Does facetime with the boss matter? Soft information communication and organizational performance

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Abstract

Can better communication with the boss (she) improve the performance of the employees (he), even if he has authority for making decisions? The term boss, in our paper, refers to the person who decides the remuneration of the employee based on his performance. An employee's performance depends not only on his effort but also on unpredictable factors beyond his control, which may be soft information. Communicating this soft information through face-to-face interaction would allow the employee to explain why he may have performed poorly (or well). Using the informativeness principle, the boss can offer more efficient contracts *ex ante* which share more risk and elicit higher level of effort by the employees. Using granular within bank data, we exploit exogenous change in the ability of bank managers to communicate with their boss and show that better communication improves their productivity. The results in the paper suggest that there may be an alternative complementary explanation (compared to Stein (2002)) for why small banks are more efficient at lending to small businesses.

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1 Introduction

Frictions in communication of information across different levels of hierarchy in an organization may impede decision-making. While improvement in information communication technology can overcome such frictions (Bloom et al., 2014), hard-to-codify soft information may be impervious to such technological change. These frictions, then, affect how organizations design themselves and allocate control within the organization. For example, in order to utilize such information, some firms delegate more decision-making power to managers (Aghion and Tirole, 1997; Stein, 2002; Berger et al., 2005; Garicano, 2000; Bloom et al., 2013). However, can improvement in soft information communication improve performance of employees even if the authority to make decisions remains with the employee?

Several papers have shown how giving more authority to the employees can improve their performance (Liberti and Mian, 2009; Liberti, 2017; Skrastins and Vig, 2019; Rodrigo and Nanda, 2012; Qian et al., 2015). Liberti (2017) studies a setting where the authority of some loans officers increased because of change in hierarchical structure in a bank; and this improved their performance. Before the organizational change, loan officers reported to division heads who in turn reported to the corporate head. After the change, some of these loan officers were promoted to senior loan officers and started reporting directly to the corporate head.[1] While delegating more authority to the loan officers would certainly lead to improvement in performance, we discover a complementary channel. If the corporate head (and not the division head) is responsible for decisions regarding the compensation and promotion of the loan officers, i.e. he is the boss of the loan officers as per our definition, then the organizational change would also lead to more face-to-face communication between the loan officer and the corporate head. This improved communication can also lead to improved performance of the loan officers as per the mechanism highlighted in our paper.

The paper also contributes to the literature on the relationship between incentive structure and use of soft information. Heider and Inderst (2012) and Agarwal and Ben-David (2018) show that altering incentive structure to be more volume-sensitive can reduce the use of soft information regarding loan quality.[2] We explore the relationship in the other direction: the ability to use soft information regarding *ex post* shocks, which affect outcomes, can help design better incentive structures and increase productivity.

We add to the empirical literature on the trade-off between risk and incentives in agency

[1] Liberti (2017) refers to this change as delegation of formal authority. Their sample of treated loan officers also consists of other loan officers who continued to report to division heads, but now the division heads had less time to monitor these loans officers. This case is referred to as delegation of real authority. Our communication channel may not be at work for these loan officers.

[2] For more on agency problems within banks, see Hertzberg et al. (2010), Berg et al. (2020), BhowaL and Subramaniam (2021), among others.

theory and of the informativeness principle (Holmström, 1979). Aggarwal and Samwick (1999) show that pay-performance sensitivity is lower for executives in firms with more volatile stock prices.[3] Shearer (2004) and Paarsch and Shearer (1999) find that controlling for the variance in exogenous shock, higher incentives can lead to higher effort. Our paper tests another prediction of the theory: if the measurement of employee performance improves, then the effort by the employee will increase. While we do not observe the contracts offered to the employees, which in our case is anyway implicit in nature, we do provide evidence that agents exert higher effort after the principal observes soft information on the effort.

The subject of credit inclusion for small, marginalised sections in India has received considerable attention. Lead Bank Scheme originated during the social banking period with the aim of extending credit to under-represented sections. The early impact of social banking period has been well-recorded (Burgess and Pande, 2005; Burgess et al., 2005; Cole, 2009). We add to this literature by studying the organization design of the Lead Bank Scheme over a more recent period. Our results show how effective information exchange within the organization can yield higher credit deliver at the district-level.

The rest of the paper is as follows. Section two discusses the Lead Bank scheme in India and describes the institutional setting. Sections 3 builds a small model to highlight our effort channel. Section 4 describes the data. Section 5 shows the results at bank-district level and section 6 shows the results at the district level. Section 8 shows the mechanisms and section 9 conducts some robustness tests. Finally, section 9 concludes.

2 Lead Bank Scheme

The Lead Bank Scheme was introduced in 1969 to address geographic disparity in credit availability in India. Concerned by the under-representation of agricultural and small industries sector from credit markets, Reserve Bank of India (RBI) adopted a service area approach wherein, one commercial bank in each district is assigned the role to promote credit supply in the local market (Gadgil, 1969). This commercial bank is known as the Lead Bank of the district. For example, Punjab National Bank is the Lead Bank of Saharanpur district while Bank of Baroda is the Lead Bank in the Rai Bareli district in the state of Uttar Pradesh. These two banks assign dedicated personnel to improve credit market outcomes in the respective districts. In order to monitor the activities of Lead banks within a state, RBI appointed another public sector bank to each state in 1977. This bank is known as the Convener Bank of the state. For example, the state of Uttar Pradesh has Bank of Baroda as its Convener Bank, which monitors the tasks performed by personnel of PNB in

[3] Also see Angelis and Grinstein (2015) and Edmans et al. (2017)

Saharanpur and BoB in Rai Bareli through quarterly meetings. Convener Bank of a state and all the Lead Banks of districts in the state collectively form the State-Level Bankers' Committee (SLBC). Currently, 28 banks have been assigned the responsibilities of Lead and Convener for all the districts and states in India.

2.1 Activities of Lead Banks

Lead Banks can influence credit market outcomes in the district through various means. Following summarizes the roles of a Lead Bank:

1. **Priority Sector Lending**: As per RBI's regulations, 40% of each bank's Adjusted Net Bank Credit is reserved for priority sectors such as agriculture, MSMEs, education etc.[4] Lead Banks personnel play a crucial role in expansion of credit under Priority Sector Lending. They are responsible for monitoring the progress of credit delivery to the priority sectors in the district. Given their own position in the market, Lead Banks expand their credit delivery to these sectors. They also communicate with other banks in case of shortfall in credit expansion to these sectors.

2. **Coordination with Other Agencies**: Lead Banks extensively coordinate with other financial institutions. They have the mandate to form sub-committees on subjects ranging from increasing lending to agriculture, increasing digital payments, and targeting small-scale industry. Lead Banks also interact closely with high ranking government officials, through various fora. Through such fora, Lead Banks inform government agents about the institutional and infrastructural bottlenecks faced by banks.

3. **Public Outreach**: Lead Banks conduct extensive public outreach programs in their assigned areas. For example, Lead Banks in Odisha organized credit *melas* in 6 districts from October 3rd to October 2019 (Odisha, 2019), where bank employees conducted programs on financial literacy. Further, many of these camps are targetted for under-covered or uncovered sections of the societies such as farmers, women, and senior citizens.

2.2 Incentives for Lead Banks

Lead Banks conduct their operations through a district-level branch which is headed by a Chief Manager-level officer. This employee is a dedicated personnel engaged specifically for Lead Bank scheme activities. We will use Lead Bank personnel, Lead Bank manager or Lead

[4]See Banerjee et al. (2004)

Banker inter-changeably to refer to this Chief Manager-level. There are several reasons why communication with senior management can serve as an important incentive for Lead Bank personnel.

First, recommendations by immediate seniors play an important role in promotions and rewards for mid-to-high level employees in public sector banks in India(Chowdary et al., 2013; Singh and Priyanka, 2016). Most of these organizations assign an Annual Performance Appraisal Report (APAR) to each employee which evaluates them on various performance metrics[5]. The final score on these APARs are guided by by immediate seniors and determine promotion decision and career progression . Thus, communicating good performance or demonstrating exogenous reasons for bad outcomes can be useful for manager's rewards and promotions. Likewise, observing soft information on effort of the manager and not just output can aid the CEO's decision in monetary rewards.

Not just promotions but monetary incentives are also associated with performance in Indian public-sector banks. Performance-based bonuses and incentive pay form upto 40% of the compensation for Chief-Manager in these banks (Khandelwal, 2010). Recommendation have also been made to reserve 25% of all bonuses for employees engaged in financial inclusion activity, which in the case of PSBs in India are Lead Bank personnel.

Finally, most public sector banks in India have only one port of entry, observe low exit or attrition rate and exhibit rare or almost non-existent lateral entries (Bhatt, 2012). Lead Bank managers are mid-to-high level employees who have climbed up the organization ladder for 10-12 years. Doeringer et al. (1972), and more recently Friedrich (2015), have noted that for employees in such an organizational environment, separation probability from the firm is low and career progression occurs mostly through promotion within the same organization.

2.3 Soft Information Exchange between Lead and Convener Banks

Communication plays an important role in the inner functioning of complex organizations (Gibbons et al., 2013). In the Lead Bank Scheme, quarterly meetings of the State Level Bankers' Committee provide opportunities to the Chief Managers to communicate with CEO. To understand the nature of communication between Chief Manager and CEO, we review the minutes of these meetings, which are recorded and published online.

In a complex and vast market such as India, the CEO of a pan-national firm is likely to be attention constrained (Sims, 2003). These meetings provide an opportunity for Chief Managers to demonstrate their effort to the CEO. Almost all meetings start with a review of the progress made on Priority Sector Lending by different banks. However, the meetings

[5]See Circular Number F.No.9/5/2009 and F.No.4/11/1/2011-IR, Department of Financial Services, Ministry of Finance, GoI and Human Resource Management Division Circular No. 355, Punjab National Bank

were not limited to presentation of hard information. Context-specific features of specific financing issues were also discussed. For eg; Chief Managers in the Haryana SLBC meeting held in September 2019 deliberated at length upon the issues faced in agri-financing (**?**).

Chief Managers also use these meetings to convey soft information on extraneous conditions in effort-output function. In Kerala SLBC meeting in February 2020, Chief Managers reported unsuitable digital infrastructure created connectivity issues for business activities on several days (CanaraBank, 2020). In the same meetings, other district managers noted difficulty in lending to small entrepreneurs due to delays in clearance from Pollution Control Board. These concerns were noted and affirmed by the government officers present in the meeting. In November 2019, Chief Managers of Madhya Pradesh state indicated bureaucratic hurdles from municipal corporations which prevented credit delivery to economically weaker sections (MP, 2019). The information conveyed by the district managers were credible since government representative present in the meetings affirmed these concerns. Thus, the messages were not simply cheap talk (Crawford and Sobel, 1982).

These meetings hold significant salience for the CEO as well. As explained above, the CEO of public sector bank in India is likely to be attention constrained. While she can obtain hard information about different districts, the variation across these markets is driven by granular, ground-level information which cannot be captured in end-of-year reports or monthly MIS. To evaluate the district manager for rewards and promotions, the soft information over the manager's market can be valuable to the CEO. For eg; in the Himachal Pradesh SLBC meetings in December 2019, it was noted that some banks had not updated their targets with the revised Priority Sector Lending needs (UCO, 2019). Revelation of such soft information to the CEO restricts the agent's ability to shirk effort, and thus alleviates moral hazard.

2.4 Appointment of Lead Banks and Convener Banks

RBI has adopted the following criteria in choosing a bank as a Lead Bank of a given district (RBI, 1972).

- Number of branches of the bank—The bank which has higher number of branches in the district receives priority in being appointed as Lead Bank of the district.
- Resources of the bank in the district—For resources, assets and liabilities are taken into account while selecting a Lead Bank for a district.
- Contiguity of districts with the same Lead Bank—RBI ensures neighbouring districts receive same Lead Bank to the extent possible.

For selecting a Convener Bank, RBI considers the regional orientation of the bank. For example, when the state of Telangana was formed out of Andhra Pradesh in 2014, its convenership was allotted to State Bank of Hyderabad, whereas Andhra Bank was retained as the Convener Bank of Andhra Pradesh. Map of districts and state tagged by their Lead and Convener Bank, respectively, can be found here.

Thus, Lead and Convener Bank appointment is not driven by district-level demand factors but mostly by supply-side capabilities of the bank.

2.5 Alignment

Given the organization structure of the Lead Bank Scheme, we define the following. A district is **Aligned** if the Lead Bank of that district and Convener Bank of the state fall within the same corporate entity. Around 44% of the districts in India are aligned. Figure 1 shows the map of districts in India tagged by their status of alignment. A Lead Bank of an aligned district is an **Aligned Lead Bank**.

Alignment between Lead and Convenor implies that the district-level officers get to interact with own boss. However, such information exchange between Lead of non-aligned districts holds less value. Given this information channel between Chief Manager and own CEO, and the institutional mechanism which allows Lead Banks to influence credit delivery, we claim the following two hypotheses in this paper. First, credit delivery by Lead Bank in Aligned districts should be higher than any other bank in the same district. We define this as a bank-district or firm-market-level impact. Second, aggregate credit delivery in Aligned districts be higher than in non-Aligned districts, which we define as the aggregate district-level or market-level impact.

To provide a more specific example, consider figure 2. Bank of Baroda (BoB) is the Convener Bank of the state of Uttar Pradesh. Within Uttar Pradesh, Saharanpur and Rae Bareli districts have Punjab National Bank (PNB) and Bank of Baroda as Lead Banks, respectively. In this example, Rae Bareli district is an aligned district where the Chief Manager receives face-time with own CEO. While Chief Manager of Saharanpur also attends these meetings, conveying information to CEO of some other bank holds less value. Conversely, the CEO of Bank of Bardoda will find information on own employee to be more valuable. Thus, we expect Lead Banks of districts tagged in darker shade in figure 1 to exert more effort in credit delivery.

Next section presents a theoretical framework which rationalize these arguments.

3 Theoretical Framework

The basic idea of our theory is very simple. We illustrate the intuition using a standard textbook model where the employee who is the agent is risk averse with CARA preference. Simple we use a textbook model, we simply state the results without deriving them.[6] There is a principle (the boss) who hires the employee to exert effort and rewards him with linear wage contract. Effort is denoted by a. Output, q, is equal to effort plus noise: $q = a + \epsilon$, where epsilon is normally distributed with mean zero and variance σ^2. This random error is soft information which can be communicated through face to face interactions. The utility of the agent is given by

$$u(w, a) = -e^{-\eta[w-\psi(a)]}$$

where $\psi(a) = \frac{1}{2}ca^2$ is the cost of exerting effort and $\eta > 0$ is the agent's coefficient of absolute risk aversion.

First we assume the principle does not know ϵ. This is analogous to the case where the banks are not aligned, hence the employee does not get to interact with the CEO and convey ϵ. The wage is then given by

$$w = t + sq$$

where t is the fixed component and sq is the variable component which depends on output. The reservation wage of the employee is given $\bar{w}$. The CEO offers the wage contract to maximize the her profit subject to the participation constraint and the incentive compatibility constraint of the employee. We get the following result.

Proposition 1. In the optimal contract, $a = s/c$ and

$$s = \frac{1}{1 + \eta c\sigma^2}.$$

When the agent can communicate ϵ, by informativeness principle, the principle will offer a contract which is also contingent on ϵ and the wage is now given by

$$w = t + sq + r\epsilon.$$

In this scenario, it can be shown that the optimal contract is such that $r = -s$. Therefore wage is given by

$$w = t + s(q - \epsilon) = t + sa.$$

[6] For details, see Bolton and Deatripont (2004).

Thus the principle fully insures the employee. We get the following result.

Proposition 2. In the optimal contract, $a = s/c$ and $s = -r = 1$.

When the employee is able to convey ϵ to the CEO, the CEO can fully insure the employee against this idiosyncratic risk and so offer the employee contract which elicits higher effort. Thus the aligned employees are more productive.

A key assumption in our setting is that the employee cannot lie about ϵ. If this was the case, then employee would want to disclose as low ϵ as possible. This assumption can be defended by the fact, that while it is soft information, it is verifiable by the boss. For example, ϵ could be local weather conditions which could affect the outcome of agricultural loans depending the cropping local cropping patterns. This information can easily be verified by the CEO. So we can assume that with small probability, the CEO verifies the information disclosed by the employee, and fires him if the employee is caught lying. This is costly for the employee, hence he does not lie.

4 Data and Summary Statistics

We use Basic Statistical Returns Data available from Reserve Bank of India. This dataset provides branch-level credit and deposit statistics of commercial banks in India from 1999-2016. We value and volume of loans or credit outstanding in a given year by each branch across sectors (agricultural, industry, transport, professional services, trade, etc.) and population centers (rural, semi-urban, urban and metropolitan). We can also observe metrics of asset quality such as weighted average lending rates (WALR) and ratio of non-performing assets (NPA).

In our analysis, we consider districts as banking markets with presence of several firms. Table 2 shows the descriptive statistics of key district-level credit market indicators across different types of banks as per the Lead Bank Scheme. On average, Non-Lead Banks have higher credit amounts and number of accounts compared to Lead Banks. However, the former also have a higher number of loan officers, while the Lead Banks (aligned as well as non-aligned) have a higher NPA ratio.

On average, a district in India has 131 branches of which nearly 20% belong to Lead Banks. This is consistent with the selection of Lead Banks reflecting supply-side orientation of the bank and indicates the capacity for Lead Banks to influence credit delivery in the district.

Table 1 provides credit amount and accounts across different sectors in rural and urban

areas. Agriculture occupies a major proportion of the credit market in the rural areas. More than half of all credit disbursal and nearly three-fourths of all accounts in the rural markets belong to the agricultural sector. On the other hand, only 7.94% of credit disbursed and 29.4% of accounts in urban markets are for agricultural needs. Agriculture forms the major component of Priority Sector Lending. Nearly 45% of all PSL has to be allocated toward agriculture while small scale units receive 20% of PSL. Communication during quarterly meetings are more likely to be around agricultural and MSME sector. Thus, we expect these sectors to experience higher impact due to alignment.

Data on Leads and Conveners was collected from websites of various SLBCs. In order to track changes in Leads and Conveners across years, we collect the notifications for Lead Bank Scheme available from RBI's website.

The intervention we study affects all branches of a bank when alignment changes. Therefore, we consider bank-district-year as the unit of observation for our analyses (Donald and Lang, 2007).

5 Empirical Strategy

Our data is rich enough to allow several empirical specifications. We choose the following two which allow for the most rigorous models while at the same time being easily interpretable.

Firm-Market-Level We adopt the following empirical specification to estimate the change for a firm (bank) within a market (district):

$$y_{bdt} = \beta.1\{AlignedLeadBank\}_{bdt} + \phi_{bt} + \phi_{dt} + \phi_{bd} + \epsilon_{bdt} \tag{1}$$

where, y_{bdt} is our dependent variable for bank b in district d in year t. $1\{Aligned\}bdt$ is an indicator which takes value 1 if the lead bank b is aligned in district d in year t; i.e. the Convener bank is the same as Lead in that district for that year.

Credit market related outcomes of a bank in a given district can be influenced by large number of factors, such as demand and supply for credit, temporal changes within a bank or variation in capacity across banks in the market. We include bank-year, ϕ_{bt}, district-year, ϕ_{dt}, and bank-district, ϕ_{bd}, fixed effects. Inclusion of bank-time dummies addresses time-varying changes for a bank such as organizational or lending strategies. District-time effects can account for time-varying local demand and supply factors, which can influence credit markets. District-time effects also absorb endogeneity of a district being aligned. Assignment of a bank as the Lead of a district depends on the pre-existing supply-side capacity of the bank in that region. To account for time-invariant resource differentials across banks within

the local market, we include bank-district effects. Since Lead banks did not change in the time period of our observations, bank-district effects also account for endogeneity in Lead bank selection.

Aggregate Market-Level To understand the equilibrium impact of alignment, we aggregate our data to the district-level and test if after becoming aligned, a district experiences improved credit market outcomes. However, in such a specification, the alignment indicator varies at the district-year level. This can be a concern if alignment change of a district is confounded by time-varying demand, leading to a biased estimation of district-level alignment change.

To overcome this problem, we use a proxy variable which could account for time-varying demand for financial services. Specifically, we use the estimated coefficients on ϕ_{dt} from equation 1. District-year effects from the above regression account for all time-varying changes which uniformly affect the dependent variable, y_{bdt}, for all banks within the district. Assuming that district-time and bank-district-time effects are log-linearly separable, we interpret the coefficients on ϕ_{dt} as proxies for time-varying demand for financial services. We denote these coefficients as $\hat{D_{dt}}$.

$$y_{dt} = \beta.1\{AlignedDist\}_{dt} + \phi_d + \phi_t + \phi_{st} + \hat{D_{dt}} + \epsilon_{dt} \tag{2}$$

$1\{AlignedDist\}_{dt}$ is the indicator which takes value 1 if district d is aligned at time t, and 0 otherwise. We include district fixed effects, year fixed effects and state-year fixed effects. The coefficient on $1\{AlignedDist\}_{dt}$ indicates the impact on y_{dt} when the district becomes aligned. A positive and significant β suggests that alignment of a district pushes all banks to improve credit delivery.

5.1 Identification

The coefficient on $1\{Aligned\}_{bdt}$, β, measures the impact of alignment on credit outcomes of a bank in a district. As explained in section 3, we expect alignment of a bank to improve its communication with senior management of the firm, thereby improving the rewards of performance.

Identification of this impact requires alignment indicator and the unobserved error term, ϵ_{bdt}, to be uncorrelated. Our estimate of β would be biased if change in alignment of a lead

bank was influenced by unobservable bank-district-time factors; i.e. $E(1\{Aligned\}_{bdt}).\epsilon_{bdt} = 0$.

In the time period of our study, change in alignment occurs due to the following reasons:

1. Formation of a New State—When a new state is formed, it may be assigned a different Convener compared to the mother state. In such cases, the alignment status of districts in new state may change. For the period of this study, four new states were formed—Chattisgarh, Jharkhand, Uttarakhand and Telangana. Each of these states received a new Convener.

2. Change in Convenership of a State—RBI also changed convenorship for Manipur in 2004 from Union Bank of India to State Bank of India. Similarly, Jharkhand's Convener was changed from Allahabad Bank in 2016 to Bank of India. As a consequence, 17 districts in Jharkhand and 8 districts in Manipur observed a change in alignment.

District-time fixed effects account for the reasons for alignment change. Thus, our main specification controls for the factors which led to a change in alignment. Further, most Lead Banks once appointed do not change and have remained the same since inception of the Lead Bank Scheme.[7] Thus, firm-market-year residuals during the period of our study are unlikely to influence alignment. The indicator for alignment of Lead Bank in a district is, thus, independent of residual component ϵ_{bdt}. Unless the residual bank-district-year component was influencing changes at the state-level, which is highly implausible, our estimate of β identifies the impact of alignment on a bank's performance. However, we will conduct some robustness checks to lend weight to our estimation.

6 Bank-District Level Impact

6.1 Lead Bank Performance in Rural Markets

Lead Bank Scheme focuses on improving credit delivery in excluded and under-served regions. For example, around 40% of funds meant for Priority Sector Lending is reserved for agricultural purposes. Consequently, we expect the impact to be the highest in the rural sub-markets.[8]

[7]Some Lead Bank firms changed due to merger of banks. However, those cases were not responsible for alignment change since the Convener bank of that district was neither of the two merging banks; i.e. alignment remained 0 before and after merger.

[8]In BSR, rural areas are defined as revenue centres with a population of less than 10,000. Other markets identified in BSR are Semi-Urban (population between 10,000 and 100,000), Urban (population between 100,000 to 1 million) and Metropolitan (population more than 1 million).

Panel A of table 3 shows the impact on credit disbursal in rural branches of Lead Banks. Column (1) shows that the total credit disbursed by Lead Banks increases by 32% after alignment. We dis-aggregate the impact across five main sectors which account for 91% of total credit market in rural branches. For agricultural sector (column 2), the coefficient on Aligned Lead Bank is 0.460 with a standard error of 0.12—rural agricultural credit by a Lead Bank increases by 46% after it becomes Aligned. Lending for industry and personal sectors do not undergo a significant increase after the bank becomes aligned. However, credit uptake for trade enterprises undergoes a 41% increase in lending (column 5). Standard errors are robust to heteroscedasticity within districts.[9]

The emphasis in PSL is on small borrowers who may have low credit requirement. Such borrowers may not demand high amounts, which may explain the lack of impact on industry credit delivery in table 3. However, Lead Bank Scheme influences credit market through opening of new accounts also. We test for the increase in number of accounts opened after Lead Bank becomes aligned in panel B of table 3. Overall, Lead Banks open 36.4% more accounts in rural branches after becoming aligned. Panel B of table 3 shows the impact of Alignment on opening of new accounts in rural areas by Lead Banks. We also find a significantly positive increase in new accounts for all five sectors. For agricultural sector, number of new accounts in rural branches increase by 43.2%. Credit accounts for personal and trade sectors increase by 39% and 25.8%, respectively, indicating the inclusion of small borrowers in this sector.

Thus, Lead Bank personnel perform better on the intensive as well as extensive margin of the credit market after the change in alignment.

6.2 Lead Bank Performance in Urban Markets

PSL covers the needs of urban areas, as well. However, PSL oriented sectors occupy a smaller proportion in urban areas. For eg; agriculture credit comprises only 7% share in overall disbursal in urban and metropolitan branches. Thus, the overall impact on urban credit markets may remain small. Table 4 shows the results of Lead Bank performance in urban markets. No significant increase occurs for total credit disbursal and new accounts of Lead Banks in urban areas after Alignment. On the extensive margin, agriculture, industry and trade accounts increase by 42.9%, 24.3% and 15.5%, respectively. Lead Bank personnel may be targeting small firms in urban areas with low credit demand. This may explain the increase in number of accounts without a significant increase in credit amount.

[9]Our choice of clustering standard errors at district level follows from Abadie et al. (2017). Results remain statistically similar if we cluster standard errors within bank-district strata.

6.3 Mechanisms

Our theoretical framework argues that increase in credit delivery occurs due to improved communication over *ex post* factors between Chief Manager and the CEO. However, competing hypotheses may generate similar results. For eg; under the attention-based view of the firm (Ocasio, 1997), managerial attention determines decision-making and productivity. Garicano and Rossi-hansberg (2005) also describe how upper-level hierarchy solves problems that are beyond the competence of lower-level hierarchies. It may be that the CEO assists the Chief Manager in some decisions after the quarterly meetings, rather than Chief Manager improving her effort. Further, CEO may also be improving communication with the Chief Manager as well ala Dewatripont and Tirole (2005). Under these competing channels, we expect changes in other market-related parameters, and not just higher effort. In this section, we such alternative supply-side drivers of credit markets by which Lead Bank personnel improve outcomes. Table 7 presents the impact of alignment on various drivers of credit markets.

6.3.1 Employee Productivity

We use two metrics of productivity—ratio of total lending and loan officers, and ratio of total credit accounts and loan officers. Column (1) shows the results for log of ratio of credit and loan officers. The coefficient in column (1) is 0.280 with a standard error of 0.10—loan officer productivity increases by 28% after the bank becomes aligned. Column (2) reports that the corresponding impact on log ratio of number of accounts and loan officers is 30.9%, which is significant at 1% level.

6.3.2 Lending Rates

Lower lending rates may also increase credit uptake as opposed to higher effort on the part of loan officers. Column (3) reports the impact on Weighted Average Lending Rate (WALR). The coefficient is -0.143 with a standard error of 0.14. Thus, although weighted lending rates in rural markets decline but the effect is insignificant.

6.3.3 Mis-Selling

Lead Bank personnel might engage in mis-selling instead of exerting higher effort to increase credit uptake. This occurs when loan officers overlook asset quality issues while making lending decisions. To detect that, we use ratio of Non-Performing Assets (NPAs) as a dependent variable. Column (4) shows that the ratio of NPAa remains nearly unchanged after the bank becomes aligned. Thus, there is no evidence on mis-selling.

6.3.4 Loan Officers

In column (5), we report the impact on total number of loan officers appointed in Lead Banks after alignment. The coefficient is 0.033 and the effect is insignificant. This result rules out allotment of more resources to banks after alignment change.

7 District-level Impact

Results in tables 3 and 4 show the impact on Lead Banks within a district. Can alignment of Lead Banks also impact aggregate market outcomes? Other than communicating with the senior management of Convener banks, Lead Bank personnel also coordinate with other financial service providers and policy makers. This coordinating role may improve overall market outcomes.

7.1 Rural Impact

To test for aggregate impact in the district, we use the specification in equation 5. Table 5 provides the results for district-level credit market outcomes in rural areas. Panel A shows the results for credit disbursal. Total credit disbursal in the district improves by 16.2%, with impact occurring in industry, personal and trade sectors. In Panel B, we present the impact on extensive margin at the district-level. Total number of accounts increase by 12.7% at the district-level with the corresponding impact for industry, personal and trade sectors at 20.3%, 17% and 18.7%, respectively. Low share of agricultural sector in the urban regions may explain the absence of alignment impact (column 2).

7.2 Urban Impact

We also test for the corresponding equilibrium impact in urban markets. Table 6 provides the results. Similar to what we observed for bank-district effects, we find no district-level impact on higher credit disbursal or number of new accounts as shown in Panels A and B, respectively.

8 Robustness Checks

Our estimation requires that the unobserved bank-district-year effects do not influence alignment of districts or its change. Since, change in alignment occurs due to macro-factors such as formation of new states or bank mergers, which are plausibly exogenous to local-level

factors, our estimation strategy gains credibility. Thus, local-level factors are unlikely to influence alignment. To further validate our results, we provide some robustness checks in this section.

8.1 Alignment Change and Time Trend

In our empirical models, we can not control for bank-district-year fixed effects as these would be correlated with Alignment indicator. However, if Lead Bank performance was already trending upward prior to Alignment change, then our estimates of ATE will be biased. To address this concern, we use the following model:

$$y_{bdt} = \beta.1\{\text{Align Lead Bank}\}_{bdt} + \gamma.1\{\text{Lead Bank}\}_{bd} * tt + \Sigma\Phi_k + \epsilon_{bdt} \tag{3}$$

We include the interaction of Lead Bank indicator and time-trends in equation 3. If coefficient on Alignment indicator was biased due to upward drift in Lead Bank credit disbursal prior to the treatment, then inclusion of Lead Bank specific time trend would eliminate this bias. On the other hand, inclusion of this time trend should not affect β if Lead Banks were not a differential trajectory. Such robustness checks are commonly used in many event studies (Wing et al., 2018). For example, Hansen et al. (2017) used it to study the effect of cigarette tax on consumption and Adbi et al. (2019) include this specification as a robustness check while studying a natural experiment of a pandemic on market structure of influenza vaccines.

Table 9 provides the results for different outcome variables in equation 4. Column (1) has log of credit as the dependent variable. The coefficient on Alignment indicator is 0.312 with a standard deviation of 0.10, while the coefficient on the interaction term is insignificant and close to 0. This ATE estimate is nearly the same as our baseline specification. In column (2), we use log of number of accounts as the dependent variable, which also remains positive and statistically significant at 1% level. For log of credit per loan officers (column (3)), the coefficient on Alignment indicator is 0.230 with a standard error of 0.11. In columns (3) and (4), we use log of number of accounts and log of accounts per loan officers dependent variables, which also remains positive and statistically significant at 1% level. Thus, our estimates remain informative even after imposing a differential time trend for Lead Banks.

8.2 Competition from Private Banks

The returns to higher effort should attenuate when facing a more efficient competitor. This is because exerting effort to improve credit delivery should be difficult as the residual demand

is absorbed by sharper competitors. We test this hypothesis by observing the heterogeneity of alignemtn effect due to varying degree of competition in the market. Given that private sector banks in India are more efficient (**?**), in districts with higher share of rural credit provided by private banks, the effect of alignment should be lower. We use the following specification for this hypothesis:

$$y_{bdt} = \beta.1\{AlignedLeadBank\}_{bdt} + \gamma.1\{AlignedLeadBank\}_{bdt} * \%Pvt.RuralCredit + \phi_{bt} + \phi_{dt} + \phi_{bd} + \epsilon_{bdt} \quad (4)$$

If Lead Banks were absorbing unmet demand, then a higher share of private sector banks in the rural financial markets would leave less for Lead Bank personnel to mop up when alignment increases; i.e. $\gamma < 0$.

Table 8 shows the results for log of credit, log of accounts and log of credit per loan officers in columns (1), (2) and (3), respectively. Across all specifications, the coefficient on Aligned Lead Bank indicator remains significant and positive. However, the interaction of Aligned Lead Bank indicator and share of private sector rural credit is significantly negative. A one percent increase in share of private banks in rural credit attenuates the increase in total credit, total credit per loan officers, total accounts and total accounts per loan officers by 2.5%, 2.3%, 0.9% and 1.3%, respectively. Another implication of this result is the presence of slack or unmet demand in credit markets in India, which is lower when competition increases.

9 Conclusion

The performance-linked incentive structure of management is critical in improving effort of employers in a firm (banks here). However, assessing the performance of an employee hinges on the nature of communication between employee and his boss. We highlight the communication of soft information between the employee and the boss as one channel to get close to the first-best world of contracts. The paper has analyzed the Lead Bank Scheme of the Indian government which aims at credit expansion with a special focus on priority sectors. It's important to note that while this scheme does not change the decision-making authority in the firm, but it creates an opportunity for loan officers in some districts to communicate well with their 'bosses' (in the cases of Aligned Lead Banks). We use the BSR data and variation across districts in communication channel to empirically identify the impact in credit market.

Our results throw light on a new channel of soft information transmission which can induce employees to exert more effort. The theoretical framework in section 3 models how

effort and expected output are higher in the case of Aligned districts; i.e. where the Convener and Lead Bank belong to the same firm. These factors like local demand, ex-post performance of loans, bureaucratic delays, infrastructure bottlenecks etc. which may otherwise be costly to convey, become less of a hurdle for Chief Managers of Aligned Lead Banks. Observing these factors (ω) reduces the riskiness and pushes the contract to induce more effort.

To empirically test this theory, we have used a quasi-natural experimental research design. We find that at the bank-district level i.e. the level of intervention of the Lead Bank Scheme, there is a greater credit inclusion in rural branches, with an increase of around 35% and 42% in intensive and extensive margin, respectively. Additionally, when we disintegrate this total impact across various sectors, we find the highest contribution coming from Agriculture and Trade, which is consistent with the intent of the scheme. Even though the performance of the Aligned Lead Bank improves, no significant credit expansion occurs at the market-level (i.e. districts). Improved effort and output by Lead Banks within Aligned districts may be reducing share of other firms in the market.

We further find that while productivity metric of loan officers improves after change in Alignment, other drivers of credit markets such as lending rates, asset quality, and total number of loan officers remain unchanged. These tests validate our hypothesis that improved communication of soft information led to higher effort by employees.

Our results also provide interesting implications regarding the banking industry in India. Good management practices can improve performance of firms in developing countries (Bloom et al., 2010; Bloom and Reenen, 2010; Bender et al., 2016). The banking industry in India has also received attention from this debate (Khandelwal, 2010). Providing more opportunities to employees to convey soft information on effort, and not just hard information on output as is the norm in most organizations, may yield substantial rewards. However, the net benefit would require balancing these rewards against the time and attention cost of the CEO, which is beyond the scope of the paper. Understanding this trade-off holistically may provide valuable insights into organizational design of banks in India.

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Appendix

A. Figure

Figure 1: Districts by Alignment

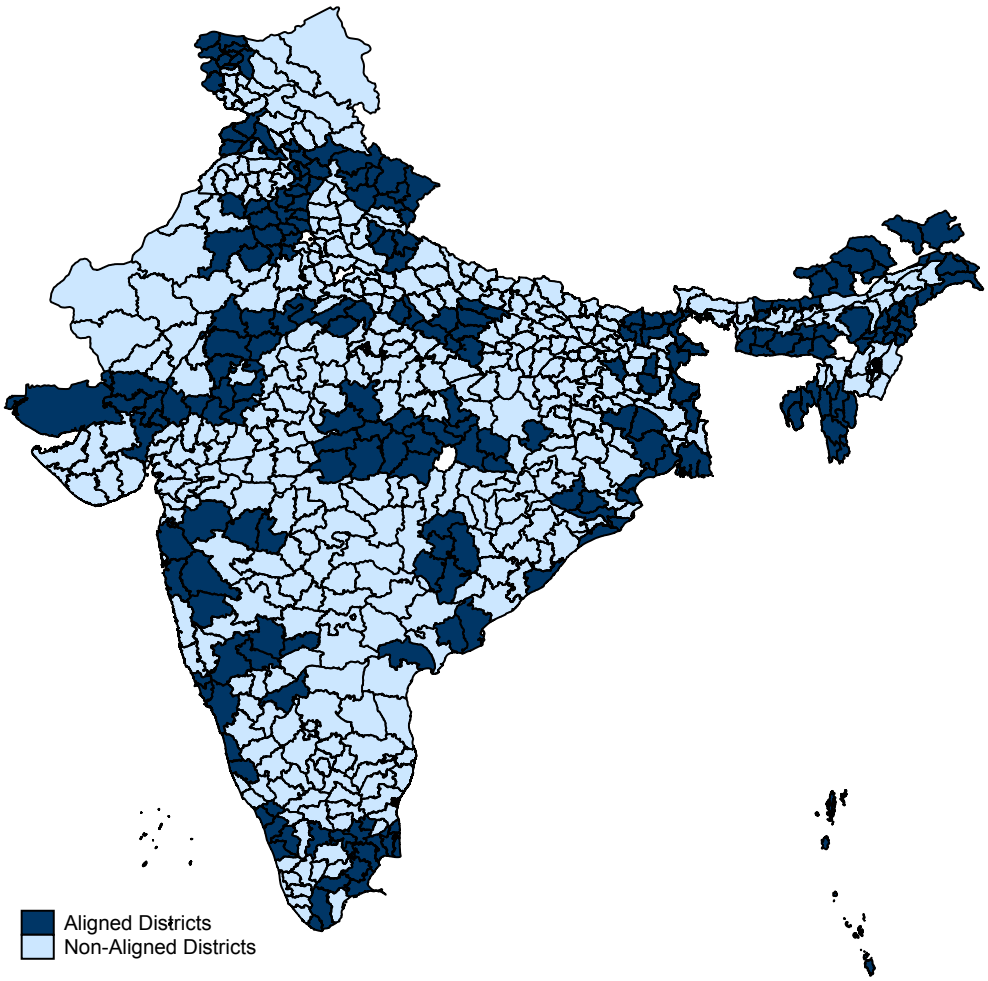
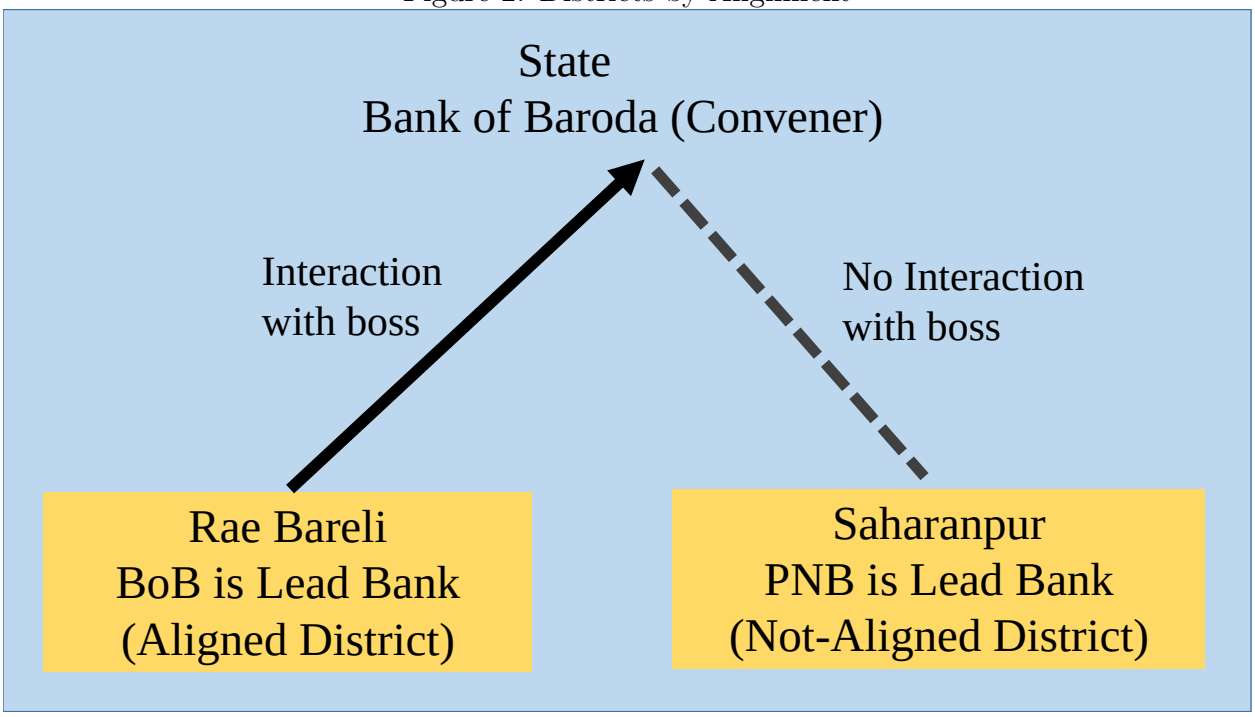


Figure 2: Districts by Alignment



10 Tables

Table 1: % Share by sectors and regions

	Agri	Industry	Personal	Trade
Panel A: Credit				
Rural	53.28	7.05	16.84	15.72
Urban	7.94	44.58	16.34	9.42
Panel B: Accounts				
Rural	72.37	1.96	12.61	6.13
Urban	29.39	3.24	51.59	5.54

Table 2: Summary Statistics

height	Branches	Amount	Accounts	Loan Officers	WALR	NPA/Loan Amount
Aligned Lead	21.30	157,375	1,141.97	3.01	11.89	7.18
		(476,391.73)	(1,119.61)	(3.59)	(1.45)	(9.07)
Non-Aligned Lead	25.70	334,680	1,214.77	3.74	11.94	7.33
		(5,991,676.72)	(1,401.02)	(29.05)	(1.47)	(8.20)
Non-Lead	6.51	385,418	1,213.93	4.48	12.34	6.02
		(6,866,070.19)	(39,938.62)	(43.80)	(2.14)	(11.15)
District	131.73				12.39	6.93
					(1.25)	(6.34)

Table 3: Bank-District Impact (Only Rural)

Panel A: Log (1+Credit)					
	(1)	(2)	(3)	(4)	(5)
	Total	Agri	Industry	Personal	Trade
$1\{AlignedLeadBank\}$	0.324***	0.460***	0.282	0.240*	0.414***
	(0.10)	(0.12)	(0.18)	(0.13)	(0.14)
Observations	82474	75661	62981	75710	65891
R-Squared	0.928	0.921	0.799	0.908	0.844
Panel B: Log(1+NOAC)					
$1\{AlignedLeadBank\}$	0.364***	0.432***	0.390***	0.258**	0.259***
	(0.10)	(0.11)	(0.11)	(0.11)	(0.10)
Observations	83385	76488	63646	76485	66618
R-Squared	0.957	0.953	0.862	0.931	0.915
Bank-Time FE	Y	Y	Y	Y	Y
District-Time FE	Y	Y	Y	Y	Y
Bank-District FE	Y	Y	Y	Y	Y

Sample restricted to rural areas. Each specification controls for bank-district, bank-time and district-year fixed effects. Standard errors are clustered at the bank-district level. ***/**/* denote significance at the 1/5/10 percent level, respectively.

Table 4: Bank-District Impact (Only Urban)

Panel A: Log (1+Credit)					
	(1)	(2)	(3)	(4)	(5)
	Total	Agri	Industry	Personal	Trade
1{*AlignedLeadBank*}	-0.025	0.244	0.161	-0.032	0.054
	(0.09)	(0.17)	(0.11)	(0.09)	(0.10)
Observations	178963	145623	156584	168299	161167
R-Squared	0.921	0.834	0.865	0.904	0.853
Panel B: Log(1+NOAC)					
1{*AlignedLeadBank*}	0.131	0.429**	0.243**	-0.037	0.155*
	(0.09)	(0.18)	(0.09)	(0.07)	(0.08)
Observations	179528	147156	158217	170070	162959
R-Squared	0.931	0.887	0.868	0.919	0.885
Bank-Time FE	Y	Y	Y	Y	Y
District-Time FE	Y	Y	Y	Y	Y
Bank-District FE	Y	Y	Y	Y	Y

Sample restricted to urban areas. Each specification controls for bank-district, bank-time and district-year fixed effects. Standard errors are clustered at the district level. ***/**/* denote significance at the 1/5/10 percent level, respectively.

Table 5: District-Level Impact (Only Rural)

	(1) Total	(2) Agri	(3) Industry	(4) Personal	(5) Trade
Panel A: Log (1+Credit)					
$1\{AlignedDist\}_{dt}$	0.162***	0.024	0.109*	0.206***	0.146**
	(0.05)	(0.06)	(0.06)	(0.06)	(0.06)
Observations	10133	9843	9487	9770	9612
R-Squared	0.980	0.979	0.915	0.974	0.927
Panel B: Log(1+NOAC)					
$1\{AlignedDist\}_{dt}$	0.127***	0.070	0.203***	0.170***	0.187***
	(0.03)	(0.06)	(0.06)	(0.05)	(0.06)
Observations	10202	9970	9637	9989	9776
R-Squared	0.990	0.988	0.937	0.978	0.972
State-Time FE	Y	Y	Y	Y	Y

Sample restricted to rural areas. Each specification controls district, year and state-year fixed effects. We include coefficients on district-year fixed effects from equation 1 as proxy for time-varying demand for financial services in the district. Following Abadie et al. (2017), standard errors are clustered at the district level. ***/**/* denote significance at the 1/5/10 percent level, respectively.

Table 6: District-Level Impact (Only Urban)

	(1) Total	(2) Agri	(3) Industry	(4) Personal	(5) Trade
Panel A: Log (1+Credit)					
$1\{AlignedDist\}_{dt}$	0.041	0.132	-0.021	0.035	0.016
	(0.04)	(0.10)	(0.09)	(0.04)	(0.04)
Observations	9897	9564	9680	9507	9804
R-Squared	0.991	0.976	0.978	0.989	0.981
Panel B: Log(1+NOAC)					
$1\{AlignedDist\}_{dt}$	0.063*	0.074	0.067	0.041	0.061
	(0.04)	(0.08)	(0.06)	(0.03)	(0.04)
Observations	9664.000	9526.000	9654.000	9461.000	9785.000
R-Squared	0.992	0.983	0.971	0.990	0.984
State-Time FE	Y	Y	Y	Y	Y

Sample restricted to urban areas. Each specification controls district, year and state-year fixed effects. We include coefficients on district-year fixed effects from equation 1 as proxy for time-varying demand for financial services in the district. Following Abadie et al. (2017), standard errors are clustered at the district level. ***/**/* denote significance at the 1/5/10 percent level, respectively.

Table 7: Drivers of Credit Markets

	Log (Credit/LO)	Log (Accounts/LO)	WALR	NPA Ratio	Log(1+ LO)
$1\{AlignedLeadBank\}$	0.280**	0.309***	-0.143	0.001	0.033
	(0.09)	(0.10)	(0.12)	(0.09)	(0.05)
Observations	81800	82734	82986	83107	83302
R-Squared	0.890	0.939	0.848	0.512	0.956
Bank-Time FE	Yes	Yes	Yes	Yes	Yes
District-Time FE	Yes	Yes	Yes	Yes	Yes
Bank-District FE	Yes	Yes	Yes	Yes	Yes
Number of Clusters	630	630	630	630	630

Sample restricted to rural areas. Each specification controls for bank-district, bank-time and district-year fixed effects. Following Abadie et al. (2017), standard errors are clustered at the bank-district level. ***/**/* denote significance at the 1/5/10 percent level, respectively.

Table 8: Alignment Effect in Markets with Efficient Competitor

	Log(Credit)	Log(Credit/LO)	Log(1+NoACs)	Log(1+NoACs/LO)
1{*AlignedLeadBank*}	0.337**	0.292***	0.373***	0.316***
	(0.10)	(0.09)	(0.12)	(0.10)
1{*AlignedLeadBank*}% Pvt.RuralCredit	-0.025***	-0.023***	-0.009***	-0.013***
	(0.01)	(0.01)	(0.001)	(0.001)
Observations	82474	81800	83385	82734
Bank-Time FE	Yes	Yes	Yes	Yes
District-Time FE	Yes	Yes	Yes	Yes
Bank-District FE	Yes	Yes	Yes	Yes

Sample restricted to rural areas. Each specification controls for bank-district, bank-time and district-year fixed effects. Following Abadie et al. (2017), standard errors are clustered at the bank-district level. ***/**/* denote significance at the 1/5/10 percent level, respectively.

Table 9: Alignment Effect and Differential Time Trend of Lead Banks

	Log(Credit)	Log(Credit/LO)	Log(1+NoACs)	Log(1+NoACs/LO)
$1\{AlignedLeadBank\}$	0.312**	0.230**	0.327**	0.257***
	(0.10)	(0.09)	(0.10)	(0.09)
Lead*Time-Trend	0.002	0.010***	0.008**	0.011***
	(0.01)	(0.01)	(0.01)	(0.001)
Observations	82474	81800	83385	82734
R-squared	0.928	0.890	0.957	0.939
Bank-Time FE	Yes	Yes	Yes	Yes
District-Time FE	Yes	Yes	Yes	Yes
Bank-District FE	Yes	Yes	Yes	Yes

Sample restricted to rural areas. Each specification controls for bank-district, and district-year fixed effects. Following Abadie et al. (2017), standard errors are clustered at the bank-district level. ***/**/* denote significance at the 1/5/10 percent level, respectively.