Essays on Capital Account Liberalization, Growth and International Trade

By

Seun Emmanuel Fabiyi

A Dissertation Submitted in Partial Fulfillment of the Requirement for the Degree of Doctor of Philosophy in Economics

Middle Tennessee State University

August, 2024

Dissertation Committee:

Dr. Wisarut Suwanprasert, Chair

Dr. Bichaka Fayissa

Dr. Aaron Gamino

DEDICATION

This work is dedicated to the Lord Jesus for His faithfulness and kindness over me and my family. To my dear wife, Bukola Fabiyi, and my precious children, Oreofe, Adeife, and Emmanuel, for their understanding and support during this faith journey. I love you all dearly.

ACKNOWLEDGEMENTS

Let me start by acknowledging the goodness of my father and king for His plan and purpose for my life, who supernaturally orchestrated this program and completed it. To God be the glory.

I am deeply indebted to all those who have stood by me with unwavering support throughout this remarkable journey. Your encouragement, guidance, and support have inspired me constantly. I want to thank my family and friends, who have been pillars of strength during every step of this incredible endeavor.

I am incredibly grateful to my dissertation chair, Dr. Wisarut Suwanprasert, for his advice and mentorship while authoring this dissertation. I also thank my dissertation committee, Dr. Bichaka Fayissa, and Dr. Aaron Gamino, for their insight and contributions. My sincere appreciation also goes to the esteemed faculty and staff of the Department of Economics and Finance at MTSU, particularly Dr. Stuart Fowler and Dr. Adam Rennhoff, for their mentorship and contributions to my academic pursuits.

I thank the following families for the strategic role played in this milestone achievement: My uncle Dr. Moses Adeyanju, Daddy and Mummy Akindoyin (UK), Mr. & Mrs. Alatiba (UK), Mr. & Mrs. Sesin, Pastors Mo & Nikki with my entire H3 Church family.

Finally, my dear family: my lovely wife Bukola, who ensured I stayed healthy and focused throughout, and to our beloved children: Oreofe, Adeife, and Emmanuel. I owe all to you guys for sacrificing all for me through the journey.

ABSTRACT

This dissertation comprises three papers on the impact of capital account liberalization on the economy from three perspectives: consumption growth, firm performance, and the export industry. It employs instrument variable (IV) models to mitigate potential endogeneity biases. Though acquiring a valid instrument for this purpose can be challenging and time-consuming, it consistently conducts endogeneity tests and overidentification restriction tests to ensure the validity and appropriateness of the instruments.

Chapter 1 focuses on the extent to which a country with larger trade openness benefits from capital account liberalization. It explores the impact of capital account liberalization associated with trade openness on consumption growth. It uses panel data from 141 countries between 1970 and 2019 to explore the impact of capital account liberalization associated with trade openness on consumption growth. Findings show that a country with larger trade openness experienced smaller consumption growth after capital account liberalization. It underscores the importance of liberalizing capital accounts within each country's economic framework and trade openness level.

Chapter 2 examines how firms in liberalized countries benefit from capital account liberalization. Using a large dataset covering 106 countries from 1980 to 2019, it investigates the effect of capital account liberalization on firm performance. The results show that firms' performance improved after capital account liberalization, characterized by grown profitability and reduced leverage. It shows the significance of the well-developed financial markets of liberalized countries for firms' performance. It highlights the need for domestic economic development, especially for low-income countries, to strengthen the effects of capital liberalization on firm performance.

Chapter 3 investigates the influence of capital account liberalization on firms' decisions to enter the export market (extensive margin) and the volume of exports (intensive margin). Substantial initial investments and fixed operational costs often hinder entry into ex-

port markets, compounded by financial constraints. This chapter uses a sizeable firm-level dataset from 2006 to 2023 across 169 countries. It uses advanced econometric models to address endogeneity concerns, including the IV-Probit and IV-2SLS models. The findings show that capital account liberalization significantly enhances firms' likelihood of engaging in export activities, particularly for foreign-owned entities. It also identifies a positive correlation between capital account liberalization and the intensive margin of trade, particularly among firms reliant on external capital for asset financing. It underscores the potential of capital account liberalization to incentivize market penetration and alleviate financial constraints inhibiting firms' participation in international trade.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

Chapter 1

Capital Account Liberalization, Trade Openness, and Consumption Growth

To what extent does capital account liberalization benefit a country with larger trade openness? This chapter explores the impact of capital account liberalization associated with trade openness on consumption growth. Using panel data from 141 countries between 1970 and 2019, it explores the impact of capital account liberalization associated with trade openness on consumption growth. The chapter uses an instrument variable two-stage least squares (IV-2SLS) approach to address potential endogeneity. Findings show that a country with larger trade openness experienced smaller consumption growth after capital account liberalization. It underscores the importance of liberalizing capital accounts within each country's economic framework and trade openness level.

1.1 Introduction

Financial development and trade integration continue to attract the attention of governments, policymakers, and academic scholars as drivers of economic growth. Many countries, particularly emerging and developing countries, have embraced capital account liber-

alization and trade openness reforms to enhance growth and development. While there is a consensus on the benefits of trade openness, the economic benefits of capital liberalization remain debated among scholars. This paper seeks to investigate the extent to which countries with high levels of trade openness can benefit from capital account liberalization, focusing on its impact on consumption growth.

This paper investigates the effect of capital account liberalization associated with trade openness on consumption growth. Capital account liberalization is a policy that removes constraints on cross-border capital flows. This policy is claimed to enhance economic efficiency, attract foreign investment, and improve credit availability (Bekeart et al., 2003). Trade openness measures market access for goods, services, and capital, potentially enhancing consumption growth through increased competition and innovation. It also aids in stabilizing income and consumption patterns by diversifying economic activities. However, trade openness exposes countries to external financial shocks, which could disrupt consumption patterns and overall economic stability. Studies have shown that trade openness and capital account liberalization enhance economic growth (Bekaert et al., 2005; Bekaert & Harvey, 2000; Aizenman & Noy, 2009; Quinn & Toyoda, 2008). However, their impacts vary significantly across different countries because of differences in the level of development, economic structures, and institutional frameworks.

The study uses (unbalanced) panel data extracted from the World Development Indicators, a World Bank database comprising 141 countries from 1970 to 2019. The study focuses on consumption growth to measure the policy's impact on consumers' welfare and living standards. It analyzes the data using the instrument variable two-stage least square (IV-2SLS) approach. This approach helps to address the endogeneity problem since consumption patterns can predict an economy's level of trade openness. The method helps to mitigate biases in the estimation process and produces better results. While obtaining suitable instruments for IV analysis can pose challenges, this paper adheres to the established

literature in identifying and selecting instruments. The paper chooses four instruments: the second-order lag of capital account liberalization, the binary indicator of being land-locked as a proxy for access to a seaport, the interaction between these two variables, and gross fixed capital formation (GFCF). The tests for endogeneity and overidentification are performed to affirm their validity and relevance.

The findings show that the effect of capital account liberalization associated with trade openness dampens consumption growth. It shows that a country with larger trade openness received smaller consumption growth after capital account liberalization. One explanation of this finding is the external competitive effect domestic firms face because of capital liberalization. Such an effect could result in lower wages and diminished consumer purchasing power. Also, when capital inflow to a country is directed towards specific sectors of the economy while others are neglected, it may lead to income inequalities, concentrating wealth in fewer hands and lowering overall consumption growth. The marginal effects emphasize the total effect of capital account liberalization on consumption growth across different levels of trade openness in the dataset. The result shows that a one-unit increase in the capital account liberalization index (KA_Open), which represents a shift in a country's policy towards greater openness, reduces consumption growth by 0.367%. This change in KA_Open indicates various policy implementations aimed at increasing capital account openness rather than an immediate transition from completely closed to open completely.

Across different regions, the evidence shows that the effects vary geographically. The effects are significant for the African, Asia Pacific, Middle Eastern regions and emerging markets. The findings show that the larger trade openness of countries in these regions has a detrimental effect on consumption growth after liberalizing their capital accounts. The paper also investigates the effect of capital account liberalization on consumption growth linked to a country's level of import and export. While no significant effect is found, the margin effect provides a better insight, showing that capital account liberalization's nega-

tive effect on consumption growth could be severe for economies reliant on imports. The findings underscore the role of GDP per capita growth in shaping consumption growth. They show the need for economic development as a fundamental condition for capital account liberalization, consistent with the existing literature. The paper contributes to the existing literature on international finance, trade, and economic growth by empirically investigating the relationship between capital account liberalization, trade openness, and consumption growth. The paper acknowledges and addresses potential endogeneity issues inherent in the simultaneous relationship between capital liberalization, trade openness, and consumption growth.

It highlights the importance of a careful and balanced approach in policy formulation. Policymakers should consider a gradual capital account liberalization that matches their level of trade openness (Basu & Morey, 2005). The results highlight countries' need to strengthen their domestic economies before integrating with global markets (Stiglitz, 2000; Aizenman & Noy, 2009).

The paper signals to import-reliant countries on the policy implication of larger import on consumption growth after CAL. Import-reliant countries, especially developing countries, must consider the benefits and costs of capital liberalization with larger trade openness on consumption growth and its effect on household living standards.

It should be noted that prior researchers have also examined similar topics. Aizenman and Noy (2009) explored how financial and trade openness is determined within countries, finding a positive relationship between the two and discussing possible implications for future trade policies. Law (2009) investigated the effects of trade openness and capital flows on financial development in developing countries, showing that these factors are significant drivers of financial progress. This study builds on these findings by examining how the nexus between financial and trade openness affects household welfare through consumption growth.

Scholars have examined the effect of financial liberalization on consumption risk sharing (Bekaert et al., 2006; Islamaj, 2009). Islamaj (2009) affirms that consumption risk-sharing is contingent upon barriers to trade in foreign capital. Bekaert et al. (2006) findings suggest that financial liberalization, specifically in equity markets and capital accounts, correlates with reduced volatility in consumption growth. The paper diverges from prior studies by investigating how capital account liberalization associated with trade openness influences consumption growth. Its findings contribute to the existing literature by providing evidence that capital liberalization can enhance consumption risk-sharing, but this benefit depends on the level of trade openness.

The remaining parts of this paper take the following sequence. Section 1.2 discusses the literature review. Section 1.3 presents the methodology adopted and the model specification. Section 1.4 describes the data used for the analysis. Section 1.5 presents the empirical results. Section 1.6 presents the robustness checks. Section 1.7 concludes.

1.2 Literature Review

This section discusses an overview of capital account liberalization. It later explores empirical literature on capital account liberalization, trade openness, and consumption. Both capital account liberalization and trade openness are strategies adopted by many countries, especially developing and emerging markets, to drive economic growth.

1.2.1 Overview of capital account liberalization

Capital account liberalization can be traced back to 1958 when full current account liberalization was achieved among advanced countries to strengthen post-World War II trade. Before the 1980s, many countries viewed capital restrictions as a standard component of economic policy. However, Mckinnon and Shaw 1973 advocated for easing financial re-

pression policies and allowing market forces to allocate and redistribute scarce financial resources.

Capital account liberalization is a significant turn in a country's economic policy, eliminating restrictions on international capital flows. The primary aim is to foster integration into the global financial system and to attract investment. However, such policies' motives, implementations, and impacts vary significantly between advanced and developing countries.

In advanced economies, the aim is to enhance capital market efficiency, attract foreign investment, and deepen global financial integration. Advanced countries often implement capital liberalization to strengthen their already robust financial systems. France in 1962 and Japan in 1979 were characterized by a gradual approach to liberalization, combined with domestic and external reforms to protect exchange rates and maintain monetary stability (Bakker & Chapple, 2002). In contrast, the United Kingdom (U.K.) led rapid liberalization starting in 1979, which, while hastening integration, also led to transitional challenges like industrial unrest, asset price bubbles, and exchange rate volatility. Countries that embraced a floating exchange rate regime during their liberalization processes, such as the U.K., Australia, and New Zealand, experienced fewer financial sector disturbances than those with fixed regimes, such as Finland, Norway, and Sweden.

On the other hand, developing countries engage in capital account liberalization primarily to attract foreign direct investment (FDI) to accelerate economic growth, infrastructural development, and technological advancement. These countries generally prefer long-term investments like FDI over volatile short-term capital flows. A gradual liberalization strategy is favored among developing countries, starting with liberalizing FDI inflows while imposing restrictions on specific economic sectors. For instance, China, India, Indonesia, Mexico, Thailand, and South Africa have all adopted this path toward liberalization. Meanwhile, Brazil, Malaysia, and Thailand have implemented policies to deter short-term

inflows (Bakker & Chapple, 2003; Evens & Quirk, 1995). This approach shows a general strategy to mitigate the risks of unexpected capital flight and financial volatility.

For countries to successfully transition to capital account liberalization, initial domestic financial market reforms and well-established prudential supervision are recommended. These preconditions ensure that domestic interest rates can be critical in managing capital flows and safeguarding economic stability (Evens & Quirk, 1995; Schneider, 2001). Since liberalization is a government initiative, the process and methods of liberalization vary over time and across countries. Because of its complexity, it should not be considered a single and one-off event, as different countries have relaxed their market differently (Bekaert et al., 2003; Edison & Warnock, 2001).

Economic literature measures capital account liberalization by de facto and de jure metrics (Ranciere et al., 2006). The de jure metrics focus on the methodologies and frameworks of the International Monetary Fund's Annual Report on Exchange Arrangements and Exchange Restrictions (AREAER). A notable index for de jure liberalization, known as the KAOPEN index, was developed by Menzie Chinn and Hiro Ito in 2006. Conversely, de facto measures are determined through price differences, which assess interest rate parity or international price arbitrage. It captures variations in portfolio flows, banking flows, and foreign direct investments (FDI), highlighting the real-time movement of international capital.

The terms "capital account liberalization" and "equity market liberalization" have often been used interchangeably to refer to the broader concept of financial liberalization (Bekaert et al., 2003, 2006; Manova, 2008; Henry, 2000; Chinn & Ito, 2006; Chen & Nugent, 2019). Many studies have explored the effects of financial liberalization on emerging and developing economies, uncovering a range of outcomes (Henry, 2000; Edwards & Wijnbergen, 1986; Galindo, 2005). The findings on the impacts of financial liberalization have been contrasted, which can be partly explained by the different methodologies used

in measuring liberalization (Bekaert et al., 2006).

While capital account liberalization can benefit countries, there is no optimal level of capital account liberalization; instead, certain conditions must be fulfilled before a country can optimize its benefits. Studies, however, have shown that the positive impacts of capital account liberalization depend on certain conditions, such as strong governance and the development of robust institutions. For instance, Prasad and Rajan (2008) suggest that threshold levels of institutional development must be met for the benefits of capital account liberalization to exceed its costs. Therefore, countries should strengthen their institutions and governance frameworks to maximize the potential benefits of capital account liberalization.

Several scholars have studied the effect of capital account liberalization on various economic aspects like investment, employment, banking, and trade balances, all contributing to economic growth (Fuchs-Schundeln & Funke, 2003; Manova, 2008; Sun et al., 2013). Despite consumption's significance as a crucial measure of economic growth and individual well-being, limited studies have shown its relationship with capital account liberalization. This paper aims to bridge this gap by focusing on the effect of capital account liberalization on consumption growth.

1.2.2 Empirical literature on capital account liberalization, trade openness and consumption growth

Since its inception, financial liberalization has sparked an extensive debate among international economics and finance scholars. The theoretical viewpoints offer varying conclusions on the benefits of opening capital flows, and empirical studies have yet to produce clear-cut outcomes (Eichengreen, 2001); however, a significant portion of the scholarly work leans towards supporting liberalization. Many developing countries have pursued financial liberalization by opening their stock markets to foreign investors to counter finan-

cial repression.

Empirical findings have linked financial liberalization to significant economic benefits, such as reduced capital costs, alleviated financial constraints, enhanced innovation (Manova, 2008; Bekaert & Harvey, 2000; Henry, 2003; Moshirian et al., 2020), and improved investment fund allocation efficiency (Galindo et al., 2007). Studies, such as those by Henry (2003) and Bekaert (2003), have highlighted the profound impacts of market liberalization in emerging economies, observing significant capital inflows and positive spillover effects on the real sector. This increased access to external finance has been linked to enhanced export performance and industrial trade (Manova, 2008; Defever & Suedekum, 2014). Bekaert et al. (2005) further show that, on average, equity market liberalizations lead to a 1% increase in annual real economic growth, while Quinn and Toyoda (2008) support the claim that capital account liberalization fosters growth across both developed and emerging markets without finding substantial impacts from interactions between capital account liberalization and other variables in finance and political economy.

However, the opposition has argued that it leads to increased economic instability and crises (Stiglitz, 2004) and could impair income inequality (Das & Mohapatra, 2003). Proponents like Ranciere et al. (2006) and Tornell et al. (2004) counter that, despite these risks, the growth benefits and easing of financial constraints outweigh the disadvantages, suggesting that the merits of liberalization hinge on careful regulatory implementation to mitigate inherent risks.

Several studies have examined the effects of trade and capital market liberalization on economies, showing their impacts on welfare, growth volatility, and financial development. Edwards and Wijnbergen (1986) argue that liberalizing the capital account with trade distortions can harm welfare, advocating for gradual trade liberalization. Conversely, Bekaert et al. (2006) and Islamaj (2009) suggest that financial liberalization is linked to lower consumption growth volatility and that barriers to trade in foreign capital influence con-

sumption risk-sharing. Ahmed and Suardi (2009) show that trade liberalization increases Africa's output and consumption growth volatility. Aizenman and Noy (2009) explore the feedback between financial and trade openness, finding that increased trade openness leads to greater financial openness, which can influence future trade policies. Law (2009) demonstrates that trade openness and capital flows significantly contribute to financial development in developing countries, with concurrent openness in trade and capital accounts positively affecting financial development.

Trade openness generally benefits countries by enhancing consumers' welfare by providing access to various products. However, it exposes countries to external financial shocks that may impact their economic stability. However, the extent of welfare benefits varies and largely depends on the share of new imported goods in total consumption (Arkolakis et al., 2008). Still, scholars have shown that developed economies benefit more from trade openness because of productivity growth rather than investment growth (Dowrick, 2004; Anderson & Babula, 2008). Yanikkaya (2003) suggests that trade barriers can positively and significantly impact growth, especially for developing countries. These illustrate the dynamic nature of trade openness and its varied effects on growth depending on a country's development level and economic structure.

The relationship between liberalization and macroeconomic development has been investigated with varying findings. Fuchs-Schundeln and Funke (2003) observed that liberalization correlates with a significant short-term increase in real private investment and GDP per capita growth while noting a sustained growth effect in a larger sample. Arespa (2015) highlighted the role of financial integration and trade openness in reducing macroeconomic volatilities influenced by innovation shocks and the degree of trade openness. Ma et al. (2021) presented a model showing that trade and financial openness impact macroeconomic volatility based on shocks, suggesting that a combination of moderate trade and high financial openness optimizes welfare. Conversely, Naceur et al. (2008) found that,

while stock market liberalization in the MENA region has a negative short-term impact on market development, it yields positive long-term effects, advocating for domestic financial reforms before liberalizing the stock market. These studies collectively illuminate the compound impacts of liberalization on macroeconomic indicators, underlining the importance of contextual factors and integration degrees in achieving optimal outcomes.

Quinn and Inclan (1997) explore the political factors determining financial openness, emphasizing the significant yet complex impact of political partisanship and the influence of institutional and political economy variations on international financial regulation. They argue that financial openness allows low-saving countries to access international capital at competitive rates, although at the potential cost of macroeconomic policy autonomy. Brune et al. (2001) further explore national governments' capital account policy choices, finding that countries with fixed exchange rates and less developed economies maintain closed capital accounts. However, integration into the global economy, government spending in developed countries, and democratic governance, particularly in developing countries, are associated with capital account liberalization, suggesting a complex interplay among political, economic, and institutional factors in shaping financial openness policies.

Capital account liberalization and trade openness offer potential benefits to the countries implementing the policies. However, there are caveats to these. For instance, prior financial crises in Asia regions in the 1970s have been associated with the country's ill-effectiveness in financial liberalization. As previously highlighted, these policies carry risks that should be carefully evaluated, such as increased vulnerability to external shocks and risks associated with weak institutions before implementation. The risk associated with liberalization may be too costly when a country has weak institutions and a less efficient financial system. Therefore, policymakers should carefully consider these costs and potential benefits when formulating economic strategies.

1.3 Methodology

This section explains the research method and model specification used in the paper to estimate the impact of capital account liberalization linked with trade openness on consumption growth. It uses panel data to analyze the effect. To accommodate the potential lag in the change of consumption growth to other variables, the model plans a dynamic equation for consumption growth, incorporating the lag of the independent variables.

The empirical model detailed below is estimated using the instrumental variable two-stage least squares (IV-2SLS) method.

$$c_{it} = \alpha_1 KA\_Open_{it-1} + \alpha_2 Trade_{it-1} + \theta\{KA\_Open_{it-1} \times Trade_{it-1}\} + v_1 X_{it} + \Gamma_t + \varepsilon_{it}, \qquad (1.1)$$

where c_{it} is current consumption growth, KA_Open_{it-1} is an index proxied for lagged level of capital account liberalization, $Trade_{it-1}$ is lagged trade openness measured as the ratio of the sum of exports and imports in its GDP and X_{it} is a vector control variable in the model which include GDP per capita growth, population growth, inflation, unemployment, and market capitalization. Γ_t captures the unobserved heterogeneity time-specific effects. The primary variable of interest is the parameter θ which is the coefficient of the interaction of capital account liberalization and trade openness.

The model incorporates macroeconomic variables to adjust for potential confounding factors. GDP per capita growth is a crucial measure of living standards, directly influencing household consumption. Population growth is another critical factor, as it affects consumption patterns by increasing the demand for goods and services in line with population expansion. The inflation and unemployment rates are included because of their potential impact on household spending decisions. Household consumption is likely to decrease as inflation and unemployment rise. Their lags are used as control variables to mitigate the potential endogeneity concerns with inflation and unemployment.

Rajan and Zin-gales (2003) interest group theory underscores the importance of finan-

cial development for both financial and trade openness. The paper includes market capitalization as a proxy for financial development. It helps to isolate the effect of financial development on consumption growth. It also integrates time-specific fixed effects within the model to manage the unobserved heterogeneity inherent in the analysis. However, it excludes country-specific effects because of multicollinearity. This strategy aims to mitigate potential biases from unobservable factors, reinforcing the robustness of the Instrumental Variable Two-Stage Least Squares (IV-2SLS) estimator.

Common to empirical studies in trade and finance literature is the problem of endogeneity, and this paper is no different. This paper posits that trade openness is an endogenous variable relative to consumption growth, arguing that consumption patterns predict an economy's level of trade openness. For instance, while trade openness can improve consumption growth by providing access to various products, a higher consumption growth can lead to an increase in foreign goods and services, prompting a country to relax its trade barriers and become open to trade. This relation produces a simultaneity issue, resulting in an endogeneity problem. The model assumes that capital account liberalization influences consumption only through its impact on trade openness, categorizing it as an exogenous factor.

The paper uses instrumental variables to address concerns about endogeneity in the model: the second lag of capital account liberalization, a binary indicator for landlocked status, the interaction between these two variables, and Gross Fixed Capital Formation (GFCF). The instruments are considered under the relevance and exogeneity conditions of instrumental variables. The second lag of CAL has a direct correlation with the first lag of CAL but is unlikely to directly impact current consumption growth (Grilli & Milesi-Ferretti, 1995). Similarly, landlock status is directly correlated with trade openness. Geographic characteristics such as this significantly influence a country's trade pattern. While landlocked status affects trade openness because of higher transportation costs and logistic

barriers, it does not directly influence consumption growth (Gallup et al., 1999). The interaction of the second lag of CAL and landlocked status creates a new variable related to trade openness and CAL. This variable does not correlate with the error terms. Empirical papers have evidenced the significance of GFCF on trade openness (Fetahi-Vehapi et al., 2015; Osei et al., 2019). Incorporating control variables for income and unemployment helps to address potential direct channels through which GFCF could influence consumption.

Empirical validation was also conducted by performing endogeneity and overidentification tests to confirm the validity and suitability of the instruments. However, the overidentification test is not available for clustered standard errors. The outcomes of these tests affirm the relevance and validity of the instruments for the model. (Appendix A, Table 1.7 for details on these tests).

1.3.1 Model Identification Problems

The model specification examining the effect of capital account liberalization on consumption growth undergoes econometric analyses to mitigate potential data availability issues, ensuring unbiased model estimation. The initial diagnostic entails assessing the suitability of annual frequency data for estimation. Since annual frequency data are susceptible to seasonal or trend effects, they may exhibit unit roots or non-stationarity, potentially introducing bias into the estimation outcomes. Fisher-type tests were used to assess each variable within the dataset to mitigate potential biases arising from this concern in the dataset. The results show that most variables are stationarity at a significant level of 0.05. However, export, unemployment, and net financial assets (de facto metric) fail the Fisher's test. The first differencing was undertaken to eliminate the unit root and ensure stationary before incorporating it into the analysis.

Another significant concern in model estimation pertains to multicollinearity, where certain variables in the model exhibit high correlation. A variable elimination process

is undertaken based on multicollinearity diagnostics to address this issue. Specifically, a Variance Inflation Factor (VIF) analysis was conducted to identify variables contributing to multicollinearity. Subsequently, it was observed that including country-specific effects significantly elevated VIF values, showing pronounced multicollinearity. Therefore, the decision was taken to exclude country-specific effects from the model. The model only incorporates time-specific fixed effects, thus mitigating multicollinearity concerns and enhancing the reliability of the regression analysis.

Another concern is heteroskedasticity. Residuals are visually examined through plotting and subjected to the Pagan-Hall IV heteroskedasticity test to detect their presence. The null hypothesis assumes homoskedasticity disturbances. The resulting outcome is statistically insignificant, suggesting the absence of heteroskedasticity. However, robust standard errors clustered at the country level were reported, deviating from the conventional practice of reporting standard errors to handle potential correlations within the country. This method aids in alleviating the impact of heteroskedasticity, supporting the reliability of the statistical analysis (Appendix B).

1.3.2 Expected signs of the parameters

According to McKinnon (1973), capital account liberalization eases financial repression in developing economies by facilitating free capital mobility and enabling benefits such as portfolio diversification, risk sharing, and trade.

The interaction term between capital account liberalization and trade openness is expected to offer insight into the simultaneous effect of these policies.

$$\frac{\partial c_{it}}{\partial KA\_Open_{it-1}} = \alpha_1 + \theta Trade_{it-1} \tag{1.2}$$

Assuming the parameters $\alpha_1$and θ are positive, a slight increase in trade openness or capital liberalization would likely result in enhanced consumption growth and improved

risk-sharing. However, if these parameters are non-positive, the outcomes would be contingent upon the extent of trade openness. This marginal effect can support the argument for a level of trade openness expected to optimize consumer well-being.

1.4 Data

This section presents an overview of the dataset used for the analysis. A comprehensive description of the data can be found in Appendix A.

1.4.1 Data sources and description

The sample for these analyses was extracted from two sources: The World Development Indicator (WDI) from the World Bank and the Capital Account Openness Index developed by Chinn-Ito (2006). The data lines from these sources were matched using unique identifiers, including country and year. The sample comprises 141 countries with 4,673 observations from 1970 to 2019.

The primary variable in the model is the household's final consumption expenditure (annual percentage growth). Government consumption expenditure is excluded from this variable to isolate the specific impact of capital account liberalization on private consumers. Other variables include trade openness, measured as the ratio of trade (sum of exports and imports) to GDP, which serves as a macroeconomic indicator for a country's trade openness. Capital account liberalization is proxy by the capital account openness (K A - Open) index, which signifies a shift in a country's policy towards liberalization. While data on capital account liberalization may not be readily available in standard databases like the World Development Indicators (WDI), scholars have developed indexes to gauge countries' levels of capital account liberalization using various indicators and restrictions (Bekaert et al., 2003; Edison & Warnock, 2001; Chinn-Ito, 2006).

The de jure measure used in this paper is constructed by Chinn-Ito (2006) to study capital controls, institutions, and interactions, which are publicly available. K A - Open focuses on information regarding restrictions in the International Monetary Fund's Annual Report on Exchange Arrangements and Exchange Restrictions (AREAER). It is the first standardized principal component of the variables that indicates the presence of multiple exchange rates, restrictions on current account transactions, capital account transactions, and the requirement to surrender export proceeds. The selection of (K A - Open) as the measure of capital account liberalization for empirical analysis was based on its recent update to 2021, providing access to current data on financial openness. However, a de facto measure constructed by Lane and Milesi-Ferretti (2008) was used for robustness and sensitivity tests.

The dataset encompasses macroeconomic and demographic variables, including GDP per capita growth, population growth rate, inflation, unemployment, and market capitalization, which serves as a proxy for financial development. These variables serve as control measures. A comprehensive overview of the data, along with its sources, is provided in Appendix A. The data is classified into five regions: Africa, the Americas, Asia Pacific, Europe, and the Middle East, and analyzed based on the markets: developed market, emerging market, and frontier market. See Appendix D for details on the list of countries by region.

Figure 1.1 shows the distribution of year-over-year changes in the capital account liberalization index (KA_OPEN) for all countries over time. The histogram and the kernel density plot indicate that most countries experience slight changes in their KA_OPEN index over time. However, there is evidence of some countries experiencing a one-unit change in their index during specific periods. Appendix D provides a detailed list of these countries and the specific years in which the one-unit changes occurred. Table 1.1 shows the basic summary statistics of the data used.

Figure 1.1: Distributon of the changes in KA_Open index from all countries

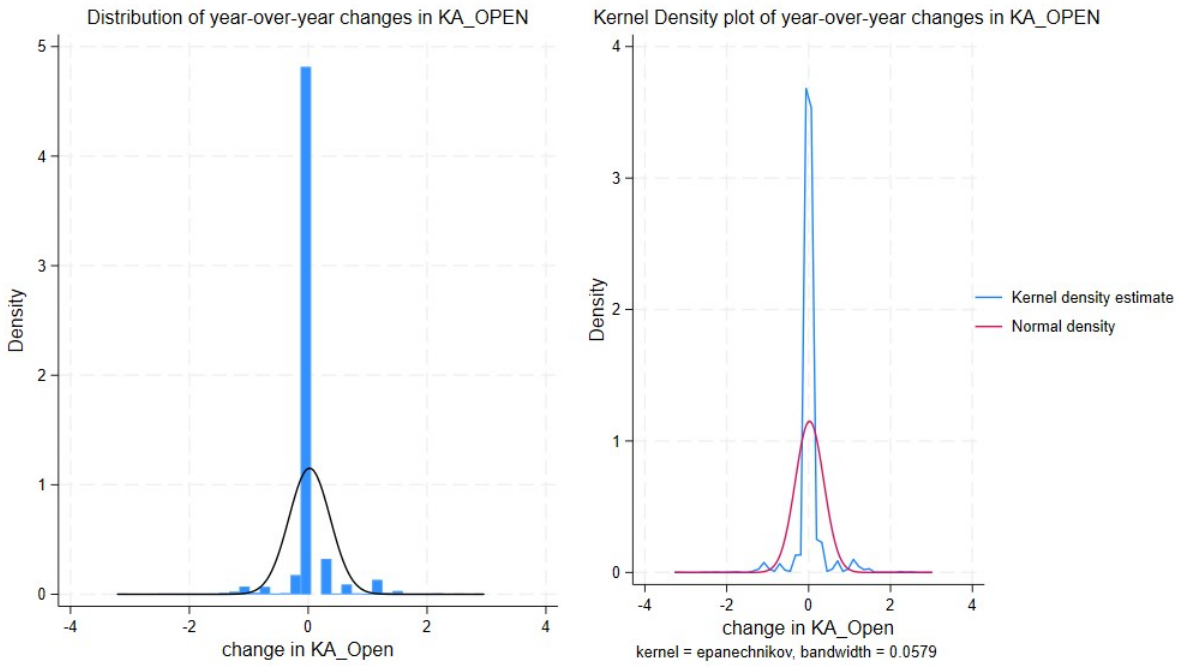


Table 1.1: Descriptive Summary Statistics

Main variables	Obs	Mean	Std. Dev.	Min	Max
Consumption growth	4673	3.96	9.65	-42.55	459.21
lagged KA_Open	4530	0.16	1.55	-1.93	2.31
lagged Trade	4530	73.49	46.70	1.30	437.33
lagged Import	4530	39.16	23.52	0.68	208.93
lagged Export	4387	0.32	4.27	-41.66	52.18
Control variables					
GDPper capita growth	4660	2.1	4.49	-41.59	60.09
Population growth	4672	1.63	1.39	-6.77	15.18
Market capitalization	1793	52.16	51.02	0.01	322.71
lagged Inflation	4529	24.19	323.82	-26.3	13611.63
lagged Unemployment	3535	-0.02	1.15	-8.32	9.77

1.4.2 Changes in KA_OPEN index and their actual policies

This subsection aims to illustrate the real-world policies corresponding to changes in the KA_OPEN index. Understanding these policy changes helps contextualize the quantitative analysis and illustrates how capital account openness impacts consumption growth.

Over time, shifts in the KA_OPEN index signify changes in countries' policies and intentions about financial openness. Some countries have eased capital controls to allow cross-border capital movement, attract foreign direct investment, and promote growth. Conversely, other countries have tightened their capital controls to protect their economies from the shocks of external capital. The KA_OPEN index thus suggests the direction of these policies.

Countries that eased their capital controls include Oman, Botswana, and Uzbekistan. For instance, in 2003, Oman raised the limit on foreign currency borrowing by nonbank financial institutions to 100% from 40% of net worth, resulting in a KA_OPEN index shift of 1.076 between 1999 and 2003. Also, after reclassifying its exchange rate structure from multiple to unitary in 2006, Botswana experienced a KA_OPEN index shift of 1.196 between 2000 and 2006. Similarly, Uzbekistan lowered the capital requirement for firms to acquire foreign investment enterprise (FIE) status from $150,000 to $50,000. It relaxed the participation requirements for foreign entities, shifting its KA_OPEN index by 0.689 between 2011 and 2018.

On the contrary, countries like Angola, Bolivia, and Indonesia have tightened their capital controls further, as shown in their KA_OPEN index over time. In 2007, Angola reclassified its exchange rate structure from unitary to multiple, shifting its index by -0.689 between 2003 and 2007. By raising the cash reserve requirement for foreign currency deposits from 3.5% to 13.5% in 2011, Bolivia's KA_OPEN index shifted by -1.142 between 1970 and 2011. In 2011, Indonesia raised the reserve requirement on foreign exchange deposits from 1% to 5% and subsequently to 8% on June 1 and reinstated the limit on banks' short-term external debt, resulting in a KA_OPEN index shift of -0.506 between 1970 and 2011.

Table 1.2 presents examples of policies implemented by various countries at different times, which have shifted their KA_OPEN index. These shifts show movements toward

more liberalized economies by relaxing capital controls or toward more closed economies by tightening controls and restricting capital flows. These examples highlight countries' diverse policy approaches in response to their specific economic situations. Countries that eased controls often aimed to enhance capital inflows and foster economic growth, while those tightening controls sought to stabilize their financial systems against potential external shocks.

Figure 1.2: Changes in KA_OPEN Index and Actual Policies

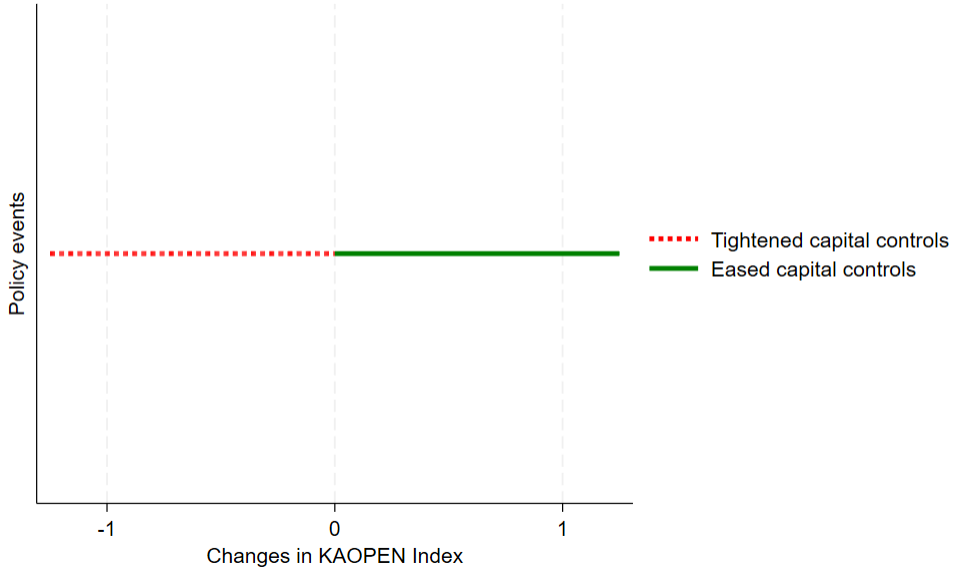


Figure 1.2 illustrates the changes in the KA_OPEN index and the policy directions of various countries. The policy events are classified into two categories: policies that eased capital controls, indicated by positive values above zero, and policies that tightened capital controls, indicated by negative values over time.

1.5 Empirical Results

This section presents the regression outcomes. The findings about regional and market effects are discussed. Finally, the significance of capital account liberalization associated with trade components on consumption growth is shown.

Table 1.2: Changes in KA_OPEN Index and Actual Policies of some countries over time

Country	Periods	Shift in KAOPEN Index	Magnitude	Policy changes	Policies detail
Angola	2003-2007	-1.242 to -1.931	-0.689	Tightening	The exchange rate structure of Angola was reclassified from unitary to multiple.
Austria	1973-1995	1.034 to 2.300	1.266	Easing	Austria's accession to the EU required the government to accelerate structural reforms and to take steps to liberalize its economy.
Bolivia	1970-2011	1.100 to -0.042	-1.142	Tightening	Raising the cash reserve requirement for foreign currency deposits from 3.5% to 13.5%.
Botswana	2000-2006	1.104 to 2.300	1.196	Easing	The exchange rate structure was reclassified to unitary from dual due to technical correction in the classification.
Burundi	2000-2006	-1.242 to -1.931	-0.689	Tightening	Purchase of shares and other securities requiring approval by the BRB, and reclassification of the exchange rate structure to multiple.
Costa Rica	1970-2011	1.100 to 2.300	1.200	Easing	Completion of foreign exchange purchase program, and institutional laws towards payment and securities systems to improves confidence of economic agents.
Indonesia	1970-2011	0.340 to -0.166	-0.506	Tightening	Raised the reserve requirement on deposit accounts in foreign exchange from 1% to 8% and reinstating the limit on banks' short-term external debt.
Madagascar	1970-2013	-0.989 to -0.166	0.823	Easing	Suspension of a preferential exchange rate for oil importers.
Oman	1999-2003	1.224 to 2.300	1.076	Easing	The limit on foreign currency borrowing by nonbank financial institutions was raised from 40% to 100% of net worth.
Poland	2002-2015	-0.042 to 1.034	1.076	Easing	The limit on open pension funds' investments in assets denominated in a currency other than the national one is increased to 20% from 10%.
Turkey	1988-2008	-1.242 to -0.042	1.200	Easing	Removed minimum requirement for pension funds to invest in government debt instruments, and abolished limits on their investment in foreign securities.
Ukraine	1996-2009	-1.242 to -1.931	-0.689	Tightening	Limitation on withdrawal of time deposits before maturity, and multiple currency practice at the official foreign exchange auction.
Uzbekistan	2011-2018	-1.931 to -1.242	0.689	Easing	Lowered the capital requirements for firms to acquire foreign investment enterprise (FIE) status from $150,000 to $50,000.

1.5.1 Effects of capital account liberalization associated with trade openness on consumption growth

The estimation process of equation 1.1 begins with an ordinary least squares (OLS) analysis. However, an alternative method to address endogeneity is desired because of a concern about the potential presence of endogeneity. The study used the instrumental variable two-stage least squares (IV-2SLS) method to accurately address this issue and estimate the relationship. Year-fixed effects are incorporated into the model to account for time-invariant effects. The regression analysis results are presented in Table 1.7 for empirical examination and further analysis.

Table 1.3 presents the estimation outcomes derived from Ordinary Least Squares (OLS) and Instrumental Variable-2 Stage Least Squares (IV-2SLS) methods regarding the effect of capital account liberalization associated with trade openness on consumption growth. Panel A explains the regression results based on equation 1.1, while Panel B expands on the marginal effects regarding the influence of capital account liberalization and trade openness on consumption growth. Columns I and II display the regression findings without incorporating control variables, while columns III and IV present the outcomes with control variables.

The empirical analysis focuses on column (IV) in Panel A and its corresponding marginal effects in Panel B. The findings show that a one-unit increase in the capital account liberalization index and a one-unit increase in trade openness leads to a slight decrease in consumption growth with a magnitude of -0.012; all other factors remain constant. The effect could be unfavorable to consumption growth. A one-unit change in capital account liberalization signifies a shift in a country's policy towards becoming more open through various policy implementations instead of a direct transition from completely closed to completely open.

The analysis suggests that countries with larger trade openness experience smaller con-

sumption growth following capital account liberalization. Specifically, a one-unit increase in capital account liberalization directly affects consumption growth by 0.631%, which is positive but insignificant. Based on equation 1.2, the indirect effect through trade openness is -0.882% (-0.012 * 73.49). It indicates that capital account liberalization can adversely impact consumption growth, especially in countries with high trade openness.

For example, Oman's policy to raise the limit on foreign currency borrowing for non-bank financial institutions between 1999 and 2003 corresponded to a 0.113% reduction in consumption growth, associated with a 9.381% increase in its trade openness. On the other hand, Botswana's reclassifying its exchange rate structure to unitary from multiple led to a 0.067% increase in consumption growth, associated with a 5.591% decrease in its trade openness between 2000 and 2006.

The analysis in Panel B, the marginal effect, provides insights into the overall effect of capital account liberalization at different levels of trade openness in the dataset. It shows a significant overall reduction in consumption growth, with a decrease of -0.367% due to its interaction with trade openness. While the direct effect of capital account liberalization might appear positive, the overall impact on consumption growth becomes negative when accounted for the variation across different levels of trade openness. It suggests that larger trade openness amplifies the adverse effects of capital account liberalization on consumption growth.

These results show that larger trade openness after capital account liberalization could have unfavorable implications on consumers' well-being and can result in economic instability. It is consistent with existing literature (Stiglitz, 2004). The negative effect may be due to the competitive pressures created by financial development that could undermine other clear advantages of financial development, leading to the destruction of domestic human capital (Rajan & Zingales, 2003). Also, when capital inflow is channeled to specific sectors of the economy while others are neglected, it may lead to income inequalities, con-

Table 1.3: Effects of Capital Account Liberalization associated with Trade Openness on Consumption Growth

Panel A: Regression outcomes

Dependent variable: Consumption Growth	Column I	Column II	Column III	Column IV
lagged KA_Open	-0.145	4.864	0.160	0.631
	(0.268)	(8.676)	(0.124)	(0.507)
lagged Trade	0.015***	0.088*	0.008**	0.018
	(0.005)	(0.052)	(0.003)	(0.013)
Interaction	-0.004	-0.075	-0.006***	-0.012*
	(0.003)	(0.113)	(0.002)	(0.007)
Methods	OLS	IV-2SLS	OLS	IV-2SLS
Observations	4,530	4,291	1,684	1,677

Panel B: Marginal Effects

lagged KA_Open	-0.426***	-0.651	-0.310***	-0.367***
	(0.114)	(0.416)	(0.083)	(0.112)

Note: Table 1.3 shows the estimation outcomes of Equation 1.1. Standard errors in parentheses clustered at the country level. ***, **, * denote significance at 1, 5, and 10 percent levels, respectively. Dependent variable is the annual percent growth. Regressions include fixed time effects (estimates not reported).

centrating wealth in fewer hands and eventually lowering overall consumption growth. As a result, these findings underline the importance of caution and precision in policy formulation. The findings highlight the importance of strengthening domestic economies before engaging in global trade (Stiglitz, 2000; Aizenman & Noy, 2009).

1.5.2 Effect of capital account liberalization associated with trade openness on consumption growth by regions and markets

This subsection describes the distributional regions' and markets' effects of capital account liberalization associated with trade openness on consumption growth. The dataset is divided into sub-samples based on regions and market classification to examine the relationship further. Equation 1.1 is modified to analyze the distribution of the effect of capital account liberalization associated with trade openness across regions and markets, as shown in the models below.

$$c_{it} = \alpha_1 KA\_Open_{irt-1} + \alpha_2 Trade_{irt-1} + \theta\{KA\_Open_{irt-1} \times Trade_{irt-1}\} + v_1 X_{it} + \Gamma_t + \varepsilon_{irt} \quad (1.3)$$

$$c_{it} = \alpha_1 KA\_Open_{imt-1} + \alpha_2 Trade_{imt-1} + \theta\{KA\_Open_{imt-1} \times Trade_{imt-1}\} + v_1 X_{it} + \Gamma_t + \varepsilon_{imt} \quad (1.4)$$

The second lag of trade and its interaction with the second lag of capital openness are included to address concerns about endogeneity at the regional level. The inclusion of additional instruments is necessary for some reasons. First, the Middle East's landlocked location and its interaction with the lag in capital openness correlate with other variables, highlighting the need to identify factors. Introducing these extra instruments helps address the endogeneity concern in the Asia-Pacific region. However, these instruments compromise the validity of the European region; therefore, they are excluded from the European region.

Table 1.4 displays the regression analysis results based on the model outlined in equations 1.3 and 1.4. These models explore how capital account liberalization associated with trade openness influences consumption growth across different regions and markets. The first five columns are dedicated to regions, while the last three represent the market types.

The analysis highlights the disparities in consumption growth across regions. The results show that the effect of capital account liberalization on consumption growth that depends on trade openness differs across regions, as indicated by the negative coefficients of the interaction term. The estimations are significant for Africa, with a magnitude of -0.026%, Asia Pacific, with a magnitude of -0.006%, and the Middle East, with a magnitude of -0.044%. The Middle East has a positive direct effect of capital account liberalization on consumption growth with a magnitude of 3.091%. However, the marginal effects give us insights into the total impact of capital account liberalization on consumption growth in the regions. It shows that capital account liberalization significantly negatively affects

consumption growth in both the Americas and Europe, with a magnitude of -0.174% and -0.219%, respectively.

Regarding the market-specific analysis, the interaction between capital account liberalization and trade openness shows an adverse effect, but only significant for the emerging markets with a magnitude of -0.009. However, the effects on developed and frontier markets are insignificant. The findings suggest that the effect of capital account liberalization on consumption growth linked with trade openness varies across regions and markets and can lead to decreased consumption growth. The finding is consistent with existing literature that capital account liberalization might lead to economic instability (Stiglitz, 2004). However, it shows that the adverse impacts may be mitigated by the country's level of economic development. Therefore, countries aiming to liberalize their capital accounts should consider their level of economic development alongside policy actions.

1.5.3 Effects of capital account liberalization associated with exports and imports on consumption growth

In this subsection, trade openness is decomposed into export and import components to examine how capital account liberalization is associated with each component affecting consumption growth. This analysis provides insight into how capital account liberalization affects consumption growth for countries that overly depend on either of these components.

Equation 1.1 is adapted by substituting the trade openness variable with imports or exports and their respective interaction terms with capital account liberalization. The modified model specifications are outlined below.

$$c_{it} = \beta_1 KA\_Open_{it-1} + \beta_2 imports_{it-1} + \theta_{1m}\{KA\_Open_{it-1} \times imports_{it-1}\} + v_1 X_{it} + \Gamma_t + \varepsilon_{it}, \quad (1.5)$$

$$c_{it} = \beta_1 KA\_Open_{it-1} + \beta_2 exports_{it-1} + \theta_{2x}\{KA\_Open_{it-1} \times exports_{it-1}\} + v_1 X_{it} + \Gamma_t + \varepsilon_{it}, \quad (1.6)$$

Table 1.4: Effects of Capital Account Liberalization and Trade Openness on Consumption Growth by Regions and Markets

Panel A: Regression outcomes	Regions					Markets		
DV: Consumption Growth	Africa	Americas	Asia Pacific	Europe	Middle East	Developed	Emerging	Frontier
lagged KA_Open	1.497	-0.131	0.341	-0.06	3.091**	0.884	0.634*	2.432
	(1.173)	(0.118)	(0.211)	(0.286)	(1.154)	(0.665)	(0.365)	(3.914)
lagged Trade	0.028	-0.002	0.012*	-0.002	0.075	0.026	0.004	-0.011
	(0.017)	(0.008)	(0.006)	(0.008)	(0.043)	(0.024)	(0.007)	(0.057)
Interaction	-0.026*	-0.001	-0.006**	-0.002	-0.044**	-0.015	-0.009**	-0.027
	(0.014)	(0.003)	(0.002)	(0.004)	(0.018)	(0.011)	(0.003)	(0.041)
Observations	180	292	373	675	157	725	659	293
Panel B: Marginal Effects								
lagged KA_Open	-0.403	-0.174**	-0.206	-0.219*	-1.037	-0.140	-0.133	-0.203
	(0.310)	(0.079)	(0.154)	(0.132)	(0.894)	(0.166)	(0.152)	(0.397)

Note: Table 1.4 shows the sub-sample regression outcomes of Equations 1.3 and 1.4 for regions and markets, respectively. Standard errors in parentheses clustered at the country level. ***, **, * denote significance at 1, 5, and 10 percent levels, respectively. Dependent variable is the annual percent growth. Regressions include fixed time effects (estimates not reported).

where exports are the value of goods and services sent to other countries measured as the GDP ratio, and where imports are the value of goods and services received from other countries measured as the GDP ratio. The parameters of θ_{1m} and θ_{2x} stand as the coefficients of interest concerning imports and exports, respectively, showing the extent of the impact of capital account liberalization associated with trade components on consumption growth.

Table 1.5 shows the regression analysis based on equations 1.5 and 1.6, examining the relationship between capital account liberalization and its interaction with imports and exports on consumption growth. The analysis shows that the interaction of capital account liberalization with exports affects consumption growth positively, with a magnitude of 0.231%. In contrast, the interaction with imports hurts consumption growth, showing a magnitude of -0.029%. However, these interactions are insignificant. Despite their in-

Table 1.5: Effects of Capital Account Liberalization associated with Trade Components on Consumption Growth

Panel A: Regression outcomes

Dependent variable: Consumption Growth	Export	Import
lagged KA_Open	-0.204***	0.793
	(0.072)	(0.686)
lagged Export /lagged Import	-0.730	0.045
	(0.823)	(0.036)
Interaction terms	0.231	-0.029
	(0.451)	(0.019)
Observations	1,677	1,677

Panel B: Marginal Effects

lagged KA_Open	-0.132	-0.386***
	(0.164)	(0.136)

Note: Table 1.5 shows the sub-sample regression outcomes of Equations 1.5 and 1.6 for imports and exports, respectively. Standard errors in parentheses clustered at the country level. ***, **, * denote significance at 1, 5, and 10 percent levels, respectively. Dependent variable is the annual percent growth. Regressions include fixed time effects (estimates not reported).

significance, the findings from the marginal effects shed light on the relationships. The results show a negative impact of capital account liberalization on consumption growth for import-dependent countries, with a magnitude of -0.386%.

This finding shows that countries heavily reliant on imports may experience adverse effects from capital account liberalization on consumption growth. Therefore, such countries should develop a strategy to consciously develop their domestic economies and exercise caution while implementing capital account liberalization.

1.5.4 Sensitivity Analysis

The paper initially posits that capital account liberalization is perceived as an exogenous variable influencing consumption growth, while trade openness is regarded as an endogenous variable within the model. This explanation implies that the interaction between trade openness and capital account liberalization is also considered endogenous. The empirical analysis of growth and finance is constantly faced with the concern of endogeneity. The

Table 1.6: Sensitivity Analysis

Panel A: Regression outcomes

DV: Consumption Growth	I	II	III	IV	V	VI
lagged KA_Open	0.160	0.137	0.605	0.119	0.625	0.633
	(0.124)	(0.156)	(0.481)	(1.607)	(0.503)	(0.510)
lagged Trade	0.008***	-0.003	0.017	-0.021	0.019	0.019
	(0.003)	(0.007)	(0.013)	(0.087)	(0.013)	(0.013)
Interaction	-0.006***	-0.006***	-0.012*	-0.007	-0.012*	-0.013*
	(0.002)	(0.002)	(0.006)	(0.022)	(0.007)	(0.007)
Methods	RE	FE	IV-RE	IV-FE	IV-2SLS	IV-LIML
Observations	1,684	1,684	1,677	1,677	1,677	1,677

Note: Table 1.6 shows the estimation outcomes of modified Equation 1.1, assuming both KA_Open and Trade openness are endogenous. Standard errors in parentheses clustered at the country level. ***, **, * denote significance at 1, 5, and 10 percent levels, respectively. Dependent variable is the annual percent growth. Regressions include fixed time effects (estimates not reported).

study revises its approach by reclassifying capital account liberalization as an endogenous variable, aligning with contemporary scholarly discourse. This methodological modification probes whether such reclassification changes the initial results, uncovering any potential bias in the initial estimation.

Re-evaluation of the model, Equation 1.1 was analyzed using various methods. These methodologies encompassed the Random Effect (RE) approach, Fixed Effect (F.E.) approach, as well as enhancements of these approaches through incorporating an Instrumental Variable, resulting in the Random Effect with an Instrumental Variable (IV-RE) and Fixed Effect with an Instrumental Variable (IV-FE) analyzes. The method extended to include IV-2SLS and IV-LIML techniques. The outcomes of these analytical works are presented in Table 1.6.

The updated results are consistent with the original conclusions, demonstrating that capital account liberalization associated with trade openness negatively impacts consumption growth. All estimations have some level of significance except for the IV-FE model. The results emphasize the robustness of the conclusion that larger trade openness reduces consumption growth after capital account liberalization.

1.5.5 De-facto metric of capital liberalization

The analysis has predominantly used the de jure measure of capital openness. However, because of concerns about measurement errors and bias, as highlighted by Quinn and Toyoda (2008), an alternative approach, the de facto measure, has been explored. Using the Lane and Milesi- Ferretti (2008) dataset on financial globalization, net financial assets (as a percentage of GDP) were used as a proxy for capital liberalization. The original model's de jure capital openness indicator (KA_Open) is substituted with the de facto measure to determine if such a change impacts the results.

The updated model incorporates net financial assets as the metric for capital liberalization. The variable underwent unit root testing, and first differencing was applied to maintain the stationarity of net financial assets. The revised model's regression results are presented in the Appendix. These results were insignificant, suggesting insufficient evidence to claim that the initial results, based on de jure metrics (KA_Open), were biased. The OLS results show a negative effect -0.014% on consumption growth. It aligns with earlier findings using capital openness (KA_Open), although slight variations in the magnitude exist.

1.6 Robustness checks

An extensive array of sensitivity analyses were undertaken to enhance the analytical framework's robustness and guarantee the empirical outcomes' reliability and validity. These analyses covered various aspects of the research method, including data specifications and underlying assumptions, ensuring a thorough examination of the study's underpinnings.

Initially, the study examined the stationarity of the variables to confirm that their statistical characteristics remained uniform across various intervals, minimizing potential biases because of unit roots. In addressing multicollinearity, comprehensive examinations were undertaken to identify potential issues emanating from high correlations among the in-

dependent variables. An analysis of heteroskedasticity was executed to reduce any bias arising from unrelated variances among observations.

It carefully evaluated the reliability and validity of the tools used at every analysis stage, confirming their compliance with the requisite assumptions for instrumental variable estimation. This measure should enhance the integrity of the instrumental variable method and reduce the potential for endogeneity bias.

It introduces the de facto metric of capital liberalization as an alternative variable, offering further insights into the dynamics between capital openness and consumption growth. The analysis finds no evidence to suggest that the initial results are biased.

Finally, to further validate the robustness of the results, it used alternative methods of estimation, including random effects (RE), fixed effects (F.E.), instrumental variable-random effects (IV-RE), instrumental variable-fixed effects (IV-FE), and instrumental variable-limited information maximum likelihood (IV-LIML) approaches. (Details in the Appendix). The findings of this study are consistent across all these methods. They reinforce that larger trade openness may reduce consumption growth after capital account liberalization.

1.7 Conclusions

This study examined the effect of capital account liberalization associated with trade openness on consumption growth. Using an instrumental variable two-stage least squares (IV-2SLS) method, the study addressed the issue of endogeneity. The findings show that capital account liberalization and trade openness interaction reduces consumption growth. It indicates that a country with larger trade openness received smaller consumption growth after capital account liberalization, highlighting the importance of carefully considering the potential costs associated with these policies, such as increased vulnerability to external shocks and risks associated with weak institutions, as discussed earlier.

The policy implications of this paper are clear. A one-size-fits-all approach to capital

account liberalization and trade openness is unlikely to have consistently positive effects. Therefore, a cautious approach to liberalization is recommended, tailored to a country's level of development. This approach should also consider the global economic environment and the potential for external shocks, which can affect economies depending on their level of openness and integration.

The paper contributes to the existing literature on capital account liberalization and growth by providing empirical evidence on the effect of capital account liberalization on consumption growth. It highlights the significance of trade openness as a moderating factor in the relationship between capital account liberalization and consumption growth. This insight is essential for emerging and developing economies, where the quest for economic growth must be balanced with the need for financial stability and economic development. The findings from this paper provide insight into countries that are heavily dependent on imports while liberalizing their capital accounts. Capital account liberalization and trade openness policies should be designed with a focus on ensuring long-term economic stability and enhancing the well-being of the population at large.

In conclusion, this paper enriches international finance and trade discourse by explaining the conditional effects of capital account liberalization and trade openness on consumption growth. It shows that a country with larger trade openness receives smaller consumption growth after capital account liberalization. It offers practical guidance for policymakers aiming to harness the benefits of openness to capital accounts while mitigating risks and improving living standards for all citizens.

REFERENCES

[1] Ahmed, A.D. and Suardi, S. (2009). Macroeconomic Volatility, Trade and Financial Liberalization in Africa. *World Development*, 37(10), pp.1623–1636.

[2] Aizenman, J. and Noy, I. (2009). Endogenous Financial and Trade Openness. *Review of Development Economics*, 13(2), pp.175–189.

[3] Andersen, L. and Babula, R. (2009). The Link Between Openness and Long-Run Economic Growth. [online] Available at: https://www.usitc.gov/publications/332/journals/openness_growth_link.pdf.

[4] Arespa, M. (2014). Macroeconomic Volatility and International Integration. *Bulletin of Economic Research*, 67(4), pp.393–410.

[5] Arkolakis, C., Demidova, S., Klenow, P.J. and Rodréguez-Clare, A. (2008). Endogenous Variety and the Gains from Trade. *American Economic Review*, 98(2), pp.444–450.

[6] Bae, K.-H. and Goyal, V.K. (2010). Equity market liberalization and corporate governance. *Journal of Corporate Finance*, 16(5), pp.609–621.

[7] Bakker, A., & Chapple, B. (2003). Capital Liberalization in Transition Countries. Edward Elgar Publishing.

[8] Bakker, A., & Chapple, Mr. Bryan. (2002). Advanced Country Experiences with Capital Ac count Liberalization. International Monetary Fund.

[9] [1] Baltagi, B. H., Demetriades, P. O., & Law, S. H. (2009). Financial development and openness: Evidence from panel data. Journal of Development Economics, 89(2), 285-296.

[10] Basu, P. and Morey, M.R. (2005). Trade Opening and the Behavior of Emerging Stock Market Prices. *Journal of Economic Integration*, 20(1), pp.68–92.

[11] Bekaert, G. and Harvey, C.R. (2000). Foreign Speculators and Emerging Equity Markets. *The Journal of Finance*, 55(2), pp.565–613.

[12] Bekaert, G., Harvey, C.R. and Lundblad, C.T. (2003). Equity Market Liberalization in Emerging Markets. *Journal of Financial Research*, 26(3), pp.275–299.

[13] Bekaert, G., Harvey, C. and Lundblad, C. (2005). Does financial liberalization spur growth? *Journal of Financial Economics*, 77(1), pp.3–55.

[14] Bekaert, G., Harvey, C. and Lundblad, C. (2006). Growth Volatility and Financial Liberalization. *Journal of International Money and Finance*, 25(3), pp.370–403.

[15] Berg, A. and Krueger, A.O. (2003). Trade, Growth, and Poverty: A Selective Survey. *IMF Working Papers*, 03(30), p.1.

[16] Berthou, A., Chung, J.J.-H., Manova, K. and Sandoz, C. (2020). Trade, Productivity and (Mis)allocation. *IMF Working Papers*, 20(163).

[17] Brune, N., Garrett, G., Guisinger, A. and Sorens, J. (2001). The Political Economy of Capital Account Liberalization. [online] Available at: https://www.international.ucla.edu/media/files/capacct.pdf.

[18] Chen, M. and Nugent R, J. (2019). On the Effectiveness of Capital Controls: A Synthetic Control Method Approach. The Graduate Center, City University New York.

[19] Chinn, M.D. and Ito, H. (2006). What matters for financial development? Capital controls, institutions, and interactions. *Journal of Development Economics*, [online] 81(1), pp.163–192.

[20] Das, M. and Mohapatra, S. (2003). Income inequality: the aftermath of stock market liberalization in emerging markets. *Journal of Empirical Finance*, 10(1-2), pp.217–248.

[21] Defever, F. and Suedekum, J. (2014). Financial liberalization and the relationship-specificity of exports. *Economics Letters*, 122(3), pp.375–379.

[22] Dowrick, S. (2004). Trade Openness and Growth: Who Benefits? *Oxford Review of Economic Policy*, 20(1), pp.38–56.

[23] Edwards, S. (1999). How Effective are Capital Controls? Journal of Economic Perspectives, 13(4), 65–84. https://doi.org/10.1257/jep.13.4.65

[24] Edwards, S. (2000). Capital Mobility and Economic Performance: Are Emerging Economies Different? *. [online] Available at: https://www.anderson.ucla.edu/faculty_pages/sebastian.edwards/kiel6.pdf.

[25] Edwards, S. and van Wijnbergen, S. (1986). The Welfare Effects of Trade and Capital Market Liberalization. *International Economic Review*, 27(1), p.141.

[26] Eichengreen, B. (2001). Capital Account Liberalization: What Do Cross-Country Studies Tell Us? *The World Bank Economic Review*, 15(3), pp.341–365.

[27] Eichengreen, B. and Mussa, M. (1998). Capital Account Liberalization and the IMF. Finance and Development, *A quarterly Magazine of the IMF*, 35(4), pp.16–19.

[28]] Evens, O., Liberalization & Quirk, P. (1995). IV Experience with Capital Account in Developing Countries. https://doi.org/10.5089/9781557755247.084.ch004 International Monetary Fund.

[29] Fetahi-Vehapi, M., Sadiku, L., & Petkovski, M. (2015). Empirical analysis of the effects of trade openness on economic growth: An Evidence for South East European countries. Procedia Economics and Finance, 19, 17–26. https://doi.org/10.1016/S2212-5671(15)00004-0

[30] Fischer, S. (2005). IMF essays from a time of crisis : the international financial system, stabilization, and development. Cambridge, Mass. ; London: Mit.

[31] Fuchs-Schündeln, N. and Funke, N. (2003). Stock market liberalizations: Financial and macroeconomic implications. *Review of World Economics*, 139(4), pp.730–761.

[32] Galindo, A., Schiantarelli, F. and Weiss, A. (2007). Does financial liberalization improve the allocation of investment? *Journal of Development Economics*, 83(2), pp.562–587.

[33] Gallup, J. L., Sachs, J. D., & Mellinger, A. D. (1999). Geography and Economic Development. International Regional Science Review, 22(2), 179–232. https://doi.org/10.1177/016001799761012334

[34] Grilli, V., & Milesi-Ferretti, G.-M. (1995). Economic Effects and Structural Determinants of Capital Controls. IMF Working Papers, 95(31), 1. https://doi.org/10.5089/9781451844993.001

[35] Grossman, G.M., Elhanan Helpman and Mit Press (2001). Innovation and growth in the global economy. Cambridge ; London: The Mit Press.

[36] Henry, P.B. (2000). Stock Market Liberalization, Economic Reform, and Emerging Market Equity Prices. *The Journal of Finance*, 55(2), pp.529–564.

[37] Henry, P.B. (2003). Capital-Account Liberalization, the Cost of Capital, and Economic Growth. *American Economic Review*, 93(2), pp.91–96.

[38] Huchet-Bourdon, M., Le Mouël, C. and Vijil, M. (2017). The relationship between trade openness and economic growth: Some new insights on the openness measurement issue. *The World Economy*, [online] 41(1), pp.59–76.

[39] International Monetary Fund (2011). Global Trade Liberalization and the Developing Countries - An IMF Issues Brief. [online] Imf.org. Available at: https://www.imf.org/external/np/exr/ib/2001/110801.htm.

[40] Islamaj, E. (2008). Why don't we observe improvements in consumption smoothing as countries get more financially integrated: Bridging theory and empirics. *Economics Letters*, 100(2), pp.169–172.

[41] Kohler, W. (2012). Feenstra, R.C.: Product variety and the gains from international trade. *Journal of Economics*, 106(2), pp.183–193.

[42] Lane, P. R., & Milesi-Ferretti, G. M. (2008). The Drivers of Financial Globalization. American Economic Review, 98(2), 327–332. https://doi.org/10.1257/aer.98.2.327

[43] Law, S.H. (2009). Trade Openness, Capital Flows, and Financial Development in Developing Economies. *International Economic Journal*, 23(3), pp.409–426.

[44] Ma, Y., Jiang, Y. and Yao, C. (2021). Trade openness, financial openness, and macroeconomic volatility. *Economic Systems*, 46(100934).

[45] Manova, K. (2008). Credit constraints, equity market liberalizations, and international trade. *Journal of International Economics*, 76(1), pp.33–47.

[46] Mckinnon, R.I. (1973). Money and capital in economic development. Washington: Brookings Institution.

[47] Melitz, M.J. and Redding, S.J. (2014). Missing Gains from Trade? *American Economic Review*, 104(5), pp.317–321.

[48] Melitz, M.J. and Trefler, D. (2012). Gains from Trade when Firms Matter. *Journal of Economic Perspectives*, 26(2), pp.91–118.

[49] Moshirian, F., Tian, X., Zhang, B. and Zhang, W. (2020). Stock market liberalization and innovation. *Journal of Financial Economics.*

[50] Narendra Jadhav, D., & Delhi, N. (2003). Capital account liberalization: The Indian Experience A Tale of Two Giants: India's and China's Experience with Reform and Growth. https://www.imf.org/external/np/apd/seminars/2003/newdelhi/jadhav.pdf

[51] Naceur, B., S., Ghazouani, S. and Omran, M. (2008). Does stock market liberalization spur financial and economic development in the MENA region? *Journal of Comparative Economics*, 36(4), pp.673–693.

[52] Osei, D. B., Sare, Y. A., & Ibrahim, M. (2019). On the determinants of trade openness in low- and lower-middle-income countries in Africa: how important is economic growth? Future Business Journal, 5(1). https://doi.org/10.1186/s43093-019-0002-8

[53] Prasad, E. S., & Rajan, R. G. (2008). A Pragmatic Approach to Capital Account Liberalization. Journal of Economic Perspectives, 22(3), 149–172. https://doi.org/10.1257/jep.22.3.149

[54] Quinn, D.P. and Inclan, C. (1997). The Origins of Financial Openness: A Study of Current and Capital Account Liberalization. *American Journal of Political Science*, 41(3), p.771.

[55] Quinn, D.P. and Toyoda, A.M. (2008). Does Capital Account Liberalization Lead to Growth? *Review of Financial Studies*, 21(3), pp.1403–1449.

[56] [4] Rajan, R., & L., Zingales. (2003). The great reversal: The politics of financial development in the 20th century. Journal of Financial Economics, 69(1), 1

[57] Ranciere, R., Tornell, A. and Westermann, F. (2006). Decomposing the effects of financial liberalization: Crises vs. growth. *Journal of Banking & Finance*, 30(12), pp.3331–3348.

[58] Romer, P.M. (1994). The Origins of Endogenous Growth. *Journal of Economic Perspectives*, 8(1), pp.3–22.

[59] Shaw, E.S. (1973). Financial deepening in economic development. New York.

[60] Stiglitz, J.E. (2000). Capital Market Liberalization, Economic Growth, and Instability. *World Development*, [online] 28(6), pp.1075–1086.

[61] Stiglitz, J.E. (2004). Capital-market Liberalization, Globalization, and the IMF. *Oxford Review of Economic Policy*, 20(1), pp.57–71.

[62] Sun, P., Sen, S. and Jin, S. (2013). Equity Market Liberalization, Credit Constraints, and Income Inequality. Economics: The Open-Access, Open-Assessment E-Journal, 7(2013-12), p.1.

[63] The World Bank (2018). Stronger Open Trade Policies Enable Economic Growth for All. [online] *World Bank.* Available at: https://www.worldbank.org/en/results/2018/04/03/stronger-open-trade-policies-enables-economic-growth-for-all.

[64] Tornell, A., Westermann, F. and Martinez Trigueros, L. (2004). The Positive Link between Financial Liberalization, Growth and Crises. SSRN Electronic Journal.

[65] Warnock, F.E. and Edison, H.J. (2001). A Simple Measure of the Intensity of Capital Controls. *IMF Working Papers*, 01(180), p.1.

[66] Winters, L.A. (2004). Trade Liberalisation and Economic Performance: An Overview. *The Economic Journal*, 114(493), pp.F4–F21.

[67] Yanikkaya, H. (2003). Trade openness and economic growth: a cross-country empirical investigation. *Journal of Development Economics*, 72(1), pp.57–89.

[68] Young, A. (1991). Learning by Doing and the Dynamic Effects of International Trade. *The Quarterly Journal of Economics*, 106(2), p.369.

APPENDICES I

A. Table A1: Description of Variables

Variables	Descriptions
Capital Account Openness (KA_Open)	KA_Open is an index proxy for the level of financial liberalization. It is based on information about restrictions in the International Monetary Fund's Annual Report on Exchange Arrangements and Exchange Restrictions (AREAER). Constructed by Chinn-Ito (2006). Source: International Finance and Macroeconomics Catalogue of Data Sources, National Bureau of Economic Research (NBER).
Households Final Consumption Expenditure (annual % growth)	It is the amount households spend on goods and services, including expenses of nonprofit institutions serving households and payments to governments to obtain permits and licenses. The average annual growth is based on constant 2015 prices, expressed in U.S. dollars. Available for all countries from 1970 – 2019. Source: World Bank Development Indicators.
Exports (as % of GDP)	Exports are the value of all goods and services sent abroad, including merchandise, insurance, transport, travel, royalties, license fees, communication, financial, information, business, personal, and government services. They exclude compensation for employees, investment income, and transfer payments. Available for all countries from 1970 – 2019. Source: World Bank Development Indicators.

GDP Growth (annual %)	Annual percentage growth rate of GDP at market prices based on constant local currency. Aggregates are based on constant 2015 prices, expressed in U.S. dollars. Available for all countries from 1970 – 2019. Source: World Bank Development Indicators.
Imports (as % of GDP)	Imports are the value of all goods and services from abroad, including merchandise, insurance, transport, travel, royalties, license fees, communication, financial, information, business, personal, and government services. They exclude compensation of employees, investment income, and transfer payments. Available for all countries from 1970 – 2019. Source: World Bank Development Indicators.
Inflation rate	It is the rate of price change in the economy measured by the annual growth rate of the GDP implicit deflator. I proxy with the consumer price index, where the GDP deflator is unavailable. Available for all countries from 1970 – 2019. Source: World Bank Development Indicators.
Population Growth rate	It is the annual rate of change in a country's population regardless of all residents' legal status or citizenship, expressed as a percentage. Available for all countries from 1970 – 2019. Source: World Bank Development Indicators.
Market capitalization	Market capitalization (or market value) is the share price times the number of shares outstanding (including their several classes) for listed domestic companies. Data are end-of-year values. Available for all countries from 1970 – 2019. Source: World Bank Development Indicators.

Trade (% of GDP)	It is the sum of all exports and imports of goods and services divided by gross domestic product. It is a standard measure of a country's trade openness. Available for all countries from 1970 – 2019. Source: World Bank Development Indicators.
Unemployment rate	It is the share of the labor force that is without work but available for and actively searching for employment. Available for all countries from 1970 – 2019. Source: World Bank Development Indicators.

B. Other Estimations and Tests of Endogeneity

Regression Outcomes for De facto Metric - Net Financial Assets

Panel A: Regression outcomes

DV: Consumption Growth	NFA	NFA	NFA	NFA
lagged Net financial assets	-0.191	-3.796	2.011***	-41.111
	(0.662)	(4.160)	(0.715)	(34.148)
lagged Trade	0.007**	0.058**	-0.003**	-0.002
	(0.003)	(0.026)	(0.001)	(0.007)
Interaction	0.003	0.065	-0.014**	0.351
	(0.007)	(0.065)	(0.006)	(0.295)
Methods	OLS	IV-2SLS	OLS	IV-2SLS
Observations	4,418	4,187	1,684	1,676

Note: Table 1.7 estimates Equation 1.1 with de facto metric of financial openness proxy by net financial asset. Standard errors in parentheses clustered at the country level. ***, **, * denote significance at 1, 5, and 10 percent levels, respectively. Dependent variable is the annual percent growth. Regressions include fixed time effects (estimates not reported).

Regression Outcomes for Alternative Methods - RE, FE, IV-RE, IV-FE, and IV-LIM

Panel A: Regression outcomes

Dependent variable: Consumption Growth	RE	FE	IV-RE	IV-FE	IV-LIML
lagged KA_Open	0.160	0.137	0.733	0.642	0.651
	(0.124)	(0.156)	(0.450)	(1.283)	(0.528)
lagged Trade	0.008***	-0.003	0.016	-0.000	0.018
	(0.003)	(0.007)	(0.014)	(0.076)	(0.013)
Interaction	-0.006***	-0.006***	-0.014**	-0.013	-0.013*
	(0.002)	(0.002)	(0.006)	(0.018)	(0.007)
Observations	1,684	1,684	1,677	1,677	1,677

Note: Re-evaluation of Equation 1.1 using alternative method. Standard errors in parentheses clustered at the country level. ***, **, * denote significance at 1, 5, and 10 percent levels, respectively. Dependent variable is the annual percent growth. Regressions include fixed time effects (estimates not reported).

B.3 Estimation of Tests of endogeneity

Table B.3.1:	Main Regression (Column IV)	
H0: Variables are exogenous		
Robust regression F(2,76) =	.656735	(p = 0.5215)
(Adjusted for 77 clusters in country)		

,

Table B.3.2:	Tests of Endogeneity for Regions Estimations				
H0: Variables are exogenous	Africa	Americas	Asia Pacific	Europe	Middle East
Robust Regressions	F(2,11)	F(2,12)	F(2,15)	F(2,26)	F(2,8)
	.90889	1.92076	1.63508	5.22232	1.63296
	(p = 0.4312)	(p = 0.1889)	(p = 0.2278)	(p = 0.0124)	(p = 0.2543)
(Adjusted for N clusters in country)	12	13	16	27	9

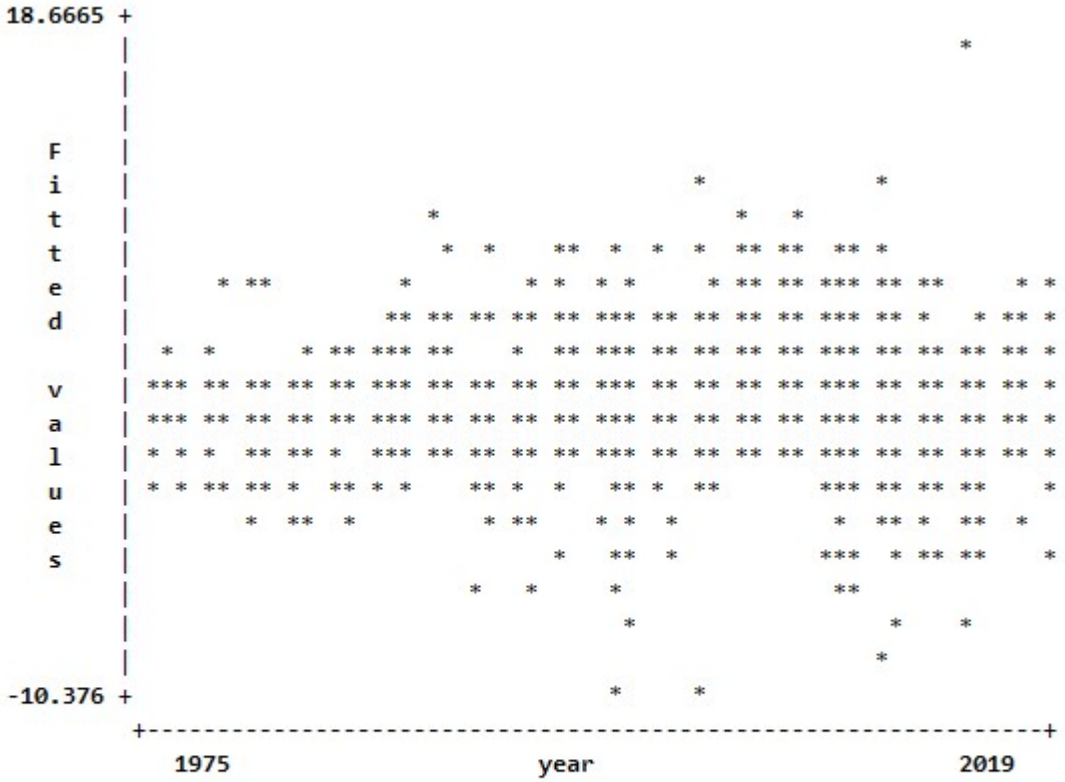
Table B.3.3:	Tests of Endogeneity for Markets Estimations		
H0: Variables are exogenous	Advanced	Emerging	Frontier
Robust regression	F(2,22)	F(2,31)	F(2,21)
	3.20737	2.38488	.271785
	(p = 0.0599)	(p = 0.1088)	(p = 0.7647)
(Adjusted for N clusters in country)	23	32	22

Table B.3.4:	Tests of Endogeneity for Exports and Imports		
H0: Variables are exogenous	Exports		Imports
F(2,76)	.98065	F(2,76)	1.18605
(Adjusted for 77 clusters in country)	(p = 0.3798)		(p = 0.3110)

Table B.3.5:	Tests of Endogeneity for De facto metric	
H0: Variables are exogenous		
NFA: Robust regression F(2,76) =	1.31922	(p = 0.2734)
(Adjusted for 77 clusters in country)		

C. Heteroskedasticity: Plot of residuals

```
. plot residual year
```




```
. ivhettest
IV heteroskedasticity test(s) using levels of IVs only
Ho: Disturbance is homoskedastic
    Pagan-Hall general test statistic   :  42.699  Chi-sq(52) P-value = 0.8176
```

D. List of Countries

Africa	Africa	Americas	Asia Pacific	Asia Pacific
Algeria	Mauritius	Argentina	Armenia	Sri Lanka
Angola	Morocco	Bahamas, The	Australia	Tajikistan
Benin	Mozambique	Belize	Azerbaijan	Thailand
Botswana	Namibia	Bolivia	Bangladesh	Tonga
Burkina Faso	Niger	Brazil	Bhutan	Uzbekistan
Burundi	Nigeria	Canada	Cambodia	Vanuatu
Cameroon	Rwanda	Chile	India	
Cape Verde	Senegal	Colombia	Indonesia	
Chad	Seychelles	Costa Rica	Japan	
Comoros	Sierra Leone	Dominican Republic	Kazakhstan	
Equatorial Guinea	Somalia	Ecuador	Kyrgyz Republic	
Eritrea	South Africa	El Salvador	Malaysia	
Ethiopia	Tanzania	Guatemala	Maldives	
Gambia, The	Togo	Haiti	Marshall Islands	
Ghana	Tunisia	Honduras	Mongolia	
Guinea	Uganda	Jamaica	Myanmar	
Guinea-Bissau	Zimbabwe	Mexico	Nepal	
Kenya		Nicaragua	New Zealand	
Lesotho		Panama	Pakistan	
Madagascar		Paraguay	Papua New Guinea	
Malawi		Peru	Philippines	
Mali		United States	Singapore	
Mauritania		Uruguay	Solomon Islands	

Europe	Europe	Middle East
Albania	Moldova	Bahrain
Austria	Netherlands	Cyprus
Belarus	Norway	Israel
Belgium	Poland	Jordan
Bosnia and Herzegovina	Portugal	Kuwait
Bulgaria	Romania	Lebanon
Croatia	San Marino	Oman
Czech Republic	Slovak Republic	Qatar
Denmark	Slovenia	Saudi Arabia
Estonia	Spain	Syrian Arab Republic
Finland	Sweden	Turkey
France	Switzerland	United Arab Emirates
Georgia	Ukraine	
Germany	United Kingdom	
Greece		
Hungary		
Iceland		
Ireland		
Italy		
Latvia		
Lithuania		
Macedonia, FYR		
Malta		

Chapter 2

Firm Performance in the Context of Capital Account Liberalization: Does it Make a Difference?

To what extent do firms in liberalized countries benefit from capital account liberalization? This chapter investigates the effect of capital account liberalization on firm performance using a large dataset covering 106 countries from 1980 to 2019 and an instrumental variable two-stage least squares (IV-2SLS) model. The results show that firms' performance improved after capital account liberalization, characterized by grown profitability and reduced leverage. The study shows the significance of well-developed financial markets of liberalized countries on firms' performance. It highlights the need for domestic economic development, especially for low-income countries, to strengthen the effects of capital liberalization on firm performance.

2.1 Introduction

Scholars have identified access to finance as a significant factor for firms' growth (Ang, 2008; McLean et al., 2012; Beck et al., 2015). With access to finance being reported as a challenge by many firms, approximately 40% identified it as a hurdle (The World Bank Enterprise Survey, 2006 to 2023), highlighting its crucial role in firms' growth and survival. However, financial liberalization has been advocated to alleviate financial constraints and stimulate economic growth (Bekaert et al., 2005; Manova, 2008). Capital account liberalization is perceived to facilitate efficient resource allocation, enhance access to credit, and mitigate financial constraints firms face. Accessing external finance maximizes firm value, growth prospects, and investments (Khemiri & Nouggigh, 2018). The question is: "To what extent do firms in liberalized countries benefit from capital account liberalization?" This paper aims to investigate the effects of capital account liberalization on firm performance, focusing on profitability and leverage.

Many countries impose restrictions on their capital accounts to mitigate risks associated with fluctuations in foreign capital flows and other macroeconomic disturbances (Brooks, 2004; Eichengreen, 2001). However, since the 1980s, many developing countries have embraced economic liberalization policies for enhanced economic growth and development (Cornia & Lipumba, 1999). Capital mobility transfers resources from capital-abundant economies, where investors expect low returns, to capital-scarce economies, where higher returns are expected. Capital account liberalization reduces capital costs, enhances firm-level investment and performance, and fosters efficient resource allocation (Bekaert & Harvey, 2000; Henry, 2003; Mitton, 2006; Manova, 2008).

This study uses a panel data sample comprising 33,390 firms across 106 countries from 1980 to 2019 to investigate the influence of capital account liberalization on firm performance. The analysis aims to mitigate potential endogeneity issues using an instrumental variable two-stage least squares (IV-2SLS) approach. The model is over-identified using

two instruments: the second lagged of capital account openness and political stability and absence of violence. These instruments undergo an endogeneity test to ensure their validity and consistency.

The empirical investigation shows that capital account liberalization improves firm performance, particularly in profitability and leverage metrics. Specifically, the study shows that with a one-unit increase in the capital account openness index, firm profitability substantially increases by 0.757%, alongside a corresponding leverage reduction of -2.105. This observed pattern aligns with the existing literature on finance and economic growth. The findings underscore the importance of a well-developed and efficient financial infrastructure, coupled with economic stability, to harness the benefits of capital account liberalization. The synergy between capital account liberalization and a well-functioning financial system strengthens access to external financial resources, fostering enhanced productivity among financially constrained firms.

Evidence from sub-sample data shows differential impacts of capital account liberalization across various regions and market economies. The findings indicate that firms operating in developed and emerging economies benefit substantially from capital account liberalization. For advanced economies, capital account liberalization enhances firm profitability by 1.121%, substantially reducing leverage by -4.703. Similarly, in emerging markets, capital account liberalization is associated with an increase in firm profitability by 0.814% alongside a modest rise in leverage by 0.528. In contrast, the outcomes remain insignificant for firms operating within low-income countries.

This research contributes to the existing finance, trade, and growth literature. First, using a large and diverse sample of firms from around the globe provides a detailed study of the effects of capital account liberalization on firm performance. It provides insight into the effect of capital account liberalization at the firm level for regions and markets with scanty evidence because of a lack of access to firm-level data or unreliable data.

Second, the paper finds evidence to support the need for a well-developed financial system and macroeconomic stability to unlock the benefits of capital account liberalization (Eichengreen et al., 2011; Bilir et al., 2019). Also, it shows that firms' credit constraints can be eased and growth enhanced if free capital mobility across borders exists. It is consistent with the existing literature on capital account liberalization and credit constraints (Bilir et al., 2019; Gopalan & Sasidharan, 2020).

The paper applies to various firms' stakeholders, including policymakers, and shows policy implications for consideration when starting a new policy. It provides an insight into the strategic framework for economic growth and development, especially for low-income countries.

The rest of this paper is structured: Section 2.2 discusses related literature. Section 2.3 discusses my empirical methods and identification problems. Section 2.4 discusses the data sources used in the analysis. Section 2.5 presents my empirical results. Section 2.6 provides evidence of the robustness of my findings. Section 2.7 wraps up by summarizing the paper and highlighting its contributions.

2.2 Capital account liberalization: Should firms be concerned?

2.2.1 Firm Performance

One approach to gauging a firm's financial well-being is analyzing its financial ratios. The ratios play a significant role for different stakeholders in the business, such as investors, lenders, employees, and government, whose actions and decisions influence firm performance.

Several scholars have extensively researched what drives firm performance (Atkin et al., 2017; Loecker & Goldberg, 2014; Bhagat & Bolton, 2019), and one firm characteris-

tic that has attracted the attention of management studies is the relationship between firm age and performance. As a result, Rossi (2016) systematically reviews existing literature and critiques the relationship between firm age and performance. His findings suggest that the relationship between firm age and performance is inconclusive. Lo et al. (2023) studied the relationship between inter-firm collaborative R&D and firm performance. Their findings suggest that technological innovation performance and potential market competitiveness are positively associated with inter-firm collaborative R&D but negatively impact profitability indicators. Various governance issues, such as agency problems, inside ownership, and boards, have been studied to assess their impact on firm performance (Bhagat & Bolton, 2019).

Also, evidence has shown that economic policy uncertainty has a significant role in how a firm performs and behaves (Kahloul et al., 2022; Iqbal et al., 2020; Feng et al., 2021). Kahloul et al. (2022) explore how economic policy uncertainty moderates the association between earnings management and firm performance and find that high economic policy uncertainty plays a significant role in promoting opportunistic use of earnings management that harms firm performance. Similarly, firms' incentives to expand their operations decline when there is uncertainty in the economic policy (Iqbal et al., 2020; Feng et al., 2021). It suggests that firms' performance responds positively to economic stability.

Likewise, financial institutions and markets are significant for firm performance. They act as an intermediary between savers and borrowers, help mobilize funds, and reallocate them amongst firms needing funds. As stock markets connect the investors to the firms needing external finance, liberalization opens access for foreign investors. The size and depth of a country's financial market largely determine liquidity level, which boosts investors' confidence. In a formal and structured economy, firms needing finance must pass through these channels. The effectiveness and efficiency of financial intermediaries and markets play a significant role in a firm's performance. This paper contributes to the ongo-

ing debate by exploring the impact of capital account liberalization on firm performance.

2.2.2 Empirical Review on Capital Account Liberalization and Firm Performance

It will be good to stress that different financial reforms, such as stock (equity) market liberalization and capital account liberalization, have been used interchangeably to connote financial liberalization (Bekaert et al., 2005; Manova, 2008; Henry, 2000 & 2003). Financial liberalization is a financial reform that removes the government's restrictions and controls on the financial markets and allows for free capital movement within and across borders. Much empirical work has shown the need to promote financial liberalization to ease financial constraints, enhance firm growth, and improve economic resilience (Wang et al., 2022; Gopalan & Sasidharan, 2020; Manova, 2008; Bekaert et al., 2005).

Scholars have argued that capital account liberalization promotes growth by enhancing the development of the financial system and increasing aggregate productivity. (Bekaert et al., 2005; Eichengreen et al., 2011; Larrain & Stumpner, 2017). Opponents such as Stiglitz (2000) have argued that information asymmetries from a lack of transparency in financial institutions could cause an inefficient allocation of capital flows, creating maturity mismatches and resulting in costly crises.

While there are mixed conclusions on the effects of liberalization on economic growth across different countries and regions (Henry, 2007; Stiglitz, 2000), there is a consensus on the need for internal deregulation and domestic macroeconomic stability for countries to benefit from external financial integration (Rajan & Gopalan, 2015). The failure of capital account liberalization policies in the 1970s in the South American region (Argentina, Chile, and Uruguay) emphasized the necessity of achieving domestic financial deregulation, macroeconomic stability, and trade liberalization before embarking on capital account opening (Brooks, 2004). Investigating the relationship between domestic financial liberal-

ization and capital account liberalization, scholars have also suggested the need for quality financial institutions to ensure the efficient use of capital inflows (Johnston,1997; Mishkin, 2009). Countries with weak financial systems may need to focus on developing their financial institutions and markets before liberalizing their capital account.

The empirical literature has argued for capital account liberalization as a medium to ease credit constraints, improve firms' access to external capital, and promote firms' productivity and growth (Manova, 2008; Bekaert et al., 2005). Studies have also shown that capital account liberalization reduces the cost of equity and improves a firm's governance, which compels the firm's manager to improve profitability (Gopalan & Sasidharan, 2020; Bekaert & Harvey, 2000; Henry, 2000; Mitton, 2006). Most scholars agree that financial liberalization positively impacts firms' growth and investment and increases profitability and efficiency. (Bekaert & Harvey, 2000; Henry, 2000; Mitton, 2006; Nheri, 2012). Therefore, firms with access to external finance will grow, be more profitable, increase investment, and maximize their value depending on each country's specific institutional and market conditions.

Scholars emphasized financial development's role in financial liberalization's success or failure. Capital account liberalization improves domestic financial development and increases competition, enhancing financial innovations (Eichengreen, 2001; Larrain & Stumpner, 2017; Klein & Olivei, 2008). Eichengreen (2001) argues that capital restrictions protect financial intermediaries from foreign competition, limit the market's ability to allocate resources efficiently, and create opportunities for rent-seeking. Eichengreen et al. (2011) suggest that capital account liberalization's impacts are limited to countries with relatively well-developed financial systems, sound accounting practices, substantial creditor rights, and the rule of law. Klein and Olivei (2008) suggest that allowing capital mobility can encourage the domestic financial system to be more efficient through competitive financial innovations that offer excellent services and enlarge the scope of financial

services. Larrain and Stumpner (2017) argue that by incentivizing financial development, capital account liberalization enables financially constrained firms to access more capital and produce more efficiently.

When a country liberalizes its capital account, it integrates into the global market. It can attract external finance from foreign investors to boost growth and economic development (Bekaert & Harvey, 2000; Henry, 2000). Liberalization enhances the domestic financial system by spurring healthy competition among domestic financial institutions and lowering firms' capital costs (Manova, 2008). Larrain and Stumper (2017) suggest that incentivizing financial development and capital account liberalization enables financially constrained firms to demand more capital and produce more efficiently. A firm with increasing profitability and a reduced leverage ratio could have a robust financial position, showing growth.

This study is similar to Mitton's (2006) studies on the impact of stock market liberalization on operating performance at the firm level. Both studies used financial data to explore the relationship between financial liberalization and firm performance. Their findings are consistent in that financial liberalization enhances firm performance. In contrast, they differ regarding the variables used in the model, especially the proxy for liberalization. Another significant difference is that Mitton's study focuses on 2,784 firms from 28 emerging countries, with sample data covering 1980-2000. It adopts a larger dataset that covers 33,390 firms from 106 countries, with data covering 1980- 2019. It helps to provide a robust analysis of the impact of capital account liberalization on firm performance. The findings from this study are consistent with Mitton's (2006) studies on the impact of stock market liberalization on operating performance at the firm level.

2.3 Methodology

This section describes the research method and model specification used in the paper to investigate the effect of capital account liberalization on firms' behavior and performance. The study uses a dynamic modeling technique to measure how firms adapt to changes in economic policy, focusing specifically on capital account liberalization. Therefore, a dynamic model is constructed to estimate the effect.

The empirical model is specified:

$$Performance_{cit} = \beta_1 * ka\_open_{ct-1} + v_1 X_{ct} + \lambda_{it} + K_c + T_t + \varepsilon_{cit}, \tag{2.1}$$

where $Performance_{cit}$ is the dependent variable for firm i in country c at time t. ka_open_{ct-1} is the independent variable of interest for country c at time t. It measures the effect of previous capital account liberalization on current firm performance. $X_{ct}$is a vector control variable, including inflation, GDP per capita, unemployment, domestic credit to private sector and market capitalization, λ_{it} is the firm characterics including age and size, K_c is country-specific effect, and T_t is time-specific fixed effect to control for changes in the global economic cycles, and ε_{cit} is an idiosyncratic error term.

Firm characteristics, such as age and size, are considered when analyzing how capital account liberalization affects firm performance. Research has shown that these characteristics can have a significant impact on performance. The analysis aims to control the age and size of firms. It is done to ensure that any differences observed in firm performance are not solely attributed to their age or size but to the impact of capital account liberalization.

This study considers macroeconomic variables (inflation, GDP per capita, and unemployment) and the level of financial development as fundamental determinants that may influence a firm's performance. For instance, a general rise in the price level could influence a firm's cost structure, pricing strategies, and financial stability, influencing a firm's performance. GDP per capita is seen as a factor capable of influencing firms' performance;

including GDP per capita as a control variable isolates the specific impact of capital account liberalization on firm performance, separating it from broader economic conditions. Also, shifts in capital account liberalization have the potential to shift labor market dynamics, impacting the demand for labor and unemployment rates. Incorporating unemployment as a control variable is essential to ensure that any observed effects on firm performance remain unaffected by fluctuations in labor market conditions.

Also, the accessibility of credit and the relative size of the stock market are critical considerations for firms, particularly when confronted with changes in capital account policies. Controlling domestic credit to the private sector and market capitalization is undertaken to account for variations in financing conditions and capture the broader financial market context. It ensures that any observed effects on firm performance are only because of capital account liberalization, devoid of confounding influences from other financial market dynamics. Incorporating country and year-fixed effects into the model aims to control unobserved heterogeneity traits among individual firms.

One primary concern in the study of finance and growth is endogeneity bias - omitted variable, reverse causation, and simultaneity. Here, an improvement in firm performance may signal policymakers' readiness for capital account liberalization as the country becomes attractive to foreign investors. While the fixed effect model suffices to handle omitted variables, it is unsuitable for reverse causation bias. Hence, a better model is preferred.

The instrument variable (IV) two-stage least square (IV-2SLS) model is used to analyze the effect and address the endogeneity bias, mitigating potential bias. While getting a valid instrument can be challenging and time-consuming, it follows the existing literature using the lag value of openness (Grill & Milesi-Ferretti, 1995; Baltagi et al., 2009). The model is over-identified with two instruments: the second lagged value of capital account openness and political stability and absence of violence. Endogeneity tests were conducted to determine the relevance and reliability of the instruments to handle endogeneity bias.

Overidentification restriction tests are unavailable because the estimations are clustered at a firm level. (see Appendix IV for details on endogeneity tests).

The study extends its analysis by introducing interactions between the variable of interest and two financial development indicators: domestic private credit to GDP ($ldcps$) and stock market capitalization to GDP ($lsmc$). It is done to explore potential moderating effects within the relationship defined in equation 2.1. The variables of these financial development proxies are transformed using natural logarithms. These include the logarithm of domestic credit to the private sector as a percentage of GDP and the logarithm of stock market capitalization as a percentage of GDP.

$$\begin{aligned} Performance_{cit} = {} & \alpha_1 * ka\_open_{ct-1} + \alpha_2 * ldcps_{ct} + +\alpha_3 * lsmc_{ct} \\ & + \alpha_4 * (ka\_open_{ct-1} * ldcps_{ct}) + \alpha_5 * (ka\_open_{ct-1} * lsmc_{ct}) \\ & + v_1 X_{ct} + \lambda_{it} + K_c + T_t + \varepsilon_{cit} \end{aligned} \tag{2.2}$$

2.3.1 Expectations

Based on empirical evidence, capital account liberalization is expected to strengthen firm performance. It fosters competition within the domestic financial sector, reducing capital costs and decreasing margin product costs (Bekaert, 2000; Henry, 2000; Mitton, 2006). Capital account liberalization is predicted to boost profitability, expand investment opportunities, and augment shareholder value. Thus, a positive association between capital account liberalization and a firm's profitability is expected, as shown by gross margin ($ka\_open > 0$).

However, regarding leverage, capital account liberalization may incentivize firms to seek external financing through equity or debt, attracted by lower capital costs. The decision regarding leverage is likely to be contingent upon firm management's assessment of associated risks. The impact on leverage may be negative ($ka\_open < 0$) if firms can

secure additional funds from alternative sources, such as equity issuance or retained earnings. Conversely, a positive impact ($ka\_open > 0$) on leverage may occur if firms opt for increased debt or loans to finance their assets (Henry, 2007).

2.4 Data

This section describes the data used to investigate the relationship between capital account liberalization and firms' performance. A full description of the data sample is available in Appendix A.

This paper uses panel data with a sample of 33,390 firms from 106 countries to examine the relationship between capital account liberalization and firms' performance. The dataset for firm performance is extracted from S&P Capital IQ (dependent variables), the Chinn-Ito updated capital account openness index as a proxy for capital account liberalization, and the World Bank Database for the macroeconomic and financial variables. The sample is classified into regions and markets based on the International Monetary Fund (IMF) grouping in the financial development index.

The initial sample for firm performance analysis comprises 46,945 publicly traded firms with market capitalization exceeding zero, spanning a data collection period from 1980 to 2019, encompassing 40 years of observation. Notably, firms established between 2016 and 2019 were excluded from the sample because of insufficient availability of financial data. It was observed that data scarcity characterized the earlier period from 1980 to 1997. The dataset sourced from S&P Capital IQ presents a challenge due to missing data points, mainly when zeros are recorded for periods when firms were not yet established, resulting in logically empty data. This practice of recording missing data with zeros can misrepresent the actual absence of activity and does not imply randomness in how data is missing. Observations displaying zeros across all variables from data sources were excluded from the analysis to address potential biases and inaccuracies arising from these zero entries. This

precaution helps maintain the analytical integrity and validity of the findings by ensuring that only active operational periods are considered.

After matching the initial sample with data from other sources, some firms dropped off from the sample. For instance, Taiwan has many firms that dropped because of the non-availability of data on Taiwan's capital account openness, as captured by the Chinn-Ito Index. The final sample has 465,870 observations from 33,390 firms from 106 countries.

This study uses profitability and leverage to assess firm performance. Gross margin proxied for profitability measures a firm's operational efficiency and operating profit. The selection of gross margin as a primary metric is underscored by its capacity to provide extensive insights into the firm's operational efficacy. The return on assets (ROA) and return on equity (ROE), which are conventional metrics for profitability, are susceptible to data-capturing errors, which may lead to potential estimation biases. About 87% of observations within the ROA metric and 80% within the ROE metric are zeros because of various factors, including missing, unreported, or actual value anomalies. In contrast, the gross margin metric has fewer observations, with zeros amounting to only 6%, making it a preferred option regarding data integrity and analytical robustness. Therefore, gross margin is preferred because of its high data integrity and focus on the firm's operational efficiencies without any potential dilution caused by taxes, interest, or administrative costs.

On the other hand, the leverage aspect of firm performance was appraised using the ratio of total debt to total assets, known as the debt ratio. This metric presents the proportion of a firm's assets financed through debt, furnishing critical insights into capital leveraging practices and the attendant financial risk exposure of the firm. By quantifying the extent to which firms leverage their capital structure, the debt ratio is paramount in elucidating an entity's financial soundness and risk profile.

The analyses control for firm age and size as crucial variables. Firm age was determined by subtracting the year founded from the current year, showing a range of 8 to 123

years among the dataset's firms. Firm size was approximated using the log value of total assets, serving as a proxy for size variation within the sample. These control measures are crucial for ensuring the robustness of the analysis and isolating the impact of capital account liberalization on firm performance.

Capital account liberalization represents a governmental policy decision to eliminate restrictions on capital mobility, facilitating the free flow of capital within and across borders. This policy shift enhances firms' access to external finance and eases financial constraints that impede growth and investment. The study uses the capital account openness index developed by Chinn-Ito, using data from 2006 to 2020. This index, derived from the IMF Annual Report on Exchange Arrangement and Exchange Restrictions (AREAER), integrates four binary measures reflecting the openness of capital and current accounts and the stringency of requirements for repatriation of export proceeds and exchange rate policies. The index, ranging from -1.93 to 2.31, shows openness to cross-border financial transactions across countries.

Table 2.1 presents the descriptive summary statistics data.

Table 2.1: Descriptive Summary Statistics

Variable	Obs	Mean	Std. dev.	Min	Med	Max
lagged ka_open	464,167	0.86	1.6	-1.93	2.06	2.31
Gross margin -Profitability	465,870	68.26	24,140.10	-2142	27.17	16475094
Debt ratio- Leverage	465841	2.74	456.57	0	2.06	218147.67
Firm age	465,870	45.65	26.02	8.00	38.00	123.00
Firm size	465,870	7.15	3.50	-11.51	7.12	23.40
Inflation	463,075	3.05	11.58	-4.86	2.18	2075.89
Unemployment	464,241	5.62	3.00	0.10	4.68	27.47
GDP per capita	464,309	25,046.55	19,691.63	388.45	28094.92	96,677.53
log Domestic private credit	435,682	4.64	0.61	-1.68	4.85	5.72
log Market Cap	428,179	4.39	0.75	-4.69	4.42	7.21
Political stability & absence of violence	418,378	0.12	0.87	-2.81	0.29	1.76

2.5 Empirical Results and Findings

2.5.1 Capital account liberalization and Impact on firm performance

The primary aim of this study is to investigate the impact of capital account liberalization on firm performance, with the null hypothesis positing that capital account liberalization enhances firm performance. As previously emphasized, the liberalization of capital accounts is expected to augment firms' access to external finance, facilitating growth. Initial examination of the relationship between capital account liberalization and firm performance, measured by profitability and leverage, was conducted using a fixed effect (FE) model. However, to address the endogeneity bias inherent in the analysis, an instrumental variable (IV) approach using two-stage least squares (IV-2SLS) was used to correct for endogeneity and estimate the regression model outlined in equation 2.1. All estimations incorporate fixed effects for country, industry, and year to account for potential heterogeneity across these dimensions. The results of both the FE and IV-2SLS models are presented in Table 2.2, providing insights into the relationship between capital account liberalization and firm performance.

Table 2.2 shows regression outcomes from equation 2.1 for the FE and IV-2SLS models. Columns (I) and (II) present results from the FE model for profitability and leverage. The coefficient and standard error for profitability appear notably high, suggesting potential upward bias stemming from endogeneity. Hence, the adoption of an alternative method becomes imperative.

In columns (III) and (IV), the IV-2SLS estimation is applied to rectify the endogeneity bias. This approach gives reliable estimations. Specifically, the coefficient of capital account liberalization exhibits a positive and significant association with profitability. It suggests that with a one-unit increase in the capital account openness index, a firm's profitability increases by 0.674%, while leverage is reduced by -0.514, holding all other factors

constant. As a firm's age increases by one year, profitability decreases by -0.104% while leverage increases by 0.162. A one-unit change in firm size significantly increases profitability by 1.264%, whereas leverage decreases by -6.968.

These findings suggest the direction and magnitude of the relationship between capital account liberalization and firm performance. It shows that removing capital control and allowing free mobility within and across borders significantly improves firm performance. The findings are consistent with our expectations. The findings also show the influence of firm size on its performance.

Table 2.2: Capital Account Liberalization and Firm Performance

	(I)	(II)	(III)	(IV)
Outcome variable	Profitability	Leverage	Profitability	Leverage
lagged ka_open	28.489	-1.200	0.674***	-0.514
	(27.380)	(0.813)	(0.154)	(0.731)
Firm age	-1.099	0.163***	-0.104***	0.162***
	(1.016)	(0.052)	(0.007)	(0.059)
Firm size	41.145	-6.972***	1.264***	-6.968***
	(40.773)	(2.209)	(0.064)	(2.377)
Observations	464,071	464,045	416,789	416,770
Method	FE	FE	IV-2SLS	IV-2SLS
Control for macroecon.	No	No	No	No

Note: Table 2.2 shows the estimation outcomes of Equation 2.1. FE model outcomes reported robust standard errors are in parentheses; IV-2SLS estimations are clustered at the firm level. ***, **, * denote significance at 1, 5, and 10 percent levels, respectively. Dependent variables are the annual percent growth. Estimations include country and time fixed effect (estimates not reported).

2.5.2 Relevance of macro-stability and financial development in capital account liberalization

This subsection explores the influence of macroeconomic factors and financial development on the relationship between capital account liberalization and firm performance. Macroeconomic factors, like inflation, unemployment, GDP per capita, and the level of financial system development, significantly impact the operational landscape of firms. Financial development is defined using the logarithmic value of domestic private credit to GDP as a

proxy for financial intermediaries and the logarithmic value of stock market capitalization (market cap) to GDP as a proxy for the financial market.

Equation 2.1 is re-estimated with controls for macroeconomic factors (unemployment, inflation, and GDP per capita) and financial system development. Initially, the effect is estimated by controlling solely for macroeconomic factors, with the results presented in Table 2.3, Columns (I) to (II). Next, financial system variables are incorporated as controls into the model to observe the specific impact of financial development, with the results displayed in columns (III) to (IV).

Table 2.3 Column (I) shows that capital account liberalization positively affects a firm's profitability. It shows that with a one-unit increase in capital account openness, a firm's profitability grows by 0.860%. Unemployment and inflation significantly reduce a firm's profitability by -0.335% and -0.143%, respectively. Column (II) results show leverage declining by -1.454 but insignificant.

Columns (III) to (IV) analyze incorporate market capitalization and domestic private credit to isolate the impact of financial system development. The outcomes observed that removing restrictions on capital accounts corresponds to a growth of 0.757% in the firm, accompanied by a reduction in leverage by -2.105. Also, market capitalization exhibits a significant increase in firms' profitability by 1.949%, with a marginal decrease in leverage of -0.050. Regarding macroeconomic factors, unemployment and inflation adversely affect profitability, with coefficients of -0.285% and -0.213%, respectively.

These findings underscore the critical role of efficient financial markets and the need for stable macroeconomic policies in fostering economic growth. This observation aligns with the literature on financial development and growth (Bekaert et al., 2005; Milton, 2006; Klein & Olivei, 2008; Eichengreen et al., 2011).

The impact of capital account liberalization on firm performance is analyzed based on firm size and age, with the definition between small and young firms established at the 25th

Table 2.3: Role of Financial Development and Capital Account Liberalization on Firm Performance

	(I)	(II)	(III)	(IV)
Outcome variables	Profitability	Leverage	Profitability	Leverage
lagged ka_open	0.860***	-1.454	0.757***	-2.105
	(0.183)	(1.332)	(0.193)	(1.808)
Firm age	-0.105***	0.166***	-0.109***	0.184***
	(0.007)	(0.060)	(0.008)	(0.070)
Firm size	1.277***	-7.021***	1.091***	-7.975***
	(0.063)	(2.395)	(0.069)	(2.843)
Inflation	-0.143***	0.441***	-0.213**	0.113
	(0.053)	(0.154)	(0.097)	(0.150)
Unemployment	-0.335***	0.440	-0.285***	0.419
	(0.049)	(0.610)	(0.052)	(0.691)
GDP per capita	-0.000**	0.001	-0.000**	0.001
	(0.000)	(0.000)	(0.000)	(0.001)
log Domestic private credit			-0.973	-3.489
			(0.929)	(3.005)
log Market Cap			1.949***	-0.050
			(0.278)	(0.431)
Observations	415,679	415,660	364,712	364,695

Note: Table 2.3 shows the estimation outcomes of Equation 2.1. The estimations incorporate macroeconomic variables and financial development as control variables. Standard errors in parentheses are clustered at the firm level. ***, **, * denote significance at 1, 5, and 10 percent levels, respectively. Dependent variables are the annual percent growth. Estimations include country and time fixed effect (estimates not reported).

percentile thresholds. Small firms are defined as those below the 25th percentile in size, while young firms are those below the 25th percentile in age, with respective thresholds of 5.05 for size and 26 years for age. Equation 2.1 is estimated, incorporating financial variables into the model and imposing constraints based on these thresholds. (see Appendix III for details).

The findings show that older and large firms benefit more from capital account liberalization than young and small firms. Older and larger firms' profitability increases by 0.681% when a country liberalizes its capital accounts. These results are very close to the initial findings. On the contrary, young small firms suffer from the effect of capital account liberalization, with a decline in their profitability of -4.042%. For such firms, their age and size are significant factors in their performance. As a firm ages, profitability and leverage

increase by 0.367% and 4.739, respectively, with profitability. The firm's size increases profitability by 2.320% and reduces leverage by -43.143.

These findings suggest how significantly a firm's maturity and size could respond to economic shocks. Mature and large firms benefit more from capital account liberalization than young and small firms. These findings suggest that young small firms may suffer when capital accounts are liberalized, as it brings foreign competition, which can displace domestic firms. The impact of this shock may be more assertive about young small firms than mature and large firms. Therefore, policymakers should consider their stage of economic development and policy impact on domestic firms when proposing economic policies such as capital liberalization.

2.5.3 The Moderating Impact of Financial Development

This study examines the potential moderating impact of financial development indicators, namely domestic private credit to GDP and stock market capitalization to GDP, on the relationship in equation 2.1. It interacts with the variables of interest, domestic private credit, and market capitalization to gauge any influence on the original findings. The additional instrument, the rule of law, is identified for the interaction effects. An endogeneity test is conducted to ensure the validity of the instruments, showing no inherent endogenous issues. The regression outcomes and average marginal effects (AME) are presented in Table 2.4 for detailed analysis and interpretation.

Table 2.4 represents the regression results for equation 2.2. Columns (I) and (II) represent the profitability outcomes for the estimated regression and average marginal effects, while columns (III) and (IV) represent outcomes for leverage.

In Column (I) of Table 2.4, estimation coefficients for profitability are displayed. The analysis shows that the interaction between capital account liberalization and market capitalization yields a positive estimate of 5.345%. However, the interaction of capital account

liberalization with domestic private credit reduces firm profitability by -3.165 %. The average marginal effect analysis provides a better insight into their total effect. Capital account liberalization enhances a firm's profitability by 1.430%, market capitalization by 4.256%, and domestic private credit by 3.441%; all other factors remain constant. The findings suggest the need for well-developed capital markets through which a firm can access external funds for firm performance.

Column (III) represents the estimation coefficients for leverage. The result shows that the direct effect of capital account liberalization on firm performance is positive. However, the average marginal effects for leverage suggest that capital account liberalization and market capitalization significantly reduced leverage. The findings expound that, with a well-developed financial market, firms can access funds through the stock market, reduce transaction costs, and enhance their performance.

Table 2.4: Interaction of Capital Account Liberalization with Financial Development

	I	II	III	IV
Outcome variables	Profitability		Leverage	
Estimations	Est. coeff.	AME	Est. coeff.	AME
Capital Account Liberalization (CAL)	-7.002	1.661**	113.795**	-11.206*
	(13.848)	(0.650)	(58.028)	(5.775)
Market-Cap to GDP	0.135	4.451***	11.907	-22.494*
	(0.576)	(1.384)	(14.921)	(13.475)
Private Credit to GDP	5.854***	3.167**	-51.595	-39.170
	(1.987)	(1.622)	(54.062)	(26.224)
Capital Account Liberalization *Market-Cap	5.759**		-45.899	
	(2.382)		(37.250)	
Capital Account Liberalization*Private Credit to GDP	-3.585*		16.578	
	(1.860)		(39.355)	
Firm age	-0.108***		0.177***	
	(0.008)		(0.068)	
Firm size	1.091***		-7.991***	
	(0.068)		(2.845)	
Inflation, consumer prices (annual %)	-0.538**		2.696	
	(0.218)		(2.143)	
Unemployment, total (% of total labor force)	-0.018		-1.157	
	(0.109)		(3.015)	
GDP per capita	-0.000***		0.003**	
	(0.000)		(0.001)	
Observations	364,712		364,695	

Note: Table 2.4 shows the estimation outcomes of Equation 2.2. The estimations incorporate macroeconomic variables and financial development as control variables. Standard errors in parentheses are clustered at the firm level. ***, **, * denote significance at 1, 5, and 10 percent levels, respectively. Dependent variables are the annual percent growth. Estimations include country and time fixed effect (estimates not reported).

2.5.4 Sub-sample Analysis of Capital Account Liberalization and Firm Performance

In this subsection, analyses are conducted to assess the influence of capital account liberalization on firm performance within distinct regions and markets, as delineated in the dataset. The dataset is divided into five regions and three markets. The International Monetary Fund (IMF) uses its financial development index to make these classifications. The regions are Africa, Asia and Pacific, Europe, Middle East and Central Asia, and the Western

Hemisphere, and the markets are advanced, emerging, and low-income economies.

The sub-sample analyses are undertaken for two primary reasons: first, the inherent individual heterogeneity among countries renders them unique and potentially influential in shaping policy outcomes. Grouping countries based on standard features, such as regions and markets, facilitates a deeper understanding of the effects of capital account liberalization on growth. This approach helps illuminate the impact of capital account liberalization in regions with limited firm-level data, particularly in Africa and low-income countries. Access to a reliable data source enhances the credibility of such findings, and this paper endeavors to bridge this gap.

Table 2.5 shows the regression outcomes for each region in the dataset, labeled a - j in this order: Africa (a-b), Asia and Pacific (c-d), Europe (e-f), Middle East and Central Asia (g-h), and Western Hemisphere (i-j).

The findings show that with a one-unit increase in the capital account openness index, firm performance varies significantly across regions. For instance, capital account liberalization in Asia and the Pacific region significantly increases in profitability by 0.717%. In contrast, the Western Hemisphere region shows a significant increase in leverage by 12.546. Similarly, the Middle East and Central Asia show a marginally significant increase in leverage by 0.012. However, for Africa and Europe, there is no significant evidence to suggest that capital account liberalization influences firm performance, underscoring the varied economic impacts across different global regions.

Table 2.5: Capital Account Liberalization and Firm Performance: Subset Sample by Regions

Regions	Africa		Asia & Pacific		Europe		Middle East & Central Asia		Western Hemisphere	
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)
Outcome variables	Profitability	Leverage	Profitability	Leverage	Profitability	Leverage	Profitability	Leverage	Profitability	Leverage
lagged ka_open	-7.473	-0.070	0.717***	0.547	-0.477	0.946	0.953	0.012*	0.590	12.546**
	(5.533)	(0.076)	(0.249)	(0.499)	(1.084)	(0.891)	(0.890)	(0.007)	(0.739)	(6.165)
Firm age	-0.152***	-0.001**	-0.114***	0.039*	-0.054***	0.026	-0.083*	-0.001***	-0.135***	0.670**
	(0.047)	(0.000)	(0.012)	(0.021)	(0.015)	(0.016)	(0.043)	(0.000)	(0.013)	(0.293)
Firm size	1.520**	-0.016	0.421***	-1.695*	0.667***	-1.687	1.956***	0.001	2.241***	-20.616**
	(0.696)	(0.018)	(0.105)	(0.935)	(0.174)	(1.226)	(0.450)	(0.019)	(0.105)	(8.361)
Inflation	-0.133	0.000	-0.265*	0.152	-0.271*	0.273*	0.053	0.000	0.041	-0.404
	(0.121)	(0.002)	(0.135)	(0.199)	(0.163)	(0.163)	(0.092)	(0.001)	(0.088)	(0.913)
Unemployment	0.443	0.006	-0.431***	0.095	-0.351***	-0.114	-0.293	-0.006	0.305*	0.403
	(0.563)	(0.008)	(0.136)	(0.287)	(0.075)	(0.140)	(0.332)	(0.004)	(0.173)	(1.169)
GDP per capita	-0.001	-0.000	-0.000*	-0.000	-0.000	-0.000	-0.000	-0.000	0.000	0.002
	(0.003)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.004)
log Domestic private credit	0.014	-0.022	-3.834*	3.578	2.997**	-2.288	-3.186	-0.009	-1.016	-2.716
	(3.013)	(0.047)	(2.236)	(2.818)	(1.169)	(1.731)	(2.259)	(0.027)	(1.783)	(12.287)
log Market Cap	0.005	0.015	2.876***	-0.580	1.099	-1.230	3.127**	0.015	1.269*	-8.743
	(2.044)	(0.024)	(0.406)	(0.461)	(1.103)	(2.034)	(1.558)	(0.020)	(0.735)	(6.788)
Observations	3,938	3,938	246,880	246,865	46,736	46,734	7,947	7,947	59,211	59,211

Note: Table 2.5 shows the sub-sample estimation outcomes of Equation 2.1. The estimations incorporate macroeconomic variables and financial development as control variables. Standard errors in parentheses are clustered at the firm level. ***, **, * denote significance at 1, 5, and 10 percent levels, respectively. Dependent variables are the annual percent growth. Estimations include country and time fixed effect (estimates not reported).

Based on the empirical findings derived from regional regression analyses, there is no compelling evidence to substantiate a significant influence of capital account liberalization on firm performance. The advantages attributed to capital account liberalization are masked by the distinctive characteristics inherent to the individual countries in the regions. Therefore, the dataset is analyzed based on their income classifications. A reevaluation of the sample is conducted to show the latent advantages of capital account liberalization on firm performance within this stratified framework.

Table 2.6 above shows the estimated regression outcomes for advanced markets, emerging markets, and Low-income countries. Columns I and II present the estimated result for advanced markets classified as high-income countries. Columns III and IV display the estimated regression results for emerging markets. The regression results for low-income countries are shown in columns V and VI.

Table 2.6, Column I, shows that firms in advanced economies benefit from capital account liberalization. A one-unit increase in the capital account openness index increases profitability by 1.121% for firms in advanced economies. Similarly, Column II, emerging markets, suggests that capital account liberalization positively affects firms' profitability. It suggests that with a one-unit increase in the capital account openness index, firms in the Emerging economies grow their profits by a magnitude of 0.814%. However, evidence of leverage remains insignificant for both advanced and emerging markets.

However, some firms require high leverage for their business operations. For a business that requires high leverage, capital account liberalization leads to effective competition and lowers the cost of capital to finance business operations and investment. In Columns V and VI, the results are insignificant for low-income countries.

Table 2.6: Capital Account Liberalization and Firm Performance: Subset Sample based on Income Classifications

Market Classifications	Advanced markets		Emerging markets		Low income countries	
	(I)	(II)	(III)	(IV)	(V)	(VI)
Outcome variables	Profitability	Leverage	Profitability	Leverage	Profitability	Leverage
lagged ka_open	1.121***	-4.703	0.814**	0.528	20.080	-0.037
	(0.254)	(3.442)	(0.319)	(0.425)	(29.194)	(0.206)
Firm age	-0.141***	0.336**	-0.062***	0.019	0.022	-0.001**
	(0.008)	(0.133)	(0.017)	(0.015)	(0.061)	(0.001)
Firm size	1.633***	-12.009***	0.212*	-1.288	3.211***	-0.001
	(0.076)	(4.502)	(0.124)	(1.078)	(0.896)	(0.008)
Inflation	0.169**	-0.463	-0.266**	0.187	0.209	-0.001
	(0.075)	(0.389)	(0.119)	(0.169)	(0.243)	(0.002)
Unemployment	-0.157**	0.533	-0.430***	0.162	-0.602	-0.013*
	(0.061)	(0.896)	(0.103)	(0.177)	(0.878)	(0.008)
GDP per capita	-0.000***	0.002*	0.001*	-0.000	0.036**	-0.000
	(0.000)	(0.001)	(0.000)	(0.000)	(0.017)	(0.000)
log Domestic private credit	-2.801***	-10.000*	-0.330	1.694	-14.941*	0.252***
	(0.641)	(5.616)	(1.364)	(2.315)	(7.851)	(0.071)
log Market Cap	2.159***	-2.072	1.926***	0.088	1.133	-0.034*
	(0.433)	(2.358)	(0.351)	(0.218)	(2.946)	(0.019)
Observations	195,928	195,922	166,474	166,463	2,310	2,310

Note: Table 2.3 shows the sub-sample estimation outcomes of Equation 2.1. The estimations incorporate macroeconomic variables and financial development as control variables. Standard errors in parentheses are clustered at the firm level. ***, **, * denote significance at 1, 5, and 10 percent levels, respectively. Dependent variables are the annual percent growth. Estimations include country and time fixed effect (estimates not reported).

The empirical analyses show that capital account liberalization yields favorable outcomes for firms operating in the Advanced economies and Emerging markets. However, the extent of these benefits may depend on the level of financial development and macroeconomic stability within the liberalized countries. It underscores the significant roles played by financial system maturity and economic stability in determining the distribution of benefits of capital account liberalization. These findings support Quinn and Toyoda's (2008) research, showing a correlation between capital account liberalization benefits and economies with strong financial systems and stable economies.

2.6 Robustness Checks

In order to ensure consistency and reliability of results, several sensitivity analyses were conducted for robustness checks to see if the results were consistent. The entire sample was divided into sub-samples for further analysis at region and market levels.

To further enhance the validity and reliability of the empirical analysis, the study re-estimate model in equation 2.1 with alternative methodologies - a fixed effect with an endogenous variable model (IV-FE) and the IV-limited information maximum likelihood (IV-LIML) model is used to check if the findings are consistent. The outcomes are consistent in magnitude and direction for the IV-FE model but insignificant. However, the outcome of IV-LIML is consistent with IV-2SLS in magnitude and direction with the same significance level. The IV-LIML is assumed to be less biased and gives a better confidence interval coverage range than the IV-2SLS. (see Appendix I for details).

Return on equity (ROE) and liquidity ratio are alternative performance metrics. ROE represents alternative profitability, while liquidity ratio is alternative leverage applied as a dependent variable. These results are consistent with the initial findings, though they differ in magnitude. (see Appendix II for details).

One thing that is held in this empirical paper is that capital account liberalization enhances a firm's performance. It increases a firm's profitability and declines its leverage. These outcomes are consistent with existing papers on financial liberalization and a firm's operating performance (Mitton, 2006) and Bekaert et al. (2005) on economic growth.

2.7 Conclusions

This paper provides valuable insights by critically examining how firms in liberalized countries benefit from capital account liberalization. The theoretical perspective on finance explains its impact on a firm's existence and financial well-being. It also suggests that access

to external finance can help firms overcome one of their main challenges. This paper provides evidence of how external factors, such as capital account liberalization policy, affect firm performance and growth.

The study shows, through empirical evidence, that firm performance is positively enhanced by capital account liberalization. Firms' profitability grows by approximately 0.757%. Capital account liberalization improves access to external funds from foreign investors. It increases financial institutions' efficiency and competition and lowers the cost of capital. The findings also provide evidence for efficient and effective financial development in allocating the benefit of capital account liberalization. Weak financial institutions and markets will hamper firm performance.

In order to broaden our understanding of how firms in different regions and markets respond to capital account liberalization, this paper also extends its scope to cover regions and markets. The findings from the market's perspective clarify who benefits from liberalization. Capital account liberalization increases a firm's profitability by about 1% for firms in advanced economies and emerging markets. It evidenced the need for well-developed financial institutions and markets and a stable economy. It supports the existing empirical studies on the need for internal financial deregulation, macroeconomic stability, and developed financial institutions to reap the benefit of financial liberalization (Johnson et al., 1997; Mishkin, 2009).

The paper contributes significantly to understanding how firm performance is affected by capital account liberalization. Empirical analysis shows that liberalization positively impacts firms' performance, leading to a 0.757% increase in profitability. It suggests improved financial health and access to external funds from foreign investors, enhancing firms' ability to invest and grow. The study highlights the role of financial institutions' efficiency.

The paper offers insight into how firms across various economies respond to capital

account liberalization by extending its analysis to different regions and markets. It sheds light on who benefits from liberalization and underscores the importance of well-developed financial institutions and stable economies in maximizing its positive impact. The paper highlights how government policies and actions are crucial in shaping firm performance and the general economic landscape.

For governments and policymakers, the findings of this paper have significant policy implications. It underscores the importance of financial sector reforms in improving financial institutions' competence and competitiveness to transfer the benefits of capital account liberalization to firms. Also, there is a need for domestic financial development initiatives, including regulatory reforms and improvements in financial infrastructure, to support the growth of firms and small and medium-sized enterprises.

In conclusion, policymakers should tailor their policies to the specific characteristics of their economies and markets, as highlighted by the paper's regional and market-specific analyses. The results from the paper are consistent with the existing literature on financial liberalization and growth.

REFERENCES

[1] Ameer, R. (2010). Financial liberalization and firms' capital structure adjustments evidence from Southeast Asia and South America. *Journal of Economics and Finance*, 37(1), 1–32. https://doi.org/10.1007/s12197-010-9158-3

[2] Ang, J. B. (2008). A survey of recent developments in the literature of finance and growth. *Journal of Economic Surveys*, 22(3), 536–576. https://doi.org/10.1111/j.1467-6419.2007.00542.x

[3] Atkin, D., Khandelwal, A. K., & Osman, A. (2017). Exporting and Firm Performance: Evidence from a Randomized Experiment*. *The Quarterly Journal of Economics*, 132(2), 551–615. https://doi.org/10.1093/qje/qjx002

[4] Beck, T., Lu, L., & Yang, R. (2015). Finance and Growth for Microenterprises: Evidence from Rural China. *World Development*, 67, 38–56. https://doi.org/10.1016/j.worlddev.2014.10.008

[5] Bekaert, G., & Harvey, C. R. (2000). Foreign Speculators and Emerging Equity Markets. *The Journal of Finance*, 55(2), 565–613. https://doi.org/10.1111/0022-1082.00220

[6] Bekaert, G., Harvey, C., & Lundblad, C. (2005). Does financial liberalization spur growth? *Journal of Financial Economics*, 77(1), 3–55. https://doi.org/10.1016/j.jfineco.2004.05.007

[7] Bhagat, S. and Bolton, B. (2019). Corporate governance and firm performance: The sequel. *Journal of Corporate Finance*, 58(1), pp.142–168. doi:https://doi.org/10.1016/j.jcorpfin.2019.04.006.

[8] Bilir, L. K., Chor, D., & Manova, K. (2019). Host-country financial development and multinational activity. *European Economic Review*, 115, 192–220. https://doi.org/10.1016/j.euroecorev.2019.02.008

[9] Brooks, S. M. (2004). Explaining Capital Account Liberalization in Latin America: A Transitional Cost Approach. *World Politics*, 56(3), 389–430. https://doi.org/10.1353/wp.2004.0014

[10] Chinn, M. D., & Ito, H. (2006). What matters for financial development? Capital controls, institutions, and interactions. *Journal of Development Economic*s, 81(1), 163–192. https://doi.org/10.1016/j.jdeveco.2005.05.010

[11] Christoffersen, P., Chung, H., & Errunza, V. (2006). Size matters: The impact of financial liberalization on individual firms. *Journal of International Money and Finance*, 25(8), 1296–1318. https://doi.org/10.1016/j.jimonfin.2006.09.003

[12] Cornia, G. A., & Lipumba, N. H. I. (1999). The impact of the liberalization of the exchange rate and financial markets in sub-Saharan Africa. Editors' introduction. *Journal of International Development*, 11(3), 317–319. https://doi.org/10.1002/(sici)1099-1328(199905/06)11:3%3C317::aid-jid588%3E3.0.co;2-3

[13] D'Souza, J., Megginson, W., & Nash, R. (2005). Effect of institutional and firm-specific characteristics on post-privatization performance: Evidence from developed countries. *Journal of Corporate Finance*, 11(5), 747–766. https://doi.org/10.1016/j.jcorpfin.2004.12.001

[14] De Loecker, J., & Goldberg, P. K. (2014). Firm Performance in a Global Market. *Annual Review of Economics*, 6(1), 201–227. https://doi.org/10.1146/annurev-economics-080113-104741

[15] Eichengreen, B. (2001). Capital Account Liberalization: What Do Cross-Country Studies Tell Us? *The World Bank Economic Review*, 15(3), 341–365. https://doi.org/10.1093/wber/15.3.341

[16] Eichengreen, B., Gullapalli, R., & Panizza, U. (2011). Capital account liberalization, financial development and industry growth: A synthetic view. *Journal of International Money and Finance*, 30(6), 1090–1106. https://doi.org/10.1016/j.jimonfin.2011.06.007

[17] Feng, X., Luo, W. and Wang, Y. (2021). Economic policy uncertainty and firm performance: evidence from China. *Journal of the Asia Pacific Economy*, pp.1–18. doi:https://doi.org/10.1080/13547860.2021.1962643.

[18] Giannetti, M., & Ongena, S. (2007). Financial Integration and Firm Performance: Evidence from Foreign Bank Entry in Emerging Markets*. *Review of Finance*, 13(2), 181–223. https://doi.org/10.1093/rof/rfm019

[19] Gopalan, S., & Sasidharan, S. (2020). Financial liberalization and access to credit in emerging and developing economies: A firm-level empirical investigation. *Journal of Economics and Business,* 107, 105861. https://doi.org/10.1016/j.jeconbus.2019.105861

[20] Grilli, V., & Milesi-Ferretti, G. M. (1995). Economic Effects and Structural Determinants of Capital Controls. Staff Papers - International Monetary Fund, 42(3), 517. https://doi.org/10.2307/3867531

[21] Han, S., & Jung, K. (2022). CEO political orientation, risk taking, and frm performance: evidence from the U.S. property-liability insurance industry. *Economics of Governance*, 24, 1–39. https://doi.org/10.1007/s10101-022-00281-2

[22] Henry, P. B. (2000). Stock Market Liberalization, Economic Reform, and Emerging Market Equity Prices. *The Journal of Finance*, 55(2), 529–564. https://doi.org/10.1111/0022-1082.00219

[23] Henry, P. B. (2003). Capital-Account Liberalization, the Cost of Capital, and Economic Growth. *American Economic Review*, 93(2), 91–96. https://doi.org/10.1257/000282803321946868

[24] Henry, P.B. (2007). Capital Account Liberalization: Theory, Evidence, and Speculation. *Journal of Economic Literature*, [online] 45(4), pp.887–935. doi:https://doi.org/10.1257/jel.45.4.887.x

[25] Johnston, R. B., Darbar, S. M., & Echeverria, C. (1997). Sequencing Capital Account Liberalization: Lessons from the Experiences in Chile, Indonesia, Korea, and Thailand. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.882738

[26] Iqbal, U., Gan, C. and Nadeem, M. (2019). Economic policy uncertainty and firm performance. *Applied Economics Letters*, pp.1–6. doi:https://doi.org/10.1080/13504851.2019.1645272.

[27] Kahloul, I., Grira, J., & Hlel, K. (2022). The trilogy of economic policy uncertainty, earnings management and firm performance: empirical evidence from France. *Journal of Economics and Finance*, 47(1), 184–206. https://doi.org/10.1007/s12197-022-09605-8

[28] Khémiri, W., & Noubbigh, H. (2018). Determinants of capital structure: Evidence from sub-Saharan African firms. *The Quarterly Review of Economics and Finance*, 70, 150–159. https://doi.org/10.1016/j.qref.2018.04.010

[29] Klein, M. W., & Olivei, G. P. (2008). Capital account liberalization, financial depth, and economic growth. *Journal of International Money and Finance*, 27(6), 861–875. https://doi.org/10.1016/j.jimonfin.2008.05.002

[30] Kraay, A. (1998). In search of the macroeconomic effects of capital account liberalization. *World Bank*.

[31] Larrain, M., & Stumpner, S. (2017). Capital Account Liberalization and Aggregate Productivity: The Role of Firm Capital Allocation. *The Journal of Finance*, 72(4), 1825–1858. https://doi.org/10.1111/jofi.12497

[32] Lee, C.-C., & Lin, C.-W. (2016). Globalization, political institutions, financial liberalization, and performance of the insurance industry. *The North American Journal of Economics and Finance*, 36, 244–266. https://doi.org/10.1016/j.najef.2016.01.007

[33] Levine, R. (1997). Financial Development and Economic Growth: Views and Agenda. *Journal of Economic Literature*, 35(2), 688–726.

[34] Liu, Y., Miletkov, M. K., Wei, Z., & Yang, T. (2015). Board independence and firm performance in China. *Journal of Corporate Finance*, 30, 223–244. https://doi.org/10.1016/j.jcorpfin.2014.12.004

[35] Lo, K. L., Liu, H., Xia, F., & Mi, J. J. (2022a). The Impact of Inter-firm Cooperative R&D on Firm Performance: Evidence from Chinese Publicly Listed Companies. *Emerging Markets Finance and Trade*, 59(2), 1–13. https://doi.org/10.1080/1540496x.2022.2103402

[36] Manova, K. (2008a). Credit constraints, equity market liberalizations and international trade. *Journal of International Economics*, 76(1), 33–47. https://doi.org/10.1016/j.jinteco.2008.03.008

[37] Mclean, R. D., Zhang, T., & Zhao, M. (2012). Why Does the Law Matter? Investor Protection and Its Effects on Investment, Finance, and Growth. *The Journal of Finance*, 67(1), 313–350. https://doi.org/10.1111/j.1540-6261.2011.01713.x

[38] Mishkin, F.S. (2009). Prudential Supervision What Works and What Doesn't. Chicago, Il *University Of Chicago Press*. Available at: https://chicago.universitypressscholarship.com/view/10.7208/chicago/9780226531939.001.0001/up 9780226531885-chapter-2.

[39] Mitton, T. (2006). Stock market liberalization and operating performance at the firm level. *Journal of Financial Economics*, 81(3), 625–647. https://doi.org/10.1016/j.jfineco.2005.09.001

[40] Nheri, O. (2012). Economic reforms, corporate governance and privatization method as determinants in performance changes of new privatized firms: the case of MENA countries. *Journal of Management & Governance*, 18(1), 95–127. https://doi.org/10.1007/s10997-012-9222-9

[41] Quinn, D. P., & Toyoda, A. M. (2008). Does Capital Account Liberalization Lead to Growth? *The Review of Financial Studies*, 21(3), 1403–1449. https://doi.org/10.1093/rfs/hhn034

[42] Rajan, R.S. and Gopalan, S. (2014). Economic Management in a Volatile Environment. *Springer*.

[43] Rossi, M. (2016). The Impact of Age on Firm Performance: A literature review. *Corporate Ownership and Control*, 13(2). https://doi.org/10.22495/cocv13i2c1p3

[44] Stiglitz, J. E. (2000). Capital Market Liberalization, Economic Growth, and Instability. *World Development*, 28(6), 1075–1086. https://doi.org/10.1016/s0305-750x(00)00006-1

[45] Varela, L. (2017). Reallocation, Competition, and Productivity: Evidence from a Financial Liberalization Episode. *The Review of Economic Studies*, 85(2), 1279–1313. https://doi.org/10.1093/restud/rdx046

[46] Wang, C., Zhao, S., Zheng, H., & Bai, Y. (2022). Does Financial Constraint Hinder Firm Growth? *Emerging Markets Finance and Trade*, 58(15), 1–12. https://doi.org/10.1080/1540496x.2022.2069490

APPENDICES II

A. Description of Variables

Variables	Descriptions
Capital Account Openness (KA_Open)	an index proxy for the level of financial liberalization. It is based on information relating to restrictions in the International Monetary Fund's Annual Report on Exchange Arrangements and Exchange Restrictions (AREAER). Constructed by Chinn-Ito (2006). Source: International Finance and Macroeconomics Catalogue of Data Sources, National Bureau of Economic Research (NBER).
Gross Margin	It measures a company's operational profit and efficiency. It is difference between revenue and cost of goods sold divided by revenue Source: S&P Capital IQ.
Total debt/Total assets ratio	It assesses the fraction of a company's total assets that are financed through debt. Source: S&P Capital IQ.
Return on Equity (ROE)	ROE measures a company's profitability by calculating its net income (NI) as a percentage of its shareholders' equity. Source: S&P Capital IQ.
Total debt/Total equity ratio	The ratio evaluates the relative proportion of a company's debt to its shareholders' equity. Source: S&P Capital IQ.
Firm's age	It is calculated by subtracting year founded from current year. Source: Author generated

Firm's size	It is defined as the log of firm's total assets. Source: Author generated
Domestic private credit to GDP	It is the financial resources provided to the private sector by financial corporations. Source: World Bank Development Indicators.
Stock market capitalization to GDP	Total value of all listed shares in a stock market as a percentage of GDP. Source: Global Financial Development, World Bank.
GDP per capita	It is gross domestic product divided by midyear population. Source: World Bank Development Indicators.
Political stability & absence of violence	It measures perceptions of the likelihood of political instability and politically-motivated violence, including terrorism. Source: World Bank Development Indicators.
Inflation, consumer prices (annual %)	It is the rate of price change in the economy measured by consumer price index. Source: World Bank Development Indicators.
Employment rate	It is the fraction of a country's population that is employed. Source: World Bank Development Indicators.
Unemployment rate	It is the share of the labor force that is not working but is available for and actively searching for employment. Source: World Bank Development Indicators.

B. Other Measurements and Tests of Endogeneity

B.1 Alternative methods - Fixed Effect with Endogenenous variable model & IV-LIML

I: Alternative methods - Fixed Effect with Endogenenous variable model & IV-LIML

Outcome variables	Profitability	Leverage	Profitability	Leverage
lagged ka_open	0.757*	-2.105	0.757***	-2.105
	(0.396)	(1.741)	(0.193)	(1.808)
Firm age	-0.109***	0.184***	-0.109***	0.184***
	(0.006)	(0.067)	(0.008)	(0.070)
Firm size	1.091***	-7.975***	1.091***	-7.975***
	(0.059)	(2.884)	(0.069)	(2.843)
Inflation	-0.213*	0.113	-0.213**	0.113
	(0.117)	(0.152)	(0.097)	(0.150)
Unemployment	-0.285***	0.419	-0.285***	0.419
	(0.059)	(0.548)	(0.052)	(0.691)
GDP per capita	-0.000*	0.001*	-0.000**	0.001
	(0.000)	(0.001)	(0.000)	(0.001)
log Domestic private credit	-0.973	-3.489	-0.973	-3.489
	(0.995)	(3.200)	(0.929)	(3.005)
log Market Cap	1.949***	-0.050	1.949***	-0.050
	(0.520)	(1.224)	(0.278)	(0.431)
Method	FE-IV	FE-IV	IV-LIML	IV-LIML
Observations	364,712	364,695	364,712	364,695

Note: The table shows the estimation outcomes of Equation 2.1 with alternative methods. The estimations incorporate macroeconomic variables and financial development as control variables. Standard errors in parentheses are clustered at the firm level. ***, **, * denote significance at 1, 5, and 10 percent levels, respectively. Dependent variables are the annual percent growth. Estimations include country and time fixed effect (estimates not reported).

B.2 Alternative Performance Metrics

II: Alternative Performance Metrics

Outcome variables	Return on Equity	Liquidity ratio
lagged ka_open	0.313***	-0.444
	(0.090)	(0.567)
Firm age	0.011***	0.032
	(0.004)	(0.040)
Firm size	1.180***	-1.219***
	(0.034)	(0.148)
Inflation	-0.022	0.333*
	(0.021)	(0.184)
Unemployment	-0.016	-0.361*
	(0.038)	(0.201)
GDP per capita	-0.000	-0.000
	(0.000)	(0.000)
log Domestic private credit	-2.243***	0.531
	(0.664)	(2.308)
log Market Cap	0.239*	-0.784
	(0.141)	(0.869)
Observations	364,712	363,973

Note: Table shows the estimation outcomes of Equation 2.1 with alternative mertics of firm performance. The ROE measures profitability, while the liquidity ratio measures leverage. The estimations incorporate macroeconomic variables and financial development as control variables. Standard errors in parentheses are clustered at the firm level. ***, **, * denote significance at 1, 5, and 10 percent levels, respectively. Dependent variables are the annual percent growth. Estimations include country and time fixed effect (estimates not reported).

B.3 Capital Account Liberalization on Firm Performance (Firms Factors at 25 percentile Threshold)

III: Capital Account Liberalization on Firm Performance (Firms Factors at 25 percentile Threshold)

	VARIABLES	*lagged ka_open*	*Firm age*	*Firm size*	Observ
age < p25	Profitability	-0.405	-0.093	1.637***	89,054
		(0.606)	(0.061)	(0.100)	
	Leverage	-5.984	1.121	-13.166**	89,050
		(6.987)	(0.790)	(6.358)	
age >= p25	Profitability	0.553***	-0.086***	0.727***	275,658
		(0.176)	(0.010)	(0.090)	
	Leverage	-0.683*	0.105*	-5.594*	275,645
		(0.392)	(0.057)	(3.010)	
size < p25	Profitability	-2.141***	0.005	2.236***	82,807
		(0.629)	(0.016)	(0.120)	
	Leverage	-3.489	0.746**	-38.104***	82,796
		(8.335)	(0.296)	(13.592)	
size >= p25	Profitability	0.969***	-0.127***	0.238*	281,905
		(0.237)	(0.009)	(0.144)	
	Leverage	-0.002	-0.001***	0.019***	281,899
		(0.002)	(0.000)	(0.001)	
age & size < p25	Profitability	-3.318**	0.430***	2.417***	28,531
		(1.552)	(0.116)	(0.180)	
	Leverage	-18.911	4.933	-42.845**	28,528
		(23.634)	(3.138)	(20.698)	
age & size >=p25	Profitability	0.681***	-0.089***	0.438**	221,382
		(0.228)	(0.011)	(0.175)	
	Leverage	-0.001	-0.001***	0.017***	221,377
		(0.002)	(0.000)	(0.001)	

Note: The table is a sub-sample of the dataset based on the firm's age and size based on the initial model in Equation 2.1. The estimations incorporate macroeconomic variables and financial development as control variables (not reported). Standard errors in parentheses are clustered at the firm level. ***, **, * denote significance at 1, 5, and 10 percent levels, respectively. Dependent variables are the annual percent growth. Estimations include country and time fixed effect (estimates not reported).

B.4 Tests of Endogeneity

B.4.1 (Equation 2.1, Table 2.2)

H0: variables are exogeneous	Profitability			Leverage	
Durbin (score) chi2(1)	0.006311	p = 0.9367	Durbin (score) chi2(1)	0.000051	p = 0.9943
Wu-Hausman F(1, 416660)	0.006309	p = 0.9367	Wu-Hausman F(1, 416641)	0.000051	p = 0.9943
Robust regression F(1, 33244)	0.25295	p = 0.8736	Robust regression F(1, 33244)	0.027302	p = 0.8688

B.4.2 (Equation 2.1, Table 2.3)

H0: variables are exogeneous	Profitability			Leverage	
Durbin (score) chi2(1)	0.098047	p = 0.7542	Durbin (score) chi2(1)	0.000015	p = 0.9969
Wu-Hausman F(1, 364596)	0.098016	p = 0.7542	Wu-Hausman F(1, 364579)	0.000015	p = 0.9969
Robust regression F(1, 31642)	0.505666	p = 0.4770	Robust regression F(1, 31642)	0.008	p = 0.9287

B.4.3 (Equation 2.2, Table 2.4)

H0: variables are exogeneous	Profitability			Leverage	
Durbin (score) chi2(3)	3.63062	p = 0.3042	Durbin (score) chi2(3)	5.31959	p = 0.1498
Wu-Hausman F(1, 364592)	1.20982	p = 0.3044	Wu-Hausman F(1, 364575)	1.77264	p = 0.1499
Robust regression F(1, 31642)	2.37205	p = 0.0683	Robust regression F(1, 31642)	2.35091	p = 0.0703

Chapter 3

Capital Account Liberalization and the Margins of Trade

How does the government's decision on capital account liberalization affect the export market? This research investigates the influence of capital account liberalization on firms' decisions to enter the export market and the volume of exports, addressing both the extensive and intensive margins of trade. Substantial initial investments and fixed operational costs often impeded entry into export markets, compounded by financial constraints. This chapter uses a sizeable firm-level dataset from 2006 to 2023 across 169 countries. It uses advanced econometric models to address endogeneity concerns, including the IV-Probit and IV-2SLS models. The findings show that capital account liberalization significantly enhances firms' likelihood of engaging in export activities, particularly for foreign-owned entities. The study also identifies a positive correlation between capital account liberalization and the intensive margin of trade, particularly among firms reliant on external capital for asset financing. It underscores the potential of capital account liberalization to incentivize market penetration and alleviate financial constraints inhibiting firms' participation in international trade. The study underlines the role of capital account liberalization in shaping firms' export behavior and its implications for economic policy.

3.1 Introduction

Many firms are deterred from entering the export market because of the substantial upfront costs. These expenses are typically non-recoverable if the firm decides against pursuing market entry. Also, ongoing expenses are necessary to establish and maintain a presence in the market. Although certain expenses can be recovered, a considerable amount is tied to intangible assets, which makes it challenging to use them as loan collateral or to attract investment (Becker, 2012). However, scholars have advocated for capital liberalization to ease financial constraints. They highlight the benefits of reducing capital control to spur economic growth, improve resource allocation, and help solve credit constraints (Bekaert et al., 2003; Manova, 2008). More recent studies have focused on how financial constraints affect trade (Berman & Hericourt, 2010; Fauceglia, 2015; Manova et al., 2015). However, more research is needed on how government policies on reducing capital controls impact margins of trade. This paper aims to fill that gap by exploring how liberalizing capital accounts affects the margins of trade. It adds new insights to the discussion on financial liberalization and its impact on trade.

This study examines how capital account liberalization affects a firm's decision-making process for entering the export market and its impact on export volume. The debate on export determinants revolves around these two margins. The export market faces financial constraints concerning the costs associated with market entry (extensive margin) and operational expenses (variable costs) influencing the intensive margin. External finance is critically needed in this market. Capital account liberalization emerges as a potential solution to ease financial constraints and credit crises (Manova, 2012; Manova et al., 2015). The nexus between credit constraints and capital account liberalization underscores the need to examine how the latter influences firms' export decisions and export volumes.

This study uses a firm-level dataset from enterprise surveys conducted by the World Bank (2006-2023). The dataset covers approximately 48,320 firms across 169 countries.

The analysis adopts a probit model incorporating an endogenous covariate, termed the ivprobit model, to assess the influence of capital account liberalization on export probability. The instrumental variable with a two-stage least square (IV-2SLS) model is used to evaluate the effects of capital account liberalization on export volume. In order to mitigate endogeneity bias, the liquid liabilities to GDP ratio is chosen as an instrument and subjected to tests of endogeneity to validate its appropriateness for correcting such bias.

The study explains the impact of capital account liberalization on firms' export decisions. It shows that with a one-unit increase in the capital account openness index, the probability of firms participating in export activities increases by about 0.50. Substantial evidence shows a surge in foreign-owned firms' export involvement following capital account liberalization. This observation aligns with the existing literature on the role of multinational corporate subsidiaries in international trade.

Capital account liberalization can serve as a catalyst for firms to engage in exporting activities. Government policies to stimulate economic growth should prioritize encouraging firms' entry into the export market rather than solely providing subsidies for existing export activities. This process highlights the critical role of firm productivity and size in maintaining export operations. After entering, firms with higher productivity sustain their presence in the export market. In contrast, less productive firms may focus on servicing the domestic market.

The study further shows that capital account liberalization is associated with increased trade intensity, especially for firms that rely on external financing for their assets. It indicates a significant increase in trading activities, with approximately 39%, for firms that rely on external capital post-liberalization. This finding is consistent with the existing financial constraints and trade dynamics literature. Capital account liberalization can help overcome financial constraints and encourage market entry.

This paper relates to existing literature that studies financial constraints, financial devel-

opment, and trade determinants. Scholars have shown that the heterogeneity of firms' productivity, alongside existing fixed costs, is why some firms do not engage in foreign trade (Melitz, 2003; Suwantaradon, 2008). Krugman (1980) argued that the operational variable costs of exports are essential when determining the level of trade by a firm. Fernandes et al. (2023) document that extensive and intensive margins have the same relevance in accounting for the difference in bilateral trade flow. Scholars have also extensively studied financial constraints and trade and provided empirical evidence on the effect of financial constraints on export (Berman & Hericourt, 2010; Chen et al., 2020; Fauceglia, 2015; Manova, 2012; Manova et al., 2015). Using capital account liberalization to tackle financial constraints faced by emerging and developing markets has been well-articulated (Bekaert et al., 2003; Manova, 2008; Sun et al., 2013).

Previous research has examined the impact of financial liberalization on trade dynamics. For instance, Manova (2008) investigates credit constraints, equity market liberalizations, and their effects on international trade using sector-level data. This current study uses firm-level data to explore the influence of capital account liberalization on firms' decisions regarding foreign market entry and trade volume. This study closely relates to Manova et al. (2015) study that examines firm exports and multinational activities amidst credit constraints. Both studies analyze how financial factors shape firms' behavior and activity patterns. Manova et al. (2015) focus on credit friction and firms' perceptions of external finance necessity. In contrast, this study concentrates on the influence of policy on firms' behavior and activity patterns.

This study contributes to the literature on capital liberalization and firms' export activities, with substantial economic implications. First, it discusses how capital account liberalization influences firms' decisions to engage in exports. The findings highlight the significance of implementing policies encouraging export-driven growth and attracting foreign direct investment through capital account liberalization.

Also, capital account liberalization may cause firms to enter the export market. However, the study emphasizes the significance of firm productivity and size in ensuring their continuous presence within the export domain. Policymakers should aim at measures that encourage firms' productivity and competitiveness. Such initiatives are essential to guarantee their sustained engagement in export activities.

The study further demonstrates that capital account liberalization enhances trade intensity, especially among firms reliant on external financing. It underscores the significance of mitigating financial barriers firms face in securing external finance, as this substantially influences their capacity to participate in the exporting market. By removing restrictions on capital accounts, policymakers can encourage firms to enter the export markets, accelerating economic growth and improving competitiveness.

The remaining parts of this paper take the following sequence. Section 3.2 discusses the theoretical framework and related empirical literature. Section 3.3 presents the methodology adopted and the model specification. Section 3.4 describes the data sources used for the analysis. Section 3.5 presents the empirical results. Section 3.6 presents the robustness checks. Section 3.7 concludes.

3.2 Theoretical Framework

All firms require access to finance; however, their need varies across industries and countries. Credit constraint is a challenge many firms face, particularly those in the exporting sector.

Theoretical literature suggests that credit constraints in the exporting market are attributed to longer transaction durations and challenges in enforcing cross-border payments (Amiti & Weinstein, 2011). In his model, Feenstra et al. (2014) examine why credit constraints exist for domestic and exporting firms when banks do not observe the firm's productivity. His findings show the time lag in completing export deals, which makes it more

difficult for exporting firms to access bank loans than domestic firms. Also, Manova (2012) identifies three channels through which credit constraints impact trade. These include the selection of diverse firms for local production, the selection of local manufacturers for exporting, and the overall level of firm exports. It suggests that credit constraints may lead to a reduction in the extensive and intensive margins of exports.

Exporting firms are said to demand more external finance than domestic firms. Manova et al. (2015) provide three reasons. First, entering foreign markets requires extra upfront costs. Fixed costs include potential market feasibility study, research and development (R&D), product development, regulatory compliance, building supply chain network, and logistics. These costs are related to the extensive margin. Variable costs, which include transportation, taxes, and freight insurance, are associated with the intensive margin. The second is time lag barriers. Export transactions always take longer time to complete than domestic transactions. It significantly impacts the exporters' working capital and external finance needs. Last, foreign trade is inherently risky, which requires exporters to have insurance to cover the uncertainty.

Allowing free capital mobility within and across borders can ease credit constraints. Capital account liberalization should cause resource redistributions from capital-abundant countries, where expected returns are low, to capital-scarce countries, where expected returns are high. It will reduce the cost of capital in liberalizing economics, increase investment, and raise output and exports (Bekaert & Harvey, 2000; Manova, 2008). Foreign Direct Investment (FDI), which depends on capital account openness, might ease the impact of credit tensions on growth, trade, and private sector development in less financially developed economies (Manova et al., 2015). Suppose credit constraints restrict firms' ability to produce and grow. In that case, capital account liberalization should stimulate aggregate exports by allowing more firms to become exporters and increasing firm-level exports.

3.2.1 How significant is capital account liberalization to exporting firms?

This section focuses on the empirical literature on the margin of trade and finance. Scholars have established that export varies based on intensive margins (Krugman, 1980) and extensive margins (Melitz, 2003). Several other scholars have made tremendous contributions to this issue of export and the margins of trade; therefore, I detail some of the literature and highlight how this paper is relevant.

Research has shown that firms' productivity largely determines the continuous existence of firms in the export market. According to Melitz (2003), only highly productive firms will be motivated to enter the export market when exposed to trade, while the less productive firms will concentrate on the domestic market. However, Fernandes et al. (2023) document that both intensive and extensive margins have equal relevance in accounting for the difference in bilateral trade flow. His findings suggest that approximately 40% of the export variation is because of the intensive margin, while the extensive margin accounts for the balance. In his study, Chaney (2008) demonstrates that introducing firm heterogeneity in productivity and fixed cost of exporting to the Krugman model results in changes in export size and the number of exporters because of variations in transport cost. His findings suggest that the elasticity of substitution between varieties of goods has inverse effects on each margin. The export size responds more to changes in trade restriction when the elasticity of substitution is high but less responsive to the number of exporters. Reducing a trade barrier attracts new and less productive firms to enter the exporting market. The less productive firms are disadvantaged when the elasticity of substitution is high.

The impact of financial development on trade has caught many scholars' attention (Becker et al., 2012; Jaud et al., 2009; Fauceglia, 2015; Manova et al., 2015). The empirical evidence suggests the need for a developed financial system to facilitate trade. For instance, Becker (2012) studies the link between financial development and firm exports

and argues that a developed financial system can facilitate exports. They stressed the intangibility nature of the fixed cost needed in the export market, which makes it hard to be externally financed. It suggests the relationship between financial development and the ability of domestic firms to export. Using Rajan and Zingales (1998), Jaud et al. (2009) examine if financial development facilitates country-product survival in the foreign market. Their findings suggest that financial markets and institutions help firms overcome moral hazard and adverse selection problems by reducing their costs of raising money from outsiders. It is easier for firms with enough financial resources and high productivity to enter the foreign market. Ma and Xie (2019) find that the financial development of the target and originating countries significantly influences bilateral trade patterns on both the extensive and intensive margin.

Other literature has claimed that financial development can lower the impact of credit constraints on export decisions and behavior. Fauceglia (2015) finds that the impact of credit constraints on the likelihood of export is more significant for firms in financially less developed countries. Manova (2012) stresses the need for external finance in trade. The imperfections in the financial markets severely limit trade flow as exporters require external finance. One-third of the trade-specific effects reflect reduced firm entry into exporting (extensive margin), and two-thirds result from lower firm-level sales abroad (intensive margin). Manova et al. (2015) find that foreign direct investment (FDI) can help ease the impact of domestic financial market imperfections on trade.

Lee (2023) studied the differential impacts of access to finance on incumbent and new exporters. His findings can be summed up in three layers: access to external finance positively relates to exports and margins of exports for new entrants but does not affect incumbents; they both respond differently to changes in access to external finance; and access to external finance rises exporter entry rate, but it does not impact firm exit and survival rates. Bilir et al. (2019) found that weak local capital markets can be a significant obstacle

for firms wanting to establish affiliates. As a result, countries are implementing financial reforms to encourage FDI inflows. Liu et al. (2015) explore the impact of the inefficient allocation of financial resources from corruption on export. The findings suggest that inefficient allocation of financial resources hampers export growth, particularly at the extensive margins of heterogeneous firms, despite favorable external financial shocks.

He (2012) studies whether China's financial reform promotes the expansion of its exports using a system of GMM (generalized method of moments) estimation. His result finds no effect of financial deregulation, meaning that Chinese financial deregulation on its economic development may not be possible by promoting export expansion. Manova (2008) showed that credit constraints are significant determinants of trade flows. Her research examines the relationship between equity market liberalizations and export behavior in 91 countries from 1980 to 1997. The findings suggest that liberalization has a more substantial positive effect on exports in sectors that rely more on external finance and have softer assets. Introducing financial frictions into the trade model with heterogeneous firms like Melitz (2003) and Suwantaradon (2008) finds a connection between financial constraints and productivity. Firms that are more financially dependent are likely to operate on a less efficient scale, which may cause exiting the market. It suggests that the effect of productivity on the probability of exporting increases with access to finance.

Based on the existing literature, one can observe the relevance of financial reforms in shaping the financial development of an exporting country and easing the credit constraints exporting firms face. If liberalization reduces the cost of capital, enhances investment, and improves productivity (Bekaert et al., 2003; Henry, 2003), then it should be able to stimulate aggregate exports by encouraging more firms to enter the export market (extensive margin) or by increasing firm-level exports (Intensive margin).

This paper contributes to the existing literature on the margins of trade by exploring how capital account liberalization has enhanced exporting firms' behavior regarding the

margins of trade. It intends to investigate the impact of capital account liberalization on the extensive margins and the intensive margins of trade in nine emerging economies that have liberalized the financial market.

3.3 Methodology

This paper adopts two empirical methods to analyze the influence of capital account liberalization on the margins of trade.

The first method is the probit model for analyzing the impact of capital account liberalization on the extensive margin. The firm's decision to enter the market is a discrete variable that takes a value of one if it enters the exporting market; zero otherwise. Therefore, the likelihood of a firm i in the country c exporting during period t is given as:

$$pr(X_{ict} > 0) = \begin{pmatrix} 1 \\ 0 \end{pmatrix} if\ \beta_1 CAL_{ct} + v_1 \Omega_{ict} + S_i + T_t + \varepsilon_{ict} > 0, \tag{3.1}$$

xcc where $pr(X_{ict})$ is the discrete variable for the extensive margin, CAL_{ct} is the capital account openness index proxied for capital account liberalization, and Ω_{ict} is a vector control variable, including access to finance (financial constraints), firm productivity, firm size, ownership, exchange rate, private credit to GDP, and gross domestic product (GDP). S_i is the sector where firm i operates captures sector-specific fixed effects, and T_t is time-specific fixed effects to account for unobserved characteristics. The country fixed effect is excluded because of its high collinearity with the variable of interest.

Access to finance is a crucial determinant influencing a firm's capacity to participate in foreign trade. Firms with access to financial resources show a greater capacity to invest in production, export infrastructure, and expand their market. Similarly, firm size and productivity have been evidenced to be significant in firms' decisions. Large firms are inclined to engage in foreign trade more effectively, potentially benefiting from economies of scale. A positive correlation exists between increased firm productivity and competitiveness in for-

eign markets. Incorporating these variables as controls ensures that any identified effects are not only because of firm productivity or size disparities.

Also, the exchange rate plays a significant role in international trade and currency stability, which influences firms' competitiveness on a global scale. As a control, it facilitates isolating the effect of capital account liberalization on margins of trade from the uncertainty prompted by currency instability. Including private credit as a percentage of GDP as a control variable is essential. It helps to differentiate the impact of capital account liberalization on margins of trade from the current level of credit accessibility in the overall economy. The level of economic activities across countries is included as control variables using the log of GDP to ensure that economic activities do not influence the estimated effect.

In international trade, self-selection is a critical concept. It involves a firm's decision-making process to export or focus on the domestic market. This selection mechanism frequently depends on prominent characteristics that set exporting firms apart from those not engaging in export activities. Diez et al. (2016) illustrate that such differences in firm characteristics are sustained regardless of their export status, primarily because highly productive firms observe profitability in choosing to export.

However, in certain circumstances, the divergence in firm characteristics may not become apparent until the process of exporting is started. This situation posits that exporting facilitates a learning curve, enabling exporting firms to assimilate innovative and more efficacious production techniques. Empirical research consistently validates that firms exhibiting superior productivity levels are more inclined towards engaging in exportation. Also, the evidence has suggested that increased trade costs eliminate the less efficient firms, and only those with higher proficiency get involved in export activities. Conversely, with reduced trade costs, an incentive emerges for the less productive firms to venture into the export domain.

The econometric model for the extensive margin of trade incorporates firm-specific

characteristics and macroeconomic factors that can influence a firm's decision to enter the export market. This approach aims to mitigate potential biases from self-selection. A constraint is imposed on the right-hand side of the model, stipulating that it must exceed zero to ensure that it includes sole exporting entities. This precautionary measure eases the risk of erroneously incorporating non-exporting firms into the estimation process, thus safeguarding the integrity of the results.

First, equation 3.1 is estimated to evaluate the influence of capital account liberalization on the decision-making process of exporting firms. All estimations incorporate year-fixed effects variables to control for unobserved characteristics.

In empirical studies concerning finance and growth, addressing endogeneity bias is crucial. In this context, endogeneity often results from reverse causation. When a government relaxes restrictions on capital movement, firms may react by seeking cheaper foreign funds for investment and expansion in anticipation of increased export opportunities. However, firms' expectations can influence the government's decision to liberalize capital accounts. The advanced probit model with an endogenous covariate (iv-probit) is adopted to mitigate this concern. Using instrument variables helps to isolate the actual effect of capital account liberalization on the margins of trade, controlling for the potential bias from reverse causation. The study chooses liquid liabilities to GDP as an instrument. Capital account liberalization enhances access to foreign capital, often leading to increased liquid liabilities within an economy, indicating a direct correlation between liquid liabilities to GDP and capital account liberalization. However, while firms can influence the demand for credit, this is unlikely to impact the level of liquid liabilities in the economy. Adding a control such as GDP to capture the level of economic activities can help improve the estimates' reliability. Acknowledging the assumptions and challenges associated with identifying a valid instrument, statistical tests of endogeneity and weak instruments are conducted for the reliability and validity of the instrument.

Finally, all estimations are reported with robust standard errors clustered at the firm level to address heteroscedasticity concerns. Results from both the probit and iv-probit models are presented for detailed analysis.

The second model is the standard ordinary least square (OLS) with a fixed effect to estimate the intensive margins of trade.

$$log(X_{ict}) = \alpha_1 CAL_{ct} + v_1 \Omega_{ict} + S_i + T_t + \varepsilon_{ict} \; if \; pr(X_{ict} > 0), \tag{3.2}$$

where, $log(X_{ict})$ is the logarithm of the value of exports for intensive margin. Equation 3.2 considers a different dependent variable and imposes a constraint $(X_{ict} > 0)$ on the right-hand side to include only exporting firms in the sample. A two-stage least squares (2SLS) model addresses the persistent concern regarding endogeneity bias. The instrumental variable (IV) approach is used in the IV-2SLS estimation to mitigate endogeneity bias.

When examining exporting behavior using a sub-sample, selection issues may arise because of the non-random nature of the sample. Exporters are not randomly chosen but are self-selected based on various unobservable traits, such as firm size, productivity, and market conditions. This self-selection leads to biased estimates, as larger and more productive firms are more likely to export than smaller ones. Likewise, sample bias may occur if only exporters who voluntarily report their activities or those meeting specific criteria are included, potentially misrepresenting the entire exporter population.

The Heckman correction procedure addresses this selection problem by adopting a two-step approach. This approach models the selection process through a probit model, predicting the probability of a firm engaging in exporting based on observable characteristics. This first step yields the inverse Mills ratio, which quantifies the likelihood of selection conditional on the covariates. The second step involves integrating the inverse Mills ratio as an additional regressor in the outcome model, correcting for selection bias. It ensures that the estimation procedure only considers firms engaged in exporting. The Heckman correction method improves the validity of the findings by controlling for specific firm characteristics

and incorporating sector-specific and year-specific fixed effects.

Robust standard errors are reported to address the heteroscedasticity concerns. Endogeneity tests are conducted, with the Dubin-Wu-Hausman test assessing the exogeneity of regressors. Results show that the null hypothesis of exogeneity cannot be rejected for all estimations. Also, the minimum eigenvalues for all estimations surpass critical values, affirming the suitability and strength of the chosen instruments. Both ordinary least squares (OLS) and IV-2SLS estimates are reported for detailed analysis.

3.3.1 Expectations

Based on prior empirical research, it is expected that associating the control variables (specifically, the firm's financial health, productivity, size, and ownership) would exhibit a positive relationship, denoted as β_2, $\alpha_2 > 0$ (Meltiz, 2003; Chaney, 2008; Berman & Hericourt, 2010). Previous empirical investigations have shown that capital account liberalization significantly mitigates financial constraints and credit shortages, enhancing firm-level investments and facilitating efficient allocation of resources (Manova et al., 2015; Milton, 2006). Therefore, it is conjectured that capital account liberalization would stimulate aggregate exports by enabling more firms to engage in exporting activities and subsequently increasing firm-level export volumes. Therefore, it is hypothesized that the coefficient associated with capital account liberalization β_1, $\alpha_1 > 0$ would also show a positive effect.

3.4 Data

The dataset for this study is sourced from three primary sources. The firm-level data are derived from the World Bank Enterprise Surveys. The Chinn-Ito Index (2006), which measures capital account openness, serves as the metric for capital account liberalization. Additional data are sourced from the World Bank Database, specifically the World Development

Indicators (WDI) and the Global Financial Development (GFD) database. The dataset is carefully matched using country and year. Missing data are carefully managed using a pair-wise deletion approach. While this approach has limitations, it is considered the most reasonable way to mitigate bias and ensure efficiency in the analysis process.

The study uses a sizeable firm-level database derived from enterprise surveys conducted by the World Bank between 2006 and 2023. This dataset encompasses 48,320 observations spanning 18 years across 169 countries. Each survey year corresponds to a distinct country, considering the time trends and changes within the dataset. The dataset includes firms' export data, size, and access to finance, which serves as a proxy for financial constraints. The financial constraint metric is qualitative, denoting whether a firm perceives access to finance as a hindrance, with a value of one showing constraint and zero showing otherwise.

All financial values are converted into US dollars in nominal terms using the official exchange rates provided by the World Bank database to facilitate effective comparison. Productivity is gauged by the ratio of total sales to the number of employees within a firm. Also, firms are categorized into small (<20 employees), medium (20-99 employees), and large (100 and above employees) based on their workforce size. The ownership structure is a binary variable, where one denotes foreign investment exceeding 49% of the capital, and zero shows otherwise. Export data is captured through the logarithmic representation of goods a firm sells directly or indirectly in foreign markets. Also, the export level can be measured by a firm's share of exports, representing the proportion of its total export volume.

The Chinn-Ito capital account openness index is used to measure capital account liberalization. Countries showing greater openness to cross-border financial transactions are assigned higher values within this index, which range between -1.93 and 2.31. Complementing this measure, the foreign direct investment (FDI) net inflow to GDP ratio serves as an alternative indicator of capital account liberalization, favored by its characteristic

of representing long-term investments less prone to abrupt reversals. The metrics provide robust insights into openness to international financial flows, facilitating robust analysis of economic policies and their impact on cross-border capital movements within diverse economic contexts.

The dataset is divided into two sub-samples based on their respective requirements for external capital. The need for external capital is determined based on the method firms use to finance their assets. Firms predominantly using internal funds for asset financing are identified as having limited access to external capital.

Table 3.1 presents the descriptive statistics based on the log variables of a firm's characteristics. The mean value of export is 13.01, which is about $446,859.72 (=exp (13.01)), and the firm's average size is 1.68, average productivity is 9.95, i.e., $20,952.22 (=exp (9.95)), and 0.09 of the firms are owned by foreign nationality.

Table 3.1: Descriptive Summary Statistics

Variables	N	Mean	Min	p25	Median	p75	Max	Std. Dev.
Log of export	9,046	13.01	0.96	11.17	13.03	14.82	27.87	2.81
Capital account liberalization	44,860	0.31	-1.93	-1.23	-0.03	1.80	2.31	1.49
Financial Constraint	44,860	0.65	0.00	0.00	1.00	1.00	1.00	0.48
Size	44,860	1.68	1.00	1.00	2.00	2.00	3.00	0.75
Labor Productivity	39,567	9.95	-4.53	8.75	9.97	11.05	24.65	2.08
Exchange rate	39,579	633.81	0.21	3.91	25.85	470.29	8,967.93	1601.36
Private credit to GDP	42,835	42.49	3.81	22.25	34.00	56.26	129.36	28.42
log of GDP	44,860	24.79	19.78	23.68	24.78	26.02	28.28	1.47

Matrix of Correlations

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Log of export	1.00							
Capital account liberalization	0.17	1.00						
Financial Constraint	-0.10	-0.07	1.00					
Size	0.57	0.06	-0.04	1.00				
Labor Productivity	0.72	0.24	-0.05	0.13	1.00			
Exchange rate	-0.05	-0.14	-0.07	0.00	-0.10	1.00		
Private credit to GDP	0.16	0.32	-0.08	0.07	0.15	-0.07	1.00	
log of GDP	0.04	0.17	-0.03	0.09	0.10	0.02	0.27	1.00

3.5 Empirical Findings and Discussions

This section discusses the regression outcomes of the influence of capital account liberalization on margins of trade and interprets the findings.

3.5.1 Capital account liberalization and participation in the export market

The study investigates the impact of capital account liberalization on firms' participation and export size, considering factors such as access to finance, productivity, size, and ownership. Table 3.2 presents results from basic estimations using equation 3.1. Columns (a) to (d) display probit estimations, while Columns (e) to (h) use probit with endogenous covariate (iv-probit) to address potential issues of reverse causality.

Results show a positive and significant impact of capital account liberalization on firms' probability of exporting, although this effect appears to be downwardly biased in the probit model. Therefore, interpretations primarily rely on the probit with endogenous covariates to mitigate endogeneity concerns.

The empirical evidence shows that capital account liberalization significantly enhances the probability of firms engaging in export activities, with an estimated increase ranging from 0.47 to 0.50. It suggests that with a one-unit increase in the capital account openness index, the probability of firms participating in exports increases by 0.47 (47%), and all other factors remain constant. Also, the analysis shows that firms with foreign ownership are more likely to participate in exporting activities, exhibiting a higher likelihood of approximately 0.35. In addition, the study emphasizes a positive correlation between firm size and the probability of export, with a coefficient of 0.30.

The study also shows a negative relationship between access to finance and the probability of exporting with a magnitude of -0.04, suggesting that firms more dependent on internal financing for fixed assets exhibit a reduced likelihood of exporting. Sub-sample analyses show that firms highly dependent on external capital are more inclined to participate in exports when restrictions on capital accounts are lifted.

Table 3.2: Capital account liberalization and exporting probability

Outcome variable	$P(X>0)$				$P(X>0)$			
External capital required			High	Low			High	Low
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
Capital Account Liberalization	0.105***	0.098***	0.105***	0.085***	0.472***	0.504***	0.502***	0.016
	(0.008)	(0.008)	(0.009)	(0.026)	(0.056)	(0.050)	(0.055)	(0.340)
Financial Constraint	-0.074***	-0.053**	-0.069***	-0.120*	-0.036*	-0.015	-0.031	-0.133
	(0.022)	(0.022)	(0.024)	(0.065)	(0.022)	(0.021)	(0.022)	(0.090)
Productivity	0.041***	0.030***	0.043***	0.031*	0.003	-0.010	-0.001	0.034
	(0.006)	(0.006)	(0.006)	(0.019)	(0.009)	(0.008)	(0.009)	(0.022)
Size	0.347***	0.302***	0.356***	0.291***	0.295***	0.251***	0.292***	0.289***
	(0.014)	(0.014)	(0.015)	(0.040)	(0.020)	(0.018)	(0.022)	(0.043)
Foreign		0.516***				0.354***		
		(0.031)				(0.043)		
Method	Probit	Probit	Probit	Probit	IVprobit	IVprobit	IVprobit	IVprobit
Observations	37,858	37,858	33,594	4,250	37,858	37,858	33,594	4,250

Note: Table 3.2 shows the regression outcome for equation 3.1 measuring the effect of capital account liberalization on initial exporting activities. All estimations include sector-specific and year-specific fixed effects. Robust standard errors are in parentheses. ***, **, * denote significance at 1, 5, and 10 percent levels, respectively.

3.5.2 Capital account liberalization and Entry Decisions

Exporting requires substantial financing, and financial limitations can present a challenging obstacle to market entry for exporters. The initial investment involves research and development (R&D) expenses, product development, and surveys of target markets. Once these costs are incurred and the decision not to enter the market is made, they become sunk costs, irretrievable by the firm. However, should the firm decide to enter the market, these sunk costs transform into fixed costs.

Liberalizing capital accounts may serve as an incentive for firms to enter export markets. However, it is necessary to gauge its significance in sustaining these firms within the market. Also, Equation 3.1 is further estimated based on firms that opted to enter the export markets after the establishment.

As presented in Table 3.3, the results primarily focus on the probit with endogenous covariate estimations, delineated in columns (e) to (h). These findings show that capital account liberalization effectively encouraged certain firms, previously serving solely the domestic market, to enter the exporting market. Column (e) indicates that with a one-unit increase in the capital account openness index, the probability of entering the export market increases by approximately 0.48 (48%), and all other factors remain constant. Productivity, size, and ownership of firms exhibit positive correlations with entry into export markets, each significant with magnitudes of 0.02, 0.41, and 0.33, respectively. Also, while the impact of capital account liberalization is significant for firms heavily reliant on external capital with a magnitude of 0.50, it remains positive yet insignificant for those with lesser dependence on external funds. The findings also underscore the critical role of a firm's productivity and size in sustaining presence within the exporting market, demonstrating significance at the 1% level.

The results show that liberalizing capital accounts mitigates the sunk costs associated with entering new markets, incentivizing firms to pursue export-oriented activities. As such, government policy decisions to liberalize capital accounts can significantly enhance the propensity of firms to engage in the export market.

3.5.3 Capital account liberalization, financial health, and export decisions

This study also investigates how capital account liberalization interacts with firms' access to finance, mainly focusing on financially constrained firms. Regression analysis, as presented in Table 3.4, shows that the interaction between capital account liberalization and access to finance is negative and insignificant, with a magnitude of -0.17. However, it is significant for firms less dependent on external finance.

Also, the analysis shows that the direct effects of capital account liberalization on the

Table 3.3: Capital account liberalization and entry probability

Outcome variable	$P(X>0)$				$P(X>0)$			
External capital required			High	Low			High	Low
	(a)	(b)	(c)	(d)	(e)	(f	(g)	(h)
Capital Account Liberalization	0.077***	0.073***	0.076***	0.060***	0.476***	0.499***	0.502***	0.068
	(0.006)	(0.006)	(0.007)	(0.019)	(0.045)	(0.042)	(0.044)	(0.270)
Financial Constraint	-0.005	0.011	-0.009	-0.059	0.028*	0.041***	0.023	-0.058
	(0.017)	(0.017)	(0.018)	(0.049)	(0.016)	(0.016)	(0.017)	(0.072)
Productivity	0.063***	0.054***	0.065***	0.047***	0.018**	0.008	0.013	0.047***
	(0.004)	(0.004)	(0.005)	(0.014)	(0.008)	(0.007)	(0.008)	(0.018)
Size	0.486***	0.453***	0.486***	0.424***	0.406***	0.373***	0.392***	0.424***
	(0.010)	(0.011)	(0.011)	(0.029)	(0.021)	(0.019)	(0.023)	(0.029)
Foreign		0.500***				0.329***		
		(0.026)				(0.036)		
Method	Probit	Probit	Probit	Probit	IVprobit	IVprobit	IVprobit	IVprobit
Observations	37,858	37,858	33,594	4,258	37,858	37,858	33,594	4,258

Note: Table 3.3 shows the regression outcome for equation 3.1 measuring the effect of capital account liberalization on entry decisions. All estimations include sector-specific and year-specific fixed effects. Robust standard errors are in parentheses. ***, **, * denote significance at 1, 5, and 10 percent levels, respectively.

likelihood of exporting are highly positive, with a magnitude of about 0.60. It suggests that financially constrained firms may enter export markets as they access external finance. These findings align with previous research on financial liberalization and credit constraints.

Table 3.4: Interaction Effect of Capital account liberalization and Financial constraint on Exporting Decisions

Outcome variable	$P(X>0)$				$P(X>0)$			
External capital required			High	Low			High	Low
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
Capital Account Liberalization	0.103***	0.099***	0.103***	0.058*	0.595***	0.545***	0.479***	0.996***
	(0.009)	(0.009)	(0.010)	(0.031)	(0.112)	(0.117)	(0.130)	(0.093)
Interaction	-0.039***	-0.040***	-0.042***	0.003	-0.172	-0.066	0.028	-1.319***
	(0.011)	(0.011)	(0.012)	(0.034)	(0.221)	(0.217)	(0.232)	(0.233)
Financial Constraint	0.011	0.027	0.007	-0.061	0.080	0.065	0.022	0.795***
	(0.017)	(0.018)	(0.019)	(0.054)	(0.059)	(0.059)	(0.055)	(0.134)
Productivity	0.063***	0.054***	0.065***	0.047***	0.016***	0.007	0.015**	0.024**
	(0.004)	(0.004)	(0.005)	(0.014)	(0.005)	(0.005)	(0.006)	(0.012)
Size	0.487***	0.454***	0.487***	0.423***	0.403***	0.372***	0.394***	0.277***
	(0.010)	(0.011)	(0.011)	(0.029)	(0.015)	(0.017)	(0.022)	(0.084)
Foreign		0.501***				0.329***		
		(0.026)				(0.031)		
Method: IVprobit	Probit	Probit	Probit	Probit	IVprobit	IVprobit	IVprobit	IVprobit
Observations	37,858	37,858	33,594	4,258	37,858	37,858	33,594	4,258

Note: Table 3.4 shows the regression outcome for equation 3.1 interacts capital account liberalization with financial health of firms. All estimations include sector-specific and year-specific fixed effects. Robust standard errors are in parentheses. ***, **, * denote significance at 1, 5, and 10 percent levels, respectively.

3.5.4 Does capital account liberalization matter for level of export?

This subsection examines the impact of capital account liberalization on export levels, explicitly focusing on firms engaged in exports. Equation 3.2 is estimated with the constraint $pr(X_{isct} > 0)$ to ensure including only exporting firms in the sample.

Initially, a standard Ordinary Least Squares (OLS) regression is conducted, controlling for year-fixed effects, and the results are reported in Table 3.5, columns (a) to (d). However, OLS estimation may be biased due to the simultaneity problem, prompting the adoption of an instrumental variable two-stage least squares (IV-2SLS) approach to address endogene-

ity concerns. Both OLS and IV-2SLS estimates are reported.

Table 3.5 displays regression results. Columns (a) and (e) present the outcomes of equation (2) without ownership control, while columns (b) and (f) include ownership. Columns (c-d) and (g-h) further stratify the sample based on firms' reliance on external capital for asset financing. The findings show a positive relationship between capital account liberalization and export quantities among firms active in export markets. It indicates that with a one-unit increase in the capital account openness index, firms' export levels increase by 40% (0.401*100), and all other factors remain constant. Moreover, firm productivity and size show significant positive effects, with coefficients of 0.912% and 1.719%, respectively.

Evidence suggests that firms that are more reliant on external finance show a 39% (0.386*100) increase in exports. Firm productivity and size are crucial factors for firms sustaining export activity, mainly as they access external financing. This finding aligns with previous literature on the intensive margin of trade (Fauceglia, 2015; Manova et al., 2015; Berman & Hericourt, 2010; Balgan & Yilmazkuday, 2018).

Also, equation 3.2 was reevaluated using the alternative metric of intensive margin, the firm export share. The regression outcome is presented in Table 3.6.Its finding indicates that with a one-unit increase in the capital account openness index, a firm share of exports increase by 10% (0.103*100). It is consistent with the initial findings with difference in magnitude.

Table 3.5: Capital account liberalization and the level of export

Outcome variable	$Log(X)$				$Log(X)$			
External capital required			High	Low			High	Low
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
Capital Account Liberalization	0.049***	0.041***	0.068***	-0.058*	0.401***	0.447***	0.386***	0.453**
	(0.012)	(0.012)	(0.013)	(0.033)	(0.081)	(0.080)	(0.092)	(0.178)
Financial Constraint	-0.087***	-0.060*	-0.070**	-0.135*	-0.021	0.012	-0.008	-0.052
	(0.032)	(0.031)	(0.035)	(0.082)	(0.036)	(0.036)	(0.040)	(0.092)
Productivity	0.939***	0.928***	0.930***	0.980***	0.912***	0.898***	0.904***	0.964***
	(0.008)	(0.008)	(0.009)	(0.020)	(0.011)	(0.011)	(0.012)	(0.023)
Size	1.713***	1.663***	1.711***	1.733***	1.719***	1.675***	1.716***	1.746***
	(0.020)	(0.020)	(0.022)	(0.049)	(0.021)	(0.021)	(0.023)	(0.054)
Foreign		0.527***				0.463***		
		(0.041)				(0.044)		
Method	OLS	OLS	OLS	OLS	IV2SLS	IV2SLS	IV2SLS	IV2SLS
F-Stat					145.145	150.666	113.844	26.806
Observations	8,387	8,387	6,923	1,464	8,387	8,387	6,923	1,464

Note: Table 3.5 shows the regression outcome for equation 3.2. All estimations include sector-specific snd year-specific fixed effects. Robust standard errors are in parentheses. ***, **, * denote significance at 1, 5, and 10 percent levels, respectively.

Table 3.6: Capital account liberalization and share of export

Outcome variable	$Log(X)$				$Log(X)$			
External capital required			High	Low			High	Low
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
Capital Account Liberalization	0.026***	0.024***	0.031***	-0.002	0.103***	0.113***	0.104***	0.080*
	(0.003)	(0.003)	(0.003)	(0.008)	(0.021)	(0.021)	(0.024)	(0.047)
Financial Constraint	-0.025***	-0.019**	-0.024***	-0.003	-0.010	-0.003	-0.009	0.011
	(0.008)	(0.008)	(0.009)	(0.019)	(0.009)	(0.009)	(0.010)	(0.021)
Productivity	-0.015***	-0.017***	-0.017***	-0.005	-0.021***	-0.024***	-0.023***	-0.007
	(0.002)	(0.002)	(0.002)	(0.005)	(0.003)	(0.003)	(0.003)	(0.006)
Size	0.035***	0.024***	0.036***	0.034***	0.036***	0.027***	0.037***	0.036***
	(0.005)	(0.005)	(0.005)	(0.012)	(0.005)	(0.005)	(0.006)	(0.012)
Foreign		0.109***				0.095***		
		(0.010)				(0.011)		
Method	OLS	OLS	OLS	OLS	IV2SLS	IV2SLS	IV2SLS	IV2SLS
F-Stat					145.145	150.666	113.844	26.806
Observations	8,387	8,387	6,923	1,464	8,387	8,387	6,923	1,464

Note: Table 3.6 shows the regression outcome for equation 3.2 using share of export. All estimations include sector-specific snd year-specific fixed effects. Robust standard errors are in parentheses. ***, **, * denote significance at 1, 5, and 10 percent levels, respectively.

3.5.5 Capital Account Liberalization, Firm Size, and Exporting Decisions

The dataset is subdivided into three categories based on firm size: small, medium, and large. The aim is to analyze whether the influence of capital account liberalization on the decisions and behaviors of exporting firms varies depending on their size. Two models, IVProbit and IV-2SLS, are used to estimate Equation 3.1 and Equation 3.2.

The results presented in Table 3.7 outline the estimation outcomes for each sub-sample. Columns (a) and (b) correspond to small firms, (c) and (d) to medium firms, and (e) and (f) to large firms. The findings align with the initial observations, showing a positive as-

sociation between capital account liberalization and the probability of firms engaging in exporting activities. This relationship's magnitude varies across firm sizes, ranging between 0.26 and 0.56. With a one-unit increase in the capital account openness index, the probability of small and medium firms entering the export market increases by 0.56 and 0.48, respectively, while large firms have a magnitude of 0.26; all other factors remain constant. The analysis suggests that small and medium-sized firms are more inclined to enter the export market following capital account liberalization, potentially driven by enhanced access to external capital.

However, with a one-unit increase in the capital account openness index, the firm level of export increases by 69% (0.692*100) for small firms, 26% (0.258*100) for medium firms, and 40% (0.401*100) for large firms. Also, the analysis emphasizes the significant role of firm productivity in influencing firms in the export market. These findings are consistent with the established literature on international trade dynamics.

Table 3.7: Capital account liberalization and Exporting decisions by Size

Subsample	Small		Medium		Large	
Outcome variables	Entry	Export	Entry	Export	Entry	Export
Capital Account Liberalization	0.560***	0.692**	0.476***	0.258**	0.259***	0.401***
	(0.086)	(0.301)	(0.063)	(0.117)	(0.077)	(0.111)
Financial Constraint	0.065***	0.065	0.032	0.006	-0.056	-0.081
	(0.023)	(0.089)	(0.026)	(0.058)	(0.037)	(0.059)
Productivity	-0.004	0.919***	0.017	0.942***	0.060***	0.883***
	(0.013)	(0.025)	(0.013)	(0.018)	(0.013)	(0.019)
Method	ivprobit	IV2SLS	ivprobit	IV2SLS	ivprobit	IV2SLS
Observations	19,020	2,306	12,434	3,077	6,350	3,004
R-squared		0.66		0.66		0.55

Note: Table 3.7 shows the regression outcomes for equations 3.1 and 3.2 measuring the effect of capital account liberalization and firm size on exporting decisions. All estimations include sector-specific and year-specific fixed effects. Robust standard errors are in parentheses. ***, **, * denote significance at 1, 5, and 10 percent levels, respectively.

3.6 Robustness checks

A series of sensitivity analyses were conducted to ensure the robustness of our findings. The ratio of foreign direct investment (FDI) net inflows to the Gross Domestic Product (GDP) was used as an alternative metric for assessing capital account liberalization. The preference for FDI by many nations, attributed to its long-term investment nature and reduced vulnerability to abrupt investor withdrawals, underscores its relevance in this context. The foundational estimations for equations 3.1 and 3.2 were executed, corroborating the initial findings.

The outcomes are summarized in Table 3.8 and Table 3.9, which present the findings regarding the probability of entry and the level of exports, respectively. These results remain consistent with the original outcomes, showing minor fluctuations in magnitude.

Table 3.8 shows that with a one percent increase in FDI inflow, the probability of firms entering the export market increases by 0.07 and is significant. Particularly notable is the significance of this finding for firms that are reliant on external capital. Also, FDI inflow is found to be significant when assessing the level of exports by firms, as depicted in Table 3.9. Specifically, with a one percent increase in FDI inflow, export levels increase by about 5% (0.048*100).

These findings suggest that FDI inflow as a measure of capital account liberalization may incentivize firms to enter the export market (the extensive margin) and enhance firms' level of exports (intensive margin). The findings from this paper suggest that liberalizing capital accounts encourages the participation of firms that would otherwise refrain from exporting, reducing the export share per firm.

Heckman's selection model was adopted on the level of exports to address potential sample selection bias. (see Appendix, Table 3.7 for details). The results remained consistent and significant with a relative difference in magnitude.

Table 3.8: Foreign Direct Investment and entry probability

Outcome variable	$P(X>0)$				$P(X>0)$			
External capital required			High	Low			High	Low
	(a)	(b)	(c)	(d)	(e)	(f	(g)	(h)
FDI Inflow to GDP	0.007***	0.008***	0.006***	0.009***	0.065***	0.069***	0.069***	0.011
	(0.001)	(0.001)	(0.001)	(0.003)	(0.007)	(0.007)	(0.007)	(0.041)
Financial Constraint	-0.004	0.012	-0.010	-0.049	0.049***	0.069***	0.040**	-0.045
	(0.017)	(0.017)	(0.018)	(0.050)	(0.017)	(0.017)	(0.018)	(0.109)
Productivity	0.069***	0.059***	0.071***	0.050***	0.053***	0.043***	0.053***	0.050***
	(0.004)	(0.004)	(0.005)	(0.013)	(0.005)	(0.005)	(0.005)	(0.013)
Size	0.485***	0.451***	0.486***	0.421***	0.436***	0.397***	0.433***	0.420***
	(0.010)	(0.011)	(0.011)	(0.029)	(0.015)	(0.015)	(0.016)	(0.031)
Foreign		0.513***				0.457***		
		(0.026)				(0.027)		
Method	Probit	Probit	Probit	Probit	IVprobit	IVprobit	IVprobit	IVprobit
Observations	37,858	37,858	33,594	4,258	37,858	37,858	33,594	4,258

Note: Table 3.8 shows the regression outcome for equation 3.1 using FDI as alternative measure of capital liberalization. All estimations include sector-specific snd year-specific fixed effects. Robust standard errors are in parentheses. ***, **, * denote significance at 1, 5, and 10 percent levels, respectively.

Table 3.9: Foreign Direct Investment and the level of export

Outcome variable	$Log(X)$				$Log(X)$			
External capital required			High	Low			High	Low
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
FDI Inflow to GDP	0.001	0.001	0.002	-0.001	0.048***	0.054***	0.046***	0.066***
	(0.002)	(0.002)	(0.002)	(0.003)	(0.010)	(0.010)	(0.011)	(0.025)
Financial Constraint	-0.093***	-0.066**	-0.079**	-0.128	0.002	0.041	-0.000	0.102
	(0.032)	(0.032)	(0.035)	(0.083)	(0.039)	(0.038)	(0.041)	(0.125)
Productivity	0.942***	0.931***	0.935***	0.978***	0.932***	0.919***	0.925***	0.969***
	(0.008)	(0.008)	(0.009)	(0.020)	(0.009)	(0.009)	(0.009)	(0.021)
Size	1.713***	1.662***	1.710***	1.735***	1.713***	1.666***	1.711***	1.757***
	(0.020)	(0.020)	(0.022)	(0.050)	(0.021)	(0.021)	(0.022)	(0.056)
Foreign		0.533***				0.499***		
		(0.041)				(0.042)		
Method	OLS	OLS	OLS	OLS	IV2SLS	IV2SLS	IV2SLS	IV2SLS
F-Stat					350.971	354.221	280.571	48.326
Observations	8,387	8,387	6,923	1,464	8,387	8,387	6,923	1,464

Note: Table 3.9 shows the regression outcome for equation 3.2 using FDI as alternative measure of capital liberalization. All estimations include sector-specific and year-specific fixed effects. Robust standard errors are in parentheses. ***, **, * denote significance at 1, 5, and 10 percent levels, respectively.

3.7 Conclusions

This study investigates the influence of capital account liberalization on a firm's determination to enter the export market and the subsequent impact on the quantity of exports. Due to the substantial capital requirement, many firms need help considering expansion into foreign markets. The substantial upfront expense required for this condition is a non-recoverable cost. Moreover, capital account liberalization is a feasible remedy to address the financial challenges faced in export markets (Manova et al., 2015).

The study underscores the importance of capital account liberalization concerning trade dynamics. Empirical evidence substantiates the effectiveness of capital account liberalization in mitigating financial impediments encountered by the exporting sector. Capital ac-

count liberalization can stimulate increased firms' participation within the exporting sector. Still, the sustained presence of firms in the market after entry is contingent upon their productivity levels. Liberalizing capital accounts has led to an influx of foreign-owned firms. It underscores the negative influence of market constraints on economic expansion and the potential for growth and development through liberalization efforts.

Also, the findings show a positive correlation between capital account liberalization and increased export volumes among firms. In addition, the study emphasizes the significance of firm-specific characteristics, such as productivity, size, ownership structure, and financial constraints, in influencing the extent of exports. These findings explain the nexus between capital account liberalization, firm dynamics, and export performance.

This study significantly enriches the academic discourse on finance, growth, and international trade. Initially, the study examines how capital account liberalization influences firms' choice to participate in exports. The results show firms will likely engage in export activities between 0.47 and 0.50 after capital account liberalization. Also, the analysis highlights the significant influence of foreign ownership on exports, significantly when capital accounts are liberalized, thus confirming the existing literature on multinational subsidiaries. These findings emphasize the significance of policy frameworks favoring capital account liberalization to stimulate export-oriented activities and attract foreign investment.

Second, liberalizing capital accounts may accelerate firms' entry into export markets by mitigating sunk costs, suggesting potential economic growth advantages. However, this study further highlights the critical role of firm productivity and size in determining their sustainability within the export sector. Policymakers must examine measures aimed at encouraging firms' productivity and competitiveness. Such initiatives are essential to secure firms' ongoing involvement in export activities.

Likewise, the study shows a positive association between capital account liberalization and the intensive margin of trade, particularly for firms requiring external capital to finance

their assets. This finding underscores the importance of addressing financial constraints firms face in accessing external capital, as it can significantly impact their ability to engage in international trade. Policymakers can stimulate economic growth and enhance competitiveness by incentivizing firms to enter the exporting market through capital account liberalization measures.

REFERENCES

[1] Amiti, M., & Weinstein, D. E. (2011). Exports and Financial Shocks. *The Quarterly Journal of Economics*, 126(4), 1841–1877. https://doi.org/10.1093/qje/qjr033

[2] Baglan, D., & Yilmazkuday, H. (2018). Financial Health and the Intensive Margin of Trade. *Emerging Markets Finance and Trade*, 54(6), 1304–1319. https://doi.org/10.1080/1540496x.2016.1274258

[3] Becker, B., Chen, J., & Greenberg, D. (2012). Financial Development, Fixed Costs, and International Trade. *The Review of Corporate Finance Studies*, 2(1), 1–28. https://doi.org/10.1093/rcfs/cfs005

[4] Bekaert, G., & Harvey, C. R. (2000). Foreign Speculators and Emerging Equity Markets. *The Journal of Finance*, 55(2), 565–613. https://doi.org/10.1111/0022-1082.00220

[5] Bekaert, G., Harvey, C. R., & Lundblad, C. T. (2003). Equity Market Liberalization in Emerging Markets. *Journal of Financial Research*, 26(3), 275–299. https://doi.org/10.1111/1475-6803.00059

[6] Berman, N., & Héricourt, J. (2010). Financial factors and the margins of trade: Evidence from cross-country firm-level data. *Journal of Development Economics*, 93(2), 206–217. https://doi.org/10.1016/j.jdeveco.2009.11.006

[7] Berthou, A., & Fontagné, L. (2015). Variable Trade Costs, Composition Effects and the Intensive Margin of Trade. *The World Economy*, 39(1), 54–71. https://doi.org/10.1111/twec.12313

[8] Bilir, L. K., Chor, D., & Manova, K. (2019). Host-country financial development and multinational activity. *European Economic Review*, 115, 192–220. https://doi.org/10.1016/j.euroecorev.2019.02.008

[9] Blonigen, B. A., & Wilson, W. W. (2018). Handbook of international trade and transportation. Edward Elgar Publishing, (Diez et al., Chapter 10, pp 299-336).

[10] Chaney, T. (2008). Distorted Gravity: The Intensive and Extensive Margins of International Trade. *American Economic Review*, 98(4), 1707–1721. https://doi.org/10.1257/aer.98.4.1707

[11] Chen, Z., Poncet, S., & Xiong, R. (2020). Local financial development and constraints on domestic private-firm exports: Evidence from city commercial banks in China. *Journal of Comparative Economics*, 48(1), 56–75. https://doi.org/10.1016/j.jce.2019.09.005

[12] Chinn, M. D., & Ito, H. (2006). What matters for financial development? Capital controls, institutions, and interactions. *Journal of Development Economics*, 81(1), 163–192. https://doi.org/10.1016/j.jdeveco.2005.05.010

[13] Dutt, P., Mihov, I., & Van Zandt, T. (2013). The effect of WTO on the extensive and the intensive margins of trade. *Journal of International Economics*, 91(2), 204–219. https://doi.org/10.1016/j.jinteco.2013.08.001

[14] Eaton, J., Kortum, S., & Kramarz, F. (2004). Dissecting Trade: Firms, Industries, and Export Destinations. *American Economic Review*, 94(2), 150–154. https://doi.org/10.1257/0002828041301560

[15] Fauceglia, D. (2015). Credit constraints, firm exports and financial development: Evidence from developing countries. *The Quarterly Review of Economics and Finance*, 55, 53–66. https://doi.org/10.1016/j.qref.2014.08.003

[16] Feenstra, R. C., Li, Z., & Yu, M. (2014). Exports and Credit Constraints under Incomplete Information: Theory and Evidence from China. *The Review of Economics and Statistics*, 96(4), 729–744. https://doi.org/10.1162/REST_a_00405

[17] Fernandes, A. M., Klenow, P. J., Meleshchuk, S., Pierola, M. D., & Rodríguez-Clare, A. (2023). The Intensive Margin in Trade: How Big and How Important? *American Economic Journal: Macroeconomics*, 15(3), 320–354. https://doi.org/10.1257/mac.20200269

[18] He, Q. (2012). Do Financial Liberalization Policies Promote Exports? Evidence from China's Panel Data. *Emerging Markets Finance and Trade*, 48(6), 95–105. https://doi.org/10.2753/ree1540-496x480605

[19] Henry, P. B. (2003). Capital-Account Liberalization, the Cost of Capital, and Economic Growth. *American Economic Review*, 93(2), 91–96. https://doi.org/10.1257/000282803321946868

[20] Jaud M., Kukenova M., & Strieborny, M. (2009). Financial Dependence and Intensive Margin of Trade. *RePEc: Research Papers in Economics*.

[21] Krugman, P. (1980). Scale Economies, Product Differentiation, and the Pattern of Trade. *The American Economic Review*, 70(5), 950–959. https://www.jstor.org/stable/1805774

[22] Lee K. Y. (2023). Financial dependence and exports: Entrants or incumbents? *Southern Economic Journal*, 89(4), 1102–1137. https://doi.org/10.1002/soej.12624

[23] Liu, Q., Lu, R., & Ma, X. (2015). Corruption, Financial Resources and Exports. Review of International Economics, 23(5), 1023–1043. https://doi.org/10.1111/roie.12194

[24] Ma, X., & Xie, W. (2019). Destination country financial development and margins of international trade. *Economics Letters*, 177, 99–104. https://doi.org/10.1016/j.econlet.2019.02.006

[25] Manova, K. (2008). Credit constraints, equity market liberalizations and international trade. *Journal of International Economics*, 76(1), 33–47. https://doi.org/10.1016/j.jinteco.2008.03.008

[26] Manova, K. (2012). Credit Constraints, Heterogeneous Firms, and International Trade. *The Review of Economic Studies*, 80(2), 711–744. https://doi.org/10.1093/restud/rds036

[27] Manova, K., Wei, S.-J., & Zhang, Z. (2015). Firm Exports and Multinational Activity Under Credit Constraints. *Review of Economics and Statistics*, 97(3), 574–588. https://doi.org/10.1162/rest_a_00480

[28] Melitz, M. J. (2003). The Impact of Trade on Intra-Industry Reallocations and Aggregate Industry Productivity. *Econometrica*, 71(6), 1695–1725. https://doi.org/10.1111/1468-0262.00467

[29] Mitton, T. (2006). Stock market liberalization and operating performance at the firm level. *Journal of Financial Economics*, 81(3), 625–647. https://doi.org/10.1016/j.jfineco.2005.09.001

[30] Quinn, D. P., & Toyoda, A. M. (2008). Does Capital Account Liberalization Lead to Growth? *Review of Financial Studies*, 21(3), 1403–1449. https://doi.org/10.1093/rfs/hhn034

[31] Rajan, R. G., & Zingales, L. (1998). Financial Dependence and Growth. The American Economic Review, 88(3), 559–586. https://www.jstor.org/stable/pdf/116849.pdf

[32] Sun, P., Sen, S., & Jin, S. (2013). Equity Market Liberalization, Credit Constraints and Income Inequality. Economics: *The Open-Access, Open-Assessment E-Journal*, 7(2013-12), 1. https://doi.org/10.5018/economics-ejournal.ja.2013-12

[33] Suwantaradon, Ruanjai. Financial Frictions and International Trade. (2008). 1-40. Available at: https://ink.library.smu.edu.sg/soe_research/1340

APPENDICES III

A. Test of Endogeneity

H0: variables are exogenous

Durbin (score) chi2(1)	= 17.7298 (p = 0.0000)
Wu-Hausman F(1, 8337)	= 17.6614 (p = 0.0000)
Robust score chi2(1)	= 20.2812 (p = 0.0000)
Robust regression F(1,8337)	= 18.5676 (p = 0.0000)

First-stage regression summary statistics

Variable	R-sq	Adj. R-sq	Partial R-sq	Robust F(1, 11914)	Prob > F
Capital account liberalization	0.3602	0.3566	0.0203	145.145	0.0000

Minimum eigenvalue statistic =172.617

Critical Values # of endogenous regressors: 1

H0: Instruments are weak # of endogenous instruments: 1

	5%	10%	20%	30%
2SLS relative bias		(not available)		

	10%	15%	20%	25%
2SLS Size of nomial 5% Wald test	16.38	8.96	6.66	5.53
LIML Size of nomial 5% Wald test	16.38	8.96	6.66	5.53

B. Heckman's Selection Model

Heckman's Selection Model

	Outcome Equation		Outcome Equation	
Variables	Coefficients	Std. Error	Coefficients	Std. Error
Capital Account Liberalization	0.271***	(0.055)	0.198***	(0.036)
Financial Constraint	-0.098	(0.073)	-0.037	(0.056)
Productivity	1.127***	(0.044)	1.051***	(0.027)
Size	3.157***	(0.307)	2.681***	(0.189)
Foreign			1.527***	(0.201)
	Selection Equation		Selection Equation	
Capital Account Liberalization	0.077***	(0.006)	0.073***	(0.006)
Financial Constraint	-0.005	(0.017)	0.011	(0.017)
Productivity	0.063***	(0.004)	0.054***	(0.004)
Size	0.486***	(0.010)	0.453***	(0.011)
Foreign			0.501***	(0.026)
rho	1.000		1.000	
sigma	4.177		3.176	
lambda	4.177***	(0.865)	3.176***	(0.571)
Wald test of indep. eqns. (rho = 0):	chi2(1) = 160.78	Prob > chi2 = 0.0000	chi2(1) = 138.01	Prob > chi2 = 0.0000
Selected	8,387		8,387	
Nonselected	29,652		29,652	
Observations	38,039		38,039	

Note: Heckman's selection model estimations. All estimations include sector-specific and year-specific fixed effects. Robust standard errors are in parentheses. ***, **, * denote significance at 1, 5, and 10 percent levels, respectively.