Career Incentives and Employee Productivity in State-Owned Enterprises: Evidence from India

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Abstract

State-owned enterprises (SOEs) are large and important organizations in many economies but suffer from low labour productivity. Can SOEs improve their labour by enhancing career concerns for their employees? We show that exogenous change in opportunities to influence career progression significantly improves the performance of employees of state-owned banks in India. In particular, we find that when banking employees get more exposure to senior management, who can influence their promotion decisions, they increase credit expansion on both intensive and extensive margins. Further, this expansion happens through increased productivity, and not costly factors such as liberal screening, lower interest rates or higher resource allocation. Our results show that reforms in performance review processes, which allow workers to signal effort to supervisors in state-owned firms, may yield substantial productivity gains.

Key Words: Career concerns, State-owned enterprises, Firm productivity
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1 Introduction

State-owned enterprises (SOEs) are often large and important organizations in many economies but suffer from various inefficiencies such as low labour productivity (IMF, 2020). While private-sector firms use monetary incentives or promotions to improve worker's effort, SOEs rarely offer bonuses based on subjective performance evaluations. This leaves SOEs only promotions or career motives to incentivize their employees.

Can career concerns be a strong motive to improve SOE employees? SOEs usually have a single port of entry and minimal lateral hiring, which make career concerns for existing employees a strong motivator. However, contract termination is rare in SOEs, which puts a floor on the downside risk for the employees. Further, even non-performing employees may achieve career growth, although with some delay in promotion. These factors would reduce the power of incentives generated by career concerns within SOEs. Thus, *prima facie*, the effect of career concerns on SOE employees is ambiguous. If career concerns are indeed effective in SOEs, then SOEs can improve their labour productivity by improving their review processes, which would further have enormous welfare implications.

In this paper, we study the role of career motives in a novel setting of Indian public sector banks. Studying within firm incentive structures in SOEs is a challenging task for several reasons. First, finding exogenous variation in incentives within firms is hard; hence most studies rely on conducting experiments within firms, which may be difficult to implement for the researchers. Secondly, SOEs have fewer incentives and are also more reluctant to share within-firm data compared to private firms, which are constantly looking to improve their productivity because of market competition. We overcome these challenges by using within-firm granular data from Indian banks and exploiting a natural experiment that induces exogenous variation in employees' ability to demonstrate higher effort and productivity to supervisors.

We analyze the Lead Bank Scheme of India to answer our questions. This scheme was started in 1969 to improve credit access to priority sectors such as agriculture, small businesses and marginalized sections of society.[1] Under this scheme, each district is assigned one state-owned bank (also called public sector bank) to promote Lead Bank Scheme outreach to these priority sectors in that district. This bank is called the lead bank for that district, and its activities are managed by the mid-management level employee, whom we call the lead banker (he). To monitor the lead banks of a state, the Reserve Bank of India (RBI) appoints another state-owned bank at the state level.[2] These banks are called the convener

[1] We discuss priority sector lending in greater detail in section 2.1.

[2] The central bank of India is called the Reserve Bank of India.

banks, and their task is to review the performance of the lead bankers in every district in that state. Thus, there are some districts where the same bank acts as both the lead bank and the convener bank. We refer to these lead banks as 'aligned'; otherwise they are referred to as 'non-aligned'.

The review of Lead Banks occurs through quarterly meetings which are headed by the CEO (she) of the convenor bank. In aligned districts, the CEO of the bank can observe the output of her own employees, while in non-aligned districts, the lead banker's output is reviewed by the CEO of a different bank. Institutional arrangements in Indian sector banks make such interactions with own CEO and senior management crucial for promotions and career advancements. Specifically, each employee in the bank receives confidential performance appraisal reports from his supervisors. At the time of promotion evaluations, a committee takes the decision on whether or not to promote the employee based on these reports and an interview with the employee. However, Khandelwal (2010) finds that nearly 80 - 90% of the appraisees get 'excellent' ratings. This leniency bias (Prendergast, 1999) renders these reports useless for separating performers from non-performers. Our discussions with former bank officials suggest that recommendations by senior officers and the discretion of supervisors in the form of informal oral recommendations become critical in evaluation by the committee. Further, since promotions at the middle management level are not automatic, and only a fraction of employees get promoted at a time, these recommendations are extremely valuable for early promotion. Apart from promotions, the employees in the banks also look to enhance their careers by getting appointed in coveted locations and departments for which they again rely on informal recommendations from senior managers in their bank.

We hypothesize that an aligned lead banker will have a higher incentive to demonstrate his effort and productivity to the CEO of his own bank. But a non-aligned lead banker has no such opportunity. Thus, the alignment of a district determines the employee's motive to enhance his career through better performance (Holmstrom, 1999). We exploit exogenous change in *alignment* to study how variation in career concerns affects the performance of the employees. Alignment of a lead bank changes mainly due to the splitting of old states in which case the newly formed states get new convener banks. Importantly, Lead Banks do not change in our sample. Thus, all variation in alignment change comes from administrative or political factors at the state, which are unlikely to be influenced by or correlated with the district-level performance of banks. Our granular dataset allows us to use a specification with a rich set of fixed effects such as district-time fixed effects to control for district-level time-varying characteristics such as local demand (this is analogous to using firm-time fixed effects in Khwaja and Mian (2008)), bank-time fixed effects to control for bank-level time-varying characteristics, and bank-district fixed effect to control for, among other factors, the

appointment of a particular bank as lead bank in that district.

We expect the impact of alignment to be the highest in rural areas, and in particular, agriculture, since the focus of priority sector lending is toward the agricultural sector.[3] Further, since agriculture lending comprises only 7% of urban lending, we expect no impact of alignment on urban areas. Consistent with this reasoning, the results show an average increase of 35% in the amount of loans and an increase of 30% in the number of loans by aligned lead banks relative to other banks in rural areas. Sector-wise analysis also confirms that most of the increase is driven by agricultural credit, and not industry, personal and trade. There is no corresponding increase for the urban markets, as expected.

Our conjecture is that after alignment change, the lead banker would exert higher effort, which may occur by pushing his subordinate loans officers to reach out to more borrowers and disburse more credit. If loan officers are indeed working harder, then their average productivity should increase. We find that in rural areas, for aligned banks, credit amount per loan officer increases by 32% and number of accounts per loan officer increases by 28%. We then test whether other factors that could drive credit, such as lower lending rates, liberal screening of borrowers or number of loan officers also change for aligned lead banks. We find no change in Weighted Average Lending Rate (WALR), ratio of non-performing assets (NPAs) and total number of district-level loan officers. Thus, the increase in credit supply occurs mostly through an improved effort by banking officers of the district.

To further test the effort channel, we study the impact of competition by private banks on lending by aligned banks. Poaching new customers or expanding to new ones may be difficult if the competitor is a private bank, which are more productive relative to state-owned banks. Thus, marginal returns of exerting effort may be lower if the market share of the private banks is higher. We test this by including the interaction of alignment indicator with the market share of private banks in our bank-district level regressions. Increase in rural lending by the aligned banks and productivity of employees is lower in the districts with higher market share of private banks. This result provides further evidence that the increase in lending by the aligned banks is coming from the effort channel.

We then study if the increase in credit by the aligned lead banks translates to an increase in total credit at the district level. We find an increase in total supply of credit in the aligned rural districts both at the intensive margin and extensive margin. This suggests that the aligned lead banks are not just poaching old customers of existing banks but also giving credit to new customers. Sector-wise split suggests an increase in credit in all sectors. However, there is no significant change for urban areas.

Finally, we conduct additional tests to check the robustness of our results. First, we rule

[3] 45% of all priority sector loans are earmarked toward the agricultural sector.

out pre-trends in credit disbursal by aligned lead banks. As an alternative identification strategy, we compare treated lead banks against non-treated lead banks from other districts to find expected increase in credit disbursal by treated lead banks. We then look at the impact of alignment on non-lead banks and find no increase in credit as expected. As a placebo test, we study how deposits change because of alignment of lead banks, and find no evidence of increase in deposits. This is expected since deposit generation is beyond the scope of the Lead Bank scheme.

Our paper makes several contributions to the literature. First, we contribute to the empirical literature which studies the impact of career concerns on productivity of employees within organizations. The existing literature has analyzed the impact of career concerns for bureaucrats (Bertrand et al., 2020; Karachiwalla and Park, 2017) and employees in private firms Manthei et al. (2023). Bertrand et al. (2020) show that bureaucratic leaders may be incentivized by glittering prizes which come in the form of last career promotion making them the top bureaucrats in the country. Karachiwalla and Park (2017) show that higher wage increases for promotion are associated with better performance of teachers in government schools in China. Ours is the first study to show that career concerns can be effective incentives for SOE employees.

We also contribute to the literature on the productivity of SOEs. Most of the current literature has focused on the impact of privatization on the productivity of SOEs (Barberis et al., 1996; Gupta, 2005; Hsieh and Song, 2015; Estrin and Pelletier, 2018). However, privatization is an arduous reform and faces several political constraints. Instead, management reforms may serve as an alternative to improve SOE performance without a change in ownership, because the latter may also change the socially oriented objectives that the SOEs pursue rather than just profit maximization. Among these reforms, Kala (2023) shows the importance of giving managers of SOEs in India more autonomy in creating higher value. Our paper provides empirical evidence that better performance review processes, motives for career advancements and better levers at influencing own prospects may indeed be very effective in improving employee productivity. While our study is focused on banks, the issue of low employee productivity and poor incentives for employees plague most SOEs. Thus, our paper is also important in the specific context of India where SOEs form a large part of the economy and employ many workers.[4] State-owned banks alone employed about eight hundred thousand employees in 2019 as per the economic survey of India. Improving employee productivity in SOEs can thus have an enormous impact on social welfare.

The subject of credit inclusion for poor and marginalised sections in India has received considerable attention. Lead Bank Scheme itself originated during the social banking period

[4]As per Kala (2023), SOEs employed over 1.14 million people in the year 2009.

with the aim of extending credit to under-represented sections. We add to the exiting literature on credit inclusion (Burgess and Pande, 2005; Burgess et al., 2005; Cole, 2009) by studying the Lead Bank Scheme and show that improving incentives of bank employees can improve credit delivery to priority sectors.

The rest of the paper is as follows. Section two discusses the Lead Bank scheme in India and describes the institutional setting. Section 3 describes the data. Section 4 discusses our identification strategy and section 6 discusses the results. In section 6, we conduct several robustness tests and section 7 concludes.

2 Institutional details and lead bank scheme

Indian banking sector comprises of a mix of private banks and state-owned or government-owned banks banks (also called public sector banks).[5] These banks usually have a national presence and are quite large in terms of their asset size. Both private banks and state-owned banks are listed on stock markets, but the state-owned banks are mostly owned by the government. On the other hand government usually do not have any direct ownership in the private banks.

2.1 Lead Bank Scheme

The Lead Bank Scheme was introduced in 1969 to address geographic disparity in credit availability in India. The Reserve Bank of India (RBI) was concerned that commercial banks did not have adequate presence in rural areas and lacked rural orientation (Gadgil, 1969). To address this concern, RBI adopted a service area approach where one state-owned bank in each district was assigned the role to promote credit supply to priority sectors in that district (see below for details of which sectors comprise the priority sector). This bank is known as the Lead Bank of the district. The lead banks assign a dedicated personnel at the district level whom we refer to the Lead Bank manager or Lead Banker to oversee the activities of the lead bank scheme in their districts. These lead bank managers are middle-management level employees with about 15-20 years of experience.

In order to monitor the activities of lead banks, RBI appointed another state-owned bank for each state in 1977. This bank is known as the Convener Bank of the state. The convener bank of a state monitors the lead banks of all the districts in that state by conducting quarterly meetings with the lead bank managers. These meetings are headed by the CEO of

[5]There are also some other types of banks such as cooperative banks and regional rural banks, but these banks form a very small fraction total bank credit.

the convener bank. In the absence of the CEO, these meetings are headed by another very senior manager of the bank. The convener bank of a state and all the lead banks of districts in the state collectively form the State-Level Bankers' Committee (SLBC). In the year 2016, the final year of our sample, there were 26 banks which were assigned the responsibility of lead banks for all the districts in India and 18 banks which were assigned the responsibility of convener banks for the different states in India.

This institutional set up implies that there are some districts for which the lead and convener banks are same which we call as aligned districts; else the districts are referred to as non-aligned.

2.2 Activities of lead banks and priority sector lending

The main role of the lead banks is to promote lending to priority sectors in their respective districts (RBI, 2021). As per RBI's regulations, 40% of each bank's Adjusted Net Bank Credit is reserved for priority sectors which include sectors such as agriculture, micro, small and medium enterprises (MSMEs), housing and education (RBI, 2022). Of the total priority sector loans, agricultural sector receives 45%, while 18% is reserved for micro enterprises. In addition, 30% of the priority sector loans should be given to weaker sections of the society.

For the execution of the lead bank scheme, each lead bank in consultation with other financial institutions in that district prepares an annual credit plan. While the job of the lead bankers is to implement these credit plans, he can influence only the employees of his own bank to implement the scheme. To increase credit, he can push the loan officers of his bank who are entry-level employees and amenable to following the directions of the lead banker.

The lead banker also coordinates with officers of other banks, local bureaucrats and politicians to promote socially beneficial activities such as digital payments and financial literacy. For example, the lead banks in the state of Odisha organized credit *melas* in 6 districts in October 2019 (Odisha, 2019), where bank employees conducted programs on financial literacy. Lead bankers also interact closely with high ranking government officials through various fora and inform government agents about the institutional and infrastructural bottlenecks faced by banks in credit supply and financial inclusion.

2.3 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—While considering the resources of a bank to select the lead bank in a district, RBI takes into account the size of both assets and liabilities of the bank in the district.
- Contiguity of districts with the same Lead Bank—RBI tries to take into account the proximity of districts while assigning lead banks as it may help the banks in their operation.

In a nutshell, typically the state-owned bank with the largest market share in the district is appointed the lead bank. In our sample, the lead banks have market share of 36% in rural areas and 27% in urban areas.

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 which had strong presence in Telangana, whereas Andhra Bank was retained as the Convener Bank of Andhra Pradesh.

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

2.4 Impact of alignment on career concerns of lead bankers

The officers in the state-owned banks are selected through competitive exams and these jobs are highly coveted as they pay well and have high career stability. The banks usually have only one port of entry and lateral entries are non-existent. The employees enter the bank as entry level officers and slowly grow in the bank through promotions. Since bonuses are limited, the incentives for these employees come from promotions and appointments in coveted locations and departments within the bank. However, these employees are rarely laid off for poor performance, which puts a floor on the downside risk for the employees. Further, even non-performing employees keep getting their promotions, although there may be some delay in their promotions. These factor would reduce the power of incentives generated by career concerns and may instead incentivize the employees to enjoy the quiet life (Bertrand and Mullainathan, 2003).

The lead banker in a district is a mid-management level employee of the lead bank. These lead bankers have an experience of 15-20 years and are engaged specifically for Lead Bank Scheme activities. Thus these bankers have climbed the organization ladder for more than

15 years and are very unlikely to exit the organization.[6] Since the job of the lead banker is challenging as it entails interacting and coordinating with officers of other banks, bureaucrats and local politicians, the banks generally appoint only their better officers as lead bankers. As mentioned above, the incentives for these officers could possibly come from promotions within the banks.

The appraisal process in these banks is as follows. The supervisor of each employee writes an annual confidential performance appraisal report for the employee. In some cases, the supervisor may also write an appraisal report for a particular task assigned to the employee. When the employee is up for promotion, a committee takes the decision on whether or not to promote the employee based on these reports and an interview with the employee. The promotions at the middle and senior management level are not automatic and only a fraction of employees get promoted in the first shot. At the middle management level, only about one third of the employees may get promoted in their first attempt. The remaining employees have to wait for one or more years for their promotion.

A key challenge in the appraisal process is that the appraisal reports and ratings suffer from leniency bias (Prendergast, 1999). As per the Khandelwal Committee Report, 80 - 90% of the appraisees get an 'excellent' rating (Khandelwal, 2010), and this bias renders these reports ineffective for screening performers from non-performers. Since the employees cannot rely on these reports to help them get promoted, they call on the senior managers they may know to give informal oral recommendations to the members of the committee which is going to make the decision on promoting the employee. Thus it is these oral recommendations which act as deciding factors on whether the employee gets promoted or not. Because only a fraction of employees get promoted at a time, these recommendations are extremely valuable for the career progression of the employees. Apart from promotions, the employees in the banks also look to get appointed in coveted locations and departments for which they again rely on informal recommendations from senior managers in their bank.

As discussed above, the leads bankers at the district level are monitored by the CEO (or occasionally a very senior manager) of the convener bank of the state through SLBC meetings which are held quarterly. Thus the aligned lead bankers get to demonstrate his performance and productivity to the CEO of his own bank whereas the non-aligned lead bankers interact with the CEO of a different bank. These review meetings are an opportunity for the aligned lead bankers to impress the CEO of his own bank with his performance. A good impression on the CEO and any recommendation by her can go a long way in enhancing the career of

[6]Our sample is from 1999 to 2016. Hence the lead bankers in the period of our sample would have been as hired as entry-level officers in an era when the Indian economy was still quite socialist in nature and jobs in state-owned enterprises considered amongst the best jobs in India.

the lead bankers. Thus, being aligned gives the lead bankers an opportunity to enhance his career through his performance.

Based on the above arguments, our key hypothesis is that aligned lead bankers will perform better than non-aligned lead bankers. This hypothesis may not hold true because of several reasons. First, as discussed above, the power of incentives may not be high enough as the CEO will not fire the non-performers. Secondly, while the non-performers may not get promoted immediately, they generally will also get promoted albeit with some delay. Finally, the aligned lead bankers instead of becoming more productive, may engage in unproductive influence activities such as "buttering up" the CEO (Milgrom and Roberts, 1988; Milgrom, 1988; De Janvry et al., 2023) to garner his favours. This final countervailing force may in fact make the aligned lead bankers less productive.

3 Data and Summary Statistics

The main data set that we use is the Basic Statistical Returns (BSR) Data provided by the Reserve Bank of India. This data set provides branch-level credit and deposit statistics of scheduled commercial banks and regional rural banks in India from 1999-2016 at annual frequency.[7] We observe the number of accounts and the total amount of loans or credit outstanding at the end of the year for each branch across various sectors (agricultural, industry, transport, professional services, trade, etc.). We also know the kind of population centers —rural, semi-urban, urban and metropolitan —that the branch belongs to.[8] The data set also provides information on weighted average lending rates (WALR), non-performing assets (NPA) and total deposits for each branch. We club semi-urban, urban and metropolitan branches together and call them urban branches and conduct our analysis separately for rural and urban branches for reasons which will be discussed below. Since our treatment is at the bank-district-year level, we consider bank-district-year as the unit of observation for our analysis.

We develop the panel data on alignment by collecting information on lead banks and convener banks from websites of various SLBCs. In order to track changes in the leads banks and convener banks across years, we collect the notifications for Lead Bank Scheme available from RBI's website. Around 44% of districts are aligned. Figure 1 shows the map

[7] In India the financial year starts on 1st April and ends on 31st March. So we have annual data from March 31, 1999, to March 31, 2016.

[8] According to RBI, rural areas are defined as centres with a population of less than 10,000. Similarly, semi-urban areas are those with population between 10,000 and 100,000, urban areas are those with population between 100,000 to 1 million and metropolitan areas are those with population of more than 1 million.

of districts in India tagged by their status of alignment in the year 2011.

We first look at the distribution of lending by four major sectors — agriculture, industry, personal and trade — in rural and urban branches (Table 1). In rural areas, agricultural lending comprises of 53% (72%) of total amount (accounts) of credit. Contrarily, in urban areas, agricultural lending comprises only of 8% (29%) of total amount of (accounts) credit. Industry loans form a larger share in urban areas (45%) than in rural areas (7%).

Table 2 shows the average loan size in urban and rural areas. As expected, average loan size is much larger in urban areas than rural areas. More importantly, even for agricultural sector, the average size of urban loans is more than twice the average size of rural loans. This suggests that smaller and marginal farmers are borrowing more from rural branches.

Table 3 provides the share of credit that the lead banks provide in rural and urban areas. We see that in rural (urban) areas leads banks have a markets share of 35.6% (27.1%). This is consistent with the criteria that the lead bank in a district is selected based on its supply-side capability in that district and indicates the capacity of the lead banks to influence credit delivery in the district.

The above statistics suggest that when lead bankers are trying to increase credit, they will focus mostly on rural areas than urban areas for the following reasons. The main objective of a lead bank is to give out more priority sector loans, which refer to lending to agriculture, MSMEs, housing, education, etc. However, as per RBI regulations agriculture is supposed to receive 45% of the priority sector loans. In addition, within the sectors mentioned above, attention is to be paid to financially excluded and weaker sections of society, which are primarily located in rural areas. Since agricultural credit comprises 53% loans in rural areas and only 8% loans in urban areas, it is natural that the lead banker will focus on rural areas. Even within agricultural loans, as mentioned above, average loan size in urban areas is more than twice the average size in rural areas indicating that poorer and marginal farmers are getting credit from rural branches. The well off farmers are more likely to already have access to credit from banks. So any untapped markets would comprise mostly of marginal farmers, and these markets are more likely to be in the remote rural areas than in the urban areas. Hence we expect that as lead banks become aligned, they will give more credit in rural areas than in urban areas.

Table 4 provides the summary statistics of the important variables separately for aligned lead banks, non-aligned lead banks and non-lead banks. On overage the leads banks are much larger than non-lead banks as they lend more and also have higher number of branches. The WALR is quite similar for the lead and non-lead banks. But the non-lead banks have lower NPA ratio on average. This could be because all private banks are non-lead banks and they have lower NPA.

4 Empirical Strategy

Our hypothesis is that... We test this hypothesis using the following specification:

$$y_{bdt} = \beta.\mathbb{1}\{\text{AlignedLead}\}_{bdt} + \phi_{bt} + \phi_{dt} + \phi_{bd} + \epsilon_{bdt}; \quad (1)$$

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

Our specification also has a rich set of fixed effects which includes bank-year (ϕ_{bt}), district-year (ϕ_{dt}) and bank-district (ϕ_{bd}) fixed effects. Inclusion of bank-year dummies controls for time-varying changes for a bank such as organizational changes, lending strategies or bank capital. District-year fixed effects control for district level time-varying factors such as local demand which can influence credit market outcome. This fixed effect is analogous to the firm-time fixed effect used by Khwaja and Mian (2008). District-year effects also absorb the endogeneity of a district being aligned. Assignment of a bank as the lead bank of a district depends on the pre-existing supply-side capacity of the bank in that district. To account for time-invariant resource differentials across banks within the local market, we include bank-district fixed effects. Further, most lead banks once appointed do not change and have remained the same since the inception of the Lead Bank Scheme.[9] Since lead banks did not change in our sample period, bank-district fixed effects also account for the endogeneity in lead bank selection. Our coefficient of interest is β which measures the impact of alignment on lead banks relative to banks, both lead and non-lead, which did not change alignment.

4.1 Change in alignment and identification

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 bank compared to the mother state. In such cases, the alignment status of districts in the new states may change. During the period of this study, four new states were formed—Chattisgarh, Jharkhand, Uttarakhand and Telangana. Each of these states received a new convener bank.

2. Change in convener bank of a state—RBI also changed the convener bank for the state of Manipur in the year 2004 from Union Bank of India to State Bank of India.

[9]Some lead banks 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.

The formation of new states in India happens mostly due to political reasons or sometimes a large state may be split into two states for the ease of administration. In total there are 58 districts which change alignment. Out of these 58 districts, there were 44 districts which changed to aligned from non-aligned and 14 districts which changed to non-aligned from aligned.

Identification of the impact of alignment requires that in equation 1 the indicator for aligned lead banks and the unobserved error term, ϵ_{bdt}, be uncorrelated. In other words, for the estimate of β in equation 1 to be biased, residual bank-district-year components should influence state-level changes. Given the reasons for change in alignment mentioned above, it seems highly unlikely that a banking unit within a district would lead to a change in convener bank at the state level. Further, our specification includes several fixed effects which would take care of any possible endogeneity of factors such as local demand at district level, selection of lead banks to a district and aggregate credit supply by the banks. Therefore the indicator for alignment of the lead bank in a district is independent of residual component ϵ_{bdt}.

5 Results

5.1 Impact of alignment on credit by lead banks

Our hypothesis is that lead banks will give more credit when they become aligned. As discussed above, we expect the increase in credit to happen more in rural areas than in urban areas because of two reasons. First agricultural lending has a much larger in rural areas than in urban areas. Also, the untapped markets will mostly constitute of poorer and marginal farmers without access to credit, and these farmers are more likely to be situated in remote rural areas than urban areas. Hence we conduct our analysis separately for rural and urban markets.

5.1.1 Lead bank performance in rural markets

Table 5 shows the impact of alignment on credit disbursal in rural areas estimated using equation 1. Panel A shows the results for amount of credit (dependent variable is log(1+credit)) and Panel B shows the results for number of loan accounts (dependent variable is log(1+account)). Column (1) in Panel A shows that the total credit disbursed by lead banks increases by 0.299 log points (standard error is 0.09) after alignment relative to banks, both lead and non-lead, which did not change alignment. We disaggregate the impact across four main sectors—agriculture, industry, personal and trade—which constitute 91%

of total credit market in rural markets. For the agricultural sector (column (2)), the estimate of coefficient β is 0.290 with a standard error of 0.12. This implies that there is a relative increase of 33% in rural agricultural credit given by a lead bank after it becomes aligned. Lending to the industrial sector also increases by 0.337 log points though the effect is only significant at 10% level. The estimate of β for personal loans 0.136. While this estimate is not statistically significant, the t-statistics is close to 1, suggesting an increase in personal loans by about 14%. The coefficient for trade loans is -0.12 with a standard error of 0.22 which suggests that there was no impact on trade loans...

[10]

Panel B of Table 5 shows the impact of alignment on the number of accounts in rural areas. Analogous to panel A, we see that there is an increase in number of loans given. The total number of accounts of the lead banks increases by 0.263 log points (standard error is 0.08) when it becomes aligned. This effect translates into a relative increase of nearly 30%. When we separate the effect into different sectors, we see a statistically significant increase for agriculture, industry and personal loans. The increase in personal loans is statistically significant only at 10%. There appears to be no impact on number of trade loans which is in line with the result in Panel A which showed no increase in the amount of trade loans.

5.1.2 Lead bank performance in urban markets

According to our hypothesis, there should be no or small impact of alignment on credit given by lead banks in urban areas. Table 6 shows the results of estimating equation 1 for urban areas. In line with our hypothesis, we see no impact of alignment on the amount of credit or the number of accounts given by lead banks.

5.2 Mechanisms

The increase in credit in rural areas by lead banks may have happened because of several reasons. First, the lead banker may work harder and push the loans officers to reach out to more borrowers and disburse more credit. Second, the loan officers instead of working harder may just reduce the lending rate to increase credit demand. Finally, the loans officers may start lending indiscriminately without exerting effort to screen or monitor the borrowers. Such lending would result in increase in non-performing assets. We test these channels next.

[10] 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.

5.2.1 Employee Productivity

If our hypothesis is true, then lead banker would work harder when it is aligned and push the loans officers of its bank to reach out to more borrowers and disburse more credit. We should then see an increase in productivity of the loans officers in the aligned lead banks. We use two metrics of productivity—total credit amount per loan officer and total credit accounts per loan officer. Column (1) in table 7 shows the result of estimating equation 1 with dependent variable as the log of credit amount per loan officer in rural markets. The coefficient in column (1) is 0.285 with a standard error of 0.10. Column (2) reports that the corresponding impact on the log of number of accounts per loan officer is 28% (0.249 log points), which is statistically significant at 1% level. These coefficients are very close to those in credit regressions (see table 5), suggesting that almost the entire increase in credit may be driven by increase in loan officer productivity.

5.2.2 Lending rates

Lower lending rates may also increase credit uptake as opposed to higher effort on the part of loan officers. To test this hypothesis, we estimate equation 1 with Weighted Average Lending Rate (WALR) in rural areas as the dependent variable. Column (3) in table 7 reports the relative impact of alignment on WALR of lead banks. The coefficient is -0.051 (standard deviation of 0.14) which indicates a decrease in lending rate by 5 basis points. This change is economically very small and result is also statistically insignificant. The result thus indicates that the loan officer did not decrease the interest rate to increase the amount of credit given by them.

5.2.3 Effort substitution

While loan officers may increase effort in prospecting for new loans, they might simultaneously also reduce effort in screening or monitoring the loans to increase credit uptake. This will affect the asset quality and the level of non-performing assets (NPAs). To detect this, we use the ratio of NPAs and total credit as the dependent variable and estimate equation 1. Column (4) in table 7 shows that NPA ratio remains nearly unchanged after the bank becomes aligned, suggesting that loan officers are not reducing their effort in screening or monitoring the loans.

5.2.4 Loan Officers

Finally, we test whether lead banks get allocated more resources after they become aligned so that they can increase credit. If this were the case, then there would be an increase in the

total number of loan officers in rural areas when lead banks are aligned. In column (5), we report the impact on total number of loan officers appointed in lead banks after alignment. Our estimate of the coefficient is 0.014 (standard error is 0.05) and the effect is statistically insignificant. This result rules out allotment of more resources to banks after alignment change.

5.2.5 Competition from private banks

Another method to test our hypothesis of higher effort would be to check whether the impact of alignment decreases when the lead banks face more efficient competitors. This is because more efficient banks would have found markets which have residual credit demand and provided credit to them leaving fewer untapped markets for lead banks to expand in after they become aligned. So the marginal benefit of effort would be lower in such markets resulting in lower effort in equilibrium, which would further reduce any credit increase after the lead banks become aligned. Given that private sector banks in India are more productive (Mishra et al., 2022; Sensarma, 2006; Rishi and Saxena, 2004), 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:

$$y_{bdt} = \beta.\mathbb{1}\{\text{Aligned Lead Bank}\}_{bdt} + \gamma.\mathbb{1}\{\text{Aligned Lead Bank}\}_{bdt} \times \%\text{Pvt. Credit} + \phi_{bt} + \phi_{dt} + \phi_{bd} + \epsilon_{bdt} \quad (2)$$

Here Aligned Lead Bank$\}_{bdt}$ is the indicator for lead banks which are aligned. %Pvt. Credit is the market share of credit provided by the private banks. Table 8 shows the results for log of credit, log of number of accounts, log of credit per loan officers and log of account per loan officers in columns (1), (2), (3) and (4) respectively. Across all specifications, the coefficient on Aligned Lead Bank indicator remains positive and statistically significant. However, the interaction of Aligned Lead Bank indicator and share of private sector credit is negative and statistically significant. This implies that a one percent increase in the market 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 1.9%, 1.4%, 1.6% and 1.1%, respectively. These results confirm our hypothesis that it is harder for lead banks to increase their credit when they are competing with private banks; and hence they may exert lower effort. Another takeaway of this result is that the presence of slack or unmet demand in rural credit markets in India is lower when the presence of private banks is higher.

5.3 District-level Impact

The results so far indicates that when the lead banks are aligned, then they give more credit relative to the banks which did not change alignment. This relative increase in credit could be the result of two factors. First, the aligned lead banks could be reaching out to untapped markets and providing more credit to new borrowers who were not borrowing from banks earlier. The second reason could be that the aligned lead banks were poaching existing customers of non-lead banks. The objective of the lead bank scheme is to increase credit supply to priority sectors. If the aligned lead banks are only increasing credit by poaching customers from other banks, then the objective of the scheme would not be fulfilled. On the other hand, if they are reaching out to borrowers in untapped markets, then purpose of the scheme would be fulfilled and we should observe an increase in aggregate credit at the district level. Therefore we test whether aggregate credit increases when the district becomes aligned. To test for aggregate impact in the district, we use the following specification:

$$y_{dt} = \beta.\mathbb{1}\{\text{AlignedDist}\}_{dt} + \phi_d + \phi_t + \phi_{st} + \epsilon_{dt}. \tag{3}$$

$\mathbb{1}\{\text{AlignedDist}\}_{dt}$ is the indicator which takes value 1 if district d is aligned at time t, and 0 otherwise. We include district, year and state-year fixed effects. The state-year fixed effects control for state level time varying characteristics which affect credit market outcomes such as state elections (Cole, 2009). The coefficient β on $\mathbb{1}\{\text{AlignedDist}\}_{dt}$ indicates the impact on y_{dt} when the district becomes aligned. Note that in this specification, unlike equation 1, we are unable to include district-year fixed effects since it is perfectly correlated with $\mathbb{1}\{\text{AlignedDist}\}_{dt}$. While this may not be a concern if the alignment change of a district is uncorrelated with time-varying factors which affect credit market outcome such demand or local political factors, we acknowledge the absence district-year fixed effects may produce biased results if these factors are correlated with alignment of the districts. Further, we have also not included bank-time fixed effects as was done in equation 1, and are thus not controlling for banks level time varying factors which could affect the supply credit in that district. Again, if these factors are correlated with change in alignment of the districts, then the estimates will be biased. With these caveats, we study the impact of alignment on aggregate credit in rural and urban areas.

5.3.1 District-level impact in rural market

Table 9 provides the impact on district-level credit disbursal in rural areas after the district becomes aligned. Total credit disbursal increases by 0.32 log points (standard error of 0.14) with a corresponding increase in agriculture, industry, personal and trade sector by 0.208,

0.487, 0.391 and 0.267 log points. Panel B shows similar results for accounts as well. The total number of accounts increased by 0.207 log points (standard error of 0.07) at the district-level with the corresponding increase in agriculture, industry, personal and trade sectors by 0.184, 0.307, 0.287 and 0.117 log points, respectively. Recall that the market share of lead banks in rural areas is about 35% (table 3). If we multiply the market share of lead bank with the coefficients in table 5 and compare it to the coefficients in table 9, these coefficients appear to be too large to be merely justified by an increase in credit by lead banks. So while the positive coefficients does suggest an increase in aggregate credit in rural areas, these estimates as noted above may be biased because our specification does not control for time-varying district level factors such as demand and time-varying bank level factors such as supply.

5.3.2 District-level impact in urban market

We also test for the corresponding impact on the equilibrium credit market outcome in urban markets after the district becomes aligned. Table 10 provides the results. We find that change in alignment has no relative impact on the total credit disbursal (Panel A) or the number of accounts (Panel B) in urban markets. These results are consistent with the earlier results we obtained for urban markets (see table 6) when we conducted bank district level regressions and found no increase in credit by lead banks in urban areas.

6 Robustness Checks

Our identification assumption is that the unobserved bank-district-year effects do not influence the alignment of districts or its change. Since the change in alignment occurs due to state-level factors such as the formation of new states, which are plausibly exogenous to local-level factors, we believe that the estimation strategy has credibility. To further validate our results, we provide some more robustness checks in this section.

6.1 Pre-Trends in Credit Variables

Pre-existing trends in credit disbursal or account generation may confound our results. Such a trend may occur for various reasons. Lead Bank personnel could have anticipated the change in alignment, or there could be coinciding unobservable factors unrelated to the alignment change which introduce a pre-trend in credit markets. We test this concern by using the following specification:

$$y_{bdt} = \beta_{-1}\text{Before}^{-1} * \mathbb{1}\{\text{Lead}\}_{bdt} + \beta_0\text{Before}^{0} * \mathbb{1}\{\text{Lead}\}_{bdt} + \beta_{+1}\text{After}^{+1} * \mathbb{1}\{\text{Lead}\}_{bdt} + \phi_{bt} + \phi_{dt} + \phi_{bd} + \epsilon_{bdt}. \quad (4)$$

We replace the $Aligned_{dt}$ dummy with three dummy variables —Before^0, Before^{-1} and After^{+1}. If a district has changed alignment from 0 to 1, then the variables Before^0, Before^{-1} and After^{+1} take value 1 in the year of alignment change, exactly one year before the year of alignment change and for all years after the year of alignment change respectively, and 0 otherwise. If a district has changed alignment from 1 to 0, then the variables Before^0, Before^{-1} and After^{+1} take the value 1 in only the year before alignment change, in the year of alignment change and in all years before alignment change except the year before alignment change respectively, and 0 otherwise. We interact these variables with Lead$\}_{bdt}$ which is the indicator for the lead bank.

For districts which changed alignment from 0 to 1, if there was an increasing trend before alignment change

Table 11 presents the results for equation 4 with log of credit amount disbursed as y_{bdt}. β_{-1} remains statistically insignificant across all columns, indicating that credit disbursal for any sector by Lead Banks immediately before alignment change was not different from the years prior to that. Importantly, we also find β_0 to be statistically indistinguishable from 0, which indicates that the impact of alignment does not occur instantly. There may be two possible reasons for this. First, some changes in alignment may have occurred in the middle of the year, and so there is not enough time to see the impact in the same year. Secondly, it may take time for the lead banker to push his loan officers to disburse more credit.

In table 12, we use log of accounts as the dependent variable for equation 4. We find β_{-1} insignificant for the number of total, agricultural and industry accounts. For personal and trade sectors, there exist some pre-trends but the effect is negative.

6.2 Comparison of Lead Banks across districts

Specification in equation 1 provides the impact on Lead Banks with respect to all other banks within districts which received the treatment of alignment change. As an alternative strategy, we compare treated Lead Banks against Lead Banks in other districts. The Lead Banks in other districts did not change alignment, i.e. they were either aligned or non-aligned throughout our sample. Thus, all the other Lead Banks serve as a control group for the treated Lead Banks. Panel A and B of table 13 provides the results on credit and amount for this quasi-experiment. We restrict our sample to rural areas and control for

district, state-year and bank-year effects.[11] Consistent with our hypothesis, we find that the Lead Banks increase total credit disbursal by 0.118 log points and agricultural credit by 0.151 log points. Trade sector loans have statistically strong results as well. For total number of accounts and agricultural accounts, we see an increase of 0.113 and 0.101 log points, respectively.

6.3 Comparison of Non-Lead Banks across districts

Non-lead banks do not attend quarterly meetings, and thus do not have the opportunity to communicate even if own CEO is attending. Thus, we expect these banks to not experience any effect due to alignment change. To test that, we restrict our sample to non-lead bank district observations, and compare non-lead banks of districts where alignment changes against non-lead banks of other districts. We regress credit and accounts on the alignment indicator for the district. Table 14 shows the results for amount and accounts for non-lead banks. Each regression controls for district, state-year and bank-year fixed effects. As expected, we see null effects in every regression. These results also rule out any negative spillover on the competitors in the market.

6.4 Impact on Deposits

Credit delivery is the main goal under the Lead Bank Scheme. As a placebo check, we look at whether the deposits get affected too. Table 15 shows that the deposits remain unaffected due to the change in alignment. This is unsurprising since Lead Bank personnel are unlikely to exert effort in mobilizing fund intake.

7 Conclusion

SOEs across the world are plagued with low productivity. While several scholars argue for privatization as a panacea to this issue, political compulsions and costly legal process in ownership transfer make this solution difficult to implement. In contrast, the evidence on administrative and management reforms in SOEs is scant due to a lack of adequate research design or data.

In this paper, we show that public sector employees may significantly increase effort when given the opportunity to strongly signal their productivity to supervisors, who can influence

[11] This specification has similar concerns as in equation 4; i.e. we are unable to control district-year effects since they will be perfectly collinear with the treatment variable. This will not be a concern as long as unobserved temporal demand is uncorrelated with change in alignment status.

promotion and transfer decisions. We analyze the Lead Bank Scheme of the RBI, which aims at expanding district-level credit oriented toward some priority sectors. Under this scheme, RBI assigns plan implementation responsibilities to employees of one bank in each district, known as Lead Bank. Lead Bank personnel of a state convey the problems and challenges faced in their tasks in quarterly meetings. RBI assigns the responsibility of overseeing and conducting these meetings to the CEO of another bank, known as the Convenor of the state. In some districts, where Lead and Convenor banks are same, therefore, Lead Bank personnel are reviewed by own CEO. We define the districts where Lead and Convenor belong to the same bank, as aligned districts. Discretion and informal oral recommendations by senior management plays a crucial role in promotion and transfer decisions. Aligned lead bankers, therefore, have a higher incentive to signal effort and productivity.

To empirically test this theory, we exploit exogenous changes in the alignment status of a Lead Bank. We use the BSR data from RBI to observe credit disbursal from banks. At the bank-district level i.e. the level of intervention of the Lead Bank Scheme, credit inclusion in rural areas increase by 35% and 30% at the intensive and extensive margin, respectively. Further, consistent with the sectoral focus of the priority sector lending, most of the credit expansion occurs in the agricultural sector. We test for various drivers of credit markets. While productivity metrics of credit and accounts per loan officers improve after change in alignment, other drivers which may affect supply of credit, such as lending rates, asset quality, and the total number of loan officers, remain unchanged. These tests validate our hypothesis that when the lead banker is able to communicate with the CEO, he exerts more effort and pushes the loans officers to give out more credit.

Our results also provide interesting implications regarding the banking industry in India. Good management practices can improve the 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). Broadly, our results suggest that if banks can provide more levers for employees to demonstrate effort in a manner that affects their promotions, productivity is likely to increase. However, the net benefit would require balancing these productivity gains against the cost of instituting such a review mechanism, which is beyond the scope of the paper. Understanding this trade-off holistically may provide valuable insights into organization design of banks in India.

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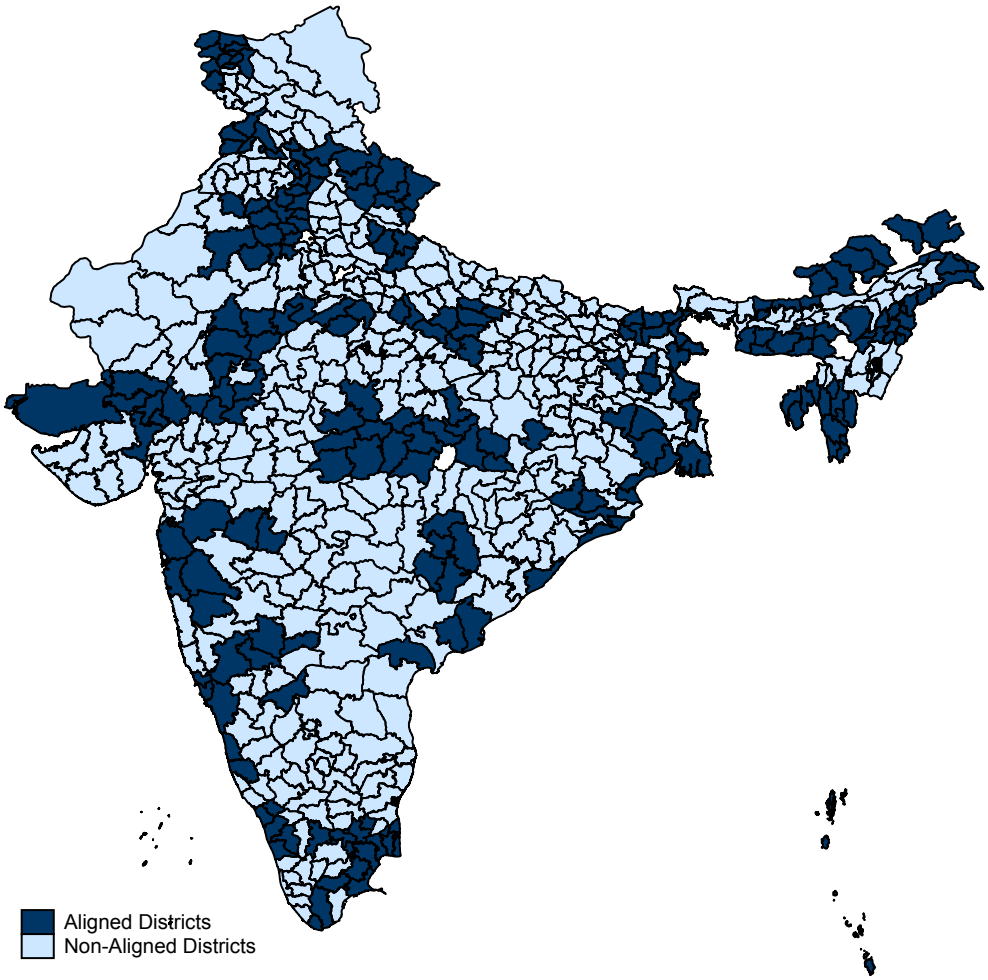
Appendix

A.1 Figures

Figure 1: Districts by Alignment



A.2 Tables

Table 1: Sectoral Share in Credit Markets

	(1) Agri	(2) Industry	(3) Personal	(4) 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

Panel A reports the sectoral share of credit amount disbursed in rural and urban regions of a district. Panel B reports the sectoral share of credit accounts in rural and urban regions of the district.

Table 2: Average Loan Size (INR '000s)

	(1) Total	(2) Agri	(3) Industry	(4) Personal	(5) Trade
Rural	70.4	57.6	129.2	89.7	123.4
Urban	416.4	128.7	4719.2	139.3	636.1

Average loan size across sectors in rural and urban regions of the district.

Table 3: Lead Banks Share

	(1) Total	(2) Agri	(3) Industry	(4) Personal	(5) Trade
Panel A: Credit					
Rural	35.6	35.3	35.5	35.5	35.1
Urban	27.1	27.9	26.8	26.7	25.3
Panel B: Accounts					
Rural	32.4	33.1	30.5	32.5	30.9
Urban	26.4	28.4	25.5	26.0	24.5

Panel A reports the proportion of credit disbursed by Lead Banks for different sectors in rural and urban regions. Panel B reports the proportion of credit accounts for different sectors in rural and urban regions.

Table 4: Summary Statistics

	Rural			Urban		
	(1) Aligned Lead	(2) Non-Aligned Lead	(3) Non-Lead	(4) Aligned Lead	(5) Non-Aligned Lead	(6) Non-Lead
Credit (INR million)	1047.8 (1792.1)	1172.5 (1702.3)	413.8 (1596.0)	2466.7 (5744.5)	7444.0 (52795.8)	2384.3 (21984.9)
Accounts	13236.6 (16764.8)	16725.1 (17127.3)	5953.0 (13033.4)	12550.9 (19825.3)	15686.5 (21564.1)	5669.0 (103702.6)
Loan Officers	27.83 (25.40)	31.78 (25.78)	12.34 (19.68)	39.70 (48.03)	62.28 (195.4)	24.34 (139.4)
WALR	11.82 (1.688)	11.78 (1.678)	11.82 (2.694)	12.14 (1.838)	12.30 (1.690)	12.40 (2.503)
NPA ratio	0.0763 (0.115)	0.0811 (0.114)	0.0709 (0.132)	0.0773 (0.115)	0.0792 (0.112)	0.0647 (0.126)
Branches	13.31 (11.24)	14.79 (10.77)	6.231 (10.01)	9.427 (12.10)	12.25 (17.89)	4.198 (8.415)

Columns 1, 2 and 3 report rural credit market statistics for Aligned Lead Banks, Non-Aligned Lead Banks, and Non-Lead Banks, respectively. Columns 4, 5 and 6 report urban credit market statistics for Aligned Lead Banks, Non-Aligned Lead Banks, and Non-Lead Banks, respectively.

Table 5: Bank-District Impact (Only Rural)

	(1) Total	(2) Agri	(3) Industry	(4) Personal	(5) Trade
Panel A: Log (1+Credit)					
$AlignedLead_{bdt}$	0.299***	0.290**	0.337*	0.136	-0.120
	(0.09)	(0.12)	(0.18)	(0.13)	(0.22)
Observations	83101	83101	83101	83101	83101
Panel B: Log(1+NOAC)					
$AlignedLead_{bdt}$	0.263***	0.235**	0.298***	0.175*	-0.060
	(0.08)	(0.10)	(0.11)	(0.10)	(0.12)
Observations	83101	83101	83101	83101	83101

The table reports the results from regression in equation 1. Dependent variables in columns 1-5 of Panel A are log values of total credit, agri-credit, industry credit, personal credit and trade credit, respectively. Dependent variables in columns 1-5 of Panel B are log values of total credit accounts, agri-credit accounts, industry credit accounts, personal credit accounts and trade credit accounts, respectively. The sample is restricted to rural areas and trimmed at 1 and 99 percentile. Each specification controls for bank-district, bank-year and district-year fixed effects. Standard errors, shown in parenthesis, are clustered at the district level. ***/**/* denote significance at the 1/5/10 percent level, respectively.

Table 6: Bank-District Impact (Only Urban)

	(1) Total	(2) Agri	(3) Industry	(4) Personal	(5) Trade
Panel A: Log (1+Credit)					
$AlignedLead_{bdt}$	0.075	-0.005	-0.025	-0.133	0.052
	(0.08)	(0.16)	(0.17)	(0.09)	(0.13)
Observations	179906	179906	179906	179906	179906
Panel B: Log(1+NOAC)					
$AlignedLead_{bdt}$	0.037	0.051	0.142	-0.106	0.030
	(0.08)	(0.13)	(0.10)	(0.07)	(0.08)
Observations	179906	179906	179906	179906	179906

The table reports the results from regression in equation 1. The dependent variables in columns 1-5 of Panel A are log values of total credit, agri-credit, industry credit, personal credit and trade credit, respectively. The dependent variables in columns 1-5 of Panel B are log values of total credit accounts, agri-credit accounts, industry credit accounts, personal credit accounts and trade credit accounts, respectively. The sample is restricted to urban areas and trimmed at 1 and 99 percentile. Each specification controls for bank-district, bank-year and district-year fixed effects. Standard errors, shown in parenthesis, 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)
$AlignedLead_{bdt}$	0.285***	0.249***	-0.051	0.012	0.014
	(0.08)	(0.06)	(0.14)	(0.02)	(0.05)
Observations	82997	82997	82186	82256	82997

The table reports the results from regression in equation 1. The dependent variables in columns 1-5 are log of credit per loan officer, log of accounts per loan officer, Weighted Average Lending Rate, Share of Non-Performing Assets and log of loan officers, respectively. The sample is restricted to rural areas and trimmed at 1 and 99 percentile. Each specification controls for bank-district, bank-year and district-year fixed effects. Following Abadie et al. (2017), standard errors, shown in parenthesis, are clustered at the district level. ***/**/* denote significance at the 1/5/10 percent level, respectively.

Table 8: Alignment Effect in Markets with Efficient Competitor

	Log(Credit)	Log(1+NoACs)	Log(Credit/LO)	Log(1+NoACs/LO)
$AlignedLead_{bdt}$	0.311***	0.271***	0.310***	0.271***
	(0.09)	(0.08)	(0.08)	(0.06)
$AlignedLead_{bdt}$ ×	-0.019***	-0.014***	-0.016***	-0.011***
% Lending by Pvt.	(0.01)	(0.00)	(0.00)	(0.00)
Observations	83101	83101	82997	82997

The table reports the results from regression in equation 2. The dependent variables in columns 1-4 are log of total credit, log of total accounts, log of credit per loan officer, and log of total accounts per loan officer, respectively. The sample is restricted to rural areas and trimmed at 1 and 99 percentile to remove outliers. Each specification controls for bank-district, bank-year and district-year fixed effects. Standard errors, shown in parenthesis, are clustered at the district level. ***/**/* denote significance at the 1/5/10 percent level, respectively.

Table 9: District-Level Impact (Only Rural)

	(1) Total	(2) Agri	(3) Industry	(4) Personal	(5) Trade
Panel A: Log (1+Credit)					
$AlignedDist_{dt}$	0.320**	0.208**	0.487**	0.391	0.267**
	(0.14)	(0.10)	(0.19)	(0.24)	(0.12)
Observations	10590	10590	10590	10590	10590
Panel B: Log(1+NOAC)					
	Total	Agri	Industry	Personal	Trade
$AlignedDist_{dt}$	0.207***	0.184***	0.307***	0.287*	0.117**
	(0.07)	(0.06)	(0.10)	(0.17)	(0.06)
Observations	10590	10590	10590	10590	10590

The table reports the results from regression in equation 3. The dependent variables in columns 1-5 are the log of total credit, agri-credit, industry credit, personal credit and trade credit, respectively. The sample is restricted to rural areas and is trimmed at 1 and 99 percentile to remove outliers. Each specification controls district, year and state-year fixed effects. Standard errors, shown in parenthesis, are clustered at the district level. ***/**/* denote significance at the 1/5/10 percent level, respectively.

Table 10: District-Level Impact (Only Urban)

	(1) Total	(2) Agri	(3) Industry	(4) Personal	(5) Trade
Panel A: Log (1+Credit)					
$AlignedDist_{dt}$	0.007	0.010	0.047	-0.124	-0.160
	(0.03)	(0.08)	(0.07)	(0.12)	(0.17)
Observations	10241	10241	10241	10241	10241
Panel B: Log(1+NOAC)					
	Total	Agri	Industry	Personal	Trade
$AlignedDist_{dt}$	-0.009	0.078	0.043	-0.123	-0.124
	(0.03)	(0.08)	(0.06)	(0.13)	(0.18)
Observations	10241	10241	10241	10241	10241

The table reports the results from regression in equation 3. The dependent variables in columns 1-5 are the log of total credit, agri-credit, industry credit, personal credit and trade credit, respectively. The sample is restricted to urban areas and trimmed at 1 and 99 percentile to remove outliers. Each specification controls district, year and state-year fixed effects. Standard errors, shown in parenthesis, are clustered at the district level. ***/**/* denote significance at the 1/5/10 percent level, respectively.

Table 11: Pre-Trend Analysis for Credit Amount (Only Rural)

	(1) Total	(2) Agri	(3) Industry	(4) Personal	(5) Trade
$Before^{-1}$	0.024	0.133	-0.052	-0.081	0.086
	(0.08)	(0.12)	(0.18)	(0.10)	(0.17)
$Before^{0}$	0.115	0.103	0.093	-0.064	0.153
	(0.09)	(0.13)	(0.24)	(0.11)	(0.24)
$After^{+}1$	0.291***	0.268*	0.196	0.174	-0.347
	(0.10)	(0.14)	(0.21)	(0.14)	(0.27)
Observations	83394	83394	83394	83394	83394

The table reports the results from regression in equation 4. The dependent variables in columns 1-5 are log values of total credit, agri-credit, industry credit, personal credit and trade credit, respectively. The sample is restricted to rural areas and trimmed at 1 and 99 percentile to remove outliers. Each specification controls for bank-district, bank-year and district-year fixed effects. Standard errors, shown in parenthesis, are clustered at the bank-district level. ***/**/* denote significance at the 1/5/10 percent level, respectively.

Table 12: Pre-Trend Analysis for Accounts (Only Rural)

	(1) Total	(2) Agri	(3) Industry	(4) Personal	(5) Trade
$Before^{-1}$	-0.003	0.104	-0.021	-0.178**	-0.161*
	(0.07)	(0.09)	(0.12)	(0.08)	(0.09)
$Before^{0}$	0.107	0.115	0.130	-0.107	-0.077
	(0.07)	(0.10)	(0.14)	(0.09)	(0.14)
$After^{+1}$	0.273***	0.263**	0.237**	0.186*	-0.232*
	(0.08)	(0.11)	(0.11)	(0.11)	(0.13)
Observations	83394	83394	83394	83394	83394

The table reports the results from regression in equation 4. The dependent variables in columns 1-5 are log values of total credit accounts, agri-credit accounts, industry credit accounts, personal credit accounts and trade credit accounts, respectively. The sample is restricted to rural areas and trimmed at 1 and 99 percentile to remove outliers. Each specification controls for bank-district, bank-year and district-year fixed effects. Standard errors, shown in parenthesis, are clustered at the district level. ***/**/* denote significance at the 1/5/10 percent level, respectively.

Table 13: Comparison of Lead Banks across districts

	(1) Total	(2) Agri	(3) Industry	(4) Personal	(5) Trade
Panel A: Log (1+Credit)					
$AlignedDist_{dt}$	0.124**	0.142*	-0.065	0.034	0.076
	(0.06)	(0.08)	(0.16)	(0.07)	(0.12)
Observations	10207	10207	10207	10207	10207
Panel B: Log(1+NOAC)					
$AlignedDist_{dt}$	0.113***	0.118**	0.096	0.102*	0.077
	(0.04)	(0.06)	(0.09)	(0.06)	(0.09)
Observations	10207	10207	10207	10207	10207

The sample is restricted to only Lead Banks in rural areas. Each specification controls for district, year, state-year and bank-year fixed effects. Standard errors, shown in parenthesis, are clustered at the district level. ***/**/* denote significance at the 1/5/10 percent level, respectively.

Table 14: Comparison of Non-Lead Banks across districts

	(1) Total	(2) Agri	(3) Industry	(4) Personal	(5) Trade
Panel A: Log (1+Credit)					
$AlignedDist_{dt}$	-0.016	-0.025	0.135	0.033	0.235
	(0.07)	(0.11)	(0.15)	(0.09)	(0.15)
Observations	73221	73221	73221	73221	73221
Panel B: Log(1+NOAC)					
	Total	Agri	Industry	Personal	Trade
$AlignedDist_{dt}$	-0.064	-0.018	-0.035	-0.028	0.034
	(0.06)	(0.08)	(0.09)	(0.08)	(0.08)
Observations	73221	73221	73221	73221	73221

The sample is restricted to only non-lead banks in rural areas. Each specification controls for bank-district, bank-year and state-year fixed effects. Standard errors, shown in parenthesis, are clustered at the district level. ***/**/* denote significance at the 1/5/10 percent level, respectively.

Table 15: Deposits - Bank District (Only rural)

	(1) Log(Deposits Amount)	(2) Log(Deposit Accounts)
$AlignedLead_{bdt}$	-0.063	-0.008
	(0.06)	(0.05)
Observations	83019	83019

The table reports the results from regression in equation 1. The dependent variables in columns 1 and 2 are log values of deposit amount and deposit accounts, respectively. The sample is restricted to rural areas. Each specification controls for bank-district, bank-year and state-year fixed effects. Standard errors, shown in parenthesis, are clustered at the district level. ***/**/* denote significance at the 1/5/10 percent level, respectively.