IBN HALDUN UNIVERSITY
SCHOOL OF GRADUATE STUDIES
DEPARTMENT OF ECONOMICS

PH.D. THESIS

THREE ESSAYS ON FIRM PERFORMANCE CONSTRAINTS: EMPIRICAL EVIDENCE FROM EUROPEAN AND CENTRAL ASIA COUNTRIES

ARAB DAHIR HASSAN

THESIS SUPERVISOR
PROF. MUHİTTİN KAPLAN

ISTANBUL, 2023

IBN HALDUN UNIVERSITY
SCHOOL OF GRADUATE STUDIES
DEPARTMENT OF ECONOMICS

PH.D. THESIS

THREE ESSAYS ON FIRM PERFORMANCE CONSTRAINTS: EMPIRICAL EVIDENCE FROM EUROPEAN AND CENTRAL ASIA COUNTRIES

by
ARAB DAHİR HASSAN

A thesis submitted to the School of Graduate Studies in partial fulfillment of the requirements for the degree of Doctor of Philosophy in Economics

THESIS SUPERVISOR:
PROF. MUHİTTİN KAPLAN

ISTANBUL, 2023

APPROVAL PAGE

This is to certify that we have read this thesis and that in our opinion it is fully adequate, in scope and quality, as a thesis for the degree of Doctor of Economics.

Thesis Jury Members

Title - Name Surname	Opinion	Signature
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

This is to confirm that this thesis complies with all the standards set by the School of Graduate Studies of Ibn Haldun University.

Date of Submission Seal/Signature

ACADEMIC HONESTY ATTESTATION

I hereby attest that all information in this document has been gathered and presented in compliance with academic standards and ethical norms. Additionally, I affirm that I have appropriately credited and referenced all sources that are not original to this work, as mandated by these standards and conduct.

Name Surname: Arab Dahir Hassan

Signature:

ÖZ

FİRMA PERFORMANSI KISITLARI ÜZERİNE ÜÇ MAKALE: AVRUPA VE ORTA ASYA ÜLKELERİNDE EMPİRİK KANITLAR

Arab Dahir, Hassan
Doktora Programı
Öğrenci Numarası: 194003003
Open Researcher and Contributor ID (ORC-ID): 0000-0003-2397-4126
Ulusal Tez Merkezi Referans Numarası: 10574417

Tez Danışmanı: Prof. Dr. Muhittin Kaplan
September 2023, 101 Sayfa

Bu tez, Avrupa ve Orta Asya'daki işletmelerin karşılaştığı temel performans kısıtlamalarını incelemektedir. Araştırma, özel araştırma sorularını ele alan üç farklı makale içermekte olup, her bir makale doğasına ve amaçlarına özgü olarak tanımlayıcı istatistikler, sıralı regresyon ve Bayesian analizi gibi farklı yöntemleri kullanmaktadır. Araştırma bulguları, işletme performansını olumsuz etkileyen beş temel faktörü belirlemektedir. Bunlar, vergi oranları, finansal kaynaklara erişim, iyi eğitimli işgücünün bulunabilirliği, kayıt dışı işletmelerden kaynaklanan rekabet ve siyasi istikrarsızlık olarak sıralanabilir.

Bu tez önceki çalışmalardan farklı olarak mevcut akademik literatüre başlıca iki alanda önemli katkılarda bulunmaktadır. İlk olarak, bu çalışmada firma performansı, geleneksel göstergeler olan satış, istihdam ve karlılık yerine sabit varlıkların edinimi veya uzun vadeli yatırım taahhüdü değişkenleri kullanılarak ölçülmektedir. Ayrıca, çalışma rüşvet, mevzuatın karmaşıklığı ve vergi denetimlerinin sıklığı gibi daha önce göz ardı edilen değişkenleri dikkate almakta; ki bu değişkenler işletmelerin neden vergi oranlarını performanslarının önündeki en önemli engel olarak gördüklerini açıklamaktadır.

İkinci olarak, bu çalışma literatüre kullandığı ekonometrik yöntemler açısından katkı sunmaktadır. Firma performansının belirleyenleri üzerine mikro düzeyde yapılan

önceki araştırmalar genellikle geleneksel ikili ve sıralı modelleri kullanmıştır. Ancak sıralı modeller, her bir bağımsız değişkenin her bir çıktı kategorisinin olasılığını doğrusal etkilediğini varsayar, bu da orantılı olasılık veya paralel çizgiler varsayımı olarak bilinir. Bu varsayımın karşılanması çoğu zaman mümkün olmaz ve bu varsaymamın ihlali katsayı tahminlerinin sağlamlığını tehlikeye atabilir. Bu çalışmada, orantılı olasılık varsayımının geçerli olup olmadığına ilişkin test sonuçları varsayımın ihlal edildiğini göstermektedir. Ayrıca, bu varsayım ihlal edildiğinde katsayı tahminlerinin etkilenip etkilenmediğini değerlendirmek için farklı modellerin tahmin sonuçları karşılaştırmıştır. Bulgular, orantılı olasılık varsayımı ihlallerinin farklı modellerin tahminlerinde sadece küçük farklılıklara neden olduğunu göstermektedir. Dahası, firma performans göstergelerinin analizinde sıklıkla geleneksel istatistiki veya ekonometrik yöntemler kullanılmakla birlikte, bu yöntemler tahminlerdeki belirsizliği niceleştirmede sınırlı kaldıkları için eleştiriye uğramışlardır. Bu nedenle, bu çalışma, daha esnek ve daha güvenilir tahminler sunan Bayesian yaklaşımını benimsemektedir.

Anahtar Kelimeler: Bayesian Yaklaşım, Finansal Engeller, Kapasite Kullanımı, KOBİ'ler, Kredi Kısıtlaması, Sabit varlıklar.

ABSTRACT

THREE ESSAYS ON FIRM PERFORMANCE CONSTRAINTS: EMPIRICAL EVIDENCE FROM EUROPE & CENTRAL ASIAN COUNTRIES

Arab Dahir, Hassan
Ph.D. in Economics
Student ID: 194003003
Open Researcher and Contributor ID (ORC-ID): 0000-0003-2397-4126
National Thesis Center Reference Number: 10574417

Thesis Supervisor: Prof. Muhittin Kaplan
September 2023, 101 Pages

This study examines the main performance constraints faced by enterprises in Europe and Central Asia. The research consists of three separate essays, each addressing specific research questions, and uses different methodologies, including descriptive statistics, ordinal regression, and Bayesian analysis, tailored to the unique nature and objectives of each essay. The study identifies five key barriers to business performance: Tax rates, financial resource access, skilled labor availability, unregistered firm competition, and political instability.

This dissertation departs from previous studies and contributes to the existing academic literature in several ways. Firstly, it introduces evaluating firm performance via fixed asset acquisition or long-term investments, diverging from traditional indicators like sales, employment, and profitability. In addition, the study introduces previously overlooked constructs such as tax bribery, regulatory complexity, and the frequency of inspections by tax authorities, which provide valuable insights into why firms perceive tax rates as a major impediment to their performance.

Second, from an econometric perspective, previous research on the determinants of performance at the micro level has typically used traditional binary and ordinal models. Ordinal models, however, assume that the effect of each independent variable on the probability of each outcome level is proportional, which is known as the

proportional odds or parallel lines assumption. This assumption is often challenging to meet, and its violation can impact estimate robustness. The study discovered a breach in the proportional odds assumption yet found only minor differences in the model predictions as a result. While the determinants of firm performance have been studied from a frequentist statistical or econometric perspective, criticism has arisen about the limited quantification of uncertainty in the estimates. In contrast, this study uses the Bayesian approach, which is more flexible and provides more reliable estimates of the predictions.

Keywords: Bayesian approach, Capacity Utilization, Credit Constraint, Financial Obstacle, Fixed Assets, SMEs.

ACKNOWLEDGEMENT

I am profoundly grateful to my esteemed supervisor, Prof. Dr. Muhittin Kaplan, for his invaluable guidance and steadfast support, which were crucial in the successful completion of this doctoral thesis. I extend my deepest thanks to my mother, Halimo Nour Duale, and my aunt, Ardo Hassan Sh. Gadiid, my two special heroes, for their unwavering love, care, and prayers.

My aunt, Ardo Hassan Sh. Gadiid, deserves special thanks for her selfless sacrifices that have shaped me into a better person; I would not be who I am today without her.

I also wish to express my deep gratitude to my beloved wife, Hanna Mohamed Jibril, for her enduring patience, boundless moral support, unconditional love, and care during this critical period.

Lastly, I am deeply indebted to Ibn Haldun University for providing me with the opportunity to pursue my Ph.D. education. Their support has been instrumental in shaping my academic journey.

Arab Dahir Hassan
ISTANBUL, 2023

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF SYMBOLS AND ABBREVIATIONS

SME	Small and Medıum Enterprise
SDG	Sustainable Development Goals
CEO	Chief Executive Officer
ES	Enterprise Survey
EBRD	European Bank for Reconstruction and Development
GETS	General-to-Specific Modeling
MCMC	Markov Chain Monte Carlo
SE	Standard Errors
ESS	Effective Sample Size
TAILl ESS	Tail Effective Sample Size
BULK ESS	Bulk Effective Sample Size
RC	Gelman-Rubin Convergence Diagnostic

CHAPTER I

INTRODUCTION

In today's rapidly evolving business world, a company's ability to leverage its resources and capabilities to achieve profitable growth and sustainable development is not only a competitive advantage but a matter of survival. A company's profitable growth enables it to continue to invest, create new jobs, and contribute to society through social responsibility projects. While the relentless pursuit of profit and value creation is a given for all stakeholders, the importance of a company's expansion goes beyond these immediate benefits (Abdulsalam & Zainal, 2022).

Growth is a catalyst for innovation. As companies grow, they are often forced to venture into uncharted territory, pushing the boundaries of what is possible and driving technological advances. This constant evolution and adaptation fosters a culture of innovation within the company and encourages employees to think outside the box and find creative solutions to complex problems. This innovation in turn leads to the development of new products and services and opens up new markets and opportunities for the company. In addition, a growing company contributes significantly to job creation. When companies expand their operations, they need more employees to handle the increased workload. This leads to the creation of new jobs, both within the company and in the wider economy. These jobs not only provide an income for the individual but also help to reduce the unemployment rate and promote economic growth.

Furthermore, the growth of a company has a cascading effect on the economy. When businesses expand, they invest resources in infrastructure, technology, and human resources, which injects capital into the economy and boosts economic dynamism. This capital inflow increases production and consumption and drives economic expansion. In addition, expanding businesses enriches the economy by paying taxes that the government can use to fund public services and infrastructure initiatives.

Nevertheless, it is important to recognize that while growth is generally beneficial, it also requires careful management. Uncontrolled or rapid expansion can lead to overexpansion, where the company takes on more than it can handle. This can deplete resources, lead to inefficiencies, and ultimately affect the company's performance. Therefore, as companies strive for growth, they must also ensure that they have the necessary systems and procedures in place to manage this growth effectively.

A company's growth trajectory and overall performance are subject to a variety of obstacles and constraints. These challenges can range from internal factors such as resource constraints and operational inefficiencies to external factors such as market competition, regulatory changes, and economic volatility. Recognizing and understanding these constraints is critical for companies to develop successful strategies and actions that will help them overcome these obstacles and achieve long-term success.

Internal constraints often arise from the resources and capabilities of the company. For example, a lack of financial resources may limit a company's ability to invest in new projects or technologies. Similarly, a lack of qualified personnel can affect a company's ability to innovate and adapt to changing market conditions. Operational inefficiencies, such as poor management practices or outdated technologies, can also affect a company's performance and growth.

External constraints, on the other hand, are factors outside the company's control. Competition in the market can be a major challenge, as competitors may offer better products or services or use aggressive marketing strategies. Regulatory changes can also affect a company's operations, forcing it to adapt its practices to comply with new laws or standards. Economic fluctuations such as recessions or changes in consumer demand can also pose a challenge.

To navigate the complexities of the business landscape, companies must adopt a forward-thinking and strategic mindset. This requires a comprehensive examination of both their internal operations and the external market conditions to pinpoint potential hurdles and opportunities. Armed with this knowledge, they can formulate strategies

and policies that capitalize on their advantages, mitigate their shortcomings, and set them on a path to thrive even in challenging circumstances.

This study delves into the significant economic, political, and regulatory challenges companies in Europe and Central Asian countries face and examines how these challenges affect their performance. The primary research question posed in this study is, “What are the major constraints on performance for firms in the specified region?” This central question was the initial focus of the investigation. The insights gained from this preliminary inquiry laid the groundwork for subsequent research questions. As a result, the structure of the study mirrors a collection of three distinct yet interrelated essays.

The first essay in this study focuses on a central research inquiry: 'What are the primary limitations affecting firms in Europe and Central Asia?' The research highlights the top five constraints perceived by senior firm managers: tax rates, limited access to finance, competition from informal sectors, political instability, and a deficiently educated workforce. Specifically, this essay delves into the significance of access to finance and its direct impact on firms' operational capacity, considered a key metric of firm performance. In its conclusion, the essay investigates the factors contributing to firms' inability to secure financial support from institutions, revealing that high-interest rates and strict collateral requirements stand as the foremost barriers.

The second essay in this series strives to clarify why firms view the tax rate as a significant performance constraint, as outlined in the first essay. To determine whether the perception of the tax rate as a major performance constraint varies with the size and sector of a firm, we conducted a comprehensive analysis across firms, sectors, and regions. Interestingly, regardless of firm size, sector, and, most notably, different regional blocks, the tax rate remains the primary performance obstacle. To comprehend this trend, the essay establishes significant constructs, including tax bribery, regulatory complexity, the frequency of tax inspections, firms' perceptions of tax administration, and financial constraints. The fundamental hypothesis posited by the essay is that firms exposed to tax bribery are more inclined to view the tax rate as a primary obstacle. Likewise, increased scrutiny from regulatory bodies may prompt firms to perceive the tax rate as a significant performance impediment or potentially

reduce information asymmetry between firms and tax administration. Furthermore, the essay hypothesizes that financially constrained firms are more prone to consider the tax rate a substantial obstacle to their performance.

The essay employs several ordinal econometric models to investigate the relationship between compliance with or deviation from basic model assumptions and various factors. It specifically evaluates the predictive capabilities of these models and determines whether any assumption violations affect their predictions. The findings indicate that factors such as tax bribery, credit constraints, and regulatory complexity are why firms consider the tax rate their primary constraint on business performance. Conversely, tax inspection mitigates firms' negative perceptions of the tax rate.

The third essay delves into the impact of financial access and constraints on firm performance using a Bayesian econometric approach. Fixed asset acquisition serves as the chosen measure of firm performance in this essay, capturing long-term investment decisions that signal robust performance. The findings reveal a significant positive impact of financial access on the likelihood of acquiring fixed assets, highlighting its role in boosting performance. Conversely, financial constraints hinder such acquisitions, aligning with the theoretical notion that access fuels growth while constraints act as roadblocks.

1.1. Categories of Firm Performance Obstacles

This section endeavors to provide a comprehensive overview of the obstacles that may impede the performance of firms. These obstacles can be categorized based on a variety of metrics. However, for this study, we have divided them into two main categories: internal and external obstacles.

The first part of this section delves into internal factors. These are obstacles inherent to the characteristics of the firms themselves. Such factors could include organizational structure, leadership style, employee skills, and financial resources. Understanding these internal obstacles is crucial as they directly impact the firm's operations and can be managed or mitigated through strategic planning and effective management.

The second part of this section is devoted to analyzing external obstacles. These factors are beyond the firm's control but significantly affect its performance. These factors may include market competition, regulatory environment, economic conditions, technological changes, and societal trends. While firms may not have direct control over these external factors, understanding them can help strategies to adapt and thrive in the face of these challenges. By examining internal and external obstacles, this study aims to provide a holistic understanding of the challenges faced by firms and offer insights into how they can navigate these hurdles to enhance their performance.

1.1.1. Internal Obstacles

Many firms prioritize growth, but it's not always smooth sailing. Internal roadblocks can hinder an enterprise's ability to flourish (Al-Maskari et al., 2019). Identifying and tackling these challenges is crucial for achieving sustainable growth. The following are some examples:

- **Absence of well-defined strategy**: To flourish, any firm needs a crystal-clear growth strategy. This roadmap outlines the firm's goals, objectives, and the precise steps to conquer them. In today's cutthroat business environment, a growth strategy isn't a luxury; it's a lifeline (Mascarenhas et al., 2002). It's how a business charts its course to expansion, meticulously analyzing its current standing, evaluating the external landscape's opportunities and threats, and boldly forging a path toward its objectives (Porter, 1996). A lack of strategy? It's a growth killer. Without a clear roadmap, businesses are like ships lost at sea, prone to drifting off course and missing golden opportunities. They might react impulsively, wasting resources on pursuits that don't align with their true north. Or, they might fall victim to threats they never saw coming. The result? Stagnation, decline, and missed chances for expansion.

  So, what stops businesses from charting their course? It could be a lack of resources or know-how. Some get caught up in the daily grind, mistaking busyness for progress. Others, lulled by complacency, believe they can wing it. But regardless of the reason, the consequences are the same: missed opportunities, wasted resources, and a potential nosedive.

The antidote? A well-crafted growth strategy. It's the compass that keeps businesses pointed toward their goals, the shield that deflects unforeseen threats, and the key to unlocking sustainable growth. For any business serious about thriving, a defined growth strategy is non-negotiable.

- **Inadequate resources:** Growth requires essential resources such as money, personnel, and time. Without the right resources, a business may face struggles in expansion. Resource scarcity can significantly obstruct business success (Pissarides, 1999). Resources include all assets that could used to produce goods or services, such as financial capital, human capital, physical capital, and intangible assets. A lack of resources can hinder a business's ability to compete, innovate, and grow (Yoshino & Taghizadeh Hesary, 2016). Extensive academic literature explores the correlation between resource constraints and business expansion. Businesses with limited access to various forms of capital—financial, human, physical, and intangible—are less likely to expand than businesses without such limitations.
- **Ineffective management:** Any firm that wants to expand must have effective management. Effective planning, organizing, and leadership skills are essential for managers. They must also possess the ability to inspire and motivate workers. The absence of managerial capacities may be a significant barrier to business expansion. Comparatively, organizations managed by managers who lack the requisite skills are more likely to fail or grow more slowly than organizations managed by managers who do (Siepel et al., 2021).
- **Lack of innovation:** Innovation is a key factor for a business to outperform its competitors. Without creativity, a business may find it challenging to grow. Innovation plays a significant role in business growth. Businesses that embrace innovation are more likely to succeed in a competitive marketplace (Le & Ikram, 2022). These businesses can also stimulate economic growth by creating new jobs.

  Several factors explain why a lack of innovation can hinder business growth. First, innovation helps businesses to stand out from their competitors, providing a competitive advantage. This advantage can allow them to charge higher prices for their products or services (Hanaysha et al., 2022).

  Second, innovation can lead to improved efficiency and increased production in a business, resulting in lower costs and higher profits. Finally, innovation

can help businesses enter new markets and attract more customers (Gunday et al., 2011).

- **Internal communication failure:** Internal communication is vital for any company that aims to grow and prosper. This communication involves the exchange of information and ideas between employees, management, and other stakeholders. Effective internal communication can enhance employee morale, productivity, and decision-making (Jacobs et al., 2016). It can also foster trust and collaboration across different departments and levels within the company. However, internal communication doesn't always succeed. When it fails, the organization may experience various adversary effects. These could include reduced productivity, poor decision-making, and disengaged employees. It could also make it harder for the company to address issues and adapt to change.
- **Employee motivation:** Employee motivation is a critical factor in business growth. Motivated workers tend to engage more in their work, leading to increased productivity and creative thinking (M. T. Lee & Raschke, 2016). However, several factors can demotivate employees, potentially preventing businesses from achieving their growth objectives. One of the most common barriers to employee engagement is a lack of clarity on expectations and goals. When employees are not sure what the company expects from them, they may not feel motivated to perform at their best. Therefore, managers should frequently communicate expectations and goals to their team members.

1.1.2. External Obstacles

In the business world, performance is an essential element that has a direct impact on the prosperity of an organization. It reflects the organization's ability to effectively implement its plans and achieve results. Performance encompasses various aspects, including efficiency, effectiveness, and adaptability.

A mix of factors is required to achieve solid performance in an organization. Efficiency is crucial for optimizing the use of resources and refining processes. Effectiveness ensures that a company can achieve its goals and deliver value to customers and

stakeholders. Equally important is adaptability, which enables the company to respond to changing market scenarios and emerging obstacles.

Nevertheless, the path to consistent and outstanding performance is fraught with challenges. External factors such as economic fluctuations, regulatory changes, and changes in consumer tastes can present significant obstacles. To overcome these hurdles, a proactive and strategic approach is required to successfully navigate the ever-changing business terrain.

In this highly competitive environment, high-performing companies recognize the importance of continuous improvement and the ability to adapt to external influences. By focusing on excellence and proactively addressing potential challenges, companies can increase their chances of lasting success and establish a resilient position in the marketplace.

- **Lack of access to capital:** One of the biggest barriers to business performance is a lack of funding. It can prevent businesses from growing, hiring employees, and creating new goods and services (Fowowe, 2017). In some cases, it can even lead to the failure of a business. It can be difficult for small businesses to obtain funding for a variety of reasons. One explanation is that smaller businesses are sometimes seen as riskier ventures than larger companies. Small firms are more prone to bankruptcy than larger ones, and they may not have as much collateral or a long financial history. Lack of access to finance can hurt small businesses in several ways. It can prevent them from growing, which can lead to job losses and stagnant growth. It can also make it difficult for smaller businesses to compete with larger companies, giving the latter an unfair advantage.
- **Regulations and Taxes:** Government regulations can seriously hinder the growth of businesses (Ndiaye et al., 2018). Not only do they increase costs, but they can also make it more difficult to hire and fire employees and hinder innovation. Some companies can even be driven out of business by regulations. Government regulations can hinder the growth of companies in different ways. One method is to raise prices. Regulations can force companies to purchase equipment, hire additional employees, or comply with complicated reporting

requirements. These expenses can cut into profits and make it more difficult for businesses to continue to grow. Another way that government regulations can hinder business growth is by making it more difficult to hire and fire employees. Many countries have strict laws governing the hiring and firing of employees. These regulations can make it difficult for companies to quickly adapt their staff to changing market conditions. Taxes can be a major obstacle to business expansion. High tax rates could limit the amount of profits that companies can use to finance new ventures, research and development, and other growth-enhancing measures. Because foreign competitors may be subject to lower tax rates, taxes can also make it more difficult for domestic companies to compete with them. Taxes not only have a direct impact on a company's profitability but can also indirectly hinder a company's development. Complex tax laws, for example, can make it difficult for companies to comply with tax laws, which can lead to costly mistakes and penalties. It can also be difficult for companies to understand their tax obligations as the tax system is not transparent enough, which can lead to risk and confusion. Depending on the individual characteristics of the business and the tax structure, taxes can have a different impact on business growth. Small companies, for example, are often more sensitive to the impact of taxes than large companies. This is because small businesses often have fewer financial resources to pay the high tax bills. In addition, it is often difficult for small companies to comply with complicated tax regulations.

- **Competition:** Competition is an inevitable feature of any business atmosphere. It can be a driving force for innovation and efficiency, but it can also be a major obstacle to progress. There are several ways in which competition can stifle business growth. First, competition can lead to lower prices. When multiple companies are competing for the same customers, they are all under pressure to keep their prices low. This can make it difficult for companies to make a profit, which limits their ability to invest in expansion. Secondly, competition can lead to higher marketing spend. Businesses often have to spend more money on marketing and advertising to attract customers in a competitive market. For small businesses, this can be a significant investment. The potential danger to a company's growth posed by competition can manifest itself in the form of informal competition (Y. Wang, 2016). Informal competition has

become an increasingly formidable obstacle for businesses globally. Informal firms, which operate outside the formal economy, lack government registration, do not fulfill tax obligations, and frequently disregard labor and environmental regulations. Although informal firms may present advantages such as lower prices and convenient services, they can also constitute a significant menace to the expansion of formal firms.

- **Economic conditions:** Economic circumstances within a country heavily influence the growth of its firms (Issah & Antwi, 2017). When the economy thrives, heightened demand for goods and services often drives firm growth by boosting sales and profits. Low-interest rates also aid this growth, making it easier for firms to secure financial assistance. However, firms may face sluggish growth or even contraction during economic downturns. The decrease in demand for goods and services is the primary cause, leading to reduced sales and profits. Additionally, elevated interest rates present firms with heightened challenges in obtaining financing, further complicating the growth path.

1.2. Objectives of the Study

This thesis primarily aims to investigate business performance through a detailed analysis of crucial factors. These objectives can be further delineated as follows:

- **Identifying and Examining Key Limitations**: The main objective of this study is to carefully pinpoint and examine the significant obstacles that businesses encounter in achieving peak performance. This thesis aims to illuminate the complex challenges that affect performance through an exhaustive investigation.
- I**nvestigating the Nexus between Obstacles and Firm Performance:** This research is committed to probing the complex relationships between the identified barriers and their effect on business performance. We aim to reveal the complex dynamics involved through careful analyses and data-driven research.
- **Providing Valuable Insights and Recommendations:** A crucial element of this research endeavor is to offer practical, actionable insights and suggestions.

These insights aim not only to assist businesses in enhancing their performance but also to enlighten and guide policymakers. The objective is to create a blueprint enabling firms to effectively address these obstacles by fostering improved performance across diverse sectors.

1.3. Significance and Contribution of the Study

The significance of this study lies in its multifaceted and noteworthy contributions to the established body of literature. These contributions span various dimensions, constituting a comprehensive and substantial enhancement to scholarly discourse. They encompass;

- **Conceptual Contribution:** This dissertation introduces novel constructs that existing literature has previously overlooked. These constructs provide valuable insights into theoretical models explaining why enterprises perceive tax rates as a significant impediment to their growth and performance. Among these new constructs are tax bribery, regulatory complexity, and the frequency of tax regulator inspections. Additionally, this study enriches the literature by utilizing fixed asset acquisition as a proxy for a firm's long-term investment decisions. It also investigates how financial constraints and accessibility influence the likelihood of engaging in fixed-asset acquisitions.
- **Methodological Novelty:** This study uniquely employs advanced econometric methods, such as Bayesian analysis and Generalized Ordered Logit, which have received relatively less exploration in the empirical analysis of firm performance and constraints. These methods bolster the research findings' robustness. While historical examinations of firm performance determinants primarily relied on frequentist statistical or econometric perspectives, these approaches faced criticism for their limited quantification of estimate uncertainty. In contrast, this study adopts the Bayesian approach, offering greater flexibility and more reliable estimates for prediction.
- **Scrutiny of Model Assumptions and Model Predictions:** This dissertation emphasizes methodological precision by thoroughly evaluating the alignment of the utilized ordinal models (e.g., ordered logit and probit models) with their fundamental assumptions, particularly the proportional odds assumption. This

rigorous assessment not only strengthens the credibility of the analytical framework but also catalyzes methodological advancement in the field. Additionally, this research makes a significant contribution to the extant literature by conducting an in-depth analysis of the predictive efficacy of ordinal models and empirically verifying whether deviations from the foundational assumptions of proportional odds result in disparities in predictive outcomes among these models.

- **Practical Relevance:** This research goes beyond theoretical contributions to address practical concerns, specifically focusing on the major challenges encountered by enterprises, particularly Small and Medium-sized Enterprises (SMEs) in Europe and Central Asia. Its findings offer valuable insights to business leaders by identifying specific obstacles that could hinder their enterprise's growth and performance. Armed with this information, leaders can develop customized strategies for improvement.
- **Policy Implications:** Policymakers can leverage the data-driven insights derived from this study to shape policies that promote business development. Specifically, they may consider the need to reassess tax rates, as highlighted in the study a significant obstacle to enterprise performance. This could involve lowering tax rates, streamlining tax processing, and crucially creating a more business-friendly regulatory environment. These policy modifications have the potential to stimulate firm growth, thereby fostering overall economic growth and job creation.

CHAPTER II

THE DETERMINANTS OF ENTERPRISE CAPACITY UTILIZATION AND THE MAJOR GROWTH OBSTACLES FOR SMES

2.1. Introduction

Small and Medium-Sized Enterprises (SMEs), though often overshadowed by corporate giants, wield significant influence in shaping the global economic landscape. Situated at the core of emerging economies, these unassuming entities harbor undeniable potential to propel worldwide economic growth. This paper delves into the primary obstacles hindering the performance of SMEs, the economic powerhouses subtly shaping our world.

After World War II, significant changes in economic paradigms challenged the notion that only large corporations fueled economic growth. Countries such as Germany and Spain implemented post-war economic reforms intended to rebuild their economies and foster growth. These reforms encompassed tax reductions, deregulation, and investments in infrastructure. They notably benefited Small and Medium-Sized Enterprises (SMEs), creating a more favorable environment for their establishment and expansion (Sánchez Lissen & Sanz Díaz, 2020). As crucial contributors to economic growth and job creation, the positive impact of these reforms on SMEs played a pivotal role in the overall economic recovery.

Emerging from the shadows, Small and Medium-Sized Enterprises (SMEs) began revealing their significant contributions to economic development and stability. Today, these entities are recognized as the productive heroes of the global economy. SMEs, by definition, encompass a vast spectrum of businesses, ranging from family-owned enterprises to innovative startups (Budden et al., 2021). They embody entrepreneurship and economic dynamism. Unlike their larger counterparts, SMEs are

often agile, adaptable, and responsive to changing market conditions, making them integral players in the economic landscape (Robu, 2013).

One of the defining characteristics of SMEs is their ability to generate employment opportunities. In both developed and developing economies, SMEs are prolific job creators, absorbing a substantial portion of the workforce (Nursini, 2020). Their role in reducing unemployment rates, especially among young people, cannot be overstated. Moreover, they often provide opportunities for women and minority groups, promoting social inclusivity.

Indeed, Small and Medium-sized Enterprises (SMEs) are often the catalysts for innovation. They tend to be more innovative than their larger counterparts due to their agility and quick adaptability to change (Erdin & Ozkaya, 2020). Furthermore, their propensity to take risks and explore new ideas often sets them apart in the realm of innovation. Innovation, in turn, leads to enhanced competitiveness, market growth, and economic progress (Littlewood & Holt, 2018). By fostering a culture of experimentation and adaptability, SMEs play a pivotal role in shaping industries and driving technological advancements.

In emerging economies, the significance of SMEs is amplified. These enterprises serve as catalysts for economic development, particularly in regions where large corporations may have a limited presence. In labor-intensive industries, SMEs become the primary source of employment, lifting communities out of poverty and contributing to improved living standards (Eunni et al., 2007).

However, the path of SMEs is not without obstacles. They often grapple with limited access to financial resources, high-interest rates, inadequate infrastructure, and outdated technology. Institutional barriers, including complex regulations and bureaucratic hurdles, can stifle their performance and innovation potential (Manzoor et al., 2021). Understanding these challenges is essential to unlocking the full potential of SMEs and fostering an environment conducive to their growth.

This paper aims to uncover the primary challenges confronting small and medium-sized enterprises (SMEs) in Europe and Central Asia and the factors contributing to

these hurdles. Additionally, it seeks to analyze how these obstacles influence enterprise capacity utilization, a key measure of firm performance. This paper aims to offer policymakers recommendations for fostering expedited and robust economic growth in these regions by comprehending the underlying reasons behind these challenges and their effects on enterprise capacity.

This scholarly research delves extensively into the obstacles impeding the growth of Small and Medium-sized Enterprises (SMEs) across diverse regions. However, there is still a scarcity of research specifically focused on the collective development of economies in Europe and Central Asia. This paper aims to fill that gap by conducting a comprehensive investigation across these countries to uncover the shared challenges they face. The paper employs the World Bank's Enterprise Survey, which covers 17 countries in Europe and Central Asia, to assess the primary obstacles impacting SME performance in this region.

Our approach begins by identifying the five most significant obstacles from the 18 outlined in the survey. Following this, we will formulate hypotheses based on prior research. We will then develop econometric models to explore the relationship between these obstacles and the chosen factors. Additionally, we will examine the correlation between these obstacles and the operational capacity of businesses. We will also introduce a specific variable, "SME," to highlight the unique challenges faced by small and medium-sized enterprises (SMEs) compared to larger corporations. Finally, we will conduct a thorough investigation to identify the determinants of financial obstacles and evaluate their severity.

This section provides a concise overview of the relevant literature on this topic. Section 3 outlines our methodology, hypotheses, and the dataset we utilized. This dataset is unique in its scope and detail. We also explain our selection of variables for our model in this section. Section 4 introduces the empirical model, while Section 5 presents the results of our tests and a discussion of the findings. The final section concludes our paper with a summary of our discoveries.

2.2. Literature Review

There is a relatively large literature on barriers to SME growth and performance. The study by Levy (1993) on the leather industry in Sri Lanka and the construction and furniture industry in Tanzania is one of the fascinating works from the early 1990s. The study pointed out three major constraints for firms - access to finance, access to non-financial inputs, and high costs. In particular, the results showed that financial constraints were the biggest barriers to business growth. In addition, a high tax rate was also identified as a key barrier to small business growth. Since then, research has focused on specific industries to provide more detailed and precise information about the challenges faced by SMEs, e.g. (Gupta et al., 2013; Y. Wang, 2016; Fowowe, 2017; Mohammed & Bunyaminu, 2021). However, the generalization of the findings is limited by the lack of up-to-date data, the heterogeneity of contexts across the economies, and the high cost of conducting the required surveys.

Pissarides, (1999) used survey data from the European Bank for Reconstruction and Development to investigate whether lack of access to finance is the biggest obstacle to the performance of small and medium-sized enterprises (SMEs) and found that, due to underdeveloped capital markets, lack of finance has become the biggest obstacle to the growth and performance of SMEs in transition economies. Moreover, state-owned banks were more inclined to lend to state-owned or large enterprises. Subsequently, Pissarides et al. (2003) used firm-level data from 437 CEOs of SMEs in Russia and Bulgaria to identify the major barriers to SME performance. The study selected the key variables by ranking the obstacles perceived by the companies. The four most important obstacles were: suppliers' unwillingness to deliver, access to land, financing problems, and other production constraints. The results also showed that external financing constraints were the most serious, while other barriers, such as licenses, did not appear to be as significant as expected. Interestingly, these results are consistent with the study by Audretsch & Mahmood (1994), which categorizes the obstacles faced by SMEs into two main groups, external and internal. Considering this, findings determined that finance was the highest-ranked obstacle out of the 30 issues examined. Other significant factors included management skills, location, technology, corruption, and regulations, all of which are components of the World Bank Enterprise Survey.

The most important section of the debate on major constraints to performance is the link between firm characteristics and barriers to firm performance. A noteworthy part of the debate covers the role of types of ownership firms as an explanatory factor of firm growth and performance. For instance, Richter & Schaffer (1996) observed that private firms expanded faster than state-owned firms. They found state firms less efficient in terms of resource utilization. However, the debate about the performance of large public enterprises and private firms remains prominent, even though the juxtaposition of small public and private firms is relatively rare. C. Wang et al., (2022) argue that financial constraints severely affect the growth of small firms, regardless of whether the state or private individuals own them. Additionally, other scholars from China, such as Yin (2012), argue that public firms, regardless of their size, are "too big to fail" and thus encounter fewer obstacles in terms of financial access, sales, and growth. In short, the analysis of the business environment in which Small and Medium-sized Enterprises operate should consider different types of ownership.

Moreover, Beck et al. (2006a) recapitulated the empirical evidence on SMEs' financing obstacles and demonstrated that SMEs are more vulnerable than large enterprises to be hindered by finance and other institutional obstacles. Chavis et al. (2012) utilizing the World Bank Enterprise Survey 2006-2009 highlighted that 31 % of surveyed firms considered access to finance as the major obstacle, and 40 % of them were young firms with less than three years of experience in the industry. This empirical evidence indicated that younger firms are usually more dependent on informal sources of financing rather than bank financing. Bank financing accessibility progressively increases with age, while informal financing slowly decreases with age. The likelihood of using personal assets as collateral was found to be higher for young firms than for older firms (Avery et al., 1998). However, young firms in countries where the rule of law works efficiently and with better credit information have less dependence on informal financial resources.

A wealth of relevant literature emphasizes the significance of high-performing firms. Findings from several studies highlight the importance of finance for firms experiencing high growth rates, although the evidence remains inconclusive. For instance, Brush et al. (2009) categorized growth trajectories as speedy, incremental, and periodic, subsequently investigating the impact of access to finance, market

conditions, and management on firm growth. The findings revealed that fast-growing firms faced cash constraints, while incremental-growth firms hired the right personnel. Additionally, the research underscored the pivotal role of advanced management skills during periodic phases of firm growth, where a strategic marketing approach becomes instrumental in transforming the business when firms reach a plateau. N. Lee (2014) expanded on the study conducted by Brush et al. (2009) by examining the constraints hindering small firms in the UK by utilizing the Small Business Survey of UK firms and firms divided into high-growth firms and potential high-growth firms. The variables considered were recruitment, government, premises, market circumstances, management, and finance. The findings revealed that high-growth firms were no longer hindered by market situations but were drastically affected by the other five barriers. Similarly, potentially high-growth firms were less likely to see government as a major problem. Likewise, recruitment, which was anticipated to be a vital obstacle, was less considerable.

Numerous studies in the literature also examined the relationship between credit constraints and various firm characteristics to check the credit-constrainedness of a firm change with its specific features. For instance, (Flaminiano & Francisco, 2021) sought to establish a connection between a set of specific firm attributes and financial credit constraints. Their research findings indicated that factors such as larger firm size, recent purchases of fixed assets, and increased use of digital technology for accounting and financial administration are all associated with a lower estimated likelihood of a firm being credit constrained. More specifically, Krasniqi, (2010) posed a question regarding whether a firm's credit constraint is influenced by its size and raised an argument that it is common for banks to reject credit applications from small businesses primarily due to two reasons: low firm turnover and insufficient collateral. In a similar vein, Zambaldi et al., (2011) a study to identify the factors influencing credit allocation to small firms in Brazil. Their findings suggested that small enterprises often face credit rationing and primarily rely on low-risk credit contracts backed by liquid collateral as their main source of credit. Furthermore, Mutluer Kurul & Tiryaki, (2016) contested that having certification from renowned financial auditing and investigative institutions can improve a firm's access to financial market opportunities. Their findings highlighted that firms undergoing independent audits are

more likely to secure credit, while those with overdue payments are less likely to do so.

After conducting a brief review of pertinent literature concerning the variation of business environment obstacles concerning firm characteristics, this review will now delve into the impact of financial constraints which was identified as one of the major firm performances on firm performance, specifically in terms of capacity utilization. Comparatively, the review will also offer a considerable overview of the impact of financial accessibility on a firm's capacity utilization. Capacity utilization, a critical metric, measures the extent to which a firm effectively harnesses its production capabilities. In contrast, financial constraints encompass the limitations and restrictions impeding a firm's ability to secure external financing. The interplay between these two factors can significantly shape a firm's operational efficiency and overall performance.

Numerous studies have examined the intricate relationship between financial constraints and capacity utilization. Zhang (2020) found a compelling correlation between financial constraints and diminished capacity utilization in Latin American manufacturing firms. McQuoid and Ahn (2017) revealed the noteworthy revelation that capacity-constrained exporters with physical constraints, which are often intertwined with financial constraints, exhibit lower capacity utilization rates. Similarly, Acharya et al. (2007) delved into the intricacies of financial constraints by examining their impact on firms' financial policies, highlighting how constraints on debt capacity can influence a firm's hedging decisions. Furthermore, Almeida and Campello (2010) elucidated the connection between cash flow and external financing, particularly for financially constrained firms, arguing that financially constrained firms with tangible assets might exhibit a stronger positive relationship between cash flow and external financing. This implies that firms grappling with financial constraints may lean more heavily on internal funds, thereby limiting their investment capacity and the utilization of their production capacity.

While the existing literature on financial constraints and capacity utilization is relatively small, it is growing rapidly and consistently points to the negative impact of financial constraints on a firm's ability to fully utilize its capacity. These findings

underscore the critical imperative of addressing financial constraints as a strategic imperative to enhance a firm's capacity utilization and, consequently, its overall performance in the competitive business landscape. By mitigating these constraints, firms can unlock their full production potential and propel themselves toward greater success and sustainability.

On the other hand, access to financial resources promotes the capacity of utilization of firms. Capacity utilization of a firm refers to the extent to which a firm is utilizing its production capacity (Meng et al., 2021). Access to external financing, on the other hand, refers to a firm's ability to obtain funds from external sources to finance its operations or investments (Hosny, 2020). These two factors are closely related and can have significant implications for a firm's performance and growth.

Several studies have examined the relationship between capacity utilization and access to external financing. Meng et al., (2021) found that firms with higher internal financing capacity are more likely to have better access to external financing. Hosny (2020) also found a positive relationship between access to finance and capacity utilization, showing that firms with better access to finance and export diversification tend to have higher employment and capacity utilization rates. Lemmon & Zender, (2010) examined the debt capacity of firms and found that firms with limited debt capacity rely more heavily on external equity financing. Kausar et al., (2016) investigated the impact of audit choice on a firm's access to finance, finding that the information conveyed through the audit choice can enhance a firm's access to finance and increase its debt capacity. Furthermore, Fama & French, (2002) discussed the trade-off and pecking order theories of financing, according to which firms prefer internal financing over external financing, suggesting that firms may prioritize utilizing their internal resources and capacity before seeking external financing.

The above-elaborated literature on small and medium-sized enterprises (SMEs) highlights a range of challenges they face, with funding being a common thread in most research, particularly the struggle to access financial resources. However, these studies also reveal a multitude of barriers that exist, which depend on specific market conditions. Another crucial finding is that impediments to SME performance are influenced by various factors, and these circumstances can vary from one country to

another. These determinants can be categorized as either internal or external. Internal factors typically encompass various characteristics of the businesses themselves, while external factors generally relate to obstacles associated with accessing credit. In the following section, we will delve into both these challenges and their underlying factors, while also explaining our proposed approach to address them in this study. Additionally, the literature suggests that external financial resources and financial constraints have opposing effects on the capacity utilization of enterprises. We will thoroughly explore this relationship in the following sections and discuss the approaches used.

After a thorough review of the pertinent studies, it is evident that no previous research has adequately addressed the substantial constraints affecting firm performance in Europe and Central Asia and their specific impact on capacity utilization. This study seeks to bridge this critical research gap within the existing literature. Our primary objectives are to pinpoint and rank the primary performance constraints encountered by businesses in this region and to delve into their repercussions on capacity utilization, which serves as an effective proxy for assessing overall firm performance.

2.3. Hypothesis

The study's hypotheses are based on the above-summarized literature review. The group of hypotheses indicates how top management's perception of finance as a major constraint varies with firm characteristics. The second part of the hypothesis focuses on the impact of perceived major obstacles on the capacity utilization of SMEs.

H1. SMEs are more likely to perceive access to finance as the major barrier to their growth compared to large firms.

H2. The probability of perceiving access to finance is negatively correlated with the age of the enterprise.

H3. Financial obstacles more severely affect privately owned enterprises than state enterprises

H4. Credit-constrained enterprises are more likely to perceive access to finance as a considerable obstacle to their growth than noncredit-constrained enterprises.

H5. As the top executive's working experience in the industry rises, the likelihood of perceiving access to finance as a major obstacle decline.

H6. Enterprises with top female managers are more likely to perceive access to finance as the major obstacle.

H7. Constraints adversely affect the capacity utilization of enterprises

H8. The perceived significant barriers by top management have a detrimental effect on the capacity utilization of SMEs.

2.4. Methodology

2.4.1. Data Source

The data for this study is from the Enterprise Survey (ES), a World Bank and European Bank for Reconstruction and Development (EBRD) project. The ES is designed to help the World Bank achieve its strategic objective of creating an environment for job creation, investment, and sustainable growth. The ES provides indicators of investment and the obstacles to private sector growth, to improve economic growth and employment. The ES data is available in a panel format, which allows for tracking changes over time.

The Enterprise Survey (ES) is a firm-level survey that has collected data on 171,000 firms in 149 countries from 2002 to 2021. This study uses data from surveys conducted between 2007 and 2021 in 17 countries in Europe and Central Asia, including Turkey and Russia. The surveys were conducted using a representative sample of firms in the non-agricultural formal private sector. The surveys used a uniform methodology and questionnaire, making the data comparable across countries.

2.4.2. Description of Variables

This section discusses the dependent variables used in the study, which are the obstacles faced by firms in their business operations. The five most important obstacles were identified from the World Bank survey. The dependent variables were derived from the responses to the survey question "Which of the above obstacles is the biggest obstacle to the current operation of the firm?". The explanatory variables were selected from the literature and are described in Table 2.1. Table 2 shows the responses of firms from 17 countries in Europe and Central Asia for the period 2007-2021. The five most severe obstacles are tax rate, inadequately educated workforce, access to finance, practices of competitors in the informal sector, and political instability. These five variables are used as the dependent variables in the estimation.

Table 2.1. Variable Description

Variables	Description
Finance	Likert scale from 0 to 5; No obstacle '0', Minor obstacle '1', Moderate obstacle '2' Major Obstacle '3' & Very Severe Obstacle '4'.
Political	Likert scale from 0 to 5; No obstacle '0', Minor obstacle '1', Moderate obstacle '2' Major Obstacle '3' & Very Severe Obstacle '4'.
Tax rate	Likert scale from 0 to 5; No obstacle '0', Minor obstacle '1', Moderate obstacle '2' Major obstacle '3' & Very Severe Obstacle '4'.
Informal competition	Likert scale from 0 to 5; No obstacle '0', Minor Obstacle '1', Moderate Obstacle '2' Major Obstacle '3' & Very Severe Obstacle '4'.
Inadequately educated workforce	Likert scale from 0 to 5; No obstacle '0', Minor obstacle '1', Moderate obstacle '2' Major Obstacle '3' & Very Severe Obstacle '4'.
SME	Dummy variable: small and medium-sized take the value of 1 otherwise 0

Table 2.1. (cont.)

Age	Age of the firm
Experience	Top manager's years of working experience in the industry
Ownership	Binary: Totally private ‘1’ and otherwise ‘0’
Firm growth	Growth rate of the firm
Gender of manager	Binary: if the top manager is female 1 otherwise 0
Credit constraint	Binary 1 for credit-constrained and 0 otherwise.
Capital utilization	% Of capital utilization

To identify small and medium-sized enterprises (SMEs), this study uses the World Bank's definition, which classifies firms with less than 250 employees as SMEs. Firms that meet this definition are assigned a value of 1, otherwise 0. The variable "ownership" is a binary variable that is derived from the survey question "What percent of this firm is owned by private domestic individuals, companies, or organizations?". The answer is the percentage of private ownership. A firm is considered private-owned if private individuals have a share in the ownership, regardless of the percentage. If the firm is privately owned, the variable "ownership" takes the value 1, otherwise 0. Hypothesis 3 can be tested as follows: do financial obstacles have a stronger impact on privately owned enterprises than on other enterprises, as suggested by Yin (2012)? The study also aims to assess the impact of the top manager's gender on the probability that a firm perceives financing as the major obstacle. This information is obtained from the survey question "Is the Top Manager female?". The variable "gender" is set to 1 if the top manager is female, and 0 otherwise.

The variable "age" is calculated by subtracting the year of the survey from the year the firm was established. This variable can provide insights into whether younger firms face more obstacles than older firms (Chavis et al., 2010).

The variable "experience" is defined as the number of years of industry work experience of the top manager (Brush et al., 2009). Hypothesis 5 states that firms with experienced managers are less likely to perceive access to finance as a major obstacle than firms with less experienced management.

Table 2.2. The Main Obstacles SMEs Confront

Most Serious Obstacle Affecting the Operation of this Establishment	Freq.	Percent	Cum.
Tax rates	2925	21.21	96.37
Access to finance	1862	13.5	13.5
Inadequately educated workforce	1597	11.58	45.76
Practices of competitors in the informal sector	1541	11.17	71.14
Political instability	1534	11.12	59.97
Corruption	833	6.04	24.32
Electricity	599	4.34	34.18
Tax administration	555	4.02	75.17
Transport	500	3.63	100
Labor regulations	426	3.09	48.85
Business licensing and permits	381	2.76	18.28
Customs and trade regulations	316	2.29	29.84
Access to land	278	2.02	15.52
Crime, theft, and disorder	235	1.7	27.55
Courts	211	1.53	25.85
Total	13793	100	

Table 2.2 shows the five most serious obstacles faced by SMEs: tax rate, finance, inadequately educated workforce, competition from unregistered firms, and political instability. As the literature review revealed, we expected finance to be the most serious obstacle, but the data showed that the tax rate was perceived as the most significant barrier to firm growth by 21% of the enterprises in the sample, while financial limitations were perceived as the second most serious obstacle by 13% of the firms. The relationship between firm characteristics and these five major obstacles will be discussed in the next section.

2.4.3. The Model Specification

The main objective of the first part of the study is to determine whether firm-specific factors, such as size, ownership status, level of experience, and credit constraint, contribute to the severity of financial challenges faced by firms. The dependent

variable is the firm's perception of financial access as the biggest obstacle to its business operations. It is measured on a scale of 0 to 4, derived from the survey question "To what degree is Access to Finance an obstacle to the current operations of this establishment?" The response options are: No obstacle (0), Minor obstacle (1), Moderate obstacle (2), Major obstacle (3), and Very Severe Obstacle (4).

The explanatory variables are firm characteristics that comprise both dummy and continuous variables. The estimation model was formulated as

$$\mathbf{FC}_i = \beta_0 + \beta_1 SME + \beta_2 owner + \beta_3 creditconstraint + \beta_4 Age + \beta_5 gender + \beta_6 firmgrowth + \beta_7 exprienc + \varepsilon_1 \quad \textbf{(2.1)}$$

$$tax_i = \beta_0 + \beta_1 SME + \beta_2 owner + \beta_3 creditconstraint + \beta_4 Age + \beta_5 gender + \beta_6 firmgrowth + \beta_7 exprienc + \varepsilon_1 \quad \textbf{(2.2)}$$

$$labor_i = \beta_0 + \beta_1 SME + \beta_2 owner + \beta_3 creditconstraint + \beta_4 Age + \beta_5 gender + \beta_6 firmgrowth + \beta_7 exprienc + \varepsilon_1 \quad \textit{(2.3)}$$

$$competi_i = \beta_0 + \beta_1 SME + \beta_2 owner + \beta_3 creditconstraint + \beta_4 Age + \beta_5 gender + \beta_6 firmgrowth + \beta_7 exprienc + \varepsilon_1 \quad \textit{(2.4)}$$

$$political_i = \beta_0 + \beta_1 SME + \beta_2 owner + \beta_3 creditconstraint + \beta_4 Age + \beta_5 gender + \beta_6 firmgrowth + \beta_7 exprienc + \varepsilon_1 \quad \textbf{(2.5)}$$

Where
Tax – stands for tax rate.
Competi – stands for informal competition.
FC – stands for financial constraint.

The model will be estimated using an ordered probit model because the dependent variable is ordinal, with values ranging from no obstacle to very severe obstacle. The ordered probit model is a generalization of the probit model that can be used for ordinal dependent variables with more than two outcomes (Navandar et al., 2020).

2.4.4. Findings and Discussion

This section offers the results of the regression analysis by discussing the relationship between different firm characteristics and the probability of perceiving access to finance as a major obstacle, and other obstacles as well. Lastly, we outline the findings from the estimation of the association between firm performance and the degree of financial restraint.

Table 2.3. Ordered Probit Regression

	Finance	Labor	Political	Tax rate	Competition
Experience	-.015	.037*	.087***	.044**	.01
	(.024)	(.022)	(.022)	(.022)	(.023)
Age	-.048*	-.135***	-.002	-.02	.01
	(.028)	(.027)	(.027)	(.026)	(.028)
Credit constraint	.188***	.031	-.01	.024	-.054
	(.07)	(.064)	(.064)	(.062)	(.066)
Gender	.107***	.007	-.016	-.069*	.065*
	(.039)	(.036)	(.036)	(.035)	(.037)
SME	.098*	-.01	.048	.002	.024
	(.05)	(.047)	(.047)	(.046)	(.048)
Ownership	-.187	-.243*	-.338**	-.279**	-.534***
	(.139)	(.132)	(.137)	(.129)	(.151)
Firm growth	.026	.033**	.065***	.041***	.053***
	(.016)	(.015)	(.015)	(.015)	(.016)
Employee	-.008	.114***	.037**	.004	-.062***
	(.016)	(.015)	(.015)	(.015)	(.016)
Productivity	-.01**	-.022***	-.022***	-.024***	-.041***
	(.005)	(.005)	(.005)	(.005)	(.005)
Observations	5669	6268	6268	6268	6268
Pseudo R^2	.003	.007	.003	.002	.008
Standard errors are in parentheses					
**** p<.01, ** p<.05, * p<.1*					

The estimations from the Ordered Probit Model (Table 2.3) shows the degree to which SMEs are more likely to perceive finance, tax rate, competition, inadequately educated labor, and political issues as major obstacle that hinders their growth. Comparatively and interestingly, SMEs are 9.8 percentage points more likely to perceive access to finance as the major obstacle to their growth than large firms. This confirms our Hypothesis 1 and is in line with the results of the studies conducted by (Y. Wang 2016) and (Mohammed & Bunyaminu, 2021). Furthermore, results also reveal that SMEs are concerned about political instability, tax rate, and informal competition, but this relationship was found statistically insignificant.

Credit-constrained firms are 18.8 percentage points more likely to perceive access to finance as the major obstacle than non-credit-constrained firms. This validates our hypothesis 4, and this finding also corroborates with the study conducted by (Kuntchev et al., 2013). When it comes to accessing financial resources, the gender of the top manager is also important to consider. The enterprises led by female managers (gender) are 10.7% points more likely to perceive access to finance as a major obstacle than enterprises with male top managers. This is validates our hypothesis 6, and in line with the findings from the work conducted by (Wellalage & Locke, 2017). The level of industry experience of top management is vital for enterprises to receive financial resources from financial institutions (Quartey et al., 2017). The enterprises with experienced top managers are more worried about getting educated labor, political instability, and tax rates, nevertheless less worried about financial constraints.

2.4.5. Credit-Constrained Firms and the Severity of Financial Constraints

The results of our descriptive analysis have illuminated a dynamic landscape of enterprise growth challenges that evolve over different periods. Within this section, our primary aim is to investigate whether enterprises' perceptions of financial obstacles as significant barriers to their growth exhibit temporal variations. To address this question, we conducted an over-time analysis, focusing on the data collected from surveys conducted in 2008, 2013, and 2019, while excluding other surveys due to their limited dataset. Our estimates revealed that a notable 13% of firms in the survey considered finance a major impediment, while 6% regarded it as a very severe obstacle. Consequently, we transformed the ordinal dependent variable into a binary

one, coding all instances where financial obstacles were perceived as substantial or extremely severe hurdles as '1', while the rest were assigned '0'. This approach led us to select the Logit and Probit models as suitable methods for estimating this relationship.

The results, as presented in Table 2.4, underscore the statistical significance of the credit-constrained variable across different periods and models. These findings underscore the overarching importance of financial resources as the principal challenge faced by credit-constrained enterprises. In this context, our results align with the conclusions drawn in the preceding section and corroborate findings from prior research (Beck et al., 2006b). Further analysis using the marginal effect of the Probit model highlights a distinct pattern: credit-constrained enterprises express heightened concern about financial barriers when compared to their non-credit-constrained counterparts. Specifically, in 2008, a substantial 40.4% of credit-constrained enterprises perceived financial constraints as a significant hurdle, followed by 34.6% in 2013 and 33.8% in 2019. Notably, our analysis reveals an interesting trend: the coefficient associated with the credit constraint is more pronounced in 2008 in contrast to the estimations for 2013 and 2019. Given that 2008 was marked by one of the most severe global financial crises, this outcome aligns with expectations. It underscores the profound impact of external economic conditions on enterprises' perceptions and challenges, providing valuable insights into the nuanced dynamics of the financial landscape for businesses during different temporal contexts.

Table 2.4. Probit and Logit Marginal Effects Across the Periods

	Probit Model			**Logit Model**		
Variables	2008	2013	2019	2008	2013	2019
Experience	-.011	-.05	-.076*	-.019	-.084	-.136*
	(.049)	(.06)	(.044)	(.084)	(.108)	(.078)
Age	-.167	-.025	.046	-.279	-.048	.08
	(.109)	(.107)	(.048)	(.189)	(.197)	(.087)
Credit constraint	.404***	.346**	.338**	.664***	.619**	.609***
	(.121)	(.15)	(.133)	(.197)	(.254)	(.226)

Table 2.4. (cont.)

SME	.05	.041	.175*	.086	.071	.328**
	(.109)	(.154)	(.09)	(.186)	(.28)	(.166)
Ownership	.309	-.248	-.058	.5	-.505	-.132
	(.249)	(.383)	(.27)	(.415)	(.764)	(.501)
Firm growth	.01	.083*	-.017	.017	.157*	-.033
	(.037)	(.047)	(.03)	(.063)	(.087)	(.054)
Employee	.007	-.023	-.021	.012	-.045	-.034
	(.036)	(.044)	(.031)	(.061)	(.079)	(.056)
Productivity	-.019	-.031**	-.043***	-.032	-.054**	-.079***
	(.013)	(.014)	(.01)	(.023)	(.024)	(.019)
Constant	.043	-.101	-.411	.095	-.05	-.621
	(.404)	(.427)	(.258)	(.692)	(.761)	(.466)
Observations	1726	1487	3391	1726	1487	3391
Pseudo R^2	.009	.014	.014	.009	.014	.014

Standard errors are in parentheses

**** p<.01, ** p<.05, * p<.1*

2.4.6. The Effect of Financial Barriers on SME's Capacity Utilization

This section critically examines the influence of financial constraints on the capacity utilization of Small and Medium Enterprises (SMEs). Capacity utilization is defined as a firm's output expressed as a percentage of the maximum possible output, assuming all available resources are fully employed. The analysis is bifurcated into two parts: the first part elucidates the correlation analysis, while the second part provides an in-depth regression analysis.

Initially, we scrutinized the correlation between capital utilization, which serves as our dependent variable, and the various obstacles delineated in Table 2, which act as independent variables. Table 2.5 reveals a negative correlation between capacity utilization and growth obstacles such as finance, political factors, labor issues, tax rates, and informal competition. Remarkably, the correlation between capacity

utilization and financial obstacles is more pronounced than other growth constraints. This observation aligns with the overarching hypothesis of this study and corroborates the findings discussed in the preceding sections. This suggests that financial constraints significantly impede the optimal utilization of capacity in SMEs. The higher correlation between capacity utilization and financial obstacles underscores the critical role of financial resources in determining a firm's output levels. Therefore, addressing these financial constraints could potentially enhance capacity utilization and contribute to the overall growth and productivity of SMEs.

Table 2.5. Matrix of Correlations

Variables	(1)	(2)	(3)	(4)	(5)	(6)
(1) Capacity	1.000					
(2) Finance	-0.123	1.000				
(3) Tax rate	-0.011	0.280	1.000			
(4) Labor	-0.006	0.250	0.253	1.000		
(5) Political	-0.089	0.307	0.429	0.251	1.000	
(6) Competition	-0.096	0.262	0.185	0.202	0.268	1.000

We demonstrated in the above correlation analysis that the main obstacles to firm growth negatively correlated with the capacity utilization or production capacity of firms. Then, we checked if this relationship also holds in regression analysis.

Table 2.6 displays the regression analysis on capital utilization, financial constraints, lack of qualified labor, political risks, and competition from unregistered enterprises. As the table shows results of the regression analysis support the findings of the correlation analysis. These findings show that there is a negative and significant association between capacity utilization and the credit status of the firms. As a result, enterprises with credit constraints face challenges to utilize their capacity as effectively as enterprises without credit constraints. These findings are in line with other results in the literature, e.g. (Zhang, 2022; Segerson & Squires, 1993).

Table 2.6. Regression Analysis on Capacity Utilization and Growth Constraints

	Model 1	Model 2	Model 3	Model 4	Model 5
Experience	1.688***	1.584***	1.589***	1.685***	1.618***
	(.6)	(.573)	(.573)	(.572)	(.57)
Firm growth	-1.146***	-1.084***	-1.083***	-1.043***	-.964**
	(.412)	(.396)	(.396)	(.395)	(.395)
Credit constrained	-7.973***	-8.027***	-8.038***	-8.096***	-7.941***
	(1.961)	(1.854)	(1.854)	(1.851)	(1.847)
Gender	-1.727	-1.898*	-1.938*	-1.914*	-1.909*
	(1.058)	(1.024)	(1.024)	(1.022)	(1.02)
Ownership	-.737	-.309	-.45	-.774	-1.062
	(3.477)	(3.42)	(3.422)	(3.415)	(3.408)
Employee	1.758***	2.031***	2.044***	2.044***	1.853***
	(.439)	(.418)	(.419)	(.417)	(.418)
Productivity	.047	.101	.091	.041	.024
	(.14)	(.139)	(.139)	(.14)	(.139)
SME	1.316	1.66	1.635	1.702	1.631
	(1.27)	(1.219)	(1.219)	(1.217)	(1.214)
Line_ofcredit	1.502*	1.559**	1.546**	1.509**	1.452*
	(.792)	(.762)	(.763)	(.761)	(.76)
Finance	-1.321***				
	(.309)				
Tax_rate		.174			
		(.283)			
Labor			-.177		
			(.278)		
Lolitical				-.914***	
				(.265)	
Competition					-1.419***
					(.281)
Constant	65.376***	62.155***	62.96***	64.538***	66.394***

Table 2.6. (cont.)

	(4.319)	(4.189)	(4.157)	(4.151)	(4.173)
Observations	2931	3143	3143	3143	3143
R-squared	.034	.029	.029	.032	.036

Standard errors are in parentheses

**** p<.01, ** p<.05, * p<.1*

Note:

Model 1 shows the relationship between capacity utilization and financial constraint

Model 2 shows the association between capacity utilization and tax rate.

Model 3 shows the relationship between capacity utilization and inadequacy of skilled labor.

Model 4 shows the relationship between capacity utilization and political instability.

Model 5 shows the relationship between capacity utilization and informal competition.

2.4.7. Challenges SMEs Face in Obtaining External Funding Resources

In this section, we look at external factors that prevent SMEs from getting loans from financial institutions. According to Table 2.7, 67.61 percent of SMEs did not need a loan. This suggests that small and medium-sized enterprises (SMEs) may have primarily financed themselves through their internal funds. The following factors posed a challenge for SMEs needed finance to apply for funding from financial institutions; (1) unfavorable interest rate; (2) complex financing application procedures; (3) strict collateral requirements; (4) expectation of SMEs that their applications would not be approved; (5) maturity or size of a loan is insufficient. Difficulty in meeting collateral requirements and excessive borrowing expenses are practically universal challenges that SMEs in developing countries experience. Recent studies in the literature also revealed comparable conclusions, e.g. (Endris & Kassegn, 2022). Similarly, the demand for a line of credit is determined by interest rate. Unfavorable interest rates, harsh conditions, and complex bureaucratic procedures block SMEs from accessing external financing opportunities (Parida & Pradhan, 2022). The way that enterprises view financial access in financial institutions is also very important. A sizable percentage of firms (2.89%) perceive financial institutions will not approve their loan applications. Again, this is a significant factor that reveals

firms are more likely to have conditional expectations of improvement in their access to finance (Ferrando, 2020).

Table 2.7. Reasons SMEs Do not Apply for a Line of Credit

Main reason for not applying for new loans or new lines of credit	**Freq.**	**Percent**	**Cum.**
Don't know	29	0.44	0.44
No need for a loan - the establishment has sufficient capital	4423	67.61	68.05
Application procedures for loans or lines of credit are comp	332	5.07	73.13
Interest rates are not favorable	1057	16.16	89.28
Collateral requirements are too high	250	3.82	93.11
The size of the loan or maturity is insufficient	107	1.64	94.74
It is necessary to make informal payments to get bank loans	112	1.71	96.45
Did not think it would be approved	188	2.87	99.33
Other	44	0.67	100.00
Total	6542	100.00	

The study also identifies the reasons why SMEs who previously applied for loans do not currently have access to a credit line. Why aren't they trying to get a loan from a bank? However, a firm's focus on formal or informal financial resources depends on its type. The financing strategy of a firm is influenced by its ownership, assets, and geographic location (Nguyen & Canh, 2021). Noteworthily, the dataset on which this study is based does not provide details about financing strategies. The main reason SMEs did not apply for a loan, according to Table 2.8, is that they had no incentive to do so after their previous application had been rejected. The other reason they did not apply is that their previous application is still pending approval. These two reasons demonstrate that there is a substantial obstacle to obtaining external financial resources.

Table 2.8. Reasons why SMEs Do not have a Loan

What Is the Reason for not having a Loan or line of credit now?	Freq.	Percent	Cum.
Because this establishment did not apply for a loan or line of credit	3689	93.23	93.23
Because the last application for a loan or line of credit was turned down	189	4.78	98.00
Because the approval of the application for a loan or line of credit is still pending	79	2.00	100.00
Total	3957	100.00	

2.4.8. Conclusion

Small and Medium Enterprises (SMEs) are chief accelerators of job creation and significant contributors to economic growth (Yazdanfar & Öhman, 2018). Furthermore, SMEs are effective tools for youth entrepreneurship promotion, youth unemployment reduction, and poverty alleviation (Abisuga-Oyekunle et al., 2020) and (Oyelana & Adu, 2015). Hence, the growth and transformation of SMEs is essential to developing countries. For this reason, it is very important to determine the factors impeding the performance of SMEs. This study is an endeavor to figure out the main constraints of performance and their determinants as perceived by top management of SMEs. The five most notable constraints perceived by SME managers were documented as “finance”, “tax rate”, “inadequate educated labor”, “competition from the informal sector” and “political uncertainty”. Surprisingly, among those five constraints, “access to finance” appears to be the second biggest barrier after “tax rate”. Contrary to our expectations based on previous studies, our findings show that financial obstacle is not the primary biggest obstacle to SME performance, but the second biggest obstacle after the tax rate.

Findings also presented that most of SMEs did not require loans, indicating that SMEs preferred internal financing. The most significant barriers for those in need of external financial resources were high-interest rates, complicated application and loan processing procedures, and tough collateral requirements.

The study also endeavored to explore the relationship between the obstacles sorted out and the capacity utilization of SMEs. The capacity utilization or productive capacity of SMEs was employed as a proxy for firm performance. The capacity utilization of SMEs was found to be negatively impacted by financial barriers, high tax rates, political unpredictability, and competition from unregistered businesses.

The study's main findings are consistent with both the theory and what has previously been discovered through numerous studies in the literature. However, as in the case of similar studies in the literature, we have confronted data and methodological limitations. Our aggregate method of looking at all several countries with different characters as a group may be theoretically interesting, but our data analysis may not capture enough of country differences even though appropriate econometric analysis has been applied. Similarly, the absence of treatment of sectoral and regional differences can be a concern as well. The limitations and shortcomings of this study are expected to be improved upon by future researchers to enhance the research area.

CHAPTER III

EXPLORING TAX RATE AS AN INHIBITOR OF SME GROWTH: INSIGHTS FROM WORLD BANK ENTERPRISE SURVEYS

3.1. Introduction

Small and medium-sized Enterprises (SMEs) play an important role in driving economic growth and job creation in many countries (Gherghina et al., 2020). However, SMEs face tremendous challenges that limit their ability to develop and survive. Tax-related challenges can be particularly challenging for small business owners who lack the knowledge and resources necessary to comprehend intricate tax rules and regulations.

One of the main tax challenges that SMEs typically face is the cost of compliance (Nartey, 2023). For SMEs, it may be challenging and expensive to comply with the complicated and constantly changing tax laws and regulations. Small and medium-sized enterprises (SMEs) sometimes do not have the budget to hire tax professionals, which makes the expenses of compliance particularly onerous for them. Similarly, SMEs may suffer because of the penalties, fines, and legal obligations that may result from violating tax rules and regulations.

Access to tax incentives and other benefits is another major drawback issue with taxes for SMEs. In many countries, a wide range of tax benefits and incentives are provided to encourage investment, innovation, and growth in SMEs (Nam & Radulescu, 2007). Small and medium-sized enterprises (SMEs) may not be aware of these advantages and incentives, or they may not have the finances or expertise necessary to make the necessary investments (Hosono et al., 2023). As a result, SMEs' ability to invest in R&D, expand their operations, and hire new personnel may be restricted.

Small and medium-sized businesses (SMEs) may also have difficulty managing their tax issues including reporting tax properly and tax payments. Small business owners may lack the financial abilities needed to manage their tax affairs properly, which can lead to errors and inconsistencies in tax reporting. This may result in penalties and fines that are detrimental to the financial health of SMEs. Furthermore, SMEs may struggle to manage their tax payments, particularly in enterprises with seasonal fluctuations or inconsistent cash flows.

Having reviewed the theoretical bases of tax-related challenges of SMEs, and a brief descriptive statistical analysis of World Bank Enterprise Surveys also shows that top managers of SMEs in Europe and Central Asia region perceive tax rate as the biggest growth obstacle to their business operations; 21.99 % of small firms and 22.01% of medium firms of in the sample considered tax rate as the biggest challenge to their growth. To our knowledge, no study has yet examined factors that contribute to small and medium-sized enterprises (SMEs) perceiving tax rates as the most severe growth obstacle. This study aims to fill this research gap by exploring factors that contribute to SMEs' perception of tax rates as their biggest growth obstacle.

The rest of the paper is organized as follows. Section 2 reviews the theoretical and empirical literature on tax-related challenges of SMEs. Section 3 discusses estimation techniques, findings, and interpretations. Section 4 demonstrates a brief conclusion and policy recommendations.

3.2. Literature Review, Hypothesis, and Conceptual Framework

Small and medium-sized Enterprises (SMEs) play a significant role in fostering economic growth and job creation in all countries. Nevertheless, various critical challenges hinder the performance of SMEs, encompassing issues related to finance, labor force, regulations, and taxation. Among these challenges, finance emerges as the foremost impediment. SMEs often struggle to secure funding from financial institutions due to inadequate financial records and being perceived as lacking transparency (Ndiaye et al., 2018). Y. Wang, (2016) asserts that in developing countries, limited access to finance stands as the primary obstacle to SME growth. While government assistance is a common strategy to enhance SMEs' access to

funding, its effectiveness varies. According to Beck & Demirguc-Kunt, (2006), innovative lending approaches like factoring, credit scoring, and leasing tend to be more efficient compared to traditional loan financing. The type of funding utilized, especially in developing nations, significantly influences SME success.

The proficiency, skills, and knowledge of a firm's human capital often have a positive relationship with the company's success. While many studies have focused on the influence of the workforce on small and medium-sized enterprises (SMEs) in developing countries, most research in developed economies has been centered on large corporations. Islam & Siengthai, (2010) discovered a significant positive relationship between human resource management (HRM) practices and company performance in a sample of firms from the Dhaka Export Processing Zone (DEPZ) in Bangladesh. Ogunyomi & Bruning, (2016) found that HRM practices explained a significant portion of the variation in both non-financial and financial performance among Nigerian SMEs. Their study also revealed a direct correlation between employee performance management and improved financial success, while human capital development and workplace health and safety showed no such correlation.

The performance of Small and Medium Sized Enterprises (SMEs) can be influenced by rules and regulations. These can create a business-friendly environment and promote the growth of SMEs by properly assigning and protecting property rights, and by regulating financial transactions and taxation. However, they can also negatively impact a company's performance. Beck et al., (2006) found that small businesses benefit from fewer financing obstacles in more efficient and flexible legal systems. Klapper et al., (2006) showed that expensive regulations hinder the creation of new businesses and may not help to filter out fraudulent entities in underdeveloped countries or those with high levels of corruption. Troilo, (2011) found that property rights are more crucial for market expansion, while the rule of law is more significant for high job growth.

Taxation, being a part of business rules and regulations, plays a crucial role and significantly influences the performance of Small and Medium Enterprises (SMEs). The tax burden faced by SMEs is a broader issue and poses a greater challenge than just tax rates.

Tax rates greatly affect the tax liabilities of SMEs. Elevated tax rates can substantially escalate the operational costs of a business, leaving less capital for innovation and expansion. Mukherjee et al., (2017) even suggest that high tax rates could deter innovation and entrepreneurship by making investments and risk-taking less attractive. Similarly, Roman et al., (2023) also highlights those high taxes can impede SME performance. Conversely, tax reductions can positively impact the entrepreneurship and growth of SMEs (Braunerhjelm et al., 2021).

The influence of tax rates on the growth of small and medium-sized enterprises (SMEs) can be observed through input or labor costs. For instance, high taxes may compel businesses to increase employee wages to counterbalance the augmented tax burden. This could lead to increased labor costs, making it challenging for SMEs to compete with larger businesses that possess more resources. Moreover, high labor costs can discourage investment and innovation, further obstructing the growth of However, the impact of taxation on SME performance depends not only on tax rates but particularly on the specifics of the economy of countries (Alinaghi & Reed, 2021). The heterogeneity of tax rates among the countries, along with other firm-specific and institutional factors, can either boost or adversely affect the performance of SMEs. Tax rates in some countries may be high due to factors such as tax policy, structure, and development level. Alesina & Perotti, (1996) argue that states with higher tax rates often have better redistributive tax policies. The idea is to tax the wealthy and redistribute the proceeds to those who are less fortunate to lessen income disparity. However, this approach may have unintended consequences for SMEs, which could be significantly affected by higher tax rates. In essence, taxation is a multifaceted concept, with tax rates representing just one aspect. To fully comprehend the impact of taxation on SME performance, a broader term encompassing all facets of taxation, such as perception of tax rates, is required.

The focus of this study is the perception of tax rates by small and medium-sized enterprises (SMEs). Despite its limited coverage in the literature, it's crucial to understand why and how SMEs perceive tax rates and how these perceptions might influence their business operations. Wang (2016b) suggested that the perception of tax rates among SMEs is influenced by firm-specific characteristics like growth rate, age,

management experience, size, and ownership. The study also highlighted that tax rates pose a significant barrier to the growth of SMEs in developing countries.

Mohammed & Bunyaminu, (2021) used the same dataset and methodology Y. Wang, (2016) to explore the growth challenges faced by Small and Medium Enterprises (SMEs) in Ghana and the factors influencing their perception of these challenges. Their research indicated that the tax rate is a significant obstacle to firm growth, but firm-specific characteristics did not account for why SMEs perceived tax rates as a major hurdle. This implies that firm characteristics alone may not offer a complete explanation for the factors shaping SMEs' perception of tax rates.

Despite thoroughly reviewing the relevant literature, we could not find a paper that specifically identifies tax rate as the major firm performance constraint and explores why firms consider tax rate their major growth and performance constraint. This study diverges from the literature reviewed in several key ways. Firstly, we use a broader range of variables to elucidate the reasons why Small and Medium Enterprises (SMEs) perceive tax rates as a significant impediment, including factors such as tax-related bribery, the frequency of tax inspections, and the complexity of regulatory frameworks. Secondly, we employ a range of ordinal regression models to estimate the likelihood of SMEs perceiving tax rates as a major obstacle. Subsequently, we compare the predictive accuracy of these models to determine which provides the closest approximation to the observed data. In this respect, the following hypothesis will be tested in the empirical part of this study:

H1. Firms are more likely to view tax rates as a barrier when they pay tax bribes.

One of the biggest challenges that firms in developing countries confront is tax bribery or corruption; firms are more likely to incur additional costs while dealing with tax issues. So, enterprises that experience tax bribery are more likely to perceive tax rates as a major obstacle to their growth (Alm & McClellan, 2012). Similarly, Pelizzo et al., (2016) argues that firms are more likely to bribe when they perceive taxes to be a problem.

H2. The more regulations are complex, the more likely firms perceive tax rate as a growth barrier

The amount of time that senior management spends dealing with regulations and legislation is used to determine the complexity of regulation in this study. This is a proxy for regulatory complexity, as it is considered that the more time senior management spends dealing with regulations, the more complicated the regulations are. The more time senior management spends dealing with regulations, the more likely tax will be perceived by firms as a barrier to firm growth (Alm & McClellan, 2012).

H3. The higher the tax inspection, the more likely firms consider tax rates as their major growth obstacle.

Tax inspections can be stressful and concerning for small and medium-sized businesses (SMEs). Tax authorities often conduct tax inspections to make sure firms are adhering to tax laws and to detect any inconsistencies or mistakes in tax filings and reports. SMEs might lack the qualified staff and financial resources to hire experts in taxation to prepare tax reports for tax inspections.

On the other hand, tax inspection may reduce asymmetric information between tax administration and top management of enterprises.

H4. High-growth firms are less likely to perceive tax rate as a major obstacle to their growth

Regulation and tax policies can assist SMEs to flourish by fostering a supportive and business-friendly environment. A favorable taxation system and tax rate encourage high-growth SMEs to invest in R&D to create high-value-added products and services. However, the tax rate can also be one of the major impediments to SMEs' performance as reported by (Dinh et al., 2012) and (Wu & Wu, 2021).

Previous studies that attempted to investigate the relationship between top management's perception of tax rate as a major growth obstacle and firm growth

yielded inconclusive evidence. For instance, Wang, (2016) investigated the major growth constraints perceived by SMEs in developing countries. The results identified tax rate as one of the major growth constraints perceived by SMEs. However, a negative correlation between tax rates and high-growth enterprises was found, indicating that high-growth firms are less concerned about tax rates. Mohammed & Bunyaminu, (2021) came to a similar conclusion, underscoring the fact that tax rates and firm growth rates appear to be inversely associated.

H5. If firms perceive tax administration to be their growth barrier, they are more likely to consider tax rates as a significant obstacle as well.

The behaviors and procedures of tax administration can have positive or negative effects on the performance of Small medium-sized enterprises, and large enterprises. In a business environment where tax administration is seen as a major obstacle to firm expansion, the tax rate is likewise seen as a serious growth constraint. The important policy question is whether the tax administration investigates and collects taxes without imposing needless fees on businesses or not. Dabla-Norris et al., (2020) argued that when tax policy and economic governance influences are controlled, good tax administration minimizes the productivity gap between small and young enterprises and larger and older firms.

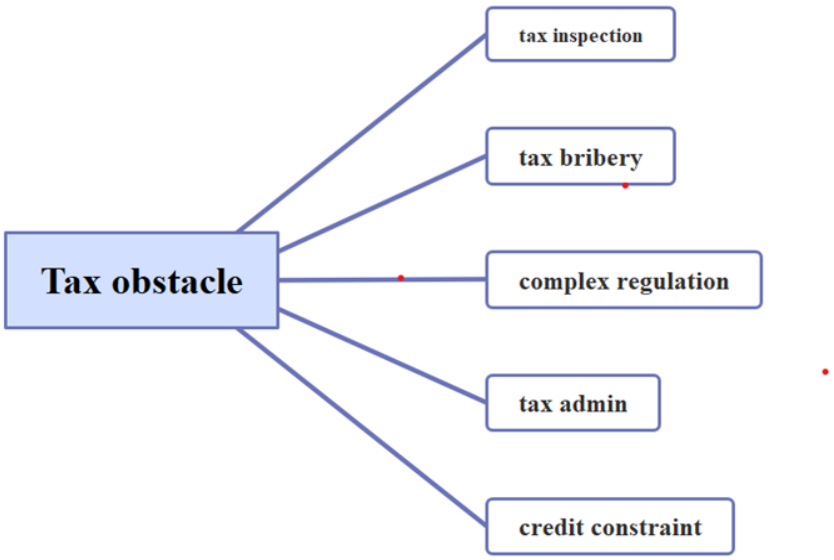

Figure 3.1. Conceptual Framework

3.3. Data and Empirical Estimation

After reviewing the existing research on how tax rates can hinder performance, we have developed an empirical tax perception model that we will use to conduct our analysis. The model is as follows:

$$\boldsymbol{Y_i = \beta_0 + \beta_1 tax - bribe + \beta_2 tax - inspect + \beta_3 complex - reg + \beta_4 tax - admin + \beta_5 credit - const + \varepsilon} \quad \textbf{(3.1)}$$

Equation 3.1 is a linear regression model e Y_i is the dependent variable for observation i and growth, tax_admin, complex_regulation, tax_bribe, and tax_inspection, plus several other variables are independent variables. The coefficients β_1, β_2, β_3 , β_4, and β_5 ---- represent coefficients of the independent variables.

Equation 3.2 introduces a latent variable y_i^* for observation I, which is a function of the independent variables x_i and an error term μ_i. The latent variable represents an unobservable underlying proclivity or tendency.

$$\boldsymbol{y_i^* = x_i'\beta + \mu_i} \quad \textbf{(3.2)}$$

y_i^* is latent for observation i, x_i represent a vector of independent variables, β is also a vector of coefficients of independent variables, and μ_i represents an error term.

Equation 3.3 defines the relationship between the observed dependent variable Y_i and the latent variable y_i^* . The observed dependent variable takes on the value of alternative j if the latent variable falls within the interval defined by the threshold parameters α_{j-1} and α_j .

$$\boldsymbol{y_i = j} \quad \textbf{if } \boldsymbol{\alpha_{j-1} < y_i^* \leq \alpha_j} \quad \textbf{(3.3)}$$

Equation 3.4 computes the likelihood that observation i is alternative j. This is accomplished by subtracting the cumulative distribution function of the standard

normal distribution from the upper and lower boundaries of the interval given by the threshold parameters.

The following is the probability that observation i will be alternative j:

$$\boldsymbol{\rho_{ij} = \rho(y_i = j) = \rho(\alpha_{j-1} < y_i^* \leq \alpha_j = f(\alpha_j - x_i'\beta) - f(\alpha_{j-1} - x_i'\beta)} \quad \textbf{(3.4)}$$

ρ_{ij} is the probability that observation i will be alternative j.

F () is the cumulative distribution function of the standard normal distribution.

The above equations were estimated using ordinal regression models. First, ordered probit and logit models were estimated, and the results are shown in Table 3.5 and Table 3.6, respectively. Second, we checked the proportional odds assumption, which is inherent to ordered logit and probit models. As shown in Table 3.7, the assumption was violated. Therefore, the third step was to apply generalized ordinal regression, and the results are shown in Table 3.8.

3.3.1. Data Source and Description

This study employed the survey data obtained from the World Bank's ES for Europe & and Central Asia, a firm-level survey carried out using standard methodology and face-to-face questionnaires by field researchers. The ESs collect data on the obstacles that firms face in their operating environment. This data is based on both quantitative indicators, such as the number of rules that enterprises must follow, and subjective ones, such as firms' perceptions of the complexity of doing business in a certain country. The data is collected on a five-point scale, with 0 representing "no obstacle" and 4 representing "very severe obstacle."

The dependent variable of this study is based on the question “To what extent is tax rate an obstacle to the current operations of this establishment?” asked top managers of firms in the surveys conducted between 2008 and 2020.

Table 3.1. Variable Description and Measurement

No.	Variables	Measurement
1	High growth firms	1 if the firm's growth rate is at least 20% and 0 otherwise
2	Employee	Number of permanent full-time employees engaged by the firm at the end of last fiscal year
3	Age	Age of firm
4	Experience	Top manager's years of experience in the sector
5	Tax rate	No obstacle = 0, Minor obstacle = 1, Moderate obstacle = 2, Major obstacle = 3, Major Obstacle = 4.
6	Tax administration	No obstacle = 0, Minor obstacle = 1, Moderate obstacle = 2, Major obstacle = 3, Major Obstacle = 4.
7	Tax bribe	1 if unofficial payments to deal with tax admin and 0 otherwise
8	Certified	1 if the firm has internationally recognized quality certification and 0 otherwise
9	productivity	Labor productivity
10	Export status	1 if the firm exports more than 10% of its sales and 0 otherwise
11	Foreign	1 if the firm has more than 10% foreign ownership and 0 otherwise
12	Ownership	1 if the firm has more than 10% state ownership and 0 otherwise
13	Complex tax	% 0f time senior management spent dealing with government regulation
14	Credit constrained	1 if the firm did not apply loan for reasons such as high interest rate & and collateral and 0 otherwise.
15	Tax inspection	Frequency of inspections by tax officials

In the following section, we will demonstrate how firms of different sizes, in different sectors, and different regional organizations perceive tax rates. Table 2 displays the

percentage of small and medium enterprises that perceive tax rates as a challenge. Table 3 illustrates how the perception of tax rates varies among firms in different sectors, such as manufacturing, service, and core. Finally, Table 4 provides a comparison of how firms in various regional blocks perceive tax rates.

3.3.2. Descriptive Analysis

Table 3.2 presents a descriptive analysis of the dataset to uncover the main growth obstacles firms face in their operations. The most striking evidence that Table 3.2 shows is that tax rate is the most serious obstacle to SME growth. As seen from Table 2, the sample size is comprised of 11,981 firms in Europe and the Central Asian region and 21.77 % of these firms considered tax rate as the biggest obstacle to their business operations. More specifically, the analysis in Table 3.2 reveals that 21.86 % of medium enterprises, and 21.70 % of small enterprises in the sample perceived taxation as the most significant growth constraint. In this analysis, we found that the tax rate is the most significant obstacle to growth for all firms regardless of size. This implies that high tax rates can discourage enterprises from growing and investing, which can lead to slower economic growth.

Table 3.2. Major Growth Obstacles Across Firm Size

No.	Most Serious obstacle firms face	Small		Medium		Total	
		Freq	%	Freq	%	Freq	%
1	Tax rates	1,483	21.7	1,125	21.86	2,608	21.77
2	Finance	919	13.45	653	12.69	1,572	13.12
3	Informal competition	814	11.91	516	10.03	1,330	11.1
4	Inadequately educated labor	769	11.25	702	13.64	1,471	12.28
5	Political instability	740	10.83	534	10.38	1,274	10.63
6	Corruption	400	5.85	298	5.79	698	5.83
7	Electricity	303	4.43	216	4.2	519	4.33
8	Tax administration	283	4.14	205	3.98	488	4.07
9	Transport	274	4.01	201	3.91	475	3.96

Table 3.2. (cont.)

10	Labor regulations	189	2.77	188	3.65	377	3.15
11	Business licensing	189	2.77	134	2.6	323	2.7
12	Customs	136	1.99	123	2.39	259	2.16
13	Land	133	1.95	93	1.81	226	1.89
14	Crime	102	1.49	82	1.59	184	1.54
15	Courts	101	1.48	76	1.48	177	1.48
	Total	6,835	100	5,146	100	11,981	100

The study further examined the consistency of the firm-level analysis presented in the previous section with findings across different sectors by investigating the major obstacles faced by enterprises in each sector. As indicated in Table 3, tax rates were identified as the most significant obstacle to business operations by 20.35% of manufacturing enterprises, 24.70% of service firms, and 22.33% of core firms. This cross-firm and cross-sectoral evidence demonstrates that tax rates represent a substantial challenge to the firms in Europe and the Central Asian region

Table 3.3. Major Growth Obstacles Across Sector

No.	**Most Serious obstacle firms face**	**Manufacturing**		**Service**		**Core**	
		Freq	**%**	**Freq**	**%**	**Freq**	**%**
1	Tax rates	1,253	20.35	564	24.7	791	22.33
2	Finance	939	15.25	238	10.42	395	11.15
3	Inadequately educated labor	830	13.48	211	9.24	430	12.14
4	Informal competition	674	10.95	261	11.43	395	11.15
5	Political instability	604	9.81	256	11.21	414	11.69
6	Electricity	367	5.96	68	2.98	84	2.37
7	Corruption	344	5.59	123	5.39	231	6.52
8	Tax administration	229	3.72	118	5.17	141	3.98
9	Transport	213	3.46	87	3.81	175	4.94
10	Labor regulations	190	3.09	83	3.64	104	2.94
11	Business licensing	154	2.5	59	2.58	110	3.11

Table 3.3. (cont.)

12	Customs	119	1.93	55	2.41	85	2.4
13	Land	107	1.74	50	2.19	69	1.95
14	Courts	81	1.32	34	1.49	62	1.75
15	Crime	52	0.84	76	3.33	56	1.58
	Total	6,156	100	2,283	100	3,542	100

To supplement the above-elaborated analysis, we examined the major growth obstacles faced by businesses across different regions. Compared to other regions, businesses in Europe and Central Asia identified taxation as their second-largest growth impediment, following the availability of skilled labor. As indicated in Table 4, a significant proportion of firms in this region (18.8%) identified tax rates as the primary barrier to their growth. This region has the highest tax rate compared to other regions, suggesting that high tax rates may pose a substantial challenge to economic growth in this region. These results further corroborate the findings of previous sections, which demonstrated that high tax rates can represent a significant constraint to growth for firms of all sizes and sectors.

Table 3.4. Major Growth Obstacles Across Regions

Obstacles	**East Asia& Pacific**	**Europe & and Central Asia**	**Latin &Caribbean**	**Middle East & and North Africa**	**Sub-Sah Africa**
Finance	14.2	9.5	9	11.4	23.7
Land	3.1	1.7	1.4	2.4	4.2
Licensing	2.6	2.7	4.4	3.7	1.3
Corruption	6.6	3.8	9.7	9	7.3
Courts	0.9	1.2	1	0.9	0.6
Crime	2.8	1.7	6.7	1.6	3.3
Customs	3.4	2.6	4.2	3.5	4.6
Electricity	8.8	3.6	5.4	11.7	14.7
Labor	9.8	18.9	7.8	8.7	1.7
Labor regul	3.5	5.3	4.5	2.7	1.0
Political	11.8	9	11.1	19.1	10.6

Table 3.4. (cont.)

Competitor	11.7	11.8	17.4	7.7	10.5
Tax admi	4	4.6	4.4	2.6	4.2
Tax rates	13	18.8	10.9	11	9.5
Transport	3.8	4.8	2.2	4	2.6

3.4. Empirical Findings and Discussion

This section presents empirical findings (Tables 3.5 and 3.6) on the factors that shape the perception of small and medium-sized enterprises (SMEs) towards tax rates. We model both internal and external factors that affect this perception. Internal factors include the age of the firm, its growth rate, and the experience of its management. External factors include aspects of the business environment such as tax administration, the complexity of regulations, tax bribery, and the frequency of inspections by tax regulators. The focus of this study is on the relationship between external factors and SMEs' perception of tax rates as an obstacle.

One of the key findings of this study is that firms that are subject to paying tax bribes are more likely to perceive tax rates as a major growth obstacle. This finding is consistent with Hypothesis 1, which predicted that tax bribery would exacerbate the perception of tax rates as an obstacle. The study also found that the complexity of regulations is another factor that exacerbates the perception of tax rates as an obstacle. This finding is consistent with Hypothesis 2, which predicted that the complexity of regulations would increase the perception of tax rates as an obstacle.

In contrast to our expectations, the study found that the frequency of tax inspections is negatively correlated with the perception of tax rates as an obstacle. This finding suggests that tax inspections can help firm managers understand tax procedures and reduce asymmetric information, which can lead to a more positive perception of tax rates. This finding rejects Hypothesis 3, which predicted that the frequency of tax inspections would be positively correlated with the perception of tax rates as an obstacle.

The study also found that high-growth firms are more likely to perceive tax rates as a major growth obstacle. This finding may be because high-growth firms are more innovation and entrepreneurship-oriented, and high tax rates can leave them with few financial resources to invest in these activities. The study also found that credit-constrained firms are more likely to perceive tax rates as a major growth constraint. This finding may be because credit-constrained firms are more reliant on internal funds, and high tax rates can reduce their available internal funds.

Table 3.5. Estimates from the Ordered Probit Analysis

	(1)	(2)	(3)	(4)	(5)
	Small	medium	SME	manuf	Service
Exprience	.024	.003	.012	-.018	.11*
	(.033)	(.032)	(.023)	(.03)	(.057)
Productivity	0	-.003	0	-.003	.006
	(.007)	(.009)	(.006)	(.008)	(.012)
High_growth	.244***	.006	.126**	.091	-.016
	(.073)	(.085)	(.055)	(.072)	(.161)
Certified	.12**	.158***	.147***	.163***	.106
	(.053)	(.051)	(.037)	(.047)	(.102)
Employee	.028	.031	.075***	.079***	-.018
	(.026)	(.027)	(.016)	(.022)	(.04)
Foreign	.062	-.214**	-.096	-.147*	-.064
	(.099)	(.088)	(.066)	(.087)	(.174)
Expor_status	-.141**	-.23***	-.195***	-.175***	-.408**
	(.063)	(.057)	(.042)	(.05)	(.171)
Age	-.044	-.097	-.067	.014	-.129
	(.061)	(.06)	(.042)	(.055)	(.102)
Ownership	.13	-.182	-.074	-.065	.112
	(.249)	(.16)	(.134)	(.188)	(.257)
Tax_admin	.475***	.432***	.453***	.464***	.5***
	(.017)	(.019)	(.013)	(.018)	(.029)

Table 3.5. (cont.)

Complex regulation	.003***	.003***	.003***	.003***	.003*
	(.001)	(.001)	(.001)	(.001)	(.002)
Credit constrains	.166**	.055	.121**	.104	-.249
	(.077)	(.074)	(.053)	(.071)	(.158)
Tax_bribe	.074*	.122**	.099***	.019	.241***
	(.042)	(.048)	(.031)	(.043)	(.073)
Tax_inspec	-.071**	-.028	-.049**	-.035	-.033
	(.033)	(.034)	(.024)	(.033)	(.054)
Observations	2997	2365	5362	2792	1047
Pseudo R2	.09	.075	.083	.087	.101
Standard errors are in parentheses					
**** p<.01, ** p<.05, * p<.1*					

Table 3.6. Outcomes of the Ordered Logit Regression

	Small	medium	SME	manuf	Service
Exprience	.024	.001	.021	-.041	.207**
	(.033)	(.055)	(.039)	(.051)	(.095)
Productivity	0	0	.002	-.006	.02
High_growth	.244***	-.037	.205**	.144	.013
	(.073)	(.143)	(.094)	(.123)	(.271)
Certified	.12**	.273***	.242***	.279***	.15
	(.053)	(.086)	(.062)	(.08)	(.168)
Employee	.028	.044	.126***	.127***	-.047
	(.026)	(.046)	(.027)	(.038)	(.069)
Foreing	.062	-.357**	-.161	-.255*	-.089
	(.099)	(.144)	(.111)	(.149)	(.291)
Expor_status	-.141**	-.378***	-.341***	-.301***	-.715**
	(.063)	(.095)	(.071)	(.085)	(.289)
Age	-.044	-.179*	-.125*	.01	-.216
	(.061)	(.103)	(.072)	(.095)	(.169)
ownership	.13	-.306	-.11	-.095	.1
	(.249)	(.266)	(.222)	(.307)	(.417)
Tax_admin	.475***	.752***	.799***	.82***	.896***
	(.017)	(.034)	(.023)	(.032)	(.053)
Complex_regulati	.003***	.005***	.005***	.005***	.006*
	(.001)	(.002)	(.001)	(.002)	(.003)
Credit constrains	.166**	.071	.205**	.165	-.389
	(.077)	(.125)	(.09)	(.121)	(.266)
Tax_bribe	.074*	.25***	.195***	.069	.406***
	(.042)	(.08)	(.053)	(.073)	(.121)
Tax_inspec	-.071**	-.027	-.067*	-.048	-.036
	(.033)	(.058)	(.04)	(.055)	(.092)
Observations	2997	2365	5362	2792	1047
Pseudo R^2	.09	.077	.085	.089	.106

3.4.1. Test of Parallel Line or Proportional Odds Assumptions

After conducting ordered probit and logit model estimations, we proceeded to examine the validity of the parallel slopes assumption in this section. The parallel lines assumption, also known as the proportional odds assumption, states that the relationship between the predictor variables and the log odds of the outcome are consistent across all levels of the ordinal outcome variable. In other words, the effect of the predictors is the same for all pairs of outcome categories. To be more specific, It means that the relationship between predictor variables and the log odds of moving from one category of an ordinal outcome variable to another is consistent or uniform across all possible pairs of outcome categories. The proportional odds assumption implies that when you compare any two adjacent outcome categories (e.g., "no obstacle" to "minor obstacle," "major obstacle" to "severe obstacle," and so on), the effect of predictor variables on the odds of transitioning between those categories is the same.

The assessment of this assumption is typically performed using the Brant test, which is employed to evaluate whether the Parallel Lines or Proportional Odds Assumption holds. The Brant test assesses the null hypothesis that the proportional odds assumption remains valid. It accomplishes this by scrutinizing whether the coefficients of the predictors exhibit equality across diverse categories of the response variable. If these coefficients differ significantly, it indicates a violation of the proportional odds assumption (Liu & Fan, 2021).

As Table 7 shows, the results of the joint test of proportional odds/parallel lines assumption on the predictor variables show that the Chi-square (242.77) statistic is statistically significant at 5 % as indicated by the probability value (0.000), which is lower than 0.01 or 0.05 and even 0.1. The variables that have p-values lower than 0.01, 0.05, and 0.1 violate the proportional odds assumption (Babalola & Mohd, 2021).

Table 3.7. Tests of the Proportional Odds

	Chi-square	**P-value**	**Decision**
All	242.77	0.000	PO/PL Assumption violated
Experience	12.95	0.005	PO/PL Assumption violated
Productivity	14.97	0.002	PO/PL Assumption violated
High_growth	0.82	0.846	PO/PL assumption met
Certified	7.06	0.070	PO/PL Assumption violated
Employee	0.80	0.850	PO/PL assumption met
Foreign	4.22	0.238	PO/PL assumption met
Expor_status	6.18	0.103	PO/PL assumption met
Age	0.90	0.825	PO/PL assumption met
Ownership	2.89	0.409	PO/PL assumption met
Tax_admin	128.95	0.000	PO/PL Assumption violated
Complex-tax	4.94	0.176	PO/PL assumption met
Creditconstraint	0.93	0.819	PO/PL assumption met
Tax_bribe	18.57	0.000	PO/PL Assumption violated
Tax_inspe	15.69	0.001	PO/PL Assumption violated

As indicated in Table 3.7, the proportional odds assumption is not met. To address this issue, several options are available. One method is to simply ignore the violation, a method commonly used in the literature. Alternatively, non-ordinal models such as multinomial logistic regression can be utilized. Another approach is to use alternative ordinal models such as original generalized ordered logit models (gologit) or default generalized ordered logit (gologit2).

Therefore, in this study, we employed the generalized ordered logit model (gologit2) to deal with the issue of the violation of the proportional odds assumption.

3.4.2. Generalized Logit and Probit Models

The ordered logit model is a frequently used method in regression analysis for managing qualitative dependent variables that have several possible values. It is

designed specifically to handle situations where the order or hierarchy of these values is meaningful and needs to be taken into account (Das & Rahman, 2011). The Ordered Logit model operates under the assumption of parallel lines, meaning that the slopes stay consistent across various response variable categories. Nevertheless, there are instances where this assumption is breached within each output variable category. In such cases, the generalized ordered logit model, an alternative to the proportional odds model, is utilized to relax the model's assumptions (Williams, 2006).

A specific case of the generalized logit model is the parallel-lines model fitted by the ordered logit model. The parallel-lines model is expressed as follows:

$$\boldsymbol{p(Y_i > j \ = g(X\beta) = \frac{\exp(\alpha_j + x_i\beta)}{1+\{\exp(\alpha_j + x_i\beta)\}}, j = 1, 2, \ldots M - 1} \qquad \textbf{(3.5)}$$

where M represents how many categories the ordinal dependent variable has. The likelihood that Y will take on each of the numbers 1..., M can be computed from the information provided above as follows:

$$P(Y_i = 1) = 1 - g(X_i\beta_1) \qquad (3.6)$$

$$P(Y_i = j) = g(X_i\beta_{j-1}) - g(X_i\beta_j) \quad j = 2, \ldots . M - 1 \qquad (3.7)$$

$$P(Y_i = M) = g(X_i\beta_{m-1}) \qquad (3.8)$$

For example, if M = 4, category 1 is contrasted with categories 2, 3, and 4 for J = 1, between categories 1 and 2 versus 3 and 4 for J = 2, and between categories 1, 2, and 3 versus category 4 for J = 3. When M > 2, the gologit model becomes comparable to a series of binary logistic regressions where categories of the dependent variable are combined.

Table 3.8. Generalized Ordered Logit

	(1)	(2)	(3)	(4)
Variables	**No_obstacle**	**Minor_obstacle**	**Moderate_obstacle**	**Major_obstacle**
Exprience	0.0205	0.0205	0.0205	0.0205
	(0.0390)	(0.0390)	(0.0390)	(0.0390)
Productivity	0.00183	0.00183	0.00183	0.00183

Table3.8 (cont.)

	(0.00956)	(0.00956)	(0.00956)	(0.00956)
High_growth	0.205**	0.205**	0.205**	0.205**
	(0.0937)	(0.0937)	(0.0937)	(0.0937)
Certified	0.242***	0.242***	0.242***	0.242***
	(0.0617)	(0.0617)	(0.0617)	(0.0617)
Employee	0.126***	0.126***	0.126***	0.126***
	(0.0274)	(0.0274)	(0.0274)	(0.0274)
Foreing	-0.161	-0.161	-0.161	-0.161
	(0.111)	(0.111)	(0.111)	(0.111)
Expor_status	-0.341***	-0.341***	-0.341***	-0.341***
	(0.0707)	(0.0707)	(0.0707)	(0.0707)
Age	-0.125*	-0.125*	-0.125*	-0.125*
	(0.0719)	(0.0719)	(0.0719)	(0.0719)
Ownership	-0.110	-0.110	-0.110	-0.110
	(0.222)	(0.222)	(0.222)	(0.222)
Tax_admin	0.799***	0.799***	0.799***	0.799***
	(0.0229)	(0.0229)	(0.0229)	(0.0229)
Complex_regulat	0.00542***	0.00542***	0.00542***	0.00542***
	(0.00126)	(0.00126)	(0.00126)	(0.00126)
Creditconstrain	0.205**	0.205**	0.205**	0.205**
	(0.0899)	(0.0899)	(0.0899)	(0.0899)
Tax_bribe	0.195***	0.195***	0.195***	0.195***
	(0.0529)	(0.0529)	(0.0529)	(0.0529)
Tax_inspec	-0.0668*	-0.0668*	-0.0668*	-0.0668*
	(0.0399)	(0.0399)	(0.0399)	(0.0399)
Constant	0.123	-0.873***	-2.132***	-3.630***
	(0.297)	(0.297)	(0.298)	(0.301)
Observations	5,362	5,362	5,362	5,362

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

3.4.3. Model Predictions

To evaluate the effectiveness of the Generalized Ordered Logit model, we contrasted model predictions with the observed data. Our findings discovered that the model's average mean probability predictions were in line with the observed data. Table 3.9 presents the proportion of firms that perceived tax rates as an obstacle, ranging from no obstacle to a very severe obstacle. The model predicted mean probabilities of 0.193 for no obstacle, 0.170 for a minor obstacle, 0.251 for a moderate obstacle, 0.228 for a major obstacle, and 0.155 for a very severe obstacle. These predicted probabilities closely matched the observed percentages in column three, indicating the model's good performance. In a nutshell, the model's predicted probabilities were consistent with the observed data, showing its effectiveness in making accurate predictions.

Furthermore, Table 10 presents a comparison of predictions generated by various ordinal models, including Ordered Probit, Ordered Logit, Generalized Ordered Logit (Gologit2), and Generalized Ordered Probit (goprobit). We estimated these models and compared their mean probability predictions. The analysis indicates that there is no significant difference in the predictions obtained from the different ordinal models. Through the exercise of model predictions and the subsequent comparison across these models, we made two significant contributions to the literature. Firstly, we observed no significant disparity among the predictions generated by the ordinal models. Secondly, despite the violation of the proportional odds assumption - a fundamental premise of ordinal logistic and probit models - it did not influence the disparity in predictions among the models.

Table 3. 9. Predictions of the Gologit2 Model

Obstacle to firm operations: tax rates	**Observed responses**	**Percent**	**Model predictions**
No obstacle	2,425	20.24	0.193
Minor obstacle	1,977	16.50	0.170
Moderate obstacle	3,199	26.70	0.251
Major obstacle	2,651	22.12	0.228

Table 3.9. (cont.)

Very severe obstacle	1,731	14.45	0.155
Total	11,983	100.00	1.000

Table 3.10. Comparison of Predictions from Several Models

	Ordered Probit		**Ordered Logit**	**Gologit2**	**Goprobit**
Tax rate obstacle	**Observed responses**	**Prob**	**Prob**	**Prob**	**Prob**
No obstacle	20.24	0.185	0.193	0.193	0.190
Minor obstacle	16.50	0.167	0.170	0.170	0.159
Moderate obstacle	26.70	0.254	0.251	0.251	0.250
Major obstacle	22.12	0.231	0.228	0.228	0.228
Very severe obstacle	14.45	0.161	0.155	0.155	0.158

3.5. Conclusion

In this study, we aimed to explore possible reasons why senior management in Small and Medium-Sized Enterprises (SMEs) may consider tax rates as the main obstacle to their firms' growth.

Findings reveal that tax rates represent the most significant obstacle to SME growth in Europe and Central Asia compared to other regions such as Sub-Saharan Africa, East Asia & and Pacific, Latin & and Caribbean, and the Middle East & and North Africa. In addition, our research indicates that tax rates remain the most significant growth hurdle across different sectors.

To better understand why tax rates are the biggest growth obstacle for SMEs in Europe and Central Asia, we constructed a conceptual framework that includes factors such as tax bribery, tax inspection, regulatory complexity, growth rate, and credit constraints. Our study found a significant positive relationship between tax bribery and firms' perception of tax rates as a major growth obstacle. This implies that enterprises that

are subject to paying tax briberies to state officials are more likely to perceive tax rates as a significant barrier to their growth.

On top of this, analysis underlines that the complexity of regulations are significant factors that contributes to executives of SMEs negatively perceiving tax rates. Regulations can be seen as a challenge for firms if they are time-consuming and vague. Interestingly, this study found that the frequency of tax inspections conducted by tax administrations is inversely correlated with the likelihood of SMEs perceiving tax rates as their most significant growth obstacle. This implies that tax inspections can have a positive impact on a firm's perception of tax rates and improve their overall confidence in the tax system.

The scope of this study limits our ability to conduct a comprehensive analysis of the tax structures in all the countries examined. Additionally, this study does not address how firms perceive different tax regimes or whether some taxes pose a more significant barrier to growth than others. Despite the limitations of our research, our findings provide recommendations for policymakers. Firstly, they should re-evaluate tax structures and regulations to gain a better understanding of their impact on the growth of Small and Medium-Sized Enterprises.

Secondly, policymakers should develop policies aimed at reducing distrust of SMEs towards the taxation system and tax rates. Thirdly, reforms must be implemented to make tax administration and regulations business environment-friendly and supportive to SMEs.

Future researchers are encouraged to explore macroeconomic and institutional factors that can contribute to SMEs' perception of tax rates as their most significant growth obstacle.

CHAPTER IV

BAYESIAN ANALYSIS OF FINANCIAL ACCESS AND CONSTRAINTS: IMPACTS ON FIXED ASSET ACQUISITION IN EUROPE AND CENTRAL ASIAN ENTERPRISES

4.1. Introduction

Financial restrictions and financial accessibility are crucial factors in determining how businesses behave across industries. This essay explores the complex interaction between these two core elements and how they affect the performance of businesses. Financial stability, or lack thereof, can have a substantial impact on a business's capacity to make strategic decisions, make investments, and ultimately generate value for stakeholders.

Financial limitations, frequently brought on by a lack of access to external financial sources, have long been acknowledged as a significant barrier to corporate innovation and expansion. These limitations may take many different forms, such as restricted credit availability, greater borrowing costs, and a lack of equity capital (Radicic, 2021). They compel businesses to make critical decisions about how to allocate their resources and their investment strategies, which ultimately shapes their operating environments and impacts how they compete in the market.

Financial access, on the other hand, fosters growth and expansion by including a firm's ability to receive the required financial resources when needed (Chowdhury et al., 2022). Access to money, whether through traditional bank loans, equity investments, or innovative financing channels, provides organizations with the tools they need to capitalize on opportunities, innovate, and be resilient to economic storms.

Small and medium-sized enterprises (SMEs) hold a significant position within the global economy, as the growth of the world economy hinges on the establishment and expansion of a robust SME sector. Consequently, the progress of SMEs is pivotal in fostering global economic growth and advancement (Savlovschi & Robu, 2011). Furthermore, SMEs have a substantial impact on furthering the objectives of the United Nations Sustainable Development Goals. They achieve this by generating a substantial quantity of job opportunities, mitigating income inequality through the bridging of wealth gaps, and fostering sustainable industrialization through increased innovation (Bartolacci et al., 2020).

As stated in the 2016 World Trade Report, small and medium-sized enterprises (SMEs) constitute 90% of the worldwide economy, provide 60-70% of jobs, and contribute to 55% of the GDP. These figures emphasize the substantial role SMEs play in driving current and future economic growth and development. SMEs are essential for generating employment opportunities for the youth, fostering innovation, and promoting sustainable economic expansion. Their impact on the global economy is immeasurable. Nevertheless, given their vital contributions, SMEs encounter a variety of challenges and limitations.

The literature provides ample evidence that access to finance is one of the most pressing issues, if not the foremost challenge, that impedes the inclusive growth of SMEs in the global economy (Kent Baker et al., 2020), (Moscalu et al., 2020), (Guariglia et al., 2011), and (Lopez-Gracia & Aybar-Arias, 2000). Studies also indicated that restricted access to capital can hinder the productivity growth of enterprises in developing states. This restraint can limit the capacity of businesses, particularly SMEs, to invest in new technologies, increase their operations, and upsurge their competitiveness. Consequently, the growth capability of these economies may be truncated (Hsieh & Klenow, 2009).

Financing constraints refer to the inability to access and take advantage of financial resources (Agostino et al., 2008). Financing constraints can arise from a range of factors, including inadequate accounting, financial, and regulatory systems (Beck & Demirguc-Kunt, 2006), intense competition (Anzoategui et al., 2010), policies and practices that affect the supply of finance such as interest rates (Foltz, 2004), and

absence of awareness and understanding of available financing options and how to access them. These factors can increase credit risk and transaction costs for SMEs, making it more challenging for them to obtain the financing they require to grow and expand their operations.

SMEs often face difficulties in fulfilling the collateral requirements set by formal capital lenders, which restricts their access to finance. This can hinder their growth and development, even when there is a high market demand for their products. SMEs might resort to alternative and informal sources of funding, such as borrowing from relatives or unauthorized lenders, which carries risks for both the borrower and the lender. Without the ability to secure additional financing, SMEs might be unable to increase their production capacity and meet demand promptly (Chandra et al., 2020).
The primary aim of this investigation is to offer concrete empirical findings on the influence of financial accessibility and obstacles on the procurement of fixed assets by small and medium-sized enterprises (SMEs) in Eastern European nations. By using the acquisition of fixed assets by SMEs as a measure of firm performance, this research significantly enhances the ongoing academic discussion. To illustrate, a previous work, Ndiaye et al., (2018) utilized the acquisition of fixed assets as a gauge for firm performance using a general-to-specific modeling approach. In contrast, our investigation delves into a distinct research inquiry and employs alternative econometric techniques.

The subsequent sections will delve into the conceptual frameworks and empirical evidence, illuminating the intricate dimensions of financial constraints and access. We will closely examine how these factors impact key firm-level performance indicators, with a specific focus on the acquisition of fixed assets.

To facilitate a structured understanding of this exploration, this paper is organized as follows: Section 2 will provide a concise overview of the pertinent literature, establishing the theoretical underpinnings for the potential determinants of SME performance. In Section 3, we will detail the data sources and methodologies employed in this study. Moving forward, Section 4 will unveil the empirical findings and engage in a thorough discussion of the results, elucidating the implications of our analysis. Finally, Section 5 will present the concluding remarks, summarizing the key

takeaways and their significance within the context of financial constraints, financial access, and firm performance.

4.2. Review of Related Literature

The impact of external funding on the performance of Small and Medium-sized Enterprises (SMEs) has been extensively researched in the literature. External financing is money that Small and Medium-sized Enterprises (SMEs) receive from sources other than their cash flow or the personal finances of their owners. This can include loans from banks, venture capital from investment firms, or grants from government agencies. The purpose of this literature review is to outline the main findings of prior research on this topic and to provide an overview of the research gap that this study aims to address.

A major explanation for the positive relationship between finance and growth is that access to capital allows the most capable firms to expand. This is supported by macroeconomic data showing that financial development boosts economic growth (Beck et al., 2006b) (Asteriou & Spanos, 2019). There are also a substantial number of microeconomic studies that demonstrate financial resources have a positive effect on the growth of firms (Ibrahim & Alagidede, 2018).

The existing literature on the impact of financing availability on firm performance can be divided into three categories. The first category consists of older studies that explored the relationship between a developed financial sector and firm performance by combining firm-level data with macroeconomic indicators of financial growth from diverse countries. The studies in this category include (Demirgüç-Kunt & Maksimovic, 1998), Beck et al., (2005) and (Hussain et al., 2021). The second category of these studies integrated country-specific firm data with financial development indicators.

The studies in this category include Butler & Cornaggia, (2007), and Nizaeva & Coskun, (2019). The third category of studies includes contemporary firm-level data, largely from the World Bank, and focuses on enterprise responses to business obstacles and their capacity to use financial market opportunities. This spawned a new

generation of research that examines the effect of access to finance and other constraints on firm performance using detailed firm-level data. The prominent works of the third category include, (Dinh et al., 2012; Aterido & Hallward-Driemeier, 2010; Aterido et al., 2011; Abdo Ahmad & Fakih, 2022; Goel et al., 2022). These categories of studies used various measures of firm performance, including employment growth, sales growth, returned earnings, profitability, and productivity.

After classifying prior relevant studies, our attention now turns to probing the effects of external financial resources on firm performance and the concomitant hurdles in accessing finance. This entails analyzing the factors influencing a firm's capacity to secure external funding, as well as exploring diverse financing alternatives.

Small and medium-sized enterprises (SMEs) are essential for economic growth and job creation, but they often have difficulty obtaining financing. Access to capital is critical for SMEs to invest, stay in business, and grow (Öhman & Yazdanfar, 2017). Policymakers are concerned about the availability of financing for SMEs because they play a key role in innovation, economic growth, and job creation. SMEs typically need external funding to support their expansion and development (Nyikos et al., 2020).

Small and medium-sized enterprises (SMEs) in critical sectors often have a strong need for external financing. This is because they may not be able to generate enough money internally to support their growth and expansion plans. As a result, they may seek external funding, such as loans or equity investments, to meet their capital requirements. For example, Ozili, (2022) argued that the availability of external financing affects the growth of European SMEs involved in circular economy activities. The study found that venture capital investments have a positive impact on the growth of European SMEs in the circular economy sector. The factors that influence SMEs' access to external financing from financial institutions differ from country to country. Wieczorek-Kosmala et al., (2020) investigated the viability of equity financing mechanisms for SMEs in Europe. Their findings emphasize the role of country-specific factors, such as the level of capital market development, economic growth, and legal and regulatory enhancements, in shaping SMEs' access to market-based funding.

As a result of these obstacles, SMEs that are unable to access external financing often exhibit lower performance in terms of growth, innovation, and research and development. These firms may become even more vulnerable to insolvency during economic crises. For instance, during events like the COVID-19 pandemic, SMEs with limited access to external financing may have faced liquidity crises and had lower survival rates (Zhang & Sogn-Grundvåg, 2022). Understanding SME financing is critical since securing financial resources is a critical challenge for entrepreneurs, who typically begin as SMEs (Starr & MacMillan, 1990). No entrepreneur or business begins as a massive enterprise. The idea is still valid today, as finance is still one of the most important prerequisites for running a business (Cummings et al., 2020), particularly for smaller businesses. Studies have shown that financial capital supports corporate growth, enhances performance, and makes it possible to acquire more resources, such as money and talent (Rosenbusch et al., 2013).

De Prijcker et al., (2019) identified access to finance as the most significant obstacle to SME growth, and it is mainly determined by demand and supply market factors (Moscalu et al., 2020). The demand factor for funding is represented by the external financing sought by firms, either through debt or equity, while the supply factor is determined by the cost of obtaining that financing. Most SMEs do not aim for an optimal capital structure, which balances maximizing the firm's value and minimizing capital costs through a debt-equity mix. Instead, they prefer to seek resources that allow for minimal interference in their business decisions (Lopez-Gracia & Aybar-Arias, 2000). Most SMEs tend to favor either debt financing or internal funding sources, despite the higher cost of the former and the potential inadequacy of the latter. Debt financing remains a crucial source of capital for SMEs (Cassar, 2004), even though it carries cost and risk.

4.3. Methodology

The study applied a Bayesian approach to explore the role of access to financial resources in the fixed assets acquisition of enterprises.

The binary logistic regression model is a statistical model that predicts the probability of a binary outcome (e.g., yes/no) based on a set of predictor variables (covariates). In

the present study, the dependent variable y_i considered was dichotomous as 1 for firms that purchased fixed assets and 0 otherwise, a binary logistic regression model with a Bayesian approach was adopted to examine the effect of the predictors on the response variable. For binary response variable Y, the binary logistic regression model with logit link function has the form (1):

$$\mathbf{log}\left(\frac{\mathbf{p_i}}{\mathbf{1-p_i}}\right) = \boldsymbol{\beta_0} + \boldsymbol{\beta_1}\mathbf{X_{i1}} + \boldsymbol{\beta_2}\mathbf{X_{i2}} + - - - - - - - - \boldsymbol{\beta_n}\mathbf{X_{in}} \qquad \textbf{(4.1)}$$

Where, Pi = the probability that the firm i purchased fixed assets, Y_i= the observed responses of firms acquired fixed assets or not obtained fixed assets, X_{i1} , X_{i2} , $- - - - - - - X_{in}$ are set of independent variables, and $\beta = (\beta_0, \beta_1, \beta_2, - - - - - - - - \beta_n)$ are vector of unknown regression parameters. The classical approach to logistic regression involves using Maximum Likelihood Estimation (MLE) and the expectation-maximization algorithm to estimate model parameters. However, this can have issues in small samples due to MLE's asymptotic properties (Anjullo & Haile, 2018). In the Bayesian method, inference about model parameters is based on their posterior distribution, which combines the likelihood function of observed data with information from prior studies or personal experiences known as the prior distribution. In other words, the Bayesian method uses both observed data and prior knowledge to make inferences about model parameters (Han et al., 2023).

In Bayesian statistics, prior knowledge and observed data are combined to make a statistical estimation analysis. The advantages of Bayesian inference include the ability to incorporate prior beliefs, avoid asymptotic approximations, and estimate functions of parameters. Bayesian inference treats data as fixed and unknown parameters as random variables (van de Schoot et al., 2014). This method allows for detailed inference from parameters for any sample size.

To carry out a Bayesian analysis, you need to specify a likelihood function for the data and a joint prior distribution over the parameter space. For data from individual subjects that are assumed to be independent of each other, the likelihood function for a data set with a sample size of n subjects is given for data

$$\mathbf{y} = \left(y_1, y_2, - - - - - - - - - - y_n\right)^T$$

$$\mathbf{prob}(\mathbf{y}|\boldsymbol{\beta}) = \mathbf{L}(\boldsymbol{\beta}|\mathbf{y}) = \prod_{\mathbf{i=1}}^{\mathbf{n}}\left[\mathbf{P_i^{yi}}(\mathbf{1}-\mathbf{P_i})^{(1-y_i)}\right]$$

$$= \prod_{i=1}^{n}\left(\frac{e^{\beta_0+\beta_1 X_1 - - - - - - - -\beta_n X_n}}{1+e^{\beta_0+\beta_1 X_1 - - - - - - - -\beta_n X_n}}\right)^{y_i}\left(1-\frac{e^{\beta_0+\beta_1 X_1 - - - - - - - -\beta_n X_n}}{1+e^{\beta_0+\beta_1 X_1 - - - - - - - -\beta_n X_n}}\right)^{1-y_i}$$

(4.2)

Additionally, choosing a prior is one of the prerequisites for any Bayesian analysis, and the most typical prior for logistic regression parameters is a normal distribution with mean μ_j and variance α_j^2 , and has the form $\beta_j \sim \mathrm{N}\ (\mu_j, \alpha_j^2)$

In mathematical terms, the prior distribution for logistic regression parameters takes the form of equation (3)

$$\boldsymbol{P(\beta_J)} = \frac{1}{\sqrt{2\pi\sigma^2}}\mathbf{exp}\left[\left(\frac{\beta_J - \mu_J}{\sigma_J^2}\right)^2\right] \qquad \textbf{(4.3)}$$

In this paper, a non-informative normal prior distribution was used to model the regression coefficients. This distribution has a mean of 0 and a variance of 100. This choice was made because there is no prior information about the regression coefficients.

When non-informative independent normal priors are chosen and the likelihood function for the data is used, to find the posterior distribution, we need to multiply the likelihood and the prior. In other words, it is the product of equations (3) and (2) and takes the form of equations (4)

$$\boldsymbol{p(\beta|y)} = \prod_{\boldsymbol{j=0}}^{\boldsymbol{p}}\ [\ \boldsymbol{p(\beta_j)}\ ]\ *\ \prod_{\boldsymbol{j=0}}^{\boldsymbol{n}}[\boldsymbol{L(\beta|y)}] \qquad \textbf{(4.4)}$$

It may not be simple to construct a closed-form solution for the posterior distribution since the product of all likelihood terms multiplied by the prior yields a complex expression. However, sampling-based approaches such as Markov Chain Monte Carlo (MCMC) techniques such as the Metropolis-Hastings algorithm or Gibbs sampling can still be used to numerically approximate the posterior distribution.

In this study, we utilized Markov Chain Monte Carlo (MCMC) to estimate the posterior distribution. In addition, to fit the Bayesian Regression Model "brms," an R

package that provides an easy way to fit Bayesian models was used in this study (Bürkner, 2017). The Brms package can be used to fit several Bayesian models, including generalized linear mixed models, logistic regression models, and linear regression models. Additionally, it supports a range of prior distributions, such as beta, gamma, and normal distributions.

4.3.1. Data Source and Model Specification

This study makes use of data from the Enterprise Survey (ES), an ongoing project by the World Bank and the European Bank for Reconstruction and Development (EBRD). The survey intends to assist the World Bank's strategic goal of creating an environment conducive to job creation, investment, and long-term growth by providing investment indicators and identifying barriers to private-sector growth. The firm-level survey provides rich economic data on 171,000 firms in 149 countries from 2002 to 2022. This study utilizes surveys conducted between 2007 and 2021 in 17 Eastern and Southern European countries, which are representative samples of firms in the non-agricultural formal private sector and employ a uniform methodology and questionnaire, making them comparable across countries.

Among the 11,161 firms included in the survey, 47.07% invested in fixed assets, while the remaining 52.93% did not. The sampled firms were diverse in terms of sectors, with 48.11% representing the manufacturing sector, 19.50% from the service sector, and 32.40% belonging to core sectors.

4.3.2. Model Specification

The study employed the General-to-specific modeling (GETS) approach to identify the most relevant variables for the model from a large pool of variables provided by the World Enterprise survey. GETS is a statistical technique that begins with a comprehensive model and progressively eliminates statistically insignificant variables or relationships until a concise model is achieved. The objective of GETS is to discover a model that is not only statistically significant but also economically meaningful.
After choosing statistically significant and relevant variables, we set the Bayesian model as follows.

Chains: 4 Number of Iterations: 5000 Observations: 9487

Priors: Normal (0,100)

$$\boldsymbol{assets = \beta_0 + \beta_1 Skilled_labor + \beta_2 Busine_licen + \beta_3 Electricity + \beta_4 Finance_obstacle + \beta_5 Female_manager + \beta_6 Sales + \beta_7 External_finance + \beta_8 Transport + \beta_9 Age + \beta_{10} Exprience} \quad \textbf{(4.5)}$$

Assets - is the dependent variable of this study, it measures whether a firm purchased fixed assets or not. Thus, it is a binary variable.

Skilled_labor is an ordinal variable that measures whether a firm perceives an obstacle to the inadequacy of skilled labor, and scaled from 0 (no obstacle), 1 (minor obstacle), 2 (major obstacle), 3 (severe obstacle) to 4 (very severe obstacle).

- Busine_licen is an ordinal variable with a scale ranging from 0 to 4. It measures whether a firm perceives any obstacles in obtaining business licenses and permits.
- Electricity is an ordinal variable with a scale ranging from 0 to 4. It measures whether a firm considers obstacles to access to electricity or energy.
- Finance_obstacle is an ordinal variable with a scale ranging from 0 to 4. It measures how much a firm perceives access to financial resources as an obstacle.
- Female_manager is a binary variable; it indicates the gender of top management of the firm.
- Sales – it is the log of total sales of a firm in the last fiscal year.
- External_finance – it is a binary variable; it measures whether a firm has access to a line of credit or loan to financial institutions.
- Transport – is an ordinal variable with a scale ranging from 0 to 4. It measures whether a firm perceives the transportation of goods, supplies, and inputs.
- Age – is the age of establishment, it measures how many years a firm has been working in the sector.
- Experience – it shows the number of years the top manager has been working in the sector.

4.4. Findings and Discussion

This study investigated the relationship between a firm's financial accessibility and its capacity to acquire fixed assets. The acquisition of fixed assets was employed in this study as a proxy for firm performance, as it indicates a firm's dedication to long-term investment and reflects the health of firm performance. The independent variables can be categorized into five groups: firm characteristics (gender, age, sales, and experience), financial accessibility (credit line and financial barrier), accessibility to infrastructure (electricity and transportation), business regulation, and availability of skilled labor.

The present study found that external financial access has a positive effect on the acquisition of fixed assets by enterprises. Firms with financial access are 0.79 percent more likely to invest in fixed assets such as land and equipment than firms without access to loans from financial institutions, confirming our first hypothesis. The mean coefficient of External_finance is 0.79, with a credible interval of (0.70, 0.88). This means that we can be 95% certain that the true value of the mean lies within this interval. This indicates that the availability of external financial resources plays a role in a firm’s decision to invest in fixed assets, and this finding is in line with existing literature (Bahadir & Bahadir, 2020).

On the other hand, financial barriers can have a significant impact on a firm's ability to purchase fixed assets. As expected, the study found that financial obstacles hurt a firm's acquisition of fixed assets. The study also underlines that the negative effect of financial barriers was more pronounced for firms with lower levels of financial resources. This suggests that firms with limited financial resources are more likely to be constrained by financial barriers when making decisions about fixed asset acquisition (Eskandar & Hadadi, 2022). The mean of Finance_obstacle is -0.119 with a credible interval of (-0.158, -0.081). This suggests that, with 95% certainty, we expect the true value of the coefficient to lie within the range of -0.158 to -0.081. In other words, the more likely a firm is to perceive financial barriers as the biggest obstacle to growth, the less likely it is to invest in fixed assets.

Moreover, the total sales volume of a firm is a significant determinant of its likelihood to make long-term investments in fixed effects. The coefficient of the sales parameter is 0.097, with a credible interval of (0.08, 0.11). This means that there is a 95% probability that the true value of the coefficient lies within this range. The level of sales directly influences a firm's overall performance, with a special focus on the acquisition of fixed assets. This underscores the firm's dedication to enduring investments, further serving as a measure of its profitability, and expected returns.

The relationship between a firm's fixed assets acquisition and its age was also found positive in this study. The mean coefficient of 'Age' is 0.112 with a credible interval of 0.03 to 0.19. This means that 95% certainty the true coefficient falls in this interval. The relationship between a firm's acquisition of fixed assets and its age is complicated. Because of the significant financial investment required, acquiring fixed assets is a critical decision for firms. Jamalabadi et al., (2014) contend that a firm's age influences its capital structure, which in turn influences its acquisition of fixed assets. It is crucial to keep in mind, however, that the association between a firm's age and the acquisition of fixed assets can change depending on a variety of variables, including the industry, the state of the market, and the particulars of the firm. Furthermore, it was anticipated that the experience of top manager in the sector would be a significant characteristic of firms in their asset acquisition. However, this relationship was found to be statistically insignificant. The mean value of experience is 0.05, with a credible interval ranging from -0.018 to 0.121. Since zero falls within the lower and upper bounds of the credible interval, this relationship is deemed insignificant.

Infrastructure accessibility is vital for firms to make long-term investments, including the acquisition of land and equipment. The availability of key infrastructures, such as electricity, significantly influences firm performance. The availability of electricity is a key factor in a firm's ability to acquire fixed assets. This is because electricity is needed to power the machinery and equipment that are used to produce or provide goods and services. Without electricity, firms would not be able to operate their businesses effectively, and they would therefore be less likely to invest in fixed assets. The findings show that access to electricity has a considerable positive effect on a firm's ability to acquire fixed assets. This is supported by a coefficient mean of 0.05, with credible intervals ranging from 0.017 to 0.082. Previous studies have also

concluded that firms with access to electricity can acquire machinery, equipment, and buildings more efficiently, resulting in increased productivity and performance (Chowdhury et al., 2021).

Access to transportation profoundly influences a firm's ability to acquire fixed assets. A robust transportation system is essential for the efficient movement of goods, services, and people, playing a pivotal role in business growth and development. Having dependable transportation infrastructure allows firms to acquire machinery, equipment, and raw materials with greater ease, enhancing efficiency, productivity, and competitiveness. However, the findings revealed that firms are more likely to be concerned about access to transportation infrastructure. This is evidenced by the coefficient mean of -0.041, with credible intervals ranging from -0.083 to -0.000.

Table 4.1. Bayesian Logit Regression Output

Parameter	**Mean**	**SE**	**CI_lower**	**CI_upper**
Intercept	-2.7331	0.0014358	-3.136676	-2.3363
Skilled_labor	0.14083	0.0001296	0.104952	0.17675
Busine_licen	-0.2085	0.0001511	-0.250201	-0.1667
Electricity	0.05005	0.0001195	0.017034	0.08283
Finance_obstacle	-0.1196	0.0001373	-0.158206	-0.0819
Female_manager	0.19704	0.0003993	0.0867993	0.30731
Sales	0.09747	0.0000607	0.0807222	0.11432
External_finance	0.79534	0.0003123	0.7085637	0.88164
Transport	-0.0418	0.0001506	-0.083359	-5E-06
Age	0.1121	0.0002988	0.030277	0.1946
Exprience	0.05176	0.0002516	-0.018253	0.12109

This section is dedicated to demonstrating the relationship between the response variable and explanatory variables more visually by plotting marginal effects. Specifically, we will focus on the interest variables such as access to external financial resources and financial barriers. Marginal effects are a method of assessing the change in the response variable for a one-unit change in an explanatory variable. They can be

used to illustrate the relationship between factors and identify which variables have the most influence on the response variable.

Figure. 1 illustrates a negative relationship between the financial obstacle (Finance_obstacle) and fixed assets acquisition (assets), as indicated by the downward slope of the blue line. This indicates that as the level of perceived obstacles in terms of financial access increases, the likelihood of a firm purchasing fixed assets decreases. The gray shaded area in the graph represents the range of possible values for a firm's purchase of fixed assets. It shows the variability in the relationship between a firm's acquisition of fixed assets and its perception of financial access. This variability can be influenced by many factors, such as the firm's industry, size, and financial health. The fact that the gray-shaded area is wider at some points in the curve indicates that the relationship between financial obstacles and a firm's purchase of fixed assets fluctuates at certain points. This can be due to differences among firms, such as their characteristics and the economic environment of their host country. Conversely, the findings of the study show that there is a direct proportional relationship between access to a line of credit and a firm's purchase of fixed assets. This is in line with the study's expected outcomes, as access to credit provides firms with the financial resources they need to invest in new equipment and machinery.

The graph shows a positive relationship between the two variables, as indicated by the positive slope of the blue line. This means that as the amount of credit available to a firm increases, the likelihood of that firm purchasing fixed assets also increases. The fact that the gray-shaded area is narrow suggests that there is a lower level of uncertainty or variability in the relationship between the independent and dependent variables. This could mean that the data is more consistent and that the relationship between the two variables is stronger.

In other words, the study's findings suggest that firms with access to a line of credit are more likely to purchase fixed assets than firms without access. This is because a line of credit provides firms with the flexibility and liquidity, they need to make large investments. Additionally, a line of credit can help firms finance their purchases over time, which can make them more affordable.

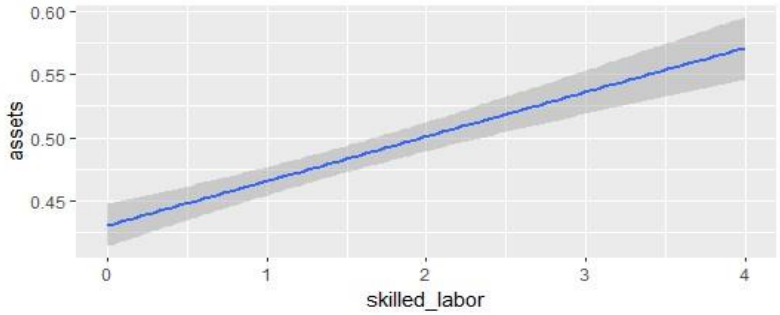

Figure 4.1. Marginal Effects of Skilled Labor

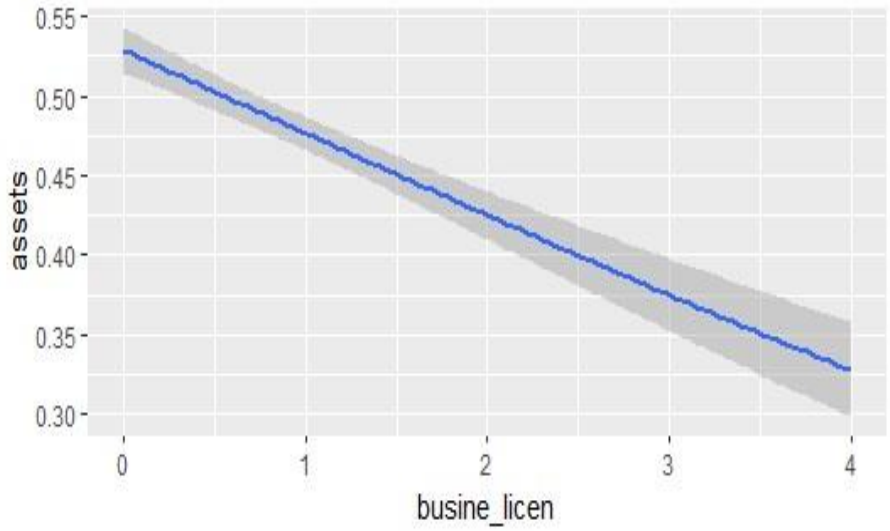

Figure 4.2. Marginal Effects of Business Licenses

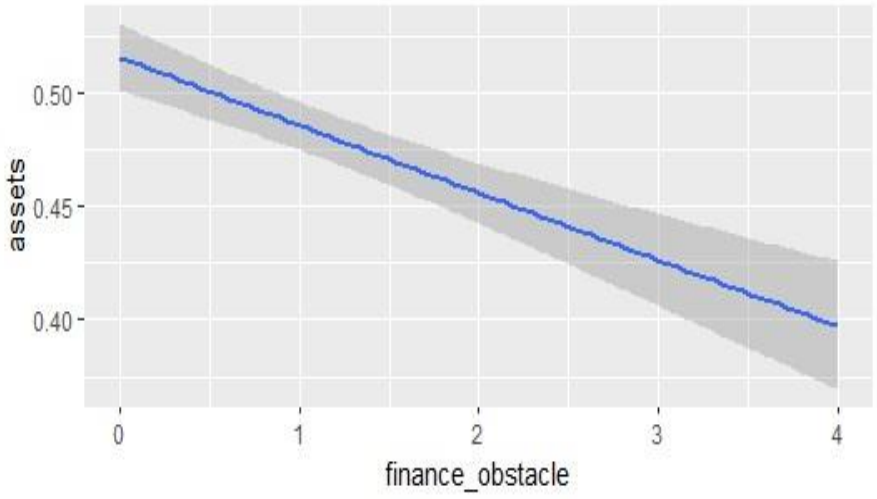

Figure 4.3. Marginal Effects of Financial Obstacle

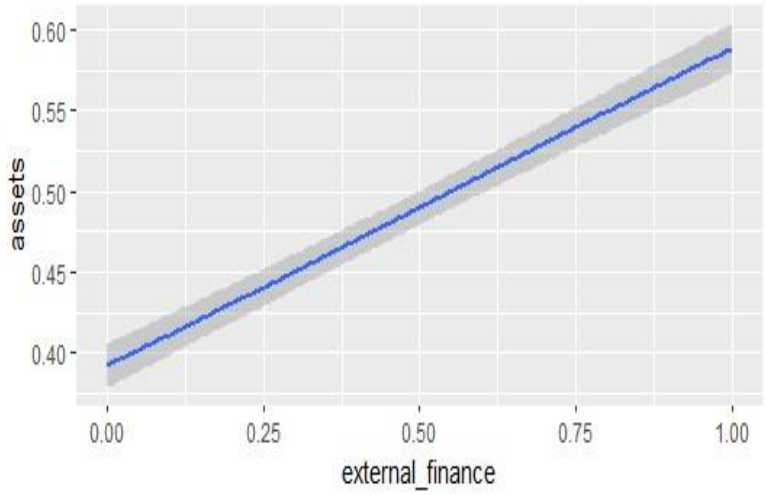

Figure 4.4. Marginal Effects of External Finance

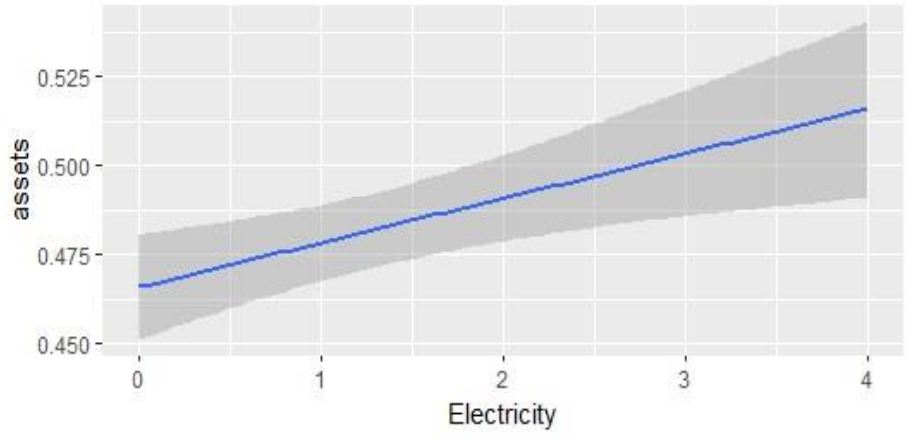

Figure 4.5. Marginal Effects of Access to Electricity

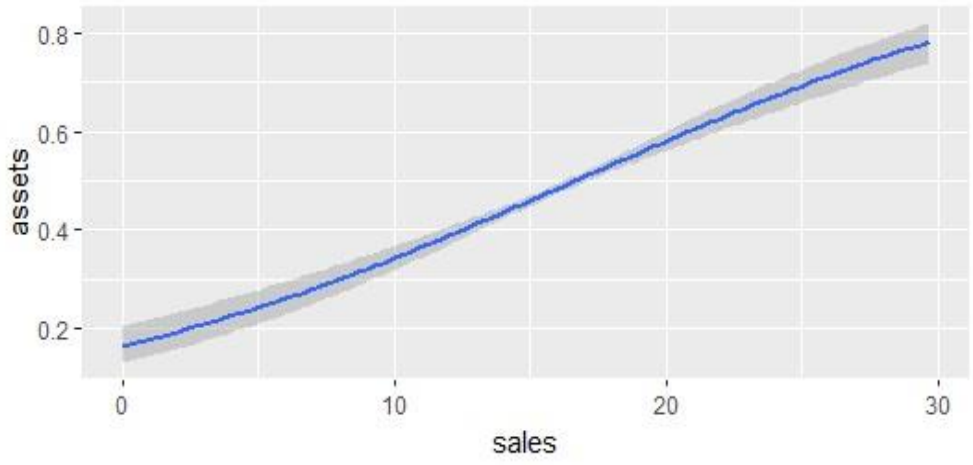

Figure 4.6. Marginal Effects of Sales

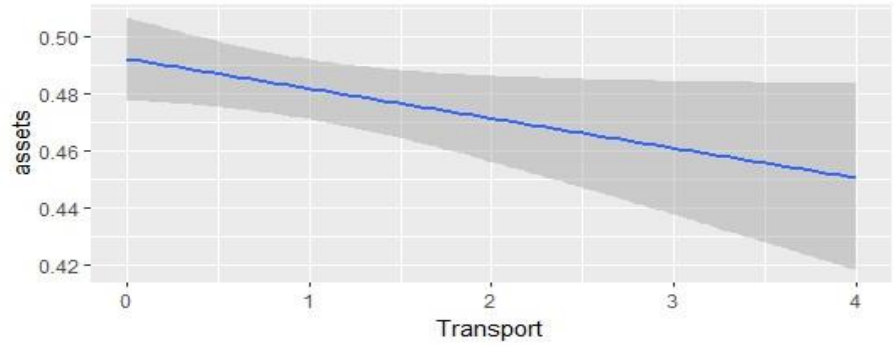

Figure 4.7. Marginal Effects of Transport

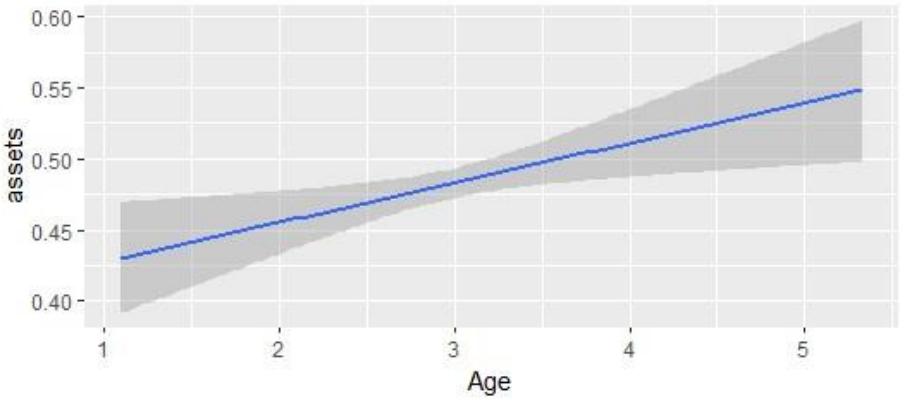

Figure 4.8. Marginal Effects of Age

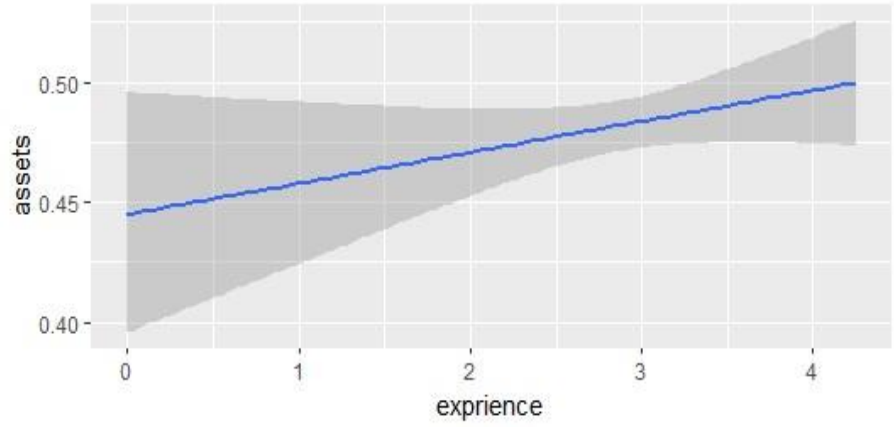

Figure 4.9. Marginal Effects of Experience

4.5. Model Diagnostics

This study applies Bayesian analysis with Markov Chain Monte Carlo Simulations (MCMC) to estimate parameters for the dynamic system, as described in the previous section. To construct the posterior distributions using the MCMC sampler, stability and convergence are required. The effective sample size (ESS) determines the stability and efficiency of the estimations. We run a total of 5000 MCMC iterations to carry out Bayesian logit regression, and the results are shown in Table 4. 1. The Effective Sample Size (ESS) for each parameter is nearly close to the MCMC sample size, which is 40000, as indicated in Table 2. Consequently, all model parameters exhibit MCMC efficiencies, underscoring the robustness of the model (Oanh et al., 2022).

In this study, Tail Effective Sample Size (Tail ESS) and Bulk Effective Sample Size (Bulk ESS) were used to measure the quality of samples acquired using Markov Chain Monte Carlo (MCMC) simulations. These metrics concentrate on different components of the sampling process and provide distinct insights into the results' reliability. Tail ESS is a diagnostic statistic that evaluates the effectiveness of MCMC samples in representing the tails or extreme values of a distribution. It calculates the effective sample size for the tails, which is crucial when the tails include infrequent or significant events. A larger Tail ESS value implies that the MCMC simulation is accurately capturing the distribution's extreme behavior. In scenarios where infrequent events or outliers have a substantial impact on the analysis, accurately representing the tails of a distribution is especially pertinent. According to the data in Table 2, all the variables have Tail ESS values between roughly 15000 and 38000. These numbers are significantly higher than the recommended threshold of 400 (Vehtari et al., 2021), demonstrating that the MCMC simulation accurately depicts the extreme behavior of the distribution for all variables.

Bulk ESS is a diagnostic statistic that assesses the ability of Markov Chain Monte Carlo (MCMC) samples to reflect the center or bulk portion of a distribution. It computes how well the MCMC simulation reflects the distribution's common, regularly occurring values. A higher Bulk ESS value indicates that the MCMC samples are efficiently representing the distribution's main portion. The threshold for interpreting Bulk-ESS is determined by the situation and model under consideration.

In general, a greater Bulk-ESS value suggests better sampling efficiency and convergence of the MCMC technique.

Based on the information in Table 2, all the variables appear to have rather high Bulk-ESS values, ranging from 15493 to 38012. This shows that the MCMC method has converged well and that the sampling effectiveness for these variables is good.

Similarly, in this study, we employed a widely known test, the Gelman-Rubin (Rc) convergence diagnostic, to multiple series. The Gelman-Rubin diagnostic compares the variability among chains to the variability within chains. Chains exhibiting a value below 1.1 are considered to have fully converged (Thach, 2021). The R-hat values reported in Table 4.2 are all less than 1.1, which indicates that the MCMC chains have converged. This signifies that the chain values match the posterior distribution, which is a crucial condition for the posterior simulation to meet the requirements of the Bayesian analysis.

Table 4.2. R-hat, Bulk Effective Sample Size, and Tail Effective Sample Size

Variable	R-hat	Bulk_ESS	Tail_ESS
Intercept	1.0	38943	15848
Skilled_labor	1.0	38012	15493
Busine_licen	1.0	32476	15519
Electricity	1.0	32704	15943
Finance_obstacle	1.0	32776	15623
Female_manager	1.0	35623	15232
Sales	1.0	37100	14735
External_finance	1.0	37191	15153
Transport	1.0	29867	16354
Age	1.0	31573	17234
Exprience	1.0	33861	16651

Having checked the convergence diagnostics of the model using Bulk Effective Sample Size, Tail Effective Sample Size, and The Gelman-Rubin diagnostic, we further turn to check the convergence of chains visually using trace and density plots.

The trace plots provide a visual representation of the Markov chain Monte Carlo (MCMC) chains' behavior for each coefficient in the model. These plots allow researchers to assess the convergence of the chains by examining their mixing and distribution throughout the sampling iterations. Ideally, the chains should mix well, meaning that they explore the entire parameter space, and converge to a stable distribution, indicating that the sampling has reached a steady state.

In the figures below, the trace plots for all variable coefficients appear to exhibit desirable properties. The chains seem to mix well and converge to a stable distribution, as evidenced by their normal and uniform appearance. The chains also appear to have converged to the mean, suggesting that the sampling has reached a steady state. Of particular interest are the variables representing financial obstacles (finance_obstacle) and financial access from financial institutions (external_finance), which exhibit clear convergence patterns and well-behaved chains. These observations suggest that the MCMC sampling has converged and that the results of the model are reliable.

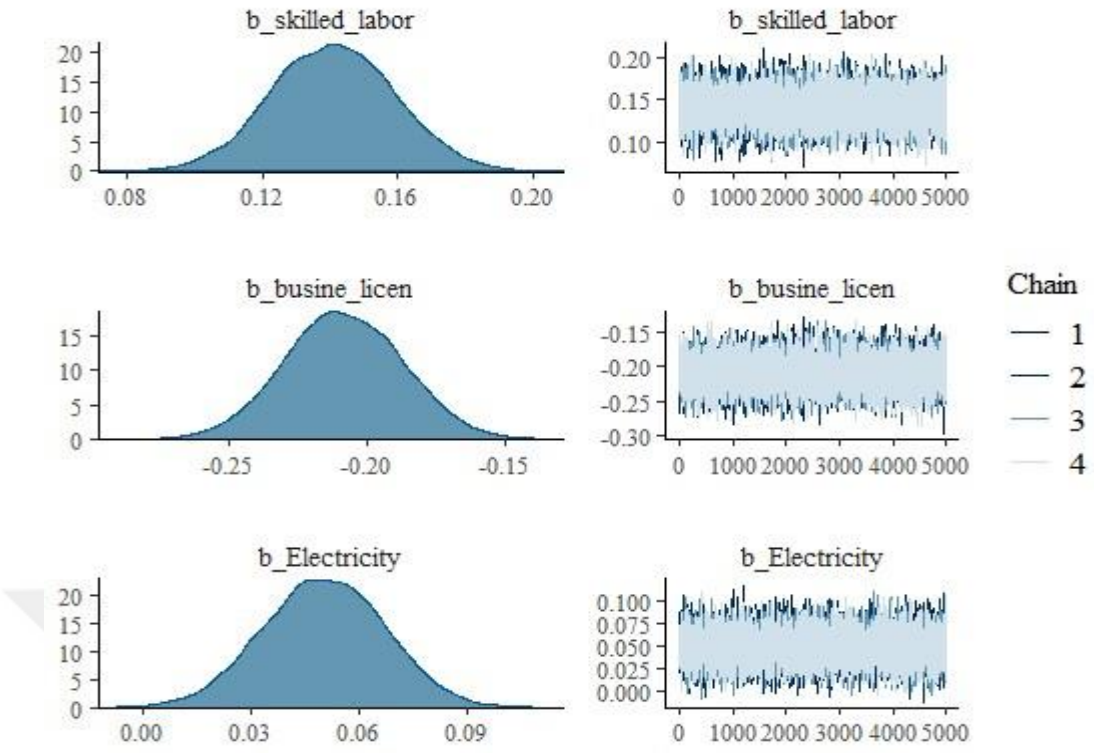

Figure 4.10. Trace and Density Plot of Skilled Labor, Business Licenses, and Electricity

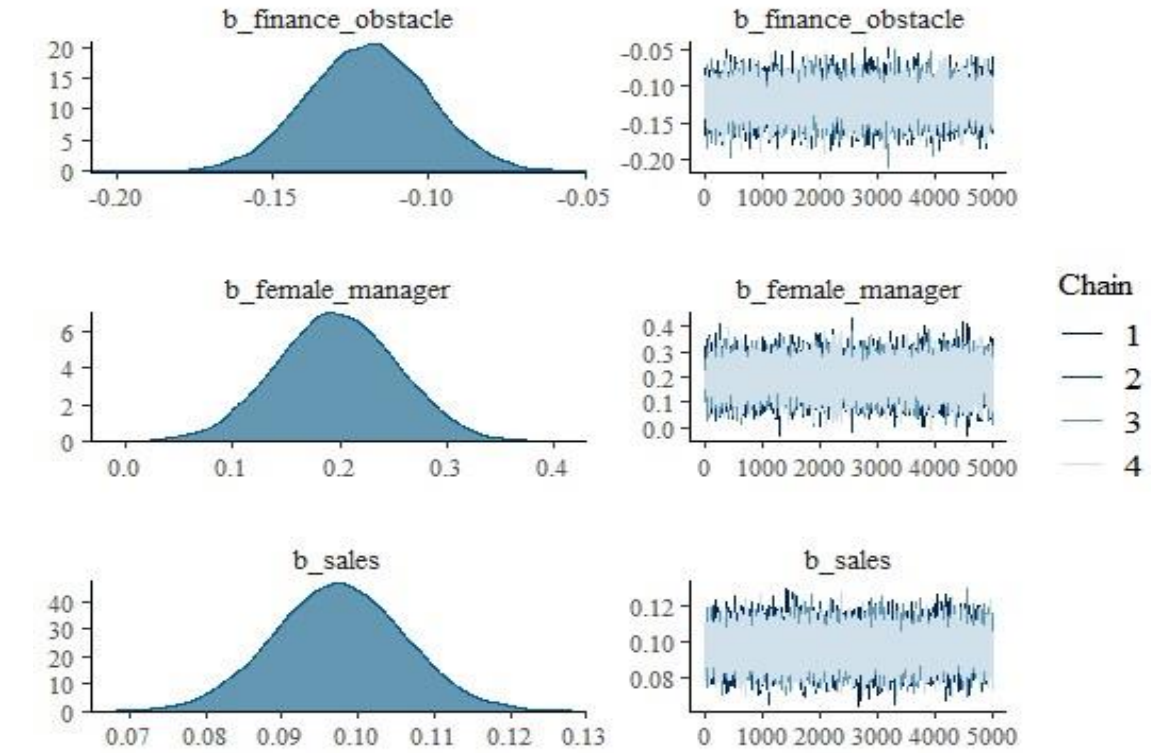

Figure 4.11. Trace and Density Plot of Finance Obstacle, Female Manager, and Sales

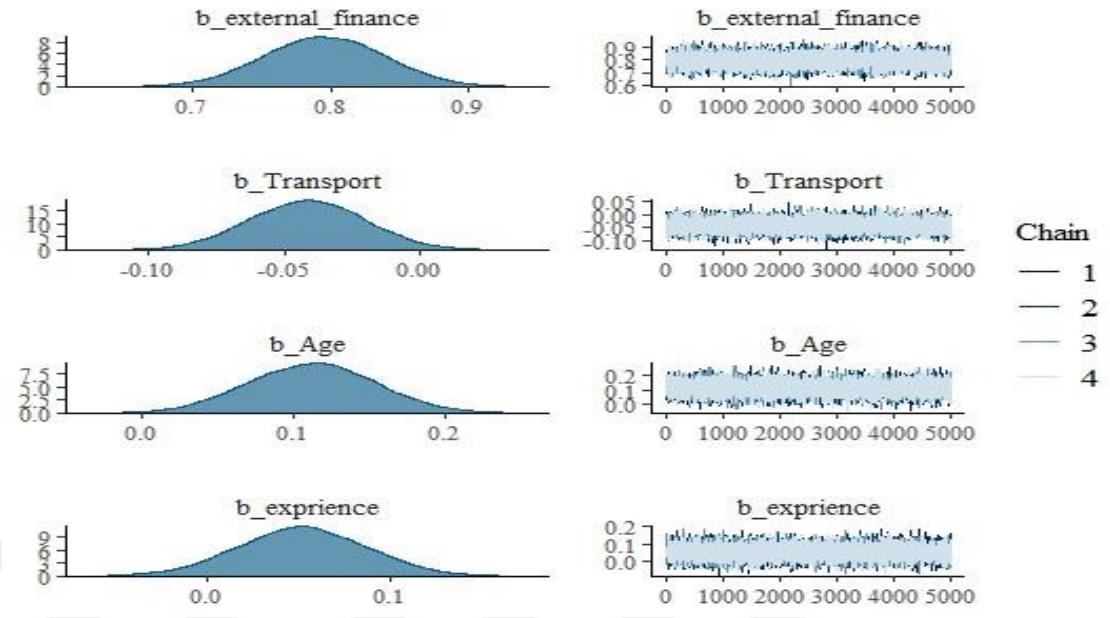

Figure 4.12. Trace and Density Plot of External Finance, Transport, Age, and Experience

We conducted posterior predictive checking as a further check of model diagnosis in this study to assess the reliability of the model findings. In Bayesian statistics, posterior predictive checking is a method for evaluating how well a model fits the data that has been observed (Kruschke, 2013). It entails simulating replicated data using the fitted model and contrasting the simulated data with the observed data. The objective is to seek systematic differences between the real and simulated data that might point to issues with the model. The posterior predictive curve (shown in Figure 3) depicts the distribution of the difference between the observed data (y) and the replicated data (y_rep). The difference between the two sets of data is shown on the y-axis of the plot, and the number of times that difference has occurred is shown on the x-axis.

The posterior predictive distribution's median is represented by the blue line in the plot. Accordingly, 50% of the replicated data sets will have differences that are less than or equal to the median, and 50% of the replicated data sets will have differences that are greater than or equal to the median. The posterior predictive distribution's 95% credible interval is displayed in the darkened area surrounding the blue line. This indicates that with 95% certainty, the true difference between the observed and

replicated data will fall within this interval. In Figure 4.13, the posterior predictive curve is centered around 0, which means that the model predicts that the observed data and the replicated data are very similar. The shaded area around the blue line is also relatively narrow, which reveals the reliability of the model prediction.

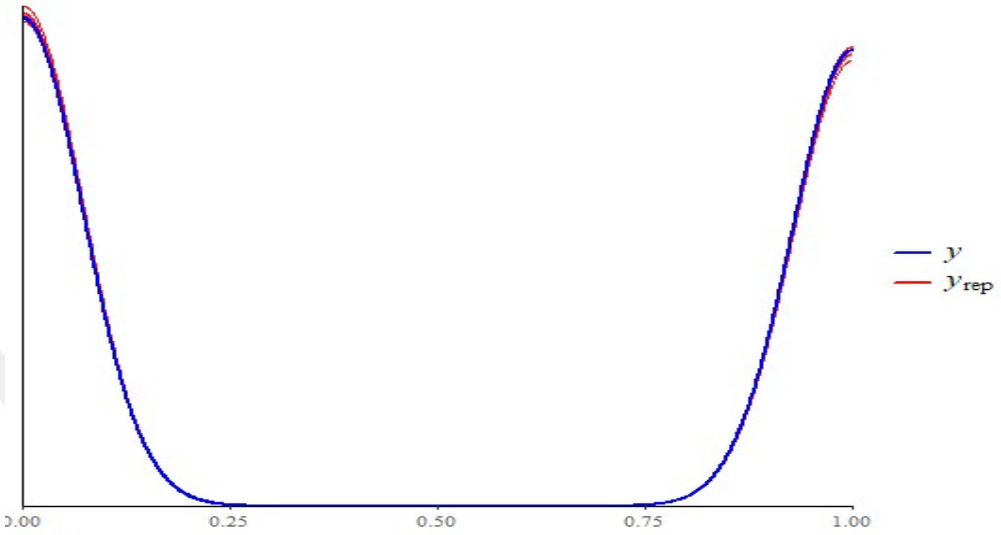

Figure 4.13. Posterior Predictive Checking

4.6. Conclusion

This study investigates the impact of financial access and barriers on firm performance, specifically focusing on the ability to purchase fixed assets and machines, which are essential for sustainability, growth, and productivity. The study uses Bayesian logit, a robust and reliable statistical method.

Bayesian models can be complex and difficult to solve analytically, but Monte Carlo simulation techniques can simplify the process. This study uses several convergence tests to ensure the reliability of the Monte Carlo simulation estimates, including density plots, trace plots, bulk effective sample size, tail effective sample size, and posterior predictive checks. The posterior predictive check compares the observed data to simulated data, and if the two are similar, it provides strong evidence that the model is reliable. The findings of this study are reliable and can be used to conclude the relationship between financial access and barriers and firm performance.

The findings demonstrate a negative relationship between financial obstacles and fixed asset acquisition, indicating that as the level of perceived obstacles in terms of financial access increases, the likelihood of a firm purchasing fixed assets decreases. Conversely, the study found a direct proportional relationship between access to a line of credit and a firm's purchase of fixed assets. This is in line with the study's expected outcomes, as access to credit provides firms with the financial resources they need to invest in new equipment and machinery.

In conclusion, the study's findings suggest that firms with access to a line of credit are more likely to purchase fixed assets than firms without access. This is because a line of credit provides firms with the flexibility and liquidity, they need to make large investments. Additionally, a line of credit can help firms finance their purchases over time, making them more affordable. These findings have important implications for policymakers and financial institutions seeking to promote economic growth and development by facilitating access to credit for firms. Further research is needed to explore the factors that influence the relationship between financial access and fixed asset acquisition, such as firm characteristics and the economic environment of the host country.

CHAPTER V

CONCLUSION

The three essays investigate the growth constraints of Small and Medium Enterprises (SMEs) in Europe and Central Asia. The findings suggest that SMEs face a variety of challenges, including financial barriers, high tax rates, political instability, competition from the informal sector, and regulatory complexity. Though the specific constraints faced by SMEs vary depending on the country and sector in which they operate, however, one common trend in this region is that all SMEs in different sectors consider tax rates as a major growth obstacle.

The first essay pinpoints and categorizes the primary hurdles impeding the growth of SMEs. The two most significant constraints identified are financial barriers and tax rates. Financial obstacles pose a substantial challenge to the expansion of SMEs in Europe and Central Asia. SMEs often encounter difficulties when attempting to secure loans from banks and other financial institutions. This can be attributed to a variety of factors, including steep interest rates, collateral prerequisites, and intricate application processes. Consequently, SMEs may find themselves compelled to depend on internal financing, which could restrict their capacity to invest in growth opportunities.

The first essay reveals that firms in Europe and Central Asia consider tax rates as the most significant obstacle to growth. Consequently, the second essay delves into the factors influencing SMEs' perception of tax rates as a hindrance to their performance. The findings indicate that elements such as tax bribery, tax inspections, regulatory complexity, and credit constraints all contribute to shaping SMEs' views on tax rates. Enterprises that are subjected to tax bribery or encounter complex regulations are more likely to view tax rates as a substantial barrier to their expansion. Interestingly, tax inspections can have a positive influence on SMEs' perceptions of tax rates. This implies that tax inspections can aid in enhancing transparency and mitigating information asymmetry between tax officials and firm managers.

The third essay investigates the impact of financial access and barriers on firms' fixed asset investment behavior. The findings reveal that financial barriers act as a deterrent to firms investing in fixed assets, while access to credit serves as an enabling factor for firms to invest in fixed assets. This is because fixed assets are frequently characterized by high upfront costs, and firms require access to financial resources to fund these expenditures. Firms that have access to lines of credit are more likely to invest in fixed assets because they enjoy the financial flexibility and liquidity required to finance these purchases.

Based on the findings of the study, policymakers are encouraged to adopt the following recommendations to address the constraints that hinder SME growth:

Financial accessibility: Financial resources are critical to the growth and sustainability of small and medium-sized organizations (SMEs). Policymakers play an important role in setting the economic climate and should examine various methods to ensure SMEs have the financial resources they need to thrive. Lowering financing rates for SMEs is one important policy tool that policymakers may implement. Reduced interest rates on loans and credit lines can dramatically reduce borrowing costs for small firms, allowing them to engage in expansion, research & and development, and workforce development. This can lead to economic growth and job creation.

Policymakers should think about measures to ease collateral requirements in addition to lowering interest rates. For SMEs with few assets, traditional lenders frequently impose onerous collateral requirements, which can be a substantial barrier. Policymakers can remove these barriers and improve credit availability for SMEs by putting in place systems like credit guarantees or government-backed lending programs.

The streamlining of the loan application and approval processes is a vital component of improving financial accessibility for SMEs. Smaller firms may be discouraged from seeking the finance they require due to the difficulty and length of the paperwork. Policymakers can improve SMEs' access to funding by streamlining and digitizing the application process, which would free up their time and resources. Tax simplification: Policymakers should simplify tax regulations and reduce the tax compliance burden

for SMEs. This would facilitate SMEs' understanding and compliance with tax laws. Additionally, policymakers should strive to eliminate tax bribery and corruption.

Political stability: Political stability is an essential component of a prosperous and robust economy, and governments must actively cultivate a climate of predictability and consistency. This atmosphere helps not only the government but also encourages businesses to invest, innovate, and flourish. Businesses benefit from a stable political environment in various ways. First, it boosts confidence. Businesses are more willing to make long-term investments, expand their workforces, and take measured risks when they can adequately foresee the laws and regulations that will affect their operations. As a result of this confidence, the economy expands, more jobs are created, and the government receives more tax income.

Political stability also encourages both domestic and international investment. Investors are more inclined to contribute their cash when they believe their investments will be safeguarded and their returns will be guaranteed, whether they are local business owners or multinational enterprises. The perceived risks of investments are lower in a predictable political environment, which draws in a larger pool of investors.

Informal sector competition: Governments and formal enterprises both face complicated challenges as a result of the rivalry in the informal sector. Governments must act to level the playing field for formal and informal enterprises to promote fair competition and a vibrant economy. This entails upholding labor and tax laws, both of which have broad economic and social ramifications.

Equally essential is enforcing labor laws. Many enterprises in the informal sector disregard labor rules, which causes their employees to work in poor circumstances and receive insufficient benefits. Governments must take action to guarantee fair labor standards for all employees, whether they work in the formal or informal economy. This not only ensures a higher standard of living for employees, but also encourages healthy competition by avoiding abuse and unfair cost advantages that informal enterprises may have owing to noncompliance.

Regulatory streamlining: Regulatory simplification is a critical component in creating a business-friendly climate and promoting economic growth. Policymakers may help ensure that regulations affecting businesses are reviewed and streamlined. By doing so, they can achieve several significant results that benefit both enterprises and the general economy.

The fundamental benefit of regulatory simplification is that it reduces the compliance burden on firms. Regulations that are complex, redundant, or out of date can result in needless paperwork and administrative expenditures for firms. This can be especially difficult for small and medium-sized businesses (SMEs) with limited resources. Policymakers that examine and streamline regulations reduce superfluous red tape, helping businesses to better manage their time, effort, and resources. As a result, entrepreneurship and innovation are encouraged by freeing up resources that can be invested in growth and development.

REFERENCES

Abdo Ahmad, I., & Fakih, A. (2022). Does the legal form matter for firm performance in the MENA region? *Annals of Public and Cooperative Economics*, *93*(1), 205–227. https://doi.org/10.1111/apce.12324

Abisuga-Oyekunle, O. A., Patra, S. K., & Muchie, M. (2020). SMEs in sustainable development: Their role in poverty reduction and employment generation in sub-Saharan Africa. *African Journal of Science, Technology, Innovation and Development*, *12*(4), 405–419.

Agostino, M., Silipo, D. B., & Trivieri, F. (2008). The Effects of Screening and Monitoring on Credit Rationing of SMEs. *Economic Notes*, *37*(2), 155–179. https://doi.org/10.1111/j.1468-0300.2008.00195.x

Alesina, A., & Perotti, R. (1996). Income distribution, political instability, and investment. *European Economic Review*, *40*(6), 1203–1228. https://doi.org/10.1016/0014-2921(95)00030-5

Alinaghi, N., & Reed, W. R. (2021). Taxes and Economic Growth in OECD Countries: A Meta-analysis. *Public Finance Review*, *49*(1), 3–40. https://doi.org/10.1177/1091142120961775

Alm, J., & McClellan, C. (2012). Tax Morale and Tax Compliance from the Firm's Perspective. *Kyklos*, *65*(1), 1–17.

Al-Maskari, A., Al-Maskari, M., Alqanoobi, M., & Kunjumuhammed, S. (2019). Internal and external obstacles facing medium and large enterprises in Rusayl Industrial Estates in the Sultanate of Oman. *Journal of Global Entrepreneurship Research*, *9*(1), 1. https://doi.org/10.1186/s40497-018-0125-3

Anjullo, B. B., & Haile, T. T. (2018). A Bayesian binary logistic regression approach in identifying factors associated with exclusive breastfeeding practices at Arba Minch Town, South Ethiopia. *Advances in Research*, *17*(5), 1–14.

Anzoategui, D., Peria, M. S. M., & Rocha, R. R. (2010). Bank Competition in the Middle East and Northern Africa Region. *Review of Middle East Economics and Finance*, *6*(2), 26–48. https://doi.org/10.2202/1475-3693.1313

Asteriou, D., & Spanos, K. (2019). The relationship between financial development and economic growth during the recent crisis: Evidence from the EU. *Finance Research Letters*, *28*, 238–245. https://doi.org/10.1016/j.frl.2018.05.011

Aterido, R., & Hallward-Driemeier, M. (2010). *The Impact of the Investment Climate on Employment Growth: Does Sub-Saharan Africa Mirror Other Low-Income Regions?* (SSRN Scholarly Paper 1559735). https://papers.ssrn.com/abstract=1559735

Aterido, R., Hallward-Driemeier, M., & Pagés, C. (2011). Big constraints to small firms' growth? Business environment and employment growth across firms. *Economic Development and Cultural Change*, *59*(3), 609–647.

Audretsch, D. B., & Mahmood, T. (1994). Firm selection and industry evolution: The post-entry performance of new firms. *Journal of Evolutionary Economics*, *4*(3), 243–260. https://doi.org/10.1007/BF01236371

Avery, R. B., Bostic, R. W., & Samolyk, K. A. (1998). The role of personal wealth in small business finance. *Journal of Banking & Finance*, *22*(6), 1019–1061. https://doi.org/10.1016/S0378-4266(98)00016-8

Babalola, S. J., & Mohd, S. (2021). Determinants of quality of housing units occupied by households in the public university host communities in Ondo state, Nigeria: An application of partially constrained/generalized ordered logit model. *Environment, Development and Sustainability*, *23*(7), 9898–9926. https://doi.org/10.1007/s10668-020-01039-8

Bahadir, B., & Bahadir, S. C. (2020). Financial Development and Country-Level Advertising Spending: The Moderating Role of Economic Development and National Culture. *Journal of International Marketing*, *28*(3), 3–20. https://doi.org/10.1177/1069031X20936278

Bartolacci, F., Caputo, A., & Soverchia, M. (2020). Sustainability and financial performance of small and medium-sized enterprises: A bibliometric and systematic literature review. *Business Strategy and the Environment*, *29*(3), 1297–1309. https://doi.org/10.1002/bse.2434

Beck, T., & Demirguc-Kunt, A. (2006). Small and medium-size enterprises: Access to finance as a growth constraint. *Journal of Banking & Finance*, *30*(11), 2931–2943. https://doi.org/10.1016/j.jbankfin.2006.05.009

Beck, T., Demirgüç-Kunt, A., Laeven, L., & Maksimovic, V. (2006a). The determinants of financing obstacles. *Journal of International Money and Finance*, *25*(6), 932–952. https://doi.org/10.1016/j.jimonfin.2006.07.005

Beck, T., Demirgüç-Kunt, A., Laeven, L., & Maksimovic, V. (2006b). The determinants of financing obstacles. *Journal of International Money and Finance*, *25*(6), 932–952. https://doi.org/10.1016/j.jimonfin.2006.07.005

Braunerhjelm, P., Eklund, J. E., & Thulin, P. (2021). Taxes, the tax administrative burden, and the entrepreneurial life cycle. *Small Business Economics*, *56*(2), 681–694. https://doi.org/10.1007/s11187-019-00195-0

Brush, C. G., de Bruin, A., & Welter, F. (2009). A gender-aware framework for women's entrepreneurship. *International Journal of Gender and Entrepreneurship*, *1*(1), 8–24. https://doi.org/10.1108/17566260910942318

Budden, P., Murray, F., & Ukuku, O. (2021). *Differentiating Small Enterprises in the Innovation Economy: Start-ups, new SMEs & other Growth Ventures*. MIT Lab for Innovation Science and Policy working paper (Cambridge …. https://innovation.mit.edu/assets/BuddenMurrayUkuku_SME-IDE_WorkingPaper__Jan2021.pdf

Bürkner, P.-C. (2017). *Advanced Bayesian Multilevel Modeling with the R Package brms* (arXiv:1705.11123). arXiv. https://doi.org/10.48550/arXiv.1705.11123

Butler, A. W., & Cornaggia, J. (2007). Does access to finance improve productivity? Evidence from a natural experiment. *Dallas School of Management*.

Cassar, G. (2004). The financing of business start-ups. *Journal of Business Venturing*, *19*(2), 261–283. https://doi.org/10.1016/S0883-9026(03)00029-6

Chandra, A., Paul, J., & Chavan, M. (2020). Internationalization barriers of SMEs from developing countries: A review and research agenda. *International Journal of Entrepreneurial Behavior & Research*, *26*(6), 1281–1310. https://doi.org/10.1108/IJEBR-03-2020-0167

Chavis, L., Klapper, L., & Love, I. (2012). *International differences in entrepreneurial finance*.

Chowdhury, M. A. S., Chuanmin, S., Sokolová, M., Akbar, A., Ali, Z., Ali, H., & Alam, Md. Z. (2022). Assessing the Empirical Linkage Among Access to Finance, Firm Quality, and Firm Performance: New Insight From Bangladeshi SMEs'. *Frontiers in Psychology*, *13*. https://www.frontiersin.org/articles/10.3389/fpsyg.2022.865733

Chowdhury, M. A. S., Chuanmin, S., Sokolová, M., Rahman, A. M., Akbar, A., Ali, Z., & Usman, M. (2021). Unveiling the Nexus between Access to Electricity, Firm Size and SME's Performance in Bangladesh: New Evidence Using PSM. *Energies*, *14*(20), Article 20. https://doi.org/10.3390/en14206493

Cummings, M. E., Rawhouser, H., Vismara, S., & Hamilton, E. L. (2020). An equity crowdfunding research agenda: Evidence from stakeholder participation in the

rulemaking process. *Small Business Economics*, *54*(4), 907–932. https://doi.org/10.1007/s11187-018-00134-5

Dabla-Norris, E., Misch, F., Cleary, D., & Khwaja, M. (2020). The quality of tax administration and firm performance: Evidence from developing countries. *International Tax and Public Finance*, *27*(3), 514–551. https://doi.org/10.1007/s10797-019-09551-y

Das, S., & Rahman, R. M. (2011). Application of ordinal logistic regression analysis in determining risk factors of child malnutrition in Bangladesh. *Nutrition Journal*, *10*(1), 124. https://doi.org/10.1186/1475-2891-10-124

De Prijcker, S., Manigart, S., Collewaert, V., & Vanacker, T. (2019). Relocation to Get Venture Capital: A Resource Dependence Perspective. *Entrepreneurship Theory and Practice*, *43*(4), 697–724. https://doi.org/10.1177/1042258717739003

Demirgüç-Kunt, A., & Maksimovic, V. (1998). Law, Finance, and Firm Growth. *The Journal of Finance*, *53*(6), 2107–2137. https://doi.org/10.1111/0022-1082.00084

Dinh, H. T., Mavridis, D. A., & Nguyen, H. B. (2012). The binding constraint on the growth of firms in developing countries. *Performance of Manufacturing Firms in Africa: An Empirical Analysis*, 87–137.

Endris, E., & Kassegn, A. (2022). The role of micro, small and medium enterprises (MSMEs) to the sustainable development of sub-Saharan Africa and its challenges: A systematic review of evidence from Ethiopia. *Journal of Innovation and Entrepreneurship*, *11*(1), 20. https://doi.org/10.1186/s13731-022-00221-8

Erdin, C., & Ozkaya, G. (2020). Contribution of small and medium enterprises to economic development and quality of life in Turkey. *Heliyon*, *6*(2), e03215. https://doi.org/10.1016/j.heliyon.2020.e03215

Eskandar, H., & Hadadi, H. (2022). Effect of Short-term Financial Constraints on SMEs, Investment Decisions. *Iranian Journal of Finance*, *6*(2), 120–134. https://doi.org/10.30699/ijf.2021.283150.1223

Eunni, R. V., Brush, C. G., & Kasuganti, R. R. (2007). SMEs in emerging markets – an overview. *International Journal of Emerging Markets*, *2*(2). https://doi.org/10.1108/ijoem.2007.30102baa.002

Fama, E. F., & French, K. R. (2002). Testing Trade-offs and Pecking Order Predictions about Dividends and Debt. *The Review of Financial Studies*, *15*(1), 1–33.

Ferrando, A. (2020). *Firms' Expectations on Access to Finance at the Early Stages of the Covid-19 Pandemic* (SSRN Scholarly Paper 3656265). https://doi.org/10.2139/ssrn.3656265

Flaminiano, J. P., & Francisco, J. P. (2021). Firm characteristics and credit constraints among SMEs in the Philippines. *Small Business International Review*, *5*(1), e332.

Foltz, J. D. (2004). Credit market access and profitability in Tunisian agriculture. *Agricultural Economics*, *30*(3), 229–240. https://doi.org/10.1111/j.1574-0862.2004.tb00191.x

Fowowe, B. (2017). Access to finance and firm performance: Evidence from African countries. *Review of Development Finance*, *7*(1), 6–17. https://doi.org/10.1016/j.rdf.2017.01.006

Gherghina, Ștefan C., Botezatu, M. A., Hosszu, A., & Simionescu, L. N. (2020). Small and Medium-Sized Enterprises (SMEs): The Engine of Economic Growth through Investments and Innovation. *Sustainability*, *12*(1), Article 1. https://doi.org/10.3390/su12010347

Goel, R. K., Mazhar, U., & Ram, R. (2022). Informal competition and firm performance: Impacts on input- versus output performance. *Managerial and Decision Economics*, *43*(2), 418–430. https://doi.org/10.1002/mde.3390

Guariglia, A., Liu, X., & Song, L. (2011). Internal finance and growth: Microeconometric evidence on Chinese firms. *Journal of Development Economics*, *96*(1), 79–94. https://doi.org/10.1016/j.jdeveco.2010.07.003

Gunday, G., Ulusoy, G., Kilic, K., & Alpkan, L. (2011). Effects of innovation types on firm performance. *International Journal of Production Economics*, *133*(2), 662–676. https://doi.org/10.1016/j.ijpe.2011.05.014

Gupta, P. D., Guha, S., & Krishnaswami, S. S. (2013). Firm growth and its determinants. *Journal of Innovation and Entrepreneurship*, *2*(1), 15. https://doi.org/10.1186/2192-5372-2-15

Han, Z., Ye, K., & Wang, M. (2023). A Study on the Power Parameter in Power Prior Bayesian Analysis. *The American Statistician*, *77*(1), 12–19. https://doi.org/10.1080/00031305.2022.2046160

Hanaysha, J. R., Al-Shaikh, M. E., Joghee, S., & Alzoubi, H. M. (2022). Impact of Innovation Capabilities on Business Sustainability in Small and Medium Enterprises. *FIIB Business Review*, *11*(1), 67–78. https://doi.org/10.1177/23197145211042232

Hosny, A. (2020). Macro-structural obstacles to firm performance: Evidence from 2,640 firms in Nigeria. *African Finance Journal*, *22*(1), 50–69.

Hosono, K., Hotei, M., & Miyakawa, D. (2023). Causal effects of a tax incentive on SME capital investment. *Small Business Economics*, *61*(2), 539–557. https://doi.org/10.1007/s11187-022-00709-3

Hsieh, C.-T., & Klenow, P. J. (2009). Misallocation and Manufacturing TFP in China and India*. *The Quarterly Journal of Economics*, *124*(4), 1403–1448. https://doi.org/10.1162/qjec.2009.124.4.1403

Hussain, S., Nguyen, V. C., Nguyen, Q. M., Nguyen, H. T., & Nguyen, T. T. (2021). Macroeconomic factors, working capital management, and firm performance—A static and dynamic panel analysis. *Humanities and Social Sciences Communications*, *8*(1), Article 1. https://doi.org/10.1057/s41599-021-00778-x

Ibrahim, M., & Alagidede, P. (2018). Effect of financial development on economic growth in sub-Saharan Africa. *Journal of Policy Modeling*, *40*(6), 1104–1125. https://doi.org/10.1016/j.jpolmod.2018.08.001

Islam, M. Z., & Siengthai, S. (2010). Human resource management practices and firm performance improvement in Dhaka Export Processing Zone (DEPZ). *Research and Practice in Human Resource Management*, *18*(1), 60–77.

Issah, M., & Antwi, S. (2017). Role of macroeconomic variables on firms' performance: Evidence from the UK. *Cogent Economics & Finance*, *5*(1), 1405581. https://doi.org/10.1080/23322039.2017.1405581

Jacobs, M. A., Yu, W., & Chavez, R. (2016). The effect of internal communication and employee satisfaction on supply chain integration. *International Journal of Production Economics*, *171*, 60–70. https://doi.org/10.1016/j.ijpe.2015.10.015

Kausar, A., Shroff, N., & White, H. (2016). Real effects of the audit choice. *Journal of Accounting and Economics*, *62*(1), 157–181. https://doi.org/10.1016/j.jacceco.2015.10.001

Kent Baker, H., Kumar, S., & Rao, P. (2020). Financing preferences and practices of Indian SMEs. *Global Finance Journal*, *43*, 100388. https://doi.org/10.1016/j.gfj.2017.10.003

Klapper, L., Laeven, L., & Rajan, R. (2006). Entry regulation as a barrier to entrepreneurship. *Journal of Financial Economics*, *82*(3), 591–629. https://doi.org/10.1016/j.jfineco.2005.09.006

Krasniqi, B. A. (2010). Are small firms really credit-constrained? Empirical evidence from Kosova. *International Entrepreneurship and Management Journal*, *6*(4), 459–479. https://doi.org/10.1007/s11365-010-0135-2

Kruschke, J. K. (2013). Posterior predictive checks can and should be Bayesian: Comment on Gelman and Shalizi, 'Philosophy and the practice of Bayesian statistics.' *British Journal of Mathematical and Statistical Psychology*, *66*(1), 45–56. https://doi.org/10.1111/j.2044-8317.2012.02063.x

Kuntchev, V., Ramalho, R., Rodriguez-Meza, J., & Yang, J. S. (2013). *What Have We Learned from the Enterprise Surveys Regarding Access to Credit by Smes?* (SSRN Scholarly Paper 2344038). https://papers.ssrn.com/abstract=2344038

Le, T. T., & Ikram, M. (2022). Do sustainability innovation and firm competitiveness help improve firm performance? Evidence from the SME sector in Vietnam. *Sustainable Production and Consumption*, *29*, 588–599. https://doi.org/10.1016/j.spc.2021.11.008

Lee, M. T., & Raschke, R. L. (2016). Understanding employee motivation and organizational performance: Arguments for a set-theoretic approach. *Journal of Innovation & Knowledge*, *1*(3), 162–169. https://doi.org/10.1016/j.jik.2016.01.004

Lee, N. (2014). What holds back high-growth firms? Evidence from UK SMEs. *Small Business Economics*, *43*(1), 183–195. https://doi.org/10.1007/s11187-013-9525-5

Lemmon, M. L., & Zender, J. F. (2010). Debt Capacity and Tests of Capital Structure Theories. *Journal of Financial and Quantitative Analysis*, *45*(5), 1161–1187. https://doi.org/10.1017/S0022109010000499

Levy, B. (1993). Obstacles to Developing Indigenous Small and Medium Enterprises: An Empirical Assessment. *The World Bank Economic Review*, *7*(1), 65–83. https://doi.org/10.1093/wber/7.1.65

Littlewood, D., & Holt, D. (2018). Social Entrepreneurship in South Africa: Exploring the Influence of Environment. *Business & Society*, *57*(3), 525–561. https://doi.org/10.1177/0007650315613293

Liu, P., & Fan, W. (David). (2021). Analysis of head-on crash injury severity using a partial proportional odds model. *Journal of Transportation Safety & Security*, *13*(7), 714–734. https://doi.org/10.1080/19439962.2019.1667933

Lopez-Gracia, J., & Aybar-Arias, C. (2000). An Empirical Approach to the Financial Behaviour of Small and Medium Sized Companies. *Small Business Economics*, *14*(1), 55–63. https://doi.org/10.1023/A:1008139518709

Manzoor, F., Wei, L., & Siraj, M. (2021). Small and medium-sized enterprises and economic growth in Pakistan: An ARDL bounds cointegration approach. *Heliyon*, *7*, e06340. https://doi.org/10.1016/j.heliyon.2021.e06340

Mascarenhas, B., Kumaraswamy, A., Day, D., & Baveja, A. (2002). Five strategies for rapid firm growth and how to implement them. *Managerial and Decision Economics*, *23*(4–5), 317–330. https://doi.org/10.1002/mde.1068

Meng, X., Li, X., Xiao, W., & Li, J. (2021). The differentiated impacts of external and internal financing on export: The firm-level evidence. *International Journal of Emerging Markets*, *18*(4), 769–787. https://doi.org/10.1108/IJOEM-11-2020-1385

Mohammed, I., & Bunyaminu, A. (2021). Major obstacles facing business enterprises in an emerging economy: The case of Ghana using the World Bank Enterprise Survey. *Journal of Small Business and Enterprise Development*, *28*(3), 475–487. https://doi.org/10.1108/JSBED-04-2020-0110

Moscalu, M., Girardone, C., & Calabrese, R. (2020). SMEs' growth under financing constraints and banking markets integration in the euro area. *Journal of Small Business Management*, *58*(4), 707–746. https://doi.org/10.1080/00472778.2019.1668722

Mukherjee, A., Singh, M., & Žaldokas, A. (2017). Do corporate taxes hinder innovation? *Journal of Financial Economics*, *124*(1), 195–221. https://doi.org/10.1016/j.jfineco.2017.01.004

Mutluer Kurul, D., & Tiryaki, S. T. (2016). How credit-constrained are firms in Turkey? A survey-based analysis. *Applied Economics Letters*, *23*(6), 420–423.

Nam, C. W., & Radulescu, D. M. (2007). Effects of Corporate Tax Reforms on SMEs' Investment Decisions under the Particular Consideration of Inflation. *Small Business Economics*, *29*(1), 101–118. https://doi.org/10.1007/s11187-006-0003-1

Nartey, E. (2023). Tax compliance of small and medium-sized enterprises in Ghana. *International Journal of Sociology and Social Policy*, *ahead-of-print*(ahead-of-print). https://doi.org/10.1108/IJSSP-06-2022-0159

Navandar, Y. V., Singh, M., Dhamaniya, A., & Patel, D. A. (2020). Empirical analysis of the level of service at toll plaza by using ordered probit model.

Transportation Letters, *12*(10), 692–700. https://doi.org/10.1080/19427867.2019.1694201

Ndiaye, N., Abdul Razak, L., Nagayev, R., & Ng, A. (2018). Demystifying small and medium enterprises (SMEs) performance in emerging and developing economies. *Borsa Istanbul Review*, *18*(4), 269–281. https://doi.org/10.1016/j.bir.2018.04.003

Nguyen, B., & Canh, N. P. (2021). Formal and informal financing decisions of small businesses. *Small Business Economics*, *57*(3), 1545–1567. https://doi.org/10.1007/s11187-020-00361-9

Nizaeva, M., & Coskun, A. (2019). Investigating the Relationship Between Financial Constraint and Growth of SMEs in South Eastern Europe. *SAGE Open*, *9*(3), 2158244019876269. https://doi.org/10.1177/2158244019876269

Nursini, N. (2020). Micro, small, and medium enterprises (MSMEs) and poverty reduction: Empirical evidence from Indonesia. *Development Studies Research*, *7*(1), 153–166. https://doi.org/10.1080/21665095.2020.1823238

Nyikos, G., Béres, A., & Laposa, T. (2020). Micro-economic effects of public funds on enterprises in Hungary. *Regional Studies, Regional Science*, *7*(1), 346–361. https://doi.org/10.1080/21681376.2020.1805351

Oanh, T. T. K., Diep, N. V., Truyen, P. T., & Chau, N. X. B. (2022). The Impact of Public Expenditure on Economic Growth of Provinces and Cities in the Southern Key Economic Zone of Vietnam: Bayesian Approach. In N. Ngoc Thach, D. T. Ha, N. D. Trung, & V. Kreinovich (Eds.), *Prediction and Causality in Econometrics and Related Topics* (pp. 328–344). Springer International Publishing. https://doi.org/10.1007/978-3-030-77094-5_26

Ogunyomi, P., & Bruning, N. S. (2016). Human resource management and organizational performance of small and medium enterprises (SMEs) in Nigeria. *The International Journal of Human Resource Management*, *27*(6), 612–634. https://doi.org/10.1080/09585192.2015.1033640

Öhman, P., & Yazdanfar, D. (2017). Short- and long-term debt determinants in Swedish SMEs. *Review of Accounting and Finance*, *16*(1), 106–124. https://doi.org/10.1108/RAF-08-2015-0118

Oyelana, A. A., & Adu, E. O. (2015). Small and medium enterprises (SMEs) as a means of creating employment and poverty reduction in Fort Beaufort, Eastern Cape Province of South Africa. *Journal of Social Sciences*, *45*(1), 8–15.

Ozili, P. K. (2022). Circular Economy and Central Bank Digital Currency. *Circular Economy and Sustainability*, *2*(4), 1501–1516. https://doi.org/10.1007/s43615-022-00170-0

Parida, P. C., & Pradhan, K. C. (2022). Explaining the demand for credit by micro, small, and medium enterprises in India. *Journal of Public Affairs*, *22*(2), e2437. https://doi.org/10.1002/pa.2437

Pelizzo, R., Araral, E., Pak, A., & Xun, W. (2016). Determinants of Bribery: Theory and Evidence from Sub-Saharan Africa. *African Development Review*, *28*(2), 229–240. https://doi.org/10.1111/1467-8268.12192

Pissarides, F. (1999). Is lack of funds the main obstacle to growth? Ebrd's experience with small- and medium-sized businesses in central and eastern Europe. *Journal of Business Venturing*, *14*(5), 519–539. https://doi.org/10.1016/S0883-9026(98)00027-5

Pissarides, F., Singer, M., & Svejnar, J. (2003). Objectives and constraints of entrepreneurs: Evidence from small and medium-sized enterprises in Russia and Bulgaria. *Journal of Comparative Economics*, *31*(3), 503–531. https://doi.org/10.1016/S0147-5967(03)00054-4

Porter, M. E. (1996). *What is strategy?*

Quartey, P., Turkson, E., Abor, J. Y., & Iddrisu, A. M. (2017). Financing the growth of SMEs in Africa: What are the contraints to SME financing within ECOWAS? *Review of Development Finance*, *7*(1), 18–28. https://doi.org/10.1016/j.rdf.2017.03.001

Radicic, D. (2021). Financial and Non-Financial Barriers to Innovation and the Degree of Radicalness. *Sustainability*, *13*(4), Article 4. https://doi.org/10.3390/su13042179

Richter, A., & Schaffer, M. (1996). The performance of de novo private firms in Russian manufacturing. *Enterprise Restructuring and Economic Policy in Russia*, 253–274.

Robu, M. (2013). The dynamic and importance of SMEs in the economy. *The USV Annals of Economics and Public Administration*, *13*(1 (17)), 84–89.

Roman, T., Marcu, N., Rusu, V. D., Doacă, E. M., & Siriteanu, A. A. (2023). Tax Payment and the Performance of SMEs: A Longitudinal Analysis on EU Countries. *Sustainability*, *15*(2), Article 2. https://doi.org/10.3390/su15020927

Rosenbusch, N., Brinckmann, J., & Müller, V. (2013). Does acquiring venture capital pay off for the funded firms? A meta-analysis on the relationship between venture capital investment and funded firm financial performance. *Journal of Business Venturing*, *28*(3), 335–353. https://doi.org/10.1016/j.jbusvent.2012.04.002

Sánchez Lissen, R., & Sanz Díaz, M. T. (2020). *The journal Moneda y Crédito as a vehicle spreading the social market economy in Spain (1943-1966)*. https://doi.org/10.33231/j.ihe.2020.04.005

Savlovschi, L. I., & Robu, N. R. (2011). The role of SMEs in modern economy. *Economia, Seria Management*, *14*(1), 277–281.

Segerson, K., & Squires, D. (1993). Capacity Utilization Under Regulatory Constraints. *The Review of Economics and Statistics*, *75*(1), 76–85. https://doi.org/10.2307/2109628

Siepel, J., Camerani, R., & Masucci, M. (2021). Skills combinations and firm performance. *Small Business Economics*, *56*(4), 1425–1447. https://doi.org/10.1007/s11187-019-00249-3

Starr, J. A., & MacMillan, I. C. (1990). Resource Cooptation Via Social Contracting: Resource Acquisition Strategies for New Ventures. *Strategic Management Journal*, *11*, 79–92.

Thach, N. N. (2021). How Values Influence Economic Progress? Evidence from South and Southeast Asian Countries. In N. Ngoc Thach, V. Kreinovich, & N. D. Trung (Eds.), *Data Science for Financial Econometrics* (pp. 207–221). Springer International Publishing. https://doi.org/10.1007/978-3-030-48853-6_15

Troilo, M. (2011). Legal institutions and high-growth aspiration entrepreneurship. *Economic Systems*, *35*(2), 158–175. https://doi.org/10.1016/j.ecosys.2010.08.001

van de Schoot, R., Kaplan, D., Denissen, J., Asendorpf, J. B., Neyer, F. J., & van Aken, M. A. G. (2014). A Gentle Introduction to Bayesian Analysis: Applications to Developmental Research. *Child Development*, *85*(3), 842–860. https://doi.org/10.1111/cdev.12169

Vehtari, A., Gelman, A., Simpson, D., Carpenter, B., & Bürkner, P.-C. (2021). Rank-Normalization, Folding, and Localization: An Improved R^ for Assessing Convergence of MCMC (with Discussion). *Bayesian Analysis*, *16*(2), 667–718. https://doi.org/10.1214/20-BA1221

Wang, C., Zhao, S., Zheng, H., & Bai, Y. (2022). Does Financial Constraint Hinder Firm Growth? *Emerging Markets Finance and Trade*, *58*(15), 4195–4206. https://doi.org/10.1080/1540496X.2022.2069490

Wang, Y. (2016). What are the biggest obstacles to growth of SMEs in developing countries? – An empirical evidence from an enterprise survey. *Borsa Istanbul Review*, *16*(3), 167–176. https://doi.org/10.1016/j.bir.2016.06.001

Wellalage, N., & Locke, S. (2017). Access to credit by SMEs in South Asia: Do women entrepreneurs face discrimination. *Research in International Business and Finance*, *41*, 336–346. https://doi.org/10.1016/j.ribaf.2017.04.053

Wieczorek-Kosmala, M., Błach, J., & Trzęsiok, J. (2020). Comparative study of the relevance of equity financing in European SMEs. *Journal of Business Economics and Management*, *21*(6), Article 6. https://doi.org/10.3846/jbem.2020.13426

Williams, R. (2006). Generalized Ordered Logit/Partial Proportional Odds Models for Ordinal Dependent Variables. *The Stata Journal*, *6*(1), 58–82. https://doi.org/10.1177/1536867X0600600104

Wu, D., & Wu, Z. (2021). Firm performance, government regulation, and managerial effort: Evidence from China. *Strategic Change*, *30*(6), 527–537. https://doi.org/10.1002/jsc.2468

Yazdanfar, D., & Öhman, P. (2018). Growth and job creation at the firm level: Swedish SME data. *Management Research Review*.

Yin, Q. (2012). *A study on the dilemma of China's small business finance* [PhD Thesis]. Doctoral Dissertation. Southwestern University of Finance and Economics.

Yoshino, N., & Taghizadeh Hesary, F. (2016). *Major Challenges Facing Small and Medium-Sized Enterprises in Asia and Solutions for Mitigating Them* (SSRN Scholarly Paper 2766242). https://doi.org/10.2139/ssrn.2766242

Zambaldi, F., Aranha, F., Lopes, H., & Politi, R. (2011). Credit granting to small firms: A Brazilian case. *Journal of Business Research*, *64*(3), 309–315. https://doi.org/10.1016/j.jbusres.2009.11.018

Zhang, D. (2022). Capacity utilization under credit constraints: A firm-level study of Latin American manufacturing. *International Journal of Finance & Economics*, *27*(1), 1367–1386. https://doi.org/10.1002/ijfe.2220

Zhang, D., & Sogn-Grundvåg, G. (2022). Credit constraints and the severity of COVID-19 impact: Empirical evidence from enterprise surveys. *Economic Analysis and Policy*, *74*, 337–349. https://doi.org/10.1016/j.eap.2022.03.005

CURRICULUM VITAE

Personal Information:

Name: Arab Dahir Hassan
E-mail (1):
E-mail (2):

Education:

2010-2014 BA in Economics, Amoud University, Somalia.
2016-2019 MA in International Trade, Sakarya University,Türkiye.
2019-2023 PhD in Economics, Ibn Haldun University, Türkiye.

Experience

2015-2016 Research Assistant at Admas University, Somalia.
2019-2023 Teaching Assistant at Ibn Haldun University, Türkiye.