Financial Development and Micro-Entrepreneurship

Rajeev Dehejia
New York University Wagner Graduate School of Public Service
dehejia@nyu.edu

Nandini Gupta 🆔
Indiana University Kelley School of Business
nagupta@indiana.edu (corresponding author)

Abstract

Does financial development facilitate micro-entrepreneurship? Using randomized surveys of over 1 million Indian households and bank-branch location as predetermined by government policy, we find that access to finance shifts workers from informal micro-entrepreneurship into formal employment. Financial access reduces the likelihood of being self-employed but benefits micro-enterprises with employees, as well as formal firms. Using data on 400,000 firms, we find that in districts with more banks, firms have higher loans, productivity, employment, and wages than firms in less banked districts. This evidence suggests a labor-market mechanism by which financial development facilitates growth: by shifting workers from unproductive micro-entrepreneurship into productive employment.

I. Introduction

Worldwide, less than 14% of advanced-economy workers are self-employed, compared with over 50% of the workforce in emerging markets (World Bank (2017)). Given the considerable evidence that financial development facilitates entrepreneurship (see Black and Strahan (2002), Guiso, Sapienza, and Zingales (2004), Klapper, Laeven, and Rajan (2006), Bertrand, Schoar, and Thesmar (2007), Bruhn and Love (2014), Adelino, Schoar, and Severino (2015), and Schmalz, Sraer, and Thesmar (2017)), why are there more self-employed individuals in less developed countries? A potential explanation for this phenomenon is that in emerging markets, where even established firms are likely to be financially constrained, limiting their ability to hire workers, entrepreneurship may arise in the absence

of employment opportunities.[1] Easing financial constraints for established firms may increase job opportunities and reduce the need for self-employment. In this article, we use large surveys of individuals and firms to study whether access to finance is correlated with an individual's decision to be self-employed versus seeking salaried employment, as well as firms' employment decisions.

We focus on micro-enterprises, which account for a significant proportion of economic activity in emerging markets (La Porta and Shleifer (2008)).[2] The conventional view is that these firms are untapped sources of growth inhibited by financial and regulatory frictions (De Soto (1989), (2000)). An alternative view argues that these informal firms are unproductive (Schoar (2010)), with 20% of the value added of formal firms (La Porta and Shleifer (2008), (2014)), and rarely transition into the formal sector (Schoar (2010), de Mel, McKenzie, and Woodruff (2013)).[3] Based on the conventional view, there has been a lot of focus on providing preferential microcredit to informal micro-enterprises. However, as described in a recent survey of this literature (Jayachandran (2020)), the majority of studies do not find that microcredit facilitates the creation of transformative enterprises, and any effect on profits appears only for the largest firms (Banerjee, Duflo, Glennerster, and Kinnan (2015)), leading Crépon, Devoto, Duflo, and Parienté (2015) to conclude that micro-enterprises are less productive than larger firms.[4] Indeed, Martin, Nataraj, and Harrison (2017) show that removing entry barriers in sectors previously reserved for small firms in India leads to employment growth in those sectors.

We contribute to the literature in the following ways: First, our results highlight an aspect of entrepreneurship that has not received much attention in the literature, the fact that many individuals would prefer a salaried job to risky self-employment, especially in low-income countries. Although the literature has documented the positive relationship between finance and entrepreneurship in developed countries (Black and Strahan, (2002), Guiso, Sapienza, and Zingales (2004), Klapper, Laeven, and Rajan (2006), Bertrand et al. (2007), Adelino et al. (2015), and Schmalz et al. (2017)), we find that in an environment where most firms are likely to be financially constrained, individuals may become self-employed because of a lack of jobs. Second, although a large literature has documented the macroeconomic effects of financial development on economic growth (Rajan and Zingales (1998), Fisman and Love (2004), Bekaert, Harvey, and Lundblad (2005),

---

[1]Benmelech, Bergman, and Seru (2015) show that financial constraints affect employment because of firms' reliance on working capital to finance labor costs, adjustment costs of hiring and firing workers, and capital labor complementarities in the production function.

[2]Globally, micro-enterprises are defined as firms with fewer than 5 to 10 workers. In India, they are defined as firms with less than $13,000 (service sector) or $34,000 (manufacturing) in capital investments. Micro-enterprises are not just an emerging-market phenomenon. The U.S. Bureau of Labor Statistics estimates that approximately 10% of the U.S. workforce is self-employed; over 60% of these workers have unincorporated businesses.

[3]We use *micro-enterprises* and *informal firms* interchangeably in the text. Formal firms are legally registered, whereas informal firms are not registered, operate on a very small scale, and typically have no employees. Over 80% of non–agricultural-sector workers in India are employed in informal, micro-enterprises (International Labour Organisation (2016)).

[4]In a recent study, Meager (2019) estimates the average effect of microcredit across 7 studies using Bayesian hierarchical models and finds that the impact of microcredit on business is unlikely to be transformative and is precisely 0 for most of the distribution.

and Gupta and Yuan (2009)), not much is known about the microfoundations of why growth occurs. Our results provide evidence of a labor-market mechanism by which financial-sector development facilitates economic growth: by shifting workers out of unproductive micro-entrepreneurial endeavors and into productive formal employment.

To study the labor-market effects of financial development, we use data on nearly 1 million Indian households and over 400,000 service-sector firms to examine whether access to finance is correlated with the occupational choices of individuals and the employment decisions of firms. We further investigate the underlying mechanism by studying whether access to finance is correlated with the borrowing, productivity, and employment decisions of firms.

We use policy-induced exogenous variation in banking infrastructure to measure access to finance. Specifically, we use the location of government-owned bank branches in 1991 across over 500 Indian districts, relying on pre-liberalization policies that governed the location of commercial banks in India. The use of historic government-owned bank-branch location data helps our identification strategy in 3 critical ways. First, the Indian central bank's policies, which determined bank-branch location until 1991, were based on improving financial access for unbanked districts rather than exploiting regional growth opportunities (Burgess and Pande (2005), Panagariya (2006), and Kochar (2011)).[5] Specifically, prior to liberalization in 1991, Indian banks were required to obtain licenses from the central bank to open new branches, and the central bank selected the districts where banks were allowed to open new branches based on population targets and existing financial coverage in the district.[6] Second, our dependent variables are from 1999 and 2004, which decreases the correlation between bank locations in 1991 and regional economic factors that affect an individual's employment decisions more than a decade later. Third, we focus on government-owned banks because they account for over 70% of loans and deposits on average in the country, they were strictly subject to the Reserve Bank of India (RBI) location restrictions, and their location choices are less likely to be driven by a profit motive compared with private banks.[7]

To study the influence of access to finance on an individual's decision to be a micro-entrepreneur versus seeking a salaried job, we use data from 2 rounds of the employment and unemployment surveys, which are randomized surveys of 1.2 million Indian households conducted in 1999 and 2004 by the Indian government. To examine whether firm-level borrowing and employment decisions are correlated with access to finance, we also use data from 2 rounds of a firm-level survey conducted in 2001 and 2006 of over 400,000 randomly selected service-sector firms, with a focus on micro-enterprises.

---

[5]In an influential study, Burgess and Pande (2005) show that poverty levels are lower in Indian states with more bank presence. Our article differs from theirs in the following ways: First, we look at individual labor-market outcomes and not poverty measures; second, Burgess and Pande's measure of bank presence is at the state level, which has been critiqued by Kochar (2011), among others, for not capturing the initial presence of bank infrastructure. We use district-level measures of access to finance.

[6]We discuss the bank-branch licensing policy in Section II.A.

[7]In addition to relying on government regulations that drove bank-branch location, we show that historical access to finance is correlated with the current branch location, but it is not correlated with the future economic characteristics of the district, which may affect the occupational choices of individuals.

We consider 2 types of micro-entrepreneurs: i) sole proprietors and own-account workers who do not employ any workers and ii) employer micro-entrepreneurs who employ at least 1 worker.[8] The results suggest that individuals are significantly less likely to become solo micro-entrepreneurs in districts with more bank branches. For example, moving from a district with the mean number of branches (~26 branches) to a district with twice as many branches lowers the likelihood of being a solo micro-entrepreneur by approximately 6%, relative to the mean likelihood of 12% of being a solo entrepreneur. The likelihood of solo micro-entrepreneurship is also significantly lower for more educated individuals in districts with greater financial access. In contrast, we find that financial access increases the likelihood of being a micro-entrepreneur with at least 1 employee. For instance, moving from a district with the mean number of branches to a district with twice as many branches increases the likelihood of being an employer micro-entrepreneur with at least 1 employee by approximately 13% relative to the mean likelihood of 3% of being an employer micro-entrepreneur.

In an environment where even formal firms are likely to be financially constrained, our results show that access to finance shifts workers from micro-entrepreneurship to salaried jobs. For example, compared with an individual living in a district with the mean number of government bank branches, an individual in a district with twice as many branches has an 11% lower likelihood of being employed in a micro-enterprise, relative to the mean likelihood of being a micro-enterprise employee of 11%. In contrast, financial access is associated with a higher likelihood of being formally employed for wages. Compared with an individual living in a district with the mean number of government-owned bank branches, an individual in a district with twice as many branches has a 6% higher likelihood of being formally employed for wages, relative to the mean likelihood of formal employment of approximately 8%.

To establish the mechanism by which access to finance improves efficiency in labor allocation, we use data from 2 rounds of a randomized survey of over 400,000 service-sector firms. A key advantage of focusing on the service sector is that it experienced rapid growth starting in the mid-1990s, which was not anticipated prior to the economic reforms of 1991 (Panagariya (2008)). This reduces the likelihood that our results are driven by banks endogenously locating in districts based on the future growth of service-sector firms in that district. We find that i) firms located in districts with greater financial access borrow more; ii) financial access is associated with higher employment, wages, and productivity; and iii) these differences are driven by formal-sector firms. It appears that increased access to finance benefits a certain type of entrepreneur: larger firms in the formal sector.

A potential critique of our findings is that bank loans go to formal firms, and therefore it is not surprising that informal micro-enterprises without employees do not benefit from access to bank branches. However, a large share of bank loans from government-owned banks (~40%) is required to be given as "priority-sector" loans to individuals and small businesses, which includes micro-entrepreneurs.

---

[8]Own-account workers are defined by the United Nations as those workers who are self-employed and do not employ any employees to work for them during the reference period.

Our results that financial access reduces the likelihood of solo employment with no employees, increases the absorption of micro-enterprise workers into the formal sector, and increases the likelihood of being a micro-enterprise employer have implications for finance and labor-market policies in emerging markets. First, our results suggest that targeted credit to micro-entrepreneurs who have little potential to become transformative entrepreneurs is unlikely to achieve high economic growth. Instead, given the evidence that microcredit does not benefit micro-entrepreneurs (Jayachandran (2020)), financial interventions, if any, should be targeted to more productive micro-enterprises that employ workers. Second, our results suggest that lending to micro-enterprises, such as government-mandated priority-sector loans in India, should not crowd out credit to productive formal firms, which can absorb individuals from unproductive micro-entrepreneurship.

Our article is also related to the large literature examining the effects of access to credit and bank deregulation, which finds that bank entry may affect firms' access to credit (Petersen and Rajan (1995), Beck, Demirguc-Kunt, and Maksimovic (2004)), economic growth (Jayaratne and Strahan (1996), Cetorelli and Gambera (2001)), rural poverty (Burgess and Pande (2005)), and entrepreneurship (Black and Strahan (2002), Bruhn and Love (2014)). For example, like Burgess and Pande, Bruhn and Love find that expanding targeted lending to low-income individuals is associated with an increase in the number of informal businesses but no change in the number of formal businesses. Our results suggest that an overall expansion in credit through financial institutions, not targeted to a specific group, facilitates growth in the formal sector but not necessarily in the informal sector. Our results suggest that access to credit is associated with a shift in the occupational choice of individuals in the labor market.

The remainder of the article is organized as follows: Section II describes our empirical strategy, Section III describes the data, Section IV describes the results from the employment and unemployment surveys, Section V describes the results from the service-sector surveys, and Section VI concludes.

II.   Empirical Strategy

A.   Bank-Branch Location Policy

We identify access to finance using the location of government-owned bank branches at the district level in 1991, prior to liberalization. Our identification strategy is based on two arguments: i) Historical financial access is correlated with current branch location, and ii) pre-liberalization branch location is driven by the licensing policy rather than regional characteristics that affect labor-market choices.

We find that the correlation in bank location between 1991 and 1999 (earliest date of the dependent variables) is equal to 0.88, and between 1999 and 2004, it is equal to 0.84. This indicates that bank-branch location in 1991 is a good proxy for bank location in the early 2000s, when we observe the individual and firm-level data.

Prior to 1991, India's central bank required all commercial banks to obtain a license before opening a bank branch and stipulated that banks had to open a specified ratio of branches in unbanked locations if they chose to enter regions with existing bank branches. The policy originated in 1962 and underwent a

number of modifications until, on Jan. 1, 1977, the central bank adopted the rule whereby a commercial bank had to open 4 branches in an unbanked rural area to get an entitlement to open one office in a metropolitan/port town or in an already-banked location, the so-called 4:1 licensing rule (Burgess and Pande (2005)). Although banks may still have selected between unbanked districts based on their growth potential, this was further limited by the central bank's Bank Licensing Program, implemented in 1979, under which the central bank drew up a list of districts, based on population targets, where banks were allowed to open new branches. The objective was to improve financial access for unbanked districts and implement the rural poverty-alleviation programs that the government had in place (Kochar (2011)) rather than to exploit growth opportunities in specific districts.

Specifically, from 1979 to 1981, the population target per branch was set at 20,000 persons per branch, and in 1982, the target was lowered to 17,000. Panagariya (2006) shows that actual bank-branch expansion prior to 1991 followed a 14:1 policy, where banks opened 14 branches in unbanked locations for every one branch in a banked location, suggesting that the central bank aggressively pursued an increase in financial access through its licensing policy. However, after the 1991 liberalization when the 4:1 rule and population target policies were abandoned, Panagariya (2006) shows that this ratio collapsed, providing further proof that pre-liberalization location choices were not driven by profit-making motives.

From the bank-branch data (described in Section III.C), we observe that between 1991 and 1992, the modal number of branch changes at the district level is 0. There is a very small left tail (less than 1% of all districts have reductions in branches), and less than 10% of districts have more than one branch added. Over the same period, the year-to-year correlation in the number of branches is 0.99. This implies a very slow evolution in the distribution of branches, which supports our argument that the cross-sectional distribution of branches in 1991 is mainly determined by the 4:1 policy rather than profit-seeking location choice. With the 1991 data, we therefore capture that part of access to credit that was determined by the 4:1 bank-branch location policy rather than by economic growth within districts in the early 2000s.

For the firm-level analysis, we focus on the service sector, which was the main driver of economic growth following the 1991 economic reforms, with an annual growth rate of 4.8% in 1990 that rose to 14% in 1999 (World Bank (2017)).[9] Service-sector growth was not anticipated prior to the 1991 economic reforms of 1991 (Panagariya (2008)), which reduces the likelihood that our results are driven by the endogenous location of banks in districts based on the future characteristics of service-sector firms in that district.

We also investigate the validity of our identification strategy under a plausible selection mechanism where banks in the early 1990s may have selected to locate in districts that were high growth at that time. Specifically, we examine the correlation between district-level growth in wages, total employment, share of formal employment, manufacturing employment, and the education level of workers between 1989 and 1999, and 1999 and 2004, using the 1987 employment and unemployment survey data (described in Section III.A). We then examine the correlation

---

[9]In contrast, the annual growth rate in manufacturing rose from 4.8% to 5.4% over the same period.

FIGURE 1

District-Level Distribution of Government-Owned Bank Branches and Micro-Entrepreneurs

Graph A of Figure 1 shows the distribution of government-owned bank branches across Indian districts, where we denote whether a district is in the top third, middle third, or bottom third of the sample in terms of the total number of government-owned bank branches. Graph B describes the likelihood of an individual being a micro-entrepreneur in a district, where we denote whether a district is in the top third, middle third, or bottom third of the sample in terms of this probability.

Graph A. Bank Branches

Graph B. Micro-Entrepreneurship
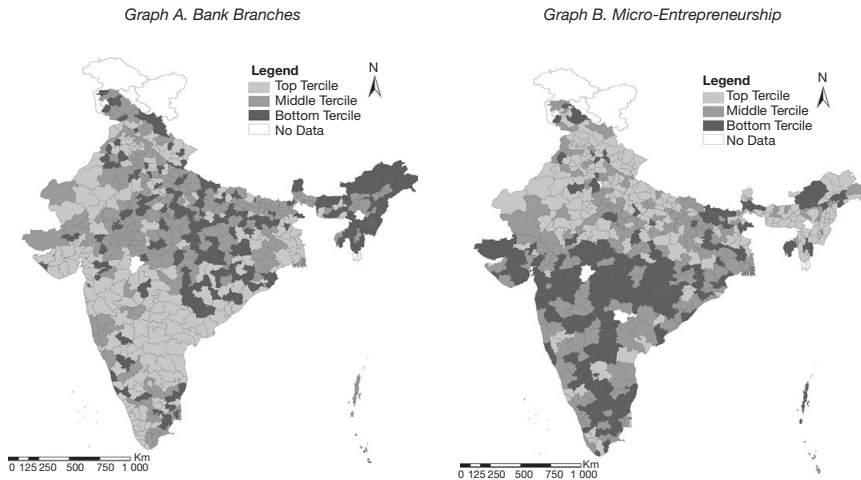
between district-level wages, employment, and education growth from 1987 to 1999 and 1999 to 2004. We find that past growth opportunities are either not correlated or negatively correlated with growth opportunities in the mid-2000s. If government-owned banks selected to locate in districts that were high growth in 1991, then it was likely to be negatively selected, with additional branches located in districts that have poor growth opportunities in the period we study. This would bias our results away from finding a positive impact of financial development on occupational choice and firm growth after 1999. These results are reported in Figures 1A–1E of the working version of this article (https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2494551).

B.   Empirical Specification

Using data on more than 1 million individuals from 2 rounds of the employment and unemployment surveys described in Section III.A, we start by examining the likelihood of being an own-account worker or solo entrepreneur of a micro-enterprise with no employees, with the following logit equation with state and 2-digit industry fixed effects:

$$
\begin{aligned}
(1) \quad &\Pr(\text{SOLO\_MICRO\_ENTREPRENEUR}_{it} = 1) \\
&= \Phi(\beta_1 \log(\text{GOVERNMENT\_BANK\_BRANCHES}_{1991,d} + \beta_2 \text{AGE}_{it}) \\
&\quad + \beta_3 \text{MALE}_{it} + \beta_4 \text{DISTRICT\_POPULATION}_{dt} + \alpha_{\text{YEAR}} + \alpha_{\text{IND}} + \alpha_{\text{STATE}}),
\end{aligned}
$$

where $\Phi(z)$ is the cumulative logistic distribution, i refers to the individual, t refers to the round of the survey (1999 or 2004), and d refers to the district. In the results,

we report marginal effects from the logit regressions. The dependent variable is equal to 1 if the individual is self-employed in a micro-enterprise that has no employees, and 0 otherwise. The equation controls for the individual's age and gender, population at the district level from the 2001 census, 2-digit industry fixed effects (using the National Industrial Classification), year dummies for the year of the survey, and state fixed effects. As discussed in Section II.A, to address potential endogeneity in the financial-access variable, we use the number of government-owned bank branches in 1991, when branch location was mostly determined by government policy.[10] All standard errors are clustered at the district level.

We next consider the likelihood of being a micro-entrepreneur with at least 1 employee by estimating equation (2), where the dependent variable is equal to 1 if the individual is a micro-entrepreneur with at least 1 employee, and equal to 0 if the individual is either a solo entrepreneur or not an entrepreneur:

$$(2) \quad \Pr(\text{EMPLOYER\_MICRO\_ENTREPRENEUR}_{it} = 1)$$
$$= \Phi(\beta_1 \log(\text{GOVERNMENT\_BANK\_BRANCHES}_{1991,d}) + \beta_2 \text{AGE}_{it}$$
$$+ \beta_3 \text{MALE}_{it} + \beta_4 \text{POPULATION}_{dt} + \alpha_{\text{YEAR}} + \alpha_{\text{IND}} + \alpha_{\text{STATE}}).$$

We also estimate equations (1) and (2) for different subsamples based on an individual's education level, classified as illiterate, less than primary schooling, and middle school and above. To establish that our results are robust to the choice of the control group, we perform two additional checks. First, we report results with the control group restricted to individuals who are not micro-entrepreneurs. Second, we estimate a multinomial logit model where the dependent variable is equal to 0 if the individual is not an entrepreneur, equal to 1 if a solo entrepreneur, and equal to 2 if an employer entrepreneur. In addition, we estimate the likelihood of being an employee in a micro-enterprise, the likelihood of being formally employed for wages, and the likelihood of being a student or being unemployed.

We examine whether access to finance eases financial constraints for more productive firms, which would enable them to pay higher wages and attract workers from less productive endeavors, by estimating the following linear equation using annual data on wages from the employment and unemployment surveys:

$$(3) \quad \log(\text{WAGES}_{it}) = \beta_1 \log(\text{GOVERNMENT\_BANK\_BRANCHES}_{1991,d})$$
$$+ \beta_2 \text{AGE}_{it} + \beta_3 \text{MALE}_{it} + \beta_4 \text{POPULATION}_{dt}$$
$$+ \alpha_{\text{YEAR}} + \alpha_{\text{IND}} + \alpha_{\text{STATE}} + \varepsilon_{idt}.$$

Lastly, to establish the firm-specific mechanism by which access to credit improves the efficiency of labor allocation, we use data on over 400,000 service-sector firms, described in Section III.B, and examine whether access to finance affects firm-level employment and performance measures. Specifically, we estimate the following linear equation, controlling for 2-digit industry, year, and state fixed effects:

---

[10]Because GOVERNMENT_BANK_BRANCHES is time invariant at the district level, we cannot include district-level fixed effects.

(4) $\log\left(\text{FIRM\_CHARACTERISTIC}\right)_{i,d,t}$

$\qquad = \beta_1 \log\left(\text{GOVERNMENT\_BANK\_BRANCHES}_{1991,d}\right) + \beta_2 \text{LABOR\_POST}$

$\qquad + \beta_4 \text{POPULATION}_{dt} + \alpha_{\text{YEAR}} + \alpha_{\text{IND}} + \alpha_{\text{STATE}} + \varepsilon_{idt},$

where FIRM_CHARACTERISTIC includes annual firm-level bank loans, total workers, gross value added per worker, and wages; and LABOR_POST is the interaction between restrictive labor regulations at the state level and a year dummy. The labor regulations measure is from Besley and Burgess (2004) and captures state-specific text amendments to the Industrial Disputes Act of 1947, which may be pro-employer, anti-employer, or may not affect the bargaining power of either workers or employers. We include this variable to capture state-level institutional differences in the business environment. Additional controls include district population and state, industry, and year fixed effects, with the standard errors clustered at the district level.

III.   Data

A.   Employment and Unemployment Surveys

The data on individual occupational choice and service-sector firms are from nationwide randomized surveys conducted by the National Sample Survey Organisation (NSSO), a division of the Ministry of Statistics and Program Implementation of the government of India. For the employment and unemployment surveys, the NSSO conducts national surveys on the employment and unemployment status of a large sample of randomly selected households every 5 years. These surveys are primary sources of data on various indicators of the labor force that are used both by policy makers and researchers. Given the timing of our data on banking and credit activities, we use 2 rounds of the employment surveys conducted in 1999 and 2004, respectively, yielding a repeated cross-section of individuals. We describe these surveys in further detail in the Appendix.

We define an individual as an informal-sector micro-entrepreneur (MICRO_ENTREPRENEUR) if the individual is recorded as the owner of an own-account enterprise (an undertaking not registered with the government, run by household labor on a very small scale, usually without any hired workers, whose main purpose is to generate income for the household (NSSO (2000)) or as an employer in an informal micro-enterprise with more than 1 employee.

From the summary statistics described in Panel A of Table 1, we note that approximately 26% of individuals in the employment survey are self-employed, employers with at least 1 employee, and workers in micro-enterprises.[11] In particular, 15% report being an entrepreneur in a micro-enterprise, of which 12% are solo entrepreneurs with no employees and 3% are employer entrepreneurs with at least 1 employee. Approximately 11% of individuals are micro-enterprise employees. We define FORMAL_SECTOR_EMPLOYEE as an individual who is a salaried

---

[11]For comparison, note that approximately 20% of workers in Organisation for Economic Co-operation and Development (OECD) economies are either self-employed or work for the self-employed, and two-fifths of the U.S. workforce experiences at least one spell of self-employment (Parker (2009), p. 11).

TABLE 1

Summary Statistics from Employment and Unemployment
Surveys and Service-Sector Firm Surveys

In Panel A of Table 1, we describe rounds 55 and 61 of the National Sample Survey Organisation (NSSO) employment and unemployment surveys. Individuals are identified as MICRO_ENTREPRENEUR if they are either self-employed in an own-account enterprise (OAE) that has no employees or are the boss of an OAE with at least 1 employee; SOLO_MICRO_ENTREPRENEUR if self-employed in an OAE that has no employees; EMPLOYER_MICRO_ENTREPRENEUR if the boss of an OAE with at least 1 employee; MICRO_ENTERPRISE_EMPLOYEE if work for a micro-enterprise; FORMAL_SECTOR_EMPLOYEE if formally employed; FORMAL_SECTOR_PART_TIME_EMPLOYEE if formally employed part-time; STUDENT if enrolled in an educational institution; UNEMPLOYED if not working but looking for work; and NOT_IN_LABOR_FORCE if not engaged in economic activity. log(WAGES) is the log value of annual salary; AGE is the age of the individual in decades; MALE is the gender; and ILLITERATE, LITERATE, and EDUCATED describe educational levels. In Panel B, we describe rounds 57 and 63 of the NSSO service-sector firm surveys. LOANS is annual loans from banks; log(GROSS_VALUE_ADDED_PER_WORKER) is the log value of annual total receipts less total operating expenses, scaled by TOTAL_EMPLOYMENT; TOTAL_EMPLOYMENT is the number of workers employed in the firm. log(WAGES_PER_WORKER) is defined as the log value of the ratio of total salary, wages, allowances, and other individual benefits scaled by TOTAL_EMPLOYMENT.

	Mean	Minimum	Maximum	Std. Dev.	No. of Obs.
Panel A. Summary Statistics from Employment and Unemployment Surveys					
MICRO_ENTREPRENEUR	15.37%	0	1		1,260,113
SOLO_MICRO_ENTREPRENEUR	12.18%	0	1		1,260,113
EMPLOYER_MICRO_ENTREPRENEUR	3.19%	0	1		1,260,113
MICRO_ENTERPRISE_EMPLOYEE	11.10%	0	1		1,260,113
FORMAL_SECTOR_EMPLOYEE	8.34%	0	1		1,260,113
FORMAL_SECTOR_PART_TIME_EMPLOYEE	9.70%	0	1		1,260,113
STUDENT	24.55%	0	1		1,260,113
UNEMPLOYED	2.41%	0	1		1,260,113
NOT_IN_LABOR_FORCE	26.10%	0	1		1,260,113
log(WAGES)	9.86	5.05	16.60	1.07	194,349
AGE	2.75	0	11.5	1.86	1,383,432
MALE	47.80%	1	2		1,383,941
ILLITERATE	31.20%	0	1		1,606,913
LITERATE (primary or less)	27.50%	0	1		1,606,913
EDUCATED (middle school and higher)	41.20%	0	1		1,606,913
Panel B. Summary Statistics from Service Firm Surveys					
HAVE_OUTSTANDING_LOAN	11.6%	0	1	32.0%	446,883
log(LOANS)	9.17	1.62	26.25	2.51	55,676
log(GROSS_VALUE_ADDED_PER_WORKER)	9.68	1.38	18.47	0.98	442,659
TOTAL_EMPLOYMENT	1.84	1	75,052	27.16	446,877
log(WAGES_PER_WORKER)	8.09	2.00	16.04	1.55	142,926

worker employed outside of the household.[12] The distribution of activities shows that approximately one-quarter of workers are engaged in micro-enterprises, either as the entrepreneur or as employees, and another 18% of workers have a formal, salaried job. We code those who normally work in one of the previous activities but are not doing so at the time of the survey (i.e., because of sickness) as belonging to their usual employment category. We note that the regression samples that follow are a subset of the full sample because the regression samples drop observations for which we are missing district information or bank-branch data.

We construct 2 additional measures of occupation: those who are not working but looking for work are defined as UNEMPLOYED, and those who are currently attending educational institutions are denoted as a STUDENT. Unemployment is

---

[12]The data classify individuals into those working within household firms (micro-enterprises in the informal sector) or as regular salaried workers outside the household (formal). Because the employment surveys cover the working conditions of individuals, we do not directly observe whether the individuals who work outside of the household do so in formal-sector firms, and we instead use the nature of the employment relationship to identify the type of firm. Specifically, the employment status is defined as de facto formal if the individual is a salaried worker working outside of the household and as de facto informal if the individual works in a household firm.

low at 2.4%, but lacking employment, the poor often work in micro-enterprises. More than one-quarter of the sample respondents report they are attending educational institutions. The survey codes education as a categorical variable, including illiterate, literate without formal school, and various degrees of formal schooling up to a postsecondary degree. Education ranges from illiteracy for 31% of the population to some primary education for 28% of the population and middle school or more advanced degrees for 41% of the population. In addition, we code individuals who are not in the labor force as NOT_IN_LABOR_FORCE, which constitutes approximately 26% of the sample.[13]

The surveys also record WAGES, defined as weekly wages or salary, which we normalize to an annualized wage. For round 51, we deflate nominal values to 1999 values using the Consumer Price Index. Annual wages are INR 30,837, or approximately $700 at 1999 exchange rates.

B.   Service-Sector Surveys

The NSSO conducted the first nationwide survey of micro-enterprises in the service sector in 2001. Note that micro-enterprises are more common in the service sector because of the capital- and scale-related entry barriers in manufacturing. Moreover, the service sector accounted for 54% of GDP in 2004, whereas manufacturing was 17% (Panagariya (2008)). The survey gathers information on both formal- and informal-sector firms, which allows for a comparison of the 2 sectors. We use data from 2 rounds of this survey conducted between 2001 and 2002 and 2006 and 2007, yielding a large, repeated cross-section of firm-level data. We describe these surveys further in the Appendix.

Panel B of Table 1 presents summary statistics for the key variables in the survey. There are over 440,000 firms surveyed over the 2 rounds. The average firm employs 1.8 workers, with a single owner-proprietor being the modal size. GROSS_VALUE_ADDED_PER_WORKER, defined as total receipts less total operating expenses divided by total employment, is approximately $500 at the 2001 exchange rate of 48 INR/USD. The survey also reports that approximately 12% of firms have an outstanding bank loan. WAGES is defined as total salary, wages, allowances, and other individual benefits (cash and kind, including bonus, retirement benefits, etc., apportioned for the month), in addition to the imputed value of group benefits for the month (including employer's contribution toward cafeteria food, sports, insurance, etc.). We scale wages to an annual reference and deflate all financial variables in round 63 to 2001 values.

C.   Banking Data

The data on bank entry and ownership are published by the Reserve Bank of India, India's central bank. These quarterly data provide loan amounts and the number of branches in each district by bank-ownership group. We use data on government-owned bank branches and loans in a district, which include

---

[13]This category includes individuals engaged in domestic duties only, including the free collection of goods for domestic use (vegetables, firewood, etc.), sewing, tailoring, and so forth; not able to work as a result of disability; receiving pensions, rents, and remittances; and beggars and sex workers (NSSO (2000)).

TABLE 2

Summary Statistics of Banking Data

In Table 2, we merge banking data by district with the National Sample Survey Organisation (NSSO) employment and unemployment surveys and service-sector firm surveys. These quarterly data provide the loans and number of branches in each district for government-owned banks, which include state, nationalized, and rural banks. The data are from the fourth quarter of 1991.

	Mean	Minimum	Maximum	Std. Dev	No. of Obs.
Panel A. Districts Merged with Employment and Unemployment Surveys					
GOVERNMENT_BANK_BRANCHES_IN_1991_BY_DISTRICT	26.35	0	268.00	25.72	461
log(GOVERNMENT_BANK_BRANCHES_IN_1991)	3.19	0	5.60	0.92	461
GOVERNMENT_BANK_CREDIT_IN_1991_BY_DISTRICT	178.20	0	6,048.20	660.40	461
log(GOVERNMENT_BANK_CREDIT_IN_1991)	3.77	0	8.71	1.47	461
Panel B. Districts Merged to Service-Sector Firm Surveys					
GOVERNMENT_BANK_BRANCHES_IN_1991_BY_DISTRICT	26.42	3	175	21.8	364
log(GOVERNMENT_BANK_BRANCHES_IN_1991)	3.08	1.39	5.17	0.66	364
GOVERNMENT_BANK_CREDIT_IN_1991_BY_DISTRICT	83.62	1.11	5,218	238.8	364
log(GOVERNMENT_BANK_CREDIT_IN_1991)	3.62	0.75	8.56	1.07	364

government-owned nationalized banks and rural banks. The data are from the fourth quarter of 1991, the year prior to the economic reforms, when bank-branch location was still governed by the 4:1 rule described in Section II.A. We merge the district identifier from the 4 NSSO surveys with the identifiers from our banking data. From 588 total districts in our banking data, we are able to merge 465 districts into the employment and unemployment survey data, and we merge 364 districts into the service-sector data. The number of districts is different when matched with the surveys because of changes in the geographic boundaries of districts and states that occurred during the sample period for political reasons. Panels A and B of Table 2 describe the banking data. On average, there are approximately 26 government-owned bank branches per district.[14]

Figures 1 and 2 provide district-level maps of India showing the distribution of bank branches, micro-entrepreneurs, and those in formal employment. Figure 1 provides 2 maps describing district-level bank-branch location (Graph A) and micro-entrepreneurship (Graph B). We denote districts in the bottom (0–9 branches), middle (10–26 branches), and top (27–268 branches) terciles of bank branches, where higher concentrations of banks are marked in lighter colors. We observe from Graph A that districts in the western and southern states (Gujarat, Maharashtra, Andhra Pradesh) have the highest concentration of government-owned banks, whereas districts in the north and northeast regions (Uttar Pradesh, Madhya Pradesh, Bihar, Assam) have the lowest bank presence.

Graph B of Figure 1 denotes districts in the top (17%–100%), middle (13%–17%), and bottom third (0%–13%) terciles of the likelihood of being a micro-entrepreneur. Districts with more micro-entrepreneurs are denoted by lighter colors. The map indicates that there are more self-employed individuals in northern states (Uttar Pradesh, Rajasthan, Assam), which have fewer bank branches, and fewer micro-entrepreneurs in the western and southern states (Gujarat, Maharashtra, Tamil Nadu), which are more banked.

---

[14]In the regression analysis, we use district-level data on the presence of bank branches and not credit because the latter variable is likely to be endogenous to district-level economic characteristics.

FIGURE 2

District-Level Distribution of Government-Owned Bank Branches and the
Likelihood of Being Formally Employed

Graph A of Figure 2 shows the distribution of government-owned bank branches across Indian districts, where we denote whether a district is in the top third, middle third, or bottom third of the sample in terms of the total number of government-owned bank branches. Graph B shows the likelihood of an individual being formally employed for wages in a district, where we denote whether a district is in the top third, middle third, or bottom third of the sample in terms of this probability.

Graph A. Bank Branches   *Graph B. Formal Employment*
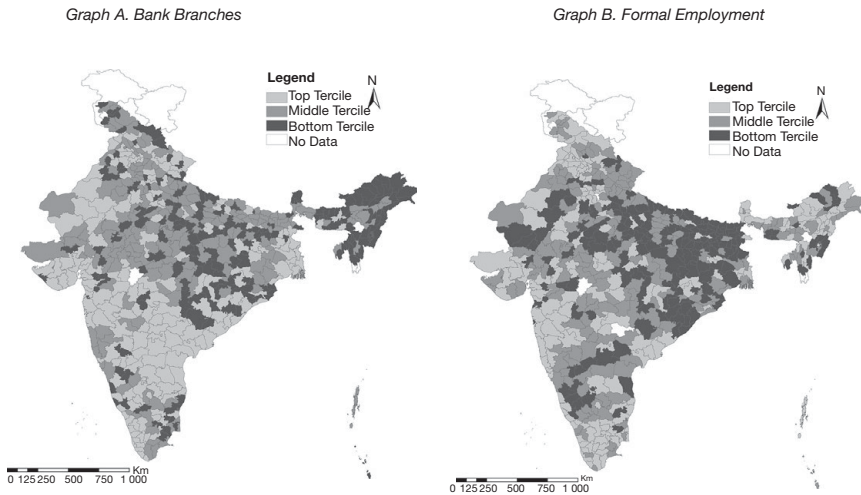
Figure 2 provides a map of districts based on the distribution of individuals who are formally employed (Graph B). The map on the right indicates districts in the bottom (0%–3%), middle (3%–6%), and top (6%–100%) terciles of the likelihood of formal-sector employment. Lighter colors indicate districts where individuals are more likely to be formally employed. As can be seen from the map, districts in northern states (Uttar Pradesh, Bihar, Orissa), which have fewer bank branches, have the lowest share of formal employment, whereas districts in the western and southern states (Gujarat, Maharashtra, Tamil Nadu), which have more bank branches, have higher rates of formal employment.

IV.   Access to Finance and Individual Occupational Choice

A.   Solo Entrepreneurs

Self-employed individuals in micro-enterprises that have no employees are likely to be different from micro-entrepreneurs who are productive enough to hire workers. Therefore, we study the relationship between financial access and the likelihood of micro-entrepreneurship for these 2 groups separately. We start by estimating equation (1) described in Section II.B, which studies whether the likelihood of being a solo entrepreneur, an individual who is self-employed with no employees, is correlated with financial access. The dependent variable is equal to 1 if the individual is self-employed in a micro-enterprise that employs no workers, and 0 otherwise. The results are reported in Table 3. In column 1, we report the

TABLE 3

Likelihood of Solo Micro-Entrepreneurship

Using data from the employment and unemployment surveys, Table 3 provides results from a logit specification where the dependent variable is equal to 1 if the individual is self-employed in an own-account enterprise (OAE) that has no employees, and 0 otherwise, in columns 1 and 3–5. In column 2, the dependent variable is equal to 1 if the individual is self-employed in an OAE that has no employees, and 0 if the individual is not an entrepreneur. log(GOVERNMENT_BANK_BRANCHES_IN_1991) is the natural logarithm of the number of government-owned bank branches in a district in 1991 + 1, AGE is the age of the individual in decades, MALE is the gender, and DISTRICT_POPULATION is the population at the district level from 2001 in millions. The specification controls for year, state, and industry effects, and standard errors are clustered at the district level. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

				EDUCATION	
				LITERATE (primary or less)	EDUCATED (middle school and higher)
	All Firms	Compared with Non-Entrepreneurs	ILLITERATE		
Variables	1	2	3	4	5
log(GOVERNMENT_BANK_ BRANCHES_IN_1991)	−0.0109***	−0.0101**	−0.0069	−0.0120***	−0.0164***
	(0.004)	(0.004)	(0.006)	(0.004)	(0.004)
AGE	0.0331***	0.0364***	0.0281***	0.0363***	0.0303***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
MALE	0.1068***	0.1236***	0.1735***	0.0683***	0.0653***
	(0.004)	(0.004)	(0.006)	(0.003)	(0.004)
DISTRICT_POPULATION	−0.0085***	−0.0081***	−0.0047	−0.0083***	−0.0100***
	(0.003)	(0.003)	(0.004)	(0.003)	(0.002)
Year dummies	Yes	Yes	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes
No. of obs.	946,511	911,502	307,578	287,839	351,094

results for the full sample; in column 2, we restrict the control group to individuals who are not entrepreneurs; and in columns 3–5, we consider subsamples based on the education level of the individual.

The results reported in column 1 of Table 3 suggest that an individual located in a district with more bank branches is significantly less likely to be a solo entrepreneur with no employees. For example, from column 1, we note that moving from a district with the mean number of government-owned bank branches (approximately 26 branches for the full sample reported in Panel A of Table 2) to a district with twice the mean number of branches reduces the likelihood of being an informal solo entrepreneur by 6% relative to the mean likelihood of being a solo entrepreneur of 12% for the full sample reported in Panel A of Table 1.[15] As a robustness check, in column 2, we drop individuals who are employer micro-entrepreneurs from the control group. The results are similar in sign, magnitude, and statistical significance to those in column 1, which suggests that our results are robust to the choice of the control group.[16]

---

[15]To obtain economic magnitudes, we use the following formula: $((\beta_1 \times \log(\text{MEAN\_BANK\_BRANCHES})) - (\beta_1 \times \log(2 \times \text{MEAN\_BANK\_BRANCHES})))/\text{MEAN\_DEPENDENT\_VARIABLE}$, where β_1 is the coefficient of log(GOVERNMENT_BANK_BRANCHES_IN_1991). For Table 3, we use the coefficient of log(GOVERNMENT_BANK_BRANCHES_IN_1991) in column 1, equal to –0.0109; the mean value of bank branches, equal to 26.35 for the full sample reported in Panel A of Table 2; and the mean likelihood of being a solo entrepreneur, equal to 12.2%, reported in Panel A of Table 1. We calculate all economic magnitudes similarly throughout the article.

[16]We also estimate a multinomial logit model, where the dependent variable is equal to 0 if the individual is not an entrepreneur, equal to 1 if a solo entrepreneur, and equal to 2 if an employer entrepreneur. The results show that compared with non-entrepreneurs, the likelihood of being a solo entrepreneur is significantly lower, and that of being an employer entrepreneur is significantly higher, in

We also find that more educated individuals who live in districts with greater access to finance are significantly less likely to be solo entrepreneurs (columns 3–5). For instance, from column 5, we note that an individual with middle school or higher education who moves from a district with the mean number of government bank branches (approximately 26 branches) to a district with twice the mean number of branches has a 9% lower likelihood of being a solo entrepreneur relative to the mean likelihood of being a solo entrepreneur of 12%. In contrast, the occupational choice of illiterate individuals does not appear to vary based on financial access (column 3).

B.   Employer Entrepreneurs

To study whether the relationship between financial access and micro-entrepreneurship is different for micro-enterprises that are productive enough to employ workers, we estimate equation (2) described in Section II.B. The dependent variable is equal to 1 if the individual is self-employed in a micro-enterprise that employs at least 1 worker, and 0 otherwise. The results are reported in Table 4. In column 1, we report the results for the full sample; in column 2, as a robustness check, we restrict the control group to individuals who are not entrepreneurs; and columns 3–5 consider subsamples based on the education level of the micro-entrepreneur.

TABLE 4

Likelihood of Being a Micro-Enterprise Employer

Using data from the employment and unemployment surveys, Table 4 provides results from a logit specification where the dependent variable is equal to 1 if the individual is a boss of a micro-enterprise that has at least one employee, and 0 otherwise, in columns 1 and 3–5. In column 2, the dependent variable is equal to 1 if the individual is a boss of a micro-enterprise that has at least one employee, and equal to 0 if the individual is not an entrepreneur. log(GOVERNMENT_BANK_BRANCHES_IN_1991) is the log of the number of government-owned bank branches in a district in 1991 + 1, AGE is the age of the individual in decades, MALE is the gender, and DISTRICT_POPULATION is the population at the district level from 2001 in millions. The specification controls for year, state, and industry fixed effects (FE), and standard errors are clustered at the district level. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

				EDUCATION	
				LITERATE	
	All Firms	Compared with Non-Entrepreneurs	ILLITERATE	(primary or less)	EDUCATED (middle school and higher)
Variables	1	2	3	4	5
log(GOVERNMENT_BANK_ BRANCHES_IN_1991)	0.0062*** (0.002)	0.0040*** (0.002)	0.0059** (0.002)	0.0041* (0.002)	0.0106*** (0.002)
AGE	0.0116*** (0.000)	0.0155*** (0.001)	0.0036*** (0.000)	0.0144*** (0.001)	0.0202*** (0.001)
MALE	0.0659*** (0.002)	0.0829*** (0.002)	0.0563*** (0.003)	0.0494*** (0.002)	0.0922*** (0.002)
DISTRICT_POPULATION	0.0029*** (0.001)	0.0023*** (0.001)	0.0033*** (0.001)	0.0029*** (0.001)	0.0028*** (0.001)
Year FE	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes	Yes
No. of obs.	946,511	812,823	307,578	287,839	351,094

more financially developed districts. The coefficient magnitudes are similar in sign and significance to the results described in columns 1 and 2 of Tables 3 and 4. To save space, we do not report these results.

In contrast to solo entrepreneurs, we find that financial access is positively associated with the likelihood of being a micro-entrepreneur with at least 1 employee. For example, from column 1, we note that moving from a district with the mean number of bank branches (approximately 26 branches for the full sample, reported in Panel A of Table 2) to a district with twice the mean number of branches increases the likelihood of being an employer micro-entrepreneur by 13%, relative to the mean likelihood of being an employer micro-entrepreneur of 3%, reported in Panel A of Table 1. We show that these results are robust to the choice of control group in column 2, where we restrict the sample to non-entrepreneurs.

The likelihood of being a micro-entrepreneur with employees is positive for illiterate individuals and those with less than a primary-level education (columns 3 and 4), and it is higher for more educated individuals in more financially developed districts (column 5). For instance, from column 5, we note that for an individual with middle school or higher education, moving from a district with the mean number of government bank branches to a district with twice the mean number of branches will increase the likelihood of being a micro-enterprise employer by 23% relative to the mean likelihood of 3%.

Because there are more solo entrepreneurs than employer entrepreneurs, on average, access to finance is negatively correlated with micro-entrepreneurship. However, the results in Tables 3 and 4 also suggest that although financial access may reduce the likelihood of unproductive self-employment, it may benefit micro-enterprises that are sufficiently productive to employ workers.

C. Micro-Enterprise Employees

To investigate if access to finance affects an individual's decision to work for a micro-enterprise, we estimate a logit equation similar to equation (1), where the dependent variable is equal to 1 for an individual who works in a micro-enterprise. The regressions control for individual age; gender; district population; and year, industry, and state fixed effects.

The results reported in Table 5 suggest that the likelihood of being employed in a micro-enterprise is significantly lower in districts with more bank branches. For example, from column 1, we note that an individual who moves from a district with the mean number of government-owned bank branches (approximately 26 branches for the full sample reported in Panel A of Table 2) to a district with twice the mean number of branches has an 11% lower likelihood of being an employee in a micro-enterprise, relative to the mean likelihood of being a micro-enterprise employee of 11% for the full sample, reported in Panel A of Table 1. We also find that an increase in the number of government bank branches in a district is associated with a significantly lower likelihood of being employed in a micro-enterprise among individuals with higher levels of schooling (columns 3 and 4) but is not significantly different for illiterate workers (column 2).

The negative relationship between solo micro-entrepreneurship and access to finance is consistent with the view that individuals may undertake informal self-employment in the absence of formal employment opportunities. In an environment where even formal-sector firms are credit constrained, financial development may

TABLE 5

Likelihood of Employment in a Micro-Enterprise

Using data from the employment and unemployment surveys, Table 5 provides results from a logit specification where the dependent variable is equal to 1 if the individual is an employee in a household firm in the informal sector, and 0 otherwise. log(GOVERNMENT_BANK_BRANCHES_IN_1991) is the natural logarithm of the number of government-owned bank branches in a district in 1991 + 1, AGE is the age of the individual in decades, MALE is the gender, and DISTRICT_POPULATION is the population at the district level from 2001 in millions. The specification controls for year, state, and industry fixed effects (FE), and standard errors are clustered at the district level. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

			EDUCATION	
			LITERATE (primary or less)	EDUCATED (middle school and higher)
	All Firms	ILLITERATE		
Variables	1	2	3	4
log(GOVERNMENT_BANK_BRANCHES_IN_1991)	−0.0179***	−0.0115	−0.0156***	−0.0252***
	(0.006)	(0.008)	(0.005)	(0.005)
AGE	−0.0090***	−0.0160***	0.0051***	−0.0214***
	(0.001)	(0.001)	(0.001)	(0.001)
MALE	−0.0303***	−0.0965***	−0.0178***	0.0436***
	(0.004)	(0.006)	(0.004)	(0.004)
DISTRICT_POPULATION	−0.0136***	−0.0133***	−0.0100***	−0.0136***
	(0.003)	(0.005)	(0.003)	(0.003)
Year FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes
No. of obs.	946,382	307,522	287,798	351,062

ease constraints for such firms, facilitating the movement of workers out of micro-enterprises and into salaried jobs. Next, we examine the relationship between access to finance and formal employment.

D.   Formal Employment

We estimate a logit equation similar to equation (1), where the dependent variable is equal to 1 if the individual is employed for wages outside of the household, which we denote as formal employment. The results suggest that access to finance is associated with a shift from micro-entrepreneurship to formal, salaried jobs.

From the results reported in Table 6, we note that the likelihood of being formally employed is significantly higher for individuals located in districts with more bank branches. For instance, for the results reported in column 1, we note that an individual moving from a district with the mean number of government-owned branches (approximately 26 branches for the full sample reported in Panel A of Table 2) to a district with twice the mean number of bank branches has a 6% higher likelihood of being formally employed relative to the mean likelihood of being formally employed of 8% for the full sample reported in Panel A of Table 1.

Considering subsamples of the data based on individual characteristics, we find that the marginal likelihood of being employed in the formal sector increases with worker education (columns 2–4). For example, moving from a district with the mean number of bank branches reported in Panel A of Table 2 to one with twice the number of banks increases the likelihood of being formally employed by 6% for illiterate workers and by 15% for workers with middle school and higher education, relative to the mean likelihood of being formally employed of 8% for the full sample.

TABLE 6

Likelihood of Employment in the Formal Sector

Using data from the employment and unemployment surveys, Table 6 provides results from a logit specification where the dependent variable is equal to 1 if the individual is formally employed for wages in a nonhousehold firm. log(GOVERNMENT_BANK_BRANCHES_1991) is the natural logarithm of the number of government-owned bank branches in a district in 1991 + 1, AGE is the age of the individual in decades, MALE is the gender, and DISTRICT_POPULATION is the population at the district level from 2001 in millions. The specification controls for year, state, and industry fixed effects (FE), and standard errors are clustered at the district level. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

| | | | EMPLOYER_EDUCATION | |
| | All Firms | ILLITERATE | LITERATE (primary or less) | EDUCATED (middle school and higher) |
Variables	1	2	3	4
log(GOVERNMENT_BANK_BRANCHES_IN_1991)	0.0073***	0.0072***	0.0088***	0.0175***
	(0.002)	(0.002)	(0.002)	(0.004)
AGE	0.0115***	−0.0013***	0.0091***	0.0566***
	(0.001)	(0.000)	(0.001)	(0.002)
MALE	0.0550***	0.0248***	0.0442***	0.1327***
	(0.004)	(0.002)	(0.003)	(0.006)
DISTRICT_POPULATION	0.0073***	0.0026	0.0079***	0.0210***
	(0.002)	(0.002)	(0.003)	(0.004)
Year FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes
No. of obs.	946,381	307,522	287,798	351,062

E.   Wages

Does access to finance ease financial constraints for more productive firms, enabling them to pay higher wages, which attracts workers from less productive enterprises? The results from estimating equation (3) described in Section II.B are reported in Table 7. We find that on average, individuals earn significantly higher wages in districts with more bank branches. For example, from the results reported for the full sample in column 1 of Table 7, we note that a worker who moves from a district with the mean number of branches (approximately 26 branches for the full sample, reported in Panel A of Table 2) to a district with twice the mean number of branches earns approximately 1% more relative to mean wages for the full sample ($435 at the 1999 exchange rate of 44 INR/USD) reported in Panel A of Table 1.

Considering subsamples based on worker education (columns 2–4), we find that more educated workers earn more on average in districts with more government bank branches. For instance, from column 4, we note that an individual with middle school and higher education who moves from a district with the mean number of branches to a district with twice the mean number of branches earns 1.1% more relative to mean wages for the full sample.

Columns 5–7 of Table 7 consider wages in micro-enterprises and formal employment. Most micro-entrepreneurs and employees do not earn a regular salary, which explains the smaller sample of individuals who report wages. We observe an increase in wages paid to employees but not to micro-entrepreneurs in districts with more bank branches (columns 5 and 6). In contrast, in column 7, we observe that in districts with more bank branches, individuals who are employed full-time in formal employment earn higher wages on average. For example, an individual in formal employment who moves from a district with the mean number of bank

TABLE 7

Wages and Access to Credit

Using individual-level data from the employment and unemployment surveys, Table 7 provides results from an OLS specification where the dependent variable is the natural logarithm of WAGES, or annual compensation. log(GOVERNMENT_BANK_BRANCHES_1991) is the natural logarithm of the number of government-owned bank branches in a district in 1991 + 1, AGE is the age of the individual in decades, MALE is the gender, and DISTRICT_POPULATION is the population at the district level from 2001 in millions. The specifications control for year, state, and industry fixed effects (FE), and standard errors are clustered at the district level. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

| | | | EDUCATION | | MICRO_ENTERPRISE | | |
| | All Firms | ILLITERATE | LITERATE (less than primary schooling) | EDUCATED (middle school and above) | ENTREPRENEUR | EMPLOYEE | FORMAL EMPLOYMENT |
Variables	1	2	3	4	5	6	7
log(GOVERNMENT_BANK_ BRANCHES_IN_1991)	0.1252***	0.0857***	0.1182***	0.1608***	0.0600	0.1218**	0.1560***
	(0.025)	(0.030)	(0.034)	(0.032)	(0.052)	(0.061)	(0.036)
AGE	0.1320***	0.0188***	0.1194***	0.3938***	0.0100	0.0301*	0.3021***
	(0.006)	(0.005)	(0.008)	(0.011)	(0.019)	(0.016)	(0.009)
MALE	0.4024***	0.4190***	0.4334***	0.2047***	0.3052***	0.4030***	0.3833***
	(0.013)	(0.015)	(0.035)	(0.028)	(0.060)	(0.051)	(0.043)
DISTRICT_POPULATION	0.0228***	0.0350**	0.0413***	0.0205**	0.0599***	0.0448	0.0002
	(0.008)	(0.016)	(0.010)	(0.009)	(0.020)	(0.032)	(0.012)
Constant	9.2406***	9.9021***	9.5469***	9.0282***	9.1966***	7.4890***	9.0300***
	(0.104)	(0.106)	(0.134)	(0.120)	(0.113)	(0.120)	(0.118)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No. of obs.	167,902	56,692	42,562	68,648	1,285	838	85,070

branches reported in Panel A of Table 2 to a district with twice the mean number of branches earns approximately 1.1% more relative to mean wages for the full sample.

F. Education and Unemployment

From the results reported in column 1 of Table 8, we note that the likelihood of being unemployed is not significantly different in districts with more bank branches. One reason may be that unemployed individuals engage in micro-entre-preneurship, a form of shadow unemployment. However, the likelihood of being a student increases significantly with financial access. For example, moving from a district with the mean number of bank branches (approximately 26 branches for the full sample reported in Panel A of Table 2) to a district with twice the mean number of branches is associated with a 2% higher likelihood of being a student, relative the mean likelihood of 25% for the full sample reported in Panel A of Table 1. Intuitively, more individuals may enroll in educational institutions if access to finance increases returns to human capital, with better job opportunities for more educated workers.

G. Women and Disadvantaged Groups

The micro-credit literature argues that women and minorities are unlikely to benefit from an expansion of credit through formal lending institutions because of historical discrimination and lack of information. In Table 9, we examine the effects for women and individuals belonging to social groups that have faced historical

TABLE 8

Likelihood of Being Unemployed or a Student

Using individual-level data from the employment and unemployment surveys, Table 8 provides results from a logit specification where the dependent variable in column 1 is equal to 1 if the individual is unemployed (not working but looking for work), and 0 otherwise, and in column 2, the dependent variable is equal to 1 if the individual is enrolled in an educational institution, and 0 otherwise. log(GOVERNMENT_BANK_BRANCHES_IN_1991) is the natural logarithm of the number of government-owned bank branches in a district in 1991 + 1, AGE is the age of the individual in decades, MALE is the gender, and DISTRICT_POPULATION is the population at the district level from 2001 in millions. The specification controls for year, state, and industry fixed effects (FE), and standard errors are clustered at the district level. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Variables	UNEMPLOYED 1	STUDENT 2
log (GOVERNMENT_BANK_BRANCHES_IN_1991)	0.0011	0.0070**
	(0.001)	(0.003)
AGE	−0.0036***	−0.0996***
	(0.000)	(0.002)
MALE	0.0082***	0.0026
	(0.001)	(0.002)
DISTRICT_POPULATION	−0.0004	−0.0009
	(0.001)	(0.001)
Year FE	Yes	Yes
Industry FE	Yes	Yes
State FE	Yes	Yes
No. of obs.	946,381	946,380

discrimination (Scheduled Tribes, Scheduled Castes, Other Backward Castes).[17] We report only the coefficient of $\log(g)$, but the equations control for age; district population; gender; and year, state, and industry fixed effects.

We find evidence corroborating this view. For example, in Table 9, we observe that men and individuals in the "Other" category (individuals belonging to higher-caste groups or not in the caste system) are on average less likely to be micro-entrepreneurs and more likely to be formally employed in districts with more government bank branches (Panel A, columns 4 and 6), whereas financial access does not appear to affect the occupational choices of women and minority groups.

However, from Panel B of Table 9, we note that women and members of the Scheduled Castes and Other Backward Castes groups are significantly less likely to be employed in a micro-enterprise in districts with more bank branches (columns 2, 3, and 5). From the results reported in Panel C of Table 9, we observe that women and members of disadvantaged social groups are more likely to be employed formally in districts with more government-owned bank branches (columns 2, 3, and 5), although the marginal effect is larger for men and individuals belonging to nondisadvantaged groups (columns 4 and 6). From Panels D and E, we note that women earn higher wages on average (Panel D, column 5) and are significantly more likely to be enrolled as students in districts with greater access to credit (Panel E, column 5). Similarly, individuals belonging to disadvantaged social groups earn higher wages on average in districts with more bank branches (Panel D, columns 2 and 3). Although access to formal credit appears to

---

[17]Scheduled Castes and Scheduled Tribes are official designations given to various historically disadvantaged population groups. In recent decades, Scheduled Castes are sometimes referred to as *Dalits. Scheduled Tribes* is the official term used to denote indigenous ethnic groups.

TABLE 9

Access to Credit for Women and Minorities

Using data from the employment and unemployment surveys, Panel A of Table 9 provides results from a logit specification where the dependent variable is equal to 1 if the individual is either self-employed in an own-account enterprise (OAE) that has no employees or is the boss of a household enterprise with at least 1 employee, and 0 otherwise. Panel B provides results from a logit specification where the dependent variable is equal to 1 if the individual is an employee in a household firm in the informal sector, and 0 otherwise. Panel C provides results from a logit specification where the dependent variable is equal to 1 if the individual is formally employed for wages in a nonhousehold firm, and 0 otherwise. Panel D provides results from an OLS specification where the dependent variable is the natural logarithm of WAGES or annual compensation. Panel E provides results from a logit specification where the dependent variable is equal to 1 if the individual is enrolled in an educational institution, and 0 otherwise. SCHEDULED_TRIBE, SCHEDULED_CASTE, and OTHER_BACKWARD_CASTE capture population subgroups that belong to discriminated-against lower-caste groups, and OTHER captures individuals belonging to upper-caste groups and those who do not belong to any caste. log(GOVERNMENT_BANK_BRANCHES_IN_1991) is the natural logarithm of the number of government-owned bank branches in a district in 1991 + 1, AGE is the age of the individual in decades, MALE is the gender, and DISTRICT_POPULATION is the population at the district level from 2001 in millions. The specification controls for year, state, and industry fixed effects (FE), and standard errors are clustered at the district level. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Variables	SCHEDULED_TRIBE 1	SCHEDULED_CASTE 2	OTHER_BACKWARD_CASTE 3	OTHER 4	WOMEN 5	MEN 6
Panel A. Likelihood of Micro-Entrepreneurship						
log(GOVERNMENT_BANK_BRANCHES_IN_1991)	0.0144 (0.012)	−0.0029 (0.005)	−0.0056 (0.005)	−0.0158*** (0.005)	−0.0017 (0.005)	−0.0125** (0.006)
No. of obs.	109,801	150,661	332,675	352,936	449,048	497,333
Panel B. Likelihood of Being Employed in a Micro-Enterprise						
log(GOVERNMENT_BANK_BRANCHES_IN_1991)	−0.0065 (0.012)	−0.0172*** (0.006)	−0.0228*** (0.008)	−0.0177*** (0.007)	−0.0175* (0.009)	−0.0195*** (0.004)
No. of obs.	109,801	150,661	332,675	352,936	449,048	497,333
Panel C. Likelihood of Being Employed in the Formal Sector						
log(GOVERNMENT_BANK_BRANCHES_IN_1991)	0.0003 (0.004)	0.0111** (0.005)	0.0064* (0.003)	0.0108** (0.006)	0.0074** (0.003)	0.0325*** (0.010)
No. of obs.	109,801	150,661	332,675	352,936	449,048	497,333
Panel D. Wages						
log(GOVERNMENT_BANK_BRANCHES_IN_1991)	0.0055 (0.063)	0.1348*** (0.032)	0.1138*** (0.035)	0.1616*** (0.029)	0.0922* (0.048)	0.2077*** (0.032)
No. of obs.	19,112	36,790	55,236	56,728	57,291	110,611
Panel E. Likelihood of Being a Student						
log(GOVERNMENT_BANK_BRANCHES_IN_1991)	0.0022 (0.007)	−0.0010 (0.005)	0.0020 (0.004)	0.0147*** (0.005)	0.0118*** (0.004)	0.0084* (0.005)
No. of obs.	109,801	150,661	332,675	352,936	449,048	497,333

benefit men and dominant social groups more,[18] the results suggest that an increase in hiring and pay in formal-sector firms in districts with more bank branches may also facilitate a change in the labor-market outcomes of women and disadvantaged groups.

V.   Access to Finance and Service-Sector Firms

The assumption underlying our interpretation of the results is that access to finance affects firm-level financial constraints. To test this assumption, we use data

---

[18]Fisman, Paravisini, and Vig (2017) use Indian data to show that cultural proximity between loan officers and borrowers, captured by religion and caste, increases access to credit.

TABLE 10

Bank Loans and Access to Credit

Using data from the service-sector surveys, Table 10 provides results from an OLS specification where the dependent variable is log(LOANS) at the firm level. log(GOVERNMENT_BANK_BRANCHES_IN_1991) is the natural logarithm of the number of government-owned bank branches in a district in 1991 + 1. LABOR_POST is the interaction between employer-friendly labor regulations at the state level and a time dummy. The specification controls for district population and for year, state, and industry fixed effects (FE), and standard errors are clustered at the district level. FORMALITY refers to whether a firm is in the informal or formal sector (registered with the government). *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

		FIRM_SIZE		LOCATION		FORMALITY	
Variables	All Firms	FIRMS_WITH_<5_WORKERS	FIRMS_WITH_≥5_WORKERS	RURAL	URBAN	INFORMAL	FORMAL
	1	2	3	4	5	6	7
log(GOVERNMENT_BANK_ BRANCHES_IN_1991)	0.260*	0.132	0.443***	0.094	0.324*	0.145	0.280**
	(0.139)	(0.117)	(0.159)	(0.163)	(0.175)	(0.135)	(0.122)
LABOR_POST	0.704***	0.667**	0.219	0.589*	0.854**	0.591**	0.311
	(0.265)	(0.265)	(0.258)	(0.312)	(0.314)	(0.267)	(0.218)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No. of obs.	40,098	32,502	7,596	18,447	21,651	22,340	17,758

from the NSSO survey of service-sector firms and examine the relationship between access to finance and firm-level borrowing and employment decisions. From Table 10, we observe that for the full sample, firms located in more financially developed districts have significantly higher loans. For instance, from column 1, we note that compared to a district with the mean number of government-owned bank branches (approximately 26 branches, reported in Panel B of Table 2), a firm located in a district with twice the mean number of branches borrows approximately 2% more on average, relative to the mean loan for the full sample reported in Panel B of Table 1. Considering subsamples of the data based on firm characteristics, we observe that larger firms that employ more workers, and firms located in urban areas, have higher loans on average in districts with more bank branches (columns 3 and 5), whereas smaller and rural firms do not borrow more in districts with more branches (columns 2 and 4).

We also find that formal-sector firms (registered enterprises) borrow significantly more from banks in districts with more government bank branches, whereas informal-sector firms do not. For instance, from column 7 of Table 10, we note that compared to a district with the mean number of bank branches, a formal-sector firm located in a district with twice the mean number of branches borrows 2.2% more on average relative to the mean loan for the full sample.

Examining whether the employment decisions of service-sector firms vary based on access to finance, from the results reported in Table 11, we note that for the full sample, firms located in districts with greater access to finance hire more workers on average (column 1). For example, compared to a district with the mean number of branches, a firm located in a district with twice the mean number of branches employs over 4% more workers on average relative to the sample mean employment of 1.8 workers reported in Panel B of Table 1.

Considering subsamples based on firm size, location, and formality, the results suggest that these effects are present for both larger and smaller firms, firms in urban

TABLE 11

Employment and Access to Credit

Using data from the service-sector surveys, Table 11 provides results from an OLS specification where the dependent variable is TOTAL_EMPLOYMENT at the firm level. log(GOVERNMENT_BANK_BRANCHES_IN_1991) is the natural logarithm of the number of government-owned bank branches in a district in 1991 + 1. LABOR_POST is the interaction between employer-friendly labor regulations at the state level and a time dummy. The specification controls for district population and for year, state, and industry fixed effects (FE), and standard errors are clustered at the district level. FORMALITY refers to whether a firm is in the informal or formal sector (registered with the government). *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

	All Firms	FIRM_SIZE		LOCATION		FORMALITY	
		FIRMS_WITH_ <5_WORKERS	FIRMS_WITH_ ≥5_WORKERS	RURAL	URBAN	INFORMAL	FORMAL
Variables	1	2	3	4	5	6	7
log(GOVERNMENT_BANK_ BRANCHES_IN_1991)	0.109** (0.051)	0.023* (0.012)	1.186*** (0.308)	−0.044 (0.058)	0.163*** (0.051)	0.023** (0.011)	0.384*** (0.134)
LABOR_POST	−0.139 (0.107)	−0.021 (0.026)	0.26 (0.684)	−0.219* (0.131)	−0.086 (0.126)	−0.041** (0.021)	−0.219 (0.342)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No. of obs.	296,684	268,558	28,126	114,261	182,423	210,874	85,810

TABLE 12

Firm Productivity and Access to Credit

Using data from the service-sector surveys, Table 12 provides results from an OLS specification where the dependent variable is log(GROSS_VALUE_ADDED_PER_WORKER) at the firm level. log(GOVERNMENT_BANK_BRANCHES_IN_1991) is the natural logarithm of the number of government-owned bank branches in a district in 1991 + 1. LABOR_POST is the interaction between employer-friendly labor regulations at the state level and a time dummy. The specification controls for district population and for year, state, and industry fixed effects (FE), and standard errors are clustered at the district level. FORMALITY refers to whether a firm is in the informal or formal sector (registered with the government). *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

	All Firms	FIRM_SIZE		LOCATION		FORMALITY	
		FIRMS_WITH_ <5_WORKERS	FIRMS_WITH_ ≥5_WORKERS	RURAL	URBAN	INFORMAL	FORMAL
Variables	1	2	3	4	5	6	7
log(GOVERNMENT_BANK_ BRANCHES_IN_1991)	0.087** (0.042)	0.066* (0.038)	0.246*** (0.050)	−0.071 (0.053)	0.130*** (0.035)	0.049 (0.037)	0.160*** (0.041)
LABOR_POST	−0.169** (0.080)	−0.160** (0.069)	0.169 (0.134)	−0.269*** (0.092)	−0.09 (0.080)	−0.203*** (0.067)	0.055 (0.096)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No. of obs.	293,853	265,931	27,922	113,053	180,800	208,961	84,892

but not rural areas, and both formal- and informal-sector firms. However, compared to a district with the mean number of bank branches, an informal firm in a district with twice the mean number of branches hires approximately 1% more workers on average relative to the sample mean, whereas a formal firm hires 15% more workers on average (columns 6 and 7) relative to the sample mean employment of 1.8 workers.

In Table 12, we examine firm-level productivity, measured by annual gross value added per worker, and find that firms located in districts with more government-owned bank branches are more productive on average. Considering subsamples based on firm characteristics, we show that both smaller and larger firms are

TABLE 13

Firm Wages and Access to Credit

Using data from the service-sector surveys, Table 13 provides results from an OLS specification where the dependent variable is log(WAGES_PER_WORKER) at the firm level. log(GOVERNMENT_BANK_BRANCHES_IN_1991) is the natural logarithm of the number of government-owned bank branches in a district in 1991 + 1. LABOR_POST is the interaction between employer-friendly labor regulations at the state level and a time dummy. The specification controls for district population and for year, state, and industry fixed effects (FE), and standard errors are clustered at the district level. FORMALITY refers to whether a firm is in the informal or formal sector (registered with the government). *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

		FIRM_SIZE		LOCATION		FORMALITY	
Variables	All Firms	FIRMS_WITH_<5_WORKERS	FIRMS_WITH_≥5_WORKERS	RURAL	URBAN	INFORMAL	FORMAL
	1	2	3	4	5	6	7
log(GOVERNMENT_BANK_BRANCHES_IN_1991)	0.147**	0.079	0.153***	−0.115*	0.182***	−0.117	0.134***
	(0.073)	(0.069)	(0.048)	(0.066)	(0.066)	(0.087)	(0.034)
LABOR_POST	0.124	0.148	0.039	0.046	0.047	−0.300	−0.013
	(0.118)	(0.117)	(0.107)	(0.120)	(0.123)	(0.203)	(0.080)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No. of obs.	101,300	73,803	27,497	32,875	68,425	17,213	84,087

more productive in districts with more branches (columns 2 and 3), and firms in urban areas are more productive in districts with more bank branches, whereas rural firms are not (columns 4 and 5). The results also suggest that formal firms are more productive in more financially developed districts (column 7), whereas informal-sector firms are not (column 6). For example, from column 7, we note that compared to a district with the mean number of branches (approximately 26 branches, reported in Panel B of Table 2), the gross value added per worker for a formal-sector firm located in a district with twice the number of branches is approximately 1.1% higher relative to the mean average gross value added per worker (approximately $332 at the 2001 exchange rate of 48 INR/USD, reported in Panel B of Table 1).

Lastly, in Table 13, we find that service-sector firms pay higher wages per worker on average in more financially developed districts, and this effect is concentrated among larger firms, firms located in urban areas, and formal-sector firms. For example, from column 7 of Table 13, we note that compared to a district with the mean number of government-owned bank branches (reported in Panel B of Table 2), a formal-sector firm located in a district with twice the mean number of branches pays 1.2% higher wages per worker on average, relative to the mean wages per worker reported in Panel B of Table 1.

The firm-level results suggest that firms borrow more in districts with more government-owned bank branches. Greater access to finance is associated with an increase in employment, wages, and worker productivity at the firm level. The results also suggest that formal-sector firms, large firms, and firms located in urban areas benefit more on average from increased financial access relative to informal, rural, and small firms.

VI.   Concluding Remarks

Using survey data on over 1 million individuals, we show that access to finance is associated with the decision to be a micro-entrepreneur in an emerging

market. In a departure from the extant literature on the topic, we observe that greater access to finance is associated with a decrease in the likelihood of being a self-employed micro-entrepreneur who does not employ any workers. Instead, individuals in more financially developed districts are more likely to be employed formally for wages.

The literature has focused on the benefits of easing financial constraints for entrepreneurs, although most studies find that micro-credit does not facilitate entrepreneurship. We find evidence suggesting that micro-entrepreneurship may be a response to the absence of employment opportunities, particularly in emerging markets, where even established firms are likely to be financially constrained. Our results also suggest that targeted credit should focus on the smaller set of enterprises that are productive enough to employ workers. Lastly, our results highlight a mechanism by which financial development facilitates economic growth: Increased access to finance eases financial constraints for more productive firms and facilitates a shift from micro-entrepreneurship in unproductive endeavors to better-paid jobs in productive firms.

Appendix. Employment and Unemployment and Service-Sector Firm Surveys

A.1.   Employment and Unemployment Surveys

The employment surveys have been conducted quinquennially from 1972 and measure the extent of employment and unemployment disaggregated by household and population characteristics. They cover the entire nation except for politically sensitive or inaccessible districts in the states of Jammu and Kashmir (border of Pakistan), Nagaland (northeast), and the Andaman and Nicobar Islands (located in the Bay of Bengal). Villages that were uninhabited in the 1991 census were also left out in 1999. The survey uses the interview method of data collection from a sample of randomly selected households. Members of the household are drawn from the population in a 2-stage stratified sample design. In the first stage, villages are selected, and individual households within these villages are sampled in the second stage.

Given the timing of our data on banking and credit activities, we use rounds 55 and 61 of the employment surveys conducted in 1999 and 2004, respectively, yielding a repeated cross-section of individuals. The 55th round of the employment and unemployment surveys in 1999 was the first nationwide survey of the informal sector, which is described by the NSSO as follows: "The informal sector may be broadly characterized as consisting of units engaged in the production of goods and services with the primary objective of generating employment and incomes to the persons concerned. These units typically operate at a low level of organization, with little or no division between labor and capital as factors of production and on a small scale" (NSSO (2000)). Informal firms are identified by the government as all enterprises, excluding those that are registered under the Factories Act of 1948 or the Bidi and Cigar Workers Act of 1966 and those run by the government or government-owned firms (NSSO (2000)).

The NSSO defines a household enterprise in the informal sector as one run by 1 or more members of a household or jointly by 2 or more households, including all proprietary and partnership enterprises. We refer to these household firms as *informal micro-enterprises* in our study. Nonhousehold enterprises are typically in the formal

sector and are owned by governments, government-owned firms, private corporations, cooperatives, and trusts (NSSO (2000)). Household enterprises are further defined as "units engaged in the production of goods or services, which are not constituted as separate legal entities independently of the households or household members that own them, and for which no complete sets of accounts are available which would permit a clear distinction of the production activities of the enterprises from the other activities of their owners" (NSSO (2000)).

We use data on the work status and activity pursued by households during the preceding year. Any activity resulting in the production of goods and services that add value to the national product is considered an economic activity (NSSO (2000)). Surveyed households work in a range of industries, including agriculture and related activities; mining and quarrying; manufacturing; construction; trading and repair services; hotels and restaurants; transport; storage and communications; financial intermediation; real estate; renting and business activities; education; health and social work; and other community, social, and personal service sectors. Approximately 68% of individuals work in primary-sector occupations, including agriculture and related activities, mining, quarrying, and so forth; approximately 5% are in manufacturing; and approximately 26% are in the service sector.

We restrict our sample to individuals between the ages of 10 and 70 (the lower bound of 10 allows for child labor if prevalent). The average age of the labor force is 27, with an almost even split between men and women. In terms of geographic location, workers are identified by district, and the data further note whether the districts are located in urban or rural areas.

A.2. Service-Sector Surveys

We use data from 2 rounds of the survey of service-sector firms, round 57 (2001–2002) and round 63 (2006–2007). The service-sector surveys cover a broad range of service-sector activities, including hotels and restaurants; transport, storage, and communications; real estate, renting, and business activities; education; health and social work; and other community, social, and personal activities. The 63rd round includes financial intermediation as well, but because these services are not included in the 57th round, we exclude them from the analysis. Also excluded from both rounds of surveys are the wholesale and retail sector; public administration and defense; production activities of private households; extraterritorial organizations; and government-owned firms. The geographic coverage is for the whole nation and covers the same regions as the employment and unemployment surveys described in the previous section. The surveys use a 2-stage stratified sampling design. In the first stage, villages in rural areas and localities in urban areas are sampled, and enterprises are sampled in the second stage (NSSO (2003)).

References

Adelino, M.; A. Schoar; and F. Severino. "House Prices, Collateral and Self-Employment." *Journal of Financial Economics*, 117 (2015), 288–306.

Banerjee, A. V.; E. Duflo; R. Glennerster; and C. Kinnan. "The Miracle of Microfinance? Evidence from a Randomized Evaluation." *American Economic Journal: Applied Economics*, 7 (2015), 22–53.

Beck, T.; A. Demirguc-Kunt; and V. Maksimovic. "Bank Competition and Access to Finance: International Evidence." *Journal of Money, Credit, and Banking*, 36 (2004), 627–648.

Bekaert, G.; C. R. Harvey; and C. Lundblad. "Does Financial Liberalization Spur Growth?" *Journal of Financial Economics*, 77 (2005), 3–55.

Benmelech, E.; N. K. Bergman; and A. Seru. "Financing Labor." NBER Working Paper No. 17144 (2015).

Bertrand, M.; A. Schoar; and D. Thesmar. "Banking Deregulation and Industry Structure: Evidence from the French Banking Reforms of 1985." *Journal of Finance*, 62 (2007), 597–628.

Besley, T., and R. Burgess. "Can Labor Regulation Hinder Economic Performance? Evidence from India." *Quarterly Journal of Economics*, 119 (2004), 91–134.

Black, S. E., and P. E. Strahan. "Entrepreneurship and Bank Credit Availability," *Journal of Finance*, 576 (2002), 2807–2833.

Bruhn, M., and I. Love. "The Real Impact of Improved Access to Finance: Evidence from Mexico." *Journal of Finance*, 69 (2014), 1347–1376.

Burgess, R., and R. Pande. "Do Rural Banks Matter? Evidence from the Indian Social Banking Experience." *American Economic Review*, 95 (2005), 780–795.

Cetorelli, N., and M. Gambera. "Banking Market Structure, Financial Dependence and Growth: International Evidence from Industry Data." *Journal of Finance*, 56 (2001), 617–648.

Crépon, B.; F. Devoto; E. Duflo; and W. Parienté. "Impact of Microcredit in Rural Areas of Morocco: Evidence from a Randomized Evaluation." *American Economic Journal: Applied Economics*, 7 (2015), 123–150.

de Mel, S.; D. McKenzie; and C. Woodruff. "The Demand for, and Consequences of, Formalization among Informal Firms in Sri Lanka." *American Economic Journal: Applied Economics*, 5 (2013), 122–150.

De Soto, H. *The Other Path: The Invisible Revolution in the Third World*. New York, NY: Harper and Row (1989).

De Soto, H. *The Mystery of Capital: Why Capitalism Triumphs in the West and Fails Everywhere Else*. New York, NY: Basic Books (2000).

Fisman, R., and I. Love. "Financial Development and Intersectoral Allocation: A New Approach." *Journal of Finance*, 59 (2004), 2785–2807.

Fisman, R.; D. Paravisini; and V. Vig. "Cultural Proximity and Loan Outcomes." *American Economic Review*, 107 (2017), 457–492.

Guiso, L.; P. Sapienza; and L. Zingales. "Does Local Financial Development Matter?" *Quarterly Journal of Economics*, 119 (2004), 929–969.

Gupta, N., and K. Yuan. "On the Growth Effect of Stock Market Liberalizations." *Review of Financial Studies*, 22 (2009), 4715–4752.

International Labour Organisation. *India Labour Market Update*. Geneva, Switzerland: International Labour Organisation Country Office for India (2016).

Jayachandran, S. "Microentrepreneurship in Developing Countries." Working Paper, Northwestern University (2020).

Jayaratne, J., and P. E. Strahan. "The Finance-Growth Nexus: Evidence from Bank Branch Deregulation." *Quarterly Journal of Economics*, 111 (1996), 639–670.

Klapper, L.; L. Laeven; and R. Rajan. "Entry Regulation as a Barrier to Entrepreneurship." *Journal of Financial Economics*, 82 (2006), 591–629.

Kochar, A. "The Distributive Consequences of Social Banking: A Microempirical Analysis of the Indian Experience." *Economic Development and Cultural Change*, 59 (2011), 251–280.

La Porta, R., and A. Shleifer. "The Unofficial Economy and Economic Development." *Brookings Papers on Economic Activity*, 47 (2008), 123–135.

La Porta, R., and A. Shleifer. "Informality and Development." *Journal of Economic Perspectives*, 28 (2014), 109–126.

Martin, L. A.; S. Nataraj; and A. E. Harrison. "In with the Big, Out with the Small: Removing Small-Scale Reservations in India." *American Economic Review*, 107 (2017), 354–386.

Meager, R. "Understanding the Average Impact of Microcredit Expansions: A Bayesian Hierarchical Analysis of Seven Randomized Experiments." *American Economic Journal: Applied Economics*, 11 (2019), 57–91.

National Sample Survey Organisation. *Non-Agricultural Enterprises in the Informal Sector in India 1999–2000*. Delhi, India: National Sample Survey Organisation, Ministry of Statistics and Programme Implementation (2000).

National Sample Survey Organisation. *Unorganised Service Sector in India 2001–02*. Delhi, India: National Sample Survey Organisation, Ministry of Statistics and Programme Implementation (2003).

Panagariya, A. "Bank Branch Expansion and Poverty Reduction: A Comment." Working Paper, Columbia University (2006).

Panagariya, A. *India: The Emerging Giant*. Oxford, UK: Oxford University Press (2008).

Parker, S. *The Economics of Entrepreneurship*. Cambridge, UK: Cambridge University Press (2009).

Petersen, M. A., and R. G. Rajan. "The Effect of Credit Market Competition on Lending Relationships." *Quarterly Journal of Economics*, 110 (1995), 407–443.

Rajan, R. G., and L. Zingales. "Financial Dependence and Growth." *American Economic Review*, 88 (1998), 559–586.

Schmalz, M. C.; D. A. Sraer; and D. Thesmar. "Housing Collateral and Entrepreneurship." *Journal of Finance*, 72 (2017), 99–132.

Schoar, A. "The Divide between Subsistence and Transformational Entrepreneurship." In *Innovation Policy and the Economy*, 10 (2010), 57–81.

World Bank. *The World Development Indicators Database*. Available at https://datatopics.worldbank.org/world-development-indicators/ (2017).