WORKING PAPER

Finance and Demand for Skill: Evidence from Uganda[1]

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Abstract

We explore the empirical interaction between firm growth, financing constraints and job creation. Using a novel small business survey from Uganda, we find that the extent to which small businesses expand skilled employment as their sales and profits increase depends significantly on access to external funding, while the hiring of casual and family workers does not. The results are robust to the inclusion of various firm level controls, region and sector fixed effects. We address reverse causality concerns by providing empirical evidence using planned hiring regression specifications. Our results are an indication for the importance of access to finance for skilled job creation in developing countries.

Keywords: Financial Access, Trained and Experienced Employment, Uganda.

JEL Classification Codes: O15, 016, 055.

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1 Introduction

Creating stable employment opportunities is a primary concern for policymakers in many developing economies. Most developing countries in Africa have grown rapidly over the past decade, even as the Global Recession has gripped many European countries and the United States. Since most of its countries have become independent around 1960, Sub-Saharan Africa has experienced the best decade of growth between 2000-2012, where GDP grew more than 4.5% annually on average. However, this growth has not translated into similarly high growth rates in job creation. In many countries in Africa, the source of growth has primarily relied upon oil, gas and mineral extraction. Even though the number of industrial sector jobs is projected to increase 55 percent over the next 10 years, the growth comes from a small base and will not come close to absorbing the millions of new workers entering the labor force each year (Brooks et al., 2014). What is even more challenging is that many educated workers also fail to be absorbed into the labor market. The lack of employment opportunities for highly skilled and trained workers raises the question of whether there is a shortage of firm-level demand for skill in African economies or there are other constraints holding back their inclusion in the labor market.

The vast literature on finance and growth has shown the importance of access to external funding for firm-level investment decisions, economic development and growth (see Levine, 2005, for an overview). Access to credit remains difficult for firms in Sub-Saharan Africa and continues to top the policy agendas concerning African economic development. In this context, while several papers have documented the relationship between financing constraints and capital investment and growth, there are relatively few papers gauging the importance of financing constraints for hiring decisions, especially of skilled workers. The aim of this paper is to investigate the role of financial constraints in firms' skilled labor demand in developing countries. Specifically, using a small business survey from Uganda, we test whether the likelihood of skilled job creation at profitable businesses rises with access to external finance.

Economic theory predicts a critical role of financing constraints in hiring decisions, similar to the role that they have for capital investment (Benmelech et al., 2011). First, timing differences between when wages are paid and when revenues are received might require the need for working capital, and the lack of it can constrain labor demand. This results in a stronger financing constraint in the case of hiring skilled workers, because skilled employees often get paid a skill-premium and hence receive higher wages and the expected contribution of skilled workers for future revenues might be relatively more intangible than that of unskilled labor - raising firm-level uncertainty. Second, if hiring of permanent staff implies fixed costs (including training or firing costs), this might require additional funding, again an effect which is expected to be stronger for skilled and experienced workers (Oi, 1962). Third, job creation might be restricted by financing constraints if capital and labor are complementary factors in the production process. Finally, the decision whether to hire permanent or fixed-term employees (Caggese and Cuñat, 2008) is likely to be more pronounced for hiring of skilled and experienced workers, where wages are higher and outside options are more for the workers. We expect all of these channels to be

stronger at profitable firms on growth paths, where demand for skilled and experienced workers should be higher.

We empirically explore the interactions between financing constraints, firm growth - measured in sales (as well as in profits) - and job creation. Using a comprehensive small business survey data collected in 2013 from a nationwide representative sample of 1,839 Ugandan companies, we test the extent to which access to external bank funding conditions the relationship between firm growth and employment creation. While this relationship is clearly an endogenous one, several features of our data and the estimation methodology allow us to isolate the effect of firms' financing constraints on firms' hiring decisions. First, following Popov and Udell (2012), Brown, Ongena, Popov and Yein (2011), Cox and Jappelli (1993), and Duca and Rosenthal (1993), we isolate demand from supply-side financial constraints by distinguishing between firms that (i) applied for and received a loan, (ii) were rejected or discouraged from applying for a loan, and (iii) state that they did not need a loan. Second, our survey also allows us to distinguish between different types of employee categories at a given establishment such as trained and experienced, as well as permanent, casual and family/friends. While theory predicts a constraining effect of lack of access to finance on the hiring of skilled and trained workers, it does not do so for casual workers or family workers and we can exploit this difference in our hypothesis testing. Third, we can differentiate between growing and non-growing firms, which will determine the demand for labor. Finally, in robustness tests we relate today's financing constraints to future hiring plans, thus controlling effectively for reverse causation.

While we use data for one specific Sub-Saharan African country, Uganda resembles in its economic and demographic structure many other developing economies. Uganda is a landlocked low-income country in Africa, which has experienced high GDP growth over the recent years, reaching 4.8% in 2013 and even higher rates were projected for 2014. However, the vast majority of Uganda's labor force remains employed in relatively low productivity sectors, such as agriculture (World Bank, 2013). Ugandans with higher education are more likely to be unemployed and to under-utilize their skill sets; many educated workers are employed in a job ill-suited to their skills or emigrate to find appropriate employment (EDPRD Uganda, 2014). Uganda has the world's youngest population with over 78% of its population below the age of 30; as the population continues to grow at a rate of 3.2% annually, the country has one of the highest youth unemployment rates in Sub-Saharan Africa (The State of Uganda Population Report, 2013). Many of the new entrants are highly educated as a result of past policies to encourage school enrolment and completing further education. There is thus a strong pool of talent to be utilized and the binding constraints for job creation remain on the firm side (EDPRD Uganda, 2014). The challenge for Ugandan policy makers is therefore to oversee the labor force's effective transition from a predominantly low productivity and agriculture based economy to a high-human capital intensive - manufacturing and service sector based - economy.

Our empirical analysis shows that growing and profitable small businesses create more jobs for trained and experienced workers - which we interpret as demand for skill - if they have access to external finance. Specif-

ically, growing and profitable firms only hire experienced and trained employees if they are not rejected or discouraged from applying for external finance. In our regression analysis we do not find such a significant relationship in the case of hiring casual employees or family and friends, suggesting that - in line with theory - financing constraints are more likely to bind in the context of employment contracts associated with experienced and trained employees with high human capital intensity. These results are robust to a large set of firm level controls as well as region and sector fixed effects. Our results suggest that financially constrained firms save their excess resources instead of investing in more sophisticated and skilled labor-force. These results are in line with prior and well established conclusions emphasized by Kaplan and Zingales (1997), who document that firms on growth path are more likely to invest in physical capital when provided with access to finance and Almeida, Campello and Weisbach (2004) who show that constrained firms have a positive cash flow sensitivity of investment. Our findings are robust to alternative classifications of financial access. Our results also hold when we regress firms' future hiring intentions (i.e. planned hiring) on firm performance and financial access - after controlling for recent hiring trends at the firm. The results from this latter regression support the argument that our benchmark results are not likely to be driven by a reverse causation bias.

The findings from our research have important policy implications as they underline the importance of well developed financial systems for job creation. As policy makers grapple with the challenge of creating formal and permanent jobs in a still growing society, financial sector policies can be critical. The inability for constrained firms to hire quality labor even though they are performing well is an issue for economic development and highlights the misallocation of high capital labor. Our results also show that beyond helping firms grow faster, more efficient financial systems can also have an impact on poverty alleviation by helping urgently needed jobs.

Our paper is related to several strands of literature. First, we add to the literature on financing constraints in developing economies. These include a series of papers that investigate the effects of firm financing constraints on firm growth (Ayyagari et al., 2008; Beck et al., 2005; Beck et al., 2008) as well as firm sales and performance (Banerjee and Duflo, 2014; Zia, 2008; De Mel et al., 2008). Second, we add to a smaller and more recent literature on the relationship between financing constraints and job creation. On the aggregate level, Pagano and Pica (2012) show a positive and significant relationship between financial development and job creation in developing countries. Giné and Townsend (2004) show for Thailand that financial liberalization has contributed to migration of subsistence agricultural workers into urban salaried jobs. For the U.S., Beck, Levine and Levkov (2010) and Benmelech, Bergman and Seru (2011) show that branch deregulation and consequent financial liberalization led to decreases in unemployment and increased labor market participation especially among low-skilled workers. Chodorow-Reich (2014) shows that firms with a pre-crisis relationships with less healthy lenders had higher reductions in employment following the Lehman bankruptcy compared to pre-crisis clients of healthier lenders. On a similar note, Cingano et al. (2016) show that bank exposure to the credit shock predicts firm investment rates, resulting in lower levels of firm employment. Campello, Graham and Harvey (2010) survey 1,050 CFOs in the U.S, Europe and Asia and find that constrained firms planned deeper cuts in

tech spending, capital and most relevantly, employment. On a similar note, Brown and Matsa (2016) show that firm financial distress results in fewer and lower quality job applicants.

Several papers gauge the differential effect of financing constraints on employment. Benito and Hernando (2007) show for a sample of Spanish firms from 1985-2000 that higher cash flow is associated with relatively more temporary employment while higher levels of financial pressure is associated with relatively lower levels of temporary employment. Caggese and Cuñat (2008) show for a sample of Italian firms that financing constraints bias enterprises towards fixed-term rather than permanent contracts. Popov (2015) investigates the determinants of firm-on-the-job training and finds that credit constrained firms have a 38% lower probability of investing in on-the-job training. Our paper contributes to this literature by gauging the role of financing constraints in the relationship between firm growth and skilled job creation in a low-income country

The remainder of the paper is structured as follows. Section 2 elaborates on the composition of our data and section 3 on the benchmark econometric model. Section 4 presents the main empirical findings. Section 5 presents a series of robustness checks and tackles the endogeneity concerns with respect to financial access and firm performance. Lastly, section 6 concludes.

2 Data

Our data come from a small business survey conducted in 2013 in Uganda. Together with Financial Sector Deepening Trust Uganda (FSD-U), we designed the survey instrument that allowed us to collect this business survey data. The project was funded by the Department for International Development (DFID) and Financial Sector Deepening Trust Uganda (FSD-U). The survey was administered by an independent consulting company and in total data from 1839 small and medium sized businesses were collected. The majority of the survey respondents were either owners of the firm or higher level managers that had adequate access to firm financial and operational information.[1] The survey data provide information on firm financials, operations and most importantly, detailed answers on employment characteristics. For the purpose of this study, we exclude all financial firms from our analysis. After this refinement, we are left with 1702 firms. They come from all five regions of Uganda, 79 districts as well as 16 sectors. The businesses are sampled from sectors such as manufacturing, construction, agricultural, forestry, and utilities. Firms were randomly selected to take part in the survey and compliance was optional. Table 1 describes the composition of our data-set with respect to location, region and sector classifications. In unreported tabulations, we find very little sectoral level differences when it comes to financial constraints and employment categories and we do not observe any pattern for dominant financial constraint status or employment behavior specific to a particular industry.

[Insert here Table 1]

[1] To be exact, 1,256 of the respondents were owners and over 450 were identified as managers.

2.1 Labor and Employment Variables

The main focus of this study is to understand the determinants of firms' employment composition and especially the demand for skilled labor. To serve this purpose, our survey categorizes five different types of employment. Specifically, the categories that we identify are (i) *Trained*, (ii) *Experienced*, (iii) *Permanent*, (iv) *Casual* and (v) *Family/Friends*. *Trained* employees are those who have a formal training appropriate for their particular occupation, while *Experienced* employees are those who have work experience for at least two consecutive years in a particular occupation; we refer to these two categories as skilled employees. *Permanent* employees are those who have worked at the interviewed firm on a daily basis for at least 3 consecutive months, while *Casual* employees are part time workers and *Family* employees are either family, relatives or friends. Skilled employees are expected to be more costly for the firm. In order to draw a clear picture to this end, the survey asks respondents to provide the average monthly salary that they pay to each category of employees. The survey responses show that the average salary for skilled employee is almost double than that of other employees; 225,700 Ugandan Shilling for trained and experienced compared to 135,400 Ugandan shillings for casual and family employees. When comparing within the same firm, we find an even starker difference, with the average wages for trained and experienced workers being 312% higher than for casual and family workers. Therefore, we conjecture that the hiring rates and the demand for skilled workers is adversely affected by firms' limited financial access compared to the overall demand for employees.

The survey also asks the respondents if the labor demand for the categories (i)-(v) above increased, decreased or stayed the same over the last 12 months. This means we have the information whether the firm hired or fired employees the past one year and if so, how many. This allows us to investigate the dynamics governing the composition of employment both along extensive and intensive margins. We would like to highlight that the employee categories (i)-(v) are not fully distinct from one another and there are clear overlaps among certain variables. For example, there might be certain cases where a firm employee is a permanent employee as well as a family member.

We present summary statistics of the key variables in Table 2. We observe that only 25% of our firms hired over the previous 12 months. Specifically, we observe 149 firms that hire permanent employees, 65 that hire casual employees, 35 that hire family employees, 86 that hire trained employees and 87 that hire experienced employees.

2.2 Firm Performance, Financing Constraints and Control Variables

In our regression analysis, firm performance is proxied by either sales or profits. The survey asks each firm its sales and profits from the previous month, where profits refer to the total income after paying all expenses including wages for employees, taxes, rents, interest expenditures etc., but not including any income paid to the owner. In addition, the survey asks whether sales and profits had increased or decreased when compared to the

same month of the last year. With this recall information, we are tracking the dynamics in firm performance over time. Specifically, variables $DSales$ and $DProfits$ take the value of 1 if the performance variable increased, 0 if there was no change and -1 if there was a decrease in sales or profits compared to the performance of the firm a year ago.[2]

In order to measure the degree of firms' financing constraints, we utilize information on whether a firm has outstanding loans and whether the firm has applied for a loan as well as the reasons for not having applied for a loan. This information allows us to identify firms who were rejected or discouraged from applying for loans. It also allows us to distinguish between firms that have not applied for a loan because they were discouraged and firms that have not applied because they have no demand. There are many firms in our sample who never applied for a loan, however, would need a commercial loan for their operations. In line with earlier and established research, we split the sample based on categories of financial access as (i) *Applied and Got a Loan* (ii) *Cannot Get a Loan* and (iii) *Do not Need a Loan.* Group (i) consists of firms who applied for a loan and got accepted to receive one.[3] Group (ii) include firms that applied for a loan, but got rejected as well as firms that did not apply for a loan, but state in the survey that they need a loan for their operations. Group (iii) includes all the firms who have not applied for a loan, because they do not need a loan for their business. Including this third group allows us to disentangle between demand and supply-side constraints. The data in Table 2 show that 62.5% of firms were either rejected or discouraged from applying, while 10.5% received a loan.

We include a set of additional control variables in our econometric analysis. As a standard control variable to proxy size, we include the log of invested capital. $InvestedCapital$ measures the investments made by the firm over the past 12 months. These purchases include machinery, equipment (including computers and software), buildings, land, training/human capital for the employees and other investment.[4] We include $BusinessAge$ to measure firm experience. As firms with higher R&D expenses require more formal and high skilled employees, we add a dummy variable to our benchmark regression equation, which will be equal to one if the firm introduced any innovative product, service or process over the past two years. Lastly, we include the education of the owner as a control variable. It might be that owners who have a higher education truly understand the benefits derived from skilled employment. Because of this, they might have a large influence on the employment composition of the firm. Therefore, we include three dummy variables. The owner is regarded as having a $LowEducation$ if he has at most primary school education. We classify $MediumEducation$ if the owner has a secondary degree education and $HighEducation$ if they have a tertiary, university (undergraduate),

[2]While the survey also asked respondents to quantify the realized profits and sales, very few of them were able to provide this information. Survey questions in developing countries are typically phrased in such a manner so that it is most conceivable for the respondents. For example, in many cases firms are only able report their monthly revenues. This is mainly because they do not have any systematic book keeping or reliable estimates for annual performance. Therefore, our questions are also phrased in monthly terms.

[3]For consistency, we drop 11 observations from the sample where firms admitted to having a loan, but have never applied for a loan.

[4]Other investments firms made included purchases of furniture, agriculture related investments such as livestock, rental expenditures, nets, watering pipes, boats and all other kinds of miscellaneous items. While we have information on the total *CapitalStock* of firms, only a small proportion of the firms in the sample disclosed this information.

postgraduate (Masters, Doctors or PhD) degree education. We maintain the education groups *Other* as the base category in our analysis. The Appendix provides more information on the additional control variables included in our analysis.

[Insert here Table 2]

Panel C in Table 2 presents two-sample t-tests for equal means. The population of firms is split between firms who *Applied and Got a Loan* and firms who *Cannot Get a Loan*. The results show that the firms are qualitatively similar when it comes to performance, invested capital, age and education. However, firms who are not financially constrained were significantly more likely to introduce a new innovative product, service or process. Results remain similar when we compare firms who *Applied and Got a Loan* against all others. In addition, since we observe low amounts of overall hiring in our sample, one might be concerned that our findings hinge on a very small subset of firms that would therefore drive our results. Two sample t-tests among firms who hire skilled employees remain the same. Unconstrained firms who hire skilled employees and constrained firms who hire skilled employees are qualitatively similar when it comes to performance, invested capital, age and education. We do not report these results for brevity.

Table 3 presents the correlations between key variables to be included in the regression analysis. The measures of firm-performance, "changes in profits" and "changes in sales" relative to the year before (*DProfit* and *DSales*), are positively correlated with hiring trained, experienced and permanent employees, but not with hiring casual and family employees. As expected, higher firm size and financial access is correlated with all five categories of employee types.

[Insert here Table 3]

3 Model and Methodology

To explore the effects of performance and financial access on dynamics of employment composition, we will estimate the following empirical specification:

$$ChangeinEmployee_{ik} = \alpha_0 + \beta_1 PerformanceGroup_i * AppliedandGotLoan_i + \beta_2 PerformanceGroup_i * CannotGetaLoan_i + \lambda X_i + \epsilon_i. \quad (1)$$

The dependent variable, *ChangeinEmployee*, is based on the five different categories of employment that we consider; namely, trained, experienced, permanent, casual and family. The firm is indexed by i and the type of employment is denoted via the subscript k. We vary these variables by examining the hiring decisions at employee type k. We will use both extensive and intensive margins of hiring decisions. First, we will use a dummy variable equalling to 1 if the firm had hired (variable *DHire*) an employee from a particular category of

k in the past 12 months, thus the *extensive* margin demand for employment. In a second step, we will use the actual number of employees hired, which measures the *intensive* hiring margin.

On the right hand side of our regressions, we proxy the performance of the firm based on two measures: *Changes in Sales* and *Changes in Profits*. $PerformanceGroup$ variables are categorical variables that indicate whether sales or profits increased or decreased, as already discussed above. Specifically, variables $DSales$ and $DProfits$ take the value of 1 if the performance variable increased, 0 if there was no change and -1 if there was a decrease in sales or profits relative to the performance of the firm a year ago.

The baseline regressions are estimated via standard OLS (Ordinary Least Squares) for the extensive margin and via Tobit model for the intensive margin. We use Tobit for our intensive margin regression analysis in order to account for left censoring in the dependent variable. We use OLS instead of probit or logit models for the extensive margin regressions, as we would otherwise lose sectoral and locational cells where either all or (more likely) no firm hires employees of a specific type. We use Tobit estimations for the regressions with actual hiring as the dependent variable, given their left-censored nature, as we need to account for both the probability of being above the limit (in this case zero), as well as the continuous values of hiring above zero.

The main interest of all our regressions will be to evaluate the significance of the interaction terms between financial access and performance. To test formally whether access to finance interacts with measures of performance in determining the changes in employment composition, we will conduct Wald tests as follows. $H_0 = \beta_1 PerformanceGroup_i * AppliedandGotLoan_i = \beta_2 PerformanceGroup_i * CannotGetaLoan_i = 0$

4 Empirical Results

The results in Table 4 show that only growing firms with access to external funding translate this growth into hiring of skilled employees. In our regressions, the main coefficients of interest are the interaction terms, which we present at the top rows of each table. Firms who experience increases in performance (via profit or sales) and at the same time also have a bank loan, hire more trained and experienced employees when compared to their well-performing but constrained counterparts, who don't have access to external finance. The Wald tests of the differences of the coefficients show that this difference is significant. Also, both constrained and unconstrained firms are more likely to hire skilled employees than firms who do not demand external funding. The economic effects of our regressions are also significant and sizable. The first column in table 4 shows that among firms with rising profits, firms with access to loans are 6.5 percentage points more likely to hire trained and 7 percentage points more likely to hire experienced employees than financially constrained firms. Given that the average likelihood of hiring trained or experienced workers is 5%, this is a large economic effect. We find similar large effects among firms with rising sales as well as for firms whose financing needs are satisfied and those that are financially constrained.

Turning to the control variables in our regressions, we find that larger firms, measured by invested capital, are more likely to hire trained and experienced employees. In addition, firms that introduced a new innovative product, are also more likely to hire skilled labor. Our results do not find any evidence for the effects of firm age or education of the business owner on the propensity to hire more skilled employees. What is interesting to note is that performance alone does not affect the likelihood of hiring skilled employees. The performance variables are both insignificant and their economic effects are minimal. Our results indicate that performance mainly affects the likelihood of firm level skilled hiring via the interaction with financial access.

[Insert here Table 4]

The results in Table 5 show that financing constraints matter not only for the extensive but also intensive margin. We now incorporate the realized values for hiring skilled employees. Specifically, we run the same regression structure as in Table 4, except we use realized hiring numbers and we estimate the model via the Tobit censored regression model. The results in Table 5 are consistent with our previous findings on the extensive margin. For experienced employees, our variables of interest remain significant and the null hypothesis (interactions are equal to one another) is rejected under both specifications. The results for trained employees are less significant, however, the signs and magnitudes of the coefficients are in line with our earlier results. In terms of economic effect, firms with a positive performance and access to external funding employ between 0.3-3.5 more skilled employees than firms with positive performance and financing constraints.

[Insert here Table 5]

The results in Table 6 show that access to external funding is not relevant for hiring decisions of less skilled workers, including casual and family workers. Here, we test whether financing constraints could also be relevant for hiring decisions of permanent or casual employees or family members. While theory does not make a clear prediction on the hiring of permanent employees, as they could be either skilled or not-skilled, theory does not predict any impact of access to external funding for the hiring decisions of casual workers or family members. Nearly all our coefficients of interest in Table 6 are insignificant, suggesting that growing firms with greater levels of financial access do not employ more casual employees or family members These results remain the same for various econometric specifications. We note that in some cases financially constrained firms are more likely to hire *other* forms of labor. This might imply a substitution effect on employment. These results are intuitive, but we cannot establish this relationship for all our econometric specifications.

To further test any potential substitution effects, we exploit a question that asks the respondents whether they had made any "training or human capital investments" for their employees in the past year. With this information, we run the same regressions as before, but replace the dependent variable with a dummy variable *DEmployee Training*. We present the results in columns 7 and 8. Our results are similar to earlier findings. Firms with higher performance and greater financial access are more likely to train their employees or invest

in human capital. These results are in line with findings by Popov (2015) and demonstrate that the firms in our sample do not substitute the lack of skilled employment with employee training or similar forms of human capital investment. The results from all these empirical tests indicate that alleviating financial constraints has a clear effect on relatively high-skill labor as opposed to the lower skilled and informal employment. As mentioned earlier, casual and family employees are often less costly and they often add proportionally less to firm value than high-skill employees. Our analysis shows that informal employment demand is often met on a firm level and therefore changes in performance and financial access have negligible effects on their composition.

[Insert here Table 6]

In summary, growing firms with demand for external finance only hire skilled and trained employees if their financing needs are satisfied, while there appears to be no such constraints for the hiring of casual workers and family members. This result is in line with Kaplan and Zingales (1997) analysis on "the positive association between cash-flow sensitivity of investment and financial access" - providing indicative evidence that in developing countries human capital investment's cash-flow sensitivity behaves in a way similar to physical capital investment's cash-flow sensitivity.

5 Robustness Tests

In this section, we present a series of robustness checks for our main findings. First, we address reverse causality concerns in the relationship between financial access and firm performance. In addition, we conduct a robustness test where we alter our financial access sub-groups. Finally, we use alternative econometric specifications to test the sensitivity of our results to the model specification.

5.1 Addressing Reverse Causality

Reverse causality is a concern for our model, as it is likely that changes in employment quality could have an effect on firms' probability of financing as well as firm performance. It may be the case that changes in employee composition drive access to finance. The higher the quantity of skilled employees, the larger the firm, the greater legitimacy in the loan application process. Because of this reverse causality concern, our model might be improperly identified. To address this possible bias, we analyze the effects of firm performance and financial access on *Planned Hiring*. For this, we utilize a survey question on how many trained, experienced, permanent and casual employees firms plan to hire over the upcoming 12 months. We run the same regressions as before, except that our dependent variable is now $PlannedHiring$. Unlike contemporaneous hiring, which might affect access to external funding (by, e.g., sending positive signals to lender), it is less likely that future hiring plans influence today's access to external finance.[5]

[5]We acknowledge that we cannot fully eliminate this concern. It could be argued that because firms were planning to steadily increase employment over the next few years, this is the reason they applied for the loan in the first place. This might happen in order to cover for the gradual increases in costs.

We run the same models as before with planned hiring of firms as a dependent variable. The *DPlanned Hiring* variable measures the hiring intentions of the firm. The variable takes the value of one if the firm intends to hire one or more employees in the future. In the survey approximately 300 firms gave actual values to these questions of which only around a 100 admitted to not planning to hire anyone in the future. All other 1500 observations were labeled as missing values. In order to have enough observations to conduct this analysis, we convert all missing values to zero. We understand that this is a strong assumption; and therefore, we also perform alternative conversions to assure that our findings are not solely a result of this conversion. Specifically, we only consider missing values that were labeled as "do not know" as zero, thus only converting approximately 60 missing observations. This is a more conservative conversion as the answer "do not know" can reasonably be interpreted as a zero value. With this specification, our results are very much in line with our prior findings.[6]

Table 7 shows a positive and significant relationship between the interaction of profit/sales growth and access to external funding, on the one hand, and future hiring of trained or experienced employees, on the other hand. Columns (1)-(4) report the result that converts all the missing values to zero and columns (5)-(8) with the more conservative conversion. Overall, the results are very similar to our prior findings. Firms with greater financial access and positive performance *plan* to hire more skilled employees. Our Wald tests are significant across all specifications and the magnitude of all coefficients are very similar to those found in earlier regressions. Most notably, our first interaction $PerformanceIncrease * AppliedandGotaLoan$ remains strongly significant across nearly all specifications. These results suggest that greater financial access encourage well-performing firms to plan on hiring more high skilled employees. In economic terms, growing firms with access to external funding are between 8 and 42 percentage points more likely to plan to hire skilled employees than growing firms with financing constraints. These results suggest that greater financial access encourage firms to plan on hiring more high skilled employees.

[Insert here Table 7]

Additionally, we also test whether our results hold with actual values for planned employment, thus the intensive margin of planned hiring. Firms reported that they were planning to hire on average between 0-30 employees depending on the employee type. In this setting, we run the same Tobit regressions as before, with actual values for planned hiring and converting only the "do not know" replies to zero. We present the Tobit regression results in Table 8. Under this specification, the majority of our results remain consistent with the previous findings. Firms who have positive performance and access to bank credit plan to employ between 1.3-4.5 more skilled employees than firms with positive performance but no access to bank credit.

[Insert here Table 8]

Finally, to control for the fact that firms might exhibit some persistence over time with respect to hiring behaviour, we include actual current hiring in our planned hiring regressions. We conduct separate regressions

[6]For clarity, responses are not driven by the position of the responder in the firm. As we mentioned before, 1,248 out of the total 1,839 respondents were owners of the firm and therefore "do not know" responses are not driven by the answers given by managers or other employee statuses.

where we include a dummy variable as well as the real hiring variable on whether the firm had previously hired a particular skilled employee type. We present the results in Table 9. In columns 1-4, we present the regression results for the extensive margin and columns 5-8 for the intensive margin while controlling for realized hiring behavior. Our results remain consistent with our earlier findings, firms with higher financial access and positive firm performance hire more skilled employees than constrained firms.

[Insert here Table 9]

5.2 Alternative Access to Finance Classification

In this section, we take a closer look into the division of our financial access sub-samples. Specifically, we distinguish among firms with financing constraints between those that were rejected and those that were discouraged, though we expect the differences between these two groups to be small. The purpose of this exercise is to separate these groups and to test whether there are further differences in employment composition. In addition, we use this to test the consistency and robustness of our results while altering our financial access sub-samples.

The results in Table 10 show a significant role for external funding in hiring decisions of skilled employees. All of our previous findings remain consistent across all specifications. Firms with greater financial access (i.e. *Applied for a Loan and Got a Loan*) increase skilled employment relatively more than their constrained counterparts as performance increases. The results from the Wald tests are in line with these results. We also conduct Wald tests separately between each pair of interactions for all possible combinations. For example, in the lower rows of table 10, "Test12 Chi" tests for the equality between the first and the second interaction and "Test 23 Chi" between the second and the third interaction respectively. By doing so, we formally test for the significant differences among all financial access sub-samples. The results from these alternative specifications are also in line with the prior results. Based on the Wald tests, nearly all our interactions are significantly distinct from one another. Coefficients are broadly significant and are in line with prior results claiming that greater financial access and positive performance increase the hiring rates of skilled employment. We do not find a consistent ranking in terms of whether rejected or discouraged are more likely to hire trained and experienced workers if they grow.

[Insert here Table 10]

To further test the legitimacy of our discouraged group specification, we change our interpretation for the discouraged firms. In earlier tests, respondents were asked whether firms needed "loan application and other financial services in their business" and we used this information to determine whether a firm was discouraged. In our survey, we also asked whether firms "would like to take out new debt in the next 12 months". With this question, we create a new variable *Cannot Get a Loan2*. This includes firms who (i) applied for a loan, but got rejected and (ii) firms who did not apply for a loan but admit needing loan application and other financial services as well as would like to take out new debt in the next 12 months. Overall, this is a more conservative

approach for classifying our constrained firms. The results in Table 11 show that our findings remain unchanged. Greater financial access and positive performance increase hiring rates of skilled employment.

[Insert here Table 11]

5.3 Accounting for Total Skilled Employees

Our analysis is unable to fully account for firm size as clarified in earlier sections. In addition, due to the nature of our study, firm size could potentially be better captured by accounting for total employment on the firm level. In order to address these two key points, we include the total amount of skilled employees as a control variable in our regressions. In the survey firms asked "how many of their their total employees were trained or experienced". By incorporating this information, we further control for firm size and average firm level skilled employee requirements. The results in Table 12 show that our main findings remain unchanged. As one would expect, we see that firms with more skilled employees hire more skilled employees. In addition and in line with our earlier results, greater financial access and positive performance remain strong predictors for the hiring rates of skilled employees.

[Insert here Table 12]

5.4 Other Robustness Tests

Estimating regressions where the dependent variable is a dichotomous variable is more often better implemented by using other limited dependent variable estimators such as Probit and Logit. When using OLS regressions with dichotomous dependent variables, predicted probabilities are not necessarily bounded by values 0 and 1. OLS also assumes that there is a linear and additive relationship between the dependent and independent variables and this is not always necessarily the case. Due to these inherent difficulties and more, we perform alternative tests by incorporating a Probit model. We present the results from this estimation strategy in Table 13. Results from these tests are in line with our prior results.

[Insert here Table 13]

Finally, to further address potential concerns regarding omitted variables, we interact all the firm level controls with the financial access variables. The results from these regressions are reported in Table 14. Our main findings remain unchanged and we continue to show that firms with greater financial access and positive performance have a higher probability of employing skilled labor, with significance levels and coefficient sizes similar to our baseline results. These results thus show that the interaction of firm growth with access to external funding does not proxy for the interaction of access to external finance with other firm characteristics.

[Insert here Table 14]

6 Conclusion

We use a micro and small enterprise survey from Uganda and show that performance and higher financial access is positively correlated with changes in high-skill employment. We find that firms with positive performance and a bank loan hire more trained and experienced employees.This is consistent with the hypothesis that firms with greater financial flexibility are more likely to hire skilled labor once their performance goes up. On the other hand, firms who are financially constrained, must save a greater proportion of the additional profits (or pay other expenses associated with financial constraints) and therefore cannot invest further in greater levels of employment. We further investigate this relationship and show that performance and financial access do not explain the hiring rates of informal employees, which include casual and family employees.

The results from our study underline the importance of financial sector development for employment. As firms grow and become profitable, employment opportunities will increase for those who are formally trained, educated and more experienced. With this, the labor force can become more permanent and potentially more stable as well. This is an important issue for many nations and especially for developing countries. We have shown that policymakers have yet another reason why they should tackle small firms' financing constraints.

References

Almeida, Heitor, Murillo Campello, and Michael S. Weisbach (2004) 'The cash flow sensitivity of cash.' *The Journal of Finance* 41(4), 1777–1804

Ayyagari, Meghana, Asli Demirgüç-Kunt, and Vojislav Maksimovic (2008) 'How important are financing constraints? the role of finance in the business environment.' *The World Bank Eonomic Review* 22(3), 483–516

Banerjee, Abhijit V., and Esther Duflo (2014) 'Do firms want to borrow more? testing credit constraints using a directed lending program.' *The Review of Economic Studies* 81(2), 572–607

Beck, Thorsten, Asli Demirgüç-Kunt, and Vojislav Maksimovic (2005) 'Financial and legal constraints to growth: does firm size matter?' *The Journal of Finance* 60(1), 137–177

_ (2008) 'Financing patterns around the world: Are small firms different?' *Journal of Financial Economics* 89(3), 467–487

Beck, Thorsten, Ross Levine, and Alexey Levkov (2010) 'Big bad banks? the winners and losers from bank deregulation in the united states.' *The Journal of Finance* 65(5), 1637–1667

Benito, Andrew, and Ignacio Hernando (2007) 'Firm behaviour and financial pressure: Evidence from spanish panel data.' *Bulletin of Economic Research* 59(4), 283311

Benmelech, Efraim, Nittai K. Bergman, and Amit Seru (2011) 'Financing labor.' *National Bureau of Economic Research*

Brooks, Karen, Aparajita Goyal, Taye Mengistae, Patrick Premand, Dena Ringold, Siddharth Sharma, and Sergiy Zorya (2014) 'Youth employment in sub-saharan africa : Overview.' *World Bank Publication*

Brown, Jennifer, and David A Matsa (2016) 'Boarding a sinking ship? an investigation of job applications to distressed firms.' *The Journal of Finance*

Brown, Martin, Steven Ongena, Alexander A Popov, and Pinar Yein (2011) 'Who needs credit and who gets credit in eastern europe?' *Economic Policy* 26(65), 93–130

Caggese, Andrea, and Vicente Cuñat (2008) 'Financing constraints and fixed-term employment contracts.' *The Economic Journal* 118(533), 2013–2046

Campello, Murillo, John R. Graham, and Campbell R. Harvey (2010) 'The real effects of financial constraints: Evidence from a financial crisis.' *Journal of Financial Economics* 97, 470–487

Chodorow-Reich, Gabriel (2014) 'The employment effects of credit market disruptions: Firm-level evidence from the 2008–9 financial crisis.' *The Quarterly Journal of Economics* 129(1), 1–59

Cingano, Federico, Francesco Manaresi, and Enrico Sette (2016) 'Does credit crunch investment down? new evidence on the real effects of the bank-lending channel.' *Review of Financial Studies* p. hhw040

Cox, Donald, and Tullio Jappelli (1993) 'The effect of borrowing constraints on consumer liabilities.' *Journal of Money, Credit and Banking* 25(2), 197–213

De Mel, Suresh, David McKenzie, and Christopher Woodruff (2008) 'Returns to capital in microenterprises: evidence from a field experiment.' *The Quarterly Journal of Economics* pp. 1329–1372

Duca, John V, and Stuart S Rosenthal (1993) 'Borrowing constraints, household debt, and racial discrimination in loan markets.' *Journal of Financial intermediation* 3(1), 77–103

Giné, Xavier, and Robert M. Townsend (2004) 'Evaluation of financial liberalization: a general equilibrium model with constrained occupation choice.' *Journal of Development Economics* 74(2), 269–307

Kaplan, Steven N., and Luigi Zingales (1997) 'Do investment cash flow sensitivities provide useful measures of financing constraints.' *The Quarterly Journal of Economics* 112(1), 169–215

MinistryofFinanceUganda (2014) 'Uganda's employment challenge an evaluation of government's strategy.' *Economic Development Policy and Research Department of the Ministry of Finance, Planning and Economic Development, Republic of Uganda*

Oi, Walter Y. (1962) 'Labor as a quasi-fixed factor.' *The Journal of Political Economy* pp. 538–555

Pagano, Marco, and Giovanni Pica (2012) 'Finance and employment.' *Economic Policy* 27(69), 5–55

Popov, Alexander (2015) 'Credit constraints and investment in human capital: Training evidence from transition economies.' *Journal of Financial Intermediation* 23(1), 76–100

Popov, Alexander, and Gregory F. Udell (2012) 'Cross-border banking, credit access, and the financial crisis.' *Journal of International Economics* 87(1), 147–161

UnitedNationsPopulationFund (2013) 'Population and social transformation: Addressing the needs of special interest groups.' *The State of Uganda Population Report*

WorldBank (2013) 'Transforming Uganda's economy for more and better jobs'

Zia, Bilal H. (2008) 'Export incentives, financial constraints, and the (mis) allocation of credit: micro-level evidence from subsidized export loans.' *Journal of Financial Economics* 87(2), 498–527

Table 1: Sector and Region Composition

SECTOR	REGION											
	NORTHERN		EASTERN		WESTERN		CENTRAL		KAMPALA		Total	
	No.	Col %	No.	Col %	No.	Col %	No.	Col %	No.	Col %	No.	Col %
ACCOMODATION	25	16.2	22	9.0	32	9.2	43	6.8	17	5.2	139	8.2
AGRICULTURE	3	1.9	46	18.9	50	14.4	178	28.3	22	6.7	299	17.6
CONSTRUCTION	4	2.6	6	2.5	12	3.5	7	1.1	9	2.7	38	2.2
EDUCATION & HEALTH	31	20.1	32	13.1	49	14.1	95	15.1	29	8.8	236	13.9
FOOD PROCESSING	18	11.7	39	16.0	27	7.8	43	6.8	21	6.4	148	8.7
INFORMATION & COMMUNICATION	10	6.5	16	6.6	42	12.1	21	3.3	26	7.9	115	6.8
MINING	1	0.6	5	2.0	5	1.4	17	2.7	7	2.1	35	2.1
OTHER MANUFACTURING	27	17.5	11	4.5	47	13.5	58	9.2	24	7.3	167	9.8
REAL ESTATE	1	0.6	0	0.0	6	1.7	34	5.4	39	11.9	80	4.7
RECREATION & PERSONAL	13	8.4	24	9.8	40	11.5	71	11.3	42	12.8	190	11.2
TRADING	14	9.1	9	3.7	24	6.9	37	5.9	65	19.8	149	8.8
TRANSPORT, UTILITIES & STORAGE	7	4.5	34	13.9	13	3.7	24	3.8	28	8.5	106	6.2
Total	154	100.0	244	100.0	347	100.0	628	100.0	329	100.0	1702	100.0

Table 2: Summary Statistics

(a) Employment Variables

VARIABLES	(1) N	(2) mean	(3) sd	(4) min	(5) max	(6) p25	(7) p50	(8) p75
DHire Trained	1,580	0.054	0.227	0	1	0	0	0
DHire Experienced	1,569	0.055	0.229	0	1	0	0	0
DHire Permanent	1,603	0.093	0.290	0	1	0	0	0
DHire Casual	1,575	0.041	0.199	0	1	0	0	0
DHire Family	1,572	0.022	0.148	0	1	0	0	0
Hire Trained	1,580	0.258	1.954	0	54	0	0	0
Hire Experienced	1,569	0.231	1.410	0	25	0	0	0
Hire Permanent	1,603	0.437	2.548	0	54	0	0	0
Hire Casual	1,575	0.168	1.123	0	20	0	0	0
Hire Family	1,572	0.052	0.558	0	16	0	0	0
DPlanned Trained	1,601	0.094	0.292	0	1	0	0	0
DPlanned Experienced	1,592	0.109	0.312	0	1	0	0	0
Planned Train	275	1.284	1.866	0	20	0	1	2
Planned Exper	266	1.470	2.242	0	30	0	1	2

(b) Performance, Financial and Control Variables

VARIABLES	(1) N	(2) mean	(3) sd	(4) min	(5) max	(6) p25	(7) p50	(8) p75
DProfit	1,702	-0.0517	0.794	-1	1	-1	0	1
DSales	1,490	-0.0389	0.880	-1	1	-1	0	1
Applied for Loan	1,702	0.417	0.493	0	1	0	0	1
Applied and got a Loan	1,702	0.106	0.308	0	1	0	0	0
Applied and was rejected a Loan	1,702	0.311	0.463	0	1	0	0	1
Cannot Get Loan	1,702	0.633	0.482	0	1	0	1	1
Invested Capital	1,487	9.10e6	5.92e7	0	1.01e9	0	0	1.50e6
Business Age	1,677	10.090	7.673	1	70	5	8	12
New Innovative Product	1,702	0.259	0.438	0	1	0	0	1
Low Education	1,702	0.193	0.395	0	1	0	0	0
Medium Education	1,702	0.287	0.453	0	1	0	0	1
High Education	1,702	0.499	0.500	0	1	0	0	1

(c) Two-Sample t-Test for Equal Means

VARIABLES	(1) N	(2) Mean Applied and got a Loan	(3) Mean Cannot Get Loan	(4) t-test
DProfit	1257	-0.05	-0.16	*
DSales	1121	-0.04	-0.15	
Invested Capital	1118	9.6e6	1.3e7	
Business Age	1236	10.00	10.64	
New Innovative Product	1257	0.25	0.41	***
Low Education	1257	0.21	0.21	
Medium Education	1257	0.29	0.30	
High Education	1257	0.48	0.48	

Notes: The Hiring variables with the letter "D" indicate that the variable is a dummy variable. The performance variables $DProfit$ and $DSales$ take a value of 1 if performance increased, 0 if there was no change and -1 for a decrease. $DPlanned$ variables with a missing values have been converted to 0.

Table 3: Correlation Table

	DHire Permanent	DHire Casual	Dhire Family	Dhire Trained	DHire Experienced	Dprofit	Dsales	Invested Capital	Business Age	New Innovative Product	Applied for a Loan	Applied and got a Loan
DHire Casual	0.46***	1										
Dhire Family	0.44***	0.47***	1									
Dhire Trained	0.73***	0.38***	0.41***	1								
DHire Experienced	0.73***	0.54***	0.54***	0.76***	1							
Dprofit	0.13***	0.03	0.05*	0.12***	0.11***	1						
Dsales	0.15***	0.03	0.05*	0.13***	0.12***	0.80***	1					
Invested Capital	0.16***	0.08**	0.13***	0.18***	0.18***	-0.03	-0.02	1				
Business Age	-0.03	-0.00	-0.01	-0.03	-0.03	-0.06*	-0.09***	0.04	1			
New Innovative Product	0.20***	0.11***	0.13***	0.22***	0.19***	0.06*	0.11***	0.13***	0.00	1		
Applied for a Loan	0.04	0.01	0.01	0.04	0.04	-0.03	-0.03	0.05*	0.03	0.06*	1	
Applied and got a Loan	0.04	0.03	0.07**	0.07**	0.07**	-0.05	-0.04	0.02	0.02	0.12***	0.41***	1
Cannot Get a Loan	0.02	-0.00	0.018	0.02	0.00	0.01	0.00	0.01	-0.02	-0.01	0.20***	-0.45***

Table 4: Extensive Margin Effects: Hiring Skilled Employees

VARIABLES	(1) DHire Trained	(2) DHire Trained	(3) DHire Experienced	(4) DHire Experienced
Profit Increased* Applied and got a Loan	0.124**		0.149**	
	(0.060)		(0.064)	
Profit Increased* Cannot Get Loan	0.059***		0.079***	
	(0.022)		(0.023)	
Sales Increased* Applied and got a Loan		0.103*		0.119**
		(0.055)		(0.059)
Sales Increased* Cannot Get Loan		0.056***		0.069***
		(0.022)		(0.023)
DProfit	0.002		-0.009	
	(0.008)		(0.009)	
DSales		0.003		-0.007
		(0.009)		(0.010)
Applied and got a Loan	-0.005	-0.005	0.003	0.005
	(0.018)	(0.020)	(0.022)	(0.026)
Cannot Get Loan	0.018	0.018	0.005	0.005
	(0.011)	(0.012)	(0.012)	(0.015)
ln(1+Invested Capital)	0.003***	0.003***	0.003***	0.003***
	(0.001)	(0.001)	(0.001)	(0.001)
Business Age	-0.000	-0.000	-0.000	-0.000
	(0.001)	(0.001)	(0.001)	(0.001)
New Innovative Product	0.065***	0.068***	0.053***	0.055***
	(0.018)	(0.019)	(0.018)	(0.020)
Low Education	0.007	-0.007	0.019	0.005
	(0.037)	(0.042)	(0.038)	(0.042)
Medium Education	0.017	0.011	0.013	0.005
	(0.038)	(0.042)	(0.037)	(0.041)
High Education	0.040	0.039	0.051	0.050
	(0.037)	(0.041)	(0.037)	(0.040)
Observations	1,376	1,246	1,369	1,239
R-squared	0.096	0.103	0.082	0.083
Sector FE	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes
Wald Test	5.114	4.565	8.039	5.822
Prob > F-val	0.00613	0.0106	0.000338	0.00305

Notes: This table shows our baseline estimation results for the relationship between hiring skilled labor, firm performance and financial constraints. The detailed variable definitions are provided in Section 2 and the Appendix. The dependent variable is a dummy variable for whether the firm hired trained or experienced employees in the past 12 months. Variables $DSales$ and $DProfits$ take a value of 1 if the performance variable increased, 0 if there was no change and -1 if there was a decrease in sales or profits compared to the performance of the firm a year ago. The Dummy $CannotGetaLoan$, includes firms who applied for a loan, but do not have a loan and also firms who did not apply for a loan, but state in the survey that they need a loan for their operations. We estimate columns 1 to 4 using an OLS regression. To control for unobserved regional and sector level fixed effects, we include sector and region fixed dummies in all our estimations. The result for the Wald Tests are reported in the bottom of the table. The null hypothesis assumes that the interaction terms between performance and financial access are equal to one another. Robust standard errors are reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 5: Intensive Margin Effects: Hiring Skilled Employees

VARIABLES	(1) Hire Trained	(2) Hire Trained	(3) Hire Experienced	(4) Hire Experienced
Profit Increased* Applied and got a Loan	8.758*		7.565**	
	(5.048)		(3.417)	
Profit Increased* Cannot Get Loan	5.243*		6.712**	
	(3.066)		(2.620)	
Sales Increased* Applied and got a Loan		8.445		7.067**
		(5.248)		(3.545)
Sales Increased* Cannot Get Loan		6.156*		6.796**
		(3.185)		(2.689)
DProfit	0.691		-1.055	
	(1.469)		(1.269)	
DSales		0.308		-1.310
		(1.444)		(1.253)
Applied and got a Loan	-1.650	-2.010	0.257	0.063
	(4.065)	(4.222)	(2.327)	(2.436)
Cannot Get Loan	2.548	1.441	0.616	0.032
	(2.401)	(2.467)	(1.665)	(1.726)
ln(1+Invested Capital)	0.426**	0.434**	0.246***	0.239***
	(0.166)	(0.171)	(0.091)	(0.092)
Business Age	-0.063	-0.061	-0.073	-0.073
	(0.092)	(0.098)	(0.069)	(0.072)
New Innovative Product	7.633***	7.636***	4.421***	4.466***
	(2.458)	(2.486)	(1.460)	(1.481)
Low Education	-1.026	-3.954	2.353	0.813
	(6.227)	(6.513)	(4.483)	(4.509)
Medium Education	1.606	1.201	1.129	0.566
	(5.967)	(6.129)	(4.356)	(4.360)
High Education	4.295	4.195	4.421	4.104
	(5.866)	(5.981)	(4.253)	(4.231)
Observations	1,376	1,246	1,369	1,239
Sector FE	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes
Wald Test	2.031	2.104	3.743	3.415
Prob > F-val	0.132	0.122	0.0239	0.0332

Notes: This table shows the estimation results for the relationship between hiring skilled labor, firm performance and financial constraints. The detailed variable definitions are provided in Section 2 and the Appendix. The dependent variable is realized hiring variable measuring the amount of trained or experienced employees the firm hired in the past 12 months. Variables $DSales$ and $DProfits$ take a value of 1 if the performance variable increased, 0 if there was no change and -1 if there was a decrease in sales or profits compared to the performance of the firm a year ago. The Dummy $CannotGetaLoan$, includes firms who applied for a loan, but do not have a loan and also firms who did not apply for a loan, but state in the survey that they need a loan for their operations. We estimate columns 1 to 4 using a Tobit regression where we account for left censoring at zero. To control for unobserved regional and sector level fixed effects, we include sector and region dummies in all our estimations. The result for the Wald Tests are reported in the bottom of the table. The null hypothesis assumes that the interaction terms between performance and financial access are equal to one another. Robust standard errors are reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 6: Extensive Margin Effects: Hiring Other Employees

VARIABLES	(1) DHire Permanent	(2) DHire Permanent	(3) DHire Casual	(4) DHire Casual	(5) DHire Family	(6) DHire Family	(7) DEmployee Training	(8) DEmployee Training
Profit Increased* Applied and got a Loan	0.103		0.015		0.029		0.138**	
	(0.066)		(0.044)		(0.045)		(0.070)	
Profit Increased* Cannot Get Loan	0.098***		0.040*		0.021		0.098***	
	(0.030)		(0.021)		(0.014)		(0.026)	
Sales Increased* Applied and got a Loan		0.073		-0.006		0.013		0.144**
		(0.062)		(0.043)		(0.043)		(0.071)
Sales Increased* Cannot Get Loan		0.109***		0.021		0.012		0.071**
		(0.029)		(0.021)		(0.015)		(0.028)
DProfit	0.002		-0.008		-0.000		-0.044***	
	(0.013)		(0.010)		(0.006)		(0.013)	
DSales		0.002		-0.002		0.001		-0.032**
		(0.013)		(0.011)		(0.006)		(0.014)
Applied and got a Loan	0.002	0.012	0.003	0.009	0.024	0.031	0.014	0.015
	(0.028)	(0.032)	(0.021)	(0.025)	(0.017)	(0.021)	(0.037)	(0.041)
Cannot Get Loan	0.012	0.009	-0.002	0.001	0.008	0.012	-0.047**	-0.042**
	(0.017)	(0.017)	(0.012)	(0.013)	(0.005)	(0.009)	(0.018)	(0.020)
ln(1+Invested Capital)	0.004***	0.005***	0.002**	0.002**	0.001*	0.001*	0.006***	0.005***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Business Age	-0.001	-0.000	0.000	-0.000	-0.000	-0.000	0.001	0.002
	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)	(0.000)	(0.001)	(0.001)
New Innovative Product	0.074***	0.072***	0.023	0.024	0.026**	0.028**	0.079***	0.084***
	(0.022)	(0.023)	(0.016)	(0.017)	(0.012)	(0.013)	(0.023)	(0.024)
Low Education	0.033	0.013	0.024*	0.020	0.005	0.001	-0.008	-0.025
	(0.051)	(0.057)	(0.013)	(0.014)	(0.009)	(0.009)	(0.065)	(0.074)
Medium Education	0.036	0.024	0.040***	0.042***	0.016	0.013	-0.037	-0.056
	(0.051)	(0.056)	(0.013)	(0.014)	(0.010)	(0.011)	(0.064)	(0.072)
High Education	0.070	0.060	0.049***	0.053***	0.033***	0.032***	0.019	0.012
	(0.050)	(0.055)	(0.013)	(0.013)	(0.009)	(0.009)	(0.064)	(0.072)
Observations	1,396	1,265	1,371	1,240	1,370	1,239	1,472	1,319
R-squared	0.098	0.112	0.034	0.036	0.046	0.048	0.125	0.136
Sector FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Wald Test	5.772	6.968	1.790	0.633	1.186	0.307	7.937	4.525
Prob > F-val	0.00319	0.000978	0.167	0.531	0.306	0.736	0.000373	0.0110

Notes: This table shows our baseline estimation results for the relationship between hiring other labor (permanent, casual and family), employee training, firm performance and financial constraints. The detailed variable definitions are provided in Section 2 and the Appendix. The dependent variable is a dummy variable for whether the firm hired permanent, casual or family employees in the past 12 months. Variables $DSales$ and $DProfits$ take a value of 1 if the performance variable increased, 0 if there was no change and -1 if there was a decrease in sales or profits compared to the performance of the firm a year ago. The Dummy $CannotGetaLoan$, includes firms who applied for a loan, but do not have a loan and also firms who did not apply for a loan, but state in the survey that they need a loan for their operations. We estimate columns 1 to 8 using an OLS regression. To control for unobserved regional and sector level fixed effects, we include sector and region dummies in all our estimations. The result for the Wald Tests are reported in the bottom of the table. The null hypothesis assumes that the interaction terms between performance and financial access are equal to one another. Robust standard errors are reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 7: Extensive Margin Effects: Planned Skilled Hiring

VARIABLES	(1) DPlanned Trained	(2) DPlanned Trained	(3) DPlanned Experienced	(4) DPlanned Experienced	(5) DPlanned Trained	(6) DPlanned Trained	(7) DPlanned Experienced	(8) DPlanned Experienced
Profit Increased* Applied and got a Loan	0.231***		0.317***		0.147		0.441***	
	(0.079)		(0.082)		(0.154)		(0.166)	
Profit Increased* Cannot Get Loan	0.045		0.077**		0.071		0.171*	
	(0.029)		(0.032)		(0.093)		(0.101)	
Sales Increased* Applied and got a Loan		0.254***		0.340***		0.288*		0.510***
		(0.079)		(0.080)		(0.160)		(0.168)
Sales Increased* Cannot Get Loan		0.015		0.032		0.090		0.092
		(0.032)		(0.035)		(0.094)		(0.105)
DProfit	-0.013		-0.023*		-0.066		-0.143**	
	(0.012)		(0.013)		(0.052)		(0.056)	
DSales		-0.008		-0.009		-0.101*		-0.130**
		(0.013)		(0.014)		(0.054)		(0.059)
Applied and got a Loan	0.051	0.046	0.015	-0.001	0.071	0.010	-0.171	-0.250**
	(0.032)	(0.035)	(0.030)	(0.032)	(0.123)	(0.130)	(0.126)	(0.126)
Cannot Get Loan	0.025	0.040*	0.050**	0.067***	-0.121	-0.124	-0.049	-0.044
	(0.018)	(0.023)	(0.020)	(0.024)	(0.084)	(0.082)	(0.085)	(0.082)
ln(1+Invested Capital)	0.005***	0.005***	0.003**	0.003**	0.011***	0.012***	-0.005	-0.003
	(0.001)	(0.001)	(0.001)	(0.001)	(0.003)	(0.003)	(0.004)	(0.004)
Business Age	-0.001	-0.001	-0.001	-0.001	-0.002	-0.002	0.000	-0.000
	(0.001)	(0.001)	(0.001)	(0.001)	(0.004)	(0.004)	(0.004)	(0.004)
New Innovative Product	0.007	0.001	0.063***	0.061**	-0.140***	-0.135**	0.125**	0.133**
	(0.021)	(0.022)	(0.023)	(0.025)	(0.052)	(0.053)	(0.060)	(0.061)
Low Education	-0.097	-0.128*	-0.077	-0.108	-0.397***	-0.436***	-0.346**	-0.355*
	(0.068)	(0.074)	(0.060)	(0.067)	(0.142)	(0.145)	(0.166)	(0.187)
Medium Education	-0.112*	-0.133*	-0.053	-0.073	-0.436***	-0.452***	-0.187	-0.165
	(0.067)	(0.074)	(0.059)	(0.066)	(0.139)	(0.145)	(0.166)	(0.187)
High Education	-0.068	-0.085	-0.002	-0.015	-0.261*	-0.274*	-0.023	0.000
	(0.067)	(0.074)	(0.060)	(0.067)	(0.136)	(0.142)	(0.159)	(0.181)
Observations	1,387	1,237	1,380	1,231	330	319	332	321
R-squared	0.174	0.185	0.157	0.164	0.403	0.416	0.268	0.285
Sector FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Wald Test	4.867	5.208	9.210	9.083	0.534	1.632	3.687	4.909
Prob > F-val	0.00783	0.00559	0.000107	0.000122	0.587	0.197	0.0262	0.00799

Notes: This table shows the estimation results for the relationship between the planned hiring of skilled labor, firm performance and financial constraints. The detailed variable definitions are provided in Section 2 and the Appendix. The dependent variable is a dummy variable for whether the firm planned hiring trained or experienced employees in the next 12 months. Variables $DSales$ and $DProfits$ take a value of 1 if the performance variable increased, 0 if there was no change and -1 if there was a decrease in sales or profits compared to the performance of the firm a year ago. The Dummy $CannotGetaLoan$, includes firms who applied for a loan, but do not have a loan and also firms who did not apply for a loan, but state in the survey that they need a loan for their operations. We estimate columns 1 to 8 using an OLS regression. In columns 1-4, all missing values of the dependent variables were converted to a value of zero. In columns 5-8, only missing values that were labeled as "do not know" were converted to a value of zero. To control for unobserved regional and sector level fixed effects, we include sector and region fixed dummies in all our estimations. The result for the Wald Tests are reported in the bottom of the table. The null hypothesis assumes that the interaction terms between performance and financial access are equal to one another. Robust standard errors are reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 8: Intensive Margin Effects: Planned Skilled Hiring

VARIABLES	(1) Planned Trained	(2) Planned Trained	(3) Planned Experienced	(4) Planned Experienced	(5) Planned Trained	(6) Planned Trained	(7) Planned Experienced	(8) Planned Experienced
Profit Increased* Applied and got a Loan	2.858***		4.617***		0.958		2.882**	
	(1.022)		(1.374)		(0.809)		(1.140)	
Profit Increased* Cannot Get Loan	1.356*		1.769**		0.860		1.223	
	(0.788)		(0.838)		(0.704)		(0.776)	
Sales Increased* Applied and got a Loan		3.406***		5.171***		2.054**		3.425**
		(1.160)		(1.586)		(0.956)		(1.353)
Sales Increased* Cannot Get Loan		0.697		0.657		0.730		0.383
		(0.804)		(0.802)		(0.725)		(0.724)
DProfit	-0.497		-0.615		-0.555		-0.806**	
	(0.377)		(0.383)		(0.346)		(0.376)	
DSales		-0.358		-0.225		-0.679*		-0.578
		(0.377)		(0.375)		(0.387)		(0.390)
Applied and got a Loan	1.613**	1.289	0.675	-0.118	0.797	0.302	-0.818	-1.564
	(0.815)	(0.902)	(0.908)	(1.045)	(0.643)	(0.668)	(0.836)	(1.015)
Cannot Get Loan	0.681	0.941	1.484**	1.738***	-0.493	-0.458	0.175	0.287
	(0.545)	(0.608)	(0.596)	(0.665)	(0.524)	(0.516)	(0.489)	(0.478)
ln(1+Invested Capital)	0.134***	0.142***	0.070**	0.076***	0.098***	0.113***	-0.004	0.013
	(0.032)	(0.034)	(0.028)	(0.029)	(0.033)	(0.035)	(0.026)	(0.025)
Business Age	-0.015	-0.007	-0.017	-0.011	0.020	0.026	0.006	0.006
	(0.039)	(0.036)	(0.035)	(0.032)	(0.029)	(0.028)	(0.028)	(0.026)
New Innovative Product	0.098	-0.065	1.240**	1.116**	-0.710**	-0.740**	0.966*	0.997*
	(0.408)	(0.411)	(0.555)	(0.549)	(0.330)	(0.338)	(0.566)	(0.572)
Low Education	-2.286**	-3.018**	-2.137*	-2.853**	-2.794***	-3.383***	-2.811***	-3.058***
	(1.164)	(1.199)	(1.267)	(1.318)	(0.906)	(1.045)	(1.046)	(1.166)
Medium Education	-2.670**	-2.938***	-1.558	-1.939	-2.881***	-3.107***	-1.791*	-1.762*
	(1.098)	(1.114)	(1.187)	(1.206)	(0.841)	(0.932)	(0.967)	(1.043)
High Education	-1.239	-1.503	-0.211	-0.562	-1.369**	-1.562**	-0.577	-0.579
	(1.022)	(1.017)	(1.143)	(1.132)	(0.678)	(0.720)	(0.903)	(0.957)
Observations	1,387	1,237	1,380	1,231	330	319	332	321
Sector FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Wald Test	4.076	4.622	5.691	6.006	0.998	2.365	3.197	3.983
Prob > F-val	0.0172	0.0100	0.00346	0.00254	0.370	0.0958	0.0423	0.0196

Notes: This table shows the estimation results for the relationship between the planned hiring of skilled labor, firm performance and financial constraints. The detailed variable definitions are provided in Section 2 and the Appendix. The dependent variable measures the real amount of planned hiring in the next 12 months. Variables $DSales$ and $DProfits$ take a value of 1 if the performance variable increased, 0 if there was no change and -1 if there was a decrease in sales or profits compared to the performance of the firm a year ago. The Dummy $CannotGetaLoan$, includes firms who applied for a loan, but do not have a loan and also firms who did not apply for a loan, but state in the survey that they need a loan for their operations. We estimate columns 1 to 8 using a Tobit regression where we account for left censoring at zero. In columns 1-4, all missing values of the dependent variables were converted to a value of zero. In columns 5-8, only missing values that were labeled as "do not know" were converted to a value of zero. To control for unobserved regional and sector level fixed effects, we include sector and region fixed dummies in all our estimations. The result for the Wald Tests are reported in the bottom of the table. The null hypothesis assumes that the interaction terms between performance and financial access are equal to one another. Robust standard errors are reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 9: Extensive and Intensive Margin Effects: Planned Skilled Employees and Controlling for Actual Hiring

VARIABLES	(1) DPlanned Trained	(2) DPlanned Trained	(3) DPlanned Experienced	(4) DPlanned Experienced	(5) Planned Trained	(6) Planned Trained	(7) Planned Experienced	(8) Planned Experienced
Profit Increased* Applied and got a Loan	0.183**		0.266***		2.145**		3.036***	
	(0.077)		(0.081)		(0.970)		(0.856)	
Profit Increased* Cannot Get Loan	0.021		0.044		0.867		0.895	
	(0.030)		(0.033)		(0.774)		(0.572)	
Sales Increased* Applied and got a Loan		0.216***		0.302***		2.802**		3.483***
		(0.077)		(0.079)		(1.091)		(0.925)
Sales Increased* Cannot Get Loan		-0.004		0.013		0.324		0.161
		(0.033)		(0.036)		(0.782)		(0.588)
DProfit	-0.009		-0.013		-0.315		-0.356	
	(0.013)		(0.014)		(0.380)		(0.296)	
DSales		-0.006		-0.003		-0.209		-0.044
		(0.014)		(0.014)		(0.374)		(0.290)
DHire Trained	0.214***	0.202***						
	(0.063)	(0.064)						
DHire Experienced			0.166***	0.149***				
			(0.057)	(0.057)				
Hire Trained					0.286*	0.268*		
					(0.160)	(0.156)		
Hire Experienced							0.145	0.122
							(0.108)	(0.106)
Applied and got a Loan	0.069**	0.058	0.030	0.010	2.030**	1.583*	0.859	0.194
	(0.034)	(0.036)	(0.031)	(0.033)	(0.832)	(0.903)	(0.683)	(0.787)
Cannot Get Loan	0.032*	0.045**	0.059***	0.073***	0.930*	1.123*	1.319***	1.473***
	(0.019)	(0.023)	(0.020)	(0.024)	(0.559)	(0.613)	(0.429)	(0.465)
ln(1+Invested Capital)	0.004***	0.005***	0.003**	0.003**	0.137***	0.146***	0.072***	0.076***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.033)	(0.035)	(0.021)	(0.020)
Business Age	-0.001	-0.001	-0.001	-0.001	-0.010	-0.004	-0.004	-0.003
	(0.001)	(0.001)	(0.001)	(0.001)	(0.038)	(0.036)	(0.026)	(0.024)
New Innovative Product	-0.011	-0.016	0.045*	0.043*	-0.155	-0.271	0.602*	0.506
	(0.022)	(0.023)	(0.023)	(0.025)	(0.411)	(0.414)	(0.318)	(0.317)
Low Education	-0.110	-0.139*	-0.089	-0.119*	-2.335**	-2.943***	-1.788*	-2.273**
	(0.067)	(0.073)	(0.059)	(0.066)	(1.105)	(1.133)	(0.921)	(0.922)
Medium Education	-0.125*	-0.145**	-0.066	-0.084	-2.727***	-2.938***	-1.402	-1.652*
	(0.066)	(0.072)	(0.058)	(0.065)	(1.046)	(1.060)	(0.869)	(0.865)
High Education	-0.083	-0.099	-0.022	-0.033	-1.234	-1.455	-0.396	-0.557
	(0.066)	(0.073)	(0.059)	(0.065)	(0.955)	(0.946)	(0.851)	(0.840)
Observations	1,308	1,181	1,292	1,165	1,308	1,181	1,292	1,165
Sector FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Wald Test	2.864	4.222	5.768	7.450	2.465	3.787	6.322	8.285
Prob > F-val	0.0574	0.0149	0.00321	0.000610	0.0854	0.0230	0.00185	0.000268

Notes: This table shows the results for the relationship between hiring skilled labor, firm performance and financial constraints. The detailed variable definitions are provided in Section 2 and the Appendix. For columns 1-4, the dependent variable is a dummy variable for whether the firm planned hiring trained or experienced employees in the next 12 months. For columns 5-8, the dependent variable is measuring the real amount of planned hiring in the next 12 months. Variables $DSales$ and $DProfits$ take a value of 1 if the performance variable increased, 0 if there was no change and -1 if there was a decrease in sales or profits compared to the performance of the firm a year ago. The Dummy $CannotGetaLoan$, includes firms who applied for a loan, but do not have a loan and also firms who did not apply for a loan, but state in the survey that they need a loan for their operations. We estimate columns 1-4 using an OLS regression and columns 5-8 using a Tobit regression where we account for left censoring at zero. To control for unobserved regional and sector level fixed effects, we include sector and region fixed dummies in all our estimations. The result for the Wald Tests are reported in the bottom of the table. The null hypothesis assumes that the interaction terms between performance and financial access are equal to one another. Robust standard errors are reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 10: Alternative Financial Access Measures, Extensive Margin Effects: Hiring Skilled Employees

VARIABLES	(1) DHire Trained	(2) DHire Trained	(3) DHire Experienced	(4) DHire Experienced
Profit Increased* Applied and got a Loan	0.123**		0.149**	
	(0.060)		(0.064)	
Profit Increased* Applied and was Rejected a Loan	0.035		0.069**	
	(0.026)		(0.029)	
Profit Increased* Did not Apply but Needs Loan Service	0.086***		0.091***	
	(0.033)		(0.032)	
Sales Increased* Applied and got a Loan		0.103*		0.119**
		(0.055)		(0.059)
Sales Increased* Applied and was Rejected a Loan		0.042		0.072**
		(0.026)		(0.028)
Sales Increased* Did not Apply but Needs Loan Service		0.075**		0.068**
		(0.032)		(0.032)
DProfit	0.002		-0.009	
	(0.008)		(0.009)	
DSales		0.003		-0.007
		(0.009)		(0.010)
Applied and got a Loan	-0.005	-0.005	0.003	0.005
	(0.018)	(0.020)	(0.022)	(0.026)
Applied and was rejected a Loan	0.016	0.011	0.006	-0.001
	(0.013)	(0.014)	(0.015)	(0.016)
Did not apply for Loan but Needs Loan Services	0.020	0.025*	0.004	0.011
	(0.013)	(0.014)	(0.014)	(0.017)
ln(1+Invested Capital)	0.003***	0.003***	0.003***	0.003***
	(0.001)	(0.001)	(0.001)	(0.001)
Business Age	-0.000	-0.000	-0.000	-0.000
	(0.001)	(0.001)	(0.001)	(0.001)
New Innovative Product	0.064***	0.067***	0.052***	0.055***
	(0.018)	(0.019)	(0.018)	(0.020)
Low Education	0.006	-0.006	0.018	0.006
	(0.038)	(0.042)	(0.038)	(0.042)
Medium Education	0.017	0.011	0.013	0.005
	(0.038)	(0.042)	(0.037)	(0.041)
High Education	0.041	0.041	0.051	0.051
	(0.037)	(0.042)	(0.037)	(0.041)
Observations	1,376	1,246	1,369	1,239
R-squared	0.099	0.106	0.082	0.084
Industry FE	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes
Wald Test	3.682	3.180	5.379	3.964
Prob > F-val	0.0117	0.0233	0.00111	0.00795
Test12 F-val	0.0659	0.0670	0.00636	0.00971
Test13 F-val	0.00571	0.0169	0.00174	0.0206
Test23 F-val	0.0206	0.0292	0.00219	0.00924

Notes: This table shows the alternative estimation results for the relationship between hiring skilled labor, firm performance and financial constraints. The detailed variable definitions are provided in Section 2 and the Appendix. The dependent variable is a dummy variable for whether the firm hired trained or experienced employees in the past 12 months. Variables $DSales$ and $DProfits$ take a value of 1 if the performance variable increased, 0 if there was no change and -1 if there was a decrease in sales or profits compared to the performance of the firm a year ago. We estimate columns 1 to 4 using an OLS regression. To control for unobserved regional and sector level fixed effects, we include sector and region dummies in all our estimations. The result for the Wald Tests are reported in the bottom of the table. The null hypothesis assumes that the interaction terms between performance and financial access are equal to one another. We also conduct Wald tests separately between two interactions for all possible combinations. "Test12 Chi" tests for the equality between the first and second interaction, "Test 23 Chi" between the second and third interaction and "Test 13 Chi" between the first and third interaction. Robust standard errors are reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 11: Alternative Discouraged Firm Specification, Extensive Margin Effects: Hiring Skilled Employees

VARIABLES	(1) DHire Trained	(2) DHire Trained	(3) DHire Experienced	(4) DHire Experienced
Profit Increased* Applied and got a Loan	0.117*		0.137**	
	(0.060)		(0.064)	
Profit Increased* Cannot Get Loan2	0.055**		0.071***	
	(0.025)		(0.026)	
Sales Increased* Applied and got a Loan		0.095*		0.112*
		(0.055)		(0.059)
Sales Increased* Cannot Get Loan2		0.051**		0.072***
		(0.025)		(0.025)
DProfit	0.007		-0.002	
	(0.008)		(0.010)	
DSales		0.008		-0.003
		(0.009)		(0.010)
Applied and got a Loan	-0.012	-0.012	-0.003	-0.003
	(0.017)	(0.020)	(0.021)	(0.025)
Cannot Get Loan2	0.014	0.014	-0.003	-0.008
	(0.011)	(0.012)	(0.012)	(0.014)
ln(1+Invested Capital)	0.003***	0.003***	0.003***	0.003***
	(0.001)	(0.001)	(0.001)	(0.001)
Business Age	-0.000	-0.000	-0.000	-0.000
	(0.001)	(0.001)	(0.001)	(0.001)
New Innovative Product	0.065***	0.067***	0.053***	0.055***
	(0.018)	(0.019)	(0.019)	(0.020)
Low Education	0.011	-0.001	0.022	0.011
	(0.037)	(0.042)	(0.038)	(0.042)
Medium Education	0.022	0.017	0.016	0.010
	(0.038)	(0.042)	(0.037)	(0.041)
High Education	0.043	0.043	0.054	0.054
	(0.037)	(0.041)	(0.037)	(0.041)
Observations	1,376	1,246	1,369	1,239
R-squared	0.095	0.101	0.078	0.082
Sector FE	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes
Wald Test	3.972	3.244	5.496	5.242
Prob > F-val	0.0191	0.0394	0.00419	0.00541

Notes: This table shows the alternative discouraged firm estimation results for the relationship between hiring skilled labor, firm performance and financial constraints. Variable $CannotGetaLoan2$ includes firms who (i) applied for a loan, but got rejected and (ii) firms who did not apply for a loan but admit needing loan application and other financial services as well as would like to take out new debt in the next 12 months. The detailed variable definitions are provided in Section 2 and the Appendix. The dependent variable is a dummy variable for whether the firm hired trained or experienced employees in the past 12 months. Variables $DSales$ and $DProfits$ take a value of 1 if the performance variable increased, 0 if there was no change and -1 if there was a decrease in sales or profits compared to the performance of the firm a year ago. We estimate columns 1 to 4 using an OLS regression. To control for unobserved regional and sector level fixed effects, we include sector and region dummies in all our estimations. The result for the Wald Tests are reported in the bottom of the table. The null hypothesis assumes that the interaction terms between performance and financial access are equal to one another. Robust standard errors are reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 12: Extensive Margin Effects: Accounting for Total Skilled Employees

VARIABLES	(1) DHire Trained	(2) DHire Trained	(7) DHire Experienced	(8) DHire Experienced
Profit Increased* Applied and got a Loan	0.149**		0.168**	
	(0.064)		(0.067)	
Profit Increased* Cannot Get Loan	0.065***		0.083***	
	(0.023)		(0.024)	
Sales Increased* Applied and got a Loan		0.128**		0.145**
		(0.058)		(0.062)
Sales Increased* Cannot Get Loan		0.067***		0.080***
		(0.023)		(0.024)
Total Trained Employees	0.010***	0.011***		
	(0.003)	(0.003)		
Total Experienced Employees			0.007***	0.007***
			(0.002)	(0.003)
DProfit	0.004		-0.011	
	(0.008)		(0.010)	
DSales		0.001		-0.011
		(0.009)		(0.010)
Applied and got a Loan	-0.008	-0.012	0.009	0.006
	(0.018)	(0.021)	(0.022)	(0.027)
Cannot Get Loan	0.019*	0.016	0.006	0.003
	(0.012)	(0.012)	(0.013)	(0.015)
ln(1+Invested Capital)	0.002**	0.002**	0.002**	0.003**
	(0.001)	(0.001)	(0.001)	(0.001)
Business Age	-0.001	-0.001	-0.001	-0.001
	(0.001)	(0.001)	(0.001)	(0.001)
New Innovative Product	0.059***	0.062***	0.047**	0.050**
	(0.018)	(0.019)	(0.019)	(0.020)
Low Education	0.026	0.017	0.025	0.011
	(0.037)	(0.041)	(0.038)	(0.042)
Medium Education	0.041	0.038	0.022	0.015
	(0.037)	(0.041)	(0.037)	(0.041)
High Education	0.049	0.053	0.051	0.051
	(0.036)	(0.041)	(0.037)	(0.041)
Observations	1,295	1,171	1,320	1,194
R-squared	0.144	0.153	0.110	0.114
Sector FE	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes
Wald Test	6.125	6.056	8.527	7.376
Prob > F-val	0.00225	0.00242	0.000210	0.000656

Notes: Notes: This table shows the relationship between hiring skilled labor, firm performance and financial constraints. $TrainedEmployees$ and $ExperiencedEmployees$ measure the total amount of employees in the firm for each respective employment category. The detailed variable definitions are provided in Section 2 and the Appendix. The dependent variable is a dummy variable for whether the firm hired trained or experienced employees in the past 12 months. Variables $DSales$ and $DProfits$ take a value of 1 if the performance variable increased, 0 if there was no change and -1 if there was a decrease in sales or profits compared to the performance of the firm a year ago. The Dummy $CannotGetaLoan$, includes firms who applied for a loan, but do not have a loan and also firms who did not apply for a loan, but state in the survey that they need a loan for their operations. We estimate columns 1 to 4 using an OLS regression. To control for unobserved regional and sector level fixed effects, we include sector and region fixed dummies in all our estimations. The result for the Wald Tests are reported in the bottom of the table. The null hypothesis assumes that the interaction terms between performance and financial access are equal to one another. Robust standard errors are reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 13: Probit Regression - Extensive Margin Effects: Hiring Skilled Employees

VARIABLES	(1) DHire Trained	(2) DHire Trained	(3) DHire Experienced	(4) DHire Experienced
Profit Increased* Applied and got a Loan	0.910**		1.015**	
	(0.437)		(0.398)	
Profit Increased* Cannot Get Loan	0.454*		0.759***	
	(0.265)		(0.273)	
Sales Increased* Applied and got a Loan		0.861*		0.907**
		(0.460)		(0.413)
Sales Increased* Cannot Get Loan		0.517*		0.730**
		(0.272)		(0.286)
DProfit	0.045		-0.140	
	(0.138)		(0.144)	
DSales		0.029		-0.137
		(0.144)		(0.145)
Applied and got a Loan	-0.043	-0.057	0.011	0.002
	(0.322)	(0.338)	(0.272)	(0.292)
Cannot Get Loan	0.340	0.273	0.037	-0.013
	(0.221)	(0.221)	(0.191)	(0.205)
ln(1+Invested Capital)	0.034***	0.035***	0.029***	0.029***
	(0.010)	(0.010)	(0.010)	(0.010)
Business Age	-0.008	-0.008	-0.008	-0.008
	(0.009)	(0.010)	(0.008)	(0.009)
New Innovative Product	0.603***	0.613***	0.443***	0.452***
	(0.150)	(0.157)	(0.145)	(0.148)
Low Education	-0.070	-0.350	0.257	0.076
	(0.531)	(0.564)	(0.494)	(0.508)
Medium Education	0.223	0.173	0.153	0.078
	(0.510)	(0.534)	(0.483)	(0.492)
High Education	0.437	0.427	0.571	0.536
	(0.488)	(0.506)	(0.468)	(0.474)
Observations	1,376	1,246	1,369	1,239
Sector FE	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes
Wald Test	5.179	4.839	9.619	7.602
Prob > Chi^2	0.0750	0.0890	0.00815	0.0224

Notes: This table shows the results for the relationship between hiring skilled labor, firm performance and financial constraints. The detailed variable definitions are provided in Section 2 and the Appendix. The dependent variable is a dummy variable for whether the firm hired trained or experienced employees in the past 12 months. Variables $DSales$ and $DProfits$ take a value of 1 if the performance variable increased, 0 if there was no change and -1 if there was a decrease in sales or profits compared to the performance of the firm a year ago. The Dummy $CannotGetaLoan$, includes firms who applied for a loan, but do not have a loan and also firms who did not apply for a loan, but state in the survey that they need a loan for their operations. We estimate columns 1 to 4 using a Probit regression. To control for unobserved regional and sector level fixed effects, we include sector and region fixed dummies in all our estimations. The result for the Wald Tests are reported in the bottom of the table. The null hypothesis assumes that the interaction terms between performance and financial access are equal to one another. Robust standard errors are reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 14: Extensive Margin Effects: Hiring Skilled Employees and Interactions

VARIABLES	(1) DHire Trained	(2) DHire Trained	(3) DHire Experienced	(4) DHire Experienced
Profit Increased* Applied and got a Loan	0.115**		0.134**	
	(0.058)		(0.062)	
Profit Increased* Cannot Get Loan	0.058***		0.079***	
	(0.022)		(0.022)	
Sales Increased* Applied and got a Loan		0.098*		0.106*
		(0.054)		(0.059)
Sales Increased* Cannot Get Loan		0.054**		0.066***
		(0.021)		(0.022)
DProfit	0.002		-0.009	
	(0.008)		(0.009)	
DSales		0.005		-0.004
		(0.009)		(0.010)
Applied and got a Loan	-0.051	-0.060	-0.073	-0.089
	(0.075)	(0.080)	(0.069)	(0.073)
Cannot Get Loan	0.027	0.047	0.011	0.030
	(0.067)	(0.082)	(0.065)	(0.080)
ln(1+Invested Capital)	0.003*	0.003*	0.004*	0.004*
	(0.001)	(0.002)	(0.002)	(0.002)
Business Age	-0.000	-0.000	-0.001	-0.001
	(0.001)	(0.001)	(0.001)	(0.001)
New Innovative Product	0.024	0.026	-0.016	-0.015
	(0.025)	(0.027)	(0.026)	(0.028)
Low Education	0.020	0.021	0.027	0.027
	(0.018)	(0.021)	(0.024)	(0.027)
Medium Education	0.019	0.023	0.013	0.014
	(0.021)	(0.025)	(0.017)	(0.020)
High Education	0.041*	0.048**	0.050**	0.056**
	(0.021)	(0.024)	(0.021)	(0.023)
ln(1+invested capital)* Applied and got a Loan	-0.001	-0.001	-0.000	0.001
	(0.003)	(0.003)	(0.004)	(0.004)
ln(1+invested capital)* Cannot Get Loan	0.000	0.000	-0.001	-0.001
	(0.002)	(0.002)	(0.002)	(0.003)
Business Age* Applied and got a Loan	-0.002	-0.003	-0.002	-0.002
	(0.002)	(0.002)	(0.002)	(0.002)
Business Age* Cannot Get Loan	-0.000	0.000	0.001	0.001
	(0.001)	(0.001)	(0.001)	(0.001)
New Innovative Product* Applied and got a Loan	0.078	0.086	0.093*	0.102*
	(0.049)	(0.053)	(0.056)	(0.060)
New Innovative Product* Cannot Get Loan	0.048	0.048	0.086**	0.086**
	(0.036)	(0.038)	(0.036)	(0.038)
Low Education* Applied and got a Loan	0.054	0.058	0.072	0.084
	(0.077)	(0.084)	(0.076)	(0.082)
Low Education* Cannot Get Loan	-0.033	-0.065	-0.033	-0.064
	(0.068)	(0.082)	(0.069)	(0.083)
Medium Education* Applied and got a Loan	0.037	0.032	0.059	0.063
	(0.074)	(0.082)	(0.072)	(0.079)
Medium Education * Cannot Get Loan	-0.011	-0.036	-0.017	-0.041
	(0.069)	(0.084)	(0.066)	(0.081)
High Education * Applied and got a Loan	0.084	0.092	0.093	0.106
	(0.078)	(0.083)	(0.074)	(0.078)
High Education * Cannot Get Loan	-0.021	-0.045	-0.024	-0.047
	(0.069)	(0.084)	(0.068)	(0.081)
Observations	1,376	1,246	1,369	1,239
R-squared	0.101	0.109	0.088	0.091
Sector FE	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes
Wald Test	4.931	4.345	7.742	5.360
Prob > F-val	0.00735	0.0132	0.000454	0.00481

Notes: This table shows the results for the relationship between hiring skilled labor, firm performance and financial constraints. The detailed variable definitions are provided in Section 2 and the Appendix. The dependent variable is a dummy variable for whether the firm hired trained or experienced employees in the past 12 months. Variables $DSales$ and $DProfits$ take a value of 1 if the performance variable increased, 0 if there was no change and -1 if there was a decrease in sales or profits compared to the performance of the firm a year ago. The Dummy $CannotGetaLoan$, includes firms who applied for a loan, but do not have a loan and also firms who did not apply for a loan, but state in the survey that they need a loan for their operations. We estimate columns 1 to 4 using an OLS regression. To control for unobserved regional and sector level fixed effects, we include sector and region fixed dummies in all our estimations. The result for the Wald Tests are reported in the bottom of the table. The null hypothesis assumes that the interaction terms between performance and financial access are equal to one another. Robust standard errors are reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Appendix

Table A1: Variable Definitions and Survey Questions

Panel A: Employment Variables	Questions
Hiring Overall	C10: In the past 12 months, has the workforce increased, decreased or stayed the same?
Hiring Permanent	C11: Number of permanent employees hired/laid-off (employees who have worked in the firm on a daily basis for at least 3 consecutive months)
Hiring Casual	C12: Number of casual employees hired/laid-off
Hiring Family	C13:Number of employees from your family, relatives or friends hired/laid-off
Hiring Trained	C14: Number of employees hired/laid-off who have a formal training appropriate for this particular business
Hiring Experienced	C15: Number of employees hired/laid-off who have a work experience for at least of two consecutive years in this particular business occupation
Planned Hiring Overall	C16: In the coming 12 months, do you plan to or anticipate employing more workers?
Planned Hiring Permanent	C18a: How many permanent employees do you anticipate to employ?
Planned Hiring Casual	C18b: How many casual employees do you anticipate to employ?
Planned Hiring Trained	C18c: How many trained employees do you anticipate to employ?
Planned Hiring Experienced	C18d: How many experienced employees do you anticipate to employ?
Employee Training	B12: What Investments have you made in the past year in your business? B12C1: Training/human capital for you or your employees

Panel B: Performance & Financial Access Variables	Questions
Performance	B3 & B9: Comparing this last month to the same month a year ago, would you say that your sales/profits have- Increased, Decreased or Stayed the same
Outstanding Loan	E5: Does your business have any outstanding debt/loans?
Applied for a Loan	E4: Has your business ever applied for a loan?
Demand for New Debt	E17: Would you like to take out new debt in the next 12 months?
Demand for Loan Application	D9: I am now going to read out a list of services. Please identify which ones you would need - Loan application and other financial services
and Other Financial Services	1) Do not need 2) Need but dont have 3) Would want to develop within the business 4) Would want to outsource 5) Not aware of

Panel C: Control Variables	Questions
Invested Capital	B12: What investments have you made in the past year in your business? 1) Machinery and equipment (including computers and software) 2) Buildings/land 3) Trainings/human capital for you or your employees 4) Other (specify)
Businesss Age	A8: How long has the business been operating (years)?
New Innovative Product	I1: From fiscal year 2010 through 2012, did this establishment introduce any innovative product, service or process? Yes/No
Low Education	D2A: What is the highest level of educational attainment of the business owner? None or Primary
Medium Education	D2A: What is the highest level of educational attainment of the business owner? Secondary
High Education	D2A: What is the highest level of educational attainment of the business owner? Tertiary, University (undergraduate), Postgraduate Masters, Postgraduate Doctors, Postgraduate PHD

Notes: For all the questions above, respondents had nearly always the option to answer either "Don't Know" or "Refuse to Answer"