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Missing firm growth in developing countries:

A firm-level analysis

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Missing firm growth in developing countries: A firm-level analysis *

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Abstract

What are the key determinants of firm growth in developing countries? Using firm-level data from the World Bank Enterprise Surveys (WBES) spanning 2010–2024, we examine the impact of three distinct categories of factors on firm growth dynamics: (1) *firm-level characteristics*, (2) *contextual factors*, and (3) *access to finance*. Our analysis reveals that each category is essential, with both internal capabilities and external conditions playing complementary roles in shaping firm growth trajectories. We find that firms with stronger technological capabilities achieve significantly higher growth. In contrast, firms facing greater exposure to political instability and financing constraints experience markedly slower growth, with small firms being significantly more vulnerable to such constraints than large firms. Access to bank financing at the firm and sector levels is associated with robust growth gains. These findings are not driven by omitted variable bias or reverse causality; they remain robust across a wide range of sensitivity analyses and estimation strategies, including matching techniques and an instrumental variable (IV) strategy. Exploring the mechanism underlying the adverse effects of the business environment, we show that political instability and financing constraints impede the development of firms' technological capabilities, which in turn undermines their growth potential. Our results underscore the importance of both firm-level capabilities and the broader enabling environment in fostering private sector development in developing economies.

Keywords: Firm growth; Firm characteristics; Institutional quality; Access to credit; MENA countries

JEL classification: D22; G30; J00; L25; O12; O14

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1 Introduction

Fast-growing firms generate employment and wealth, contribute to the development of physical and human capital, and strengthen their technological capabilities (De Loecker, 2007; Henrekson and Johansson, 2010; Bloom et al., 2013). Creating new and durable formal jobs remains one of the most pressing challenges for policymakers in developing countries, particularly in low- and middle-income economies (La Porta and Shleifer, 2014; Donovan et al., 2023). Sustained progress in raising incomes, reducing inequality and poverty, and promoting social inclusion depends largely on the emergence of a virtuous cycle in which firms expand and hire, individuals spend, and the economy grows. Yet firms in developing countries are typically smaller, operate more informally, experience slower growth, and achieve lower productivity levels than their counterparts in developed economies (Bloom et al., 2010; Hsieh and Klenow, 2014; La Porta and Shleifer, 2014).

In this paper, we pose the following questions: What are the key determinants of firm growth in developing countries? Why do some firms expand rapidly while others stagnate or decline? Firm growth is fundamentally shaped by the availability of profitable business opportunities and the possession of requisite internal capabilities, such as skills, resources, innovation, and technology, to effectively capitalize on these opportunities. In turn, each individual growth factor, be it a driver or a constraint, exerts its influence by affecting either the pool of available opportunities, the firm's underlying capabilities, or both.

A striking feature of the literature on firm growth in developing countries is that existing studies typically focus on individual growth factors or a single category of determinants, without accounting for the interplay across multiple categories. One strand of the literature examines firm-level characteristics (Bloom et al., 2012; Haltiwanger et al., 2013; Arouri et al., 2020). Another strand investigates how different dimensions of the business environment and the institutional context shape firm performance and growth (Beck et al., 2005; Ayyagari et al., 2008; Aterido et al., 2011; Yasar et al., 2011). A third stream of research concentrates exclusively on access to finance as a key driver of firm growth (Demirgüç-Kunt and Maksimovic, 1998; Chauvet and Jacolin, 2017; Kersten et al., 2017; Ayyagari et al., 2021). Moreover, most of these studies do not identify the specific channels through which these drivers and constraints operate.

We aim to address this gap in the literature by providing a systematic empirical analysis of the internal and external factors that drive and constrain firm growth. Specifically, we examine a broad set of determinants, which we classify into three distinct categories: (1) firm-level characteristics, (2) contextual factors, and (3) access to finance. Our objective is to assess the joint and relative importance of these three categories in shaping firm growth trajectories. By bringing to-

gether numerous growth factors, we seek to offer a comprehensive and nuanced understanding of the drivers and constraints of firm growth in developing countries.

In our analysis, we use repeated cross-sectional firm-level data from the World Bank Enterprise Survey (WBES). We restrict the WBSE sample to countries in the Middle East and North Africa (MENA) region. This regional focus is motivated by two main considerations. First, MENA countries exhibit structural characteristics that are particularly relevant to our research question. The private sector in the region has experienced limited dynamism, low levels of investment and innovation, and weak productivity growth over the past several decades, resulting in insufficient job creation and poor firm performance (Gatti et al., 2025). Despite rapidly expanding working-age populations, formal private sector firms have failed to generate sufficient employment opportunities. Over the period 2021–2024, annual employment growth in MENA averaged 5.1%, compared with 8.5% in low-income economies and 6.3% in middle-income economies. Against this backdrop, labor markets in MENA face multiple challenges, including a large reservoir of untapped human resources, the world's highest youth unemployment rates [1], and widespread informality (Islam et al., 2022). Second, while a substantial body of research has examined firm growth in developing countries, the MENA region remains largely understudied.[2] Investigating firm growth dynamics is therefore particularly pertinent for understanding and improving labor market outcomes in a region where they have persistently lagged.

In analyzing the factors that drive or constrain firm growth, we examine each of the three categories sequentially, introducing them one at a time in our empirical investigation. Our analysis proceeds in four steps. First, we analyze the effects of firm-level characteristics, including firm size and age, managerial characteristics, ownership and affiliation, and technological capabilities. We show that internal factors play an essential role in shaping firm growth. Smaller and younger firms grow faster than larger and older ones. In addition, firms that possess technological capabilities, including investing in physical capital and R&D, providing employee training, using a website to interact with clients and suppliers, holding an internationally recognized quality certification, engaging in exporting, and introducing product or process innovations, tend to achieve stronger growth.

Second, we analyze the effects of contextual factors on firm growth at both the country and firm levels. At the country level, firms grow faster in economies with greater growth opportunities. We find that firms located in countries with higher GDP growth, higher real GDP per

[1] According to the International Labour Organization (ILO), the youth unemployment rate in the MENA region is estimated to be around 25–26% percent in 2025.

[2] A notable exception is Betz and Ravasan (2016).

capita, and lower inflation exhibit stronger growth. In addition, firms operating in countries with a sound institutional and regulatory framework—where tax burdens are low and corruption is not widespread—experience higher growth. At the firm level, we consider managers' subjective perceptions of the obstacles they face to capture the business environment. We document that firms facing greater exposure to political instability and financing constraints experience significantly slower growth, with small firms being significantly more vulnerable to these constraints than their larger counterparts. This finding is not driven by omitted variable bias or reverse causality and remains robust across a wide range of sensitivity analyses and estimation strategies, including matching techniques and an instrumental variable (IV) strategy based on the cell-average method.

Third, we analyze the effects of access to formal and informal finance on firm growth and examine how these effects vary with firm size. We find a strong positive relationship between access to formal finance and firm growth. Firms with access to loans or overdraft facilities exhibit higher employment and sales growth than those without access, with the effects being more pronounced among small and medium-sized firms. In contrast, we find no significant association between access to formal finance and growth for large firms. Turning to informal finance, we show that trade credit and owners' personal loans are negatively associated with firm growth.

Finally, we explore the mechanisms that may explain our main findings regarding the negative effects of the business environment. We show that the adverse impacts of political instability and financing constraints on firm growth operate through firms' technological capabilities. Specifically, exposure to political instability and financial constraints prevents firms from developing these capabilities: they are less likely to invest in physical capital and R&D, provide employee training, use a website to interact with clients and suppliers, hold an internationally recognized quality certification, engage in exporting, or introduce product or process innovations. This, in turn, significantly reduces their growth potential.

This paper contributes to three distinct strands of the literature. The first focuses on firm-level characteristics as determinants of firm performance. Several studies highlight the role of firm size, age, and sector (Bigsten and Gebreeyesus, 2007; Haltiwanger et al., 2013; Aga et al., 2015), ownership structure (Haile et al., 2017; Arouri et al., 2020), and manager characteristics, including education, experience, and gender, in explaining variation in firm growth rates (Bigsten and Söderbom, 2006). Beyond the effects of firm size and age, managerial characteristics, and ownership and affiliation, our analysis adds to this literature by documenting the beneficial effects of technological capabilities on firm growth.

Second, this paper contributes to the literature on the effects of institutions and the business environment on firm growth (Beck et al., 2005; Fisman and Svensson, 2007; Ayyagari et al., 2008; Aterido et al., 2011; Yasar et al., 2011). Our contribution is to provide evidence of the negative effects of political instability and financing constraints on both employment and sales growth. We further show that these effects operate through an important channel: by impeding the development of firms' technological capabilities.

Third, this paper contributes to the extensive literature on the effects of finance on economic outcomes (Levine, 2005) and firm performance (Chauvet and Jacolin, 2017; Ayyagari et al., 2021). We contribute to this literature by demonstrating that increased access to formal finance leads to stronger employment and sales growth in developing countries. In contrast, we provide evidence of the adverse effects of informal finance on employment growth. Furthermore, we show that when a larger share of firms at the sectoral level has access to formal finance, firm growth is significantly enhanced.

The remainder of this paper is organized as follows. Section 2 discusses the theoretical mechanisms through which growth factors may affect firm growth. Sections 3 and 4 describe the methodology and data, including the variables and sample composition used in the econometric analysis. Section 5 presents the main results. Section 6 examines the robustness of our findings and addresses further issues. Section 7 concludes and discusses the policy implications of our results.

2 Theoretical mechanisms

Firm growth is shaped by a complex interplay of various factors. In what follows, we discuss some of the key mechanisms identified in the literature, focusing on how firm-level characteristics, contextual factors, and access to finance affect firm growth.

Firm-level characteristics. A growing body of research has identified several firm-level attributes associated with growth, including firm size and age, owner and manager characteristics, legal structure and ownership, export orientation, and innovation activity.

The relationship between firm size and growth has received particular attention. Since the seminal contribution of Birch (1979), which recognized small firms as primary drivers of new job creation, a vast empirical literature has documented a significant negative relationship between firm size and growth in both developed and developing countries. These studies consistently show that small firms create more jobs than their larger counterparts (Neumark et al., 2011; Bigsten and Gebreeyesus, 2007; Arouri et al., 2020). The tendency of small firms to exhibit higher growth rates is closely related to the concept of minimum efficient scale (MES). Small firms typi-

cally operate below the MES in their industry and consequently face a significant cost disadvantage compared to firms operating at or near the MES. To become competitive and survive, they must grow rapidly to reach the MES. This imperative to achieve cost efficiency thus serves as a powerful driver of high growth rates among small firms (Hall, 1987; Evans, 1987).

Similarly, the literature documents a robust negative relationship between firm growth and age (Bigsten and Gebreeyesus, 2007; Aga et al., 2015; Coad, 2018). Young firms grow substantially more rapidly than their older or mature counterparts. Schumpeter (1934)'s concept of creative destruction offers one possible explanation for this pattern. The underlying rationale is that young firms are more prone to innovation and job creation than established firms. A second explanation is provided by Jovanovic (1982)'s passive learning model of firm growth, in which new firms enter the market with no prior knowledge of their potential future profitability. These firms can only estimate their potential profits, based on realized profits, after they begin operations. This acquired and updated knowledge then informs future decisions on whether to expand, contract, or exit the market. This framework elucidates why numerous young firms exit the market, sometimes almost immediately after entry, and predicts that smaller and younger firms exhibit higher and more variable growth rates.

Formal education, work experience, gender, and the training of managers and employees have also been identified as key factors distinguishing high-performing from low-performing firms. Owners and managers with higher levels of formal education tend to possess greater managerial ability, which enhances firm capabilities and stimulates growth through improved decision-making, better adaptation to market changes, and higher productivity (Bloom et al., 2012, 2013), both directly through innovation and indirectly through technology transfer (Van der Sluis et al., 2005; Bigsten and Söderbom, 2006).

Work experience influences firm growth through two main channels. First, directly, by equipping managers and employees with knowledge and skills. Experienced owners and managers are better positioned to make strategic decisions, manage operational constraints effectively, and navigate complex business activities. Second, indirectly, by expanding the social networks of owners and managers (Stam et al., 2014). In turn, these networks facilitate access to critical resources, including finance, talent, information, and supplier or client relationships, that can generate new opportunities, broaden market reach, foster innovative solutions, and improve decision-making.

Legal structure, ownership type, and business orientation also play important roles in shaping firm growth. One mechanism through which firms can enhance their efficiency is the creation, transfer, or acquisition of new knowledge. Both internal and external sources of technology are positively associated with firm growth. For instance, foreign-owned firms often exhibit superior

growth performance compared to domestic firms, owing to their technological advantages, access to foreign markets, and easier integration into international financial systems (Dunning and Fortanier, 2007; Haile et al., 2017). Similarly, firms that engage in exporting and invest in R&D tend to achieve significantly higher productivity and profitability than those that do not.

Providing training to both managers and employees is essential for upgrading and refining their knowledge, skills, and expertise. This is particularly important for individuals in leadership roles, as they can significantly enhance firm performance and growth. Moreover, training strengthens the capabilities of managers and employees, transforming these capabilities into strategic assets that reinforce competitive advantage and ultimately lead to superior firm growth (Winter, 2009).

Contextual factors. Firm-level characteristics interact with broader contextual factors that reflect the economic and institutional environment in which firms are established and operate. These contextual factors include macroeconomic conditions and the institutional and regulatory framework, and they play a major role in shaping firms' opportunities and, consequently, their capacity and incentives to grow.

Macroeconomic conditions. Macroeconomic stability is crucial for private sector development and firm growth because it reduces uncertainty, encourages investment, fosters innovation, and facilitates planning by providing stable conditions such as low inflation and predictable interest rates. Stable economies enable firms to make informed decisions and long-term commitments, such as investing in human capital and new technology, leading to increased productivity and sustainable expansion.

The overall state of the economy affects the availability of profitable business opportunities, which in turn reflects domestic market dynamics that either encourage or discourage firms from expanding to adjust to demand. Inflation provides information about the stability of the macroeconomic environment, allowing firms to better anticipate future economic developments or shocks. As Camara et al. (2023) shows, while rising prices may initially encourage firm expansion, excessive inflation weakens purchasing power and reduces firms' ability to hire. Inflation expectations also influence firms' economic decisions. For instance, Coibion et al. (2020) find that when firms expect higher inflation, they tend to raise their prices, increase their demand for credit, and reduce their employment and capital investment.

Institutional and regulatory framework. Markets and institutions play a fundamental role in shaping firm growth. Higher-quality institutions are more supportive of firms' business strategies and competitiveness, thereby enhancing their productivity and growth. Specifically, well-functioning institutions facilitate transactions and reduce two types of production costs that firms face: transformation costs and transaction costs (North, 1990, 1994; Aron, 2000; Yasar et al., 2011). In such

an enabling environment, firms are better positioned to increase their productivity and expand.

In developing countries, however, markets and institutions tend to be less mature and developed than their counterparts in advanced economies. The institutional and regulatory framework is often burdensome and can impede firm growth. A substantial body of literature has examined how various dimensions of institutional constraints constitute important obstacles to business expansion (De Soto, 1989; Beck et al., 2005; Aterido et al., 2011). Key constraints identified include weak legal enforcement, stringent business and labor regulations, high taxes, corruption and bureaucratic red tape, and unfair competition from the informal sector. These constraints are found to have heterogeneous effects on firm growth and disproportionately affect small firms, potentially constraining their ability to grow rapidly (De Soto, 1989; Tybout, 2000).

Access to finance. A large body of empirical research underscores the importance of access to finance as a key driver of firm growth (Demirgüç-Kunt and Maksimovic, 1998; Chauvet and Jacolin, 2017). Financing is essential for firms because it enables them to expand operations, foster innovation, and invest in productive inputs and hiring (Ayyagari et al., 2021). In developing countries, however, access to finance remains limited, and credit is often allocated to only a small subset of firms. These conditions discourage firms from applying for credit, leaving many disconnected from the formal banking system (Brancati et al., 2024). As a result, firms' ability to fund investment projects is constrained, ultimately hindering their growth (Ayyagari et al., 2008; Aterido et al., 2011).

Table 1 summarizes the factors discussed in this section and specifies their expected effects on firm growth based on the mechanisms outlined above.

3 Data

We rely on the most comprehensive firm-level survey data available, collected through the World Bank Enterprise Surveys (WBES). The WBES are nationally representative surveys of manufacturing and service sector firms.[3] The surveys include only formal (registered) firms with five or more employees; informal or unregistered firms, self-employed individuals, and microenterprises (with fewer than five full-time employees) are excluded. In addition, fully government-owned firms are not eligible to participate. The sampling methodology employs random sampling stratified by firm size, sector of activity, and geographical region within each country. Stratification ensures sufficient observations for robust analysis within each stratum. We complement the firm-level data with country-level indicators to account for contextual factors that may influence

[3] The WBES do not cover extractive industries, the financial sector, or agriculture.

firm growth.

Table 1: Factors associated with firm growth

Growth factors	Link to firm growth
Firm-level characteristics:	
Firm size	−
Firm age	−
Managerial experience (years)	+
Foreign ownership	+
Export participation	+
R&D investment	+
Formal training programs	+
Contextual factors:	
Macroeconomic conditions:	
GDP growth	+
Inflation	−
Institutional and regulatory framework:	
Corruption	−
Taxes	−
Business regulation	−
Law enforcement	+
Access to finance:	
Access to bank financing	+

Notes: This table lists firm's growth factors and how they affect firm growth positively (+) or negatively (−).

3.1 Sample

We use repeated cross-sectional firm-level data from the WBES. We restrict the WBES sample to the Middle East and North Africa (MENA) region. Our main sample includes data on formal firms in Bahrain, Djibouti, Egypt, Iraq, Jordan, Lebanon, Morocco, Saudi Arabia, Tunisia, the West Bank and Gaza, and Yemen. This regional focus is motivated by the structural characteristics of MENA countries that are particularly relevant to our research question. The private sector in the region has experienced limited dynamism, low levels of investment and innovation, and weak productivity growth over the past several decades, resulting in insufficient job creation and poor firm performance (Gatti et al., 2025). Despite rapidly expanding working-age populations, formal private sector firms have failed to generate sufficient employment opportunities. Over the period 2021–2024, annual employment growth in MENA averaged 5.1%, compared with 8.5% in low-income economies and 6.3% in middle-income economies. Against this backdrop, labor markets in MENA face multiple challenges, including a large reservoir of untapped human resources, the world's highest youth unemployment rates, and widespread informality (Islam et al., 2022).

The final sample covers 18,673 formal firms operating in 11 MENA countries surveyed during the period 2010–2024, as indicated in Table 2. Approximately 54.5% of the observations reflect firms in manufacturing, whereas 45.5% reflect firms in the service sector.

Table 2: List of countries

Country	Survey rounds	Observations
Bahrain	2024 – 1st round	139
Djibouti	2013 – 1st round	212
Egypt	2013 – 1st round	2554
Egypt	2016 – 2nd round	1680
Egypt	2020 – 3rd round	2988
Iraq	2011 – 1st round	734
Iraq	2022 – 2nd round	830
Jordan	2013 – 1st round	502
Jordan	2019 – 2nd round	511
Jordan	2024 – 3rd round	555
Lebanon	2013 – 1st round	530
Lebanon	2019 – 2nd round	522
Morocco	2013 – 1st round	378
Morocco	2019 – 2nd round	936
Morocco	2023 – 3rd round	549
Saudi Arabia	2022 – 1st round	1427
Tunisia	2013 – 1st round	578
Tunisia	2020 – 2nd round	596
Tunisia	2024 – 3rd round	623
West Bank And Gaza	2013 – 1st round	361
West Bank And Gaza	2019 – 2nd round	334
West Bank And Gaza	2023 – 3rd round	358
Yemen	2010 – 1st round	436
Yemen	2013 – 2nd round	340

Notes: This table displays the list of MENA countries included in our sample and indicates the survey round years and the number of observations for each survey round.

3.2 Dependent variable: firm growth

Our dependent variable captures firm growth, for which we use two alternative measures: annual employment growth and annual sales growth. For each survey round, we observe the number of permanent full-time employees and annual sales in the year preceding the survey (final period t) and three years prior to the survey (initial period $t-2$).[4] To ensure cross-country com-

[4] The WBES asks firms to report their number of permanent full-time employees and annual sales figures for both the last fiscal year (questions l1 and d2) and three fiscal years prior (questions l2 and n3).

parability, we deflate sales figures using each country's GDP deflator.[5]

We compute annualized growth rates of employment and real sales over the three-year reference period as the change in each variable between the final period t and the initial period $t-2$, divided by the simple average of the variable over the same period. This approach, which follows Haltiwanger et al. (2013), avoids the regression-to-the-mean bias associated with using initial values as denominators and helps reduce the influence of outliers. We then divide the resulting ratio by 2, the number of years in the reference period $(t, t-2)$, to obtain annualized growth rates, as follows:

$$employment\ growth_{i(t,t-2)} = \frac{1}{2} \times \frac{E_{it} - E_{it-2}}{(E_{it} + E_{it-2})/2} \tag{1}$$

where E_{it} and E_{it-2} are the numbers of permanent full-time employees in firm i in years t and $t-2$.

$$sales\ growth_{i(t,t-2)} = \frac{1}{2} \times \frac{S_{it} - S_{it-2}}{(S_{it} + S_{it-2})/2} \tag{2}$$

where S_{it} and S_{it-2} are the annual real sales of firm i in years t and $t-2$.

Table 3 and Table 4 present the annualized employment and sales growth rates for the full sample, as well as for each country individually. On average, firms in our sample experience positive annual growth, with employment increasing by 3.5% per year and sales by 3% per year.

Table 3: Employment growth - Descriptive statistics

	Mean	St. dev.	Median	Minimum	Maximum	Obs.
Full sample	0.035	0.165	0.000	-0.906	1.000	18673
By country						
Bahrain	0.135	0.229	0.091	-0.571	0.868	139
Djibouti	0.099	0.177	0.077	-0.631	1.000	212
Egypt	0.017	0.147	0.000	-0.905	1.000	7222
Iraq	0.073	0.233	0.000	-0.852	1.000	1564
Jordan	0.043	0.198	0.000	-0.818	1.000	1568
Lebanon	-0.002	0.221	0.000	-0.786	0.767	1052
Morocco	0.074	0.146	0.034	-0.852	1.000	1863
Saudi Arabia	0.063	0.194	0.034	-0.906	1.000	1427
Tunisia	0.029	0.188	0.000	-0.818	1.000	1797
West Bank and Gaza	0.042	0.184	0.000	-0.667	0.800	1053
Yemen	-0.002	0.216	0.000	-0.837	1.000	776

Notes: Summary statistics for annual employment growth for the full sample and by country, weighted by sampling weights available from the World Bank Enterprise Surveys. The table reports the mean, median, standard deviation, maximum value, minimum value, and number of observations.

[5] The GDP deflators are sourced from the World Development Indicators, series NY.GDP.DEFL.ZS.

Table 4: Sales growth - Descriptive statistics

	Mean	St. dev.	Median	Minimum	Maximum	Obs.
Full sample	0.030	0.349	-0.028	-1.000	1.000	14751
By country						
Bahrain	0.130	0.286	0.068	-0.896	0.919	93
Djibouti	0.046	0.243	0.050	-0.685	0.573	58
Egypt	-0.011	0.222	-0.019	-1.000	1.000	6249
Iraq	-0.382	0.137	-0.411	-0.998	1.000	1239
Jordan	-0.106	0.304	-0.088	-0.975	1.000	1163
Lebanon	-0.060	0.226	-0.068	-0.899	1.000	907
Morocco	-0.038	0.228	-0.118	-0.920	0.998	1738
Saudi Arabia	0.951	0.044	0.960	0.462	0.999	1281
Tunisia	-0.077	0.239	-0.052	-0.990	1.000	1534
Yemen	-0.467	0.514	-0.644	-1.000	0.994	489

Notes: Summary statistics for annual real sales growth for the full sample and by country, weighted by sampling weights available from the World Bank Enterprise Surveys. The table reports the mean, median, standard deviation, maximum value, minimum value, and number of observations.

3.3 Drivers and constraints of firm growth

We investigate a broad set of internal and external factors that drive or constrain firm growth. To account for the observed variation in growth rates across firms, we categorize these factors into three distinct groups: firm-level characteristics, contextual factors, and access to finance. Drawing on the existing literature on the relationship between firm dynamics and the environment in which firms operate, as discussed in section 2, we further classify contextual factors into three subcategories: (i) macroeconomic conditions, (ii) institutional and regulatory framework, and (iii) business environment.

Firm-level characteristics. We extract data on firm-level characteristics from the WBES. First, we consider the size and age of the firm in the initial period $t-2$ for each survey. Firm size is measured either by the number of permanent full-time employees or by deflated sales. We also control for managerial characteristics, including the number of years of experience the top manager has worked in the sector in the initial period $t-2$ (*Managerial experience*) and female participation in decision-making, measured by whether the firm has a *Female top manager*. In addition, we account for the nature of a firm's ownership (*Foreign ownership*, *Government ownership*) and its affiliation with a larger parent firm (*Subsidiary firm*).

To capture firms' technological capabilities, we include indicators for whether firms invest in physical capital and R&D (*Capital investment*, *R&D investment*), provide formal training programs (*Formal training*), use a website to interact with clients and suppliers (*Website*), hold an internationally recognized quality certification (*Quality certification*), engage in exporting (*Export intensity*), and introduce product or process innovations (*Product innovation*, *Process innovation*).

All of these variables capture different aspects of firm characteristics, including managerial attributes, ownership and affiliation, and technological capabilities, and are expected to influence firm growth. With the exception of *Firm size*, *Firm age*, and *Managerial experience*, which are measured at the initial period $t-2$, all firm-level characteristics are measured in the current period t.

Table A.3 presents summary statistics for these variables. Firms in our sample have an average of 33 employees and are 16 years old. Approximately 19 % of firms belong to a larger parent firm, 16 % invest in physical capital, and 5 % invest in R&D. In addition, 12 % provide formal training programs, 46.5 % use a website, and 10 % hold an internationally recognized quality certification. Exporters account for 11 % of the sample, while product and process innovators represent 9.5 % and 9 %, respectively.

Table A.5 and Table A.4 present the distribution of firms by size and age. Small firms constitute 67 % of the sample, while medium and large firms account for 26 % and 6 %, respectively. In terms of age, new firms (0–4 years) represent 19.5 % of the sample, and young firms (5–9 years) account for 22 %. The largest share consists of mid-age firms (10–19 years) at 30 %, followed closely by old firms (20+ years) at 28 %.

Contextual factors. We complement the firm-level data with country-level indicators to account for contextual factors that may influence firm growth, including macroeconomic conditions, the institutional and regulatory framework, and the broader business environment.

First, to capture the effects of *macroeconomic conditions* on firm growth, we employ two variables that reflect short-term economic fluctuations: *real GDP growth* and *inflation*. We also control for the level of economic development using *GDP per capita*. Finally, we account for market size, as larger markets provide greater opportunities for firms to exploit economies of scale and achieve faster growth. We use total *Population* as a proxy for market size. All macroeconomic variables are sourced from the World Development Indicators (WDI) database.

Second, to examine the impact of the institutional and regulatory framework ($\mathbf{X}_{3ct}$) on firm growth, we employ six country-level indicators. We consider two measures of tax burden: Tax burden and Labor tax. The first, Tax burden, is a composite index from the Heritage Foundation that reflects marginal tax rates on personal and corporate income as well as the overall tax burden as a percentage of GDP. The index ranges from 0 (low tax burden) to 1 (high tax burden). The second, Labor tax, captures taxes and mandatory contributions on labor paid by firms as a share of profits, sourced from the WDI database.

To capture the quality of the institutional environment, we use four additional indicators from the World Governance Indicators (WGI) database (Kaufmann and Kraay, 2024). Control of cor-

ruption measures perceptions of the extent to which public power is exercised for private gain, including all forms of corruption and capture of the state by elites and private interests. Government effectiveness captures perceptions of the quality of public services, the quality of the civil service and its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies. Political stability measures perceptions of the likelihood of political instability or politically motivated violence, including terrorism. These three indices range from −2.5 (weak governance) to 2.5 (strong governance). Finally, Business regulations measures the extent to which regulations and bureaucratic procedures restrain entry and reduce competition in the market. For ease of interpretation, we normalize all four institutional indices to a 0–1 range.

To mitigate endogeneity concerns, all country-level variables are measured as annual averages over the three-year period preceding the initial period $t-2$, that is, from $t-5$ to $t-3$. Table A.6 reports summary statistics for these country-level variables. In our sample, average annual GDP growth is approximately 2%, while average annual inflation stands at around 2.8%.

Business environment. Finally, we consider the business environment in which firms operate. The business environment is shaped by multiple factors that may either accommodate or constrain firm growth. Private sector development depends on market opportunities and the ease of conducting business, yet it ultimately hinges on decisions made by investors and firm managers. Consequently, their perceptions of the challenges and opportunities shaping their businesses are critical.

To better understand the role of the business environment in limiting firm growth, we account for firms' perceptions of the obstacles they face. We draw on opinion-based questions from the WBES, in which the owner or manager is presented with a list of 15 factors and asked whether these factors represent an obstacle to the firm's growth. The responses are subjective by nature and reflect both the constraints that firms face and their assessment of the business environment. Firms may report multiple obstacles; however, not all are equally or genuinely constraining. Our objective is therefore to identify the binding constraints, those that directly and significantly affect firm growth, and to assess whether these effects differ across firm characteristics.

The survey question takes the following form: "How much of an obstacle is [factor k of the business environment] for the growth of your firm?" Responses are recorded on a five-point scale: 1 (no obstacle), 2 (minor obstacle), 3 (moderate obstacle), 4 (major obstacle), and 5 (very severe obstacle). We classify a firm as constrained by a specific factor k if it reports the factor as a major or very severe obstacle (the top two categories). The resulting dummy variable, *Constrained by factor k*, takes the value 1 for firms that perceive factor k as an important obstacle to their ac-

tivity, and 0 otherwise. We examine the complete set of business environment obstacles, 12 in total, that firms report as constraints on their operations: *political instability*, *access to finance*, *informal competition*, *corruption*, *tax rates*, *tax administration*, *labor regulations*, *electricity*, *crime*, *transport*, *courts*, and *access to land*. Table A.3 presents the full list of obstacles and the proportion of firms reporting each as a constraint. In our sample, nearly half of all firms report being constrained by political instability (47.5 %) and corruption (44 %). Firms frequently report significant constraints related to informal competition, tax rates, tax administration, electricity, and access to finance. In contrast, only 12 % of firms report labor regulations as a constraint, and just 14 % report constraints related to the court system.

Access to finance. We account for access to both formal and informal finance and investigate whether they have differential effects on firm growth. For formal finance, we include two dummy variables indicating whether a firm has a line of credit or loan from a financial institution (*Loan availability*) or access to an overdraft facility (*Overdraft*). To capture informal sources of funding that may substitute for or complement formal finance, we include two additional dummy variables for whether a firm uses trade credit or relies on owners' personal loans (*Trade credit* and *Personal loans*).

Table A.3 reports that 23 % of firms have access to an overdraft facility, 13 % have a credit line or loan, 8 % use trade credit, and 6.5 % rely on owners' personal loans to finance their business activities. These figures indicate that financial inclusion remains low in the MENA region, where a substantial share of firms are disconnected from the formal banking system (ERDB, EIB, and World Bank, 2016). The data also suggest that access to overdraft facilities represents the primary step toward financial inclusion for firms in developing countries.

Detailed definitions and sources for all firm- and country-level variables used in the econometric analysis are provided in Table A.1 and Table A.2. Summary statistics are reported in Table A.3 and Table A.6.

4 Methodology

We develop an empirical model that links firm growth with the growth factors discussed in section 2. We estimate the following OLS regression to examine the relationship between firm growth and our factors of interest:

$$firm\ growth_{isc(t,t-2)} = \alpha + \beta^{\top}\mathbf{X}_{isct} + sector_s + year_t + u_{isct} \tag{3}$$

The dependent variable represents the annual growth of firm i in sector s in country c over the period from $t-2$ to t. We consider two alternative measures of firm growth: annual employment growth and annual sales growth. The vector $\mathbf{X}_{isct}$ includes the factors that drive or constrain firm growth. We decompose this vector into distinct categories to distinguish between firm-level characteristics, contextual factors, and access to finance, as described in section 3. We introduce each of the three categories sequentially, extending equation (3) as follows.

First, we analyze the effects of firm-level characteristics:

$$\textit{firm growth}_{isc(t,t-2)} = \alpha + \beta_1^{\top} \boldsymbol{\textit{firm-level}}_{ist} + \textit{sector}_s + \textit{year}_t + u_{isct} \tag{4}$$

Next, we analyze the effects of contextual factors while controlling for firm-level characteristics. Contextual factors include macroeconomic conditions, the institutional and regulatory framework, and firms' perceptions of the obstacles they face in the business environment:

$$\begin{aligned} \textit{firm growth}_{isc(t,t-2)} = \alpha + \beta_1^{\top} \textit{firm-level}_{ist} + \beta_2^{\top} \boldsymbol{\textit{macro-conditions}}_{c(t-3,t-5)} \\ + \beta_3^{\top} \boldsymbol{\textit{institutions}}_{c(t-3,t-5)} + \beta_4^{\top} \boldsymbol{\textit{business- environment}}_{isct} \\ + \textit{sector}_s + \textit{year}_t + u_{isct} \end{aligned} \tag{5}$$

Finally, we analyze the effects of access to finance, controlling for both firm-level characteristics and contextual factors:

$$\begin{aligned} \textit{firm growth}_{isc(t,t-2)} = \alpha + \beta_1^{\top} \textit{firm-level}_{ist} + \beta_2^{\top} \textit{macro-conditions}_{c(t-3,t-5)} \\ + \beta_3^{\top} \textit{institutions}_{c(t-3,t-5)} + \beta_4^{\top} \textit{business- environment}_{isct} \\ + \beta_5^{\top} \boldsymbol{\textit{access-finance}}_{isct} \\ + \textit{sector}_s + \textit{year}_t + u_{isct} \end{aligned} \tag{6}$$

All specifications include sector fixed effects (*sectors*), capturing 35 sectors at the two-digit level, and year fixed effects (*yeart*) to account for unobserved heterogeneity across sectors and over time. The term u_{isct} denotes the error term. In all estimations, we report White's heteroskedasticity-consistent standard errors. Our results are also robust to the use of alternative clustering methods.[6]

[6] In subsequent sensitivity checks, we also cluster standard errors at the two-digit sector level, by geographical area, and at the intersection of sectors and areas. Our main findings remain largely robust to alternative clustering adjustments. See subsection 6.3 for details.

5 Empirical results

In this section, we present and discuss the empirical results of our investigation into the factors that drive or constrain firm growth. To this end, we analyze each of the three categories sequentially, firm-level characteristics, contextual factors, and access to finance, by estimating the models in equations (4), (5), and (6).

5.1 Firm-level characteristics

We begin our empirical investigation by analyzing how firm-level characteristics affect firm growth. We estimate equation (4) and report the results in Table 5. The first three columns present the results for employment growth, while the last three columns report the sales growth regressions.

We find that firm size is negatively and significantly associated with employment growth, indicating that smaller firms tend to expand more rapidly than larger ones. We also uncover notable nonlinearities, as evidenced by the positive and statistically significant coefficient on the squared term for firm size. These nonlinear effects are consistent across all specifications (columns 1–3) and reveal a convex relationship between employment growth and firm size. Specifically, while firm size initially constrains growth, this negative effect diminishes as firm size increases and eventually turns positive. Based on column 3, the turning point at which the effect becomes positive occurs at 303 full-time permanent employees. In other words, employment growth declines for firms with 303 or fewer employees but increases for firms beyond this threshold.

Similarly, we observe a significant negative relationship between employment growth and firm age. Consistent with Jovanovic (1982)'s learning model, this finding suggests that younger firms tend to grow more rapidly than their older counterparts. However, we find no evidence of nonlinear effects, as the coefficient on the squared term for firm age is statistically insignificant across all specifications (columns 1–3).

The interaction term between firm size and firm age has a positive and significant effect on employment growth, indicating that the negative relationship between age and growth is attenuated for firms that start larger. Such firms experience a slower decline in employment growth as they age compared to smaller firms. In contrast, firms that begin on a smaller scale exhibit rapid growth in their early stages, but their growth rate levels off more quickly.

Table 5: Firm characteristics and firm growth

Dependent variable:	Employment growth			Sales growth		
	(1)	(2)	(3)	(4)	(5)	(6)
Firm size and age						
Firm size (Ln)	-0.1556***	-0.1638***	-0.1592***	-0.0611***	-0.0607***	-0.0722***
	[0.0086]	[0.0088]	[0.0091]	[0.0059]	[0.0061]	[0.0062]
Firm size^2 (Ln)	0.0145***	0.0152***	0.0139***	0.0015***	0.0014***	0.0018***
	[0.0011]	[0.0011]	[0.0011]	[0.0003]	[0.0003]	[0.0003]
Firm age (Ln)	-0.0377***	-0.0356***	-0.0294***	-0.0638***	-0.0608***	-0.0514***
	[0.0063]	[0.0069]	[0.0072]	[0.0132]	[0.0136]	[0.0141]
Firm age^2 (Ln)	0.0005	-0.0000	-0.0002	0.0032	0.0026	0.0024
	[0.0013]	[0.0014]	[0.0014]	[0.0021]	[0.0021]	[0.0024]
Firm size × Firm age	0.0064***	0.0073***	0.0058***	0.0036***	0.0034***	0.0022**
	[0.0014]	[0.0016]	[0.0016]	[0.0009]	[0.0009]	[0.0010]
Managerial characteristics						
Managerial experience (Ln)		-0.0013	-0.0032		0.0098***	0.0094***
		[0.0022]	[0.0023]		[0.0033]	[0.0034]
Female top manager, Y/N		-0.0139**	-0.0178***		-0.0099	-0.0204**
		[0.0059]	[0.0060]		[0.0090]	[0.0090]
Ownership and affiliation						
Foreign ownership, Y/N		0.0051	-0.0114**		0.0346***	0.0160*
		[0.0050]	[0.0054]		[0.0081]	[0.0087]
Government ownership, Y/N		0.0044	0.0036		0.0435**	0.0346
		[0.0126]	[0.0131]		[0.0208]	[0.0239]
Subsidiary firm, Y/N		0.0106***	0.0073*		0.0275***	0.0218***
		[0.0037]	[0.0039]		[0.0058]	[0.0059]
Technological capabilities						
Capital investment, Y/N			0.0422***			0.0323***
			[0.0036]			[0.0058]
R&D investment, Y/N			0.0196***			0.0116
			[0.0054]			[0.0085]
Formal training programs, Y/N			0.0181***			0.0283***
			[0.0041]			[0.0066]
Website, Y/N			0.0245***			0.0292***
			[0.0031]			[0.0045]
Quality certification, Y/N			0.0262***			0.0409***
			[0.0041]			[0.0059]
Export intensity, Y/N			0.0282***			0.0260**
			[0.0067]			[0.0102]
Product innovation, Y/N			0.0114**			0.0074
			[0.0045]			[0.0072]

Continued on next page

Table 5 – *Continued from previous page*

Dependent variable:	Employment growth			Sales growth		
	(1)	(2)	(3)	(4)	(5)	(6)
Process innovation, Y/N			0.0043			0.0170**
			[0.0053]			[0.0084]
Sector FE	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓
Geographical area FE	✓	✓	✓	✓	✓	✓
No. of countries	11	11	11	11	11	11
No. of firms	18673	17014	15002	14939	13642	12090
Adjusted R^2	0.162	0.171	0.191	0.710	0.721	0.727
Mean (dependent variable)	0.0309	0.0317	0.0260	0.0145	0.0159	0.0320

Notes: This table presents OLS estimates of the model in equation (4) with robust standard errors. Firm size is measured either by the number of permanent full-time employees (columns 1-3) or deflated sales (columns 4-6). All specifications include a constant, sector, year and geographic area fixed effects. The number of observations varies across columns because some variables are available for fewer firms. Y/N = Yes or No. Detailed definitions and sources of the variables are provided in Table A.1 and Table A.2. *, **, *** denote statistical significance at the 10, 5, and 1 percent levels.

Managerial experience has no significant effect on employment growth. However, firms led by female top managers exhibit 1.78 percentage points lower growth. Contrary to earlier evidence (Gu et al., 2020; Brolhato et al., 2025), we find no significant effects associated with government ownership. Foreign-owned firms show 1.14 percentage points lower employment growth, while being a subsidiary of a larger parent firm boosts employment growth by 0.73 percentage points (column 3).

Importantly, firms that possess technological capabilities tend to achieve stronger employment growth than those without such capabilities, with each capability positively and significantly associated with growth. Specifically, firms that invest in physical capital and RD experience 4.22 and 1.96 percentage points higher employment growth, respectively. Formal training increases growth by 1.81 percentage points. Similarly, using a website and obtaining an internationally recognized quality certification raise growth by 2.45 and 2.62 percentage points. Both exporters and product innovators achieve 2.82 and 1.14 percentage points higher employment growth. Process innovation, by contrast, has no significant effect on employment.

Estimating the sales growth regression yields comparable results, with a few notable differences (columns 4–6). The negative relationships between size and growth, and between age and growth, hold and remain robust. The interaction term between firm size and firm age has a significant positive effect, indicating that the negative relationship between age and sales growth is attenuated for firms that start with a larger initial size.

In contrast to the employment growth findings, managerial experience increases sales growth by 0.94 percentage points, while firms led by female top managers exhibit 2.04 percentage points lower growth. Foreign-owned firms and subsidiaries grow more strongly—by 3.46 and 2.18 percentage points, respectively. We also find that firms' technological capabilities continue to exert positive and significant effects on sales growth (column 6).

Interestingly, the effects of innovation capabilities differ across growth measures in ways consistent with prior literature (Vivarelli, 2014; Cirera and Sabetti, 2019). For employment growth, product innovation drives firm expansion, while process innovation has no significant effect. For sales growth, the pattern reverses: product innovation is insignificant, whereas process innovation is positively and significantly associated with growth. This divergence likely reflects that product innovation expands markets and requires additional labor, while process innovation enhances efficiency and productivity, boosting sales without necessarily increasing employment.

In summary, these findings highlight the role of firm-level characteristics in shaping firm growth. Beyond the effects of firm size and age, our results point to the beneficial effects of technological capabilities. These capabilities are developed both internally and externally through a range of activities and operations, including investments in physical capital and R&D, export activities, workforce training, and innovation.

5.2 Contextual factors

Having examined how firm-level characteristics affect firm growth, we now turn to the influence of contextual factors. Specifically, we investigate three dimensions: macroeconomic conditions, the institutional and regulatory framework, and firms' perceptions of the business obstacles they face.

In Table 6, we examine how macroeconomic conditions and the institutional and regulatory framework at the country level affect firm growth. The regressions include firm-level characteristics, but we do not report these coefficients for brevity.[7] The magnitude and statistical significance of these coefficients remain stable across specifications.

The coefficient on *GDP growth* is positive and statistically significant, indicating that firms grow faster in economies with greater growth opportunities. As expected, *inflation* is negatively associated with firm growth. *Real GDP per capita* also exhibits a positive and significant relationship with firm growth, suggesting that firms perform better in wealthier countries. In addition, a

[7] The results, which are similar to those reported in Table 5 columns 3 and 6, are available upon request from the authors.

higher country *Population* is associated with significantly higher firm growth rates, confirming that firms grow faster in larger markets that offer greater growth opportunities.

Table 6: Macroeconomic conditions, institutional and regulatory framework and firm growth

Dependent variables:	Employment growth				Sales growth			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Macroeconomic conditions								
GDP growth	0.4457***	0.5522***	0.1436	0.2214	0.7446***	0.8585***	0.8954***	0.7149***
	[0.1542]	[0.1664]	[0.1511]	[0.1541]	[0.2217]	[0.2347]	[0.2220]	[0.2268]
Inflation	-0.7726***	-0.4877***	-0.9409***	-0.8626***	-4.8960***	-4.6975***	-4.6861***	-4.7908***
	[0.1003]	[0.1137]	[0.1008]	[0.1051]	[0.1616]	[0.1770]	[0.1701]	[0.1762]
GDP per capita	0.0048	0.0036	0.0203***	0.0224***	0.6078***	0.6096***	0.5780***	0.6160***
	[0.0064]	[0.0064]	[0.0069]	[0.0059]	[0.0091]	[0.0090]	[0.0108]	[0.0084]
Population	0.0234***	0.0228***	0.0308***	0.0258***	0.3088***	0.3059***	0.3082***	0.3007***
	[0.0043]	[0.0044]	[0.0042]	[0.0047]	[0.0066]	[0.0067]	[0.0066]	[0.0071]
Institutional & regulatory framework								
Labor tax (% of profits)	-0.1106**	-0.0836	-0.2623***	-0.2555***				
	[0.0437]	[0.0581]	[0.0389]	[0.0389]				
Control of corruption	0.1756***				0.2075***			
	[0.0249]				[0.0438]			
Business regulations		0.1965***				0.1683***		
		[0.0232]				[0.0354]		
Government effectiveness			0.0800**				0.4971***	
			[0.0342]				[0.0725]	
Political stability				0.0694***				0.1473***
				[0.0201]				[0.0417]
Firm-level characteristics	✓	✓	✓	✓	✓	✓	✓	✓
Sector FE	✓	✓	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓	✓	✓
No. of countries	11	11	11	11	11	11	11	11
No. of firms	14824	13829	14824	14824	12033	12033	12033	12033
Adjusted R^2	0.159	0.161	0.156	0.157	0.700	0.700	0.701	0.700
Mean (dependent variable)	0.0253	0.0235	0.0253	0.0253	0.0321	0.0321	0.0321	0.0321

Notes: This table presents OLS estimates of the model in equation (5) with robust standard errors. All specifications include a constant, firm-level characteristics as in Table 5 columns 3 and 6, sector, and year fixed effects. The number of observations varies across columns because some variables are available for fewer firms. Detailed definitions and sources of the variables are provided in Table A.1 and Table A.2. *, **, *** denote statistical significance at the 10, 5, and 1 percent levels.

A higher level of *Labor tax* is negatively and significantly associated with employment growth. In columns 1–4 and 5–8, we alternately introduce four measures of institutional quality: *Control of corruption*, *Business regulations*, *Government effectiveness*, and *Political stability*. All four in-

dicators are positive and statistically significant, suggesting that firms experience faster growth in economies with robust institutional settings. These include strong control of corruption, less restrictive regulations and bureaucratic procedures that do not hinder business entry or reduce competition, effective government, and political stability with the absence of violence or terrorism.

Overall, at the country level, we find that firms located in economies with higher GDP growth, lower and more stable inflation, higher income levels, and larger populations exhibit significantly higher growth rates. We also show that firms benefit from operating in countries with a sound and non-burdensome institutional and regulatory framework. These findings underscore the crucial role of macroeconomic stability and high-quality institutions in fostering private sector development. By creating a more favorable investment climate, improving resource allocation efficiency, and lowering transaction costs, such an environment enhances firm performance and growth, ultimately contributing to more inclusive economic development.

Table 7 and Table 8 present our findings on how firms' perceptions of the obstacles they face affect firm growth. The regressions control for all variables introduced in previous specifications.

When entered individually, we find that all 12 perceived constraint measures are negative and statistically significant, with the exception of *access to land*. Firms that report being constrained by political instability, access to finance, informal competition, corruption, tax rates, tax administration, labor regulations, electricity, crime, transport, or courts exhibit significantly lower employment growth rates (Table 7, columns 1–12). The estimated coefficients for the significant obstacles range from −0.0059 (electricity) to −0.0233 (political instability).

In column 13, we include all obstacles simultaneously in the employment growth regression. In this specification, only political instability, access to finance, and informal competition remain significant constraints. A joint hypothesis test confirms that the remaining obstacles are jointly insignificant (F-statistic = 0.75, p-value = 0.66). Political instability reduces employment growth by 1.81 percentage points, while access to finance and informal competition lower it by 1.32 and 0.88 percentage points, respectively. These effects are economically meaningful, given that the sample mean for employment growth is 2.73%.

Table 7: Business environment and employment growth

Dependent variables:	Employment growth												
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Constrained by political instability, Y/N	-0.0233***												-0.0181***
	[0.0029]												[0.0037]
Constrained by access to finance, Y/N		-0.0179***											-0.0132***
		[0.0032]											[0.0043]
Constrained by informal competition, Y/N			-0.0134***										-0.0088**
			[0.0030]										[0.0036]
Constrained by corruption, Y/N				-0.0118***									-0.0002
				[0.0028]									[0.0038]
Constrained by tax rates, Y/N					-0.0117***								-0.0053
					[0.0029]								[0.0040]
Constrained by tax administration, Y/N						-0.0094***							0.0016
						[0.0032]							[0.0044]
Constrained by labor regulations, Y/N							-0.0093**						-0.0005
							[0.0039]						[0.0053]
Constrained by electricity, Y/N								-0.0059*					0.0030
								[0.0030]					[0.0038]
Constrained by crime, Y/N									-0.0067*				0.0062
									[0.0034]				[0.0048]
Constrained by transport, Y/N										-0.0084**			0.0015
										[0.0036]			[0.0044]
Constrained by courts, Y/N											-0.0111***		-0.0011
											[0.0039]		[0.0049]
Constrained by access to land, Y/N												-0.0053	0.0036
												[0.0037]	[0.0048]
Institutional & regulatory framework	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Macroeconomic conditions	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Firm-level characteristics	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Sector FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
No. of countries	11	11	11	11	11	11	11	11	11	11	11	11	11
No. of firms	14537	14682	13294	14400	14638	14439	14665	14801	14473	14598	13670	14255	11287
Adjusted R^2	0.164	0.160	0.163	0.161	0.160	0.156	0.160	0.159	0.159	0.159	0.160	0.158	0.160
Mean (dependent variable)	0.0247	0.0252	0.0274	0.0246	0.0251	0.0244	0.0252	0.0252	0.0258	0.0252	0.0264	0.0263	0.0273

Notes: This table presents OLS estimates of the model in equation (5) with robust standard errors. All specifications include a constant, firm-level characteristics as in Table 5 columns 3 and 6, macroeconomic conditions and institutional & regulatory framework as in Table 6 column 1, sector, and year fixed effects. The number of observations varies across columns because some variables are available for fewer firms. Y/N = Yes or No. Detailed definitions and sources of the variables are provided in Table A.1 and Table A.2. *, **, *** denote statistical significance at the 10, 5, and 1 percent levels.

Table 8: Business environment and sales growth

Dependent variable:	Sales growth												
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Constrained by political instability, Y/N	-0.0347***												-0.0333***
	[0.0047]												[0.0062]
Constrained by access to finance, Y/N		-0.0122**											0.0069
		[0.0052]											[0.0069]
Constrained by informal competition, Y/N			-0.0168***										-0.0051
			[0.0049]										[0.0059]
Constrained by corruption, Y/N				-0.0112**									0.0006
				[0.0047]									[0.0061]
Constrained by tax rates, Y/N					-0.0150***								-0.0065
					[0.0048]								[0.0066]
Constrained by tax administration, Y/N						-0.0151***							-0.0021
						[0.0054]							[0.0072]
Constrained by labor regulations, Y/N							-0.0088						-0.0015
							[0.0065]						[0.0086]
Constrained by electricity, Y/N								-0.0162***					0.0009
								[0.0051]					[0.0064]
Constrained by crime, Y/N									-0.0126**				-0.0111
									[0.0059]				[0.0079]
Constrained by transport, Y/N										-0.0039			-0.0005
										[0.0062]			[0.0072]
Constrained by courts, Y/N											-0.0098		0.0086
											[0.0064]		[0.0083]
Constrained by access to land, Y/N												-0.0144**	-0.0060
												[0.0059]	[0.0076]
Institutional & regulatory framework	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Macroeconomic conditions	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Firm-level characteristics	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Sector FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
No. of countries	11	11	11	11	11	11	11	11	11	11	11	11	11
No. of firms	11787	11910	10828	11690	11916	11824	11901	12016	11751	11850	11121	11609	9312
Adjusted R^2	0.699	0.698	0.706	0.698	0.701	0.701	0.699	0.699	0.694	0.700	0.710	0.705	0.721
Mean (dependent variable)	0.0304	0.0312	0.0291	0.0305	0.0328	0.0370	0.0328	0.0318	0.0283	0.0315	0.0373	0.0316	0.0399

Notes: This table presents OLS estimates of the model in equation (5) with robust standard errors. All specifications include a constant, firm-level characteristics as in Table 5 columns 3 and 6, macroeconomic conditions and institutional & regulatory framework as in Table 6 columns 5, sector, and year fixed effects. The number of observations varies across columns because some variables are available for fewer firms. Y/N = Yes or No. Detailed definitions and sources of the variables are provided in Table A.1 and Table A.2. *, **, *** denote statistical significance at the 10, 5, and 1 percent levels.

We reproduce the analysis for firms' sales growth and report the results in Table 8. When entered individually, we find that all perceived constraint measures are negative and statistically significant, with the exception of labor regulations, transport, and courts. Firms that report being constrained by political instability, access to finance, informal competition, corruption, tax rates, tax administration, electricity, crime, and access to land exhibit significantly lower sales growth. In column 13, we include all obstacles simultaneously in the sales growth regression. In this specification, only political instability remains a significant constraint. A joint hypothesis test confirms that the remaining obstacles are jointly insignificant (F-statistic = 0.51, p-value = 0.90). Thus, political instability emerges as the true binding constraint, reducing real sales growth by 3.33 percentage points. This effect is economically meaningful, particularly when compared to the sample mean of sales growth (4%).

In summary, these results reveal that only three obstacles—political instability, informal competition, and access to finance—constitute the true binding constraints, as they are the only obstacles that directly and negatively affect firm growth. We do not claim that other obstacles are irrelevant, but rather suggest that their effects are indirect, operating through their impact on these core constraints. These findings further confirm that a poor and unfavorable business environment, characterized by multiple obstacles to conducting business activities, undermines firms' prospects of achieving their potential in terms of employment and output growth.

5.3 Access to finance

Table 9 presents our findings on the effects of access to finance on firm growth. We find a strong positive correlation between employment growth and firms' access to formal finance. Column 1 shows that firms with access to a credit line or loan (*Loan availability*) experience annual employment growth that is 0.82 percentage points higher than firms without such access, underscoring the critical role of external financing in supporting firm expansion. We also find that access to an overdraft facility is positively and significantly associated with employment growth, with an even larger effect of 1.61 percentage points. This suggests that overdraft facilities may serve as a substitute for formal loans, particularly among smaller firms. In contrast, we find no significant association between the use of trade credit and employment growth. However, firms that rely on informal financing in the form of personal loans (from owners or managers) have annual employment growth rates that are 2.00 percentage points lower.

Access to formal finance also positively affects annual real sales growth, and this effect is larger in magnitude than that observed for employment. Firms with access to a loan or credit line experience annual sales growth that is 1.90 percentage points higher than firms without such access (column 2). We also find that access to an overdraft facility has an even greater impact,

with an associated increase of 3.88 percentage points. Finally, we detect no significant effects of *Trade credit* or *Personal loans* on sales growth.

The positive effect of access to formal finance (*Loan availability* and *Overdraft facility*) on firm growth is also economically meaningful, particularly when compared to the sample means for employment growth (2.65%) and sales growth (2.93%). Overall, these findings corroborate previous studies documenting the beneficial role of formal finance in fostering employment and sales growth (Betz and Ravasan, 2016; Chauvet and Jacolin, 2017; Ayyagari et al., 2021). We also provide evidence that informal finance, specifically firm owners' personal loans, negatively affects employment growth, underscoring the distinct roles of formal and informal financing sources.

Table 9: Access to finance and firm growth

Dependent variables:	Employment growth	Sales growth
	(1)	(2)
Loan availability, Y/N	0.0082*	0.0190***
	[0.0042]	[0.0065]
Overdraft facility, Y/N	0.0161***	0.0388***
	[0.0037]	[0.0053]
Trade credit, Y/N	0.0006	-0.0081
	[0.0036]	[0.0053]
Personal loans, Y/N	-0.0200***	-0.0038
	[0.0060]	[0.0089]
Business environment	✓	✓
Institutional & regulatory framework	✓	✓
Macroeconomic conditions	✓	✓
Firm-level characteristics	✓	✓
Sector FE	✓	✓
Year FE	✓	✓
No. of countries	11	11
No. of firms	12627	11539
Adjusted R^2	0.165	0.699
Mean (dependent variable)	0.0273	0.0304

Notes: This table presents OLS estimates of the model in equation (6) with robust standard errors. All specifications include a constant, firm-level characteristics as in Table 5 columns 3 and 6, macroeconomic conditions and institutional & regulatory framework as in Table 6 columns 1 and 5, business environment as in Table 7 column 13 and in Table 8 column 13, sector, and year fixed effects. The number of observations varies across columns, because some variables are available for fewer firms. Y/N = Yes or No. Detailed definitions and sources of the variables are provided in Table A.1 and Table A.2. *, **, *** denote statistical significance at the 10, 5, and 1 percent levels.

6 Robustness checks and further issues

In this section, we conduct several robustness checks to probe the strength and sensitivity of our results and investigate further issues. First, we examine whether our findings are robust to the inclusion of a comprehensive set of additional firm-level characteristics. Second, we test whether outlier firms drive our results. Third, we employ alternative clustering adjustments for standard errors. Fourth, we account for the timing of loan issuance when analyzing the effects of formal finance on firm growth. Fifth, We examine whether financial inclusion fosters firm growth. Sixth, we examine whether the effects of access to finance and business constraints vary across firms with different characteristics. Seventh, we employ matching techniques to assess whether systematic differences between firms influence our findings. Eighth, we test whether the estimated impact of business environment constraints is subject to reverse causality. Finally, we explore the mechanisms underlying the adverse effects of business constraints on firm growth. The corresponding results are presented in Appendix B.

6.1 Firm-level characteristics: additional controls

To demonstrate the robustness of our findings, we include a comprehensive set of firm-level control variables. The results are presented in Table B.1. In columns 1 and 3, we show that our main estimates remain stable and are not driven by observable firm characteristics, such as whether the firm holds a checking or savings account (*Bank account*) or sells its main product in the *Local market* or *National market*. Furthermore, columns 2 and 4 indicate that the legal status of the firm does not alter our main findings.

6.2 Outliers

We assess whether our findings are driven by outlier firms, particularly those experiencing extreme growth or decline. Fast-growing firms, for example, may differ fundamentally from the typical firm, as they often enjoy better access to bank financing and face fewer constraints from the business environment. As a result, their growth trajectories may not reflect those of the average firm. To address this concern, we re-estimate our models after excluding the top 1% and 5% of firms with the highest and lowest growth rates. Our findings remain virtually unchanged (see Table B.2). Access to formal finance continues to exert a beneficial effect on firm growth, while political instability, access to finance, and informal competition persist as the most significant binding constraints. These results confirm that our baseline estimates are not driven by outlier firms.

6.3 Alternative clustering adjustments of the standard errors

Our main findings remain largely robust to alternative clustering adjustments. We cluster standard errors by geographical area (101 areas in our sample), by two-digit sector (35 sectors), and at the intersection of area and sector (see Table B.3). Geographical area refers to the sub-national administrative region within each country. These clustering levels correspond to the stratification dimensions used by the World Bank in constructing the survey sample, which include firm size, sector, and geographical area within each country.

6.4 Access to bank financing: Timing of loan issuance

Our measure of access to bank financing (*Loan availability*) combines current loans and lines of credit, regardless of their issuance date. In some instances, these loans may have been granted several years prior to the survey, which could introduce bias into our estimates of the effect of bank financing on firm growth. In Table B.4, we address this concern by restricting the analysis to loans and credit lines issued within the last 1, 2, 5, 7, and 10 years for each survey round.

The results remain largely consistent across all issuance windows. The positive and significant effect of access to bank financing is most pronounced for recently granted loans and diminishes over time as the issuance date recedes. Specifically, the effects are strongest for loans issued within the past one to two years, which are associated with an increase in employment growth of approximately 1.22 to 1.11 percentage points and sales growth of 2.91 to 2.70 percentage points.

6.5 Financial inclusion and firm growth

We examine whether financial inclusion fosters firm growth. We construct two measures of financial inclusion at the geographical area-sector level: *Financial inclusion (Loan)* is the share of firms in the same geographical area and sector that have a loan or credit line from a financial institution, and *Financial inclusion (Overdraft)* is the share of firms in the same geographical area and sector that have an overdraft facility. To avoid endogeneity, we exclude the firm's own observation when constructing the share for both measures. Our objective is to examine whether the distribution of bank financing across firms within a geographical area and sector influences individual firm growth. We introduce these two measures alternatively into the specification in (6) and report the results in Table B.5.

Our analysis indicates that both measures of financial inclusion are positively and significantly associated with firm growth. A 10 percentage point expansion in Financial inclusion (Loan) is associated with a 0.74 percentage point increase in employment growth and a 0.57 percentage point increase in sales growth. A corresponding expansion in Financial inclusion (Overdraft) is associated with a 0.63 percentage point increase in employment growth and a 0.65 percentage

point increase in sales growth. These findings suggest that, beyond the beneficial effect of a firm's own access to bank financing, the broader availability of bank financing among other firms in the same geographical area and sector also matters for firm growth.

6.6 Access to finance, business environment constraints and firm characteristics

We next examine whether the effects of access to finance vary systematically across firms of different sizes. Our baseline results establish that access to formal finance positively affects firm growth, while political instability, access to finance, and informal competition emerge as the most persistent binding constraints. The literature suggests that firms of different sizes face distinct challenges: small firms, in particular, tend to be more financially constrained and more vulnerable to expropriation (Beck et al., 2005; Ayyagari et al., 2008).

To explore this heterogeneity, we replicate our baseline analysis from subsection 3.2 on the effect of access to finance for the full sample, and then estimate it separately for three subsamples: small firms (5–19 employees), medium firms (20–99 employees), and large firms (100 or more employees). The results, reported in Table B.6, reveal notable differences across size classes. For employment growth, access to a loan is associated with an increase of 1.77 percentage points for small firms (column 2), while access to an overdraft facility raises employment growth by 1.97 percentage points for small firms and 1.12 percentage points for medium-sized firms (columns 2–3). For sales growth, overdraft access increases growth by 3.48 percentage points for small firms and 4.16 percentage points for medium-sized firms, while loan access is associated with a 2.23 percentage point increase for medium-sized firms (columns 6–7). In contrast, we find no significant association between access to formal finance and growth for large firms, with the sole exception of overdraft facilities, which increase sales growth by 2.33 percentage points (columns 4 and 8).

Interestingly, access to informal finance, in the form of personal loans, is negatively associated with firm growth. In the full sample, personal loans reduce employment growth by 2.00 percentage points (column 1). This negative effect is particularly pronounced among medium-sized firms, where employment growth declines by 3.39 percentage points, and among small firms, with a reduction of 1.32 percentage points (columns 2–3). For sales growth, however, the coefficients on personal loans are not statistically significant across any size category (columns 5–8). These patterns suggest that reliance on personal borrowing may reflect underlying financial distress or signal inadequate access to more formal sources of financing, and that its constraining effects operate primarily through employment rather than sales. Access to trade credit, by contrast, is not statistically significant across nearly all specifications, suggesting that this form of financing plays a limited role in shaping firm growth dynamics.

Together, these results confirm that the growth-enhancing effects of formal finance are concentrated among small and medium-sized firms, while reliance on informal finance is associated with weaker employment performance.

Having established that the effects of access to finance vary by firm size, we now examine whether business environment constraints also differentially impact firms based on their characteristics. We re-estimate the model in (6), interacting political instability, access to finance, and informal competition constraints with three firm-level characteristics: firm size, export participation, and foreign ownership. Turning to the interaction results for employment growth in columns 1–3 of Table B.7, we find that large and medium-sized firms are significantly less affected by these constraints than small firms (column 1). Column 2 indicates that exporting firms are more constrained by political instability and informal competition than their non-exporting counterparts. Column 3 shows that foreign-owned firms are particularly vulnerable to political instability and are also more constrained by informal competition. In contrast, the effect of access to finance does not vary systematically between exporters and non-exporters, nor between foreign-owned and domestically owned firms.

Turning to sales growth in columns 4–6, the pattern is broadly similar. Large and medium-sized firms remain significantly less affected by political instability and informal competition than small firms (column 4). Exporting firms continue to face greater constraints from both political instability and informal competition (column 5), while foreign-owned firms remain particularly vulnerable to political instability (column 6). As with employment growth, the effect of access to finance on sales growth does not vary systematically across firm ownership or export status.

Together, these results highlight substantial heterogeneity in how access to finance and business constraints shape firm growth. Small firms, non-exporters, and domestic firms appear most vulnerable to a weak business environment, while the growth-enhancing effects of finance are strongest among small and medium-sized firms. This finding is particularly significant given that small firms constitute 67% of our sample and play a central role in stimulating economic activity and growth in developing countries.

6.7 Matching techniques

We rely on matching techniques to assess whether our findings are driven by systematic differences between firms constrained by political instability, access to finance, or informal competition and those that are not. Specifically, we employ three estimators for the average treatment effect (ATE): bias-corrected nearest-neighbor matching following Abadie and Imbens (2011), radius matching, and entropy balancing. The results, presented in Table B.8, confirm the negative effects of the three business environment constraints on firm growth.

6.8 Checking for reverse causality

Firms experiencing slow growth may attribute their poor performance to the business environment in which they operate. If such attributions are accurate, firms' perceptions could be endogenous in our model, potentially biasing our estimates due to reverse causality.

To address this concern, we re-estimate our model using an instrumental variable (IV) approach designed to isolate the exogenous component of firms' perceived business obstacles. We construct our instruments using the cell-average method (Distinguin et al., 2016; Fisman and Svensson, 2007). First, we consider two different cells: the intersection of geographical area and sector (area-sector cell), and the intersection of geographical area, sector, and firm size (area-sector-size cell). For each firm, we then compute the average perception of a given constraint among all other firms operating in the same cell, excluding the firm's own perception. This cell-level average captures the prevailing business environment conditions faced by firm i and serves as an instrument for the firm's own perception.

Table B.9 presents the IV estimates. First-stage regressions confirm that our instruments are positively and strongly correlated with firms' perceptions. The results reveal a negative and significant effect of access to finance on employment growth, ranging from −4.5 to −5.2 percentage points (columns 1–2). Political instability exerts a negative and significant effect on sales growth, ranging from −1.7 to −2.6 percentage points (columns 3–4). Notably, these effects become more pronounced after correcting for endogeneity, suggesting that OLS estimates may understate the true constraining role of these factors. In contrast, political instability and informal competition are no longer significant in the employment growth regressions, indicating that access to finance is the most robust binding constraint for employment growth (columns 1–2).

Taken together, these results consistently demonstrate that greater exposure to political instability and access to finance constraints significantly impede firm growth.

6.9 Underlying mechanisms

After accounting for reverse causality, our findings indicate that firms constrained by political instability and limited access to finance exhibit significantly lower growth. In this section, we explore the possible mechanisms underlying these negative effects.

We have shown in subsection 5.1 that firm growth is shaped by technological capabilities acquired both internally and externally through export participation, workforce training, investment in fixed assets and R&D, and the possession of internationally recognized quality certifications (see Table 5). We argue that a plausible mechanism explaining our main results is that greater exposure to political instability and financing constraints undermines the development of

firms' technological capabilities, which in turn dampens employment and sales growth. To test this mechanism, we examine the relationship between these two binding constraints and firms' technological capabilities.

Specifically, we estimate a regression model in which each technological capability is regressed on our main explanatory variables: Constrained by political instability and Constrained by access to finance. All specifications control for access to formal and informal finance, firm-level characteristics, and sector and year fixed effects. To address potential reverse causality concerns, we employ an instrumental variable (IV) approach based on the cell-average method introduced in subsection 6.8. The first-stage results confirm that our instruments are strongly correlated with firms' perceptions of political instability and financing constraints, with F-statistics well above conventional thresholds.

Table B.10 presents the 2SLS estimation results. Firms constrained by political instability are significantly less likely to invest in R&D (column 2), engage in export activities (column 3), or introduce process innovations (column 5). In contrast, political instability does not significantly affect capital investment (column 1) or product innovation (column 4).[8]

Firms constrained by access to finance face a different set of impediments. They are significantly less likely to invest in capital (column 1), introduce product innovations (column 4), or adopt process innovations (column 5). However, financing constraints do not significantly affect R&D investment (column 2) or export participation (column 3).

Taken together, the results in Table B.10 document a negative link between binding constraints and firms' technological capabilities, while those in Table 5 establish a positive link between these capabilities and firm growth. This combined evidence demonstrates that higher exposure to political instability and financing constraints impede firm growth precisely by undermining the technological capabilities that drive it.

7 Conclusion

This paper contributes to the literature on firm growth by providing a systematic empirical analysis of the internal and external factors that drive and constrain firm growth. Using firm-level data from the WBES, we examine three distinct categories of determinants: (1) firm-level characteristics, (2) contextual factors, and (3) access to finance. Our analysis reveals that each

[8] We also tested the effects of political instability and financing constraints on other technological capabilities, including formal training, website use, and internationally recognized quality certifications. These results were statistically insignificant and are omitted for brevity.

category is essential, with internal capabilities and external conditions playing complementary roles in shaping firm growth trajectories.

We show that firms with stronger technological capabilities achieve significantly higher growth. We also demonstrate that political instability and financing constraints adversely affect firm growth, with small firms being significantly more vulnerable to these constraints than their larger counterparts. In addition, we document that firms with access to formal finance experience stronger growth than those without such access.

A key contribution of this paper is to provide new evidence on the mechanisms through which business environment constraints impede private sector growth in developing countries. Exposure to political instability and financial constraints hinders the development of firms' technological capabilities, which in turn significantly diminishes their growth. In this sense, our results suggest that political instability and limited access to bank finance adversely affect the broader economy by slowing the accumulation of technological capabilities at the firm level, thereby constraining the growth of formal sector firms.

Our empirical findings have significant implications for policy interventions aimed at fostering firm growth and enhancing private sector dynamism in developing countries. Achieving this objective hinges on a comprehensive policy response that addresses the legal, regulatory, macroeconomic, institutional, and governance constraints firms face, while positioning the private sector to lead economic transformation as a catalyst for job creation, innovation, and sustainable growth.

First, policy should be designed to de-risk innovation through targeted financial instruments while simultaneously investing in human capital. Second, developing countries should step up efforts to promote and maintain macroeconomic stability and build high-quality institutions, as these provide an enabling environment for private sector development. Governments should therefore foster the right conditions by strengthening governance, modernizing public institutions, reducing bureaucratic burdens, lowering tax burdens, fighting corruption, and protecting intellectual property. In such an environment, firms are continuously incentivized to develop the technological capabilities necessary for sustained, long-term growth.

Third, ensuring political stability to reduce uncertainty and implementing financial sector reforms to ease financing constraints and improve access to capital are likely to be among the most effective strategies for promoting firm growth in developing countries. Finally, strategies for financial development should be deliberately designed not only to expand financial inclusion but also to actively dismantle the barriers that leave so many firms financially disconnected.

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Appendix

This appendix reports:

1. The definition and source of variables used in our analysis in Table A.1 and Table A.2;
2. Summary statistics for the data used in the econometric analysis are presented in Table A.3 –Table A.6.
3. The results of the robustness checks and further issues (discussed in section 6) in Table B.1-Table B.9.

A Data

Table A.1: Definition and source of firm-level variables

Variable	Definition
Dependent variables	
Employment growth[a]	The annual growth of permanent full-time employees expressed as a percentage.
Sales growth[a]	The annual growth in real sales expressed as a percentage.
Firms' characteristics	
Firm size	Number of permanent full-time employees in the initial period $t-2$ for employment growth regressions. Total sales in the initial period $t-2$ for the sales growth regressions.
Firm age	The age of the firm measured in the initial period, $t-2$, expressed in log.
Manager experience (years)	The number of years of the top manager's experience working in the firm measured in the initial period $t-2$, expressed in log.
Female top manager, Y/N	Dummy variable for firms with a female top manager.
Foreign ownership, Y/N	Dummy variable for firms owned by private foreign individuals, companies, or organizations.
Government ownership, Y/N	Dummy variable for firms owned by the government or the state.
Subsidiary firm, Y/N	Dummy variable for firms that are part of a larger firm.
Capital investment, Y/N	Dummy variable for firms investing in physical capital.
R&D investment, Y/N	Dummy variable for firms investing in R&D.
Formal training programs, Y/N	Dummy variable for firms that offer formal training programs to their permanent full-time employees.
Website, Y/N	Dummy variable for firms using website for business related activities.
Quality certification, Y/N	Dummy variable for firms holding an internationally-recognized quality certification.
Export intensity	The share of direct exports in total sales.
Export participation, Y/N	Dummy variable if 10% or more of sales are exported.
Product innovation, Y/N	Dummy variable for firms that introduced new or significantly improved products or services over the last three years.
Process innovation, Y/N	Dummy variable for firms that introduced any new or significantly improved process over the last three years.
Business environment	
Constrained by political instability, Y/N	Dummy variable for firms reporting political instability as a major or very severe obstacle to their operations.
Constrained by corruption, Y/N	Dummy variable for firms reporting corruption as a major or very severe obstacle to their operations.
Constrained by informal competition, Y/N	Dummy variable for firms reporting competitors' practices in the informal competition as a major or very severe obstacle to their operations.
Constrained by tax rates, Y/N	Dummy variable for firms reporting tax rates as a major or very severe obstacle to their operations.
Constrained by tax administration, Y/N	Dummy variable for firms reporting tax administration as a major or very severe obstacle to their operations.
Constrained by access to finance, Y/N	Dummy variable for firms reporting access to finance as a major or very severe obstacle to their operations.
Constrained by electricity, Y/N	Dummy variable for firms reporting electricity as a major or very severe obstacle to their operations.
Constrained by licence, Y/N	Dummy variable for firms reporting business licensing and permits as major or very severe obstacle to their operations.
Constrained by labor regulations, Y/N	Dummy variable for firms reporting labor regulation as a major or very severe obstacle to their operations.
Constrained by crime, Y/N	Dummy variable for firms reporting crime, theft and disorder as a major or very severe obstacle to their operations.
Constrained by transport, Y/N	Dummy variable for firms reporting transportation of goods, supplies, and inputs as a major or very severe obstacle to their operations.
Constrained by access to land, Y/N	Dummy variable for firms reporting access to land as a major or very severe obstacle to their operations.
Access to finance	
Loan availability, Y/N	Dummy variable for firms with a credit line or loan from financial institutions.
Overdraft facility, Y/N	Dummy variable for firms with an overdraft facility.
Trade credit, Y/N	Dummy variable for firms that purchased on credit from suppliers and advances from customers.
Personal loans, Y/N	Dummy variable for firms using the owner(s)' outstanding personal loans to finance the firm business activity.

Notes: This table provides the definitions and sources of all firm-level variables used in the regression analysis. All firm-level variables are extracted from the World Bank Enterprise Surveys and are measured in the current period t unless otherwise indicated. Y/N = Yes or No.
[a] Author's calculation, see subsection 3.2 for details.

Table A.2: Definition and source of country-level variables

Variable	Definition	Source[a]
Macroeconomic conditions		
GDP growth	Annual percentage growth rate of gross domestic product at market prices based on constant local currency.	WDI
Inflation	Annual percentage change in the consumer price index.	WDI
GDP per capita	Gross domestic product divided by the mid-year population, expressed in constant 2010 U.S. dollars.	WDI
Population	All residents regardless of legal status or citizenship.	WDI
Institutional and regulatory framework		
Labor tax	The amount of taxes and mandatory contributions on labor paid by the business, expressed as a share of % of commercial profits.	WDI
Control of corruption	This index captures perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests. This index ranges from −2.5 (high corruption) to 2.5 (low corruption).	WGI
Government effectiveness	This index captures perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies. This index ranges from −2.5 (less effective) to 2.5 (more effective).	WGI
Political stability	This index measures perceptions of the likelihood of political instability and/or politically motivated violence, including terrorism. This index ranges from −2.5 (less stability) to 2.5 (more stability).	WGI
Business regulations	This index measures the extent to which regulations and bureaucratic procedures restrain entry and reduce competition in the market. To score high on this index, countries must allow markets to determine prices and refrain from regulatory activities that retard entry into business and increase the cost of producing products. They must also refrain from "playing favorites," that is, from using their power to extract financial payments and reward some businesses at the expense of others. This index ranges from 0 (more restrictive) to 10 (less restrictive).	Frazer

Notes: This table provides the definitions and sources of all country-level variables used in the regression analysis.
[a] WDI = World Development Indicators; WGI = World Governance Indicators.

Table A.3: Firm-level variables - Summary statistics

	Mean	Median	St. dev.	Minimum	Maximum	Obs.
Employment growth	0.035	0.000	0.165	-0.906	1.000	18673
Sales growth	0.030	-0.028	0.349	-1.000	1.000	14751
Firm-level characteristics						
Firm size[a]	33.208	11.000	163.461	0.000	40000.000	18695
Firm size[b]	1615602.212	5263.158	1.864e+08	0.000	7.165e+10	14932
Firm age	15.840	12.000	14.397	0.000	148.000	18695
Managerial experience (years)	16.834	15.000	11.312	0.000	68.000	18306
Female top manager, Y/N	0.054	0.000	0.226	0.000	1.000	18662
Subsidiary firm, Y/N	0.189	0.000	0.392	0.000	1.000	17654
Foreign ownership, Y/N	0.067	0.000	0.250	0.000	1.000	18426
Government ownership, Y/N	0.005	0.000	0.071	0.000	1.000	18423
Capital investment, Y/N	0.161	0.000	0.368	0.000	1.000	18546
R&D investment, Y/N	0.052	0.000	0.223	0.000	1.000	17396
Formal training programs, Y/N	0.121	0.000	0.326	0.000	1.000	18567
Website, Y/N	0.464	0.000	0.499	0.000	1.000	18658
Quality certification, Y/N	0.101	0.000	0.301	0.000	1.000	18191
Export intensity	0.048	0.000	0.169	0.000	1.000	18336
Export participation, Y/N	0.109	0.000	0.312	0.000	1.000	18336
Product innovation, Y/N	0.095	0.000	0.293	0.000	1.000	17412
Process innovation, Y/N	0.088	0.000	0.284	0.000	1.000	17313
Business environment						
Constrained by political instability, Y/N	0.475	0.000	0.499	0.000	1.000	18269
Constrained by corruption, Y/N	0.442	0.000	0.497	0.000	1.000	18056
Constrained by informal competition, Y/N	0.275	0.000	0.446	0.000	1.000	16827
Constrained by tax rates, Y/N	0.299	0.000	0.458	0.000	1.000	18356
Constrained by tax administration, Y/N	0.225	0.000	0.418	0.000	1.000	18074
Constrained by access to finance, Y/N	0.244	0.000	0.429	0.000	1.000	18374
Constrained by electricity, Y/N	0.251	0.000	0.434	0.000	1.000	18645
Constrained by business licenses, Y/N	0.188	0.000	0.391	0.000	1.000	18231
Constrained by labor regulations, Y/N	0.119	0.000	0.324	0.000	1.000	18394
Constrained by crime, Y/N	0.189	0.000	0.391	0.000	1.000	18224
Constrained by transport, Y/N	0.162	0.000	0.369	0.000	1.000	18384
Constrained by courts, Y/N	0.139	0.000	0.346	0.000	1.000	17137
Constrained by access to land, Y/N	0.169	0.000	0.375	0.000	1.000	17938
Access to finance						
Loan availability, Y/N	0.129	0.000	0.335	0.000	1.000	18224
Overdraft facility, Y/N	0.241	0.000	0.428	0.000	1.000	18235
Trade credit, Y/N	0.199	0.000	0.399	0.000	1.000	18695
Personal loans, Y/N	0.075	0.000	0.263	0.000	1.000	17393

Notes: Summary statistics for all firm-level variables used in the analysis. Firm-level data are weighted by sampling weights available from the World Bank Enterprise Surveys. The table reports the mean, median, standard deviation, maximum value, minimum value, and number of observations. Y/N = Yes or No.
[a] Firm size is measured by the number of permanent full-time employees.
[b] Firm size is measured by deflated sales.

Table A.4: Distribution of firms according to firm size by country

	Small (<20)	Medium (20-99)	Large (100+)	Total
Full sample	67.2	26.5	6.3	100
By country				
Bahrain	27.5	60.5	12.0	100
Djibouti	63.7	29.6	6.7	100
Egypt	69.0	25.4	5.6	100
Iraq	85.9	12.5	1.6	100
Jordan	60.2	31.3	8.5	100
Lebanon	63.2	31.4	5.3	100
Morocco	61.2	30.8	7.9	100
Saudi Arabia	66.9	25.0	8.1	100
Tunisia	54.3	33.3	12.4	100
West Bank and Gaza	82.1	16.6	1.3	100
Yemen	87.3	9.5	3.2	100

Notes: The table reports the distribution of firms according to firm size in percentage, weighted by sampling weights available from the World Bank Enterprise Surveys.

Table A.5: Distribution of firms according to firm age by country

	New (0-4)	Young (5-9)	Mid-age (10-19)	Old (20+)	Total
Full sample	19.5	22.2	30.1	28.2	100
By country					
Bahrain	23.1	22.8	24.4	29.7	100
Djibouti	29.9	21.3	23.1	25.7	100
Egypt	19.2	21.3	29.4	30.1	100
Iraq	25.1	44.6	27.0	3.3	100
Jordan	15.0	21.4	33.0	30.7	100
Lebanon	11.2	12.1	30.8	45.9	100
Morocco	18.7	21.3	32.5	27.4	100
Saudi Arabia	31.1	28.2	28.3	12.5	100
Tunisia	13.2	16.7	33.0	37.1	100
West Bank and Gaza	12.8	17.8	32.2	37.3	100
Yemen	14.5	20.4	32.7	32.3	100

Notes: The table reports the distribution of firms according to firm size in percentage, weighted by sampling weights available from the World Bank Enterprise Surveys.

Table A.6: Country-level variables - Summary statistics

	Mean	Median	St. dev.	Minimum	Maximum	Obs.
Macroeconomic conditions						
GDP growth	0.030	0.029	0.020	-0.019	0.065	23
Inflation	0.049	0.046	0.030	-0.002	0.104	24
GDP per capita	5826.752	3881.943	6298.017	1981.458	25342.623	23
Population (millions)	27.418	12.038	30.928	0.967	107.553	24
Institutional & regulatory framework						
Labor tax (% of profits)	0.178	0.227	0.086	0.000	0.258	17
Control of corruption	0.454	0.442	0.228	0.011	0.892	24
Business regulations	4.370	4.419	1.177	2.887	6.003	18
Government effectiveness	-0.420	-0.325	0.562	-1.320	0.697	24
Political stability	-1.146	-1.001	0.796	-2.431	0.161	24

Notes: Summary statistics for all country-level variables used in the analysis. The table reports the mean, median, standard deviation, maximum value, minimum value, and number of observations. Detailed definitions and sources of the variables are provided in Table A.2.

B Robustness checks and further issues

Table B.1: Robustness checks - Additional controls

Dependent variables:	Employment growth		Sales growth	
	(1)	(2)	(3)	(4)
Business environment				
Constrained by political instability, Y/N	-0.0213***	-0.0217***	-0.0347***	-0.0325***
	[0.0034]	[0.0034]	[0.0055]	[0.0055]
Constrained by access to finance, Y/N	-0.0085**	-0.0085**		
	[0.0040]	[0.0039]		
Constrained by informal competition, Y/N	-0.0095***	-0.0092***		
	[0.0034]	[0.0034]		
Access to finance				
Loan availability, Y/N	0.0078*	0.0075*	0.0139**	0.0129*
	[0.0042]	[0.0042]	[0.0067]	[0.0067]
Overdraft facility, Y/N	0.0111***	0.0101***	0.0264***	0.0248***
	[0.0038]	[0.0038]	[0.0055]	[0.0054]
Trade credit, Y/N	-0.0000	-0.0008	-0.0159***	-0.0181***
	[0.0036]	[0.0036]	[0.0054]	[0.0054]
Personal loans, Y/N	-0.0212***	-0.0212***	0.0002	-0.0035
	[0.0060]	[0.0060]	[0.0091]	[0.0090]
Additional controls:				
Bank account, Y/N	0.0288***	0.0271***	0.0501***	0.0472***
	[0.0041]	[0.0041]	[0.0060]	[0.0060]
Local market, Y/N	0.0188***	0.0182***	0.0094	0.0099
	[0.0056]	[0.0055]	[0.0083]	[0.0082]
National market, Y/N	0.0253***	0.0222***	0.0088	0.0073
	[0.0056]	[0.0056]	[0.0082]	[0.0082]
Listed firm, Y/N		0.0293**		0.1557***
		[0.0144]		[0.0207]
Sole proprietorship, Y/N		-0.0070		0.1251***
		[0.0136]		[0.0196]
Partnership, Y/N		0.0089		0.1261***
		[0.0138]		[0.0199]
Limited partnership, Y/N		0.0172		0.1724***
		[0.0138]		[0.0202]
LLC, Y/N		0.0178		0.1652***
		[0.0137]		[0.0195]
Macroeconomic conditions	✓	✓	✓	✓
Firm-level characteristics	✓	✓	✓	✓
Sector FE	✓	✓	✓	✓
Year FE	✓	✓	✓	✓
No. of countries	11	11	11	11
No. of firms	12615	12615	11428	11428
Adjusted R^2	0.171	0.174	0.690	0.694
Mean (dependent variable)	0.0273	0.0273	0.0289	0.0289

Notes: This table presents OLS estimates of the model in equation (6) enriched with additional controls, with robust standard errors. All specifications include a constant, firm-level characteristics as in Table 5 columns 3 and 6, macroeconomic conditions and institutional & regulatory framework as in Table 6 columns 1 and 5, business environment as in Table 7 column 13 and in Table 8 column 13, sector, and year fixed effects. The number of observations varies across columns because some variables are available for fewer firms. Y/N = Yes or No. Detailed definitions and sources of the variables are provided in Table A.1 and Table A.2. *, **, *** denote statistical significance at the 10, 5, and 1 percent levels.

Table B.2: Robustness checks: Outliers

Samples:	Top 1% firms with extreme growth excluded		Top 5% firms with extreme growth excluded	
Dependent variables:	Employment growth	Sales growth	Employment growth	Sales growth
	(1)	(2)	(3)	(4)
Business environment				
Constrained by political instability, Y/N	-0.0173***	-0.0309***	-0.0115***	-0.0288***
	[0.0030]	[0.0053]	[0.0022]	[0.0049]
Constrained by access to finance, Y/N	-0.0062*		-0.0038+	
	[0.0035]		[0.0025]	
Constrained by informal competition, Y/N	-0.0094***		-0.0039*	
	[0.0031]		[0.0022]	
Access to finance				
Loan availability, Y/N	0.0072*	0.0107*	0.0073***	0.0071
	[0.0037]	[0.0065]	[0.0026]	[0.0062]
Overdraft facility, Y/N	0.0112***	0.0302***	0.0097***	0.0270***
	[0.0032]	[0.0053]	[0.0022]	[0.0051]
Trade credit, Y/N	0.0017	-0.0164***	0.0046**	-0.0154***
	[0.0032]	[0.0053]	[0.0023]	[0.0052]
Personal loans, Y/N	-0.0149***	0.0020	-0.0059+	0.0060
	[0.0053]	[0.0090]	[0.0037]	[0.0086]
Business environment	✓	✓	✓	✓
Institutional & regulatory framework	✓	✓	✓	✓
Macroeconomic conditions	✓	✓	✓	✓
Firm-level characteristics	✓	✓	✓	✓
Sector FE	✓	✓	✓	✓
Year FE	✓	✓	✓	✓
No. of countries	11	11	11	11
No. of firms	12431	11190	11388	10330
Adjusted R^2	0.141	0.674	0.092	0.575
Mean (dependent variable)	0.0298	0.0335	0.0265	0.0245

Notes: This table presents OLS estimates of the model in equation (6) with robust standard errors. All specifications include a constant, firm-level characteristics as in Table 5 columns 3 and 6, macroeconomic conditions and institutional & regulatory framework as in Table 6 columns 1 and 5, business environment as in Table 7 column 13 and in Table 8 column 13, sector, and year fixed effects. The number of observations varies across columns, because some variables are available for fewer firms. Y/N = Yes or No. Detailed definitions and sources of the variables are provided in Table A.1 and Table A.2. *, **, *** denote statistical significance at the 10, 5, and 1 percent levels.

Table B.3: Robustness checks: Clustering

Dependent variables:	Employment growth			Sales growth		
	(1) Area	(2) 2-digit sector	(3) Area & 2-digit sector	(4) Area	(5) 2-digit sector	(6) Area & 2-digit sector
Business environment						
Constrained by political instability, Y/N	-0.0200***	-0.0200***	-0.0200***	-0.0321***	-0.0321***	-0.0321***
	[0.0042]	[0.0031]	[0.0045]	[0.0083]	[0.0082]	[0.0095]
Constrained by access to finance, Y/N	-0.0093**	-0.0093**	-0.0093**			
	[0.0039]	[0.0036]	[0.0046]			
Constrained by informal competition, Y/N	-0.0090**	-0.0090**	-0.0090*			
	[0.0036]	[0.0043]	[0.0051]			
Access to finance						
Loan availability, Y/N	0.0082+	0.0082	0.0082	0.0136**	0.0136**	0.0136*
	[0.0052]	[0.0058]	[0.0071]	[0.0067]	[0.0051]	[0.0072]
Overdraft facility, Y/N	0.0161***	0.0161***	0.0161***	0.0335***	0.0335***	0.0335***
	[0.0049]	[0.0033]	[0.0057]	[0.0074]	[0.0075]	[0.0098]
Trade credit, Y/N	0.0006	0.0006	0.0006	-0.0158*	-0.0158**	−0.0158+
	[0.0060]	[0.0032]	[0.0059]	[0.0093]	[0.0074]	[0.0103]
Personal loans, Y/N	-0.0200***	-0.0200***	-0.0200***	0.0005	0.0005	0.0005
	[0.0073]	[0.0054]	[0.0073]	[0.0114]	[0.0076]	[0.0111]
Business environment	✓	✓	✓	✓	✓	✓
Institutional & regulatory framework	✓	✓	✓	✓	✓	✓
Macroeconomic conditions	✓	✓	✓	✓	✓	✓
Firm-level characteristics	✓	✓	✓	✓	✓	✓
Sector FE	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓
No. of countries	11	11	11	11	11	11
No. of firms	12627	12627	12627	11438	11438	11438
Adjusted R^2	0.165	0.165	0.165	0.699	0.699	0.699
Mean (dependent variable)	0.0273	0.0273	0.0273	0.0291	0.0291	0.0291

Notes: This table presents OLS estimates of the model in equation (6) with robust standard errors. All specifications include a constant, firm-level characteristics as in Table 5 columns 3 and 6, macroeconomic conditions and institutional & regulatory framework as in Table 6 columns 1 and 5, business environment as in Table 7 column 13 and in Table 8 column 13, sector, and year fixed effects. The number of observations varies across columns because some variables are available for fewer firms. Y/N = Yes or No. Detailed definitions and sources of the variables are provided in Table A.1 and Table A.2. +, *, **, *** denote statistical significance at the 15, 10, 5, and 01 percent levels.

Table B.4: Access to finance and firm growth: Timing of loan issuance

Dependent variables:	Employment growth						Sales growth					
	(1) All loans	(2) 1 year	(3) 2 years	(4) 5 years	(5) 7 years	(6) 10 years	(7) All loans	(8) 1 year	(9) 2 years	(10) 5 years	(11) 7 years	(12) 10 years
Loan availability, Y/N	0.0082*	0.0122**	0.0111**	0.0092**	0.0080*	0.0074*	0.0224***	0.0291***	0.0270***	0.0264***	0.0263***	0.0224***
	[0.0042]	[0.0059]	[0.0050]	[0.0045]	[0.0045]	[0.0044]	[0.0068]	[0.0096]	[0.0081]	[0.0070]	[0.0069]	[0.0068]
Overdraft facility, Y/N	0.0161***	0.0166***	0.0165***	0.0164***	0.0166***	0.0166***	0.0330***	0.0338***	0.0334***	0.0326***	0.0325***	0.0330***
	[0.0037]	[0.0036]	[0.0036]	[0.0036]	[0.0036]	[0.0037]	[0.0052]	[0.0052]	[0.0052]	[0.0052]	[0.0052]	[0.0052]
Trade credit, Y/N	0.0006	0.0011	0.0010	0.0008	0.0009	0.0009	-0.0168***	-0.0159***	-0.0162***	-0.0169***	-0.0169***	-0.0168***
	[0.0036]	[0.0036]	[0.0036]	[0.0036]	[0.0036]	[0.0036]	[0.0053]	[0.0053]	[0.0053]	[0.0053]	[0.0053]	[0.0053]
Personal loans, Y/N	-0.0200***	-0.0191***	-0.0196***	-0.0198***	-0.0198***	-0.0198***	-0.0012	0.0013	-0.0000	-0.0015	-0.0016	-0.0012
	[0.0060]	[0.0059]	[0.0060]	[0.0060]	[0.0060]	[0.0060]	[0.0088]	[0.0088]	[0.0089]	[0.0089]	[0.0088]	[0.0088]
Business environment	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Institutional & regulatory framework	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Macroeconomic conditions	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Firm-level characteristics	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Sector FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
No. of countries	11	11	11	11	11	11	11	11	11	11	11	11
No. of firms	12627	12708	12708	12708	12708	12708	11499	11499	11499	11499	11499	11499
Adjusted R^2	0.165	0.165	0.165	0.165	0.165	0.165	0.699	0.699	0.699	0.699	0.699	0.699
Mean (dependent variable)	0.0273	0.0273	0.0273	0.0273	0.0273	0.0273	0.0289	0.0289	0.0289	0.0289	0.0289	0.0289

Notes: This table presents OLS estimates of the model in equation (6) with robust standard errors. In columns 1 and 7, *Loan availability* captures all current loans and lines of credit, irrespective of their issuance date. In columns 2–6 and 8-12, the measure is restricted to loans and credit lines issued within the previous 1, 2, 5, 7, and 10 years, respectively. All specifications include a constant, firm-level characteristics as in Table 5 columns 3 and 6, macroeconomic conditions and institutional & regulatory framework as in Table 6 columns 1 and 5, business environment as in Table 7 column 13 and in Table 8 column 13, sector, and year fixed effects. The number of observations varies across columns because some variables are available for fewer firms. Y/N = Yes or No. Detailed definitions and sources of the variables are provided in Table A.1 and Table A.2. *, **, *** denote statistical significance at the 10, 5, and 1 percent levels.

Table B.5: Financial inclusion and firm growth

Dependent variables:	Employment growth		Sales growth	
	(1)	(2)	(3)	(4)
Financial inclusion (Loan availability)	0.0741***		0.0575***	
	[0.0097]		[0.0135]	
Financial inclusion (Overdraft facility)		0.0633***		0.0650***
		[0.0078]		[0.0097]
Access to finance				
Loan availability, Y/N	0.0025	0.0056	0.0115*	0.0141**
	[0.0043]	[0.0043]	[0.0067]	[0.0067]
Overdraft facility, Y/N	0.0142***	0.0095**	0.0351***	0.0287***
	[0.0038]	[0.0039]	[0.0054]	[0.0056]
Trade credit, Y/N	-0.0005	0.0010	-0.0127**	-0.0117**
	[0.0037]	[0.0037]	[0.0054]	[0.0054]
Personal loans, Y/N	-0.0167***	-0.0176***	0.0001	-0.0008
	[0.0061]	[0.0061]	[0.0091]	[0.0091]
Business environment	✓	✓	✓	✓
Institutional & regulatory framework	✓	✓	✓	✓
Macroeconomic conditions	✓	✓	✓	✓
Firm-level characteristics	✓	✓	✓	✓
Sector FE	✓	✓	✓	✓
Year FE	✓	✓	✓	✓
No. of countries	11	11	11	11
No. of firms	12209	12202	11043	11039
Adjusted R^2	0.173	0.173	0.699	0.699
Mean (dependent variable)	0.0267	0.0267	0.0247	0.0245

Notes: This table presents OLS estimates of the model in equation (6), augmented with two measures of financial inclusion. Robust standard errors are reported in parentheses. *Financial inclusion (Loan)* is the share of firms in the same geographical area and sector that have a loan or credit line from a financial institution, and *Financial inclusion (Overdraft)* is the share of firms in the same geographical area and sector that have an overdraft facility. For both measures, we exclude the firm's own observation when constructing the share. All specifications include a constant, firm-level characteristics as in Table 5 columns 3 and 6, macroeconomic conditions and institutional & regulatory framework as in Table 6 columns 1 and 5, business environment as in Table 7 column 13 and in Table 8 column 13, sector, and year fixed effects. The number of observations varies across columns, because some variables are available for fewer firms. Y/N = Yes or No. Detailed definitions and sources of the variables are provided in Table A.1 and Table A.2. *, **, *** denote statistical significance at the 10, 5, and 1 percent levels.

Table B.6: Access to finance and firm size

Dependent variables:	Employment growth				Sales growth			
	(1) All firms	(2) Small firms	(3) Medium firms	(4) Large firms	(5) All firms	(6) Small firms	(7) Medium firms	(8) Large firms
Loan availability, Y/N	0.0082*	0.0177***	0.0100	-0.0090	0.0190***	0.0113	0.0223**	0.0201
	[0.0042]	[0.0064]	[0.0071]	[0.0083]	[0.0065]	[0.0104]	[0.0108]	[0.0124]
Overdraft facility, Y/N	0.0161***	0.0197***	0.0112*	0.0075	0.0388***	0.0348***	0.0416***	0.0233**
	[0.0037]	[0.0054]	[0.0064]	[0.0073]	[0.0053]	[0.0084]	[0.0083]	[0.0113]
Trade credit, Y/N	0.0006	-0.0017	-0.0015	0.0062	-0.0081	-0.0040	-0.0166*	-0.0133
	[0.0036]	[0.0050]	[0.0065]	[0.0076]	[0.0053]	[0.0079]	[0.0089]	[0.0117]
Personal loans, Y/N	-0.0200***	-0.0132*	-0.0339***	-0.0211	-0.0038	-0.0156	0.0016	0.0102
	[0.0060]	[0.0079]	[0.0108]	[0.0147]	[0.0089]	[0.0119]	[0.0161]	[0.0213]
Business environment	✓	✓	✓	✓	✓	✓	✓	✓
Institutional & regulatory framework	✓	✓	✓	✓	✓	✓	✓	✓
Macroeconomic conditions	✓	✓	✓	✓	✓	✓	✓	✓
Firm-level characteristics	✓	✓	✓	✓	✓	✓	✓	✓
Sector FE	✓	✓	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓	✓	✓
No. of countries	11	11	11	11	11	11	11	11
No. of firms	12627	6432	4093	2102	11539	5478	3870	2090
Adjusted R^2	0.165	0.303	0.121	0.116	0.699	0.719	0.713	0.688
Mean (dependent variable)	0.0273	0.0503	-0.0022	0.0147	0.0304	0.0147	0.0298	0.0656

Notes: This table presents the OLS estimates of the model in equation (6) with robust standard errors in brackets. All specifications include a constant, firm-level characteristics as in Table 5 columns 3 and 6, macroeconomic conditions and institutional & regulatory framework as in Table 6 columns 1 and 5, business environment as in Table 7 column 13 and in Table 8 column 13, sector, and year fixed effects. The number of observations varies across columns, because some variables are available for fewer firms. Y/N = Yes or No. Detailed definitions and sources of the variables are provided in Table A.1 and Table A.2. *, **, *** denote statistical significance at the 10, 5, and 1 percent levels.

Table B.7: Business environment and firm characteristics

Dependent variables:	Employment growth			Sales growth		
	(1) Firm size	(2) Export participation	(3) Foreign ownership	(4) Firm size	(5) Export participation	(6) Foreign ownership
Constrained by Political instability, Y/N	-0.0490***	-0.0466***	-0.0455***	-0.0442***	-0.0450***	-0.0446***
	[0.0044]	[0.0044]	[0.0045]	[0.0067]	[0.0068]	[0.0068]
Political instability × Medium	0.0592***	0.0616***	0.0625***	0.0210***	0.0202**	0.0204***
	[0.0063]	[0.0065]	[0.0065]	[0.0077]	[0.0079]	[0.0079]
Political instability × Large	0.0668***	0.0725***	0.0760***	0.0313***	0.0293**	0.0301**
	[0.0078]	[0.0082]	[0.0082]	[0.0111]	[0.0117]	[0.0118]
Political instability × Export participation, Y/N		-0.0195**	-0.0156*		0.0067	0.0078
		[0.0080]	[0.0082]		[0.0117]	[0.0119]
Political instability × Foreign ownership, Y/N			-0.0366***			-0.0098
			[0.0126]			[0.0187]
Constrained by Access to finance, Y/N	-0.0142***	-0.0153***	-0.0153***			
	[0.0050]	[0.0050]	[0.0050]			
Access to finance × Medium	0.0065	0.0048	0.0049			
	[0.0077]	[0.0079]	[0.0079]			
Access to finance × Large	0.0204*	0.0164	0.0172			
	[0.0106]	[0.0113]	[0.0114]			
Access to finance × Export participation, Y/N		0.0106	0.0110			
		[0.0095]	[0.0097]			
Access to finance × Foreign ownership, Y/N			-0.0044			
			[0.0158]			
Constrained by Informal competition, Y/N	-0.0165***	-0.0149***	-0.0150***			
	[0.0045]	[0.0045]	[0.0045]			
Informal competition × Medium	0.0168**	0.0193***	0.0192***			
	[0.0071]	[0.0074]	[0.0074]			
Informal competition × Large	0.0303***	0.0365***	0.0353***			
	[0.0090]	[0.0095]	[0.0096]			
Informal competition × Export participation, Y/N		-0.0180**	-0.0181**			
		[0.0089]	[0.0090]			
Informal competition × Foreign ownership, Y/N			0.0061			
			[0.0145]			
Access to finance	✓	✓	✓	✓	✓	✓
Institutional & regulatory framework	✓	✓	✓	✓	✓	✓
Macroeconomic conditions	✓	✓	✓	✓	✓	✓
Firm-level characteristics	✓	✓	✓	✓	✓	✓
Sector FE	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓
No. of countries	11	11	11	11	11	11
No. of firms	12404	12404	12404	11240	11240	11240
Adjusted R^2	0.183	0.184	0.184	0.701	0.701	0.701
Mean (dependent variable)	0.0265	0.0265	0.0265	0.0283	0.0283	0.0283

Notes: This table presents the OLS estimates of the model in equation (6) with robust standard errors in brackets. We interact business environment constraints (Constrained by political stability, access to finance, and informal competition) with firm characteristics: *Firm size*, *Export participation, Y/N*, and *Foreign ownership, Y/N*. The base firm size category is small: small firms have 5–19 employees, medium firms have 20–99 employees, and large firms have 100+ employees. The base category for the *Export participation* dummy is non-exporter firms and for the *Foreign ownership* dummy is domestic firms. All specifications include a constant, firm-level characteristics as in Table 5 columns 3 and 6, macroeconomic conditions and institutional & regulatory framework as in Table 6 columns 1 and 5, business environment as in Table 7 column 13 and in Table 8 column 13, sector, and year fixed effects. The number of observations varies across columns because some variables are available for fewer firms. Y/N = Yes or No. Detailed definitions and sources of the variables are provided in Table A.1 and Table A.2. *, **, *** denote statistical significance at the 10, 5, and 1 percent levels.

Table B.8: Business environment and firm growth: Matching estimators

Outcome variables:	Employment growth		
	Nearest-neighbor matching (1)	Radius matching (2)	Balancing entropy (3)
Constrained by political instability, Y/N	-0.0334*** [0.0029]	-0.0328*** [0.0033]	-0.0207*** [0.0047]
Constrained by access to finance, Y/N	-0.0226*** [0.0039]	-0.0204*** [0.0049]	-0.0150*** [0.0043]
Constrained by informal competition, Y/N	-0.0269*** [0.0035]	-0.0207*** [0.0037]	-0.0115*** [0.0036]
Outcome variables:	Sales growth		
	Nearest-neighbor matching (1)	Radius matching (2)	Balancing entropy
Constrained by political instability, Y/N	-0.0400*** [0.0045]	-0.0407*** [0.0386]	-0.0322*** [0.0123]

Notes: This table presents the average treatment effects (ATE) for three treatment variables: *Constrained by political instability*, *Constrained by access to finance*, and *Constrained by informal competition*. In column 1, we report estimates using the bias-corrected matching estimator proposed by Abadie and Imbens (2011). Column 2 presents results based on radius matching with a radius of 0.05. In column 3, we employ entropy balancing. Y/N = Yes or No. Detailed definitions and sources for all variables are provided in Table A.1 and Table A.2. *, **, *** indicate statistical significance at the 10, 5, and 1 percent levels.

Table B.9: Checking for reverse causality: IV strategy

Dependent variables:	Employment growth		Sales growth	
	(1) Area-sector	(2) Area-sector-size	(3) Area-sector	(4) Area-sector-size
Constrained by political instability, Y/N	0.0076	0.0250	-0.0874***	-0.1017***
	[0.0166]	[0.0198]	[0.0136]	[0.0155]
Constrained by access to finance, Y/N	-0.0640***	-0.0685***		
	[0.0199]	[0.0286]		
Constrained by informal, Y/N	0.0128	-0.0190		
	[0.0226]	[0.0307]		
Access to finance	✓	✓	✓	✓
Institutional & regulatory framework	✓	✓	✓	✓
Macroeconomic conditions	✓	✓	✓	✓
Firm-level characteristics	✓	✓	✓	✓
Sector FE	✓	✓	✓	✓
Year FE	✓	✓	✓	✓
Underidentification test (p-value)	0.000	0.000	0.000	0.000
Cragg-Donal Wald F	78.22	43.29	1717.52	1282.14
Kleibergen-Paap rk Wald F	61.85	34.52	1687.46	1110.61
Stock-Yogo critical value (10%)	16.38	16.38	16.38	16.38
No. of countries	11	11	11	11
No. of firms	12368	12170	11308	11046
Mean (dependent variable)	0.0267	0.0266	0.0288	0.0248
First stage regression:				
Instrument (political instability)	0.7371***	0.5407***	0.8363***	0.6348***
	[0.0243]	[0.0208]	[0.0204]	[0.0190]
Instrument (access to finance)	0.6606***	0.4382***		
	[0.0312]	[0.0438]		
Instrument (informal competition)	0.5310***	0.3477***		
	[0.0332]	[0.0243]		

Notes: This table presents the 2SLS estimates of the model in equation (6) with robust standard errors in brackets. We instrument the perception of firm i of the obstacle k they face with the share of all other firms (excluding firm i) reporting being constrained by the same obstacle k within the same environment (cell). We consider two cells: the intersection of the geographical area and 2-digit sector (Area-sector) and the intersection of the geographical area, 2-digit sector, and firm size (Area-sector-size). All specifications include a constant, firm-level characteristics as in Table 5 columns 3 and 6, macroeconomic conditions and institutional & regulatory framework as in Table 6 columns 1 and 5, access to finance as in Table 9 column 1, sector, and year fixed effects. The number of observations varies across columns, because some variables are available for fewer firms. Y/N = Yes or No. Detailed definitions and sources of the variables are provided in Table A.1 and Table A.2. *, **, *** denote statistical significance at 10, 5, and 1 percent levels.

Table B.10: Underlying mechanisms

Dependent variables:	Capital investment, Y/N	R&D investment, Y/N	Export participation, Y/N	Product innovation, Y/N	Process innovation,Y/N
	(1)	(2)	(3)	(4)	(5)
Constrained by political instability, Y/N	0.0168	-0.0499**	-0.0497**	0.0069	-0.0975***
	[0.0323]	[0.0224]	[0.0251]	[0.0295]	[0.0282]
Constrained by access to finance, Y/N	-0.2267***	-0.0613	0.0579	-0.1644***	-0.0967**
	[0.0527]	[0.0392]	[0.0399]	[0.0501]	[0.0465]
Access to finance	✓	✓	✓	✓	✓
Business environment	✓	✓	✓	✓	✓
Firm-level characteristics	✓	✓	✓	✓	✓
Sector FE	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓
Under-identification test (p-value)	0.0000	0.0000	0.0000	0.0000	0.0000
Cragg-Donal Wald F	210.59	165.49	208.49	166.04	165.65
Kleibergen-Paap rk Wald F	177.80	140.21	176.23	140.54	139.7150
Stock-Yogo critical value (10%)	16.38	16.38	16.38	16.38	16.38
No. of countries	11	11	11	11	11
No. of firms	13864	12976	13803	12982	12933
Mean (dependent variable)	0.2512	0.0993	0.1803	0.1636	0.1353
First stage regression:					
Instrument (political instability)	0.6146***	0.6322***	0.6111***	0.6331***	0.6301***
	[0.0167]	[0.0177]	[0.0167]	[0.0176]	[0.0178]
Instrument (access to finance)	0.4067**	0.3835***	0.4055***	0.3843***	0.3857***
	[0.0225]	[0.0243]	[0.0225]	[0.0243]	[0.0245]

Notes: This table presents the 2SLS estimates of the model in equation (6) with robust standard errors in brackets. We instrument the perception of firm i of the obstacle k they face with the share of all other firms (excluding firm i) reporting being constrained by the same obstacle k within the same area-sector (the intersection of the geographical area and 2-digit sector). All specifications include a constant, firm-level characteristics as in Table 5 column 2 and business environment as in Table 7 column 13, sector, and year fixed effects. The number of observations varies across columns, because some variables are available for fewer firms. Y/N = Yes or No. Detailed definitions and sources of the variables are provided in Table A.1 and Table A.2. *, **, *** denote statistical significance at 10, 5, and 1 percent levels.