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Breaking Barriers: The Role of Financial and Institutional Constraints Across the Firm Size Distribution in Latin America and the Caribbean

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Abstract

Using a novel measure of credit constraints and firm-level data from 13 countries in Latin America and the Caribbean (over 6,000 observations), this study examines how the effects of financial constraints interact with firms' exposure to corruption and political instability and how these relationships vary across the firm size distribution. I find that financial constraints are associated with lower levels of fixed asset purchases, real sales growth and employment growth. Meanwhile finding evidence that political instability reduces real sales growth both directly and indirectly, by exacerbating firms' credit constraints. In contrast, corruption primarily undermines employment growth through mechanisms unrelated to firms' access to external finance. Additionally, the results challenge prevailing assumptions about the distributional burden of financial constraints. Although large firms benefit from better access to external finance, when constrained, I find the adverse effect on their ability to purchase fixed assets more pronounced than for smaller firms. Moreover, even after accounting for the greater number of small firms, there is no evidence that they disproportionately shoulder the aggregate burden of financial constraints in the region.

Keywords: SME growth, Credit Constraints, Corruption, Political Instability, Latin America and the Caribbean

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1. Introduction

The classical Modigliani–Miller (M&M) theorem (1958) famously asserts that in a frictionless world – absent taxes, bankruptcy costs, agency problems, or information asymmetries – a firm's financial constraints are non-binding, as there are no differences between internal and external sources of financing. In reality, however, financial frictions are pervasive and there is a well documented premium on external financing (Mizen & Tsoukas, 2008; Altavilla et al., 2024). These rigidities make access to external finance a binding constraint on investment and growth. Stiglitz and Weiss (1981) pioneered this insight with a model of credit rationing under imperfect information and a large empirical literature has documented how credit market imperfections constrain firm performance. Indeed, cross-country surveys show that firms generally report financing as one of their most important obstacles (WBES, 2025). Access to credit thus plays a very important role in the overall business environment, potentially constraining firm entry and expansion. These facts stand in stark contrast to the M&M prediction and highlight the real-world relevance of financial constraints for development policy.

Small and medium-sized enterprises (SMEs) represent about 90% of businesses and more than 50% of employment worldwide and are especially affected by credit frictions. Formal SMEs contribute up to 40% of GDP in emerging economies (World Bank SME Finance, 2025). At the same time, theory and evidence agree that smaller firms are the most finance-constrained. In a world of fixed transaction costs and information asymmetries, small firms requiring relatively small loans face higher transaction costs and risk premiums, since they are more opaque and have less collateral to offer (Stiglitz & Weiss, 1981). Consistently, cross-country surveys find that small firms report higher financing obstacles than larger firms and on average finance a smaller share of their investment with formal external funds (WBES, 2025). Beck, Demirgüç-Kunt and Maksimovic (2005) show that the financing obstacles faced by smaller firms translate into significantly slower growth – and that small firms' constraints reduce overall economic growth almost twice as much as large firms' constraints. In short, limited access to credit has serious real effects on SMEs' investment, growth and the broader economy.

These financing problems are especially acute in developing countries, where weak institutions and policy dysfunction further amplify credit frictions. Poor contract enforcement, corruption and macroeconomic instability all raise borrowing costs and increase credit rationing. Indeed, Ayyagari et al. (2006) find that, among all business environment obstacles, access to finance – along with crime and political instability – has the most direct impact on firm growth. Recognizing this, international agencies such as the World Bank and regional development banks have long prioritized SME credit access through credit guarantee schemes, microfinance initiatives and regulatory reforms aimed at improving lending conditions. Yet despite these efforts, sizable credit gaps persist across many low- and middle-income economies. A growing

literature now seeks to better measure these constraints and identify which firms are most affected, in order to design more effective policy responses.

This paper focuses on Latin America and the Caribbean (LAC), a region that offers a particularly instructive setting for studying these dynamics. While LAC countries share relatively homogeneous cultural and linguistic traditions – reflecting a common colonial history and broadly similar legal systems – they display substantial variation in institutional quality and financial development. This combination of cultural similarity and institutional heterogeneity provides a valuable "natural laboratory" for examining how institutional environments shape financial outcomes. Moreover, persistent economic stagnation in LAC, often associated with the so-called "middle-income trap," remains a pressing policy concern. Unlike Korea and Taiwan, which successfully transitioned from middle- to high-income status within a generation, much of LAC has struggled to sustain growth momentum (Aizenman, Eichengreen & Park, 2018).

This study applies a novel firm-level measure of credit rationing developed by Islam and Rodríguez (2023) for the World Bank's Enterprise Surveys (WBES). This measure classifies firms into "fully constrained", "partially constrained" and "unconstrained" categories based on their loan application behavior and access to external finance, offering a more precise, direct assessment of credit constraints than conventional perception based measures. Using firm-level data from 6,744 firms across the LAC region between 2016 and 2018, I document how the effects of credit constraints interact with exposure to corruption and political instability and how these effects vary across the firm size distribution

This study's empirical strategy does not aim to formally establish causality; instead, it documents and characterizes the relationship between credit constraints and firm performance among firms operating in LAC. I confirm that limited credit access is associated with poorer firm outcomes. However, I find that although large firms benefit from better access to external finance, when constrained their ability to purchase fixed assets is more impacted than for smaller firms. Even after accounting for their lower representation in the economy, there is no evidence, in contrast to Beck, Demirgüç-Kunt and Maksimovic (2005), that smaller firms in LAC disproportionately bear the burden of credit constraints. Moreover, being more severely credit-constrained does not worsen outcomes beyond the penalty associated with being partially constrained.

Institutional factors also exert significant, though distinct, influences on firm growth. I find evidence that political instability dampens real sales growth both directly and partially indirectly by tightening credit conditions and restricting firms' access to finance. In contrast, corruption in LAC primarily impedes employment growth, operating largely through channels unrelated to financial frictions. Lastly, the analysis reveals that a widely used instrument in the literature on financial constraints performs poorly in the LAC context, raising questions about its broader applicability.

2. Literature Review

2.1 Empirical Challenges in Determining the Relationship Between Financial Constraints and Firm Performance

Demonstrating the empirical impact of financial constraints on firm performance presents two primary challenges. First, comprehensive data that accurately reflects the complexities of financial constraints across industries and regions is often lacking. Second, identifying the causal effect of financial constraints remains difficult due to issues of reverse causality and omitted variable bias, even when extensive controls are included.

To address the first challenge, much of the existing literature relies on perception-based measures of financial constraints. While these are subject to reporting bias and subjectivity, they capture important unobserved constraints perceived by decision-makers within firms. These take the form of Likert scale assessments or similar survey-based indicators (Beck & Demirgüç-Kunt, 2005; Asiedu et al., 2013; Ullah, 2020; Wang et al., 2022). A separate but related strand focuses on indicators of financial service usage, using metrics such as external credit uptake or financing patterns as proxies for financial constraints (Aterido et al., 2013; Ranasinghe & Restuccia, 2018). A more limited line of research has sought to develop direct, application-based measures of financial constraints by incorporating data on credit applications and approvals. Bigsten et al. (2003), for example, documented both low credit demand and profit-maximizing lending behavior biased toward larger firms in Sub-Saharan Africa. Despite their advantages, direct measures are less commonly used due to limited data availability and narrower cross-country coverage.

An important recent contribution by Islam and Rodriguez (2023) advances this area by improving on perception-based measures using WBES data. Their approach integrates information on external finance usage, credit application outcomes and loan approval details to construct a more precise, application-based measure of financial constraints. A detailed description of this methodology is provided in the data section of this paper. This study adopts their novel measure to investigate how financial constraints affect firm performance in LAC.

The second major challenge concerns the difficulty of identifying the causal impact of financial constraints on firm growth. Several approaches have been developed to address this issue. One strand of the literature employs Generalized Method of Moments (GMM) estimators to mitigate endogeneity concerns, particularly reverse causality (eg. Coluzzi et al., 2009; Ferragina et al., 2016). These techniques help account for the possibility that firm growth itself influences credit access. Another body of research relies on instrumental variable (IV) strategies to isolate the causal effects of financial constraints. Of particular relevance to this study are recent contributions by Ullah (2020) and Arie (2022). Both exploit firm audits as an exogenous source

of variation in financial constraints, arguing that audit exposure affects credit access while remaining largely independent of underlying firm performance.

This paper builds on these insights by applying a similar identification strategy to a unique LAC subsample. By replicating elements of their empirical approach within this distinct institutional and economic setting, the analysis seeks to assess whether the mechanisms documented in Eastern Europe, Central Asia and Indonesia also hold in LAC economies, where financial systems and credit allocation processes are shaped by different structural and institutional conditions.

2.2 Financial Constraints Literature

A large literature on the role of the financial sector in fostering growth in per capita income dates as far back as Schumpeter (1911, 1939). The literature highlights how the financial sector plays a crucial role in enhancing productivity and innovation within the economy by reallocating capital to its most efficient use and minimising moral hazard, adverse selection and transaction costs. This foundational perspective has been supported by numerous empirical studies that demonstrate a positive correlation between the development of financial institutions and aggregate economic growth (Rajan & Zingales, 1998; Wurgler, 2000; Levine & Zervos, 1996; Levine, Loayza, & Beck, 2000; Bekaert, Harvey, & Lundblad, 2005; Demirgüç-Kunt & Maksimovic, 1998).

Moving down to the firm level, key improvements in firm level datasets in the 1990s enabled a new literature focused on firm level exposure to business climate factors to be effectively compared across different countries. Early works including Beck, Demirgüç-Kunt and Maksimovic (2005) as well as Ayyagari et al. (2006) were some of the first to test this empirically. Showing that firm level financial constraints was the most relevant business climate factor in driving firm performance. In fact highlighting how other business climate factors such as corruption often impacted performance via their role in increasing financing frictions. Based on this robust finding in the literature, I propose the first two hypotheses in my paper:

Hypothesis 1: Credit constraints will have a negative and significant impact on firm level outcomes.

Hypothesis 2: Fully credit constrained firms will perform worse than partially credit constrained firms.

A substantial body of literature identifies various firm-level determinants of financial constraints, emphasizing their significant impact on firm outcomes. Winker (1999) first demonstrated, using a standard model of credit rationing based on asymmetric information, that firm age and size play pivotal roles in influencing the likelihood of encountering financing constraints. Claessens

and Sakho (2013) further underscore the relevance of these factors in LAC economies like Brazil, where the financial sector is still developing.

Credit constraints are commonly viewed as particularly critical for smaller firms due to their limited access to external funds (Gertler & Gilchrist, 1994; Chodorow-Reich, 2014; Duygan-Bump, Levkov & Montoriol-Garriga, 2015). Indeed, several studies have highlighted the unique financing challenges faced by SMEs (e.g., Thampy, 2010; Ullah, 2020). Building on these insights, I propose the following hypothesis:

Hypothesis 3: The detrimental effect of credit constraints on firm performance is more pronounced for small enterprises compared to larger ones.

Additionally, the WBES meticulously ensures representative sampling across surveyed countries. Leveraging this fact, Beck, Demirgüç-Kunt and Maksimovic (2005) identified that smaller firms bear a disproportionate economic burden of financial constraints, when adjusted for their prevalence in the economy. Therefore, the following hypothesis is suggested to verify if this pattern holds in LAC:

Hypothesis 4: The economic burden of credit constraints predominantly affects the smallest firms.

2.3 The Role of Other Business Climate Factors

Corruption and political instability collectively present significant barriers to economic growth and private sector development in LAC, shaping both the economic environment and firm-level outcomes.

On corruption, the literature presents two competing perspectives. The intuitive "sand the wheels" view sees corruption as a harmful phenomenon that undermines growth by fostering inefficiencies, misallocating resources and distorting markets. Cross-country analyses based on this reveal that higher corruption levels correlate with lower economic development and growth (Ades & Di Tella, 1999; Méon & Sekkat, 2005). National-level studies similarly document its negative effects on productivity and firm growth (Mauro, 1995; Faruq & Webb, 2013). At the firm level, Ullah (2020) demonstrates that corruption exposure in 28 Eastern European and Central Asian countries hampers SMEs' access to finance, thereby restricting their growth in transition economies.

Conversely, the "grease the wheels" hypothesis contends that in environments with weak formal institutions, corruption can facilitate business operations. In such settings, informal payments may help firms navigate bureaucratic obstacles, improving operational efficiency (Mawuli & Stinchfield, 2013). Méndez and Sepúlveda (2006) find that while high levels of corruption are detrimental, moderate corruption can be growth-enhancing. Supporting this, Williams and Kedir

(2016) show that in 40 African countries, corruption positively correlates with firm-level sales, employment and productivity growth.

However, recent evidence specific to LAC contradicts this optimistic view. Paulo et al. (2022) find that corruption significantly reduces GDP and deters both domestic and foreign investment in the region, reinforcing the notion that its net effects on growth and firm performance are predominantly negative.

Political instability represents a parallel institutional barrier with significant economic costs. Tohmé et al. (2020) theorize that instability shortens policymakers' time horizons, prioritizing immediate consumption over long-term investment and undermining growth. Empirical studies further document these dynamics. Jiang (2018) finds that political uncertainty in Chinese cities negatively affects firm investment, particularly following party secretary changes. Similarly, Bagow and Altaf (2023) demonstrate that political uncertainty during Indian general elections depresses corporate investment, especially in politically sensitive sectors and among financially constrained firms. In Africa, Ngouhouo and Njintcha (2024) report that political instability lowers firm-level investment, though the effect is attenuated for small firms and interacts with other institutional constraints like regulatory and infrastructure barriers. Within Latin America, Lins (2025) highlights how persistent political instability has historically derailed economic trajectories by disrupting policy continuity, deterring investment and creating macroeconomic volatility.

Critically, several studies indicate that corruption and political instability do not only directly affect growth and investment but also indirectly constrain firms through their impact on access to finance. For instance, Beck, Demirgüç-Kunt and Maksimovic (2005) and Ullah (2020) show how institutional weaknesses restrict firm financing, while Bagow and Altaf (2023) find that politically sensitive, financially constrained firms are particularly vulnerable to political uncertainty. Building on this literature, I propose two more hypotheses:

Hypothesis 5: Firm-level exposure to political instability and corruption worsens firm performance.

Hypothesis 6: Accounting for the effects of political instability and corruption reduces the estimated impact of being financially constrained on firm performance.

3. Data

3.1 The WBES

The paper uses a unique subsample of the World Bank Enterprise Surveys (WBES). These surveys began in 2002. It has covered over 232,000 firms in 162 economies to date, the surveys are usually conducted every 3-4 years in each country. Though larger countries tend to have better coverage. The survey covers a broad range of topics related to the business environment including access to finance, corruption, infrastructure, competition, labor and performance. All firms surveyed are non agricultural and have a minimum of 5 employees. The survey is conducted by private contractors in each country and data is collected via face to face interviews (physical or virtual) with business owners and top managers. When necessary, respondents might sometimes involve accountants and human resource managers. Extensive quality control is performed on intermediate batches of the data during the survey implementation phase and several callbacks are made in case of inconsistencies. Surveyors also provided subjective judgement to their supervisors as to whether they deemed the information was trustworthy.

All firms surveyed are formal legal entities (there are separate surveys for informal firms) and fall into one of the following industry classifications: manufacturing, construction, retail, wholesale, hotels, restaurants, transport, storage, communications, professional services, or IT. The survey uses stratified random sampling across firm size, business sector and geographic region. Notably, the World Bank conducts repeated cross-sections within each economy, whilst they do provide some limited panel datasets which use their methodology, this study is particularly interested in leveraging international differences in institutions and hence does not use this data.

Within my subsample of Latin America and the Caribbean consisting of the survey wave from 2016 to 2018, there are a total of 13 unique surveys, generating 6,744 firm level observations. These are the only pre-covid years for which a key refinement in the survey instrument is available. When possible, I utilise the same treatment of outliers as in the WBES national Indicators. Namely, questions with potentially unbounded responses exclude extreme responses by log transforming them $\ln(x+1)$ and excluding those which fall outside of 3 standard deviations of the mean at the survey level by transforming them into missing values.

In my sample small firms (5-10 employees) represented the largest proportion at 43.73%, followed by medium-sized firms (20–99 employees) at 33.88% and large firms (100+ employees) at 22.39%. This indicates a roughly even split between small and medium-sized firms, with large firms comprising just over a fifth of the sample.

3.2 Defining Credit Constrained Firms

This paper adopts a measure of credit constraints developed by Islam and Rodriguez (2023), which represents a notable advancement over earlier approaches in the literature. Their methodology capitalizes on the extensive financing module included in the Enterprise Surveys, alongside the aforementioned refinements introduced to the survey questionnaire in 2016. Firms are asked whether they applied for a loan or line of credit during the last fiscal year, with follow-up questions recording the outcome of the application as either fully approved, partially approved, rejected, or withdrawn. For firms that did not apply for a loan, the survey captures their primary reason for abstaining, with options including having sufficient capital, complex procedures, unfavorable terms, high collateral requirements, insufficient loan size or maturity and expectations of rejection.

Within this framework, firms are classified as non-credit constrained (henceforth NCC) if their loan application was fully approved, or if they did not apply for a loan because they had sufficient internal capital. Credit constrained (henceforth CC) firms are further subdivided into two categories: Fully Credit Constrained (henceforth FCC) and Partially Credit Constrained (henceforth PCC).

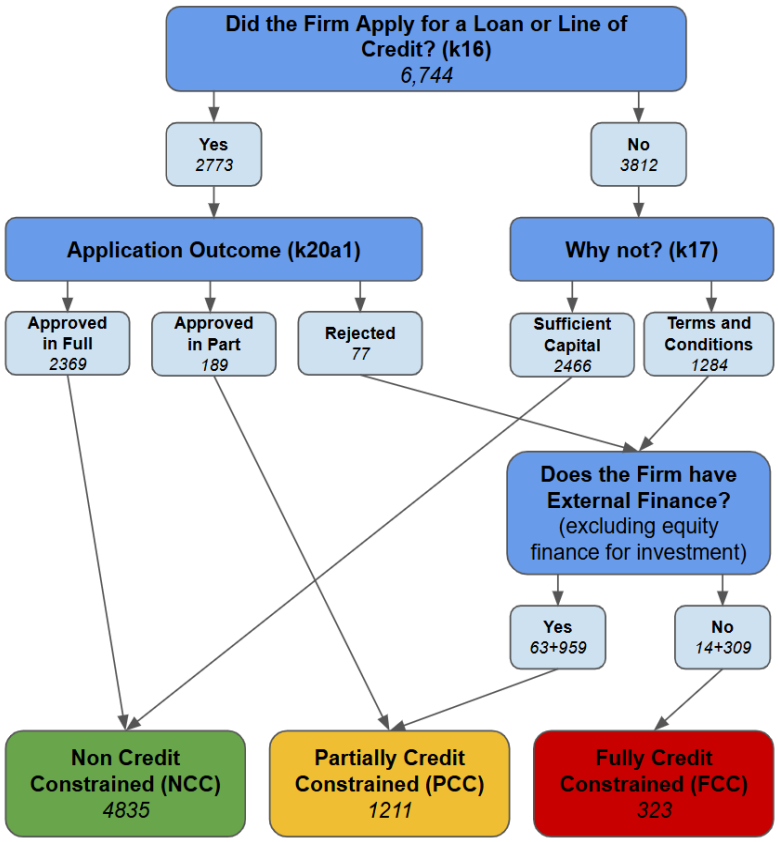
A firm is identified as FCC if it faces significant barriers to accessing credit. Specifically, these firms either (i) had their loan application rejected or (ii) chose not to apply for a loan for any reason other than having adequate internal capital. Moreover, to be classified as FCC, these firms must also lack access to any external financing. External financing is defined by whether a firm secured funds from outside sources (i.e. non-internal funds or retained earnings) for the purposes of fixed asset purchases or working capital financing during the last fiscal year. Additionally, firms that managed to access equity financing under challenging credit conditions are still classified as FCC, acknowledging that equity financing undertaken in the absence of viable debt options signals financial constraints.

Firms are categorized as PCC when (i) their loan application was partially approved, or (ii) their application was rejected or not submitted for reasons unrelated to having sufficient capital, while simultaneously having access to some form of external financing.

It is important to acknowledge, however, that this measure may slightly overstate the prevalence of credit-constrained firms. First, credit constraints are economically meaningful primarily when they prevent firms from pursuing productive investment opportunities. Some firms may be excluded from credit markets for legitimate reasons – such as poor credit histories or low-return projects – and arguably should not be considered constrained in a welfare-relevant sense. Second, firms may strategically apply for loans exceeding their actual financing needs, anticipating only partial approval. Such firms, effectively unconstrained, could be misclassified as PCC under this measure. That said, this appears to be a limited issue in my sample, as only

189 firms received partial approvals (see Figure 3.1). Nonetheless, in light of these potential sources of bias, the estimated effects of credit constraints reported in this paper should be interpreted as conservative.

Figure 3.1 Process of defining credit constraints applied to sample



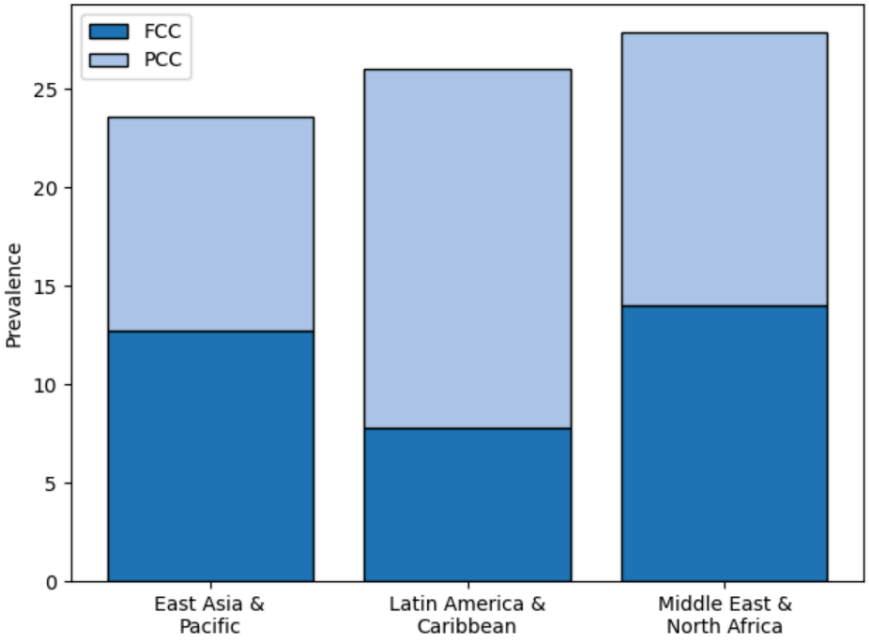
Source: Author's own based on Islam and Rodriguez (2023), using WBES data

Figure 3.2 highlights key regional differences in the prevalence of credit constraints, with a particular focus on the Middle East and North Africa (MENA) and East Asia and the Pacific (EAP). These regions, which share broadly similar GDP per capita levels with Latin America and the Caribbean, provide a more meaningful benchmark for assessing relative credit market performance (WDI, 2025). Applying the refined credit constraint measure to LAC reveals particularly telling patterns. Despite outperforming other developing regions on conventional financial development indicators – with 50.5% of firms reporting access to a bank loan or line of credit and only 58.4% of loans requiring collateral – the overall prevalence of CC firms in LAC remains broadly comparable to that of its peers.

A more detailed breakdown into FCC and PCC firms reveals a notable divergence. While other regions tend to exhibit balanced shares of FCC and PCC firms, LAC stands out for its disproportionately high share of partially constrained firms: 18.7% of firms are categorized as

PCC, compared to just 7.1% as FCC. This pronounced imbalance points to distinctive credit market dynamics in the region and further justifies a region-specific analytical focus. Moreover, these findings suggest that stronger performance on headline financial development metrics may be facilitating broader access to external finance but has not yet translated into a meaningful reduction in overall credit constraints. In other words, improved surface-level indicators appear insufficient to overcome deeper structural barriers limiting firm financing in LAC.

Figure 3.2 Credit constraints of LAC with comparable regions



Source: Author's own, using WBES data

3.3 Outcome Variables

Real sales growth is calculated as the percentage change in sales between the most recently completed fiscal year and a designated prior period. To ensure comparability across time and account for inflation, all reported sales values are deflated to constant 2009 values using each country's annual GDP deflator, adjusted according to the closing month of the firm's fiscal year to reflect country-specific inflation dynamics accurately. The formula applied is as follows, where *t* denotes the number of years between the two periods, *d2'* represents deflated sales in the last completed fiscal year and *n3'* corresponds to deflated sales from a previous period, typically two or three fiscal years prior:

$$(3.1)\ \left(\frac{1}{t}\right) * \frac{d2'-n3'}{(d2'+n3')/2} * (100)$$

Annual employment growth is computed as the percentage change in the number of full-time employees between the current fiscal year and a previous reference period. This measure

captures firm-level labor force dynamics over time. The calculation is specified as follows, where t denotes the number of years between observations, *l1* is the number of full-time employees in the most recent fiscal year and *l2* represents the corresponding figure from a prior period, typically two fiscal years earlier:

$$(3.2)\ (\frac{1}{t})\ *\ \frac{l1-l2}{(l1+l2')/2}\ *\ (100)$$

Finally, Fixed Asset Buyer is a binary indicator variable derived from firm responses to the survey question: *"In fiscal year [insert last complete fiscal year], did this establishment purchase any new or used fixed assets, such as machinery, vehicles, equipment, land or buildings?"*. The acquisition of fixed assets is indicative of a firm's reinvestment activity and future-oriented business strategy, often signaling a positive outlook on business prospects.

3.4 Institutional Variables

The paper determines a firm's exposure to high corruption or high political instability primarily through firm-level perceptions captured in the World Bank Enterprise Surveys (WBES). Specifically, firms are asked: *"Using the response options on the card, to what degree are each of the following an obstacle to the current operations of this establishment?"* Response categories include: no obstacle, minor obstacle, moderate obstacle, major obstacle and very severe obstacle. For econometric implementation, these ordinal responses are recoded into binary indicators, where each variable takes the value of 1 if the firm identifies the obstacle as either a *major* or *very severe* obstacle, and 0 otherwise.

As outlined in the literature review, corruption and political instability are particularly relevant factors in the context of LAC, given their well-documented effects on the business environment in the region (Paulo et al., 2022; Lins, 2025). High levels of corruption can distort market incentives, raise transaction costs, undermine institutional credibility and ultimately impede firm efficiency and growth. Similarly, political instability introduces policy uncertainty and operational risk, which can deter investment, disrupt business continuity and reduce the predictability of market conditions.

To account for broader institutional conditions and test the robustness of results, a set of core institutional controls is also included in the analysis. These comprise measures of regulatory barriers, legal barriers, labor regulations and the perceived adequacy of workforce education. See appendix A for details on their implementation.

3.5 Control Variables

There is a very broad literature on the determinants of firm level outcomes. However, for the purposes of this study I aim to control primarily for factors which have been shown to be the

most relevant in driving firm level performance and thereby may be systematically correlated with credit constraints. As long as lenders are able to observe these factors, they will likely provide credit to those firms with positive signals for growth.

The rationale behind the core set of controls is as follows. As is standard in the literature I account for firm age (log_age) and size (log_size). Additionally I control for the firm having access to financial services in the form of a checking or savings account, so as to avoid capturing the impact of basic access to finance (Checking_savings). Lastly, I control for exposure to crime (Has_Crime_Loss) as it has been shown to specifically raise the cost of doing business for small firms in LAC (Motta, 2016).

In selected specifications, an extended set of controls – adapted from Islam and Rodriguez (2023) – is incorporated to account for additional firm-level characteristics. This extended set includes binary indicators for whether the firm belongs to a multi-establishment enterprise (Multi_establishment_firm), provides formal training to employees (Formal_Training), the top manager's years of industry experience (Top_manager_exp), the gender of the top manager (Top_manager_gen), whether the firm engages in exporting (Exporter), the firm's ownership status (Foreign), whether the firm experienced a power outage in the prior year (Had_Power_outages) and whether the firm maintains a corporate website (Website). See appendix B for the sample summary statistics across all key variables.

4. Empirical Strategy

This study investigates the relationship between credit constraints and firm performance through the estimation of a series of regression specifications. This section outlines the conceptual rationale guiding these empirical models, while the corresponding estimation results are presented in Section 5. To address potential sources of unobserved heterogeneity at the country and sector levels, all regressions incorporate country and industry fixed effects. Additionally, to account for possible intra-group correlation in the error terms, standard errors are clustered at the survey's strata level, defined by the intersection of firm size, location and sector.

As outlined in the data section, each regression specification includes a set of control variables to account for observable heterogeneity across firms and mitigate some concerns about omitted variable bias, given the constraints of the available dataset. To evaluate the relevance of the direct measure of CC for firm outcomes, I begin by estimating Equation 4.1 for the full set of CC firms and separately for FCC and PCC firms. The primary explanatory variable of interest is the financial obstacle indicator – a widely used subjective measure of perceived credit constraints, employed in studies such as Beck, Demirgüç-Kunt and Maksimovic (2005), Asiedu et al. (2013), Ullah (2020), Arie (2022) and Wang et al. (2022). Following this, I estimate Equation 4.2 to assess whether key institutional characteristics – specifically, corruption and political instability – are systematically associated with the incidence of CC across firms. These results are presented in Section 5.1.

$$(4.1)\ CC_{ijc} = \alpha_j + \delta_c + \beta_1 Financial_Obstacle_{ijc} + X_{ijc} + \epsilon_{ijc}$$

$$(4.2)\ CC_{ijc} = \alpha_j + \delta_c + \beta_1 Corruption_{ijc} + \beta_2 Political_Instability_{ijc} + X_{ijc} + \epsilon_{ijc}$$

The paper then turns to the analysis of firm performance outcomes. To evaluate Hypothesis 1 and 2 – that financial constraints will exhibit a broadly negative and significant association with firm-level outcomes, with stronger effects observed for more severely constrained firms – Equations 4.3 and 4.4 are estimated. Equation 4.3 assesses the overall correlation between CC and firm performance, while Equation 4.4 extends this analysis by separately identifying the effects for FCC and PCC firms. The corresponding estimation results are presented in section 5.2.

$$(4.3)\ Perf_{ijc} = \alpha_j + \delta_c + \beta_1 CC_{ijc} + X_{ijc} + \epsilon_{ijc}$$

$$(4.4)\ Perf_{ijc} = \alpha_j + \delta_c + \beta_1 FCC_{ijc} + \beta_2 PCC_{ijc} + X_{ijc} + \epsilon_{ijc}$$

The analysis is subsequently extended to examine the role of institutional factors in shaping firm performance outcomes. In particular, the empirical strategy incorporates two institutional

variables of particular relevance to the LAC context: corruption and political instability. As discussed in the literature review, both have been extensively documented in the development economics literature as major impediments to private sector activity, with the potential to distort market incentives, deter productive investment and constrain firm growth.

In addition to their direct effects, these institutional obstacles may also influence firms' access to external finance. Lenders, if aware of a firm's exposure to such risks, may adjust credit allocation decisions accordingly. This introduces a potential source of omitted variable bias in earlier specifications. Moreover, as outlined by Beck, Demirgüç-Kunt and Maksimovic (2005) as well as Ullah (2020) there is evidence that institutional barriers, particularly corruption, may affect firm performance indirectly through their impact on access to finance.

To address these forms of omitted variable bias, Hypothesis 5 posits that exposure to political instability and corruption will directly negatively affect firm growth outcomes. Whilst Hypothesis 6 anticipates that controlling for these institutional factors will attenuate the estimated relationship between credit constraints and firm performance, as part of the observed effects may reflect unaccounted institutional risks.

To test these hypotheses, Equation 4.5 extends the baseline performance regressions to include firm-level measures of political instability and corruption exposure. Equation 4.6 further incorporates a broader set of institutional control variables to assess the robustness of these results. The results of these extended models are presented and discussed in Section 5.3.

$$(4.5)\ Perf_{ijc} = \alpha_j + \delta_c + \beta_1 CC_{ijc} + \beta_2 High_Corruption_{ijc} + \beta_3 High_Political_Instability_{ijc} + X_{ijc} + \epsilon_{ijc}$$

$$(4.6)\ Perf_{ijc} = \alpha_j + \delta_c + \beta_1 CC_{ijc} + \beta_2 High_Corruption_{ijc} + \beta_3 High_Political_Instability_{ijc} + \beta_4 O_High_Legal_Barriers_{ijc} + \beta_5 O_High_Labor_Regulations_{ijc} + \beta_6 O_High_Workforce_Education_{ijc} + \beta_7 O_Regulatory_Barriers_{ijc} + X_{ijc} + \epsilon_{ijc}$$

Empirical work has documented notable heterogeneity in the impact of financial constraints across the firm size distribution (Beck, Demirgüç-Kunt & Maksimovic, 2005; Ullah, 2020). In particular, credit constraints are especially critical for smaller firms due to their limited access to external funds (Gertler & Gilchrist, 1994; Chodorow-Reich, 2014; Duygan-Bump, Levkov & Montoriol-Garriga, 2015). This gap is especially concerning in developing economies, where capital market imperfections and information asymmetries are more pronounced (Stiglitz & Weiss, 1981). Given that SMEs represent the majority of firms in these economies, constraints on their ability to undertake profitable investments have significant implications for aggregate economic growth.

This paper evaluates the relationship between firm size and the impact of credit constraints in two parts. Hypothesis 3 posits that smaller firms will experience a stronger negative association

between financial constraints and performance outcomes than larger firms. To test this, an F- or $\chi 2$-test is applied to assess whether the estimated coefficients for credit constraints differ significantly between small and large firms. The difference is reported through the Difference(L−S) variable, which captures the estimated gap in the effect of credit constraints between these two size categories.

Completing this, Hypothesis 4 investigates whether the economic burden of credit constraints is disproportionately heavier for small firms. To assess this, I follow the approach outlined by Beck, Demirgüç-Kunt and Maksimovic (2005), calculating an economic impact measure for each firm size category. This is done by multiplying the estimated coefficients of the interaction terms by the mean prevalence of credit constraints within each relevant subsample. The measure is computed for both annual real sales and employment growth, with the analysis made possible by the robust sampling methodology of the WBES, which ensures the data's representativeness. The significance of the differences in these economic impacts is then tested, summarized by the Impact(L−S) variable, which captures the disparity in the total effects of credit constraints between large and small firms, evaluated at their respective population means.

To investigate these hypotheses, an augmented regression specification, presented in Equation 4.7, is estimated. This specification incorporates interaction terms between the credit constraint indicators and firm size categories, enabling a systematic assessment of whether financial constraints have more adverse effects on smaller firms. The results from this analysis are presented and discussed in Section 5.4.

$$(4.7)\ Perf_{ijc} = \alpha_j + \delta_c + X_{ijc} + \beta_1 is_small_{ijc} * CC_{ijc} + \beta_2 is_medium_{ijc} * CC_{ijc} + \beta_3 is_large_{ijc} * CC_{ijct} + \epsilon_{ijc}$$

It is important to emphasize that three principal channels are typically theorized to underpin the observed association between credit constraints and firm performance. The first is a direct causal mechanism, whereby CC firms are less able to undertake or expand productive investment opportunities due to limited access to external finance, leading to inferior performance outcomes relative to NCC firms. The second channel reflects potential omitted variable bias arising from unobserved firm-level characteristics related to creditworthiness. To the extent that lenders can observe attributes predictive of future firm performance and thereby repayment probability, these characteristics would be expected to simultaneously increase the likelihood of accessing credit and improve firm outcomes. The third channel, closely related to the second, involves a reverse causal relationship whereby lenders base credit decisions on firms' past performance, inducing a correlation between credit access and past performance outcomes.

The empirical strategy employed in this study generally does not seek to formally disentangle these mechanisms. Instead, its primary objective is to document and characterize the relationship

between credit constraints and firm performance among firms operating in LAC. It does however try adopting an instrumental variable used in recent literature by Ullah (2020) and Arie (2022).

Following the Heckman (1979) two-stage model their instrument utilizes firm responses to the survey question, "In the last fiscal year, did this establishment have its annual financial statement checked and certified by an external auditor?". An external audit of a firm's financial statement is likely to influence its financial constraints by enhancing lenders' ability to assess the firm's creditworthiness. Importantly, they argue being audited should not be inherently linked to firm performance. To remain closer to their specification, in this section the paper uses the popular perception based financing obstacle indicator also utilised in Section 5.1. Equation 4.8 represents the first stage of the IV regression, where the instrument is regressed on financial constraints.

$$(4.8)\quad \widehat{Financial_Obstacle}_{ijc} = \alpha_j + \delta_c + \beta_1 Audit_{ijc} + X_{ijc} + \epsilon_{ijc}$$

5. Results

5.1 Correlates of Credit Constraints

Table 5.1 Logistic regression for correlates of credit constraints

	CC		FCC		PCC	
	(1)	(2)	(3)	(4)	(5)	(6)
Finance Obstacle	0.449***		0.168**		0.461***	
	(0.038)		(0.074)		(0.036)	
High Corruption		0.118*		-0.134		0.170**
		(0.071)		(0.178)		(0.082)
High Political Instability		0.260***		0.448***		0.169**
		(0.065)		(0.144)		(0.079)
Log Firm Age	-0.132***	-0.163***	0.021	0.000	-0.160***	-0.189***
	(0.051)	(0.052)	(0.078)	(0.082)	(0.056)	(0.057)
Log Firm Size	-0.249***	-0.252***	-0.496***	-0.521***	-0.156***	-0.162***
	(0.030)	(0.033)	(0.073)	(0.077)	(0.031)	(0.034)
Has Checking/Savings Account	-0.521***	-0.586***	-0.869***	-0.921***	-0.111	-0.215
	(0.118)	(0.120)	(0.190)	(0.193)	(0.132)	(0.134)
Has Crime Loss	0.076	0.161**	-0.251	-0.200	0.159**	0.233***
	(0.070)	(0.069)	(0.169)	(0.161)	(0.072)	(0.073)
Multi-Establishment Firm	-0.075	-0.117	-0.025	0.006	-0.092	-0.147
	(0.107)	(0.105)	(0.192)	(0.187)	(0.118)	(0.115)
Has Formal Training	-0.108	-0.131**	-0.170	-0.160	-0.062	-0.088
	(0.068)	(0.067)	(0.130)	(0.133)	(0.074)	(0.071)
Top Manager Experience	0.002	0.001	-0.002	-0.002	0.003	0.002
	(0.003)	(0.003)	(0.006)	(0.006)	(0.003)	(0.003)
Top Manager Gender	-0.089	-0.093	-0.393**	-0.401**	0.022	0.012
	(0.096)	(0.094)	(0.179)	(0.189)	(0.099)	(0.094)
Exporter	0.021	0.036	0.052	0.109	0.021	0.022
	(0.119)	(0.116)	(0.255)	(0.262)	(0.112)	(0.105)
Foreign	0.034	0.018	0.186	0.241	-0.017	-0.039
	(0.130)	(0.129)	(0.260)	(0.267)	(0.124)	(0.120)
Has Power Outages	0.073	0.104	0.079	0.089	0.065	0.095
	(0.070)	(0.072)	(0.139)	(0.137)	(0.078)	(0.080)
Has Website	-0.074	-0.099	-0.172	-0.194	-0.016	-0.043
	(0.078)	(0.076)	(0.134)	(0.136)	(0.089)	(0.086)
Pseudo R-squared	0.119	0.079	0.145	0.145	0.098	0.056
Observations	6114	6014	5901	5806	6110	6010

Standard errors in parentheses. Clustering at the size by location by sector strata level.
All models include country, and industry fixed effects.
*** p<0.01, ** p<0.05, * p<0.10

Source: Author's own, using WBES data

Table 5.1 presents the estimated relationship between core and extended control variables and the likelihood of a firm being credit constrained. The analysis is organized to highlight both the broad and nuanced correlates of credit constraints. Columns (1) and (2) focus on the overall relationship, while columns (3)–(6) break this down further by distinguishing between partially and fully credit constrained firms, offering a deeper look at the specific factors influencing each category.

Turning to columns (1), (3) and (5), I begin by examining the relationship between the perceived financial obstacle and credit constraints. As expected, this variable shows a strong positive association with the likelihood of being credit constrained, with significance observed across all specifications. This suggests that firms' perceptions of financial obstacles are broadly in line with objective measures of credit constraints.

In terms of interpretation, converting the coefficients to odds ratios reveals that a one-point increase in a firm's perceived financial obstacle is associated with a 56.7% higher probability of being classified as credit constrained relative to the previous level. However, disaggregating this effect reveals an interesting asymmetry. Among partially credit constrained firms, the odds increase by 58.6%, while for fully credit constrained firms, the increase is notably lower at 18.3%.

This result is somewhat unexpected, as one might reasonably anticipate that the severity of perceived financial obstacles would be highest among the most constrained firms. However this strange pattern is also observed in the perception of financial obstacles by group: with NCC firms averaging 1.08, PCC firms score a mean of 1.90, while FCC firms report a slightly lower 1.63. This suggests that fully credit constrained firms, while facing objective financing barriers, may either have adjusted their expectations or perceive alternative constraints as more pressing.

Moving to firm-level characteristics in column (2), one can observe that younger and smaller firms are more likely to be credit constrained. Specifically, a one log-point increase in firm age is associated with a 12.3% reduction in the odds of being CC, relative to a firm at the previous age level. Similarly, a one log-point increase in firm size reduces the odds of being credit constrained by 22.3%, relative to a firm at the prior size level. These findings align with expectations, reinforcing the idea that smaller, younger firms face greater barriers to credit access due to limited credit histories.

Firms reporting exposure to crime in the previous year are 17.5% more likely to be credit constrained compared to those that were not exposed to crime. Additionally, access to financial services plays a critical role: firms with a checking or savings account are 44.3% less likely to be credit constrained compared to those without such access. All of these effects are statistically significant at the 5% level or better. These results underscore the importance of including crime

exposure and access to financial services as core controls in the model, as they are key factors influencing firms' credit constraints in the LAC region.

Turning to the institutional context in column (2), firms facing significant political instability have a 29.7% higher likelihood of being CC compared to firms unaffected by such instability. Similarly, exposure to high levels of corruption is associated with a 12.5% increase in the likelihood of being CC relative to comparable firms not exposed to corruption. These results are statistically significant at the 1% and 10% levels respectively, providing some circumstantial support for Hypothesis 6 and underscoring the enduring influence of institutional constraints on lending decisions in LAC.

Disaggregating the results further in columns (4) and (6) reveals important distinctions between partially and fully credit constrained firms. Firm size remains a key predictor for both groups, although the effect is more pronounced among fully credit constrained firms. Additionally, access to financial services plays a crucial role in reducing the likelihood of being fully credit constrained. This emphasizes the importance of financial infrastructure in facilitating access to external financing, particularly for firms facing the most severe credit constraints.

Finally, gender dynamics emerge as significant in the disaggregated analysis. While the gender of the top manager does not appear to predict overall credit constraints, male-managed firms are more likely to be fully credit constrained, contrary to Asiedu et al. (2013) in Africa and suggesting that gender disparities in credit access persist in LAC.

5.2 Financial Constraints and Firm Outcomes

Table 5.2 presents the estimated relationship between credit constraints and firm performance across all outcome variables, organized into separate panels. In analyzing these relationships, I first look at the overall effect of being constrained, then disaggregate the constraints into PCC and FCC. I report their respective coefficients below the aggregate estimates and test for statistical significance where applicable.

To begin, column (1) provides the baseline correlations between CC and firm performance, before any controls are introduced. Columns (2)–(4) progressively introduce core controls, country and industry fixed effects, while column (5) presents the fully specified model, incorporating the complete set of extended control variables. As the analysis moves from columns (1)–(5), the inclusion of controls and fixed effects results in a reduction in the absolute magnitude of the estimated coefficients for credit constraints across all outcome variables. However, this reduction is not statistically significant. Indeed, CC remains negative and significant at the 1% level across all specifications and performance outcomes, reinforcing the robust negative relationship between credit constraints and firm performance.

Interpreting the point estimates from column (5), it is found that firms facing credit constraints exhibit a real sales growth rate that is 2.4 percentage points lower and an employment growth rate 1.6 percentage points lower, relative to comparable unconstrained firms. Additionally, when examining the likelihood of investing in fixed assets, CC firms are 31.4% less likely to do so compared to their unconstrained counterparts. Whilst non causal these findings provide strong circumstantial support for Hypothesis 1, which posited that credit constraints lead to weaker firm performance.

Next, the analysis differentiates between FCC and PCC firms. Finding that the negative and significant coefficient for the broader measure of credit constraints in LAC is primarily driven by PCC firms. For FCC firms, the raw correlations are initially negative and significant, but as firm-level controls are progressively introduced, both the magnitude and statistical significance of these coefficients diminish. By the time the fully controlled specification in column (5) is reached, the coefficients for FCC on real sales and employment growth become small and statistically indistinguishable from zero.

However, FCC firms exhibit a substantial and statistically significant reduction in the likelihood of purchasing fixed assets relative to PCC firms. The odds ratios suggest that FCC firms are approximately 49.9% less likely to purchase fixed assets compared to NCC firms – more than double the reduction observed for PCC firms (26.7%). Recall however that the defining difference between FCC and PCC firms, namely external finance access, was partially defined based on how any recent fixed asset purchases were financed. Therefore this estimate is likely mechanically overstating the impact of being FCC on fixed asset buying.

These findings run counter to Hypothesis 2, which predicted that FCC firms would perform worse than PCC firms. In practice, there is weak evidence suggesting the opposite: within LAC, PCC firms tend to perform worse than FCC firms, particularly in terms of employment growth, where the difference is statistically significant at the 10% level. This unexpected result is further complicated by evidence from Section 5.1, which showed that FCC firms report facing lower financial obstacles than PCC firms and that increases in perceived financing obstacles are less strongly associated with being FCC than PCC. Taken together, these patterns suggest that the severity of credit constraints may be less closely tied to firms' actual performance and material conditions than commonly assumed.

Three possible explanations merit consideration. First, assuming the relationship is not driven by noise, it is possible that FCC firms have adapted their operations to mitigate the effects of being excluded from formal credit streams. This could include securing financing through informal channels, such as family members. Consequently, their lower perception of financial obstacles may reflect being less materially constrained. If so however, they must be perceiving this recourse as second best as they must still report desiring a formal loan to appear as FCC.

Table 5.2 Impact of credit constraints on performance

	(1)	(2)	(3)	(4)	(5)
Panel A: Real Sales Growth					
CC	-3.726***	-3.881***	-2.652***	-2.637***	-2.419***
	(0.708)	(0.714)	(0.798)	(0.784)	(0.796)
FCC	-3.626**	-3.199**	-1.389	-1.304	-0.674
	(1.460)	(1.475)	(1.636)	(1.649)	(1.552)
PCC	-3.750***	-4.032***	-2.930***	-2.928***	-2.800***
	(0.770)	(0.769)	(0.870)	(0.863)	(0.881)
FCC - PCC	0.124	0.833	1.541	1.624	2.126
F-test P-value	(0.937)	(0.598)	(0.318)	(0.299)	(0.163)
Observations	4947	4904	4904	4904	4810
Adjusted R-squared	0.005	0.040	0.083	0.089	0.091
Panel B: Annual Employment Growth					
CC	-2.092***	-2.222***	-1.877***	-2.037***	-1.645***
	(0.473)	(0.468)	(0.546)	(0.491)	(0.547)
FCC	-1.212	-1.027	-0.435	-0.696	0.014
	(0.930)	(0.924)	(0.845)	(0.905)	(0.883)
PCC	-2.324***	-2.518***	-2.229***	-2.367***	-2.050***
	(0.518)	(0.508)	(0.626)	(0.565)	(0.621)
FCC - PCC	1.112	1.491	1.794*	1.671*	2.064*
F-test P-value	(0.272)	(0.134)	(0.090)	(0.071)	(0.054)
Observations	5937	5877	5877	5877	5772
Adjusted R-squared	0.003	0.060	0.084	0.068	0.093
Panel C: Logistic regression for Fixed Asset Buyer					
CC	-0.579***	-0.357***	-0.358***	-0.372***	-0.377***
	(0.060)	(0.065)	(0.065)	(0.065)	(0.068)
FCC	-1.155***	-0.651***	-0.636***	-0.670***	-0.691***
	(0.128)	(0.139)	(0.148)	(0.143)	(0.145)
PCC	-0.439***	-0.292***	-0.299***	-0.307***	-0.310***
	(0.065)	(0.070)	(0.065)	(0.067)	(0.070)
FCC - PCC	-0.716***	-0.359**	-0.337**	-0.363**	-0.381**
χ^2-test P-value	(0.000)	(0.015)	(0.025)	(0.016)	(0.014)
Observations	6356	6232	6232	6223	6097
Pseudo R-squared	0.014	0.113	0.124	0.135	0.151
Core Controls		Yes	Yes	Yes	Yes
Extended Controls					Yes
Country FE			Yes	Yes	Yes
Industry FE				Yes	Yes

Standard errors in parentheses. Clustering at the size by location by sector strata level.

CC was regressed separately from FCC and PCC.

F and χ^2 -test P-values computed with un-clustered robust standard errors.

* p<0.10, ** p<0.05, *** p<0.01.

Source: Author's own, using WBES data

Second, this result may also reflect reverse causality, whereby differences in access to external finance among credit constrained firms are shaped by their past performance. Specifically, poorly performing firms may place greater emphasis on negotiating working capital credit from suppliers, thereby appearing as PCC. Meanwhile better-performing firms, less reliant on such negotiations, may appear as FCC if they actively seek but are denied formal financing. In this scenario, the classification as PCC or FCC may capture underlying differences in financial coping strategies linked to firms' recent performance, rather than reflecting the severity of their credit constraints alone.

A third, and arguably more plausible, explanation in the LAC context is that FCC firms find other obstacles more pressing. Furthermore they may have adapted their expectations and operational strategies in such a way that financial obstacles have become less salient. For instance, they may increasingly rely on leasing arrangements or finance asset acquisitions through retained earnings. This would cause their perceived financial obstacles to be lower. Meanwhile the lack of association with poor performance may simply be a matter of noise. Recall the sample of FCC firms is relatively small, comprising only 323 observations, which limits statistical power and the generalizability of these findings. Nevertheless, this interpretation's implications remain noteworthy. First, perception-based measures of credit constraints may systematically underestimate the challenges faced by the most constrained firms. Second, policies aimed at alleviating credit constraints may have less transformative effects on firm growth than anticipated if firms have already adapted to persistent financial frictions.

5.3 Financial Constraints and Institutional Factors

Table 5.3 presents the results of incorporating institutional growth constraint measures into the core regression specification. To begin, column (1) reports the basic associations between institutional constraints and firm performance, controlling only for country and industry fixed effects. Building on this, columns (2) and (4) sequentially introduce key institutional variables – high corruption and high political instability – alongside the financial constraint measure. Finally, columns (3) and (5) incorporate the full set of institutional controls as a robustness check, allowing for an assessment of the stability of these associations.

Across nearly all model specifications, both corruption and political instability exhibit negative associations with firm performance. However, the size and statistical significance of these effects differ across outcome variables.

Table 5.3 Impact of other institutional factors

	(1)	(2)	(3)	(4)	(5)
Panel A: Real Sales Growth					
CC		-2.347***	-2.528***	-2.143**	-2.306**
		(0.818)	(0.876)	(0.827)	(0.892)
High Corruption	-1.740*	-1.108	-1.443	-1.263	-1.521
	(0.898)	(0.825)	(0.898)	(0.853)	(0.923)
High Political Instability	-1.681**	-1.418**	-1.641**	-1.507**	-1.633**
	(0.722)	(0.666)	(0.694)	(0.669)	(0.700)
ΔCC from table 5.1		0.290**	0.109	0.276**	0.113
χ^2-test P-value		(0.0149)	(0.680)	(0.017)	(0.670)
Observations	4669	4823	4448	4733	4368
Adjusted R-squared	0.063	0.092	0.087	0.095	0.090
Panel B: Annual Employment Growth					
CC		-1.646***	-1.635***	-1.521***	-1.492**
		(0.538)	(0.575)	(0.548)	(0.595)
High Corruption	-1.308***	-1.078**	-0.970**	-1.152**	-1.012**
	(0.458)	(0.457)	(0.484)	(0.455)	(0.473)
High Political Instability	-0.649	-0.909*	-0.683	-0.913*	-0.711
	(0.467)	(0.470)	(0.479)	(0.471)	(0.477)
ΔCC from table 5.1		0.391	0.402	0.124	0.153
χ^2-test P-value		(0.112)	(0.407)	(0.139)	(0.383)
Observations	5609	5780	5303	5679	5214
Adjusted R-squared	0.040	0.094	0.090	0.096	0.092
Panel C: Logistic Regression for Fixed Asset Buyer					
CC		-0.368***	-0.417***	-0.374***	-0.413***
		(0.064)	(0.075)	(0.067)	(0.078)
High Corruption	-0.073	0.068	0.030	0.055	0.029
	(0.075)	(0.071)	(0.079)	(0.072)	(0.079)
High Political Instability	-0.004	0.044	-0.023	0.032	-0.026
	(0.060)	(0.067)	(0.071)	(0.067)	(0.073)
ΔCC from table 5.1		0.004	-0.043	0.003	-0.036
Observations	5962	6119	5586	5998	5484
Pseudo R-squared	0.039	0.133	0.132	0.150	0.148
Core Controls		Yes	Yes	Yes	Yes
Extended Firm Controls				Yes	Yes
Core Institutional Controls			Yes		Yes
Country FE	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes

Standard errors in parentheses. Clustering at the size by location by sector strata level.

χ^2-test P-values computed via Seemingly Unrelated Estimation (SUEST).

* p<0.10, ** p<0.05, *** p<0.01.

Source: Author's own, using WBES data

Namely, column (4) shows that exposure to high levels of corruption and political instability is associated with reductions in real annual sales growth of 1.3% and 1.5%, respectively. Notably, only the association with political instability is statistically significant at the 5% level. A different pattern emerges when examining employment growth. Here, firms reporting exposure to high corruption experience 1.2% slower growth, while those exposed to high political instability see a 0.9% reduction. In this case, the correlation with corruption reaches statistical significance at the 5% level, while the association with political instability is only significant at the 10% level. Given the greater rigidity of employment adjustments relative to sales – owing to the costs and complexities of hiring and firing – this result may suggest that corruption operates as a more persistent, long-term constraint on firm operations.

In contrast, neither corruption nor political instability appears to be significantly associated with firms' fixed asset acquisition behavior, even in column (1), which omits any financial access controls. This finding implies that these institutional constraints may be less salient in shaping long-term investment decisions than in affecting immediate operational outcomes such as sales and employment. Moreover, in high-risk environments like many economies in LAC, firms may have developed adaptive strategies to navigate persistent institutional challenges, effectively decoupling perceptions of corruption or political risk from their longer-term capital investment decisions.

These results provide supportive circumstantial evidence for Hypothesis 5, which posited that firm-level exposure to political instability and corruption negatively affects performance. It is important to acknowledge, however, that these estimates may be influenced by reverse causality. Firms regularly exposed to political instability might only report it as a major obstacle when it has recently affected their performance. A similar pattern could occur with corruption, where routine, background corruption is less likely to be flagged as an obstacle unless it disrupts operations or financing. If present, these reverse causal interpretations would tend to bias the estimates upwards, potentially overstating the true impact of these obstacles on firm outcomes.

Turning to whether these effects operate through firms' access to finance, the analysis now addresses Hypothesis 6, which anticipated that controlling for differences in exposure to corruption and political instability would attenuate the observed effect of financial constraints. To formally examine this, Table 5.3 presents results from Stata's SUEST (Seemingly Unrelated Estimation) procedure. This approach enables joint hypothesis testing across multiple models estimated on the same dataset by combining parameter estimates and their covariance matrices. In this case, it tests whether the coefficient on credit constraints differs significantly from the comparable regression reported in Table 5.2.

The results offer suggestive evidence in line with Hypothesis 6. Controlling for corruption and political instability reduces the coefficient of CC for both real sales and employment growth outcomes. However, only the reduction in the real sales growth coefficient reaches statistical

significance at the 5% level and even this effect is not robust to the inclusion of additional institutional controls.

This pattern suggests a dual channel through which primarily political instability affects real sales growth in LAC: directly lowering performance and indirectly by constraining firms' access to credit. In doing so, it offers tentative evidence of potential discrimination in lending practices based on firms' exposure to political instability. This interpretation aligns with earlier findings from Section 5.1, where exposure to high political instability was a strong predictor of being classified as credit constrained.

Conversely and diverging from the conclusions of Beck, Demirgüç-Kunt and Maksimovic (2005) and Ullah (2020), this analysis finds no evidence that the negative relationship between corruption and employment growth operates through credit constraints. Instead, corruption appears to hinder firm employment growth via a distinct mechanism, independent of firms' access to finance.

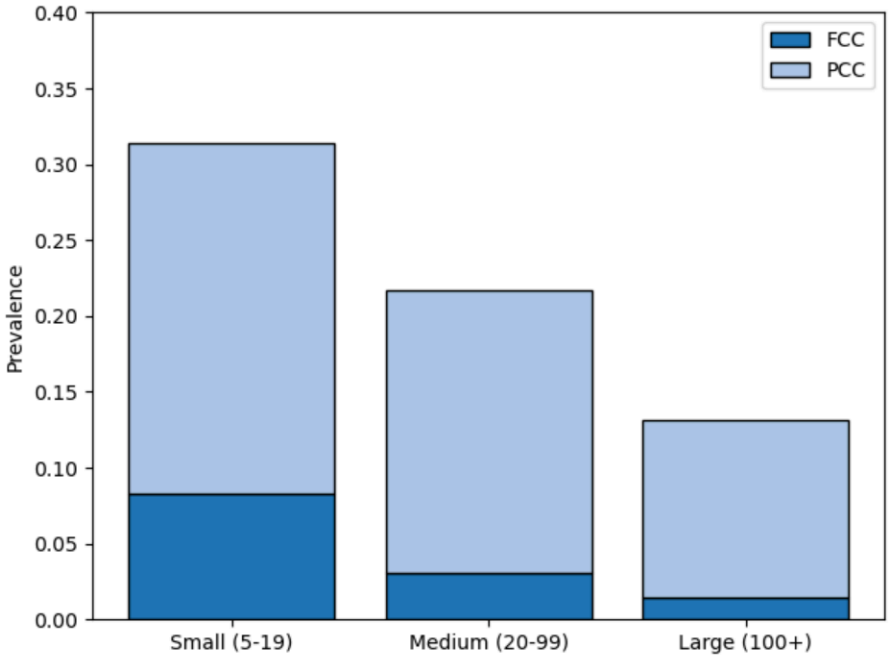
Taken together, these findings carry important implications for understanding firm growth dynamics in LAC. They suggest that addressing financial constraints alone will be insufficient to unlock firm growth in the region's weak institutional environments. Similarly, governance reforms in the absence of improvements to financial access would leave a critical barrier in place. The evidence underscores the importance of integrated policy interventions that simultaneously tackle credit market imperfections and institutional weaknesses to create a more enabling environment for firm development.

5.4 Financial Constraints Across the Firm Size Distribution

This section investigates whether credit constraints disproportionately affect smaller firms in the LAC region, as posited in hypotheses 3 and 4. The analysis proceeds in several stages. I begin by documenting the distribution of credit-constrained firms by size, followed by a regression-based examination of whether the effects of credit constraints on firm performance differ across firm size categories. I then explore possible mechanisms that may explain the observed patterns before revisiting Hypothesis 4 to assess whether the economic burden of credit constraints is borne primarily by smaller firms.

As a starting point, it is instructive to consider how credit constraints are distributed across firm sizes in the sample. A simple tabulation reveals that smaller enterprises are more frequently credit constrained than their larger peers. Additionally, in line with expectations large firms appear to have better access to external finance when credit constrained. This descriptive pattern offers preliminary support for the expectation that financial frictions weigh more heavily on smaller firms and motivates the formal empirical analysis that follows.

Figure 5.1 Credit constraints by size category



Source: Author's own, using WBES data

Turning to the regression results, I assess whether the association between credit constraints and firm performance varies systematically across firm sizes. Table 5.4 reports results from specifications in which firm size is captured by binary indicators for small, medium and large firms, replacing the continuous log(size) variable used in earlier models. Columns (1) and (3) replicate the baseline specifications from Table 5.2 using these categorical size variables, showing negligible differences in the coefficients of interest. Columns (2) and (4) introduce interaction terms between credit constraints and firm size indicators, while columns (3) and (6) further control for exposure to high corruption and political instability.

The results are broadly consistent across firm performance outcomes. For sales growth, credit constraints are associated with slower growth for firms of all sizes. The point estimates suggest that constrained large firms grow approximately 4.1% more slowly than their unconstrained peers, while small and medium firms experience growth rates roughly 2.2% lower. However, these differences in impact by firm size are not statistically significant at conventional levels. A similar pattern emerges for annual employment growth: large credit constrained firms grow 2.1% slower than their NCC counterparts, medium firms 1.8% and small firms 1.5%. Again, the differences are not statistically significant.

The clearest evidence of size-dependent effects appears in firms' fixed asset purchasing behavior. When coefficients are converted to odds ratios, credit-constrained large firms are 52.1% less likely to purchase fixed assets than their unconstrained counterparts, whereas medium and small

firms reduce their odds by 32.6% and 25.2%, respectively. Notably, the difference between large and small firms is statistically significant at the 5% level.

Table 5.4 Credit constraints across the firm size distribution

	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Real Sales Growth						
CC	-2.708***			-2.465***		
	(0.794)			(0.804)		
CC * Is Small		-2.603**	-2.256*		-2.182*	-1.861
		(1.141)	(1.211)		(1.140)	(1.193)
CC * Is Medium		-2.250*	-1.981		-2.172	-1.917
		(1.280)	(1.307)		(1.320)	(1.349)
CC * Is Large		-4.044**	-3.906**		-4.088**	-3.945**
		(1.890)	(1.816)		(1.945)	(1.871)
Impact (Large - Small)		-0.172	-0.202		-0.236	-0.262
		(2.208)	(2.182)		(2.255)	(2.219)
Difference (Large - Small)		-1.441	-1.650		-1.906	-2.084
F-test P-value		(0.464)	(0.401)		(0.346)	(0.301)
Observations	4914	4914	4832	4815	4815	4738
Adjusted R-squared	0.089	0.088	0.091	0.091	0.091	0.095
Panel B: Annual Employment Growth						
CC	-1.836***			-1.691***		
	(0.536)			(0.548)		
CC * Is Small		-1.756**	-1.633**		-1.521*	-1.408*
		(0.738)	(0.759)		(0.772)	(0.788)
CC * Is Medium		-1.829**	-1.657*		-1.781**	-1.623*
		(0.867)	(0.888)		(0.862)	(0.882)
CC * Is Large		-2.156*	-2.076*		-2.136*	-2.066*
		(1.183)	(1.148)		(1.216)	(1.184)
Impact (Large - Small)		-0.041	-0.048		-0.071	-0.077
		(1.394)	(1.376)		(1.440)	(1.423)
Difference (Large - Small)		-0.400	-0.443		-0.615	-0.658
F-test P-value		(0.773)	(0.751)		(0.667)	(0.648)
Observations	5877	5877	5780	5772	5772	5679
Adjusted R-squared	0.089	0.089	0.092	0.090	0.090	0.094

	(1)	(2)	(3)	(4)	(5)	(6)
Panel C: Logistic regression for Fixed Asset Buyer						
CC	-0.390***			-0.388***		
	(0.067)			(0.070)		
CC * Is Small		-0.304***	-0.294***		-0.290***	-0.280***
		(0.089)	(0.087)		(0.095)	(0.093)
CC * Is Medium		-0.364***	-0.380***		-0.396***	-0.412***
		(0.107)	(0.109)		(0.112)	(0.112)
CC * Is Large		-0.774***	-0.751***		-0.736***	-0.712***
		(0.190)	(0.193)		(0.190)	(0.192)
Difference (Large - Small)		-0.470**	-0.457**		-0.446**	-0.432**
χ^2-test P-value		(0.017)	(0.021)		(0.0285)	(0.035)
Observations	6248	6248	6143	6113	6113	6014
Pseudo R-squared	0.119	0.120	0.118	0.140	0.141	0.140
Core Controls	Yes	Yes	Yes	Yes	Yes	Yes
Extended Controls				Yes	Yes	Yes
Core Institutional Controls			Yes			Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes

Standard errors in parentheses. Clustering at the size by location by sector strata level.

F and χ^2 -test P-values computed with un-clustered robust standard errors.

* p<0.10, ** p<0.05, *** p<0.01.

Source: Author's own, using WBES data

Taken together, these findings run counter to the expectation set out in Hypothesis 3, which anticipated that smaller firms would be more adversely affected by credit constraints. Contrary to this, the results indicate that constrained larger firms experience a significantly greater reduction in their capacity to purchase fixed assets compared to their smaller counterparts. While the evidence regarding other performance indicators points in a similar direction, it remains circumstantial and lacks statistical significance. This counterintuitive result challenges the prevailing assumption that larger firms are less vulnerable to credit constraints due to their superior access to external financing (Gertler and Gilchrist, 1994; Chodorow-Reich, 2014; Duygan-Bump, Levkov and Montoriol-Garriga, 2015). What might account for this unexpected pattern? Four possible explanations merit consideration.

One possible explanation is that structural financing needs differ systematically by firm size. Larger firms typically rely more heavily on substantial external financing for asset acquisitions and operational expansions, leaving them especially vulnerable to financing frictions in underdeveloped financial systems. In such contexts, constraints on credit availability may therefore have a disproportionately adverse effect on their investment activities relative to smaller firms, which may be more accustomed to operating with limited external funding.

A second consideration concerns the role of corruption in financial markets, which could disproportionately disadvantage larger firms. The sizable loans they require are often subject to more discretionary and potentially politically influenced, approval processes[1]. However, when controlling for high corruption exposure in the analysis, no significant changes emerge, suggesting that this factor alone is unlikely to account for the observed pattern.

Another possibility is that the classification of a firm as credit constrained carries different implications depending on its size. For large firms – whose loan applications tend to be more profitable for financial institutions and generally receive preferential consideration – a credit rejection may reflect deeper operational or financial vulnerabilities. In contrast, financing difficulties among smaller firms may be more routine and expected in LAC, making CC less indicative of underlying creditworthiness.

Finally, it is also conceivable that the reverse causal relationship between credit constraints and firm performance diverges by size, with recent firm performance exerting a stronger influence on lending decisions for larger firms. If this holds, it could exacerbate the adverse effects of poor performance on large enterprises' access to finance, thereby contributing to the observed disparities.

These results offer bode poorly for Hypothesis 4. Indeed, the analysis of the difference in cumulative economic impact between large and small firms – in terms of annual real sales and employment growth – reveals no evidence that the economic burden of credit constraints falls predominantly on smaller firms in LAC, even after adjusting for their relative prevalence in the population. This finding stands in contrast to the conclusions of Beck, Demirgüç-Kunt and Maksimovic (2005).

Taken together, these findings challenge the assumption that financial frictions uniformly weigh more heavily on smaller firms. In the LAC context, credit constraints appear to meaningfully limit large firms' investment behavior, possibly reflecting their greater reliance on formal credit markets. While the evidence is suggestive rather than definitive, it highlights the importance of further research incorporating richer firm-level data on financing structures and credit market conditions to better document the distributional effects of credit frictions.

5.5 IV Analysis of Financial Constraints

Table 5.5 presents the results of the first-stage regression testing the relevance condition for using audit status as an instrument for the perceived severity of financial obstacles. Column (1) reports the basic correlation in LAC, estimating the effect of audit status on perceived financial constraints without any additional controls. Columns (2) and (3) progressively introduce the

[1] I would like to thank my thesis supervisor for drawing my attention to this point.

model's key covariates, as well as country and industry fixed effects. Column (3) further includes an extended set of firm-level controls.

In the baseline model (column 1), audit status is strongly and statistically significantly associated with perceptions of financial obstacles. However, this relationship is not robust to the inclusion of controls. Once core firm characteristics and fixed effects are included in column (2), the coefficient on audit status becomes statistically insignificant and remains so in column (3) when the full set of controls is included. These findings suggest that the initial association is likely caused by firm-level heterogeneity and country- or industry-specific factors.

Importantly, the instrument fails to satisfy the conventional relevance threshold in any specification. Even in the uncontrolled model, the first-stage F-statistic is only 6.98, below the commonly used threshold of 10. When core controls and fixed effects are added, the F-statistic declines sharply to 0.89, indicating a very weak instrument.

This result stands in contrast to previous findings in the literature. In the context of Eastern Europe and Central Asia, Ullah (2020) reports a robust relationship between audit status and perceived financial constraints, even after accounting for a similar set of controls. Similarly, Arie (2022) finds a strong and significant association in Indonesian data. A plausible explanation for this divergence lies in the differing prevalence of audited firms across samples. In the present dataset, approximately 59% of firms report being audited, compared to just 34% in Ullah (2020) and 20% in Arie (2022). The higher rate of auditing in this sample may attenuate variation in the instrument, limiting its explanatory power and weakening its potential as a source of exogenous variation. Overall, the evidence suggests that audit status does not serve as a relevant instrument in the LAC context, casting doubt on its suitability for identifying the causal effect of financial obstacles through instrumental variable strategies.

Table 5.5 IV regression first stage

	(1)	(2)	(3)
Audit status	-0.100***	-0.038	-0.003
	(0.038)	(0.040)	(0.043)
Core Controls		Yes	Yes
Extended Controls			Yes
Country FE		Yes	Yes
Industry FE		Yes	Yes
Audit F-stat	6.980	0.892	0.005
Adjusted R-squared	0.001	0.053	0.058
Observations	6690	6532	6388

Standard errors in parentheses

Clustering at the size by location by sector strata level.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Source: Author's own, using WBES data

6. Conclusion

In this paper I examine how financial constraints, corruption and political instability shape firm growth in Latin America and the Caribbean, using data from 6,744 firms surveyed between 2016 and 2018. While not aiming to establish causality, the analysis offers a systematic characterization of firm level financial exclusion in this middle-income context, yielding several novel and sometimes counterintuitive insights.

Despite relatively strong performance on conventional financial access indicators, the share of credit-constrained firms in LAC remains comparable to other similar regions. This suggestive evidence implies that improving financial access may shift firms along the constraint spectrum – from fully constrained to partially constrained – without fully dismantling structural barriers to credit.

The analysis also uncovers important patterns in the correlates of credit constraints. As expected, perceived financial obstacles predict credit exclusion, yet fully constrained firms report lower perceived obstacles than partially constrained firms. This counterintuitive result may imply that the most financially excluded firms adjust their expectations downward, causing perception based metrics to understate their constraints. I also find that smaller, younger and crime exposed firms are significantly more likely to face credit constraints in the region, with political instability and corruption further limiting access to finance. Moreover, LAC firms without access to basic financial services and those managed by men are especially likely to be fully credit constrained.

I find that financial constraints are robustly associated with weaker firm performance, specifically in fixed asset investment, employment growth and real sales growth. Yet, the severity of constraints does not linearly translate into worse outcomes: fully constrained firms perform no worse than partially constrained ones. Suggesting that firms lacking access to external finance may develop coping strategies that blunt the observable impact on performance. Institutional weaknesses also exert distinct effects. Political instability dampens real sales growth directly and partially indirectly, by tightening credit constraints, while corruption primarily undermines employment growth through channels largely independent of financial frictions.

The paper also casts doubt on the validity of an instrument for financial constraints adopted in recent literature. Namely audit status, which performs poorly in the LAC context once firm, sectoral and country controls are included. This likely reflects the high prevalence of auditing in the region, raising broader concerns about the cross-context relevance of this measure. Finally, I find evidence challenging prevailing assumptions about the distributional burden of financial constraints. While large firms enjoy better access to external finance, being constrained appears to have a more pronounced effect on their asset investment than on smaller firms. Even when

accounting for their larger numbers, there is no evidence that smaller firms disproportionately shoulder the cumulative burden of financial constraints in the region.

The findings of this study carry several important policy implications for promoting firm growth in LAC. First, simply improving access to financial services is unlikely to resolve the region's persistent financing gaps unless accompanied by reforms addressing deeper structural barriers to credit. Relatedly, the analysis reveals that perception based indicators may underestimate financial exclusion among the most marginalized firms. Moreover, the evidence underscores the importance of integrated policy responses that tackle both financial barriers and broader institutional weaknesses, such as political instability and corruption, which independently stifle firm growth. Finally, while large firms in LAC typically have better access to credit, the impact of financing constraints on their investment capacity is disproportionately severe – indicating that policy efforts should move beyond a narrow focus on SMEs and support productive investment opportunities for firms across the size distribution.

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Appendix

Figure A: Descriptions of control variables

Variable	Description
Core Controls	
log_age	Logarithm of the firm's age in years (minimum value is 1). Firm age serves as a proxy for business maturity and market experience.
log_size	Logarithm of the firm's number of employees (minimum value is 1). Measures firm scale while normalizing the distribution. Excluded when analyzing size distribution effects.
Checking_savings	Dummy variable (=1) if firm maintains a checking/savings account. Indicates basic financial inclusion and access to banking services.
Had_Crime_Loss	Dummy variable (=1) if firm experienced significant losses from theft, robbery, vandalism, or arson last fiscal year.
Core Institutional Controls	
O_High_Legal_Barriers	Dummy variable (=1) if courts are reported as a major or very severe obstacle to the current operations of the establishment.
O_High_Labor_Regulations	Dummy variable (=1) if labor regulations are reported as a major or very severe obstacle to the current operations of the establishment.
O_High_Workforce_Education	Dummy variable (=1) if an inadequately educated workforce is reported as a major or very severe obstacle to the current operations of the establishment.
O_Regulatory_Barriers	Percentage of senior management's time spent dealing with government regulation.
Extended Controls	
Multi_establishment_firm	Dummy variable (=1) if firm belongs to a larger multi-establishment business. Identifies corporate structure affiliation.
Formal_training	Dummy variable (=1) if firm provided structured training for permanent employees last fiscal year.
Top_manager_exp	Top manager's years of experience in the sector. Captures managerial expertise.
Top_manager_gen	Dummy variable (=1) if top manager is female. Analyzes gender effects in leadership.
Exporter	Dummy variable (=1) if firm exports >10% of sales. Identifies international market exposure.
Foreign	Dummy variable (=1) if >10% of firm is foreign-owned. Indicates global investment.
Had_Power_outages	Dummy variable (=1) if firm experienced disruptive power outages last fiscal year.
Website	Dummy variable (=1) if firm maintains its own website. Proxies digital presence.

Source: Based on descriptions in WBES indicators

Table B: Sample summary statistics

Variable	N	Mean	SD	Min	Max
Real Sales Growth	5161	1.608	21.122	-98.312	99.839
Annual Employment Growth	6261	3.178	15.702	-85.567	100.000
Fixed Asset Buyer	6721	0.511	0.500	0.000	1.000
CC	6369	0.241	0.428	0.000	1.000
FCC	6369	0.051	0.219	0.000	1.000
PCC	6369	0.190	0.392	0.000	1.000
High Corruption	6637	0.472	0.499	0.000	1.000
High Political Instability	6687	0.435	0.496	0.000	1.000
High Legal Barriers	6496	0.269	0.443	0.000	1.000
High Labor Regulations	6701	0.248	0.432	0.000	1.000
High Workforce Education	6688	0.2871	0.4524	0.000	1.000
Time Spent Managing Regulation (%)	6299	13.917	15.610	0.000	90.000
Log Firm Age	6684	2.985	0.756	0.000	5.231
Log Firm Size	6708	3.452	1.450	0.000	9.488
Has Crime Loss	6709	0.234	0.424	0.000	1.000
Multi-Establishment Firm	6744	0.224	0.417	0.000	1.000
Has Formal Training	6705	0.570	0.495	0.000	1.000
Top Manager Experience (Years)	6672	23.902	12.250	1.000	60.000
Top Manager Gender (Female=1)	6731	0.176	0.381	0.000	1.000
Exporter	6728	0.158	0.365	0.000	1.000
Foreign	6726	0.104	0.305	0.000	1.000
Has Checking/Savings Account	6693	0.919	0.273	0.000	1.000
Has Power Outages	6710	0.593	0.491	0.000	1.000
Has Website	6734	0.667	0.471	0.000	1.000
Audit Status	6690	0.587	0.492	0.000	1.000

Source: Author's own, using WBES data

Table C: Key summary statistics by country

Country	Observations	Real Sales Growth	Employment Growth	Fixed Asset Buyer	CC	FCC	PCC	High Corruption	High Political Instability
Argentina	991	-5.598	0.434	0.503	0.332	0.088	0.243	0.519	0.589
Bolivia	364	7.967	11.963	0.573	0.255	0.067	0.187	0.415	0.366
Colombia	993	7.362	5.481	0.529	0.259	0.024	0.236	0.579	0.487
Dominican Republic	359	5.985	5.484	0.416	0.066	0.016	0.051	0.322	0.177
Ecuador	361	-1.615	0.529	0.526	0.264	0.026	0.239	0.458	0.560
El Salvador	719	2.082	1.666	0.358	0.282	0.100	0.182	0.458	0.424
Guatemala	345	2.245	3.335	0.507	0.193	0.068	0.125	0.711	0.638
Honduras	332	0.437	0.668	0.429	0.278	0.044	0.234	0.591	0.494
Nicaragua	333	4.132	4.331	0.529	0.219	0.049	0.170	0.313	0.219
Paraguay	364	4.888	4.622	0.584	0.099	0.027	0.072	0.396	0.255
Peru	1003	0.885	3.668	0.562	0.192	0.018	0.175	0.528	0.471
Suriname	233	-13.835	-0.173	0.506	0.431	0.111	0.319	0.230	0.319
Uruguay	347	2.988	0.052	0.659	0.169	0.035	0.134	0.155	0.178

Source: Author's own, using WBES data

AI use disclosure

In my paper, I utilised ChatGPT and DeepSeek AI for supporting the coding process and error-resolution, reformatting Latex tables as well as grammar and spelling purposes. Throughout the entire thesis writing process all output was thoroughly scrutinised and checked through proper academic sources. I believe generative AI supported the research process by saving time on debugging and formatting, without creating concerns surrounding unoriginality and hallucinations.