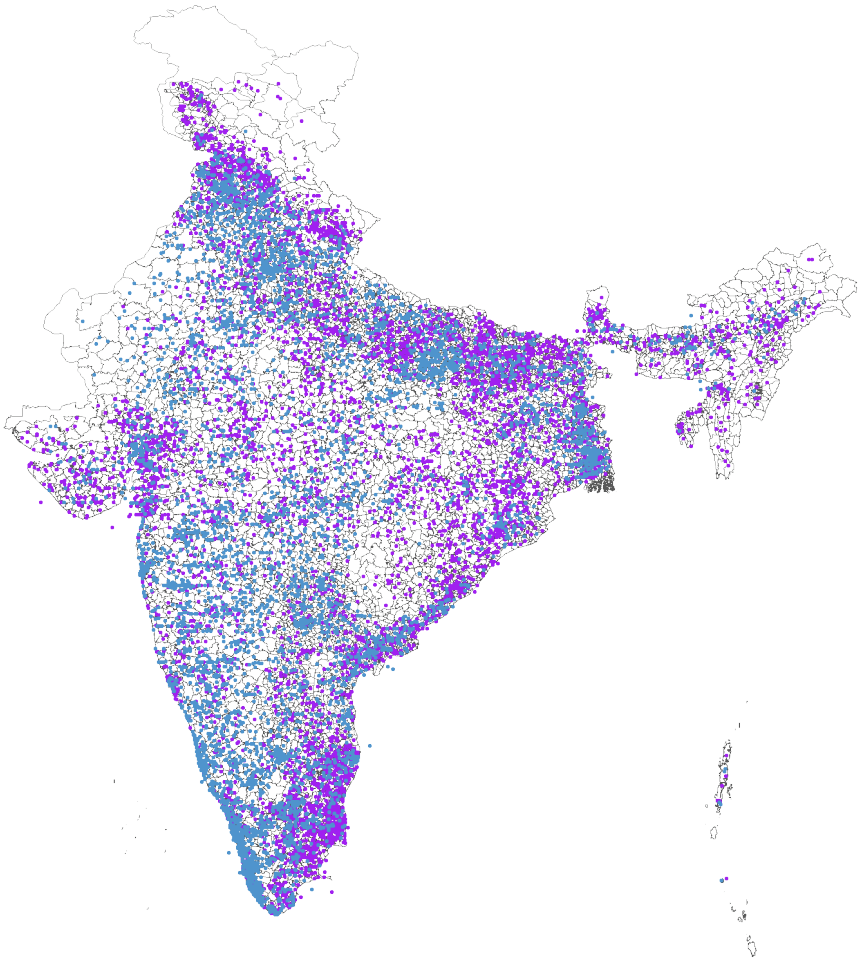

Figure 1: Spatial distribution of bank branches

This figure shows the spatial distribution of bank branches. The purple dots represent the bank branches that received penalties. The blue dots represent bank branches that did not receive penalties.

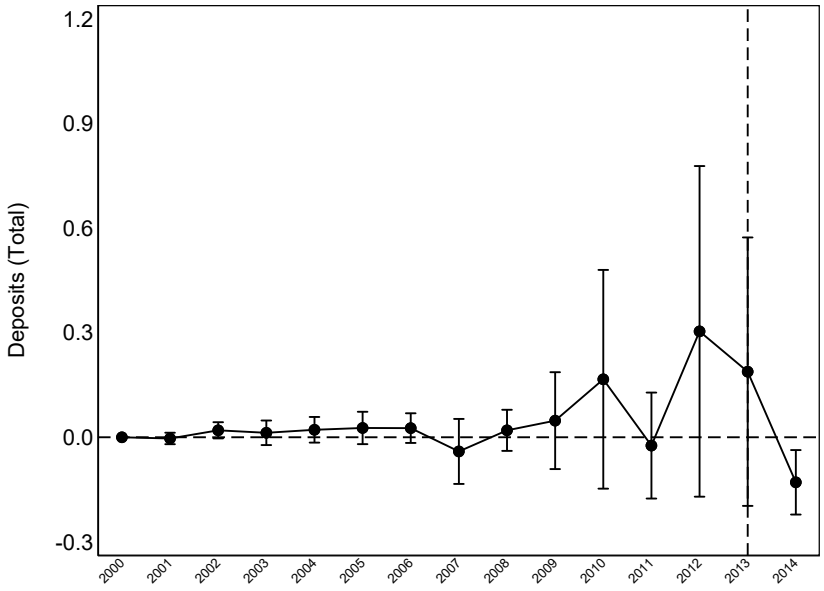

Figure 2: Coefficient plots for total deposits

This figure shows the coefficient plot of total deposit amounts at the branch level and includes two-tailed 90% confidence intervals for each point estimate. The sample period is from 2000–2014.

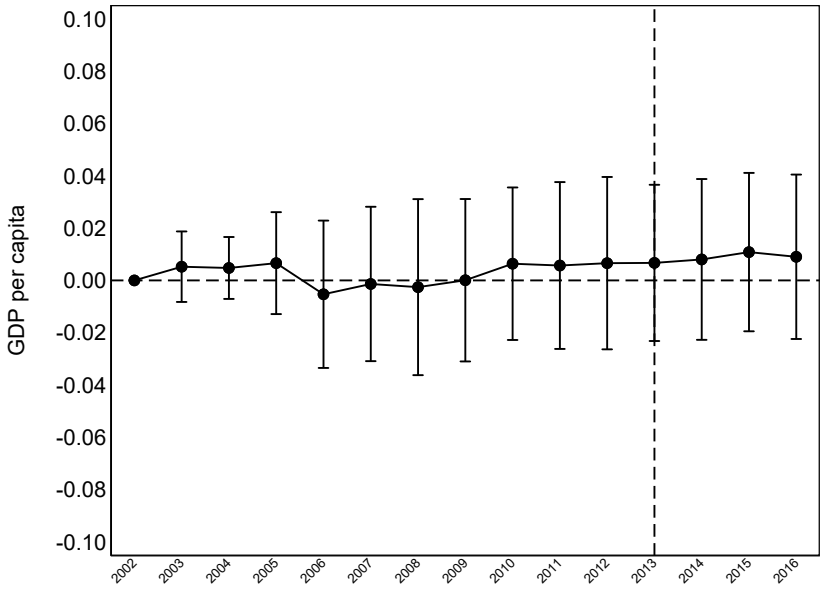

Figure 3: Coefficient plots for district-level GDP

This figure shows the coefficient plot of district-level GDP and includes two-tailed 90% confidence intervals for each point estimate. The sample period is from 2002–2016.

Table 1: Summary Statistics

This table presents the summary statistics for the variables used in this paper. The sample period is from 2000 to 2014. Panel A presents summary statistics for all variables, Panel B presents difference in means in bank-level characteristics between treatment and control banks for the year prior to the imposition of penalties. All variables are defined in Appendix A. $^{*}p < 0.1$; $^{**}p < 0.05$; $^{***}p < 0.01$ (two-tailed).

Panel A: Summary statistics

	N	Mean	Median	Std
Dependent variables (branch-year level)				
Deposits (Total)	620655	10.947	11.006	1.221
Deposits (Regional Rural)	7908	12.762	12.986	1.598
Loans (Total)	620608	11.280	11.246	1.323
Dependent variables (town/village level)				
Nightlights (Max)	111040	1.090	0.921	0.767
Nightlights (Mean)	111040	0.528	0.403	0.519
Control variables (bank-level)				
Capital Ratio	45	16.749	13.320	12.886
Nonperforming Assets Ratio	45	1.052	0.980	0.753
Return on Assets	45	1.097	0.962	0.699
Size	45	13.371	13.724	1.719
Exposure to treatment variables (district or town/village level)				
Exposure	639	60.039	60.294	17.891
Exposure (Town/Village)	11108	56.534	57.143	30.028
Trust in institutions variables (state level)				
Trust (Banks)	33	0.000	0.359	1.000
Trust (Courts)	33	0.000	-0.171	1.000
Trust (Politicians)	33	0.000	0.079	1.000
Trust (State Government)	33	0.000	-0.033	1.000
Trust (Village Panchayat)	33	0.000	-0.007	1.000
Determinants of trust variables (state level)				
College Degree	35	0.104	0.093	0.050
Conflict	33	0.000	-0.190	1.332
Corruption	28	0.000	-0.045	1.101
Crime	33	0.000	-0.224	1.476
Enforcement	35	789.743	858.000	329.173
Information Access	33	0.000	0.063	1.039
Per Capita GDP	32	88.906	74.000	56.448
Quality of Local Services	33	0.000	0.064	1.690
Social Cohesion	33	0.000	-0.813	2.897
Unemployment Rate	35	0.218	0.195	0.112

Table 1: Summary Statistics, continued

Panel B: Difference in means between treatment and control banks

	Treatment			Control			Difference in means	
	N	Mean	Std	N	Mean	Std	Difference	t-Statistic
Capital Ratio	22	13.14	1.42	23	20.201	17.456	7.061	1.933
Nonperforming Assets Ratio	22	1.195	0.727	23	0.916	0.768	-0.279	(-1.251)
Return on Assets	22	0.933	0.628	23	1.254	0.739	0.321	1.571
Size	22	14.173	1.14	23	12.603	1.847	-1.570**	(-3.448)

Table 2: Change in deposits following regulatory penalties

This table presents OLS estimates of changes in deposits in response to regulatory penalties. Panel A presents results from a difference-in-differences estimation, whereas Panel B shows results utilizing exposure to treatment at the district level. *Treatment* takes the value of one for banks that received penalties and zero otherwise, whereas *Post* takes the value of one for the period following the penalties and zero otherwise. The variable *Exposure* is the number of branches of offending banks scaled by the total number of branches in a district, expressed as a percentage and measured prior to the imposition of penalties. *Exposure (indicator)* equals one for above-median values of *Exposure* and zero otherwise. The sample period is from 2000 to 2014. Bank controls are measured in the year prior to the treatment year. All variables are defined in Appendix A. The t-statistics are presented in parentheses. Standard errors in Panel A (Panel B) are clustered by bank (district); $^{*}p < 0.1$; $^{**}p < 0.05$; $^{***}p < 0.01$ (two-tailed).

Panel A: Difference-in-differences results

	Deposits (Total)	Deposits (Total)	Deposits (Total)
	(1)	(2)	(3)
Treatment × Post	-0.184***	-0.184***	-0.163***
	(-2.958)	(-2.956)	(-2.765)
Observations	620,655	620,640	620,355
Adjusted R^2	0.906	0.481	0.484
Bank controls	Yes	Yes	Yes
Year FE	Yes	Yes	No
Branch FE	Yes	No	No
District FE	No	Yes	No
District × Year FE	No	No	Yes

Table 2: Change in deposits following regulatory penalties, continued

Panel B: Exposure to treatment results

	Deposits (Total)	Deposits (Total)	Deposits (Total)	Deposits (Total)
	(1)	(2)	(3)	(4)
Exposure × Post	-0.002***	-0.002***		
	(-3.347)	(-3.347)		
Exposure (indicator) × Post			-0.073***	-0.073***
			(-5.948)	(-5.948)
Observations	9,495	9,495	9,495	9,495
Adjusted R^2	0.192	0.988	0.195	0.988
Year FE	Yes	Yes	Yes	Yes
District FE	No	Yes	No	Yes

Table 3: Changes in deposits at neighboring branches

This table presents OLS estimates of changes in deposits in response to regulatory penalties. *Treatment* takes the value of one for banks that received penalties and zero otherwise, *Neighbor* takes a value of one for the branches of non-treated banks in the same zip code as the branches of treated banks and zero otherwise, whereas *Post* takes the value of one for the period following the penalties and zero otherwise. The sample period is from 2000 to 2014. Bank controls are measured in the year prior to the treatment year. All variables are defined in Appendix A. The t-statistics are presented in parentheses. Standard errors are clustered by bank; $^{*}p < 0.1$; $^{**}p < 0.05$; $^{***}p < 0.01$ (two-tailed).

	Deposits (Total)	Deposits (Total)	Deposits (Total)
	(1)	(2)	(3)
Treatment × Post	-0.267***	-0.267***	-0.192***
	(-4.434)	(-4.432)	(-3.557)
Neighbor × Post	-0.100***	-0.100***	-0.033**
	(-7.515)	(-7.511)	(-2.097)
Observations	620,655	620,640	620,355
Adjusted R^2	0.906	0.481	0.484
Bank controls	Yes	Yes	Yes
Year FE	Yes	Yes	No
Branch FE	Yes	No	No
District FE	No	Yes	No
District × Year FE	No	No	Yes

Table 4: Trust in institutions and change in deposits following regulatory penalties

This table presents OLS estimates of changes in deposits in response to regulatory penalties. *Treatment* takes the value of one for banks that received penalties and zero otherwise, *Neighbor* takes a value of one for the branches of non-treated banks in the same zip code as the branches of treated banks and zero otherwise, whereas *Post* takes the value of one for the period following the penalties and zero otherwise. *Trust(x)* measures trust in x institution at the state level. The sample period is from 2000 to 2014. The controls include bank-level control variables that are measured in the year prior to the treatment year. In addition, we control for the level of financial inclusion in columns (9)–(10). All variables are defined in Appendix A. The t-statistics are presented in parentheses. Standard errors are clustered by bank; $^{*}p < 0.1$; $^{**}p < 0.05$; $^{***}p < 0.01$ (two-tailed).

	Deposits (Total)	Deposits (Total)	Deposits (Total)	Deposits (Total)	Deposits (Total)	Deposits (Total)	Deposits (Total)	Deposits (Total)	Deposits (Total)	Deposits (Total)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Treatment × Post	-0.260***	-0.260***	-0.267***	-0.267***	-0.253***	-0.253***	-0.261***	-0.261***	-0.238***	-0.238***
	(-3.814)	(-3.814)	(-4.348)	(-4.348)	(-4.289)	(-4.289)	(-4.078)	(-4.078)	(-4.437)	(-4.437)
Neighbor × Post	-0.095***	-0.095***	-0.100***	-0.100***	-0.098***	-0.098***	-0.107***	-0.107***	-0.079***	-0.079***
	(-7.592)	(-7.592)	(-7.684)	(-7.684)	(-7.314)	(-7.314)	(-8.568)	(-8.568)	(-5.971)	(-5.971)
Treatment × Post × Trust (Politicians)	0.041	0.041								
	(0.543)	(0.543)								
Neighbor × Post × Trust (Politicians)	0.027	0.027								
	(1.391)	(1.391)								
Treatment × Post × Trust (State Government)			0.045	0.045						
			(0.760)	(0.760)						
Neighbor × Post × Trust (State Government)			0.014	0.014						
			(0.841)	(0.841)						
Treatment × Post × Trust (Village Panchayat)					0.083***	0.083***				
					(3.107)	(3.107)				
Neighbor × Post × Trust (Village Panchayat)					0.021	0.021				
					(1.235)	(1.235)				
Treatment × Post × Trust (Courts)							-0.073	-0.073		
							(-1.600)	(-1.600)		
Neighbor × Post × Trust (Courts)							0.043***	0.043***		
							(2.719)	(2.719)		
Treatment × Post × Trust (Banks)									-0.053	-0.053
									(-1.044)	(-1.044)
Neighbor × Post × Trust (Banks)									0.051*	0.051*
									(1.900)	(1.900)
Observations	620,265	620,265	620,265	620,265	620,265	620,265	620,265	620,265	620,265	620,265
Adjusted R^2	0.906	0.311	0.906	0.312	0.906	0.311	0.906	0.311	0.906	0.341
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Branch FE	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Bank FE	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes

Table 5: Determinants of trust in public institutions

This table presents OLS estimates of estimates of trust in institutions. All variables are defined in Appendix A. The t-statistics are presented in parentheses. $^{*}p < 0.1$; $^{**}p < 0.05$; $^{***}p < 0.01$ (two-tailed).

	Trust (Village Panchayat)	Trust (Courts)	Trust (Banks)
	(1)	(2)	(3)
Enforcement	0.000	0.000	0.000
	(0.064)	(0.639)	(0.733)
Conflict	-0.032	-0.028	0.023
	(-1.044)	(-0.645)	(0.675)
Social Cohesion	-0.005	-0.005	-0.018
	(-0.562)	(-0.389)	(-1.724)
Information Access	0.087**	0.109**	0.028
	(2.680)	(2.363)	(0.775)
Quality of Local Services	0.003	0.035	0.050**
	(0.207)	(1.450)	(2.665)
Corruption	0.018	-0.010	0.031
	(0.705)	(-0.278)	(1.093)
Crime	0.005	0.004	-0.008
	(0.244)	(0.122)	(-0.345)
College Degree	-0.509	0.653	1.474*
	(-0.738)	(0.663)	(1.900)
Unemployment Rate	-0.081	0.170	0.307
	(-0.310)	(0.457)	(1.045)
Per Capita GDP	0.000	0.001	-0.001
	(0.480)	(0.630)	(-0.942)
Constant	0.306**	0.417**	0.684***
	(2.353)	(2.248)	(4.685)
Observations	28	28	28
Adjusted R^2	0.256	0.388	0.485

Table 6: Determinants of trust and changes in deposits

This table presents OLS estimates of changes in deposits in response to regulatory penalties. *Treatment* takes the value of one for banks that received penalties and zero otherwise, *Neighbor* takes a value of one for the branches of non-treated banks in the same zip code as the branches of treated banks and zero otherwise, whereas *Post* takes the value of one for the period following the penalties and zero otherwise. The sample period is from 2000 to 2014. Bank controls are measured in the year prior to the treatment year. All variables are defined in Appendix A. The t-statistics are presented in parentheses. Standard errors are clustered by bank; $^{*}p < 0.1$; $^{**}p < 0.05$; $^{***}p < 0.01$ (two-tailed).

	Deposits (Total)	Deposits (Total)
	(1)	(2)
Treatment × Post	-0.274***	-0.274***
	(-4.542)	(-4.434)
Neighbor × Post	-0.107***	-0.107***
	(-8.216)	(-8.806)
Treatment × Post × Information Access	0.068	
	(1.553)	
Neighbor × Post × Information Access	0.061***	
	(3.302)	
Treatment × Post × Quality of Local Services		0.039
		(1.256)
Neighbor × Post × Quality of Local Services		0.040***
		(4.166)
Observations	620,265	620,265
Adjusted R^2	0.906	0.906
Bank controls	Yes	Yes
Year FE	Yes	Yes
Branch FE	Yes	Yes

Table 7: Change in credit disbursed following regulatory penalties

This table presents OLS estimates of changes in credit disbursed in response to regulatory penalties. *Treatment* takes the value of one for banks that received penalties and zero otherwise, *Neighbor* takes a value of one for the branches of non-treated banks in the same zip code as the branches of treated banks and zero otherwise, whereas *Post* takes the value of one for the period following the penalties and zero otherwise. The sample period is from 2000 to 2014. Bank controls are measured in the year prior to the treatment year. All variables are defined in Appendix A. The t-statistics are presented in parentheses. Standard errors are clustered by bank; $^{*}p < 0.1$; $^{**}p < 0.05$; $^{***}p < 0.01$ (two-tailed).

	Loans (Total)	Loans (Total)	Loans (Total)
	(1)	(2)	(3)
Treatment × Post	0.005	0.001	0.020
	(0.139)	(0.038)	(0.608)
Neighbor × Post	-0.064***	-0.068***	-0.032**
	(-3.094)	(-3.268)	(-2.216)
Observations	620,398	620,398	620,308
Adjusted R^2	0.901	0.493	0.493
Bank controls	Yes	Yes	Yes
District controls	Yes	Yes	No
Year FE	Yes	Yes	No
Branch FE	Yes	No	No
District FE	No	Yes	No
District × Year FE	No	No	Yes

Table 8: Change in nighttime light intensity following regulatory penalties

This table presents OLS estimates of nighttime light intensity changes at the town/village level following the imposition of penalties. *Exposure (Town/Village)* is the number of offending branches in a town/village scaled by the total branches in that town/village. The sample period is from 2012 to 2021. The indicator variable *Post* takes the value of one for the period following the penalties and zero otherwise. Bank-level control variables are measured in the year prior to the treatment year. All variables are defined in Appendix A. The t-statistics are presented in parentheses. Standard errors are clustered by district; $^{*}p < 0.1$; $^{**}p < 0.05$; $^{***}p < 0.01$ (two-tailed).

	Night Luminosity (Mean)	Night Luminosity (Mean)	Night Luminosity (Max)	Night Luminosity (Max)
	(1)	(2)	(3)	(4)
Exposure (Town/Village) × Post	-0.00029***	-0.00029***	-0.00042***	-0.00042***
	(-5.914)	(-5.914)	(-5.283)	(-5.283)
Observations	111,040	111,040	111,040	111,040
Adjusted R^2	0.038	0.950	0.022	0.937
Year FE	Yes	Yes	Yes	Yes
Town/Village FE	No	Yes	No	Yes

Table 9: Change in deposits at regional rural banks

This table presents OLS estimates of changes in deposits at regional rural banks at the district level. The sample period is from 2000 to 2014. The indicator variable *Post* takes the value of one for the period following the penalties and zero otherwise. The variable *Exposure* is the number of branches of offending banks scaled by the total number of branches in a district, expressed as a percentage and measured prior to the imposition of penalties. *Exposure (indicator)* equals one for above-median values of *Exposure* and zero otherwise. Bank-level control variables are measured in the year prior to the treatment year. All variables are defined in Appendix A. The t-statistics are presented in parentheses. Standard errors are clustered by bank; $^{*}p < 0.1$; $^{**}p < 0.05$; $^{***}p < 0.01$ (two-tailed).

	Deposits (Regional Rural)	Deposits (Regional Rural)	Deposits (Regional Rural)	Deposits (Regional Rural)
	(1)	(2)	(3)	(4)
Exposure × Post	-0.005**	0.003		
	(-2.199)	(1.537)		
Exposure (indicator) × Post			-0.086	0.145**
			(-1.092)	(2.279)
Observations	7,908	7,900	7,908	7,900
Adjusted R^2	0.280	0.884	0.254	0.884
Year FE	Yes	Yes	Yes	Yes
District FE	No	Yes	No	Yes

Appendix A. Online Appendix

Appendix A.1. Figures and tables

Figure OA1: A bank run at Sri Guru Raghavendra Sahakara Bank in Bangalore. Source: "Another PMC Bank-Like Crisis? RBI Restricts Withdrawals From Sri Guru Raghavendra Sahakara Bank," *Indiatimes.com*, January 14, 2020.

Appendix A.2. RBI penalises Axis Bank, HDFC Bank and ICICI Bank (RBI Press Release dated June 10, 2013)

प्रेस प्रकाशनी **PRESS RELEASE**

भारतीय रिज़र्व बैंक
RESERVE BANK OF INDIA
वेबसाइट : www.rbi.org.in/hindi
Website : www.rbi.org.in
इ-मेल email: helpdoc@rbi.org.in

संचार विभाग, केंद्रीय कार्यालय, एस.बी.एस.मार्ग, मुंबई-400001

DEPARTMENT OF COMMUNICATION, Central Office, S.B.S.Marg, Mumbai-400001
फोन/Phone: 91 22 2266 0502 फैक्स/Fax: 91 22 22660358

June 10, 2013

RBI penalises Axis Bank, HDFC Bank and ICICI Bank

The Reserve Bank has imposed a monetary penalty on Axis Bank, HDFC Bank and ICICI Bank for violating Reserve Bank of India instructions. The details of the penalty are:

Bank	Penalty amount (₹ in lakh)
Axis Bank Ltd.	500.10
HDFC Bank Ltd.	450.00
ICICI Bank Ltd.	100.10

The penalties have been imposed in exercise of powers vested in the Reserve Bank under the provisions of Section 47(A)(1)(c) read with Section 46(4)(i) of the Banking Regulation Act, 1949,

It may be recalled that the Reserve Bank of India had carried out a scrutiny of books of accounts, internal control, compliance systems and processes of these three banks at their corporate offices and some branches during March / April 2013 to investigate into the allegations of contravention of KYC/AML guidelines against them. The scrutiny of these three banks revealed violation of certain regulations and instructions issued by Reserve Bank of India, namely,

- non-observance of certain safeguards in respect of arrangement of “at par” payment of cheques drawn by cooperative banks,
- non-adherence to certain aspects of know your customer (KYC) norms and anti money laundering (AML) guidelines like risk categorisation and periodical review of risk profiling of account holders,
- Non-adherence of KYC for walk in customers including for sale of third party products, omission in filing of cash transaction reports (CTRs) in respect of some cash transactions, sale of gold coins for cash beyond Rs. 50000,
- not-obtaining of permanent account number (PAN) card details or form 60/61 as required,
- non-verification of source of funds credited to a few non-resident ordinary (NRO) accounts,
- failure to re-designate a few accounts as NRO accounts though required, non-submission of proper information called for by the reserve Bank, etc.

The investigation did not reveal any prima facie evidence of money laundering. However, any conclusive inference in this regard can be drawn only by an end to end investigation of the transactions by tax and enforcement agencies.

Based on the findings of the scrutiny, the Reserve Bank issued a show cause notice to each of these banks, in response to which the individual banks submitted written replies. After considering the facts of each case and individual bank's reply, as also, personal submissions, information submitted and documents furnished, the Reserve Bank came to the conclusion that some of the violations were substantiated and warranted imposition of monetary penalty as determined above.

A similar scrutiny was also conducted at the corporate offices of 36 other banks during April and May 2013. The process of follow up action in respect of these banks is at different stages of its completion.

Alpana Killawala
Chief General Manager

Press Release : 2012-2013/2071

Appendix A.3. RBI penalises 22 Banks (RBI Press Release dated July 15, 2013)

प्रेस प्रकाशनी **PRESS RELEASE**

भारतीय रिज़र्व बैंक
RESERVE BANK OF INDIA
वेबसाइट : www.rbi.org.in/hindi
Website : www.rbi.org.in
इ-मेल email: helpdoc@rbi.org.in

संचार विभाग, केंद्रीय कार्यालय, एस.बी.एस.मार्ग, मुंबई-400001
DEPARTMENT OF COMMUNICATION, Central Office, S.B.S.Marg, Mumbai-400001
फोन/Phone: 91 22 2266 0502 फैक्स/Fax: 91 22 22660358

July 15, 2013

RBI penalises 22 Banks

The Reserve Bank of India has imposed monetary penalty on the following 22 banks for violation of its instructions, among other things, on Know Your Customer/Anti Money Laundering. The details are:

Monetary Penalty

Sl. No.	Name of the bank	Penalty Amount (in ₹ crore)
1	Andhra Bank	2.50
2	Bank of Baroda	3.00
3	Bank of India	3.00
4	Canara Bank	3.001
5	Central Bank of India	3.00
6	Deutsche Bank A.G.	1.00
7	Development Credit Bank Ltd.	1.00
8	Dhanlaxmi Bank Ltd.	2.00
9	Indian Overseas Bank	3.002
10	ING Vysya Bank Ltd.	1.50
11	Jammu & Kashmir Bank Ltd.	2.501
12	Kotak Mahindra Bank Ltd.	1.501
13	Oriental Bank of Commerce	2.00
14	Punjab and Sind Bank	2.50
15	Punjab National Bank	2.50
16	State Bank of India	3.00
17	The Federal Bank Ltd.	3.00
18	The Lakshmi Vilas Bank Ltd.	2.50
19	The Ratnakar Bank Ltd.	0.50
20	United Bank of India	2.50
21	Vijaya Bank	2.00
22	Yes Bank Ltd.	2.00

In respect of seven other banks, as indicated below, where such scrutinies have been conducted and banks' explanation called for, the banks' written or oral submissions were found to be satisfactory or no violation of serious nature has been established. It has, therefore, been decided not to impose any monetary penalty but to issue only suitable cautionary letters.

Cautionary Letter

Sl. No.	Name of the bank
1	Barclays Bank PLC
2	BNP Paribas
3	Citibank N.A.
4	Royal Bank of Scotland
5	Standard Chartered Bank
6	State Bank of Patiala
7	The Bank of Tokyo Mitsubishi UFJ Ltd.

A similar scrutiny was also conducted in seven other banks during April and May 2013. The process of follow up action in respect of those banks is at different stages of its completion.

The penalties have been imposed in exercise of powers vested in the Reserve Bank under the provisions of Section 47(A)(1)(c) read with Section 46(4)(i) of the Banking Regulation Act, 1949.

Background

It may be recalled that the Reserve Bank of India had carried out a scrutiny of books of accounts, internal control, compliance systems and processes of these banks at their offices during April 2013. The scrutiny of these banks revealed violation of certain regulations and instructions issued by the Reserve Bank of India, namely,

- non-adherence to certain aspects of know your customer (KYC) norms and anti money laundering (AML) guidelines like customer identification procedure, risk categorisation, periodical review of risk profiling of account holders, periodical KYC updation;
- non-adherence of KYC for walk in customers including for sale of third party products, omission in filing of cash transaction reports (CTRs) in respect of some cash transactions, sale of gold coins for cash beyond ₹ 50,000;
- non-adherence to instructions on monitoring of transactions in customer accounts;
- non-adherence to instructions on classification of accounts as 'in-operative'/dormant and lapses in monitoring of transactions in dormant accounts;
- non-adherence to instructions which prohibits acceptance of cash above ₹50,000 from customers for sale of gold coins and issue of Demand Drafts, etc.;
- non-adherence to instructions on the upper limit for remittances under Liberalised Remittance Scheme, upper limit for repatriation of funds from non resident ordinary (NRO) accounts;
- non-adherence to instructions on import of gold on consignment basis.

The investigation did not reveal any prima facie evidence of money laundering. However, any conclusive inference in this regard can be drawn only by an end to end investigation of the transactions by tax and enforcement agencies.

Based on the findings of the scrutiny, the Reserve Bank issued a show cause notice to each of these banks, in response to which the individual banks submitted written replies. After considering the facts of each case and individual bank's reply, as also, personal submissions, information submitted and documents furnished, the Reserve Bank came to the conclusion that some of the violations were substantiated and warranted imposition of monetary penalty. The Reserve Bank penalised the first lot of three banks, on June 10, 2013.

Alpana Killawala
Chief General Manager

Press Release : 2013-2014/95

Appendix A.4. RBI penalises six banks (RBI Press Release dated August 23, 2013)

प्रेस प्रकाशनी **PRESS RELEASE**

भारतीय रिज़र्व बैंक
RESERVE BANK OF INDIA
वेबसाइट : www.rbi.org.in/hindi
Website : www.rbi.org.in
इ-मेल email: helpdoc@rbi.org.in

संचार विभाग, केंद्रीय कार्यालय, एस.बी.एस.मार्ग, मुंबई-400001

DEPARTMENT OF COMMUNICATION, Central Office, S.B.S.Marg, Mumbai-400001
फोन/Phone: 91 22 2266 0502 फैक्स/Fax: 91 22 22660358

August 23, 2013

RBI penalises six banks

The Reserve Bank has imposed monetary penalty on the following six banks for violation of Reserve Bank of India instructions, inter alia, on Know Your Customer/Anti Money Laundering. The details of the penalty are:

Sl. No.	Name of the bank	Penalty Amount (in ₹ Crore)
1	Allahabad Bank	0.50
2	Bank of Maharashtra	0.501
3	Corporation Bank	1.50
4	Dena Bank	2.00
5	IDBI Bank Ltd.	1.00
6	Indian Bank	1.00

The penalties have been imposed in exercise of powers vested in the Reserve Bank under the provisions of Section 47(A)(1)(c) read with Section 46(4)(i) of the Banking Regulation Act, 1949.

In respect of IndusInd Bank Ltd. where such scrutiny has been conducted and the bank's explanation called for, based on written or oral submissions, as the bank's reply was found to be satisfactory or no violation of serious nature has been established; it has been decided not to impose any monetary penalty but only to issue suitable cautionary letter.

Background

It may be recalled that the Reserve Bank of India had carried out a scrutiny of books of accounts, internal control, compliance systems and processes of these banks at their offices during April and May 2013. The scrutiny of these banks revealed violation of certain regulations and instructions issued by Reserve Bank of India, namely,

- non-adherence to certain aspects of know your customer (KYC) norms and anti money laundering (AML) guidelines like customer identification procedure, risk categorisation, periodical review of risk profiling of account holders, periodical KYC updation

- non-adherence of KYC norms for walk in customers including for sale of third party products, omission in filing of cash transaction reports (CTRs) in respect of some cash transactions

- non-adherence to instructions on monitoring of transactions in customer accounts including walk-in-customers

- non-adherence to instructions which prohibit acceptance of cash above ₹ 50, 000 from customers for sale of gold coins and issue of Demand Drafts etc.

- non-adherence to instructions on import of gold on consignment basis

- non-adherence to instructions on permitted credits to Non-resident accounts

The investigation did not reveal any prima facie evidence of money laundering. However, any conclusive inference in this regard can be drawn only by an end to end investigation of the transactions by tax and enforcement agencies.

Based on the findings of the scrutiny, the Reserve Bank issued a show cause notice to each of these banks, in response to which the individual banks submitted written replies. After considering the facts of each case and individual bank's reply, as also, personal submissions, information submitted and documents furnished, the Reserve Bank came to the conclusion that some of the violations were substantiated and warranted imposition of monetary penalty. The Reserve Bank penalised the first of three banks on June 10, 2013 and second lot of 22 banks on July.

Ajit Prasad
Press Release : 2013-2014/383 Assistant General Manager