Firm characteristics, firing cost and employment growth in developing countries

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Abstract

We investigate the linkages between firm characteristics (firm size and age), firing costs and employment growth in 56,860 firms across 110 developing countries. First, the paper finds that while firm age is negatively associated with employment growth, firm size has a positive impact in firms' employment growth. Also, despite the fact that average firing cost and the cost of firing for employees with 1 and 5 years of tenure have a negative impact on employment growth, firing cost for employees with 10 years of tenure associated positively with the rate of job growth. The findings have implications for policy interventions targeted to produce employment growth across enterprises.

Keywords: Firm size; Firm age; Firing cost; Employment growth.

JEL Classifications: J20; J30; L11; L25.

1. Introduction

The importance of small and young businesses is well acknowledged internationally as a major source of jobs generation and economic recovery. This perception is popular among politicians of different political persuasions, small and young business advocates, and the business press. Contrary to popular belief, however, research as to whether the firm size and age is actually correlated with higher net job growth rates is still under way. In some research, net job growth rates and both firm size and age have been shown to have a negative correlation, providing support for this perception, but in other studies, the negative correlation has not been clear.

In this perspective, we also shed light on ongoing mixed literature about how labor market regulations (specifically firing costs) affect in general employment growth of firms. For the first time ever, we are able to analyze in country-cross, for a large sample of developing countries, how the differences on firing costs can affect the average employment growth.

The studies on developing countries and emerging economies for the relation between job growth rate and both firm size and age are relatively limited. Acquisti and Lehmann (2000) show that small firms in Russia were the most successful at creating jobs, while medium and large firms were mainly destroying them. Ayyagari, Demirgüç-Kunt and Maksimovic (2014) find for a sample of developing countries an inverse relationship between firm size and job creation controlling for firm age, also they find that young firms have higher job creation rates compared to mature firms. Dogan, Islam and Yazici (2017) find an inverse relationship between job flows and firm size in Turkey. However, Rijkers, Arouri, Freund and Nucifora (2014) find a positive relationship between net job creation and firm size in Tunisia, even after controlling for firm age.

In this study, we first analyze how the main firm characteristics (firm size and age) affect employment growth. Additionally, we examine, in a country-level, a possible relation between firing costs and firm's employment growth. Our sample consists of 56,860 firms in 110 developing countries based on surveys.

Our main findings are summarized as follow. First, there is a positive association between firm size and employment growth. Second, we find an inverse relationship

between firm age and job growth rates. For firing costs, we find that the average firing cost and firing costs for employees with 1 and 5 years of tenure is correlated negatively to employment growth. However, firing cost for employees with 10 year of tenure seems to have a positive impact in the rate of employment growth.

The rest of the study proceeds as follows. In section 2 we provide further background on the literature. Section 3 illustrates the data, some summary statistics and describes the empirical methodology we use for analysis. Section 4 presents the results of our analysis. Section 5 provides concluding remarks. An Appendix A with additional tables is attached at the end.

2. Literature review

In this section, we try to explore the channel via which firm characteristics (firm size and age) affect employment growth. We also examine the association between firing cost and the rate of employment growth.

2.1 Firm size and age

Employment growth in any economy can occur in two ways: existing firms can grow and add employees, or new firms can form and grow, thereby initially acquiring and then adding employees. We examine the growth of overall employment for existing firms. Firm growth has been one of most widely studied in this field. There are several approaches for the analysis of firm growth in the economic literature. From the viewpoint of the classical approach (Viner, 1932; Scherer, 1970), there is a negative relationship between firm size and growth. The reason for this negative relationship is that firms search for the optimum, most efficient size. The benefits of efficiency are related to economies of scale: the larger the firm, the higher its profits (Stigler, 1958).

The general equilibrium theory suggests that large firms will create most net new jobs. Analyses of employment growth classified by size of firm, as noted by Ijiri and Simon (1964) consistently showed large firms were the major contributors of net new jobs. But, the general equilibrium model is not the only theoretical model of capitalist economics. Another theory, widely believed in the Europe but not widely embraced in the U.S. is Schumpeter's creative destruction theory (Schumpeter, 1942). Schumpeterian creative destruction theory hypothesizes that small growing firms will

create the most net new jobs. From the stochastic firm growth theory perspective, Gibrat (1931) with the Law of Proportionate Effect or Gibrat's Law and Champernowne (1937), in a same view with Gibrat's Law, suggested that there is no relationship between the size of a firm and its growth. From the viewpoint of the learning theory, Jovanovic (1982) models the heterogeneous behaviour of firm growths depending on firm size and their level of efficiency. Cabral (1995) showed that small firms grow faster because of the sunk costs. In this case, the initial investment is a small portion of the optimum production in the long run.

The most influential work was the studies by Birch (1979, 1981, 1987) which argued that it is the small firms that were the most important engines of job creation. However, Birch's findings criticized by other authors on methodological issues. [1] The findings on the existing literature are mixed for the relationship between firm size and employment growth. More recent studies support the work of Birch and shown that small firms are the major job creators (Acquisti and Lehmann, 2000; Neumark, Wall and Zhang, 2011; Dogan, Islam and Yazici 2017). Therefore small firms are more likely not only create the most jobs, but also destroy quite a large share of lost jobs (Wagner, 1995; Genda, 1998; Schuh and Triest, 2000; Fuchs and Weyh, 2010; Hijzen, Upward and Wright, 2010). More controversial results are reported in Pyo, Hong and Kim (2016), who suggest that after controlling for firm age, the correlation between firm size and net job growth rate becomes nonexistent, and in some cases there is even a positive correlation.

According to Ibsen and Westergård-Nielsen (2011) the important determinant of employment growth is age and not size, suggesting that young firms are creating and destroying more jobs than older firms (Kuhn, Malchow-Møller and Sørensen, 2016; Adelino, Ma and Robinson, 2017), though they are still creating more than destroying provided that they survive. However, studies on this area support the inverse relation between employment growth and both firm size and age (Broersma and Gautier, 1997; Liu, Tsou and Hammit, 1999; Bigsten and Gebreeyesus, 2009; Oberhofer and Vincelette, 2013; Ayyagari, Demirgüç-Kunt and Maksimovic, 2014). Conversely, Yazdanfar and Salman (2012) for Sweden suggest that firms' size and age are positively related to employment growth. From the viewpoint of learning-by-doing

[1] See e.g. Davis, Haltiwanger and Schuh (1996).

models (Arrow, 1962; Sorensen and Stuart, 2000; Chang et al., 2002) also suggest that older firms may benefit from their greater business experience, and therefore have a higher degree of growth (including employment growth) persistence than younger firms. In a different perspective, Haltiwanger, Jarmin and Miranda (2013) for the U.S. indicate that the relationship between firm size and employment growth disappears when controlling for firm age, suggesting that causality runs from age to growth and not from size to growth.

2.2 Firing cost

In general, firing costs belong to a sub-category of labor market regulations. Our main purpose is to define how labor market regulations (specifically firing costs) affect on average employment growth. Despite the fact that we examine firing costs in a country-level, we also seek the channel via which firms' firing costs can influence employment growth. The results of the theory on this field do not provide clear results (e.g. Bertola, 1990). Also, the results on empirical literature are mixed too. Many studies, in this point of view, suggest that more flexible labor market regulations are likely to increase employment rates (e.g. Burgess, 1988; Lazear, 1990; Addison and Grosso, 1996; OECD, 2002; Heckman and Pages, 2004; Feldmann, 2008). In addition, Colombo, Cunningham and Garcia (2015) for Australia suggest that regulations have a tendency to reduce job creation and contribute to job destruction. From the other point of view, there are a lot of studies which suggest that strictness of labor regulations has a neutral or modestly beneficial impact on employment growth (e.g. Anderson, 1993; Hunt, 2000).

In summary, the relationship between firing costs and employment growth and, both firm age and size and employment growth is theoretically ambiguous. Thus, these associations lend themselves to a deeply empirical validation which we address in the rest of the paper.

3. Data and empirical identification

Firm-level data

Our first data source is a survey of registered firms conducted by the World Bank's Enterprise Surveys (ES) in 110 developing countries [2] across world during 2009–17. [3] Stratification of the sample is on three criteria - firm size (number of employees), sector of activity [4] and geographic location within a country. The ES data set provides firm-level information on employment growth rate, employment levels and other firm characteristics. The final data are a pure cross-section of 56,860 firms.

Using the data set discussed above, we construct a number of variables. The dependent variable, *employment growth*, is calculated as the annual change in the number of permanent full-time employees divided by the average value over the two periods. For our sample, employment growth rates are annualized changes over a two year period. [5]

Our main explanatory variables are *firm-size (employees)* defined as (log of) total number of permanent employees at the firm during the last fiscal year and *firm-age* defined as (log of) the number of years since the firm began operations in the country.

Furthermore, we control for *access to land*, a dummy variable, constructed from the responses to the survey questions, which takes the value 0 for firms with access to land and 1 for firms without access. [6] Also, we control for include number of years of experience (log values) of the main decision maker (top manager) has working in the industry (*managerial experience*).

We provide an explicit description of the above variables in Table 1 panel A and in Table 2 panel A we present summary statistics. The average number of permanent employees in the sample of firms is 79, and the average annual growth rate is 4.6%.

[2] A list of all countries in our sample is available in Appendix A1.

[3] The Enterprise Surveys (ES) (www.enterprisesurveys.org) has been produced since 2002. Most surveys conducted after 2006 use stratified sampling and contain weights based on this information. The Enterprise Surveys do not include 100% state ownership and agricultural private firms. We restrict our sample to surveys administered after 2008 since all surveys follow a global methodology. For countries that were surveyed twice or more during this period, we retain data for the year with the largest number of firms surveyed.

[4] We provide a list of all sectors/industries in Appendix A2.

[5] In Appendix A3 we provide the exact measurement of employment growth.

[6] We expect firms with land access to have higher rates of employment growth as they can expand their operations and hire more employees.

Most of firms (96%) report having access to land. Furthermore, firms on average have been in business for about 18 years and the average managerial experience is about 17 years.

[Insert Tables 1 and 2 about here]

Country-level data

Second, we use data from World Bank's Doing Business (DB). The Doing Business data are based on a detailed reading of domestic laws and regulations as well as administrative requirements. [7] We are using DB Labor Market Regulation (LMR), [8] which studies the flexibility of regulation of employment and measure several aspects of job quality, to focus on firing cost.

From DB LMR data set we construct our main country-level variable, *firing cost*, for all the countries in our sample, [9] which measures the cost of advance notice requirements, severance payments and penalties due when terminating a redundant worker. [10]

A description of country-level variables is available in Table 1 panel B and their summary statistics in Table 2 panel B. The average cost of firing tends to increase with the years of tenure.

The empirical exercise involves estimating the following equation:

$$Employment\ growth_{i,j,k} = \alpha + \beta_1 FS_{i,j,k} + \beta_2 FA_{i,j,k} + \gamma X_{i,j,k} + \delta Z_j + CFE_j + SFE_i + u_{i,j,k} \quad (1)$$

[7] The Doing Business (www.doingbusiness.org) project launched in 2002. The first report published in 2003. Each year comes with a new publication with revisions of indicators. We use indicators for each country based on the year of Enterprise Surveys (2009-2017).

[8] The data on Labor Market Regulation are based on a detailed questionnaire on employment regulations that is completed by local lawyers and public officials, under several assumptions to make the data comparable across countries.

[9] For some countries in our sample the indicator is defined in region-level (big cities in country). In this case, if the indicators are different across regions we take the average value to construct firing costs in country-level.

[10] We extract four variables from DB LMR data set : firing cost for a worker with 1 year of tenure, firing cost for a worker with 5 years of tenure, firing cost for a worker with 10 years of tenure and firing cost (average for workers with 1, 5 and 10 years of tenure).

Where i identifies firms, j countries and k sectors/industries. *Employment growth* refers to the annualized employment growth, *FS* and *FA* are our main explanatory firm level variables (firm size - based on number of employees and firm age), *X* is a matrix of other firm level characteristics (managerial experience and access to land), *Z* captures firing cost, a country level variable that can affect employment growth, *SFE* is sector fixed effects, *CFE* denotes country fixed effects and *u* is the error term. We attempt to control for country-specific and industry-specific shocks that may affect the employment growth of firms using country fixed effects (110 countries) and a dummy variable that take into account for each specific sector/industry. Country fixed effects control for all country-level factors that affect all firms operated within a country. Industry fixed effects capture all determinants of employment growth that are common to all firms within the industry.

4. Empirical results

4.1 Baseline regressions

The regressions are estimated using ordinary least squares (OLS) with Huber–White robust standard errors clustered at the country level.

First, we find a strong positive correlation between firm size (employees) and the rate of employment growth. Table 3 presents estimates of the association between the firm's size and subsequent employment growth (equation 1) for all the firms in the sample, as well as over the manufacturing and non-manufacturing firm subsamples.

Column 1 shows that a 1% increase in firm size (employees) is associated with a 1.487% increase in employment growth. Alternatively, a doubling of number of employees from 1 to 2 employed at the firm is associated with an increase in employment growth of about 15% of its initial level. Columns 2 and 3 show the association between firm size and employment growth to be slightly strongest in the case of non-manufacturing firms (1.801%) compared to manufacturing firms (1.351%). This positive relationship is statistically significant (at 1% level) for all the examined cases, columns 1 to 3.

Second, in the case of firm age, we find a strong negative correlation between firm age and employment growth. For the whole sample, column 1 shows that a 1% increase in the age of firm is associated with a 3.86% decrease in employment growth

(statistically significant at 1% level), suggesting firms with a few years of operation (young firms) experienced higher increase in the rate of employment growth. Here again we find the relation between firm age and job growth to be strongest (both economically and statistically) in the case of non-manufacturing firms compared to manufacturing firms in columns 2 and 3.

For our country-level variable, we find a strong negative correlation between firing cost [11] and employment growth, as we expected. Specifically, for full sample column 1 shows that a 1-unit increase in the firing cost is associated with a 6.044 % decrease in employment growth (statistically significant at 1% level). However, for the case of firing cost, in columns 2 and 3, we find the relation between the growth of employment and the cost of firing to be stronger (both economically and statistically) for manufacturing firms (-9.268) compared to non-manufacturing firms (-2.173) with point estimates more than four times larger than for non-manufacturing firms.

For the remaining firm-level variables, we find that employment growth is slightly higher for firms with no land access. [12] Also, managerial experience (years) associated negatively with employment growth. [13]

[Insert Table 3 about here]

4.2 Additional robustness checks

In this section we perform several robustness checks to confirm the validity of the baseline results. First, in Table 4 we examine how our results vary across exporting and ownership status. In columns (1) and (2) we divide the sample to non-exporting and exporting firms. [14] In columns (3) and (4) we divide the sample to domestic and foreign firms. [15] For firm size and age the results are qualitatively and significantly

[11] We use the variable: firing cost (average for workers with 1, 5 and 10 years of tenure). For robust checks, in Table 7, we use all three firing costs (1, 5 and 10 years of tenure).

[12] Statistically significant at 5% level (insignificant in the case of non-manufacturing firms, column 3 Table 3). However, in economic terms plus the fact that almost all firms (96%) in the sample have land access, the effect is less interesting and it is beyond the scope of this paper.

[13] Statistically significant at 5% level (insignificant in the case of manufacturing firms, column 3 Table 3).

[14] Our sample data does not report exporting firms for Liberia.

[15] Our sample data does not report foreign firms for Azerbaijan and Kosovo.

identical to the baseline results and no difference between subsamples. However, for firing cost the magnitude coefficients are relative larger for exporting firms compared to non-exporting. Similarly, for firing cost the magnitude coefficient for domestic firms is larger than for foreign firms.

[Insert Table 4 about here]

Second, in Table 5 we split our sample based on the median value of firm size (employees). [16] For large firms the magnitude of firm size is relative small compared to small firms indicating that for a large firm adding new employees the effect on employment growth is relative smaller compared to that in small firms. The effect of firm size in employment growth is about the same for the two subgroups. The correlation between firing cost and employment growth seems to be stronger in the case of small firms compared to large. That might be a case of increased dismissal in small firms compared to large (Almeida and Susanli, 2011).

[Insert Table 5 about here]

In addition, in Table 6 we divide our sample based on the median value of firm age. [17] We find the effect of firm size in employment growth to be similar for both subgroups. Nevertheless, the effect of firm age in employment growth for young firms seems to be stronger compared to that for mature firms. Also, the cost of firing for mature firms has a stronger effect in the rate of employment growth than for young firms.

[Insert Table 6 about here]

As a final robustness check, we investigate how the cost of firing based on years of tenure of workers (1, 5 and 10 years of tenure) can affect employment growth. We add these three firing cost variables in our regression form and estimate equation (1) using OLS with Huber-White robust standard errors clustered at the country level for

[16] The median value of firm size is 20 employees. We split the sample to two subgroups based on the number of employees, small firms (up to 20 employees) in column 1 and large firms (more than 20 employees) in column 2.

[17] The median value of firm age is 15 years. Similarly here we divide our sample to two subgroups based on the number of years of firm's operation, young firms (up to 15 years of operations) in column 1 and mature firms (more than 15 years of operations) in column 2.

the whole sample. The results we find, for the main firm-level variables, are qualitatively and significantly identical with the above results. We find that the cost of firing for employees with 1 and 5 years of tenure is negatively associated with employment growth. However, we find a strong positive and statistically significant correlation between firing cost for employees with 10 years of tenure and the rate of employment growth. One explanation is that firms tend to fire employees with less intensity in the case of employees with at least 10 years of tenure (as the association with employment growth is positively for this case, the firm might not be, necessarily, hire more employees, but fire less), as it is for employees with 1 and 5 years of tenure the effect of firing cost for these two cases holds negatively. Another explanation might be that firms try to hire more productive employees, so based on their performance firms will dismissal those employees with low performance skills in the first 5 years and keep the more productive employees, secured them with a higher cost of firing. We present the above results in Table 7.

[Insert Table 7 about here]

5. Conclusion

This paper examines the correlation between firm characteristics (firm size and age), firing costs and employment growth using two complementary data sets (Enterprise Surveys, which cover firm characteristics over 56,860 firms across 110 developing countries and – Doing Business which measures the labor regulation (firing costs) aspects across the 110 countries). First we find that firm size is positively correlated with firms' employment growth, in contrary with many studies of this area. We obtain a stronger and significant association for non-manufacturing (compared to manufacturing) and small (compared to large) firms. Second we show an inverse relation between firm age and average employment growth, following the results on the existing literature. We do find that this correlation is much stronger for non-manufacturing, small and young (compared to mature) firms in our sample. We also find that the association between average firing costs and job growth is negative. For our subgroups, we find that this impact is stronger for manufacturing, exporting (compared to non-exporting), domestic (compared to foreign), small and young firms. In addition, we examine the impact of firing costs based on years of employees' tenure to employment growth. For firing costs (employees with 1 and 5 years of

tenure) we still find a strong negative impact in employment growth. However, for employees with 10 years of tenure, firing cost is correlated positively with employment growth. That might be a case of fewer dismissals for those types of employees and also that firm tend to search for employees with high productivity, thus after 5 years of tenure firm keep the more productive employees secured them with a high firing cost as a job premium.

The findings in this study suggest that for efficient job growth policies must be designed with consideration for both firm size and age. Second, policies to improve entrepreneurship and innovation are likely to be important, since lack of dynamism is a recognizing feature of developing countries, promoting firms to be more productive among the fastest growing. On the role of firing costs, despite the fact that we find a positive relation between firing cost (employees with 10 years of tenure) and employment growth, policymakers have to consider arrangements focusing on more flexible labor market regulations (in our case lower firing cost) as overall the effects of firing cost mainly decrease employment growth, since we mentioned that the potential positive sign (10 years redundant) is used as a job premium from firm to more productive employees.

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Table 1: Variable description

Variable	Description
A. *Firm-Level Variables*	
Employment growth	Annualized growth of permanent full-time employees expressed as a percentage. Annual employment growth is the change in full-time employment over a 2 year period (for all countries in the sample the interval period is 2 years).
Firm size (employees)	Number of permanent, full time employees of the firm.
Firm age	Number of years since firm began operation.
Managerial experience	Number of years of experience of the main decision maker (top manager) of firm.
Access to land	Dummy variable, 0 if the firm reports having access to land and 1 otherwise.
B. *Country-Level Variables*	
Firing cost (average for workers with 1, 5 and 10 years of tenure)	Firing cost measures the cost of advance notice requirements and severance payments due when terminating a redundant worker, expressed in weeks of salary. The average value of notice requirements and severance payments applicable to a worker with 1 year of tenure, a worker with 5 years and a worker with 10 years is considered.
Firing cost for a worker with 1 year of tenure	
Firing cost for a worker with 5 year of tenure	
Firing cost for a worker with 10 year of tenure	

Table 2: Summary statistics

Variable	Obs	Mean	Median	SD	Min	Max
A. *Firm-Level Variables*						
Employment growth	56860	4.648738	0	17.21649	-96.5602	100
Firm size (employees)	56860	79.0691	20	206.9045	1	5000
Firm age	56860	18.50167	15	14.32794	1	195
Managerial experience	56860	17.31141	15	10.64995	1	60
Access to land	56860	0.034541	0	0.182616	0	1
B. *Country-Level Variables*						
Firing cost (average for workers with 1, 5 and 10 years of tenure)	56860	16.00282	11.4	12.63056	0	69.3
Firing cost for a worker with 1 year of tenure	56860	4.522918	4.3	4.183236	0	17.3
Firing cost for a worker with 5 year of tenure	56860	15.40304	10.7	12.46592	0	65
Firing cost for a worker with 10 year of tenure	56860	28.42244	21.4	23.76157	0	132

Table 3 Baseline results

	(1)	(2)	(3)
	Employment growth (%)		
	Full sample	Manufacturing	Non-manufacturing
Log firm size	1.487***	1.351***	1.801***
	(0.275)	(0.293)	(0.295)
Log firm age	-3.860***	-3.494***	-4.468***
	(0.641)	(0.649)	(0.683)
Firing cost	-6.044***	-9.268***	-2.173***
	(0.339)	(0.312)	(0.385)
Log managerial experience	-0.393**	-0.278	-0.590**
	(0.159)	(0.186)	(0.281)
Access to land	1.244**	1.746**	0.838
	(0.523)	(0.683)	(0.634)
Constant	73.242***	109.274***	32.851***
	(2.291)	(1.944)	(2.463)
N (number of firms)	56,860	32,625	24,235
R-squared (adj.)	0.068	0.065	0.073
N (number of countries)	110	110	110

Notes: Huber–White robust standard errors clustered at the country level in brackets. In Col. (1) results reported for the full sample, Col. (2) for manufacturing firms and Col. (3) for non-manufacturing firms. In this table, we use sector fixed effects based on the major-sectors (manufacturing and non-manufacturing) as they presented in Appendix A2.
Significance level is denoted by *** (1%) and ** (5%).

Table 4 Additional robustness - Exporting and Ownership

	(1)	(2)	(3)	(4)
	Employment growth (%)			
	Exporting status		Ownership status	
	Non-exporting	Exporting	Domestic	Foreign
Log firm size	1.630***	1.601***	1.614***	1.669***
	(0.301)	(0.303)	(0.298)	(0.304)
Log firm age	-3.907***	-3.709***	-3.864***	-3.922***
	(0.686)	(0.585)	(0.713)	(0.485)
Firing cost	-5.886***	-8.160***	-6.003***	-4.272***
	(0.419)	(0.736)	(0.431)	(0.715)
Log managerial experience	-0.438***	-0.294	-0.443***	0.058
	(0.163)	(0.522)	(0.159)	(0.405)
Access to land	1.166**	0.980	1.013**	2.654*
	(0.559)	(1.153)	(0.508)	(1.511)
Constant	71.251***	95.401***	72.647***	52.721***
	(3.441)	(7.734)	(3.580)	(8.817)
N (number of firms)	48,832	7,591	51,204	4,767
R-squared (adj.)	0.074	0.065	0.071	0.077
N (number of countries)	110	109	110	108

Notes: Huber–White robust standard errors clustered at the country level in brackets. Cols. (1) and (2) present results based on firms' exporting status. Cols. (3) and (4) present results based on firms' ownership status. In this table, we use sector fixed effects based on the sub-sectors as they presented in Appendix A2.
Significance level is denoted by *** (1%), ** (5%) and * (10%)

Table 5 Additional robustness - Size of firm

	(1)	(2)
	Employment growth (%)	
	Firm size (employees)	
	Small firms	Large firms
Log firm size	4.137***	0.788***
	(0.567)	(0.226)
Log firm age	-4.180***	-3.606***
	(0.640)	(0.642)
Firing cost	-7.288***	-5.018***
	(0.476)	(0.467)
Log managerial experience	-0.535**	-0.241
	(0.244)	(0.164)
Access to land	0.968	1.530**
	(0.609)	(0.675)
Constant	83.271***	63.596***
	(4.107)	(4.553)
N (number of firms)	28,715	28,145
R-squared (adj.)	0.074	0.085
N (number of countries)	110	110

Notes: Huber–White robust standard errors clustered at the country level in brackets. Col. (1) presents results for small firms (below median of number of employees). Col. (2) presents results for large firms (above median of number of employees). Sector fixed effects based on the sub-sectors as they presented in Appendix A2. Significance level is denoted by *** (1%) and ** (5%).

Table 6 Additional robustness - Age of firm

	(1)	(2)
	Employment growth (%)	
	Firm age	
	Young firms	Mature firms
Log firm size	1.679***	1.490***
	(0.338)	(0.228)
Log firm age	-5.484***	-2.840***
	(1.159)	(0.398)
Firing cost	-2.189***	-5.962***
	(0.238)	(0.349)
Log managerial experience	-0.833***	0.114
	(0.290)	(0.239)
Access to land	1.292**	1.135
	(0.524)	(0.746)
Constant	35.495***	66.636***
	(3.264)	(4.221)
N (number of firms)	30,309	26,551
R-squared (adj.)	0.062	0.064
N (number of countries)	110	110

Notes: Huber–White robust standard errors clustered at the country level in brackets. Col. (1) presents results for young firms (below median of years of operation). Col. (2) presents results for mature firms (above median of years of operation). Sector fixed effects based on the sub-sectors as they presented in Appendix A2. Significance level is denoted by *** (1%) and ** (5%).

Table 7 Additional robustness - Firing cost (1, 5 and 10 years of tenure)

	(1)
	Employment growth (%)
Log firm size	1.539***
	(0.274)
Log firm age	-3.891***
	(0.641)
Firing cost (1 year tenure)	-2.229***
	(0.155)
Firing cost (5 years tenure)	-2.587***
	(0.158)
Firing cost (10 years tenure)	1.618***
	(0.097)
Log managerial experience	-0.368**
	(0.158)
Access to land	1.230**
	(0.510)
Constant	1.359
	(1.925)
N (number of firms)	56,860
R-squared (adj.)	0.071
N (number of countries)	110

Notes: Huber–White robust standard errors clustered at the country level in brackets. Sector fixed effects based on the sub-sectors as they presented in Appendix A2.
Significance level is denoted by *** (1%) and ** (5%).

Appendix A1: Enterprise Survey (ES) country list

Country	Survey Year	No. of firms
Albania	2013	220
Angola	2010	229
Antigua and Barbuda	2010	141
Armenia	2009	246
Azerbaijan	2013	174
Bahamas, The	2010	133
Bangladesh	2013	1,387
Barbados	2010	131
Belarus	2013	292
Belize	2010	146
Benin	2009	118
Bhutan	2015	210
Bosnia and Herzegovina	2013	323
Botswana	2010	244
Brazil	2009	1,611
Bulgaria	2013	220
Burkina Faso	2009	348
Burundi	2014	141
Cabo Verde	2009	112
Cambodia	2016	326
Cameroon	2016	297
Central African Republic	2011	122
Chad	2009	126
Chile	2010	971
China	2012	2,379
Colombia	2010	914
Congo, Dem. Rep.	2013	439
Congo, Rep.	2009	81
Costa Rica	2010	476
Croatia	2010	281
CÃ´te d'Ivoire	2009	341
Djibouti	2013	176
Dominican Republic	2010	317
Ecuador	2010	325
Egypt, Arab Rep.	2016	1,630
El Salvador	2010	323
Eritrea	2009	47
Ethiopia	2015	713
Fiji	2009	119
Gabon	2009	126
Georgia	2013	219
Ghana	2013	599
Grenada	2010	134
Guatemala	2010	556
Guinea	2016	101
Guyana	2010	150
Honduras	2010	315
Hungary	2009	261
India	2014	8,396
Indonesia	2009	1,189
Jamaica	2010	290
Jordan	2013	436
Kazakhstan	2013	437
Kenya	2013	704
Kosovo	2009	229
Kyrgyz Republic	2013	233

Appendix A1 continued

Country	Survey Year	No. of firms
Lao PDR	2009	297
Lesotho	2016	128
Liberia	2009	85
Macedonia, FYR	2009	271
Malaysia	2015	742
Mali	2010	262
Mauritania	2014	123
Mauritius	2009	326
Mexico	2010	1,355
Moldova	2013	301
Mongolia	2013	330
Montenegro	2013	98
Morocco	2013	318
Myanmar	2014	528
Namibia	2014	494
Nepal	2009	314
Nicaragua	2016	290
Niger	2009	101
Nigeria	2014	1,805
Pakistan	2013	953
Peru	2010	934
Poland	2013	358
Romania	2013	477
Russian Federation	2012	3,271
Rwanda	2011	177
Samoa	2009	85
Senegal	2014	485
Serbia	2013	300
Sierra Leone	2017	128
Solomon Islands	2015	122
Sri Lanka	2011	518
St. Kitts and Nevis	2010	130
St. Lucia	2010	150
St. Vincent and the Grenadines	2010	135
Sudan	2014	583
Suriname	2010	148
Swaziland	2016	118
Tajikistan	2013	230
Tanzania	2013	565
Thailand	2016	840
Timor-Leste	2015	117
Togo	2009	124
Trinidad and Tobago	2010	347
Tunisia	2013	539
Turkey	2013	902
Uganda	2013	595
Ukraine	2013	644
Uruguay	2010	529
Uzbekistan	2013	181
Vietnam	2009	895
West Bank and Gaza	2013	325
Yemen, Rep.	2010	420
Zambia	2013	633
Zimbabwe	2011	530

Appendix A2: Enterprise Survey (ES) sector list

Major-sector	Sub-sector	No. of firms
Manufacturing	Basic Metals & Metal Products	813
	Basic Metals/Fabricated Metals/Machinery & Equip.	620
	Chemicals & Chemical Products	1,471
	Chemicals, Plastics & Rubber	732
	Electronics & Communications Equip.	955
	Fabricated Metal Products	1,266
	Food	4,144
	Furniture	561
	Garments	1,618
	Leather Products	300
	Machinery & Equipment	1,230
	Machinery & Equipment, Electronics & Vehicles	67
	Manufacturing	6,050
	Manufacturing Panel	241
	Minerals, Metals, Machinery & Equipment	83
	Motor Vehicles	708
	Motor Vehicles & Transport Equip.	53
	Non-Metallic Mineral Products	1,629
	Other Manufacturing	6,064
	Petroleum products, Plastics & Rubber	128
	Printing & Publishing	97
	Rubber & Plastics Products	1,171
	Textiles	1,303
	Textiles & Garments	1,079
	Wood Products & Furniture	129
	Wood products, Furniture, Paper & Publishing	113
Total		32,625

Major-sector	Sub-sector	No. of firms
Non-manufacturing	Construction	790
	Hospitality & Tourism	129
	Hotels & Restaurants	683
	IT & IT Services	658
	Other Services	8,932
	Other Services Panel	159
	Retail	7,093
	Retail Panel	177
	Services	2,408
	Services of Motor Vehicles	549
	Services of Motor Vehicles/Wholesale/Retail	214
	Tourism	92
	Transport	121
	Transport, Storage, & Communications	671
	Wholesale	1,559
Total		24,235

Appendix A3 Employment growth measurement

f → last fiscal year

l_f → number of full-time permanent employees in the last fiscal year

l_{f-2} → number of full-time permanent employees two years before the last fiscal year f

$$\text{Employment growth (annualized)} = \frac{1}{2}\ \frac{l_f - l_{f-2}}{(l_f + l_{f-2})/2}\ 100$$