Université Clermont Auvergne
École Doctorale des Sciences Économiques, Juridiques, et de Gestion
Centre d'Études et de Recherches sur le Développement International (CERDI)

ESSAYS ON INTERNATIONAL TRADE AND EXPORT PERFORMANCE

Thèse nouveau Régime
Présentée et soutenue publiquement le **8 novembre 2018**
Pour l'obtention du titre de Docteur *ès* Sciences Économiques

Par
Martha Tesfaye WOLDEMICHAEL

Sous la direction de :
M. Patrick PLANE et Mme. Mary-Françoise RENARD

Membres du jury

Jean-Pierre ALLÉGRET	Directeur du GREDEG
	Professeur à l'Université Nice Sophia Antipolis (Rapporteur)
Simone BERTOLI	Professeur, CERDI, IUF, Université Clermont Auvergne (Suffragant)
Lionel FONTAGNÉ	Professeur, PSE, Université Paris I Panthéon-Sorbonne (Rapporteur)
Taye MENGISTAE	Économiste sénior, Banque mondiale (Suffragant)
Patrick PLANE	Directeur de recherches au CNRS
	CERDI, Université Clermont Auvergne (Directeur)
Mary-Françoise RENARD	Professeur, CERDI, IDREC, Université Clermont Auvergne (Directrice)

L'université Clermont Auvergne, le CERDI et le FMI n'entendent donner aucune approbation ou improbation aux opinions émises dans cette thèse. Ces opinions doivent être considérées comme propres à leur auteur.

ለወላጆቼ ተስፋዬ እና አዜብ፣

ለእህቶቼ ገሊላ እና ሳራ፣

ለወንድሜ ሳሙኤል

Remerciements

Mes remerciements vont tout d'abord à mes directeurs, M. Patrick Plane et Mme Mary-Françoise Renard pour leurs conseils et confiance dans la réalisation de cette thèse. Ils s'adressent également aux membres du comité de thèse, Messieurs Jean-Pierre Allégret, Simone Bertoli, Lionel Fontagné et Taye Mengistae qui ont accepté de consacrer du temps à l'évaluation de ce travail. Mon parcours doctoral a été jalonné de rencontres exceptionnelles qui ont façonné mes choix au-delà de la thèse, aussi je tiens à exprimer ma profonde gratitude à l'égard de Mes. Patrick Guillaumont, Léonce Ndikumana, Oumar Diallo, Olivier Cadot et Jaime de Melo. Ma reconnaissance va aussi à mes co-auteurs, amis et mentors Valerie, Carolina, Laurent et Mariana, ainsi qu'à mes chefs du FMI Christoph et Corinne pour leur flexibilité et soutien pendant les derniers mois de la thèse. Je remercie les professeurs et le personnel du CERDI et de l'Ecole Doctorale, et notamment Martine, Johan, Agnès, Chantal, Marie, Mariannick et Catherine qui ont contribué à faciliter mon parcours doctoral. Cette thèse a aussi bénéficié d'échanges et d'interactions au sein de l'écosystème de doctorants du CERDI ; je pense tout particulièrement à mes compagnons d'armes depuis la première heure Cyril, Clément, Rasmané, Aliou, Aristide et Sébastien, mais aussi à tous les autres doctorants du 4ème que je ne saurais citer ici dans leur intégralité et qui ont rendu le quotidien de la thèse stimulant, enrichissant et humain. Je suis aussi reconnaissante envers mes amis Dany, Marta, Guilhem, et Moctar pour leur soutien, ainsi qu'à Pierre, mon pilier indéfectible. Enfin, un grand merci à Jean-Marc, à mes parents, à Gellila, Sara, Sam et Lemlem pour les encouragements et le réconfort qu'ils m'ont apportés tout au long de la thèse.

Résumé

Certains pays se sont historiquement développés en s'ouvrant au commerce et en adoptant une stratégie de croissance tirée par les exportations manufacturières. Le commerce promeut l'allocation efficace des ressources suivant l'avantage comparatif, les importations favorisant les transferts technologiques et la croissance de la productivité, alors que les exportations jouent un rôle-clé en soutenant la balance des paiements et les efforts de mobilisation des recettes domestiques. En stimulant la croissance, le commerce offre la possibilité de réduire la pauvreté et d'améliorer les conditions de vie des populations. En se fondant sur le cas du Cambodge où l'industrie du textile et de l'habillement fournit la majorité des emplois manufacturiers et représente l'essentiel des exportations du pays, le Chapitre 2 montre que l'ouverture commerciale à travers les exportations manufacturières permet d'améliorer le bien-être des ménages. Nous utilisons la méthode d'appariement par score de propension pour montrer que le secteur textile améliore le bien-être des ménages faisant partie des 40 pourcent les plus pauvres en augmentant leur consommation, l'accumulation d'actifs et la part des enfants allant à l'école, ainsi qu'en réduisant l'insécurité alimentaire et l'incidence et l'ampleur de la pauvreté. L'application de la méthode des variables instrumentales indique également que les transferts de migrants travaillant dans le secteur textile permettent de relâcher la contrainte budgétaire des ménages récipiendaires et d'augmenter les dépenses d'éducation, de santé et les investissements agricoles propices à la hausse de la productivité. Le Chapitre 3 adopte une approche macroéconomique et explore les déterminants d'épisodes de croissance forte et soutenue des exportations. Il en ressort que la qualité des institutions appuyée par la stabilité macroéconomique, la dépréciation du taux de change, la diversification des exportations, la participation aux chaînes de valeur mondiales et les réformes agricoles orientées vers le marché sont sources d'accélérations des exportations. L'accroissement de la concurrence sur le marché des industries de réseau et la levée des restrictions aux mouvements de capitaux stimulent surtout les exportations de services, alors que les flux d'investissements directs étrangers favorisent les accélérations des exportations de biens. L'application de la méthode du contrôle synthétique aux cas illustratifs du Brésil et du Pérou révèle que les accélérations des exportations sont suivies par une croissance du PIB par tête réel et une baisse du chômage et des inégalités de revenu. Les résultats du chapitre indiquent une complémentarité entre les biens et les services et suggèrent que l'abaissement

des barrières au commerce des services serait également favorable à celui des biens. Le Chapitre 4 quantifie une nouvelle source de barrières au commerce liée au temps de traitement des importations en douanes. L'imprévisibilité des délais d'attente liés au dédouanement des marchandises importées entache la fiabilité de la chaîne d'approvisionnement et affecte la performance à l'export des firmes importatrices de biens intermédiaires. En utilisant l'estimateur Poisson du pseudo maximum de vraisemblance, nous trouvons que l'incertitude liée aux délais de traitement en douanes des biens intermédiaires importés n'impacte ni le taux d'entrée, ni le taux de sortie des firmes manufacturières, mais se traduit par une réduction des taux de survie des nouveaux exportateurs. Cet effet s'avère hétérogène à travers les industries, croît avec le temps en raison de la dégradation de la réputation des exportateurs et semble tiré par le commerce Sud-Nord, sans doute parce que les acheteurs dans les pays développés sont plus sensibles au temps. Il est également atténué par les coûts irrécupérables d'entrée sur les marchés.

Mots clés : Commerce international en biens et services, secteur manufacturier, bien-être des ménages, croissance, accélération des exportations, incertitude à l'importation, fiabilité de la chaîne d'approvisionnement, coûts au commerce.
Codes JEL : F13, F14, F43, F6, O1, O12, O14, O15.

Summary

Historical evidence shows that countries can successfully develop by opening up to trade and pursuing manufacturing export-led strategies. Trade promotes efficient allocation of resources according to comparative advantage, with imports acting as a vehicle for technology transfers and productivity growth while exports are key to relaxing balance-of-payments constraints and supporting domestic revenue mobilization efforts. By spurring growth, trade has the potential of alleviating poverty and delivering better livelihoods. Drawing on the case of Cambodia where the garment industry provides the bulk of manufacturing jobs and accounts for the lion's share of the export bundle, Chapter 2 provides micro evidence of the welfare-enhancing potential of trade openness through manufacturing exports. It relies on propensity score matching estimators to show that the textile and apparel sector enhances the welfare of households in the bottom 40 percent of the income distribution, boosting consumption, asset ownership and the proportion of children attending school, while curbing exposure to food insecurity and lowering the incidence and depth of poverty. Based on instrumental variables, we also show that remittances from the export-oriented garment industry relax household budget constraints, increasing expenditures in education, health and productivity-raising investments in agriculture. Chapter 3 adopts a macro approach to investigate the determinants of episodes of strong and sustained export growth. Institutional quality underpinned by macroeconomic stability, a depreciated exchange rate, export diversification, global value chain participation and market-oriented agricultural reforms show up as strong predictors of export takeoffs. Lowering barriers to competition in network industries and lifting capital movement restrictions mainly bolster services exports, while foreign direct investment inflows are conducive to goods export accelerations. Applying the synthetic control method to the illustrative cases of Brazil and Peru yields evidence of higher real GDP per capita and lower unemployment and income inequality in the years following the export surge. Our results point to significant complementarities between goods and services, and suggest that lowering barriers to trade in services is likely to support trade in goods. Chapter 4 quantifies a new source of domestic trade costs related to import processing times at the border that generate supply chain unreliability by exposing importing firms to unexpected delays in the provision of critical inputs, ultimately undermining their export performance. Using the Poisson-pseudo-maximum-likelihood estimator, we find that

uncertainty in the time required to clear imported inputs through Customs impacts neither the entry nor the exit rate of manufacturing firms, but translates into lower survival rates for new exporters. This effect is heterogeneous across export industries, grows larger over time owing to rising reputational costs to input-importing exporters, and is mainly driven by South-North trade, possibly reflecting the time-sensitivity of buyers in developed countries. It is also attenuated by sunk costs of entry in foreign markets.

Keywords: International trade in goods and services, manufacturing, household welfare, growth, export accelerations, import uncertainty, supply chain unreliability, trade costs.
JEL codes: F13, F14, F43, F6, O1, O12, O14, O15.

Liste des acronymes

2SLS	Two-Stage Least Squares
AfT	Aid for Trade
ATT	Average Treatment Effect
ASYCUDA	Automated System for Customs Data
BOP	Balance of Payments
BPM5	Balance of Payments Manual, 5th Edition
CEPII	Centre d'Études Prospectives et d'Informations Internationales
CIA	Conditional Independence Assumption
CR	Cambodian Riels
CSES	Cambodia Socio-Economic Survey
DVX	Indirect Value-Added
EAP	East Asia and Pacific
ECA	Europe and Central Asia
EDD	Exporter Dynamics Database
EMDE	Emerging Market and Developing Economy
EORA MRIO	EORA Multi-Region Input-Output
EU	European Union
FAO	Food and Agriculture Organization
FDI	Foreign Direct Investment
FERDI	Fondation pour les Études et Recherches sur le Développement International
FTA	Free Trade Arrangement
FVA	Foreign Value-Added
GDP	Gross Domestic Product
GNI	Gross National Income
GPS	Global Positioning System
GTPII	Growth and Transformation Plan II
GVC	Global Value Chain
HAI	Human Assets Index
ICRG	International Country Risk Guide
ICT	Information and Communications Technology

IFS	International Financial Statistics
IMF	International Monetary Fund
ISIC	International Standard Industrial Classification of All Economic Activities
ITC	International Trade Center
IV	Instrumental Variables
LAC	Latin America and the Caribbean
LIC	Low-Income Country
LPI	Logistics Performance Index
MFA	Multi-Fiber Agreement
MFN	Most-Favored Nation
MNA	Middle East and North Africa
NGO	Non-Governmental Organization
NIS	National Institute of Statistics
NTB	Non-Tariff Barriers
PPML	Poisson Pseudo-Maximum Likelihood
PSM	Propensity Score Matching
RE	Random-Effects
REER	Real Effective Exchange Rate
RHS	Right-Hand-Side
RMSPE	Root Mean Squared Prediction Error
SAS	South Asia
SCM	Synthetic Control Method
SITC	Standard International Trade Classification
SSA	Sub-Saharan Africa
SUTVA	Stable Unit-Treatment Assumption
TFP	Total Factor Productivity
UN COMTRADE	United Nations International Trade Statistics Database
UNCTAD	United Nations Conference on Trade and Development
US	United States
USD	United States Dollars
WBES	World Bank Enterprise Surveys
WCO	World Customs Organization
WDI	World Development Indicators

WEO	World Economic Outlook
WGI	Worldwide Governance Indicators
WITS	World Integrated Trade Solution
WTO	World Trade Organization

Contents

List of Figures

List of Tables

CHAPTER 1

Introduction

Ethiopia has embarked on a journey of structural transformation on the back of an active industrial policy in view to reaching the middle-income country status by 2025. The country's five-year Growth and Transformation Plan II (GTPII) targets the development of priority sectors, including textile and garment, agro-processing and tourism to accelerate the shift from an agrarian economy to one dominated by industry and services. Accordingly, the government has been promoting large-scale infrastructure projects buoyed by massive public spending and foreign direct investment (FDI) inflows to further its ambition of transforming Ethiopia into Africa's leading manufacturing hub. Emulating the experience of the East Asian Tigers, the country has chosen to pursue an export-oriented industrialization strategy underpinned by the development of industrial parks and export processing zones. It is supported by extensive infrastructure projects, including the recently-inaugurated Chinese-funded Addis Ababa-Djibouti railway aimed at improving trade logistics by reducing the cost of transporting goods to and from Djibouti's port, which accounts for 95 percent of landlocked Ethiopia's imports and exports. Together with substantial investments in the energy sector as evidenced by the ongoing construction of the Grand Ethiopian Renaissance Dam, the largest hydro-power project in Africa, they are expected to foster export growth and economic diversification. Ultimately, rapid manufacturing export-led development should contribute to raising living standards and reducing poverty by generating employment opportunities for Ethiopia's fast-growing population, the second largest in the continent.

This strategic role of manufacturing in the development process can be ascribed to a variety of factors, including the sector's ability to offer opportunities for capital accumulation, economies of scale, innovation and technological progress (Szirmai, 2012). The desirability of manufacturing-led growth is also predicated on the sector's tradability, as export market expansion allows countries to access demand beyond the domestic market (Hallward-Driemeier and Nayyar, 2017). This is corroborated by Syrquin and Chenery (1989) who find that large and open economies whose export portfolio is predominated by manufactures grow faster. Despite being also tradable, agricultural goods are constrained by low income-elasticity of demand as predicted by Engel's law[1] while services plagued by Baumol (1967)'s "disease" offer limited possibilities for productivity growth.[2] Addition-

[1] As per capita incomes rise, the share of agricultural expenditures in total expenditures declines while the share of expenditures on manufactured goods increases.

[2] According to Baumol (1967)'s "cost disease" hypothesis, productivity in labor-intensive services cannot be readily increased through capital accumulation, innovation or economies of scale. Notwithstanding, several

ally, not only manufacturing firms are important consumers of banking, transport, insurance and communication services, but they also provide demand stimulus for growth of agriculture. In other words, manufacturing presents strong forward and backward linkages and spillover effects vis-à-vis the rest of the economy. But one of the historically most appealing characteristics of the sector is arguably its potential for large-scale job creation, especially for unskilled workers. Several studies have documented large differences in labor productivity between the primary and secondary sectors (Restuccia, Yang, and Zhu, 2008; Gollin, Lagakos, and Waugh, 2014a,b), triggering a productivity-enhancing structural change whereby surplus workers in rural agriculture move into urban manufacturing in line with Lewis (1954)'s dual-sector model.[3] As such, manufacturing is a vehicle for catching-up and structural transformation, also evidenced by Rodrik (2013) who shows that unlike for the aggregate economy, labor productivity in modern manufacturing exhibits unconditional convergence across countries, and by Duarte and Restuccia (2010) who find that productivity growth in manufacturing explains 50 percent of the catch-up in aggregate productivity across countries.

In light of the sector's pro-development characteristics, adopting manufacturing export-led strategies therefore makes sense. Historically, outward-oriented industrialization supported East-Asia's growth miracle (Stiglitz and Yusuf, 2001; World Bank, 1993), with countries in the region outperforming Latin American economies which instead embraced import substitution approaches (Gereffi and Wyman, 2014).[4] Yet, the empirical relationship between international trade and economic performance remains hotly debated, with most research finding a growth-enhancing effect of openness.[5] Earlier studies on the positive relationship between trade openness and income include Michaely (1977), Harrison (1996) and Edwards (1998). In a seminal paper, Frankel and Romer (1999) find that a one-percentage

studies also document the growing role of services as an engine of growth thanks to ICT-backed productivity improvements in sectors such as finance, retail sales and distribution.

[3] Although the mining sector displays higher productivity than agriculture (McMillan and Rodrik, 2011), it is capital-intensive and hence cannot absorb as much as the unskilled labor supply as the manufacturing sector. Low-end services, in contrast, offer little productivity growth. Historically, stylized facts of structural change reveal a decline (rise) in the share of agriculture (services) in GDP as countries grow, while the share of manufacturing in GDP follows an inverted U-shape pattern (Chenery and Syrquin, 1975; Herrendorf, Rogerson, and Valentinyi, 2014).

[4] Oqubay (2015) insists, however, that import-substitution and export-led industrialization are complementary and mutually reinforcing in line with Hirschman (1968). In the same vein, Sachs (1987) argues that the active role of the government in promoting exports in a context where imports were not fully liberalized was instrumental in explaining East Asia's successful industrialization and subsequent growth.

[5] See Edwards (1993) and Winters (2004) for an overview of the literature.

point increase in the trade-to-GDP ratio raises income per capita by 2 to 3 percent after instrumenting for openness with geographic characteristics.[6] Using the same identification strategy to address the endogeneity of trade, Irwin and Terviö (2002) confirm that countries that trade more as a proportion of their GDP record higher incomes, and this holds even after accounting for geographical and institutional factors (Frankel and Rose, 2002; Noguer and Siscart, 2005).[7] Feyrer (2009b) improves on the literature by using a solid identification strategy for the causal impact of trade on growth. He employs a time-varying geographic instrument drawing on the differentiated trade impact of technological change across countries,[8] while Feyrer (2009a) exploits the closing of the Suez Canal as a natural experiment to obtain an exogenous variation in trade induced by changes in sea distance. Both studies give strong credence to the idea that trade contributes to spurring growth. By raising income per capita, trade liberalization also promotes economic convergence, as evidenced by Ben-David (1993) and Sachs and Warner (1995). The latter rely on a measure of openness accounting for the level of tariff and non-tariff barriers, black market exchange rate premia, as well as the presence of a socialist regime and a state monopoly on major exports to conclude that poorer countries that open up to trade enjoy higher growth rates than richer ones. Wacziarg and Welch (2008) further refine and update Sachs and Warner (1995)'s indicator of trade openness and show that countries that liberalized their trade regimes experienced average annual growth rates that were about 1.5 percentage points higher than before liberalization.

By boosting growth and income convergence, trade plays a key role in reducing income inequality and poverty. Studies show that openness brings about employment growth (Krueger, 1978, 1981) and poverty reduction as export-oriented sectors absorb low-skilled workers at a productivity premium (Hallward-Driemeier and Nayyar, 2017). McMillan, Ro-

[6] More specifically, they estimate a gravity model in which the trade-to-GDP ratio is regressed on a set of bilateral variables including population, area, distance, landlockedness and contiguity, and use the underlying estimates as an exogenous source of variation in trade openness.

[7] Rodriguez and Rodrik (2001) sparked controversy about the causal effect of trade on growth by casting doubt on Frankel and Romer (1999)'s identification strategy. They pointed out that geography can influence income through other channels than trade such as the quality of institutions and natural endowments, thereby leading to the violation of the exclusion restriction. Once distance from the equator, the fraction of a country's land area that is in the tropics and a set of regional dummies are included, the statistically significant income-enhancing effect of trade vanishes. Rodrik, Subramanian, and Trebbi (2004) arrive at the same conclusion after controlling for institutional quality and geography. However, Dollar and Kraay (2003) find that both trade and institutions have a bearing on growth, with trade playing a larger role over the short run.

[8] He takes advantage of the rising importance of air transportation relative to sea transportation owing to technological change and falling trade costs.

drik, and Verduzco-Gallo (2014) confirm that labor movement out of agriculture and into higher-productivity activities in Africa goes hand in hand with growth and poverty alleviation, while Cadot, de Melo, Plane, Wagner, and Woldemichael (2016) find that manufacturing value-added growth exhibits the strongest poverty-reducing effect relative to other sectors. Furthermore, the micro literature on the labor market effects of trade openness lends some support to the macro evidence that trade does not have a detrimental impact on the poor (Dollar and Kraay, 2002, 2004). For instance, Amiti and Cameron (2012) show that input tariff liberalization decreases the wage skill premium in Indonesia.[9] The adverse impact of trade liberalization on wage inequality is also verified for output tariff reductions as evidenced by Robertson (2004), Gonzaga, Menezes Filho, and Terra (2006) and Kumar and Mishra (2008) for Mexico, Brazil and India respectively. In addition, trade openness is found to reduce district-level poverty in Indonesia (Kis-Katos and Sparrow, 2015) and rural poverty in Vietnam (Brian, 2011) while yielding pro-poor distributional effects for households in Argentina (Porto, 2006). Although the literature on the impact of trade liberalization on welfare has failed to reveal undisputed positive effects,[10] recent theoretical work by Helpman, Itskhoki, and Redding (2010) and Helpman, Itskhoki, Muendler, and Redding (2017) shows a non-monotonic relationship between wage inequality and trade openness, where trade liberalization at first raises and later reduces wage inequality, in line with studies suggesting that the distributional effects of trade entail winners and losers in the short-run notwithstanding the poverty-alleviating effect of openness in the long-run. Finally, the socio-economic benefits of trade openness also materialize through enhanced female labor force participation and progress towards gender equality. Export-oriented sectors such as the apparel industry massively employ women, with positive implications for household members, including in terms of better nutrition and education (World Bank Group and World Trade Organization, 2015).

[9] The wage skill premium is the skilled to unskilled worker wage ratio.

[10] Studies documenting detrimental distributional effects of trade are also legion. At the macro level, evidence by Spilimbergo, Londono, and Szekely (1999) and Barro (2000) indicates that greater trade openness leads to growing income inequality. Likewise, results from the literature on the labor-market effects of tariff reductions are mixed with some papers evidencing negative effects in the form of higher wage inequality (Arbache, Dickerson, and Green, 2004; Attanasio, Goldberg, and Pavcnik, 2004; Galiani and Sanguinetti, 2003; Goldberg and Pavcnik, 2005) or increased informality (Goldberg and Pavcnik, 2003), hence pointing to unfavorable impacts on the poor. Similarly, Castilho, Menéndez, and Sztulman (2012) find evidence of lower inequality in rural areas in Brazil following liberalization, but higher poverty and inequality in urban areas.Winters, McCulloch, and McKay (2004) and Goldberg and Pavcnik (2007) provide an extensive survey of the literature on trade liberalization, inequality and poverty.

But how does trade promote growth? An important channel is arguably total factor productivity (TFP) growth, which is found to be faster in outward-oriented economies (Edwards, 1998). Openness positively influences labor productivity even after controlling for institutional quality and geography (Alcála and Ciccone, 2004). A large body of literature indicates that this productivity channel typically operates through imports. A reduction in trade barriers stimulates TFP through increased import competition as less efficient firms exit the domestic market while more productive ones increase their market shares (Hay, 2001; Pavcnik, 2002).[11] Tariff liberalization also promotes productivity by raising the variety and quantity of imported inputs, and by providing domestic firms access to the foreign knowledge embodied in imported intermediates and capital goods (Grossman and Helpman, 1991; Coe, Helpman, and Hoffmaister, 1997; Lumenga-Neso, Olarreaga, and Schiff, 2005; Keller, 2002). This is illustrated by Kasahara and Rodrigue (2008) who find that Chilean importers of foreign inputs record higher TFP growth, a result similar to Schor (2004) in the case of Brazil. Using data for Indonesia, Amiti and Konings (2007) also show that input tariff cuts yield higher TFP gains than output tariff reductions, while Keller (2004) and Halpern, Koren, and Szeidl (2015) stress productivity boosts resulting from enhanced complementarity between domestic and imported intermediates, and from the learning and spillover effects of foreign technology.[12] Since only the most efficient firms self-select into exporting,[13] the productivity-raising effect of input-trade liberalization also promotes growth by boosting export performance at the extensive and intensive margins through reduced fixed costs of exporting and enhanced quality of the export bundle.[14]

Additionally, the growth-enhancing potential of trade depends on the composition of the export basket. Several studies point to a dismal performance of resource-rich countries (Sachs and Warner, 1995b; Auty, 2000, 2001) owing to a combination of factors including

[11] See also Levinsohn (1993); Harrison (1994); Tybout and Westbrook (1995); Krishna and Mitra (1998); Trefler (2004) and Fernandes (2007).

[12] Although imports are a major vehicle for international technology transfer, the resulting TFP benefits vary across countries and firms depending on their ability to extract and use the foreign knowledge embodied in imports (Acharya and Keller, 2009; Augier, Cadot, and Dovis, 2013).

[13] See for instance Roberts and Tybout (1997); Clerides, Lach, and Tybout (1998); Bernard and Bradford Jensen (1999); Melitz (2003); Bernard, Eaton, Jensen, and Kortum (2003) and Alvarez and Lopez (2005).

[14] See for instance Manova and Zhang (2012); Kugler and Verhoogen (2009, 2012); Bas (2012); Bas and Strauss-Kahn (2014, 2015); Pierola, Fernandes, and Farole (2015); Feng, Li, and Swenson (2016); van der Marel (2017) and Edwards, Sanfilippo, and Sundaram (2017) on the impact of input-tariff liberalization on export performance. It is also worth mentioning that another strand of literature has evidenced learning-by-exporting effects by which growth-promoting productivity gains accrue as exporting firms gather experience in foreign markets. See Cadot, Carrère, and Strauss-Kahn (2013) for a survey of the literature on the productivity-export linkage.

heightened likelihood of internal conflicts following a resource bonanza, especially when institutions are weak (Arezki and van der Ploeg, 2010), and a resource boom-induced appreciation of the real exchange rate which stifles the tradable sector, the so-called Dutch disease effect.[15] Together with the Prebisch-Singer hypothesis which predicts a secular deterioration of the terms-of-trade of countries exporting primary products, the resource curse literature is suggestive of a negative association between natural resource exports and economic growth. Countries that are heavily dependent on primary product exports are also worse-off because they are exposed to commodity price volatility which undermines long-term growth prospects by rendering export revenues unstable, fueling macroeconomic uncertainty and discouraging investment. Since export concentration is negatively associated with growth (Lederman and Maloney, 2007), this makes the case for urging developing countries to diversify their export portfolios. In contrast, exporters of sophisticated goods are found to grow faster (Hausmann, Hwang, and Rodrik, 2007; Lee, 2011),[16] a result confirmed at the regional level by Jarreau and Poncet (2012) and Poncet and Starosta de Waldemar (2013) in the case of China. Along the same lines, Hidalgo, Klinger, Barabási, and Hausmann (2007) and Hausmann and Hidalgo (2014) introduce the concept of product space to illustrate the network of relatedness between products based on the similarity of the capabilities required to produce them. They show that countries tend to export mostly goods whose production hinges on a similar set of human, physical and institutional capital, and argue that a country's productive knowledge measured by the index of economic complexity,[17] and its position in the product space predict its subsequent pattern of diversification and economic growth.[18] Finally, the quality and variety of the export bundle influences the insertion and position of countries in global value chains (GVCs), with exporters of agricultural raw materials or low value-added manufactures usually providing intermediate inputs used in the production of goods exported by other countries (Blyde, 2014).

[15] See van der Ploeg (2011) for an extensive review of the literature.

[16] Hausmann, Hwang, and Rodrik (2007) propose a novel measure of the sophistication of the export basket. For each product, they calculate the weighted-average of the GDPs per capita of the countries exporting the good (PRODY), the weights corresponding to the revealed comparative advantage of each country in that good. Next, they compute the income or productivity-content of the export basket — dubbed EXPY — as the weighted average of a country's PRODYs, the weights being the value shares of the products in the country's total exports.

[17] The computation of the index of economic complexity is based on an iterative process combining the concepts of "diversity", the number of goods a country produces, and "ubiquity", the number of countries that produce a product.

[18] There is also recent evidence that countries that export complex products enjoy lower levels of income inequality (Hartmann, Guevara, Jara-Figueroa, Aristarán, and Hidalgo, 2017).

Although trade promotes growth through efficient allocation of resources according to comparative advantage, and through learning externalities and knowledge spillovers, several studies have underscored the importance of domestic enabling factors and complementary policies in achieving trade-led growth. More generally, Baldwin (2004) argues that trade liberalization should be viewed as part of a reform package including other "good" policies. Similarly, Freund and Bolaky (2008) show that trade fosters growth only in countries that are not excessively regulated, i.e. countries with flexible labor market regulations and where the procedures required to start a business or register commercial property are not cumbersome. In addition, the efficiency of the tax system, the rule of law and government effectiveness mediate the relationship between trade and growth (Borrmann, Busse, and Neuhaus, 2006). By the same token, Chang, Kaltani, and Loayza (2009) find that the growth-raising effect of trade openness is significantly enhanced when countries deepen financial markets, stabilize inflation and invest in education and public infrastructure.[19] In light of the abundant research that has documented the negative effect of trade costs on aggregate export volumes,[20] the intensive and extensive margins of trade[21] and export survival,[22] measures aimed at lowering trade costs are generally expected to support trade and contribute to raising its growth benefits. Broadly speaking, trade costs comprise policy barriers such as tariff and non-tariff barriers (NTBs), but also a wide range of costs related, inter alia, to transportation, inadequate infrastructure, limited availability of skilled labor, poor institutions (e.g. in the form of weak contract enforcement and regulatory environment), as well as Customs inefficiencies (Anderson and van Wincoop, 2004). Also included are the costs incurred in the search for information about the foreign market (e.g. prevailing foreign regulations and standards) prior to exporting or importing. Regulatory measures can also create entry barriers or increase the cost burdens facing services exporters (Miroudot, Sauvage, and Shepherd, 2013).[23] Reducing trade costs to reap the benefits of trade is all

[19] Trade openness is found to reduce poverty in countries with deep financial sectors and strong human capital and governance (Le Goff and Singh, 2014).

[20] See for instance Limão and Venables (2001); Coulibaly and Fontagné (2006); Blonigen and Wilson (2008); and Volpe Martincus, Carballo, and Cusolito (2017).

[21] See for instance Debaere and Mostashari (2010); Shepherd (2010); Dennis and Shepherd (2011); Albornoz, Calvo Pardo, Corcos, and Ornelas (2012); Regolo (2013); Feenstra and Ma (2014); and Beverelli, Neumueller, and Teh (2015).

[22] See for instance Brenton, Saborowski, and von Uexkull (2010); Brenton, Cadot, and Pierola (2012); Fugazza and Molina (2016); Cadot, Iacovone, Pierola, and Rauch (2013); Araujo, Mion, and Ornelas (2016); and Carrère and Strauss-Kahn (2017).

[23] Trade costs are usually higher for services than for goods and negatively affect their productivity (van der Marel, 2012; Miroudot, Sauvage, and Shepherd, 2013).

the more important in a context of worldwide production fragmentation where products cross borders several times as multiple imports and exports of intermediates are required to produce a final good or service (Ferrantino and Taglioni, 2014).

The Aid for Trade (AfT) Initiative launched at the 2005 Hong Kong Ministerial Conference aims precisely at addressing the trade costs taking a toll on developing countries' trade competitiveness, with donors channeling funds towards, inter alia, transport and energy infrastructure, agriculture, banking, and trade facilitation (Cadot and de Melo, 2014). Subsequent studies have substantiated the trade-enhancing effect of AfT. For instance, Brenton and von Uexkull (2009) run a difference-in-differences regression of exports on aid and find evidence of stronger export performance following donor-funded technical assistance for export development. Ferro, Portugal-Perez, and Wilson (2014) use an original identification strategy exploiting the variation in the service intensity of manufacturing sectors to identify the causal impact of aid flows to upstream services sectors on manufacturing exports. They find that aid directed to the transportation, energy and banking sectors bolsters downstream manufacturing exports. Similarly, Calì and te Velde (2011) disaggregate AfT disbursements and resort to an IV approach to examine how different AfT components influence exports. They find that aid to economic infrastructure drives the positive impact of aggregate AfT on exports, while aid to productive capacity does not exert any discernible effect. Vijil and Wagner (2012) instrument aid to infrastructure by the number of privatizations in the sector, and show that AfT enhances infrastructure quality, which is in turn positively associated with export performance. The micro literature relying on firm-level data also documents the positive effect of AfT on export performance. Studies in this strand of literature typically rely on impact evaluation techniques to assess whether firms benefiting from export promotion schemes through export-credit guarantees, or firm-level technical assistance exhibit stronger trade performance (Cadot, Fernandes, Gourdon, Mattoo, and Melo, 2014). For instance, Volpe Martincus and Carballo (2008) provide evidence of the positive impact of export promotion programs on the extensive margin of Peruvian firms' exports. Similarly, Cadot, Fernandes, Gourdon, and Mattoo (2015) show that Tunisian firms that benefited from the FAMEX export promotion program witnessed faster export growth and greater diversification across destination markets and products in the immediate years following the intervention.

Drawing on the strands of literature discussed above, this dissertation is articulated as follows. Chapter 2 provides micro evidence of the welfare-enhancing potential of manufac-

turing by building on the case of the textile and apparel sector in Cambodia. The expansion of the garment industry has been historically considered as a gateway into industrialization and economic development by supporting structural transformation out of low-productivity agriculture. Its strong export orientation and internationally fragmented production offer developing countries the opportunity to join GVCs and reap the benefits of international trade. In Cambodia, the textile and apparel sector has been the backbone of the country's strong economic growth in the past decade, attracting FDI, creating jobs, and accounting for the lion's share of exports. Against this backdrop, Chapter 2 uses the 2011 Cambodia Socio-Economic Survey to analyze the relationship between participation in the garment industry and household welfare using propensity score matching estimators. We find that households that have at least one member employed in the textile and apparel sector are less likely to experience self-reported food insufficiency, and their children are more likely to be enrolled in school. However, the positive effect of garment participation on consumption and asset ownership is restricted to households in the bottom 40 percent of the consumption distribution, who also enjoy magnified effects in terms of non-monetary welfare indicators, while displaying lower incidence and depth of poverty. We explain these results in light of the nature of garment jobs whose labor-intensity and low education entry barriers make them an attractive alternative for the poorest households but not necessarily for the better-off. Using instrumental-variables, we also show that remittances from the textile and apparel sector relax household budget constraints, increasing expenditures in education, health, and productivity-raising investments in agriculture. Without undermining important concerns over the working conditions and health and hazard regulations prevailing in garment factories, our results call for fostering a conducive environment for the textile and apparel sector in Cambodia and reducing the cost of transferring remittances.

Chapter 3 adopts a macro approach in identifying instances of high and sustained growth in goods and services exports and investigating their determinants based on a large panel of emerging market and developing economies (EMDEs). Export accelerations turn out to be relatively frequent events across the developing world, with a probability of occurrence of 26.6 and 33.1 percent for goods and services respectively. Institutional quality underpinned by macroeconomic stability, a depreciated exchange rate and market-oriented agricultural reforms show up as strong predictors of export takeoffs. Lowering barriers to competition in the telecommunication and electricity markets and lifting capital movement restrictions mainly bolster services exports, while FDI inflows are conducive to goods export accelera-

tions, probably on the back of foreign technology transfers. Product diversification triggers not only goods but also services export surges, thus highlighting the servitization of manufacturing and the key role of services inputs in trade in goods. We also find strong evidence that the fragmentation of production across the world gives EMDEs the opportunity to experience strong and sustained export growth. They seem to take most advantage of the acceleration-triggering effect of "slicing up the value chain" when they act as intermediate input providers for downstream countries, notwithstanding the gains they reap from backward linkages. Considering modern services, only GVC participation through imports of foreign goods and services appears to promote surges, probably because their production and export hinges on quality inputs that are not available locally. Applying the synthetic control method to the illustrative cases of Brazil and Peru, we also find evidence of higher real GDP per capita and lower unemployment and income inequality in the years following the export surge. Our results emphasize the contribution of domestic enabling factors, structural reforms and trade and financial openness to rapid and sustained export growth. They also suggest that lowering barriers to trade in services is likely to support trade in goods.

Chapter 4 is grounded in the observation that a supply chain is only as strong as its weakest link. Firms are constantly managing uncertainties, including unexpected delays in the provision of a critical input that can halt or slow down the production process, possibly making the manufacturer miss a delivery deadline. Yet, reliability and timeliness are key considerations for firms involved in GVCs where increasingly interconnected countries engage in trade in tasks. As most exporters are also importers of intermediate goods, supply chain unreliability related to import processing times at the border could impact downstream export dynamics, in the same fashion as a classic domestic trade cost. Exploiting a rich dataset built on firm-level information for 48 developing countries over 2006-2014, Chapter 4 relies on the PPML estimator to investigate how unpredictability in border clearance times for imports affects manufacturing firms' entry, exit and survival in export markets. We find that uncertainty in the time to clear imported inputs impacts neither the entry nor the exit rate, but translates into lower survival rates for new exporters, reducing the number of firms that continue to serve the foreign market beyond their first year of entry. As such, import uncertainty appears to affect more entrants than incumbents. Interestingly, this effect grows larger over time owing to rising reputational costs to input-importing exporters due to missed delivery deadlines, and is mainly driven by South-North trade, possibly reflecting the time-sensitivity of buyers in developed countries. We also find evidence of heterogeneous

effects across export industries. Finally, sunk costs of entry in foreign markets attenuate the negative effect of uncertainty on survival rates as firms delay exiting the export market. Our findings are robust to the inclusion of other measures of domestic trade costs associated with the import process, including cumbersome formalities to import, ease of access to finance and corrupt practices at the border. They suggest that developing countries seeking to promote the survival of newly-exporting firms in foreign markets should consider undertaking policies targeted at reducing the uncertainty these firms face when importing their production inputs.

Chapter 5 offers concluding remarks by summarizing the main takeaways of the dissertation and suggesting avenues for future research. It includes a discussion of the challenges confronting manufacturing export-led development in the face of premature deindustrialization and changing technological landscape, and introduces the burgeoning literature supporting the services-led growth paradigm.

Bibliography

ACHARYA, R. C., AND W. KELLER (2009): "Technology Transfer through Imports," *Canadian Journal of Economics*, 42(4), 1411–1448.

ALBORNOZ, F., H. F. CALVO PARDO, G. CORCOS, AND E. ORNELAS (2012): "Sequential Exporting," *Journal of International Economics*, 88(1), 17–31.

ALCÁLA, F., AND A. CICCONE (2004): "Trade and Productivity," *The Quarterly Journal of Economics*, 119(2), 613–646.

ALVAREZ, R., AND R. A. LÓPEZ (2005): "Exporting and Performance: Evidence from Chilean Plants," *Canadian Journal of Economics/Revue canadienne d'éeconomique*, 38(4), 1384–1400.

AMITI, M., AND L. CAMERON (2012): "Trade Liberalization and the Wage Skill Premium: Evidence from Indonesia," *Journal of International Economics*, 87(2), 277–287.

AMITI, M., AND J. KONINGS (2007): "Trade Liberalization, Intermediate Inputs, and Productivity: Evidence from Indonesia," *American Economic Review*, 97(5), 1611–1638.

ANDERSON, J. E., AND E. VAN WINCOOP (2004): "Trade Costs," *Journal of Economic Literature*, 42(3), 691–751.

ARAUJO, L., G. MION, AND E. ORNELAS (2016): "Institutions and Export Dynamics," *Journal of International Economics*, 98(C), 2–20.

ARBACHE, J. S., A. DICKERSON, AND F. GREEN (2004): "Trade Liberalisation and Wages in Developing Countries," *Economic Journal*, 114(493), 73–96.

AREZKI, R., AND F. VAN DER PLOEG (2010): "Trade Policies, Institutions and the Natural Resource Curse," *Applied Economics Letters*, 17(15), 1443–1451.

ATTANASIO, O., P. K. GOLDBERG, AND N. PAVCNIK (2004): "Trade Reforms and Wage Inequality in Colombia," *Journal of Development Economics*, 74(2), 331–366.

AUGIER, P., O. CADOT, AND M. DOVIS (2013): "Imports and TFP at the Firm Level: The Role of Absorptive Capacity," *Canadian Journal of Economics*, 46(3), 956–981.

AUTY, R. M. (2000): "How Natural Resources Affect Economic Development," *Development Policy Review*, 18(4), 347–364.

——— (2001): "The Political Economy of Resource-Driven Growth," *European Economic Review*, 45(4-6), 839–846.

BALDWIN, R. E. (2004): "Openness and Growth: What's the Empirical Relationship?," in *Challenges to Globalization: Analyzing the Economics*, NBER Chapters, pp. 499–526. National Bureau of Economic Research, Inc.

BARRO, R. J. (2000): "Inequality and Growth in a Panel of Countries," *Journal of Economic Growth*, 5(1), 5–32.

BAS, M. (2012): "Input-Trade Liberalization and Firm Export Decisions: Evidence from Argentina," *Journal of Development Economics*, 97(2), 481–493.

BAS, M., AND V. STRAUSS-KAHN (2014): "Does Importing More Inputs Raise Exports? Firm-level Evidence from France," *Review of World Economics (Weltwirtschaftliches Archiv)*, 150(2), 241–275.

——— (2015): "Input-Trade Liberalization, Export Prices and Quality Upgrading," *Journal of International Economics*, 95(2), 250–262.

BAUMOL, W. J. (1967): "Macroeconomics of Unbalanced Growth: The Anatomy of Urban Crisis," *The American Economic Review*, 57(3), 415–426.

BEN-DAVID, D. (1993): "Equalizing Exchange: Trade Liberalization and Income Convergence," *The Quarterly Journal of Economics*, 108(3), 653–679.

BERNARD, A. B., AND J. BRADFORD JENSEN (1999): "Exceptional Exporter Performance: Cause, Effect, or Both?," *Journal of International Economics*, 47(1), 1–25.

BERNARD, A. B., J. EATON, J. B. JENSEN, AND S. KORTUM (2003): "Plants and Productivity in International Trade," *American Economic Review*, 93(4), 1268–1290.

BEVERELLI, C., S. NEUMUELLER, AND R. TEH (2015): "Export Diversification Effects of the WTO Trade Facilitation Agreement," *World Development*, 76(C), 293–310.

BLONIGEN, B., AND W. WILSON (2008): "Port Efficiency and Trade Flows," *Review of International Economics*, 16(1), 21–36.

BLYDE, J. S. (2014): *Synchronized Factories: Latin America and the Caribbean in the Era of Global Value Chains*. Inter-American Development Bank.

BORRMANN, A., M. BUSSE, AND S. NEUHAUS (2006): "Institutional Quality and the Gains from Trade," *Kyklos*, 59(3), 345–368.

BRENTON, P., O. CADOT, AND M. D. PIEROLA (2012): *Pathways to African Export Sustainability*, no. 9380 in World Bank Publications. The World Bank.

BRENTON, P., C. SABOROWSKI, AND E. VON UEXKULL (2010): "What Explains the Low Survival Rate of Developing Country Export Flows?," *World Bank Economic Review*, 24(3), 474–499.

BRENTON, P., AND E. VON UEXKULL (2009): "Product-Specific Technical Assistance for Exports - Has It Been Effective?," *The Journal of International Trade and Economic Development*, 18(2), 235–254.

BRIAN, M. (2011): "Exporting Out of Poverty: Provincial Poverty in Vietnam and U.S. Market Access," *Journal of International Economics*, 85(1), 102–113.

CADOT, O., C. CARRÈRE, AND V. STRAUSS-KAHN (2013): "Trade Diversification, Income, And Growth: What Do We Know?," *Journal of Economic Surveys*, 27(4), 790–812.

CADOT, O., AND J. DE MELO (2014): *Aid for Trade: What Have We Learnt? Which Way Ahead?* CEPR Press and FERDI.

CADOT, O., J. DE MELO, P. PLANE, L. WAGNER, AND M. T. WOLDEMICHAEL (2016): "Industrialization and Structural Change: Can Sub-Saharan Africa Develop without Factories ?," *Revue d'économie du développement*, 24(2), 15–43, English Issue.

CADOT, O., A. FERNANDES, J. GOURDON, A. MATTOO, AND J. MELO (2014): "Evaluating Aid for Trade: A Survey of Recent Studies," *The World Economy*, 37(4), 516–529.

CADOT, O., A. M. FERNANDES, J. GOURDON, AND A. MATTOO (2015): "Are the Benefits of Export Support Durable? Evidence from Tunisia," *Journal of International Economics*, 97(2), 310–324.

CADOT, O., L. IACOVONE, M. D. PIEROLA, AND F. RAUCH (2013): "Success and Failure of African Exporters," *Journal of Development Economics*, 101(C), 284–296.

CALÌ, M., AND D. W. TE VELDE (2011): "Does Aid for Trade Really Improve Trade Performance?," *World Development*, 39(5), 725–740.

CARRÈRE, C., AND V. STRAUSS-KAHN (2017): "Export Survival and the Dynamics of Experience," *Review of World Economics (Weltwirtschaftliches Archiv)*, 153(2), 271–300.

CASTILHO, M., M. MENÉNDEZ, AND A. SZTULMAN (2012): "Trade Liberalization, Inequality, and Poverty in Brazilian States," *World Development*, 40(4), 821–835.

CHANG, R., L. KALTANI, AND N. V. LOAYZA (2009): "Openness Can be Good for Growth: The Role of Policy Complementarities," *Journal of Development Economics*, 90(1), 33–49.

CHENERY, H., AND M. SYRQUIN (1975): *Patterns of Development 1950-1970*. Oxford University Press.

CLERIDES, S., S. LACH, AND J. R. TYBOUT (1998): "Is Learning by Exporting Important? Micro-Dynamic Evidence from Colombia, Mexico, and Morocco," *The Quarterly Journal of Economics*, 113(3), 903–947.

COE, D. T., E. HELPMAN, AND A. W. HOFFMAISTER (1997): "North-South R&D Spillovers," *Economic Journal*, 107(440), 134–149.

COULIBALY, S., AND L. FONTAGNÉ (2006): "South–South Trade: Geography Matters," *Journal of African Economies*, 15(2), 313–341.

DEBAERE, P., AND S. MOSTASHARI (2010): "Do Tariffs Matter for the Extensive Margin of International Trade? An Empirical Analysis," *Journal of International Economics*, 81(2), 163–169.

DENNIS, A., AND B. SHEPHERD (2011): "Trade Facilitation and Export Diversification," *The World Economy*, 34(1), 101–122.

DOLLAR, D., AND A. KRAAY (2002): "Growth Is Good for the Poor," *Journal of Economic Growth*, 7(3), 195–225.

——— (2003): "Institutions, Trade, and Growth," *Journal of Monetary Economics*, 50(1), 133–162.

——— (2004): "Trade, Growth, and Poverty," *Economic Journal*, 114(493), 22–49.

DUARTE, M., AND D. RESTUCCIA (2010): "The Role of the Structural Transformation in Aggregate Productivity," *The Quarterly Journal of Economics*, 125(1), 129–173.

EDWARDS, L., M. SANFILIPPO, AND A. SUNDARAM (2017): "Importing and Firm Export Performance: New Evidence from South Africa," *South African Journal of Economics*, 86(S1), 79–95.

EDWARDS, S. (1993): "Openness, Trade Liberalization, and Growth in Developing Countries," *Journal of Economic Literature*, 31(3), 1358–1393.

——— (1998): "Openness, Productivity and Growth: What Do We Really Know?," *The Economic Journal*, 108(447), 383–398.

FEENSTRA, R. C., AND H. MA (2014): "Trade Facilitation and the Extensive Margin of Exports," *The Japanese Economic Review*, 65(2), 158–177.

FENG, L., Z. LI, AND D. L. SWENSON (2016): "The Connection between Imported Intermediate Inputs and Exports: Evidence from Chinese Firms," *Journal of International Economics*, 101(C), 86–101.

FERNANDES, A. M. (2007): "Trade Policy, Trade Volumes and Plant-Level Productivity in Colombian Manufacturing Industries," *Journal of International Economics*, 71(1), 52–71.

FERRANTINO, M. J., AND D. TAGLIONI (2014): "Global Value Chains in the Current Trade Slowdown," *World Bank - Economic Premise*, (138), 1–6.

FERRO, E., A. PORTUGAL-PEREZ, AND J. S. WILSON (2014): "Aid to the Services Sector: Does it Affect Manufacturing Exports?," *The World Economy*, 37(4), 530–541.

FEYRER, J. (2009a): "Distance, Trade, and Income - The 1967 to 1975 Closing of the Suez Canal as a Natural Experiment," NBER Working Papers 15557, National Bureau of Economic Research, Inc.

——— (2009b): "Trade and Income – Exploiting Time Series in Geography," NBER Working Papers 14910, National Bureau of Economic Research, Inc.

FRANKEL, J., AND A. ROSE (2002): "An Estimate of the Effect of Common Currencies on Trade and Income," *The Quarterly Journal of Economics*, 117(2), 437–466.

FRANKEL, J. A., AND D. H. ROMER (1999): "Does Trade Cause Growth?," *American Economic Review*, 89(3), 379–399.

FREUND, C., AND B. BOLAKY (2008): "Trade, Regulations, and Income," *Journal of Development Economics*, 87(2), 309–321.

FUGAZZA, M., AND A. C. MOLINA (2016): "On the Determinants of Exports Survival," *Canadian Journal of Development Studies / Revue canadienne d'études du développement*, 37(2), 159–177.

GALIANI, S., AND P. SANGUINETTI (2003): "The Impact of Trade Liberalization on Wage Inequality: Evidence from Argentina," *Journal of Development Economics*, 72(2), 497–513.

GEREFFI, G., AND D. L. WYMAN (2014): *Manufacturing Miracles: Paths of Industrialization in Latin America and East Asia*. Princeton University Press.

GOLDBERG, P. K., AND N. PAVCNIK (2003): "The Response of the Informal Sector to Trade Liberalization," *Journal of Development Economics*, 72(2), 463–496.

——— (2005): "Trade, Wages, and the Political Economy of Trade Protection: Evidence from the Colombian Trade Reforms," *Journal of International Economics*, 66(1), 75–105.

——— (2007): "Distributional Effects of Globalization in Developing Countries," *Journal of Economic Literature*, 45(1), 39–82.

GOLLIN, D., D. LAGAKOS, AND M. E. WAUGH (2014a): "Agricultural Productivity Differences across Countries," *American Economic Review*, 104(5), 165–70.

——— (2014b): "The Agricultural Productivity Gap," *The Quarterly Journal of Economics*, 129(2), 939–993.

GONZAGA, G., N. MENEZES FILHO, AND C. TERRA (2006): "Trade Liberalization and the Evolution of Skill Earnings Differentials in Brazil," *Journal of International Economics*, 68(2), 345–367.

GROSSMAN, G. M., AND E. HELPMAN (1991): "Endogenous Product Cycles," *Economic Journal*, 101(408), 1214–1229.

HALLWARD-DRIEMEIER, M., AND G. NAYYAR (2017): *Trouble in the Making? The Future of Manufacturing-Led Development*, no. 27946 in World Bank Publications. The World Bank.

HALPERN, L., M. KOREN, AND A. SZEIDL (2015): "Imported Inputs and Productivity," *American Economic Review*, 105(12), 3660–3703.

HARRISON, A. (1994): "Productivity, Imperfect Competition and Trade Reform: Theory and Evidence," *Journal of International Economics*, 36(1-2), 53–73.

——— (1996): "Openness and Growth: A Time-Series, Cross-Country Analysis for Developing Countries," *Journal of Development Economics*, 48(2), 419–447.

HARTMANN, D., M. R. GUEVARA, C. JARA-FIGUEROA, M. ARISTARÁN, AND C. A. HIDALGO (2017): "Linking Economic Complexity, Institutions, and Income Inequality," *World Development*, 93(C), 75–93.

HAUSMANN, R., AND C. HIDALGO (2014): *The Atlas of Economic Complexity: Mapping Paths to Prosperity*, vol. 1 of *MIT Press Books*. The MIT Press.

HAUSMANN, R., J. HWANG, AND D. RODRIK (2007): "What You Export Matters," *Journal of Economic Growth*, 12(1), 1–25.

HAY, D. A. (2001): "The Post-1990 Brazilian Trade Liberalisation and the Performance of Large Manufacturing Firms: Productivity, Market Share and Profits," *The Economic Journal*, 111(473), 620–641.

HELPMAN, E., O. ITSKHOKI, M.-A. MUENDLER, AND S. J. REDDING (2017): "Trade and Inequality: From Theory to Estimation," *Review of Economic Studies*, 84(1), 357–405.

HELPMAN, E., O. ITSKHOKI, AND S. REDDING (2010): "Inequality and Unemployment in a Global Economy," *Econometrica*, 78(4), 1239–1283.

HERRENDORF, B., R. ROGERSON, AND K. VALENTINYI (2014): "Growth and Structural Transformation," in *Handbook of Economic Growth*, vol. 2 of *Handbook of Economic Growth*, chap. 6, pp. 855–941. Elsevier.

HIDALGO, C. A., B. KLINGER, A.-L. BARABÁSI, AND R. HAUSMANN (2007): "The Product Space Conditions the Development of Nations," *Science*, 317(5837), 482–487.

HIRSCHMAN, A. O. (1968): "The Political Economy of Import-Substituting Industrialization in Latin America," *The Quarterly Journal of Economics*, 82(1), 1–32.

IRWIN, D., AND M. TERVIÖ (2002): "Does Trade Raise Income?: Evidence from the Twentieth Century," *Journal of International Economics*, 58(1), 1–18.

JARREAU, J., AND S. PONCET (2012): "Export Sophistication and Economic Growth: Evidence from China," *Journal of Development Economics*, 97(2), 281–292.

KASAHARA, H., AND J. RODRIGUE (2008): "Does the Use of Imported Intermediates Increase Productivity? Plant-level Evidence," *Journal of Development Economics*, 87(1), 106–118.

KELLER, W. (2002): "Geographic Localization of International Technology Diffusion," *American Economic Review*, 92(1), 120–142.

——— (2004): "International Technology Diffusion," *Journal of Economic Literature*, 42(3), 752–782.

KIS-KATOS, K., AND R. SPARROW (2015): "Poverty, Labor Markets and Trade Liberalization in Indonesia," *Journal of Development Economics*, 117(C), 94–106.

KRISHNA, P., AND D. MITRA (1998): "Trade Liberalization, Market Discipline and Productivity Growth: New Evidence from India," *Journal of Development Economics*, 56(2), 447–462.

KRUEGER, A. O. (1978): *Liberalization Attempts and Consequences*. NBER.

——— (1981): *Trade and Employment in Developing Countries*. University of Chicago Press.

KUGLER, M., AND E. VERHOOGEN (2009): "Plants and Imported Inputs: New Facts and an Interpretation," *American Economic Review*, 99(2), 501–507.

——— (2012): "Prices, Plant Size, and Product Quality," *Review of Economic Studies*, 79(1), 307–339.

KUMAR, U., AND P. MISHRA (2008): "Trade Liberalization and Wage Inequality: Evidence from India," *Review of Development Economics*, 12(2), 291–311.

LE GOFF, M., AND R. J. SINGH (2014): "Does Trade Reduce Poverty? A View from Africa," *Journal of African Trade*, 1(1), 5 – 14.

LEDERMAN, D., AND W. MALONEY (2007): *Natural Resources: Neither Curse Nor Destiny*chap. Trade Structure and Growth. The World Bank, Washington, DC.

LEE, J. (2011): "Export Specialization and Economic Growth around the World," *Economic Systems*, 35(1), 45–63.

LEVINSOHN, J. (1993): "Testing the Imports-As-Market-Discipline Hypothesis," *Journal of International Economics*, 35(1-2), 1–22.

LEWIS, A. W. (1954): "Economic Development with Unlimited Supplies of Labour," *The Manchester School*, 22(2), 139–191.

LIMÃO, N., AND A. J. VENABLES. (2001): "Infrastructure, Geographical Disadvantage, Transport Costs, and Trade," *World Bank Economic Review*, 15(3), 451–479.

LUMENGA-NESO, O., M. OLARREAGA, AND M. SCHIFF (2005): "On 'Indirect' Trade-related R&D Spillovers," *European Economic Review*, 49(7), 1785–1798.

MANOVA, K., AND Z. ZHANG (2012): "Export Prices across Firms and Destinations," *The Quarterly Journal of Economics*, 127(1), 379–436.

MCMILLAN, M. S., AND K. HARTTGEN (2014): "What is Driving the 'African Growth Miracle'?," NBER Working Papers 20077, National Bureau of Economic Research, Inc.

MCMILLAN, M. S., AND D. RODRIK (2011): "Globalization, Structural Change and Productivity Growth," NBER Working Papers 17143, National Bureau of Economic Research, Inc.

MELITZ, M. J. (2003): "The Impact of Trade on Intra-Industry Reallocations and Aggregate Industry Productivity," *Econometrica*, 71(6), 1695–1725.

MICHAELY, M. (1977): "Exports and Growth : An Empirical Investigation," *Journal of Development Economics*, 4(1), 49–53.

MIROUDOT, S., J. SAUVAGE, AND B. SHEPHERD (2013): "Measuring the Cost of International Trade in Services," *World Trade Review*, 12(4), 719–735.

NOGUER, M., AND M. SISCART (2005): "Trade Raises Income: A Precise and Robust Result," *Journal of International Economics*, 65(2), 447–460.

OQUBAY, A. (2015): *Made in Africa: Industrial Policy in Ethiopia*. Oxford University Press.

PAVCNIK, N. (2002): "Trade Liberalization, Exit, and Productivity Improvements: Evidence from Chilean Plants," *Review of Economic Studies*, 69(1), 245–276.

PIEROLA, M. D. C., A. M. FERNANDES, AND T. FAROLE (2015): "The Role of Imports for Exporter Performance in Peru," Policy Research Working Paper Series 7492, The World Bank.

PONCET, S., AND F. STAROSTA DE WALDEMAR (2013): "Export Upgrading and Growth: The Prerequisite of Domestic Embeddedness," *World Development*, 51(C), 104–118.

PORTO, G. G. (2006): "Using Survey Data to Assess the Distributional Effects of Trade Policy," *Journal of International Economics*, 70(1), 140–160.

REGOLO, J. (2013): "Export Diversification: How Much Does the Choice of the Trading Partner Matter?," *Journal of International Economics*, 91(2), 329–342.

RESTUCCIA, D., D. T. YANG, AND X. ZHU (2008): "Agriculture and Aggregate Productivity: A Quantitative Cross-Country Analysis," *Journal of Monetary Economics*, 55(2), 234–250.

ROBERTS, M. J., AND J. R. TYBOUT (1997): "The Decision to Export in Colombia: An Empirical Model of Entry with Sunk Costs," *American Economic Review*, 87(4), 545–564.

ROBERTSON, R. (2004): "Relative Prices and Wage Inequality: Evidence from Mexico," *Journal of International Economics*, 64(2), 387–409.

RODRIGUEZ, F., AND D. RODRIK (2001): "Trade Policy and Economic Growth: A Skeptic's Guide to the Cross-National Evidence," in *NBER Macroeconomics Annual 2000, Volume 15*, NBER Chapters, pp. 261–338. National Bureau of Economic Research, Inc.

RODRIK, D. (2013): "Unconditional Convergence in Manufacturing," *The Quarterly Journal of Economics*, 128(1), 165–204.

RODRIK, D., A. SUBRAMANIAN, AND F. TREBBI (2004): "Institutions Rule: The Primacy of Institutions Over Geography and Integration in Economic Development," *Journal of Economic Growth*, 9(2), 131–165.

SACHS, J. D. (1987): "Trade and Exchange Rate Policies in Growth-Oriented Adjustment Programs," NBER Working Papers 2226, National Bureau of Economic Research, Inc.

SACHS, J. D., AND A. WARNER (1995a): "Economic Reform and the Process of Global Integration," *Brookings Papers on Economic Activity*, 26(1, 25th A), 1–118.

SACHS, J. D., AND A. M. WARNER (1995b): "Natural Resource Abundance and Economic Growth," NBER Working Papers 5398, National Bureau of Economic Research, Inc.

SCHOR, A. (2004): "Heterogeneous Productivity Response to Tariff Reduction. Evidence from Brazilian Manufacturing Firms," *Journal of Development Economics*, 75(2), 373–396.

SHEPHERD, B. (2010): "Geographical Diversification of Developing Country Exports," *World Development*, 38(9), 1217–1228.

SPILIMBERGO, A., J. L. LONDONO, AND M. SZEKELY (1999): "Income Distribution, Factor Endowments, and Trade Openness," *Journal of Development Economics*, 59(1), 77–101.

STIGLITZ, J. E., AND S. YUSUF (2001): *Rethinking the East Asian Miracle*, no. 13969 in World Bank Publications. The World Bank.

SYRQUIN, M., AND H. CHENERY (1989): "Three Decades of Industrialization," *The World Bank Economic Review*, 3(2), 145–181.

SZIRMAI, A. (2012): "Industrialisation as an Engine of Growth in Developing Countries, 1950–2005," *Structural Change and Economic Dynamics*, 23(4), 406–420.

TREFLER, D. (2004): "The Long and Short of the Canada-U. S. Free Trade Agreement," *American Economic Review*, 94(4), 870–895.

TYBOUT, J., AND M. D. WESTBROOK (1995): "Trade Liberalization and the Dimensions of Efficiency Change in Mexican Manufacturing Industries," *Journal of International Economics*, 39(1-2), 53–78.

VAN DER MAREL, E. (2012): "Trade in Services and TFP: The Role of Regulation," *The World Economy*, 35(11), 1530–1558.

——— (2017): "Explaining Export Performance through Inputs: Evidence from Aggregated Cross-country Firm-level Data," *Review of Development Economics*, 21(3), 731–755.

VAN DER PLOEG, F. (2011): "Natural Resources: Curse or Blessing?," *Journal of Economic Literature*, 49(2), 366–420.

VIJIL, M., AND L. WAGNER (2012): "Does Aid for Trade Enhance Export Performance? Investigating the Infrastructure Channel," *The World Economy*, 35(7), 838–868.

VOLPE MARTINCUS, C., AND J. CARBALLO (2008): "Is Export Promotion Effective in Developing Countries? Firm-Level Evidence on the Intensive and the Extensive Margins of Exports," *Journal of International Economics*, 76(1), 89–106.

VOLPE MARTINCUS, C., J. CARBALLO, AND A. CUSOLITO (2017): "Roads, Exports and Employment: Evidence from a Developing Country," *Journal of Development Economics*, 125(C), 21–39.

WACZIARG, R., AND K. H. WELCH (2008): "Trade Liberalization and Growth: New Evidence," *World Bank Economic Review*, 22(2), 187–231.

WINTERS, L. A. (2004): "Trade Liberalisation and Economic Performance: An Overview," *The Economic Journal*, 114(493), F4–F21.

WINTERS, L. A., N. MCCULLOCH, AND A. MCKAY (2004): "Trade Liberalization and Poverty: The Evidence So Far," *Journal of Economic Literature*, 42(1), 72–115.

WORLD BANK, . (1993): *The East Asian Miracle: Economic Growth and Public Policy*. Oxford University Press.

WORLD BANK GROUP, ., AND . WORLD TRADE ORGANIZATION (2015): *The Role of Trade in Ending Poverty*, no. 22081 in World Bank Publications. The World Bank.

CHAPTER 2

To Sew or Not to Sew? Assessing the Welfare Effects of the Garment Industry in Cambodia

---

[1]

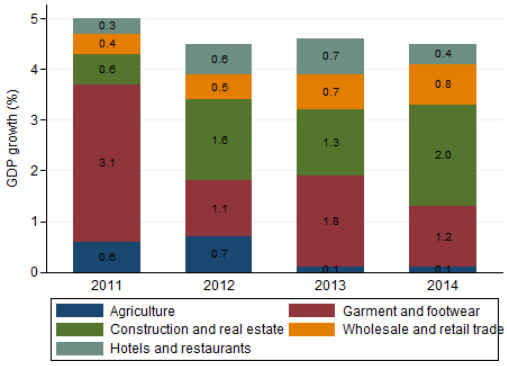
[1] An earlier version of this Chapter was published in the World Bank working paper series WPS8061 as the output of joint work with Carolina Mejía-Mantilla when I was a consultant in the World Bank's Trade and Competitiveness Global Practice in summer 2015. Earlier versions benefited from useful comments and suggestions from Simone Bertoli, Olivier Cadot, Samuel Freije-Rodriguez, Sekou Keita, Pierre Mandon, Moctar Ndiaye, Patrick Plane, Carlos Sobrado and Salman Zaidi, as well as participants of CERDI PhD Seminar, the GDRI Conference on International Development Economics in Clermont-Ferrand and the 4th DIAL Conference on Development Economics in Paris.

2.1 Introduction

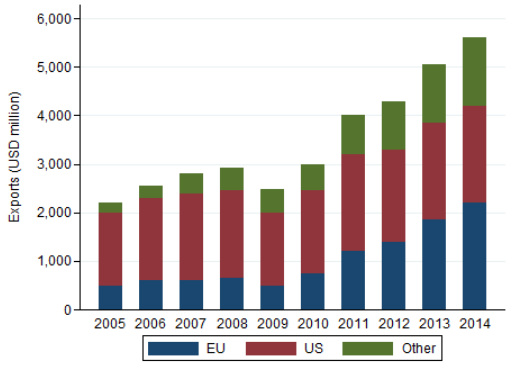
The garment industry has been one of the pillars of Cambodia's impressive economic growth in the past fifteen years, as well as the most important source of industrialization of the country. In 2014, it was the second highest contributor to GDP growth after the construction sector, accounting for 1.2 percentage points out of a total of 4.5 percentage points (Figure 2.1a). The value of garment exports reached USD 1.4 billion in 2015, representing around 75 percent of the country's total exports and constituting the main source of foreign direct investment. The primary destination of garment exports in 2015 was the EU market followed by the US, with a share of 40 and 30 percent respectively (Figure 2.1b). Although it has faced some challenges in recent years, including the appreciation of the US dollar[2] and the emergence of other Asian competitors such as Myanmar and Bangladesh, it is projected to remain a key engine of the economy for the foreseeable future.

Figure 2.1: Stylized Facts on the Garment Industry in Cambodia

(a) Sector Contribution to GDP Growth



(b) Main Destination Markets of Garment Exports



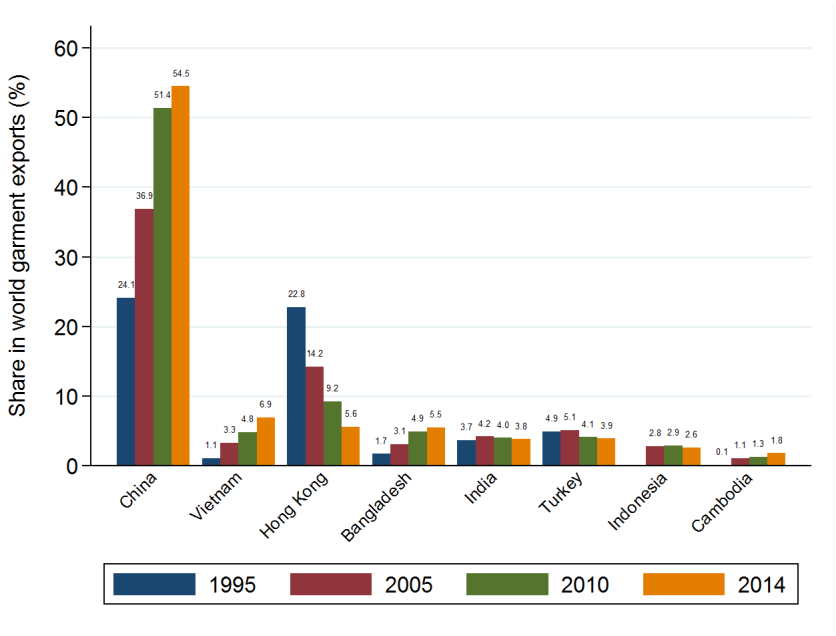
Notes: (a) Adapted from figures provided by Cambodian authorities. (b) Adapted from World Bank (2015). Exports are expressed in millions of USD. EU: European Union; US: United States.

The industry took off in 1999 with the bilateral textile agreement between the US and Cambodia, which granted Cambodia access to the US market for three years under the Multi-Fiber Agreement (MFA) quota system, and with the privileged access the EU granted to Cambodian apparel exports. Under the MFA, the initial quotas granted by the US to Cambodia were the most generous in per capita terms and the agreement established that the quotas would increase annually if the country's firms and factories accepted to comply with internationally agreed labor

[2]The appreciation of the US dollar negatively affects Cambodian textile and apparel exports in a setting where most garment firms' costs are in dollars.

standards, as well as the country's labor law. This initiative known as the Better Factories Cambodia was the genesis of the Better Work Program, which currently operates in seven additional countries (Lopez-Acevedo and Robertson, 2012; Kotikula, Pournik, and Robertson, 2015). The MFA was extended for another three years in 2001 and it finally ended in 2005. Cambodia's access to the EU has continued under the Everything but Arms Initiative, established in 2001 (Savchenko and Lopez-Acevedo, 2012) and, as mentioned, is nowadays the main garment export destination for the country. Access to both the US and the EU textile markets was a major incentive to investors from China; Hong Kong SAR, China; and the Republic of Korea. The industry boomed in the country, and the contribution of Cambodia's garment exports to world garment exports increased from 0.1 percent in 2000 to 1.8 percent in 2014 (Figure 2.2).

Figure 2.2: Main Garment Exporters in the World



Notes: Adapted from UNCTAD (2015). Top eight garment exporters in the world, ranked in descending order based on their performance in 2014. Missing 1995 value for Indonesia.

Along with being an engine of economic growth, the garment industry in Cambodia is a source of job opportunities for low-skilled workers, who usually belong to the poorest households and whose alternatives are the agricultural sector and/or informal economic activities. As of 2015, the industry employs approximately 600,000 workers, accounting for the lion's share of the total manufacturing labor force (Kotikula, Pournik, and Robertson, 2015). Jobs in the garment sector usually pay higher wages and are considered to be more stable over time, al-

lowing households to enhance their acquisitive power and increase their well-being and savings over time (Robertson, Brown, Pierre, and Sanchez-Puerta, 2009). Moreover, since 80 percent of textile and apparel workers in Cambodia are young women, mostly migrants from rural areas, garment manufacturing is considered to contribute to enhancing the socio-economic status of women in the country, with positive externalities on human capital investment through children's education (Kotikula, Pournik, and Robertson, 2015; World Bank Group and World Trade Organization, 2015).

Against this background, this paper sheds lights on the socio-economic benefits of the garment industry in Cambodia and contributes to the literature on two fronts. First, it goes beyond analyzing the labor market outcomes of garment workers and explores the welfare benefits of the industry at the household level. We consider that a household participates in the textile and apparel sector if at least one member, current or migrant, is employed in the industry. Using the 2011 Cambodia Socio-Economic Survey (CSES), we employ propensity score matching (PSM) estimators[3] to identify the effect of garment participation on monetary welfare indicators (including household consumption per capita, poverty and extreme poverty status, poverty gap and asset ownership) as well as non-monetary measures (including the proportion of children aged 6-14 attending school and the self-reported incidence of food insufficiency). Second, our paper contributes to the literature on the effects of migrant transfers on poverty reduction and agricultural investments by exploring the welfare-enhancing effect of garment remittances in the Cambodian context. Specifically, we use instrumental variables (IV) to quantify the impact of remittances sent by garment factory workers on household expenditure, including productive investments in health, education and agricultural inputs.

Our results suggest that garment households are 0.9 percentage point less likely to report food insufficiency and 3.3 percentage points more likely to have children attending school relative to households who are not involved in the textile and apparel industry. Although garment participation appears to be negatively associated with consumption and asset ownership, the sign of these point estimates is reversed when the analysis of the treatment effect is restricted to the bottom 40 percent of the consumption distribution. Among the poorest households, we find that per capita consumption and asset ownership are higher by 3 percent and 2.6 percentage points

[3]PSM has been widely used to estimate causal treatment effects in the evaluation literature. Its applications include, inter alia, the evaluation of labor market policies (Dehejia and Wahba, 1999; Bryson, 2002) and the identification of the effects of migration and remittances on household outcomes (Acosta, 2011; Cox-Edwards and Rodríguez-Oreggia, 2009; Jimenez-Soto and Brown, 2012; Bertoli and Marchetta, 2014). In our case, PSM estimators have the advantage of not requiring the introduction of functional forms of the relationship between household characteristics, participation in the garment sector and the measures of welfare.

respectively, the negative effect on the incidence of poverty and the poverty gap is statistically significant, while the benefits in terms of reduced exposure to food insufficiency and increased school enrollment of children are magnified. In other words, participation in the textile and apparel sector enhances the welfare of the poorest households but not the well-off. This result is robust to unobserved heterogeneity, as well as to various specifications of the PSM selection model, to the use of different matching estimators and to employing an alternative methodology for covariate balancing allowing to combine matching with regression analysis. A possible explanation lies in the nature of the bulk of garment jobs whose labor-intensity and low education entry barriers have been documented to represent a good employment opportunity for the poor and low-skilled. Together with the observation that the majority of firms operating in the sector are foreign-owned, and mostly hire foreign top and middle-managers, skilled-workers and supervisors (Lopez-Acevedo and Robertson, 2012), this may explain why the garment industry is not the best alternative for the richest households, and may actually be their last resort.

Furthermore, the migration channel points to a positive impact of garment remittances on household per capita consumption, and on expenditures in education, health and agricultural productive inputs. Notwithstanding concerns over the working conditions prevailing in garment factories, our results provide additional evidence of the welfare-enhancing benefits of the textile and apparel sector.

The rest of the paper is organized as follows. Section 2.2 links this paper both to the literature on the effect of the garment sector on workers' labor market outcomes in Cambodia and other countries, and to the literature that goes beyond labor market outcomes. Section 2.3 presents the data and some descriptive statistics, followed by Section 2.4 which introduces the methodological approach. Empirical results and robustness checks are described in Section 2.5, while Section 2.6 explores the remittances channel using instrumental variables. Section 2.7 concludes.

2.2 Review of Existing Studies

Since the early examples of the United Kingdom and the United States, the expansion of garment manufacturing has been considered as a gateway into industrialization and economic development. Its strong export orientation and internationally fragmented production offer countries the opportunity to join global value chains and reap the benefits of international trade. By providing job opportunities for low-skilled and poor workers mostly from rural areas whose alternatives would otherwise be agriculture, low-productivity services or occupations in the informal econ-

omy, the textile and apparel sector appears as the cornerstone of structural transformation and a source of poverty reduction (Lopez-Acevedo and Robertson, 2012). The important concentration of women in the industry also highlights its key role in enhancing female labor force participation and empowering women in the household (Keane and te Velde, 2008; Fukunishi, Murayama, Yamagata, and Nishiura, 2006; Yamagata, 2009; Fukunishi and Yamagata, 2013).

The literature that has studied the benefits of an expanding garment sector has focused on workers' labor market outcomes, with several quantitative studies showing the existence of a wage premium for textile and apparel workers, while qualitative studies analyzed the non-wage working conditions of workers (Kotikula, Pournik, and Robertson, 2015). Robertson, Brown, Pierre, and Sanchez-Puerta (2009) report the existence of a wage premium in the garment sector in four out of five country cases including Honduras, Cambodia, El Salvador, Madagascar and Indonesia (the latter being the exception), and indicate that the larger the foreign direct investment in the sector, the higher the wage premium. Interestingly, the greatest wage premium was reported for Cambodia, at around 35 percent. Similarly, Lopez-Acevedo and Robertson (2012) explore how apparel exports, employment, and wages changed for various countries after the end of the MFA in 2005. They find that total employment and wage premium increased in Bangladesh, India, Pakistan and Vietnam, while they declined for Sri Lanka, Honduras and Mexico. For Cambodia, the end of the MFA resulted in a 20 percent increase in total employment while the garment wage premium declined, although it recovered in the following years. Similarly and in the specific case of Cambodia, Savchenko and Lopez-Acevedo (2012) employ Mincer wage equations to determine that the garment sector premium was around 28 percent during the 2004-2009 period. They also show that the expansion of the industry coincided with a narrowing of the gender wage gap in the country, supporting the hypothesis that the sector is beneficial for female unskilled workers. In the same vein, Kotikula, Pournik, and Robertson (2015) report that there is no statistically significant difference between the self-reported wage of female and male workers in garment factories, despite the fact that women are often concentrated in lower-skilled tasks such as sewing.

However, few studies have rigourously explored how the benefits of the garment sector extend beyond labor market outcomes. Kotikula, Pournik, and Robertson (2015) find that poverty in Cambodian households that are not involved in the garment industry is slightly higher than in households that are, and that a girl whose mother works in the textile and apparel sector has higher chance to attend school compared to one whose mother is employed in other comparable sectors. However their study is descriptive and relies on simple stylized facts, with no further econometric analysis. This paper is in the vein of De Hoyos, Bussolo, and Núñez (2012) and

Heath and Mobarak (2015), who carefully analyze the welfare implications of the garment sector in Honduras and Bangladesh respectively. The first study concludes that the maquila sector in Honduras has not only contributed to curbing the gender wage gap, but it also helped reduce poverty. By setting the maquila wage premium to zero in wage income micro-simulations, they estimate that on average, the maquila premium by itself accounted for 0.31 percentage points in the reduction of the poverty incidence, and 0.44 percentage points when allowing for gender-specific effects. Similarly, Heath and Mobarak (2015) take advantage of the variation in the dates at which garment factories opened in Bangladesh, as well as their distance to the households surveyed, to estimate hazard models for age at marriage and age at first birth for girls with different exposure to factory jobs. They find that the garment industry is associated with a lower risk of early marriage and childbirth for girls, both because they postpone marriage and stay in school to enhance their human capital.

More generally, this paper also relates to the large body of literature on export-led growth in developing countries. As summarized nicely in Bernard and Jensen (2007), export-oriented sectors are beneficial for economic development. Not only do they create significant employment opportunities, particularly in low-income countries as suggested by Mammen and Paxson (2000), and pay higher wages, they are also a source of productivity, innovation and technological progress.[4]

Finally, this paper is linked to the literature on the impact of workers' remittances. Several studies have explored the welfare-effects of migrants' transfers and present evidence in favor of the productive use of remittances by recipient households. These include Castaldo and Reilly (2007) in the case of Albania, Taylor and Mora (2006) in the case of for Mexico and also Acosta, Fajnzylber, and Lopez (2008) who study seven Latin American countries. Relatedly, there is evidence that remittances allow recipient households in rural areas to supplement non-farm income, encouraging productive investments (Rozelle, Taylor, and DeBrauw, 1999; Minot, Kherallah, and Berry, 2000; Abdoulaye and Sanders, 2005).

2.3 Data and Descriptive Statistics

We use data from the Cambodia Socio-Economic Survey (CSES), a comprehensive household survey collected by the National Institute of Statistics (NIS) to measure the living conditions of the population. It contains data on characteristics of the household, its consumption and various

[4] See for instance Alvarez and Lopez (2005); Arnold and Hussinger (2005); Van Biesebroeck (2005); De Loecker (2007) and Sinani and Hobdari (2010).

sources of income as well as individual-level data on education, economic activities, and health, among other topics. The survey is representative at the national level, and is used both by the government and the World Bank to calculate poverty estimates. We rely on the 2011 wave of the CSES, as this is the latest year with a migration module containing detailed information on the sector of employment and whereabouts of the migrants. Information on migration is key to our identification strategy given the profile of the workers employed in the garment sector, typically young women who migrate from rural areas to Phnom Penh, where most of garment firms are located (Kotikula, Pournik, and Robertson, 2015).

The data are collected from a sample of 3,518 households across Cambodia. Of those, 19 percent are involved in the textile and apparel sector with at least one member of the household – either a migrant or an individual still living in the household – employed in the industry.[5] Specifically, garment households are identified based on (i) NIS-specific occupation codes when the member of the household is a migrant,[6] and (ii) the International Standard Industrial Classification of All Economic Activities (ISIC) when the member still lives in the household.[7] In 32 percent of the households that participate in the garment industry, the worker turns out to be a migrant, hence confirming the importance of accounting for the migration channel. Figure 2.3 depicts the distribution of garment households across Cambodian provinces and shows they mostly reside in the South-Eastern provinces of the country, including Phnom Penh.

We use the following monetary and non-monetary welfare indicators:

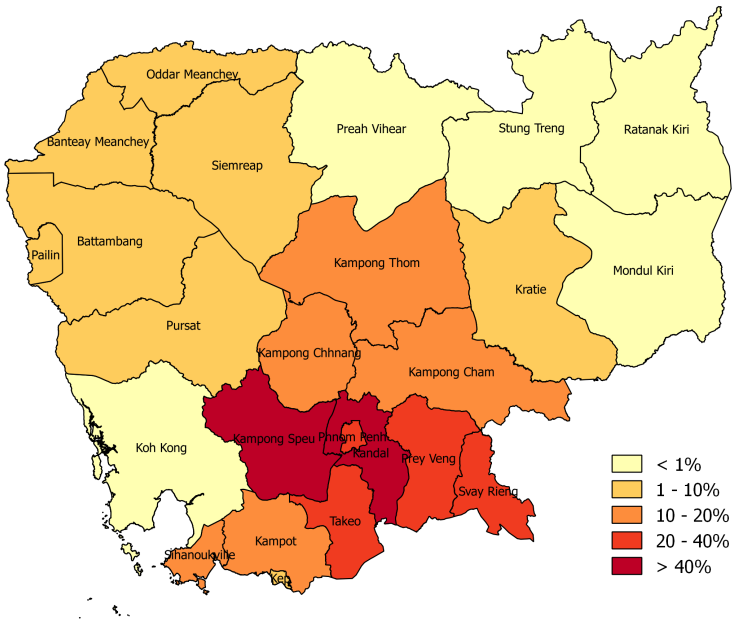
- *Monthly consumption per capita*. We rely on the same consumption aggregate used by the World Bank to estimate the incidence of poverty in Cambodia. It includes the following expenses: house services, housing, food, communication, personal, entertainment, school, health, durables, and other expenses. For durable goods, it uses the monthly use value of durable goods purchased in the last 12 months. Similarly, when households own the dwelling place in which they reside, the monthly use value of the house was estimated based on the characteristics and location of the household. The consumption aggregate

[5] The retained sample remains close to the original CSES 2011 comprising 3,592 households of which 74 (only 2 percent of households) were dropped due to missing values for some covariates of interest.

[6] Individuals whose occupation is described with the following NIS codes are identified as garment workers: 737 Rope makers; 738 Handloom weavers, handicraft workers in textile, leather and related material; 754 Tailors, dress makers, furriers and hatters; 755 Garment and related trade workers; 756 Pelt, leather and related trades workers; 815 Textile, fur and leather products machine operators.

[7] Garment households have at least one member working in one of the following ISIC Revision 4 industry divisions: 13 Manufacture of textile; 14 Manufacture of wearing apparel; and 15 Manufacture of leather and related products.

Figure 2.3: Distribution of Garment Households across Provinces



Notes: Authors' calculations based on the 2011 Cambodia Socio-Economic Survey. The map displays the percentage share of treated households across Cambodian provinces. Figures are computed using sampling weights. Tbong Khmum province, which was only formed in 2013 when Kampong Cham Province was split in two, was merged with the latter to reflect the administrative provinces prevailing in 2011.

is adjusted by a spatial price index to account for price differences between households living in Phnom Penh, other urban areas and rural areas.

- *Asset ownership index*. It is computed as the percentage of goods owned out of a list of 15 agricultural and non-agricultural durable goods accumulated to date by the household. These include the following: radio, television, bicycle, motorcycle, video/vcd/dvd recorder or player, refrigerator, electric fan, electric kitchen or gas stove, cell phone, electric iron, desktop or laptop computer, plough, harrow/rake/hoe/spade/axe, batteries and bed sets (bed mattress).

- *Poverty status*. A household is considered poor if its monthly consumption per capita is below the national poverty line, which includes a food component based on a minimum caloric intake recommended by the FAO, and a non-food allowance. In the case of Cambodia, three poverty lines[8] are used depending on the geographical location of the

[8]Poverty lines were determined in 2011 using 2009 data. A detailed description of the poverty methodology can

household.[9] For each household, we also compute a poverty gap index defined as the average distance of household consumption to the poverty line as a proportion of the poverty line (for the non-poor the distance is considered to be zero). The indicator is usually interpreted as the average amount that would have to be transferred to the poor to bring their expenditure up to the poverty line as a proportion of the poverty line.

- *Extreme poverty status*. Similarly, a household is considered extremely poor when its monthly consumption per capita falls below the food component of the poverty line.[10]
- *Food insufficiency*. It is computed as the share of the last 12 months during which the household reported not having enough food.
- *School enrollment*. It refers to the proportion of children aged 6-14 attending school.

Table 2.1 presents the summary statistics of key variables used in the analysis, comparing garment households to their non-garment counterparts. Garment households display a lower level of per capita consumption, but the data also suggest they have accumulated more durable goods with an asset index of around 45 percent against 42 percent for non-garment households. They also seem to exhibit lower prevalence of poverty and extreme poverty and reduced poverty gap, although the difference in means is not statistically significant. Non-garment households reported experiencing food insufficiency about 2.68 percent of the last 12 months, while the corresponding figure for households participating in the textile and apparel industry is lower at 1.40 percent. Garment households also enjoy a higher rate of school enrollment for children aged 6-14 standing at 92 percent against 88 percent for their non-garment counterparts.

Furthermore, households that participate in the textile and apparel industry appear to be headed by older individuals, although they do not seem to statistically differ from their non-garment counterparts in terms of the other characteristics of the household head. In addition, garment households are larger in size (5.66 individuals versus 5.19, have lower dependency ratios (50 percent against 79 percent), and host on average 2.05 female members (against 1.39 for non-garment households), consistent with the fact that the garment industry is intensive in female labor as documented in Section 2.2. In terms of housing conditions, 44 percent of garment households enjoy access to electricity and 49 percent benefit from an improved water

be found in World Bank (2013).

[9] For 2011, the poverty lines stood at 182,935 Cambodian Riels (CR) for households residing in Phnom Penh, 146,846.94 CR for those living in other urban areas and 134,507.02 CR for those in rural areas.

[10] As of 2011 the food component for Phnom Penh, other urban areas and rural areas stood at 118,444.51 CR, 97,986.32 CR and 89,752.28 CR respectively.

Table 2.1: Descriptive Statistics by Treatment Status

	All HHs		Garment HHs		Non-Garment HHs		Mean Comparison	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Diff. (3)-(5)	P-value
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Head's Characteristics								
Age of head	46.50	14.93	50.90	13.08	45.47	15.01	5.425	0.000
Head's education	5.118	4.201	5.024	3.770	5.140	4.294	-0.115	0.574
Male headship	0.819	0.427	0.811	0.406	0.821	0.431	-0.010	0.605
Married head	0.832	0.401	0.816	0.401	0.836	0.402	-0.020	0.267
Employed head	0.912	0.318	0.892	0.347	0.916	0.311	-0.024	0.126
Khmer head	0.974	0.181	0.981	0.146	0.972	0.188	0.008	0.423
Household Characteristics								
Urban household	0.205	0.379	0.229	0.411	0.199	0.371	0.030	0.258
Household size	5.281	2.458	5.661	2.994	5.193	2.292	0.468	0.001
Dependency ratio (%)	73.72	81.05	50.03	59.39	79.21	83.45	-29.19	0.000
Nb. of working female members	1.516	1.214	2.045	1.339	1.393	1.121	0.652	0.000
House ownership	0.975	0.138	0.971	0.125	0.975	0.141	-0.005	0.487
Wall	0.148	0.352	0.140	0.347	0.150	0.353	-0.010	0.578
Electricity	0.377	0.547	0.443	0.573	0.362	0.540	0.081	0.033
Water	0.465	0.580	0.491	0.584	0.459	0.579	0.032	0.413
Primary education at most	0.639	0.546	0.695	0.516	0.626	0.551	0.069	0.010
Secondary education at most	0.662	0.549	0.811	0.438	0.628	0.563	0.183	0.000
Tertiary education	0.106	0.323	0.117	0.377	0.103	0.309	0.014	0.397
Welfare Indicators								
Consumption per capita (monthly)	302,276	174,044	281,447	137,442	307,105	181,127	-25,658	0.003
Asset index (% 15 durable goods)	42.47	19.80	45.03	18.01	41.88	20.06	3.157	0.003
Poverty incidence	0.206	0.517	0.188	0.517	0.210	0.517	-0.022	0.411
Extreme poverty incidence	0.038	0.260	0.028	0.225	0.040	0.267	-0.012	0.355
Poverty gap	0.042	0.142	0.037	0.133	0.043	0.144	-0.006	0.433
Food insufficiency (% 12 months)	2.44	13.64	1.40	7.55	2.68	14.67	-0.018	0.358
School enrollment (% children)	88.48	31.53	92.33	26.08	87.73	32.41	4.597	0.020
Migration and Remittances								
Number of migrants	0.819	1.645	1.374	1.942	0.690	1.533	0.684	0.000
Migrant household	0.351	0.561	0.560	0.580	0.302	0.541	0.258	0.000
Remittances-recipient household	0.276	0.521	0.478	0.586	0.229	0.488	0.249	0.000
Remittances from all migrants	173,307	712,328	365,807	1,022,836	128,674	612,147	237,133	0.000
Remittances from employed migrants	161,770	673,416	338,623	920,066	120,766	596,253	217,857	0.000
Remittances from non-garment migrants	129,035	615,643	164,700	693,023	120,766	596,253	43,934	0.129
Observations	3518		667		2851			

Notes: Authors' calculations based on the 2011 Cambodia Socio-Economic Survey. Garment households are households with at least one member (migrant or current member) working in the garment sector while non-garment households are those included in the control group. Descriptive statistics are computed using sampling weights. For *school enrollment*, descriptive statistics are computed over a total sample of 1,799 households, among which 289 are treated and 1,510 are not involved in the garment industry. Table A1 in the Appendix provides a description of the variables.

source whereas corresponding figures for non-garment households are lower and stand at 36 percent and 46 percent respectively.

A closer look at the difference in consumption per capita between garment and non-garment households suggests that the full-sample result is driven by the top 20 percent of the distribution (Figure 2.4a).[11] In other words, consumption is lower only for the richest households who are involved in the textile and apparel sector. Once households from quintile 5 are trimmed, consumption per capita turns out to be higher for garment households, with a mean difference of +3,424 CR. The gap even widens to +5,580 CR and is statistically significant at the 15 percent level when the analysis is further restricted to quintiles 1 and 2. Combined with the observation that the poor and extremely poor are concentrated in the bottom 40 percent of the distribution,[12] this explains why a lower poverty incidence seems to coincide with a lower level of consumption per capita for garment households compared to their non-garment counterparts when considering the entire sample.

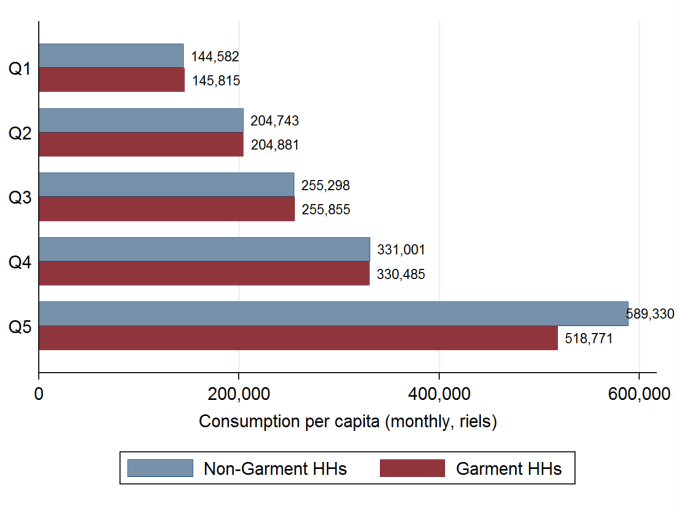
A breakdown of the asset index by quintile portrays a similar picture, as only garment households from quintile 5 display lower asset accumulation relative to non-garment households, at 55 percent against 58 percent respectively (Figure 2.4b). On the contrary, the difference in means favors garment households across the remaining quintiles. Garment households from the top 20 percent of the distribution are also less likely to host a member who has completed tertiary education (22 percent against 31 percent) whereas the inverse holds across the remaining quintiles (Figure 2.4c). These stylized facts indicate that, contrary to what is observed in the other quintiles, garment households in the richest quintile seem to be worse off compared to their non-garment counterparts. This might be related to the nature of the jobs available in the garment sector and the fact that they probably represent a "second best" or constrained choice for individuals in the richest households. Given their social and human capital characteristics, the wealthiest households that engage in the textile and apparel sector would have earned more and been better-off in alternative non-garment occupations.

[11] We further probe this result by plotting the density distribution of consumption per capita for both treated and control groups, revealing that per capita consumption is indeed lower for garment households in the top 20 percent of the income spectrum (Figure A1).

[12] Quintile 1 hosts all 82 extremely poor garment households whereas the 501 poor garment households are distributed over quintiles 1 and 2.

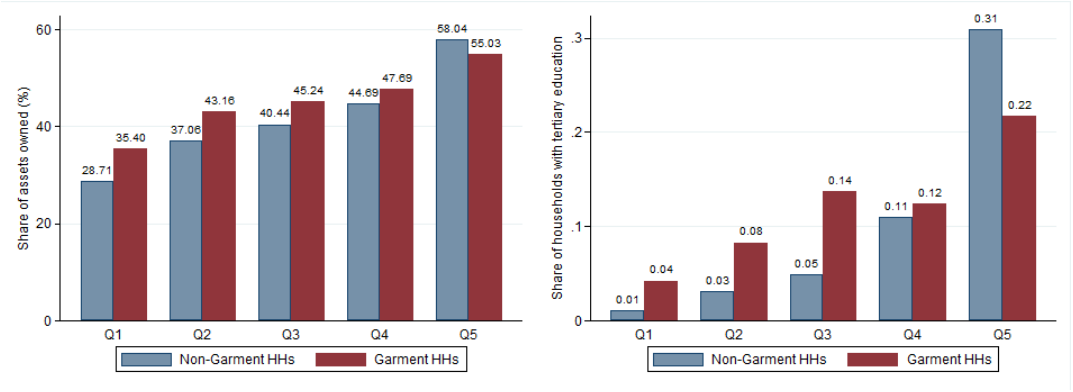
Figure 2.4: Quintile Distribution of Selected Variables

(a) Consumption per capita



(b) Asset index

(c) Tertiary education



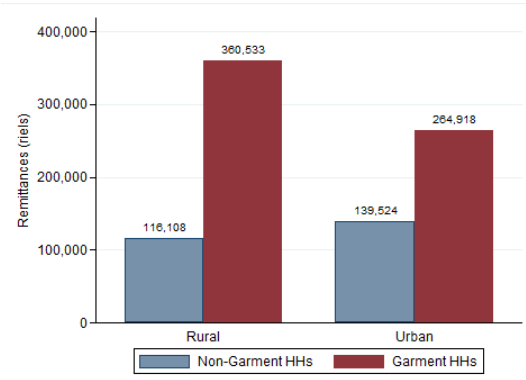
Notes: Authors' calculations based on the 2011 Cambodia Socio-Economic Survey. Figures are computed using sampling weights. Garment households are households with at least one member (migrant or current member) working in the garment sector, while non-garment households are those included in the control group. The description of variables is provided in Table A1 in the Appendix. Q1 to Q5 refer to consumption quintiles 1 (poorest households) to 5 (richest households). Difference in means is statistically significant for (a) the 5th quintile only; (b) all quintiles; and (c) the 3rd and 5th quintiles only.

Table 2.1 also reports summary statistics pertaining to migration and remittances. It shows that the average number of migrants in garment households is 1.37, twice the figure reported for those that do not participate in the textile and apparel sector. Similarly, garment households

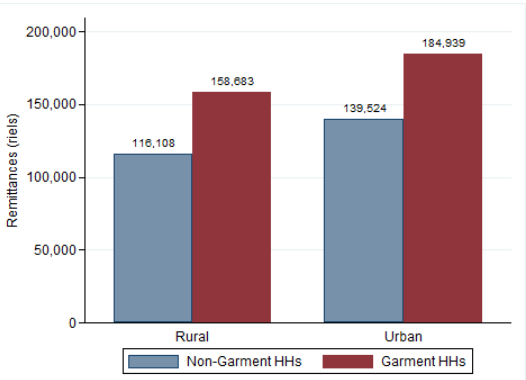
receive on average more remittances from their employed migrants, although the difference in means is statistically significant for rural households only (Figure 2.5a).[13] Also, it is worth noting that by definition, total remittances channeled to households participating in the textile and apparel sector may originate from both garment and non-garment sectors, and possibly from unemployed migrants, whereas non-garment households can only receive non-garment remittances and again, transfers from unemployed migrants.[14] Subsequently, it is crucial to disentangle the effect of remittances originating from garment workers and those sent by non-garment workers, especially in the case of hybrid households who host both types of migrants. In our case, the data do not seem to support any confounding effect of non-garment remittances as their amount does not statistically differ across garment and non-garment households, even after considering a further rural/urban breakdown (Figure 2.5b).[15]

Figure 2.5: Remittances Received by Rural and Urban Households

(a) Employed Migrants



(b) Non-Garment Migrants



Notes: Authors' calculations based on the 2011 Cambodia Socio-Economic Survey. Figures are computed using sampling weights. Garment households are households with at least one member (migrant or current member) working in the garment sector, while non-garment households are those included in the control group. Remittances are expressed in Cambodian riels: (a) total amount of remittances received from employed migrants, irrespective of their occupation; (b) total amount of remittances received from migrants employed outside the garment sector. Difference in means is statistically significant for (a) rural households only; (b) neither rural, nor urban households.

[13] This result still holds when the amount of remittances received is normalized by the number of remitters or by the size of the household. Garment households also seem to be more dependent on migrant transfers, with remittances representing 3 percent of aggregate consumption, against 1 percent in the case of non-garment households. This difference in the remittances-to-consumption ratio holds for both rural and urban households.

[14] 2.4 percent of garment households receive remittances from unemployed migrants whereas the corresponding figure lies at 1.3 percent for households who are not involved in the textile and apparel sector. Unemployed migrants possibly send remittances out of their savings or the earnings of their spouse. The report by the Cooperation Committee for Cambodia (2005) indicates that amounts sent home sometimes include borrowed money.

[15] The same analysis holds for remittances sent by unemployed migrants.

Restricting the sample to households that participate in the textile and apparel sector seems to further highlight the importance of garment remittances. An average garment household typically has 2.5 times more non-garment migrants than garment migrants. Yet, the average ratio of garment-to-non-garment remittances stands at 1.2, suggesting that migrants working in the garment industry send more remittances than their non-garment counterparts. This is particularly true for rural garment households. Remittances received by a garment household from its migrants working in the textile and apparel sector represent 1.7 percent of its aggregate consumption, against 1.3 percent in the case of transfers originating from non-garment workers.[16]

Overall, garment households seem to be better-off when compared to their non-garment counterparts in most of the welfare dimensions considered. Nonetheless, these comparisons do not account for selection into participation in the garment sector. Using propensity score matching estimators, this paper addresses the selection bias based on observable characteristics. Since the aim is to obtain a relationship between welfare and garment participation that is close to a causal inference, the methodology is complemented with sensitivity analyses based on Rosenbaum bounds, so as to measure how robust the results are to unobserved heterogeneity bias.[17]

2.4 Methodology

2.4.1 Setting the Framework

Let D_i be the treatment status dummy, which in this case takes the value of one if household i has at least one migrant or current member working in the garment sector. The value of the observed outcome of interest when $D_i = 1$ is equal to $Y_{i1(D=1)}$, whereas $Y_{i0(D=1)}$ is the potential outcome of the same household i if it had not participated in the garment industry. The average treatment effect on the treated (henceforth ATT), is defined as follows:

$$ATT = E[(Y_{i1} - Y_{i0}) \mid D_i = 1] = E[Y_{i1} \mid D_i = 1] - E[Y_{i0} \mid D_i = 1] \tag{2.1}$$

It measures the difference in the outcome of interest as a result of the treatment for household i. In practice, the observational rule for Y_i precludes the estimation of ATT as $Y_{i0(D=1)}$ cannot be observed. In an experimental scenario $E[Y_{i0} \mid D_i = 1] = E[Y_{i0} \mid D_i = 0]$, so the observed

[16] The ratio of garment remittances-to-consumption for rural households is twice the figure for urban households (2 percent and 1 percent respectively).

[17] More specifically, they determine how strongly an unmeasured variable must influence the selection process in order to undermine the results of propensity score matching estimators.

outcomes for the untreated observations can replace those of the treated observations to estimate the counterfactual. However, in a non-experimental scenario, this does not hold true, as the assignment to the treatment can be influenced by factors also affecting the outcome Y. In the specific case of this study, it could be that households residing in Phnom Penh are more likely to have a current member working in the textile and apparel sector as garment factories are concentrated in the capital city, and they are also more likely to register a higher economic status than their rural counterparts. Thus, the estimation of the ATT requires finding a proxy for the mean welfare outcome of garment households had they not been treated.

Matching estimators typically assume that there exists a set of observable characteristics X_i such that the outcomes are independent of assignment to treatment conditional on X_i. This is known as the unconfoundedness or conditional independence assumption (CIA). Formally:

$$Y_i \perp D_i \mid X_i \tag{2.2}$$

where Xi is the vector of covariates that jointly influence garment participation and welfare. This way, once controlling for confounding observables, systematic differences in the outcome of interest between treated and control households with the same values of covariates X_i are attributable to the treatment (Caliendo and Kopeinig, 2008).

Since conditioning on all relevant covariates is not straightforward in the case of a high dimensional vector of covariates X_i – the curse of dimensionality – matching is performed on a single dimension which summarizes the information given by X_i. Hence, the second key assumption for the propensity score matching methodology is that for all values of X_i, there is a positive probability $p(X)$ of assignment to treatment for both treated and untreated observations, known as the propensity score.[18] This common support or overlap condition ensures that there are comparable non-treated households for each treated household.

$$0 < Pr(D_i = 1 \mid X_i) < 1 \tag{2.3}$$

As Rosenbaum and Rubin (1983) demonstrated, if $p(X) \subset (0, 1]$ this entails that:

$$Y_i \perp D_i \mid p(X_i) \tag{2.4}$$

which in turn implies that the expected value of the unobserved outcome for treated observations

[18] Formally, the propensity score is defined as $p(X_i) = E(D_i \mid X_i) = Pr(D_i = 1 \mid X_i)$ and is simply the probability of a household of having at least one member working in the garment industry given its observed characteristics X_i.

$Y_{i0(D=1)}$ coincides with the expected value of the observed outcome for untreated observations $Y_{i1(D=1)}$, conditional on $p(X_i)$. Thus, if the conditional independence assumption and the common support conditions are met, then the counterfactual for the unobserved outcomes of treated observations can be proxied with the observed outcomes of the untreated observations.

Hence the ATT can be estimated as follows:

$$ATT = E[Y_{i1} \mid D_i = 1, p(X_i)] - E[Y_{i0} \mid D_i = 0, p(X_i)] \tag{2.5}$$

When both unconfoundedness and overlap are verified, the treatment is said to be strongly ignorable and allows proper identification of the ATT (Rosenbaum and Rubin, 1983). PSM also hinges on SUTVA, the Stable Unit-Treatment Value Assumption (Rubin, 1986), which precludes spillovers from treated to untreated units. In our case, SUTVA requires that the welfare outcome of a household be not affected by whether or not a given household has at least one member working in the textile and apparel sector. Our broad definition of the treatment group dismisses concerns about SUTVA violation as we also consider as treated those households that may witness an improvement in their welfare status owing to the remittances they receive from their garment migrants. Such transfers are precisely the channel we aim to test in Section 2.6.[19]

2.4.2 Specifying and Estimating the Propensity Score Model

The estimation of the propensity score model is an essential step of the process as the omission of key variables can bias the estimated treatment effect (Heckman, Ichimura, and Todd, 1998; Dehejia and Wahba, 1999). As mentioned in Section 2.4.1, the covariates included in the vector X_i should influence both the probability of a household participating in the garment industry and the welfare outcomes of interest (Sianesi, 2004; Smith and Todd, 2005). Moreover, variables that are directly affected by participation in the garment sector should be excluded to avoid a reverse causality problem. As Caliendo and Kopeinig (2008) suggest, the aim is not to estimate the true propensity score as accurately as possible but to obtain treatment probabilities $p(X_i)$ that balance the covariates across treated and untreated households (in this case between garment

[19] The only remaining concern relates to spillovers due to inter-household transfers other than remittances reported in the migration module. Given our nationally representative sample, we cannot entirely rule out such interactions between households. Apart from remittances sent by previous household members who migrated, the data show that 22.5 percent of households in the sample received remittances not reported in the migration module of the survey, which is suggestive of inter-household transfers. However, Table A2 in the Appendix indicates that neither the share of households that receive such transfers, nor the amount of transfers they reported statistically differ across the treatment and control groups.

and non-garment households). Achieving this balancing property may require the inclusion of higher-order and/or interaction terms among the selected household characteristics.

Given that the treatment is binary, the propensity score is estimated using a logit model:

$$p(X_i) = Pr(D_i = 1 \mid X_i) = \frac{e^{\beta X_i}}{1 + e^{\beta X_i}} \tag{2.6}$$

2.4.3 Choosing the Matching Method

To estimate the ATT, the counterfactual for the unobserved outcomes of the treated observations is proxied with the observed outcomes of the untreated observations. More specifically, the welfare outcome Y_i of each household i belonging to the set of treated households C_1 is matched to a weighted average of welfare outcomes of neighboring households from the pool of untreated households C_0 lying within the common support region.[20] A credible range of the common support ensures comparable garment and non-garment households, hence minimizing off-support inferences.

Matching methods differ in how the neighborhood is defined. The weight w_{ij} attached to each untreated household j is proportional to the closeness of its observables to those of i proxied by the distance between their propensity scores. In our baseline specification, we rely on Epanechnikov-kernel weights following Heckman, Ichimura, and Todd (1998). Therefore, given the common support restriction, the ATT is calculated as follows:

$$ATT = \sum_{i \in C_1} [Y_{i1} - \sum_{j \in C_0} w_{ij} Y_{j0}] N_T^{-1} \tag{2.7}$$

where $w_{ij} \propto K[\frac{p(X_i) - p(X_j)}{h}]$, with $\sum_{j \in C_0} w_{ij} = 1$. h is the bandwidth parameter[21] and N_T stands for the number of matched garment households in the sample. As common in the literature (Heckman, 1997; Lechner, 2002; Black and Smith, 2004; Sianesi, 2004), standard errors of treatment effects are computed by bootstrapping with 500 replications. Bootstrapping is not inconsistent with kernel matching (Abadie and Imbens, 2006, 2008; Abadie, Diamond, and Hainmueller, 2011) and accounts for both sampling errors in the propensity score estimates and errors due to multiple matches for a single treated household (Johar, 2009).

[20] Following Dehejia and Wahba (2002), the region of common support is identified based on the minima and maxima criterion which consists in discarding households whose propensity score is smaller than the minimum and larger than the maximum in the opposite group.

[21] A large bandwidth reduces variance at the cost of increased bias. We use the default value $h = 0.06$.

Several alternative matching techniques are used to check the robustness of the baseline estimates derived from kernel weights matching: (i) local linear regression matching, a method similar to kernel matching except for the fact that it includes a linear term in the weighting function; (ii) nearest-neighbor matching with replacement, in which each treated observation is matched with its n closest neighbors from the untreated observations, with a number of neighbors $n = 1$, 3 and 5; and finally (iii) radius matching, where a tolerance level – the caliper – is imposed on the maximum propensity score distance; all untreated households within the caliper are used as matches (Dehejia and Wahba, 2002).[22]

2.4.4 Assessing the Matching Quality

The quality of the matching procedure depends on how well the estimated treatment assignment probabilities balance the distribution of covariates across the treated and untreated groups. In this particular context, the matching is successful if there are no differences in observable characteristics between garment and non-garment households after conditioning on the propensity score (Imbens, 2004). A common approach to investigating the quality of the matching is to exploit the standardized bias indicator proposed by Rosenbaum and Rubin (1985). For each covariate, the standardized bias is computed as the difference of sample means in the treated and matched control sub-samples as a percentage of the square root of the average of sample variances in both groups (Caliendo and Kopeinig, 2008; Lechner, 1999):

$$SB = 100 \times \frac{\bar{X}_1 - \bar{X}_0}{\sqrt{0.5[V_1(X) + V_0(X)]}} \tag{2.8}$$

where $X_1(V_1)$ is the mean (variance) in the treatment group and $X_0(V_0)$ is the mean (variance) in the control group. The standardized bias after matching should be less than 5 percent. t-tests for equality of means in the treated and untreated groups can also complement the assessment of the matching quality: they should be non-significant after matching to support the validity of the CIA. Following Sianesi (2004), another procedure consists in estimating the propensity score on both the unmatched sample (original sample) and the matched sample (i.e. on garment households and their matched non-garment counterparts), so as to compare the pseudo R^2s before and after matching.[23]

[22] A narrow ($r = 1\%$), medium ($r = 5\%$) and wide ($r = 10\%$) radius is alternatively used.

[23] Given that the pseudo R^2 measures how well the covariates explain the probability of garment participation in the logit model, the estimated treatment probabilities act as good balancing scores if the distributions of covariates across the two groups are similar, hence entailing a lower pseudo R^2 after matching. This is similar to rejecting the corresponding likelihood-ratio test of the joint significance of all covariates in the logit model of the propensity score after matching.

2.4.5 Testing the Sensitivity of Estimates to Unobserved Heterogeneity

As described in Equation 2.2, one of the key identifications underlying PSM is conditional independence or selection on observables. The methodology does not account for possible "hidden bias" that might arise in the presence of unobservable characteristics affecting both the treatment and the outcome (Rosenbaum, 2002). Since it is unrealistic to completely rule out selection bias on unobservables, we carry out sensitivity analyses to assess the robustness of ATT estimates to departures from the conditional independence assumption.

Let u_i be an unmeasured confounder which determines household participation in the garment sector along with the vector of observable confounders X_i so that the propensity score model is now defined as follows:

$$p(X_i, u_i) = Pr(D_i = 1 \mid X_i, u_i) = \frac{e^{\beta X_i + \gamma u_i}}{1 + e^{\beta X_i + \gamma u_i}} \tag{2.9}$$

The parameter γ reflects the extent to which unobservable confounders affect the probability of a household of having at least one member working in the garment industry. It implies that two households with similar observed covariates can still feature different probabilities of being treated due to unobserved heterogeneity. Rosenbaum (2002) shows that the odds ratio that these two households are involved in the garment sector is bounded within the interval $[e^{-\gamma}, e^{+\gamma}]$. Both households have the same probability of treatment if $e^{\gamma} = 1$, entailing the absence of unobserved selection bias. Subsequently, we rely on Rosenbaum (2002) bounds sensitivity tests to investigate the size of the hidden bias that jeopardizes the validity of the matching procedure. More specifically, we consider incremental levels of e^{γ} to determine how large the unmeasured confounder u_i can be before the significance of the estimated ATT is rejected. The higher the threshold, the more robust the point estimates.[24]

2.5 Results

2.5.1 Main Results

Recall that the treatment status for a household is to have one or more members, migrants or current residents, employed in the garment industry. The vector of covariates chosen for the baseline propensity score model includes variables pertaining to the household head, namely

[24] Becker and Caliendo (2007) provide an implementation of the Rosenbaum bounding approach in the case of binary-outcome variables. We use DiPrete and Gangl (2004)'s *rbounds* Stata routine which extends to continuous-outcome variables.

gender, age, years of education (in level and squared) and employment status. These characteristics of the household head are expected to influence both garment participation and welfare indicators. The vector of covariates also comprises the size of the household, the total dependency ratio expressed as the ratio between dependents (defined as children who are 14 years old and younger, and seniors who are 65 years and older) and working-age members (individuals aged 15-64), as well as binary variables for urban residence, access to electricity and house ownership. We also include a dummy variable indicating whether the primary construction material of the dwelling unit's walls is of superior quality.[25] Results from the logit estimation of the propensity score are reported in Table 2.2. The treatment probabilities supporting our empirical approach are derived from the model displayed in Column 1 while the remaining specifications are used for robustness purposes.[26]

Table 2.3 presents ATT estimates associated with the welfare effect of garment sector participation. Results from the kernel matching suggest that the share of the past 12 months for which households declare having experienced food insufficiency is 0.9 percentage points lower for garment households. Similarly, the proportion of children aged 6-14 attending school is 3.3 percentage points higher among garment households relative to the control group. While the size of the effect is modest, the ATT estimates for school enrollment range from 4.7 to 5.8 percentage points and are slightly larger when considering the nearest-neighbor matching methodology. They convey the same qualitative message that children aged 6-14 years enjoy higher school enrollment rates when at least one adult in the household works in garment factories. This result is line with Heath and Mobarak (2015) who show that exposure to garments jobs promotes the educational attainment of girls, contributing to close the gender enrollment gap. Likewise, it also complements the evidence presented by Kotikula, Pournik, and Robertson (2015) indicating that working in the textile and apparel industry raises school attainment. Turning to monetary measures of welfare, the ATT estimates for poverty, extreme poverty and the poverty gap bear the expected negative sign but are statistically insignificant. Garment participation also appears to be negatively associated with consumption per capita and asset ownership, with coefficients of 9 percent and 1.1 percentage points respectively using kernel matching.

Nonetheless, the sign of the point estimates on consumption and asset ownership is reversed when the sample is restricted to households in the bottom 40 percent of the consumption distribution, the reference population for *shared prosperity* (Table 2.4).[27] For these households,

[25] Walls are deemed of superior quality if they are primarily made out of concrete, brick, stone or cement/asbestos.

[26] The coefficients on the regressors do not have a behavioral interpretation (Dehejia and Wahba, 2002; Bertoli and Marchetta, 2014).

[27] This indicator is defined by the World Bank as the consumption growth of the bottom 40 percent of the distribu-

Table 2.2: Propensity Score Estimation

	(1)	(2)	(3)	(4)
Head's education	0.132***	0.131***	0.131***	0.129***
	(0.035)	(0.035)	(0.035)	(0.035)
Head's education^2	-0.012***	-0.012***	-0.012***	-0.012***
	(0.003)	(0.003)	(0.003)	(0.003)
Male headship	-0.249**	-0.350*	-0.246**	-0.243**
	(0.113)	(0.194)	(0.113)	(0.113)
Age of head	0.015***	0.016***	0.015***	0.015***
	(0.004)	(0.004)	(0.004)	(0.004)
Employed head	-0.001	-0.005	-0.001	0.013
	(0.152)	(0.152)	(0.152)	(0.152)
Household size	0.104***	0.101***	0.104***	0.104***
	(0.024)	(0.024)	(0.024)	(0.024)
Urban household	-0.180	-0.178	-0.180	-0.234*
	(0.127)	(0.127)	(0.127)	(0.131)
Dependency ratio	-0.006***	-0.006***	-0.006***	-0.006***
	(0.001)	(0.001)	(0.001)	(0.001)
House ownership	-0.816***	-0.823***	-0.819***	-0.796***
	(0.189)	(0.189)	(0.189)	(0.189)
Wall	-0.275**	-0.276**	-0.277**	-0.314**
	(0.128)	(0.128)	(0.128)	(0.129)
Electricity	0.341***	0.341***	0.344***	0.336***
	(0.117)	(0.117)	(0.117)	(0.118)
Married head		0.128		
		(0.202)		
Khmer head			0.150	
			(0.294)	
Water				0.216**
				(0.099)
Constant	-1.575***	-1.595***	-1.713***	-1.674***
	(0.334)	(0.336)	(0.432)	(0.338)
Observations	3,518	3,518	3,518	3,518
Pseudo R^2	0.051	0.051	0.051	0.053

Notes: Logit estimates. *** p<0.01, ** p<0.05, * p<0.1. Standard errors are given in parenthesis. The dependent variable is a dummy for household participation in the garment sector. Table A1 in the appendix provides a detailed description of included variables.

Table 2.3: Propensity Score Matching Estimates, Full Sample

	Kernel	Local linear	Radius matching			Nearest-Neighbor matching		
	matching	matching	r = 1%	r = 5%	r = 10%	n = 1	n = 3	n = 5
ATT, **Consumption p.c.**	-0.091***	-0.093***	-0.091***	-0.090***	-0.087***	-0.094***	-0.083***	-0.087***
	(0.015)	(0.017)	(0.018)	(0.016)	(0.016)	(0.034)	(0.028)	(0.024)
Median bias	0.5	1.2	1.2	0.5	3.0	1.2	2.2	2.3
Pseudo R^2	0.001	0.002	0.000	0.001	0.007	0.002	0.002	0.001
LR test (p-value)	1.000	0.967	0.570	1.000	0.352	0.967	0.979	1.000
Rosenbaum test	1.5	1.5	1.5	1.5	1.5	1.3	1.5	1.5
ATT, **Asset index**	-1.091*	-1.705***	-1.428**	-1.043*	-0.456	-0.718	-1.262	-1.159
	(0.584)	(0.607)	(0.639)	(0.593)	(0.586)	(1.197)	(0.961)	(0.899)
Median bias	0.5	1.2	1.2	0.5	3.0	1.2	2.2	2.3
Pseudo R^2	0.001	0.002	0.000	0.001	0.007	0.002	0.002	0.001
LR test (p-value)	1.000	0.967	0.570	1.000	0.352	0.967	0.979	1.000
Rosenbaum test	1	1.1	1.1	1	1	1	1	1
ATT, **Poverty**	-0.009	-0.012	-0.007	-0.010	-0.012	0.003	-0.004	-0.004
	(0.013)	(0.013)	(0.013)	(0.014)	(0.012)	(0.023)	(0.019)	(0.017)
Median bias	0.5	1.2	1.2	0.5	3.0	1.2	2.2	2.3
Pseudo R^2	0.001	0.002	0.000	0.001	0.007	0.002	0.002	0.001
LR test (p-value)	1.000	0.967	0.570	1.000	0.352	0.967	0.979	1.000
Rosenbaum test	3	3	3	3	3	1	3	3
ATT, **Extreme Poverty**	-0.007	-0.007	-0.008	-0.007	-0.008	-0.019*	-0.008	-0.007
	(0.006)	(0.005)	(0.006)	(0.006)	(0.006)	(0.010)	(0.008)	(0.008)
Median bias	0.5	1.2	1.2	0.5	3.0	1.2	2.2	2.3
Pseudo R^2	0.001	0.002	0.000	0.001	0.007	0.002	0.002	0.001
LR test (p-value)	1.000	0.967	0.570	1.000	0.352	0.967	0.979	1.000
Rosenbaum test	>3	>3	>3	>3	>3	1.4	>3	>3
ATT, **Poverty gap**	-0.003	-0.003	-0.003	-0.003	-0.003	-0.005	-0.003	-0.004
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.005)	(0.004)	(0.004)
Median bias	0.5	1.2	1.2	0.5	3.0	1.2	2.2	2.3
Pseudo R^2	0.001	0.002	0.000	0.001	0.007	0.002	0.002	0.001
LR test (p-value)	1.000	0.967	1.000	1.000	0.352	0.967	0.979	1.000
Rosenbaum test	>3	>3	>3	>3	>3	1	2.1	2.7
ATT, **Food insufficiency**	-0.871***	-0.919***	-0.849***	-0.874***	-0.889***	-1.072*	-0.725	-0.832*
	(0.279)	(0.273)	(0.311)	(0.271)	(0.255)	(0.615)	(0.468)	(0.427)
Median bias	0.5	1.2	1.2	0.5	3.0	1.2	2.2	2.3
Pseudo R^2	0.001	0.002	0.000	0.001	0.007	0.002	0.002	0.001
LR test (p-value)	1.000	0.967	0.570	1.000	0.352	0.967	0.979	1.000
Rosenbaum test	>3	>3	>3	>3	>3	1.1	>3	>3
ATT, **School enrollment**	3.337**	3.321*	3.765**	3.263**	3.317**	5.353**	5.755**	4.695**
	(1.559)	(1.699)	(1.700)	(1.606)	(1.508)	(2.713)	(2.298)	(1.991)
Median bias	1.0	1.6	1.4	0.9	3.8	1.6	1.7	1.8
Pseudo R^2	0.001	0.005	0.001	0.001	0.007	0.005	0.002	0.001
LR test (p-value)	1.000	0.972	0.660	1.000	0.889	0.972	1.000	1.000
Rosenbaum test	>3	>3	>3	>3	>3	1.4	>3	>3
Observations	3,518	3,518	3,518	3,518	3,518	3,518	3,518	3,518
# of Treated Obs.	667	667	667	667	667	667	667	667
# of Control Obs.	2,851	2,851	2,851	2,851	2,851	2,851	2851	2851

Notes: Bootstrapped standard errors based on 500 replications reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1. ATT: Average Treatment effect on the Treated. Median bias: median post-matching absolute bias. Pseudo R^2: pseudo R^2 derived from the estimation of the propensity score on the sample of garment households and their matched non-garment counterparts. LR test (p-value): p-value of the likelihood-ratio test of the joint significance of all covariates in the logit model of the propensity score after matching. Rosenbaum test: the level of e^{γ} beyond which the ATT is no longer significant at the 10 percent confidence level (Section 2.4.5). The description and source of variables are provided in Table A1 in the Appendix.

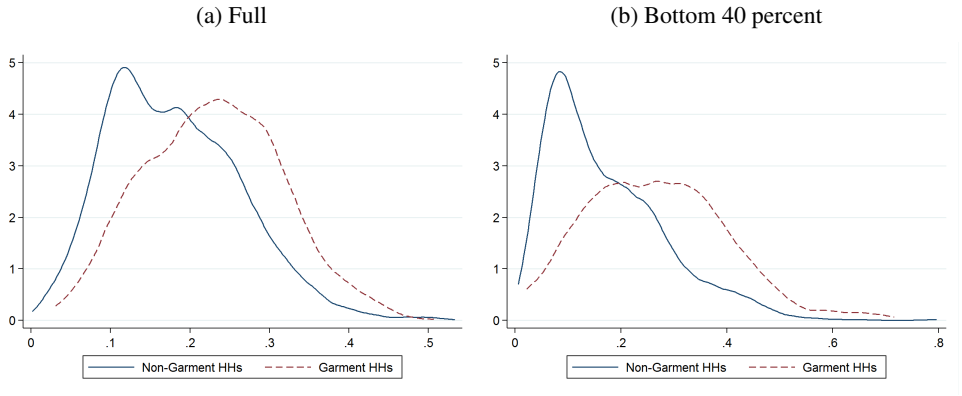
Table 2.4: Propensity Score Matching Estimates, Bottom 40 percent

	Kernel matching	Local linear matching	Radius matching			Nearest-Neighbor matching		
			r = 1%	r = 5%	r = 10%	n = 1	n = 3	n = 5
ATT, **Consumption p.c.**	0.030*	0.029*	0.037**	0.029*	0.030*	0.031	0.031	0.031
	(0.016)	(0.017)	(0.019)	(0.017)	(0.016)	(0.029)	(0.025)	(0.022)
Median bias	2.4	8.7	3.7	2.3	3.7	8.7	2.0	4.6
Pseudo R^2	0.001	0.019	0.004	0.001	0.004	0.019	0.007	0.007
LR test (p-value)	1.000	0.476	0.997	1.000	0.998	0.476	0.976	0.977
Rosenbaum test	1.5	1.5	1.6	1.5	1.5	1.1	1.3	1.4
ATT, **Asset index**	2.571**	2.407**	2.583**	2.588**	3.163***	2.702	2.001	2.541*
	(1.103)	(1.107)	(1.182)	(1.053)	(1.013)	(1.891)	(1.542)	(1.368)
Median bias	2.4	8.7	3.7	2.3	3.7	8.7	2.0	4.6
Pseudo R^2	0.001	0.019	0.004	0.001	0.004	0.019	0.007	0.007
LR test (p-value)	1.000	0.476	0.997	1.000	0.998	0.476	0.976	0.977
Rosenbaum test	1.4	1.3	1.3	1.4	1.5	1.2	1.2	1.3
ATT, **Poverty**	-0.079**	-0.082**	-0.095**	-0.076**	-0.073**	-0.125**	-0.083	-0.071
	(0.040)	(0.039)	(0.045)	(0.039)	(0.037)	(0.062)	(0.053)	(0.046)
Median bias	2.4	8.7	3.7	2.3	3.7	8.7	2.0	4.6
Pseudo R^2	0.001	0.019	0.004	0.001	0.004	0.019	0.007	0.007
LR test (p-value)	1.000	0.476	0.997	1.000	0.998	0.476	0.976	0.977
Rosenbaum test	1	1	1.3	1	1	1.3	1.2	1.1
ATT, **Extreme Poverty**	-0.033	-0.032*	-0.038*	-0.033*	-0.033*	-0.030	-0.030	-0.037
	(0.021)	(0.019)	(0.023)	(0.020)	(0.020)	(0.037)	(0.030)	(0.026)
Median bias	2.4	8.7	3.7	2.3	3.7	8.7	2.0	4.6
Pseudo R^2	0.001	0.019	0.004	0.001	0.004	0.019	0.007	0.007
LR test (p-value)	1.000	0.476	0.997	1.000	0.998	0.476	0.976	0.977
Rosenbaum test	>3	>3	>3	>3	>3	1	2.4	>3
ATT, **Poverty gap**	-0.017*	-0.017	-0.023*	-0.017*	-0.018*	-0.016	-0.020	-0.020
	(0.010)	(0.010)	(0.012)	(0.010)	(0.010)	(0.017)	(0.015)	(0.013)
Median bias	2.4	8.7	3.7	2.3	3.7	8.7	2.0	4.6
Pseudo R^2	0.001	0.019	0.004	0.001	0.004	0.019	0.007	0.007
LR test (p-value)	1.000	0.476	0.997	1.000	0.998	0.476	0.976	0.977
Rosenbaum test	1.7	1.7	1.7	1.7	1.7	1.2	1.6	1.6
ATT, **Food insufficiency**	-1.755**	-1.727**	-1.851**	-1.735**	-1.657**	-2.325	-1.398	-1.770*
	(0.770)	(0.774)	(0.847)	(0.781)	(0.788)	(1.504)	(1.220)	(1.039)
Median bias	2.4	8.7	3.7	2.3	3.7	8.7	2.0	4.6
Pseudo R^2	0.001	0.019	0.004	0.001	0.004	0.019	0.007	0.007
LR test (p-value)	1.000	0.476	0.997	1.000	0.998	0.476	0.976	0.977
Rosenbaum test	>3	>3	>3	>3	>3	1.1	2	>3
ATT, **School enrollment**	9.319***	9.079***	11.278***	9.171***	8.959***	13.491***	13.580***	12.876***
	(2.613)	(2.413)	(2.897)	(2.690)	(2.504)	(5.001)	(3.956)	(3.516)
Median bias	3.5	10.1	7.7	3.6	3.5	10.1	3.9	4
Pseudo R^2	0.001	0.025	0.010	0.003	0.004	0.025	0.003	0.005
LR test (p-value)	0.94	0.648	0.986	1.000	1.000	0.648	1.000	0.999
Rosenbaum test	>3	>3	>3	>3	>3	1.8	>3	>3
Observations	1,052	1,052	1,052	1,052	1,052	1,052	1,052	1,052
# of Treated Obs.	200	200	200	200	200	200	200	200
# of Control Obs.	852	852	852	852	852	852	852	852

Notes: Bootstrapped standard errors based on 500 replications reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1. ATT: Average Treatment effect on the Treated. Median bias: median post-matching absolute bias. Pseudo R^2: pseudo R^2 derived from the estimation of the propensity score on the sample of garment households and their matched non-garment counterparts. LR test (p-value): p-value of the likelihood-ratio test of the joint significance of all covariates in the logit model of the propensity score after matching. Rosenbaum test: the level of e^{γ} beyond which the ATT is no longer significant at the 10 percent confidence level (Section 2.4.5). The description and source of variables are provided in Table A1 in the Appendix.

participation in the garment sector raises per capita consumption by 3 percent and enhances asset ownership by 2.4 to 3.2 percentage points. Consistent with the consumption estimates, garment participation has now a statistically significant poverty-reducing effect of around 8 percentage points. Table 2.4 also indicates a 3 percentage point decrease in the incidence of extreme poverty and a 1.7 percentage point reduction in the poverty gap index among garment households of the bottom 40 percent. The statistically significant negative effect of garment participation on poverty echoes the findings of De Hoyos, Bussolo, and Núñez (2012) and Yamagata (2006), among others. Our findings are consistent with the strand of literature that reports significant wage premia and higher labor participation for low-skilled workers, particularly from rural areas, employed in the garment industry (Robertson, Brown, Pierre, and Sanchez-Puerta, 2009; Savchenko, Lopez-Acevedo, and Robertson, 2014). Households in the bottom 40 percent of the consumption distribution also enjoy larger effects on non-monetary welfare measures, with vulnerability to food insecurity lower by 1.7 percentage points while school enrollment is 9.3 percentage points higher. As before, nearest-neighbor matching yields the largest ATT estimates, with coefficients on school enrollment ranging from 12.9 to 13.6 percentage points.

Figure 2.6: Kernel Density of Covariates



Notes: Authors' elaboration based on the 2011 Cambodia Socio-Economic Survey. Garment households are households with at least one member (migrant or current member) working in the garment sector, while non-garment households are those included in the control group. The dashed and solid lines depict the distribution density of propensity scores for treated and untreated households respectively.

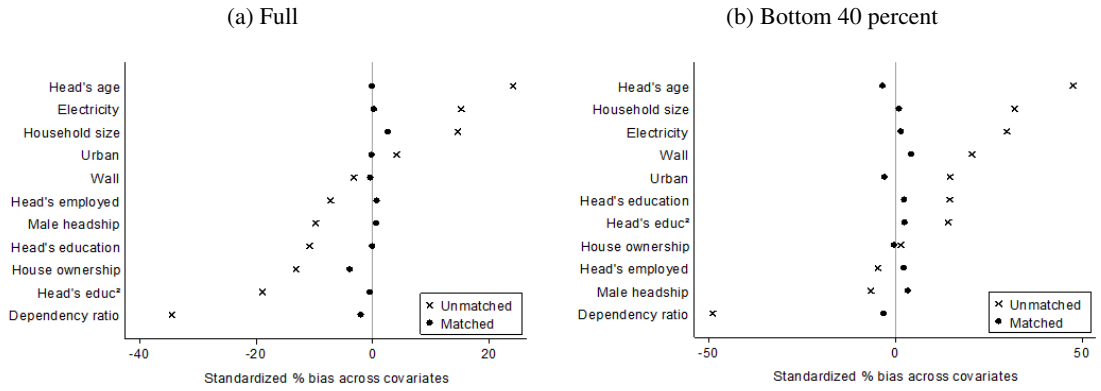
Overall, our results suggest that the apparel sector is likely to help lift least well-off households out of poverty by offering them opportunities in better-earning jobs. These findings are robust to the use of different matching methods and are quantitatively and qualitatively similar

tion.

when resorting to alternative specifications of the propensity score model, namely when the selection model is sequentially augmented with dummy variables reflecting household access to an improved water source during both wet and dry seasons, the marital status of the household head and Khmer ethnicity (Table A3 and A4 in the Appendix).

The set of graphs, statistics and diagnostic tests introduced in Section 2.4, indicates that the quality of the matching is satisfactory for both the entire sample and the bottom 40 percent subsample. Figure 2.6 depicts how the distribution density of propensity scores for garment and non-garment households overlaps, revealing an adequate region of common support.[28] More importantly, the low pseudo R^2 derived from the estimation of the propensity score on the sample of garment households and their matched non-garment counterparts also indicates that the estimated treatment probabilities result in good balancing.[29] Finally, the matching was effective in building a comparable control group by reducing the extent of covariate imbalance as further suggested in Figure 2.7. This is summarized by the median post-matching absolute bias reported below each ATT estimate, which is less than 5 percent.[30]

Figure 2.7: Covariate Balance Before and After Matching



Notes: Authors' elaboration based on the 2011 Cambodia Socio-Economic Survey. The standardized bias measures the extent to which the propensity scores balance the distribution of covariates across treated and untreated households; it should be less than 5 percent after matching. Table A1 in the Appendix provides the description of the covariates included in the analysis.

[28] In the case of the bottom 40 percent, it turns out that one garment household falls outside the region of common support. The removal of this single treated household does not change the results of the analysis.

[29] Similar information is relayed by the high p-value of the likelihood ratio-test of joint insignificance of all regressors.

[30] The median bias is larger but inferior to 10 percent in the case of local linear matching and nearest-neighbor matching with $n = 1$ performed over the bottom 40 percent.

More importantly, Tables 2.3 and 2.4 report the level of e^{γ} beyond which the ATT is no longer significant at the 10 percent confidence level due to hidden bias. Focusing on the bottom 40 percent, it appears that unobserved heterogeneity would have to raise the odds of participating in the garment industry by 50 percent to jeopardize the statistical significance of the ATT for consumption per capita. This figure stands at 40 percent for the asset ownership index and is greater than 200 percent for non-monetary measures of welfare. In other words, selection on unobservables would need to more than triple the probability to select into garment participation for the ATTs on food insufficiency and school enrollment to become non-significant.[31] Overall, the critical values for e^{γ} are relatively large compared to figures reported in the evaluation literature (e.g. Aakvik, 2001; Clément, 2011; Bertoli and Marchetta, 2014). Although not informative about the actual presence of unobservable counfournders (Becker and Caliendo, 2007), the Rosenbaum test indicates that our ATT estimates are broadly robust to hidden bias.

2.5.2 Robustness and Sensitivity Checks

2.5.2.1 Breaking Down the Treatment

In view to checking the robustness of our baseline results, we consider alternative definitions of garment participation for households in the bottom 40 percent of the consumption distribution (Table 2.5). First, we distinguish between short- and long-term migrant exposure to the garment industry by restricting the portion of the treatment that operates through migration to having at least one household member that migrated less than 5 years ago versus more than 10 years ago to work in the textile and apparel sector. Results suggest that the benefits of garment participation in terms of poverty reduction and reduced exposure to food insufficiency materialize in the case of recent migration, while older migration promotes asset accumulation and children's school enrollment. Second, we include in the treatment group only those households whose garment migrants remit back home and find that the ATT estimates are very similar to the baseline results, hence confirming the role of remittances in channeling the welfare-enhancing effect of garment participation. We further check whether the amount of remittances received matters by only considering households that enjoy per capita garment transfers that are above the sample median. The results show that the increase in asset ownership and the fall in extreme poverty are larger compared to the baseline estimates. Similarly, given that garment households differ with respect to how many of their members work in the industry, we test whether the number

[31] Considering kernel matching, the poverty variable is the only variable which appears to be highly sensitive to hidden bias, as even a 10 percent increase in unobserved heterogeneity would suffice to undermine the statistical significance of the ATT estimate.

of individuals employed in the textile and apparel sector matters by defining as treated only those households for which the ratio of garment workers-to-household size is above the sample median. Results indicate that ATT estimates for the incidence of extreme poverty and children's school enrollment are larger than in the baseline.

Table 2.5: Alternative Definitions of the Treatment, Bottom 40 Percent

	% Treated Bottom 40 % (1)	Consumption per cap., log (2)	Asset ownership (3)	Poverty (4)	Extreme poverty (5)	Poverty gap (6)	Food insufficiency (7)	School enrollment (8)
Baseline	19.69%	0.030*	2.571**	-0.079**	-0.033*	-0.017*	-1.755**	9.319***
		(0.016)	(1.109)	(0.039)	(0.019)	(0.010)	(0.784)	(2.671)
Migration $<$ 5 years	18.45%	0.026	2.428**	-0.067	-0.038**	-0.015	-1.522*	7.888***
		(0.018)	(1.106)	(0.042)	(0.019)	(0.010)	(0.839)	(2.667)
Migration $>$ 10 years	17.11%	0.026	3.002**	-0.068	-0.033	-0.015	-1.318	9.405***
		(0.017)	(1.186)	(0.044)	(0.022)	(0.010)	(0.816)	(2.670)
Remittances-sending migrant	19.46%	0.028	2.509**	-0.075*	-0.032	-0.017*	-1.689**	9.612***
		(0.017)	(1.076)	(0.042)	(0.020)	(0.010)	(0.780)	(2.630)
Above-the-median remittances	17.33%	0.026	3.059***	-0.072	-0.039*	-0.016	-1.441*	8.231***
		(0.016)	(1.163)	(0.044)	(0.020)	(0.010)	(0.812)	(2.563)
Above-the-median # of workers	8.50%	0.019	2.219	-0.041	-0.054***	-0.013	-1.103	11.233***
		(0.018)	(1.382)	(0.056)	(0.016)	(0.010)	(0.967)	(3.461)
Previously in garment	16.63%	0.026	2.409**	-0.075	-0.033	-0.014	-1.279	8.631***
		(0.018)	(1.210)	(0.047)	(0.022)	(0.011)	(0.860)	(2.756)
Previously in agriculture	18.83%	0.026	2.912***	-0.064	-0.030	-0.016	-1.545**	9.499***
		(0.017)	(1.061)	(0.042)	(0.021)	(0.010)	(0.768)	(2.708)
Previously in services	16.37%	0.018	2.736**	-0.059	-0.031	-0.010	-1.236	7.502***
		(0.019)	(1.152)	(0.044)	(0.021)	(0.011)	(0.836)	(2.792)
Previously in industry	16.15%	0.018	2.451**	-0.054	-0.030	-0.010	-1.197	8.409***
		(0.018)	(1.141)	(0.045)	(0.022)	(0.011)	(0.867)	(2.715)
Previously unemployed	16.33%	0.018	2.052*	-0.055	-0.030	-0.010	-1.196	8.409***
		(0.019)	(1.181)	(0.043)	(0.021)	(0.011)	(0.861)	(2.974)
At least one male worker	5.40%	0.022	1.615	0.037	-0.062***	-0.010	0.087	9.327**
		(0.027)	(1.839)	(0.077)	(0.024)	(0.016)	(1.488)	(4.314)
All female workers	14.29%	0.024	2.727***	-0.098**	-0.012	-0.014	-2.175***	6.797**
		(0.017)	(1.050)	(0.044)	(0.023)	(0.012)	(0.657)	(2.720)

Notes: Bootstrapped standard errors based on 500 replications reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Table A1 in the Appendix provides the description of variables.

Additionally, we investigate whether the welfare-enhancing potential of the garment industry is influenced by the previous sector of employment of the garment migrant. Specifically, we ask if its positive effect on welfare is related to the fact that (i) the industry offers job opportunities to individuals who were initially unemployed; or (ii) it offers better paid jobs to individual who already had a job before migrating. For the latter, we consider previous employment of at least one migrant in agriculture, services, garment and non-garment industry. Interestingly, we find that the effect on asset ownership, children school enrollment and reduced vulnerability to food insufficiency is strongest when at least one garment migrant was previously working in agriculture, possibly reflecting productivity-enhancing labor reallocation effects à la Lewis (1954) when workers move from the primary sector to manufacturing.

Finally, we alternatively consider as treated only those households whose garment workers

are entirely female versus cases where at least one worker is male to assess whether the gender of garment participants matters. We find that asset accumulation is 2.7 percentage points higher and the incidence of poverty 9.8 percentage points lower for treated households when all garment workers are female. Non-monetary measures of welfare are also greater in size relative to the baseline estimates, although having at least one male garment worker yields a much larger ATT for children's school enrollment.

2.5.2.2 Using An Alternative Methodology for Covariate Balancing

Entropy Balancing

To further check the robustness of the baseline estimates, we implement entropy balancing as proposed by Hainmueller (2012) instead of propensity score matching to achieve covariate balance. The methodology consists in reweighting untreated units so that the covariate distribution of the control group resembles the treatment group's. More precisely, the solution weights are chosen to satisfy a set of pre-specified balance constraints. In our case, we impose exact balance on the first and second moments across the treatment and the control group. Then, the fitted weights are used to perform regression analysis. The possibility of combining matching with regression analysis is an attractive feature of entropy balancing, especially as this allows including additional controls and accounting for survey weights (Hainmueller, 2012; Hainmueller and Xu, 2013). Table A5 shows how well the mean and variance of the covariates in the reweighted control group of non-garment households match those in the treatment group after employing entropy balancing. We subsequently plug the fitted weights into a regression framework where each monetary and non-monetary welfare indicator is regressed on the dummy for garment participation and the covariates used in the first step.[32] We also include district-fixed effects to account for time-invariant district-specific heterogeneity that may influence household welfare. Binary outcomes such as the incidence of poverty and extreme poverty are estimated with a probit model. Standard errors are clustered at the province level.

Results for the full sample are presented in Table 2.6. Garment participation is still negatively associated with per capita consumption and asset ownership but its effect on food insufficiency and children's school enrollment is not statistically significant anymore. Still, it now appears to lower the incidence of extreme poverty by 3.2 percentage points. More interestingly, for households in the bottom 40 percent of the consumption distribution, entropy matching

[32] We follow Neuenkirch and Neumeier (2016) who argue that this is equivalent to including control variables in a randomized experiment and increases estimation efficiency.

yields larger and more statistically significant ATTs relative to the baseline PSM results (Table 2.7). Although the effect on asset ownership is no longer statistically significant, garment participation now raises the monthly consumption per capita of the poorest households by 5.4 percent, almost twice the size of the PSM estimate, while reducing poverty and extreme poverty by 11.5 and 24.3 percentage points respectively. Working in the textile and apparel sector also translates into magnified benefits in terms of reduced depth of poverty, as depicted by the ATT for the poverty gap that is now statistically significant at the 1 percent level. Estimates for non-monetary welfare indicators are smaller in size and less significant but still tell the same story.

Table 2.6: Entropy Matching: Full Sample

	Consumption per cap., log (1)	Asset ownership (2)	Poverty (3)	Extreme poverty (4)	Poverty gap (5)	Food insufficiency (6)	School enrollment (7)
Garment	-0.087**	-1.810*	-0.010	-0.032***	-0.003	-0.155	0.488
	(0.035)	(0.966)	-0.017	(0.010)	(0.004)	(0.362)	(1.636)
Head's education	0.014***	0.891***	-0.024***	-0.005	-0.007***	-0.295*	0.507
	(0.005)	(0.186)	(0.008)	(0.006)	(0.001)	(0.164)	(0.674)
Head's education^2	0.000	-0.004	0.001	0.000	0.000***	0.016	-0.017
	(0.000)	(0.018)	(0.001)	(0.001)	(0.000)	(0.011)	(0.056)
Male headship	0.028	3.842***	-0.059	0.007	-0.007	-1.808**	-1.550
	(0.039)	(1.227)	(0.041)	(0.006)	(0.009)	(0.832)	(1.628)
Age of head	0.001	0.124***	0.000	0.000**	0.000	0.000	0.024
	(0.001)	(0.025)	(0.001)	(0.000)	(0.000)	(0.011)	(0.082)
Employed head	-0.049	-0.495	0.057**	-0.010	0.007	0.071	0.468
	(0.031)	(1.410)	(0.027)	(0.022)	(0.014)	(0.581)	(3.785)
Household size	-0.081***	1.419***	0.049***	0.011***	0.012***	0.225**	-0.027
	(0.007)	(0.140)	(0.005)	(0.003)	(0.003)	(0.086)	(0.398)
Urban household	-0.009	5.892**	0.077	0.012	0.020	-1.436	6.149
	(0.046)	(2.373)	(0.061)	(0.026)	(0.014)	(1.388)	(5.086)
Dependency ratio	-0.001***	-0.041***	0.001***	0.000**	0.000***	0.002	-0.022
	(0.000)	(0.009)	(0.000)	(0.000)	(0.000)	(0.002)	(0.014)
House ownership	0.142***	8.827***	-0.141*	-0.023	-0.023***	-0.815*	10.846
	(0.022)	(1.157)	(0.077)	(0.064)	(0.005)	(0.449)	(8.638)
Wall	0.233***	4.944***	-0.080***	0.068	0.002	-0.519	-1.375
	(0.047)	(1.197)	(0.029)	(0.121)	(0.007)	(0.480)	(2.193)
Electricity	0.249***	10.780***	-0.179***	-0.051***	-0.039***	-0.268	0.392
	(0.023)	(1.006)	(0.021)	(0.012)	(0.010)	(0.827)	(3.825)
Observations	3,518	3,518	2,960	982	3,518	3,518	1,799
R^2	0.602	0.535	0.409	0.427	0.407	0.450	0.232
Adjusted R^2	0.584	0.515	0.409	0.427	0.381	0.425	0.163
District Fixed-Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Regression analysis based on entropy matching. Probit regressions and McFadden R^2 for Columns 3 and 4. *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors clustered at the province level in parentheses. Constant included but not reported. Table A1 in the Appendix provides the description of variables.

Table 2.7: Entropy Matching: Bottom 40 Percent

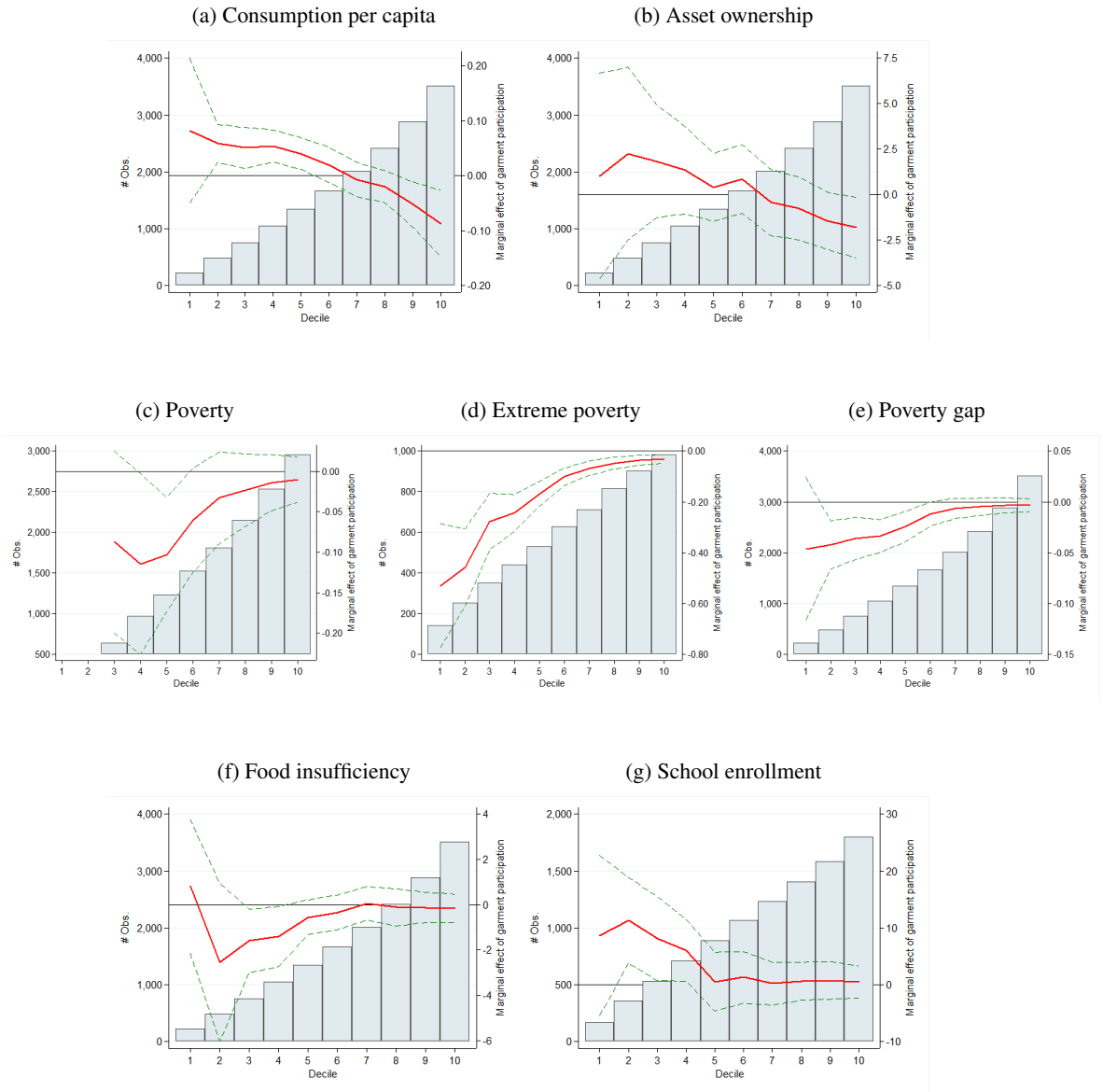
	Consumption per cap., log (1)	Asset ownership (2)	Poverty (3)	Extreme poverty (4)	Poverty gap (5)	Food insufficiency (6)	School enrollment (7)
Garment	0.054***	1.348	-0.115*	-0.243***	-0.033***	-1.417*	6.084*
	(0.017)	(1.398)	(0.068)	(0.044)	(0.009)	(0.776)	(3.183)
Head's education	0.026***	0.567	-0.069***	-0.022	-0.015***	-0.794**	1.300
	(0.005)	(0.444)	(0.023)	(0.023)	(0.004)	(0.379)	(1.406)
Head's education^2	-0.002***	0.021	0.004**	0.000	0.001***	0.050*	-0.149
	(0.000)	(0.052)	(0.002)	(0.003)	(0.000)	(0.028)	(0.172)
Male headship	0.051	6.142***	-0.220***	0.049**	-0.025	-2.603	-2.800
	(0.031)	(1.907)	(0.075)	(0.023)	(0.021)	(1.679)	(3.101)
Age of head	-0.001	0.110***	0.001	0.002**	0.001	-0.030	-0.128
	(0.001)	(0.029)	(0.002)	(0.001)	(0.001)	(0.026)	(0.166)
Employed head	-0.042	1.674	0.228**	-0.054	0.013	-0.936	-6.084
	(0.053)	(1.897)	(0.110)	(0.095)	(0.033)	(1.407)	(4.079)
Household size	-0.035***	1.792***	0.097***	0.050***	0.021***	0.220	0.805
	(0.005)	(0.274)	(0.018)	(0.007)	(0.004)	(0.174)	(0.591)
Urban household	-0.094*	4.466	0.214*	0.033	0.051	-6.216***	3.605
	(0.053)	(3.307)	(0.125)	(0.100)	(0.030)	(1.709)	(4.366)
Dependency ratio	-0.001***	-0.026***	0.001***	0.001*	0.000***	-0.005	-0.047**
	(0.000)	(0.006)	(0.000)	(0.000)	(0.000)	(0.005)	(0.017)
House ownership	0.038	4.579	-0.155	-0.198	-0.020	-0.504	22.172
	(0.033)	(3.625)	(0.231)	(0.283)	(0.025)	(1.325)	(24.398)
Wall	-0.015	2.178	-0.228	0.855***	0.008	-1.016	-3.107
	(0.072)	(2.936)	(0.180)	(0.149)	(0.045)	(1.395)	(5.973)
Electricity	0.111***	8.587***	-0.344***	-0.122***	-0.070***	0.270	2.423
	(0.038)	(1.607)	(0.113)	(0.019)	(0.020)	(0.900)	(2.496)
Observations	1,052	1,052	971	440	1,052	1,052	713
R^2	0.472	0.552	0.303	0.381	0.463	0.555	0.408
Adjusted R^2	0.390	0.482	0.303	0.381	0.379	0.486	0.263
District Fixed-Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Regression analysis based on entropy matching. Probit regressions and McFadden R^2 for Columns 3 and 4. *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors clustered at the province level in parentheses. Constant included but not reported. Table A1 in the Appendix provides the description of variables.

Regressions over Subsamples of Consumption Deciles

In sum, irrespective of the covariate balancing methodology employed, our analysis documents substantial heterogeneity in the welfare effects of the garment industry, depending on the distribution of treated households across the consumption spectrum. We take advantage of the flexibility of entropy matching to further probe this result by running regressions over subsamples based on consumption deciles. For each welfare indicator, we start by estimating the model on the first decile of monthly per capita consumption, and then expand the sample by adding the second decile, followed by the third decile and so forth until the full sample is reached. Results are summarized in Figure 2.8. The solid red line plots the marginal effect of garment participation on welfare, while the dashed green lines delineate the two-tailed 90 percent confidence

Figure 2.8: Marginal Effect of Garment Participation on Welfare, by Consumption Decile



Notes: Marginal effect plots constructed using parameter estimates from Tables A6-A12 in the Appendix. The welfare variable is regressed on the first decile of monthly per capita consumption, then on a larger sample expanded by adding the second decile, followed by the third decile and so forth until the full sample is reached. The solid red line plots the marginal effect of garment participation on welfare, while the dashed green lines delineate the two-tailed 90 percent confidence intervals around the marginal effect of the treatment indicator (right axis). The bar graph tracks the sample size across deciles (left axis). The description and source of variables are provided in Table A1 in the Appendix.

intervals around the marginal effect of the treatment indicator (right axis). In addition, the bar graph tracks the sample size across deciles (left axis).[33]

Graph (a) shows that the positive and statistically significant effect of garment participation on monthly consumption per capita appears over the bottom 20 percent subsample, vanishes at the inclusion of the 6th decile, and even turns negative and statistically significant once the 9th decile is added. A similar pattern emerges with the poverty index (graph c) and the poverty gap (graph e). Clearly, the poverty-reducing effect of the garment industry is concentrated at the bottom of the consumption distribution and grows weaker with the inclusion of higher deciles. For instance, the marginal effect of the treatment on the poverty gap stands at -4.2 percentage points over the bottom 20 percent subsample, but shrinks to -1.2 percentage points by the time the 6th decile is included, and becomes non-significant thereafter. In other words, the lack of statistical significance of poverty-related ATTs over the entire sample and the negative effect found on consumption hide considerable heterogeneity both in terms of the sign and size of the estimates. Furthermore, the effect on the incidence of extreme poverty decreases with the rise of the sample size, albeit remaining consistently significant at the 1 percent level (graph d). As for non-monetary welfare indicators, graphs (f) and (g) offer some evidence that garment jobs raise school enrollment and lower vulnerability to food insufficiency only for the poorest households. Finally, graph (b) reveals that the negative association between garment participation and asset ownership is driven by the inclusion of the top 10 percent of the distribution. Together with the estimate for consumption per capita (graph a), this result confirms that the garment industry does not necessarily offer welfare-enhancing opportunities for the richest households.

Quantile Regressions

Our last robustness exercise relies on quantile regressions and further sheds light on the sign reversal of the point estimates on consumption and asset ownership. While standard least squares methods minimize the sums of squared residuals to compute the conditional mean response of the outcome variable, estimates from a median regression are obtained by minimizing the sums of the absolute residuals (Koenker and Hallock, 2001). More generally, quantile regression methods allow comparing how some percentiles of the welfare variable of interest may be more influenced by the treatment than other percentiles. Tables 2.8 and 2.9 give coefficient estimates for consumption per capita and asset ownership respectively based on a range of quantile regressions. Again, results provide evidence of heterogeneity as reflected in the change in both the size and sign of the coefficient of interest. Specifically, we find that the effect of gar-

[33]The underlying regressions are presented in Tables A6-A12 in the Appendix.

ment participation on monthly per capita consumption differs considerably, having a statistically positive effect at the lowest quantiles, but turning negative past the 20^{th} quantile. In the same vein, jobs in the textile and apparel industry seem conducive to improved asset ownership only below the 5th quantile. The effect becomes negative and consistently grows stronger for higher quantiles, ranging from -1.09 percentage points for the 30^{th} quantile to -4.72 percentage points for the 90^{th} quantile. In sum, the garment industry seems to represent an attractive alternative for the poorest households but not necessarily for the better-off.

Table 2.8: Quantile Regressions: Log Consumption per capita

	Q1	Q5	Q10	Q20	Q30	Q40	Q50	Q60	Q70	Q80	Q90
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Garment	0.156*	0.110***	0.050*	-0.022*	-0.053***	-0.085***	-0.107***	-0.106***	-0.099***	-0.130***	-0.201***
	(0.087)	(0.018)	(0.030)	(0.011)	(0.018)	(0.017)	(0.013)	(0.013)	(0.012)	(0.024)	(0.019)
Head's education	0.034***	0.032***	0.034***	0.022***	0.015***	0.016***	0.008	0.008*	0.014***	0.011**	0.006
	(0.012)	(0.004)	(0.005)	(0.006)	(0.004)	(0.005)	(0.005)	(0.004)	(0.004)	(0.005)	(0.008)
Head's education^2	-0.001	-0.001***	-0.001**	-0.000	0.000	0.000	0.001*	0.001*	0.000	0.000	0.001
	(0.001)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)
Male headship	0.108***	0.117***	0.071***	0.064***	0.065***	0.039**	0.031**	0.031**	0.027	0.021	-0.002
	(0.034)	(0.019)	(0.024)	(0.014)	(0.023)	(0.018)	(0.014)	(0.013)	(0.017)	(0.018)	(0.027)
Age of head	0.002*	0.001	0.001**	0.000	0.000	0.001	0.001***	0.001***	0.000	0.001	0.001
	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)
Employed head	-0.070	-0.085***	-0.043	-0.046**	-0.065**	-0.068***	-0.049**	-0.061***	-0.077***	-0.097***	-0.056
	(0.081)	(0.018)	(0.031)	(0.022)	(0.027)	(0.022)	(0.024)	(0.019)	(0.024)	(0.027)	(0.037)
Household size	-0.052**	-0.059***	-0.064***	-0.070***	-0.073***	-0.075***	-0.079***	-0.084***	-0.089***	-0.094***	-0.095***
	(0.022)	(0.003)	(0.003)	(0.003)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.006)
Urban household	-0.115*	-0.144***	-0.061*	-0.075***	-0.078***	-0.053	-0.020	-0.028	0.054	0.039	0.109**
	(0.064)	(0.034)	(0.035)	(0.021)	(0.025)	(0.035)	(0.023)	(0.028)	(0.055)	(0.037)	(0.045)
Dependency ratio	-0.002***	-0.002***	-0.002***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
House ownership	0.166***	0.144	0.155***	0.179***	0.134***	0.129***	0.149***	0.145***	0.126*	0.037	0.010
	(0.051)	(0.100)	(0.043)	(0.021)	(0.048)	(0.022)	(0.052)	(0.038)	(0.067)	(0.036)	(0.067)
Wall	0.153***	0.120***	0.098***	0.127***	0.142***	0.154***	0.221***	0.270***	0.305***	0.337***	0.401***
	(0.032)	(0.024)	(0.020)	(0.022)	(0.018)	(0.029)	(0.033)	(0.037)	(0.025)	(0.042)	(0.038)
Electricity	0.181***	0.194***	0.184***	0.219***	0.230***	0.227***	0.241***	0.270***	0.269***	0.259***	0.263***
	(0.035)	(0.024)	(0.018)	(0.015)	(0.013)	(0.016)	(0.019)	(0.013)	(0.021)	(0.022)	(0.031)
Observations	3,518	3,518	3,518	3,518	3,518	3,518	3,518	3,518	3,518	3,518	3,518
Pseudo R^2	0.552	0.449	0.416	0.396	0.388	0.392	0.399	0.407	0.419	0.437	0.480
District Fixed-Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Quantile regressions based on entropy matching. *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors clustered at the province level in parentheses. Constant included but not reported. Table AA1 in the Appendix provides the description of variables.

Table 2.9: Quantile Regressions: Asset Ownership

	Q1	Q5	Q10	Q20	Q30	Q40	Q50	Q60	Q70	Q80	Q90
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Garment	4.545*	2.634***	1.140	-0.681	-1.094*	-1.124*	-1.567***	-2.588***	-3.252***	-3.817***	-4.720***
	(2.419)	(0.872)	(0.976)	(0.456)	(0.609)	(0.651)	(0.561)	(0.682)	(0.636)	(0.576)	(0.953)
Head's education	0.955**	0.781***	0.978***	0.892***	0.888***	1.065***	1.077***	0.981***	0.614**	0.487***	0.631**
	(0.381)	(0.249)	(0.282)	(0.167)	(0.193)	(0.163)	(0.215)	(0.232)	(0.256)	(0.172)	(0.285)
Head's education^2	0.001	0.020	-0.002	-0.000	-0.002	-0.021**	-0.023	-0.018	0.006	0.007	0.013
	(0.039)	(0.017)	(0.021)	(0.015)	(0.012)	(0.010)	(0.015)	(0.017)	(0.016)	(0.014)	(0.021)
Male headship	5.363***	4.464***	4.355***	5.752***	4.217***	4.060***	4.674***	3.246***	3.069***	2.455***	1.342
	(1.523)	(0.909)	(0.788)	(0.508)	(1.173)	(0.734)	(0.810)	(0.992)	(0.640)	(0.579)	(1.084)
Age of head	0.134***	0.123***	0.128***	0.091***	0.112***	0.132***	0.144***	0.131***	0.181***	0.140***	0.117***
	(0.045)	(0.022)	(0.023)	(0.018)	(0.024)	(0.024)	(0.020)	(0.021)	(0.022)	(0.024)	(0.030)
Employed head	-1.164	-1.445	-1.912**	-0.886	-0.079	0.326	-0.368	-0.715	-0.210	-1.154**	-2.094
	(1.675)	(1.242)	(0.823)	(0.662)	(0.896)	(1.027)	(0.939)	(1.128)	(1.113)	(0.574)	(1.275)
Household size	2.743***	2.598***	2.287***	1.961***	1.762***	1.561***	1.272***	1.154***	0.929***	0.781***	0.364
	(0.285)	(0.333)	(0.207)	(0.155)	(0.145)	(0.204)	(0.181)	(0.139)	(0.148)	(0.131)	(0.235)
Urban household	1.417	0.775	1.855*	1.788	3.108***	4.078***	4.752***	5.705***	5.746***	7.791***	7.893***
	(2.087)	(1.282)	(0.964)	(1.264)	(1.056)	(1.258)	(1.182)	(1.160)	(1.652)	(0.943)	(2.326)
Dependency ratio	-0.061***	-0.052***	-0.054***	-0.045***	-0.042***	-0.037***	-0.035***	-0.035***	-0.030***	-0.030***	-0.023***
	(0.013)	(0.005)	(0.005)	(0.004)	(0.005)	(0.006)	(0.004)	(0.005)	(0.005)	(0.004)	(0.008)
House ownership	8.801***	10.494***	9.476***	9.648***	7.489***	7.059***	8.321***	7.253***	7.710***	7.862***	7.259***
	(2.480)	(1.328)	(1.921)	(2.206)	(2.310)	(1.010)	(1.107)	(1.395)	(0.796)	(2.294)	(1.823)
Wall	8.390***	6.440***	6.819***	7.326***	5.876***	5.443***	4.050***	3.826***	4.500***	5.024***	2.677**
	(1.175)	(1.322)	(0.909)	(0.984)	(0.814)	(0.767)	(0.992)	(0.667)	(0.717)	(0.503)	(1.119)
Electricity	11.401***	10.455***	9.450***	9.582***	11.173***	11.156***	11.860***	13.197***	12.226***	12.297***	13.341***
	(1.257)	(1.117)	(1.006)	(0.843)	(0.719)	(0.802)	(0.828)	(0.907)	(0.707)	(0.678)	(1.179)
Observations	3,518	3,518	3,518	3,518	3,518	3,518	3,518	3,518	3,518	3,518	3,518
Pseudo R^2	0.441	0.396	0.378	0.371	0.358	0.346	0.345	0.357	0.354	0.371	0.382
District Fixed-Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Quantile regressions based on entropy matching. Adjusted R^2 for OLS regression in Column 1. *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors clustered at the province level in parentheses. Constant included but not reported. Table AA1 in the Appendix provides the description of variables.

2.6 Investigating the Remittances Channel

Given how the treatment variable is defined and the importance of garment remittances compared to non-garment transfers (Figure 2.5), this section explores the welfare-enhancing potential of the remittances that households receive from their migrants employed in the textile and apparel industry. In this section, we adopt an instrumental-variables (IV) approach to explore the causal effect of garment remittances on household expenditure patterns, distinguishing between food consumption, expenditures on durable goods and productive investments including health, education and agricultural inputs.

2.6.1 Identification Strategy

We focus on the sub-sample of 166 treated households that reported receiving remittances from migrants working in garment factories.[34] Among these, an overwhelming majority (92 percent) are rural dwellers engaged in farming activities. This motivates the choice of investigating not only the causal impact of remittances on recipient households' aggregate consumption per capita and its sub-components (described in Section 2.2)[35] but also on investments that enhance agricultural productivity. Formally we consider the following specification:

$$Y_i = \alpha + \beta Remit_{i,p} + \gamma X_i + \varepsilon_i \tag{2.10}$$

where Y_i refers to aggregate consumption per capita, one of its sub-components or investment costs pertaining to farming activities. The latter are further broken down into expenditures related to (i) livestock and poultry raising activities and (ii) crop cultivation, including expenses associated with buying chemical fertilizers; and those related to the use of tractors, animals, and human labor for ploughing and harrowing. Labor productivity is defined as kilograms of crop production per worker.[36] $Remit_{i,p}$ is the amount of remittances received by household i from its migrant(s) working in the garment industry in province p (in log). For consumption regressions, X_i is a vector of household characteristics similar to the one used for PSM in Section 2.5. It comprises the age, gender and years of education (in level and squared) of the household head, as well as the dependency ratio and dummy variables for urban residence, wall quality and

[34] Out of the 3,518 households used in the PSM section, 986 are remittance-recipient households and 175 receive remittances originating from the textile and apparel sector. However, the analysis excludes the 9 garment households that reported receiving remittances from international migrants, which sizes down the sample of interest to 166 households.

[35] More specifically, house services, food, communication, personal, entertainment, school, health, durables, and other expenses.

[36] The number of workers is proxied by the number of working-age individuals in the household.

access to electricity. In the case of expenditures on agricultural inputs and productivity, the set of control variables includes the total plot area (in square meters), the variety of crops grown by the household, the number of poultry, ovine and bovine animals owned by the end of the previous year, the probability of damaged crops in the past season owing to floods or excessive rains at the province level and dummy variables for paddy production and urban residence. Expenditures on chemical fertilizers (in log) are also included as a control variable in the labor productivity regression. ε_i denotes the error term.

We anticipate garment remittances to alleviate household budget constraints (i.e. $\beta > 0$), allowing recipients to increase consumption in food and non-food items and invest more in education, health and agricultural inputs. The main challenge in identifying the causal effect of garment transfers on consumption and investment expenditures lies in addressing the possible endogeneity of remittances, which means that transfers are potentially correlated with the error term, such that $cov(Remit_{ip}, \varepsilon_i) \neq 0$. Endogeneity may arise from reverse causality if migrants particularly care about the welfare status of their household of origin. For instance, a household's low consumption level and limited resources for agricultural investments may signal its poverty status, which may induce its garment migrant(s) to send higher amounts of remittances back home. This translates into downward biased estimates of β. In contrast, an omitted variable bias may lead to overestimate the true impact of garment transfers on expenditures. This can occur in a context where a common negative (positive) shock affects both migrants and their household of origin, by reducing (increasing) the ability to remit back home for the former, and by reducing (increasing) consumption and investment expenditures for the latter. To deal with biases stemming from the potential endogeneity of garment remittances, we resort to an IV methodology relying on the two-stage least squares (2SLS) estimator:

$$\begin{aligned} Remit_{i,p} &= \delta + \theta Z_{i,p} + \mu_{ip} \\ Y_i &= \alpha + \beta \widehat{Remit}_{i,p} + \gamma X_i + \varepsilon_i \end{aligned} \tag{2.11}$$

where $Z_{i,p}$ is a vector of three instrumental variables for the amount of remittances received by household i from its migrant(s) working in the garment industry in province p. For these variables to be valid instruments, they must be sufficiently correlated with the amount of garment remittances but uncorrelated with the error term.[37] Our first instrument is the average age of

[37] Formally, the first condition requires that the F-statistic for the joint significance of the coefficients on all excluded instruments exceed 10 (Stock, Wright, and Yogo, 2002). The second requirement implies that all instruments meet the exclusion restriction which precludes any direct impact of the instrument on the consumption or investment-related dependent variable, except through its effect on remittances. In the case of clustered standard errors and an

migrants employed in garment factories and provides variations across households. If taken as a proxy of the wage level of the migrant, it should be positively associated with the amount of remittances. This is in line with the literature showing a positive relationship between earnings and age or experience (tenure) (Mincer, 1974; Card, 1999; Lemieux, 2006). However, the average age of garment migrants could also negatively correlated with the amount of remittances sent as older migrants are more likely to get married and set up a household of their own in the city where they reside and work. In this context, remittances may decrease in size as the garment worker will need to provide for his/her own family (Dahlberg, 2006).

The remaining two instruments are computed at the province level using the district-level questionnaire provided along with the CSES 2011. First, we exploit the exogenous variations in the cost of making a domestic financial transaction in the province where the migrant resides, following a strategy similar to that of Calero, Bedi, and Sparrow (2009), who use information on the number of bank branches in the migrants country of residence as an instrument for remittances sent to households in Ecuador. Domestic transaction costs negatively affect the volume of funds transferred by textile and apparel workers, but at the same time, they are not expected to have a direct impact on households consumption and investment back home. Second, we use the price of ampicillin prevailing in the province of residence of the garment migrants. A qualitative study by Dahlberg (2006) indicates that medical fees represent a significant share of garment workers' total expenditures (after accounting for remittances, savings, and food and housing expenditures). Thus, an increase in the price of drugs in the province of destination of the migrant should be negatively correlated with the amount of remittances sent, without directly impacting the beneficiary household's agricultural or consumption decision in the province of origin.

2.6.2 IV Results

The results from the IV estimation of the effect of garment remittances on consumption per capita and its sub-components are presented in Table 2.10.[38] The first-stage estimation presented in Column (1) of Table A12 in the Appendix shows that the coefficients on the average age of garment migrants, the price of ampicillin and the transfer cost all bear a statistically negative sign at the 1 percent level. All specifications include geographical zone fixed-effects and standard

overidentified model where the number of additional instruments exceeds the number of endogenous regressors, it can be tested using Hansen's J statistic which should not be statistically significant at the 10 percent level.

[38]Using the amount of garment remittances normalized by the size of the household or the number of remitters yields quantitatively and qualitatively similar results.

errors are clustered at the province level (Moulton, 1990).[39] Sampling weights are also used to account for the features of complex survey data (Kish and Frankel, 1974; Holt, Smith, and Winter, 1980).

If the per capita amount of garment remittances is doubled, recipient households would enjoy a 9.2 percent increase in their monthly per capita consumption (Column 1). Similarly, food expenditure, which accounts for 57 percent of total expenditure, also increases with remittances: a 100 percent rise in garment transfers translates into a 8.2 percent increase in food spending, although the coefficient is statistically significant at the 12 percent level (Column 2). For both regressions, the Kleibergen-Paap F-statistic for weak identification[40] stands at 25.30 and exceeds the Stock and Yogo critical values,[41] rejecting the hypothesis of weak instruments. Similarly, the p-values associated with the overidentification test are above the threshold of 0.10, signaling that the instruments are exogenous. Although the magnitude of the coefficients is modest, these findings are consistent with Orozco (2003) who shows that Mexican households spend a large share of the remittances they receive on food items. However, we do not find an impact on leisure activities, as Tabuga (2007) does in the case of the Philippines (Column 8). Also, miscellaneous expenditures such as contributions to funeral rituals and wedding ceremonies witness a 29.5 percent increase following a twofold rise in garment remittances (Column 9).

[39] Clustering at the province level relaxes the independence assumption of errors and requires only that households be independent across provinces. Cluster-robust standard errors are robust to both arbitrary heteroskedasticity and intra-province correlation. Several studies have discussed the implications of failure to control for within-cluster correlation (Bertrand, Duflo, and Mullainathan, 2004; Wooldridge, 2010).

[40] Since standard errors are clustered at the province level, the Cragg-Donald-based weak instruments test is no longer valid and the Kleibergen-Paap F-statistic is used instead (Baum, Schaffer, and Stillman, 2007).

[41] The Stock and Yogo critical values stand at 9.08 percent for the maximum IV relative bias and 22.30 for the maximum IV size

Table 2.10: Garment Remittances and Consumption, IV Estimates

	Log total consumption (1)	Log food expenditures (2)	Log school expenditures (3)	Log health expenditures (4)	Log durables expenditures (5)	Log house serv. expenditures (6)	Log transp. & telecom exp. (7)	Log recreational expenditures (8)	Log personal expenditures (9)	Log other expenditures (10)
Log garment remittances p.c.	0.092*	0.082	0.954***	1.386*	-0.153	0.015	-0.206	0.139	0.057	0.295***
	(0.053)	(0.053)	(0.200)	(0.833)	(0.245)	(0.048)	(0.154)	(0.117)	(0.113)	(0.102)
Head's education	0.055	0.026	-0.118	-0.011	0.033	-0.025	0.097	0.125*	0.019	0.121**
	(0.034)	(0.025)	(0.126)	(0.491)	(0.440)	(0.055)	(0.088)	(0.068)	(0.056)	(0.049)
Male headship	-0.125	-0.011	0.068	-0.700	-0.577	-0.173	0.159	-0.339*	0.105	-0.190
	(0.107)	(0.095)	(0.608)	(1.348)	(0.428)	(0.113)	(0.228)	(0.194)	(0.125)	(0.153)
Age of head	0.005	0.003	0.062**	0.078*	0.012	-0.003	0.001	0.009	0.003	0.016
	(0.003)	(0.003)	(0.028)	(0.042)	(0.029)	(0.004)	(0.012)	(0.009)	(0.008)	(0.010)
Employed head	-0.104***	-0.118**	-0.305	0.027	-0.608	-0.148	-0.029	0.084	-0.274***	-0.075
	(0.032)	(0.052)	(0.419)	(1.473)	(1.003)	(0.091)	(0.145)	(0.241)	(0.078)	(0.211)
Urban household	0.057	0.125	0.536	0.389	-0.248	0.116	0.337	-0.230	-0.084	0.307*
	(0.099)	(0.093)	(0.640)	(0.870)	(0.830)	(0.132)	(0.234)	(0.347)	(0.168)	(0.160)
Dependency ratio	-0.002***	-0.002***	-0.006*	-0.001	-0.013*	-0.001***	-0.001	-0.001	-0.003***	-0.002***
	(0.000)	(0.000)	(0.003)	(0.006)	(0.007)	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)
Electricity	0.148*	0.017	0.260	-0.211	-0.199	0.236***	-0.073	0.446***	0.424***	0.042
	(0.089)	(0.073)	(0.249)	(0.797)	(0.391)	(0.049)	(0.140)	(0.167)	(0.118)	(0.178)
Observations	154	154	98	60	58	154	138	107	154	154
Root MSE	0.312	0.287	1.523	2.346	1.280	0.428	1.026	0.638	0.604	0.692
Kleibergen-Paap F-stat	25.30	25.30	15.59	1.79	7.28	25.30	11.23	10.65	25.30	25.30
Hansen J p-value	0.318	0.405	0.598	0.553	0.371	0.161	0.083	0.728	0.353	0.426
Zone Fixed-Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: IV estimates. *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors in parentheses clustered at the province level. Sampling weights used in all regressions. Dependent variables are monthly per capita expenditures in Phnom Penh prices, in log. RHS variable of interest is the log amount of garment remittances per capita. Instruments: average age of garment migrants, cost of domestically transferring money, price of ampicillin. Partialled-out variables: house ownership and wall dummies, head's age squared and zone fixed-effects. Root MSE: root mean squared error. Table A1 in the Appendix provides the description of variables.

Table 2.10 also provides evidence of the productive use of garment remittances. A 10 percent increase in per capita transfers raises education expenditure by 9.5 percent (Column 3). This positive effect on human capital investment is in line with Kifle (2007) who shows that remittance-recipient Eritrean households tend to spend more on education. Cardona Sosa and Medina (2006) and Adams and Cuecuecha (2010) find similar expenditure patterns for households in Colombia and Guatemala respectively. Furthermore, remittances originating from the textile and apparel industry increase health expenditures per capita by 1.4 percent (Column 4),[42] consistent with Amuedo-Dorantes and Pozo (2011) and Valero-Gil (2009).

Table 2.11: Garment Remittances and Agricultural Investments, IV Estimates

	Log labor productivity (1)	Log agricultural investments (2)	Log crop cultivation (3)	Log fertilizer use (4)	Log draft power use (5)	Log livestock & poultry (6)
Log garment remittances p.c.	0.133**	0.243***	0.294***	0.408**	0.068	0.443***
	(0.052)	(0.079)	(0.110)	(0.187)	(0.145)	(0.105)
Urban household	0.200***	-0.636***	-0.648***	-1.195***	-0.037	-0.039
	(0.067)	(0.246)	(0.152)	(0.143)	(0.207)	(0.285)
Log area (m^2)	0.816***	0.504***	0.670***	0.740***	0.537***	0.155*
	(0.068)	(0.082)	(0.100)	(0.174)	(0.123)	(0.090)
Damaged crops (%)	-1.263	0.976	0.336	3.155*	0.761	
	(0.853)	(0.877)	(1.143)	(1.648)	(1.116)	
Log fertilizer expenditures	0.059**					
	(0.028)					
Crop variety	0.138***					
	(0.015)					
Paddy	0.284***					
	(0.094)					
Log crop yield (kg/m^2)	1.062***					
	(0.036)					
Number of animals		0.006				0.017***
		(0.004)				(0.006)
Observations	105	131	122	108	107	114
Root MSE	0.434	0.858	0.827	1.103	0.830	1.271
Kleibergen-Paap F-stat	21.50	28.69	19.29	15.99	28.05	51.94
Hansen J p-value	0.155	0.866	0.708	0.526	0.801	0.088
Zone Fixed-Effects	Yes	Yes	Yes	Yes	Yes	Yes

Notes: IV estimates. *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors in parentheses clustered at the province level. Sampling weights used in all regressions. Dependent variables expressed in per capita terms, in log. RHS variable of interest is the log amount of garment remittances per capita. Instruments: average age of garment migrants, cost of domestically transferring money, price of ampicillin. Partialled-out variables: zone fixed-effects. Root MSE: root mean squared error. Table A1 in the Appendix provides the description of variables.

Table 2.11 reports the causal effect of per capita garment remittances on productive agricultural investments. A twofold increase in transfers raises aggregate per capita expenditures

[42] However, our instruments for remittances seem to perform poorly, especially for health expenditures, probably due to the reduction in sample size.

related to farming activities by 24.3 percent (Column 2), providing additional support to the hypothesis on the productive use of remittances. Specifically, per capita costs incurred in crop cultivation and those pertaining to livestock and poultry raising activities increase by 29.4 and 44.3 percent respectively when remittances are doubled (Columns 3 and 6). Although garment transfers do not seem to have an effect on expenditures for hiring draft power (Column 5), they do increase the amount spent on chemical fertilizers and pesticides: a 100 percent rise in transfers translates into a 40.8 percent increase in this expenditure post. In addition, a twofold increase in per capita remittances boosts agricultural labor productivity by 13.3 kilograms per worker (Column 1). Overall, these findings are consistent with the literature that underlines how remittances relax the liquidity constraints of agricultural households (Minot, Kherallah, and Berry, 2000; Abdoulaye and Sanders, 2005). For instance, they allow overcoming imperfect credit and insurance markets in Burkina Faso (Wouterse and Taylor, 2008) and China (Rozelle, Taylor, and DeBrauw, 1999). In the specific case of the textile and apparel sector, our IV results also broadly echo findings from qualitative studies reporting that remittances-recipient households living in rural areas in Cambodia are able to increase their food consumption, cover health and education expenses, and invest in crop production (Cooperation Committee for Cambodia, 2005; Dahlberg, 2006).

2.7 Conclusion

The garment industry is one of the key engines of Cambodia's impressive economic growth in recent years, as well as the largest source of jobs in the manufacturing sector. This paper seeks to shed some light on the socio-economic benefits of the industry based on a rigorous econometric approach. It explores the relationship between garment participation and both monetary and non-monetary welfare indicators using PSM estimators to assess how households with at least one member employed in the textile and apparel sector fare with respect to their non-garment counterparts. We find that garment households report lower food insecurity and a higher proportion of children aged 6-14 attending school. They also exhibit lower consumption per capita and accumulate fewer assets, a result that is however reversed for households in the bottom 40 percent of the consumption distribution. For these poor households, participation in the garment sector raises per capita consumption by 3 percent and enhances asset ownership by 2.6 percentage points. The benefits in terms of reduced exposure to food insecurity and increased school enrollment are magnified at 1.8 and 9.3 percentage points respectively, while the incidence of poverty and extreme poverty, and the poverty gap index are lower by 8, 3 and 1.7 percentage

points respectively. These results show that in Cambodia, the welfare-enhancing potential of the textile and apparel industry is specific to the poorest households.

For the richest households, participating in the garment sector appears as an inferior option, perhaps because of the nature of the jobs available, typically physically demanding and with low skill requirements. Given their social and human capital characteristics, workers from the wealthiest households would have gained higher returns from their education or earned more and been better-off in alternative non-garment occupations. However, and more importantly, the garment sector does enhance the welfare of the poorest households in Cambodia. Part of the effect operates through the remittances that garment workers send to their households of origin, with the latter increasing their consumption, particularly in education and health, and investing in agricultural inputs that enhance labor productivity.

A caveat to our results is that participation in the garment sector may have negative consequences for the welfare of households that are important but very difficult to quantify, including potential psychological effects of family separation in the case of migrants and long-term psychological and physical effects of working long hours in poor conditions. Moreover, poor working conditions often prevail in textile and apparel factories, and NGOs and international organizations still report concerns over health and safety standards and child labor (Cambodian Center for Human Rights, 2014). Without undermining such important concerns, our paper brings to the debate quantitative evidence of the positive welfare effects of the industry, which is informative not only for Cambodia but also other countries in the region such as Myanmar where the sector is expanding. Accordingly, and given the welfare-enhancing effects uncovered for those households in the lower-end of the income distribution, our results call for policies to create a conducive environment for the textile and apparel sector in Cambodia, including favorable conditions for foreign direct investment such as macroeconomic and political stability.

Finally, our results highlight the importance of facilitating migrant transfers given their positive welfare-impact for the poor. Lowering the cost of remittances, both nationally and internationally, and supporting their productive use can benefit the poor. Some alternatives include promoting monetary transfers using mobile technology and developing financing products linked to remittances. Such measures can act as multipliers of the positive effect of remittances on consumption and agricultural investments evidenced in this paper.

References

AAKVIK, A. (2001): "Bounding a Matching Estimator: The Case of a Norwegian Training Program," *Oxford Bulletin of Economics and Statistics*, 63(1), 115–143.

ABADIE, A., AND G. W. IMBENS (2006): "Large Sample Properties of Matching Estimators for Average Treatment Effects," *Econometrica*, 74(1), 235–267.

——— (2008): "On the Failure of the Bootstrap for Matching Estimators," *Econometrica*, 76(6), 1537–1557.

——— (2011): "Bias-Corrected Matching Estimators for Average Treatment Effects," *Journal of Business and Economic Statistics*, 29, 1–11.

ABDOULAYE, T., AND J. H. SANDERS (2005): "Stages and Determinants of Fertilizer Use in Semiarid African Agriculture: the Niger Experience," *Agricultural Economics*, 32(2), 167–179.

ACOSTA, P. (2011): "School Attendance, Child Labour, and Remittances from International Migration in El Salvador," *Journal of Development Studies*, 47(6), 913–936.

ACOSTA, P., P. FAJNZYLBER, AND J. H. LOPEZ (2008): "Remittances and Household Behavior: Evidence from Latin America," in *Remittances and Development: Lessons from Latin America*, ed. by P. Fajnzylber, and J. H. López, pp. 133–169. The World Bank.

ADAMS, R. H., AND A. CUECUECHA (2010): "Remittances, Household Expenditure and Investment in Guatemala," *World Development*, 38(11), 1626–1641.

ALVAREZ, R., AND R. A. LOPEZ (2005): "Exporting and Performance: Evidence from Chilean Plants," *Canadian Journal of Economics*, 38(4), 1384–1400.

AMUEDO-DORANTES, C., AND S. POZO (2011): "New Evidence on the Role of Remittances on Healthcare Expenditures by Mexican Households," *Review of Economics of the Household*, 9(1), 69–98.

ARNOLD, J. M., AND K. HUSSINGER (2005): "Export Behavior and Firm Productivity in German Manufacturing: a Firm-Level Analysis," *Review of World Economics*, 141(2), 219–243.

BAUM, C. F., M. E. SCHAFFER, AND S. STILLMAN (2007): "Enhanced Routines for Instrumental Variables/GMM Estimation and Testing," *Stata Journal*, 7(4), 465–506.

BECKER, S., AND M. CALIENDO (2007): "Sensitivity Analysis for Average Treatment Effects," *Stata Journal*, 7(71-83).

BERNARD, A. B., J. B. JENSEN, S. J. REDDING, AND P. K. SCHOTT (2007): "Firms in International Trade," *Journal of Economic Perspectives*, 21(3), 105–130.

BERTOLI, S., AND F. MARCHETTA (2014): "Migration, Remittances and Poverty in Ecuador," *Journal of Development Studies*, 50(8), 1067–1089.

BERTRAND, M., E. DUFLO, AND S. MULLAINATHAN (2004): "How Much Should We Trust Differences-in-Differences Estimates?," *Quarterly Journal of Economics*, 119(1), 249–275.

BLACK, D. A., AND J. A. SMITH (2004): "How Robust Is the Evidence on the Effects of College Quality? Evidence from Matching," *Journal of Econometrics*, 121(1), 99–124.

BRYSON, A. (2002): "The Union Membership Wage Premium: An Analysis Using Propensity Score Matching," Center for Economic Performance Discussion Papers 0530, LSE.

CALERO, C., A. S. BEDI, AND R. SPARROW (2009): "Remittances, Liquidity Constraints and Human Capital Investments in Ecuador," *World Development*, 37(6), 1143–1154.

CALIENDO, M., AND S. KOPEINIG (2008): "Some Practical Guidance for the Implementation of Propensity Score Matching," *Journal of Economic Surveys*, 22(1), 31–72.

CAMBODIAN CENTER FOR HUMAN RIGHTS, . (2014): "Workers' Rights are Human Rights," Policy Brief: The Garment Industry in Cambodia.

CARD, D. (1999): "The Causal Effect of Education on Earnings," *Handbook of Labor Economics*, 3, 1801–1863.

CARDONA SOSA, L., AND C. MEDINA (2006): "Migration as a Safety Net and Effects of Remittances on Household Consumption: The Case of Colombia," Discussion paper, Banco de la Republica de Colombia.

CASTALDO, A., AND B. REILLY (2007): "Do Migrant Remittances Affect the Consumption Patterns of Albanian Households?," *South-Eastern Europe Journal of Economics*, 1(1), 25–54.

CLÉMENT, M. (2011): "Remittances and Household Expenditure Patterns in Tajikistan: A Propensity Score Matching Analysis," *Asian Development Review*, 28(2).

COOPERATION COMMITTEE FOR CAMBODIA, . (2005): "Impact of the Garment Industry on Rural Livelihoods: Lessons from Prey Vey Garment Workers and Rural Households," .

COX-EDWARDS, A., AND E. RODRÍGUEZ-OREGGIA (2009): "Remittances and Labor Force Participation in Mexico: An Analysis Using Propensity Score Matching," *World Development*, 37(5), 1004–1014.

DAHLBERG, E. (2006): "Do the Migration and Spending Patterns of Cambodian Garment workers Show Signs of a Trickle-down Effect?," Master's thesis, Stockholm School of Economics, Department of Economics.

DE HOYOS, R. E., M. BUSSOLO, AND O. NÚÑEZ (2012): "Exports, Gender Wage Gaps, and Poverty in Honduras," *Oxford Development Studies*, 40(4), 533–551.

DE LOECKER, J. (2007): "Do Exports Generate Higher Productivity? Evidence from Slovenia," *Journal of International Economics*, 73(1), 69–98.

DEHEJIA, R. (2005): "Practical Propensity Score Matching: A Reply to Smith and Todd," *Journal of Econometrics*, 125(1), 355–364.

DEHEJIA, R. H., AND S. WAHBA (1999): "Causal Effects in Nonexperimental Studies: Reevaluating the Evaluation of Training Programs," *Journal of the American statistical Association*, 94(448), 1053–1062.

——— (2002): "Propensity Score-Matching Methods for Nonexperimental Causal Studies," *Review of Economics and Statistics*, 84(1), 151–161.

DIPRETE, T. A., AND M. GANGL (2004): "Assessing Bias in the Estimation of Causal Effects: Rosenbaum Bounds on Matching Estimators and Instrumental Variables Estimation with Imperfect Instruments," *Sociological Methodology*, 34(1), 271–310.

FUKUNISHI, T., M. MURAYAMA, T. YAMAGATA, AND A. NISHIURA (2006): *Industrialization and Poverty Alleviation: Pro-poor Industrialization Strategies Revisited*. UNIDO.

FUKUNISHI, T., AND T. YAMAGATA (2013): "Employment and Wages in Export-Oriented Garment Industry: Recent Trends in Low-income Countries under Trade Liberalization," Discussion paper, Background paper to Industrial Development Report 2013, UNIDO.

HAINMUELLER, J. (2012): "Entropy Balancing for Causal Effects: A Multivariate Reweighting Method to Produce Balanced Samples in Observational Studies," *Political Analysis*, 20(01), 25–46.

HAINMUELLER, J., AND Y. XU (2013): "ebalance: A Stata Package for Entropy Balancing," *Journal of Statistical Software*, 054(i07).

HEATH, R., AND A. M. MOBARAK (2015): "Manufacturing Growth and the Lives of Bangladeshi Women," *Journal of Development Economics*, 115, 1–15.

HECKMAN, J. (1997): "Instrumental Variables: A Study of Implicit Behavioral Assumptions Used in Making Program Evaluations," *Journal of Human Resources*, pp. 441–462.

HECKMAN, J. J., H. ICHIMURA, AND P. TODD (1998): "Matching as An Econometric Evaluation Estimator," *Review of Economic Studies*, 65(2), 261–294.

HOLT, D., T. M. F. SMITH, AND P. D. WINTER (1980): "Regression Analysis of Data from Complex Surveys," *Journal of the Royal Statistical Society, Series A: General*, 143, 474–487.

IMBENS, G. W. (2004): "Nonparametric Estimation of Average Treatment Effects under Exogeneity: A Review," *Review of Economics and Statistics*, 86(1), 4–29.

JIMENEZ-SOTO, E. V., AND R. P. BROWN (2012): "Assessing the Poverty Impacts of Migrants' Remittances Using Propensity Score Matching: The Case of Tonga," *Economic Record*, 88(282), 425–439.

JOHAR, M. (2009): "The Impact of the Indonesian Health Card Program: A Matching Estimator Approach," *Journal of Health Economics*, 28(1), 35–53.

KEANE, J., AND D. W. TE VELDE (2008): "The Role of Textile and Clothing Industries in Growth and Development Strategies," Discussion paper, ODI.

KIFLE, T. (2007): "Do Remittances Encourage Investment in Education? Evidence from Eritrea," *GEFAME Journal of African Studies*, 4(1).

KISH, L., AND M. R. FRANKEL (1974): "Inference from Complex Samples," *Journal of the Royal Statistical Society, Series B: Methodological*, pp. 1–37.

KOENKER, R., AND K. F. HALLOCK (2001): "Quantile Regression," *Journal of Economic Perspectives*, 15(4), 143–156.

KOTIKULA, A., M. POURNIK, AND R. ROBERTSON (2015): *Interwoven: How the Better Work Program Improves Jobs and Life Quality in the Apparel Sector*. World Bank Publications.

LECHNER, M. (1999): "Earnings and Employment Effects of Continuous Off-the-job Training in East Germany after Unification," *Journal of Business and Economic Statistics*, 17(1), 74–90.

——— (2002): "Some Ractical Issues in the Evaluation of Heterogeneous Labour Market Programmes by Matching Methods," *Journal of the Royal Statistical Society, Series A: Statistics in Society*, 165(1), 59–82.

LEMIEUX, T. (2006): *The "Mincer equation" Thirty Years after Schooling, Experience, and Earnings*. Springer.

LEWIS, A. W. (1954): "Economic Development with Unlimited Supplies of Labour," *The Manchester School*, 22(2), 139–191.

LOPEZ-ACEVEDO, G., AND R. ROBERTSON (2012): *Sewing success? Employment, wages, and poverty following the end of the multi-fibre arrangement*. World Bank Publications.

MAMMEN, K., AND C. PAXSON (2000): "Women's Work and Economic Development," *Journal of Economic Perspectives*, 14(4), 141–164.

MINCER, J. A. (1974): "Schooling and Earnings," in *Schooling, Experience, and Earnings*, pp. 41–63. NBER.

MINOT, N., M. KHERALLAH, AND P. BERRY (2000): "Fertilizer Market Reform and the Determinants of Fertilizer Use in Benin and Malawi," MSSD discussion papers 40, International Food Policy Research Institute (IFPRI).

MOULTON, B. R. (1990): "An Illustration of a Pitfall in Estimating the Effects of Aggregate Variables on Micro Units," *Review of Economics and Statistics*, pp. 334–338.

NEUENKIRCH, M., AND F. NEUMEIER (2016): "The Impact of US Sanctions on Poverty," *Journal of Development Economics*, 121(C), 110–119.

OROZCO, M. (2003): "Remittances, the Rural Sector, and Policy Options in Latin America," Discussion paper, Inter-American Dialogue.

ROBERTSON, R., D. BROWN, G. PIERRE, AND M. L. SANCHEZ-PUERTA (2009): *Globalization, wages, and the quality of jobs: five country studies*. World Bank Publications.

ROSENBAUM, P. R. (2002): *Observational Studies*. Springer.

ROSENBAUM, P. R. (2010): *Design of Observational Studies*.

ROSENBAUM, P. R., AND D. B. RUBIN (1983): "The Central Role of the Propensity Score in Observational Studies for Causal Effects," *Biometrika*, 70(1), 41–55.

——— (1985): "Constructing a Control Group using Multivariate Matched Sampling Methods that Incorporate the Propensity Score," *The American Statistician*, 39(1), 33–38.

ROZELLE, S., J. E. TAYLOR, AND A. DEBRAUW (1999): "Migration, Remittances, and Agricultural Productivity in China," *American Economic Review*, 89(2), 287–291.

RUBIN, D. B. (1986): "Which Ifs Have Causal Answers?," *Journal of the American Statistical Association*, 81(961-962).

SAVCHENKO, Y., AND G. LOPEZ-ACEVEDO (2012): "Female Wages in the Apparel Industry Post-MFA: The Cases of Cambodia and Sri Lanka," World Bank Policy Research Working Paper 6061, World Bank.

SAVCHENKO, Y., G. LOPEZ-ACEVEDO, AND R. ROBERTSON (2014): "Do Apparel Exports Help Women in Developing Countries?," World Bank, Washington DC.

SIANESI, B. (2004): "An Evaluation of the Swedish System of Active Labor Market Programs in the 1990s," *Review of Economics and Statistics*, 86(1), 133–155.

SINANI, E., AND B. HOBDARI (2010): "Export Market Participation with Sunk Costs and Firm Heterogeneity," *Applied Economics*, 42(25), 3195–3207.

SMITH, J. A., AND P. E. TODD (2001): "Reconciling Conflicting Evidence on the Performance of Propensity-Score Matching Methods," *American Economic Review*, 91(2), 112–118.

——— (2005): "Does Matching Overcome LaLonde's Critique of Nonexperimental Estimators?," *Journal of Econometrics*, 125(1), 305–353.

SMITH, J. A., AND P. E. TODD (2005b): "Rejoinder," *Journal of Econometrics*, 125(1-2), 365–375.

STOCK, J. H., J. H. WRIGHT, AND M. YOGO (2002): "A Survey of Weak Instruments and Weak Identification in Generalized Method of Moments," *Journal of Business and Economic Statistics*, (20), 518–529.

TABUGA, A. D. (2007): "International Remittances and Household Expenditures: The Philippine Case," Discussion paper no. 2007-18, Philippine Institute for Development Studies.

TAYLOR, J., AND J. MORA (2006): "Does Migration Rehape Expenditures in Rural Households? Evidence from Mexico," World Bank Policy Research Working Paper 3842, World Bank.

UNCTAD, . (2015): "Key Statistics in International Trade 2015," United Nations Publication, Geneva.

VALERO-GIL, J. N. (2009): "Remittances and the Household's Expenditures on Health," *Journal of Business Strategies*, 26(1), 119.

VAN BIESEBROECK, J. (2005): "Exporting Raises Productivity in Sub-Saharan African Manufacturing Firms," *Journal of International Economics*, 67(2), 373–391.

WOOLDRIDGE, J. M. (2010): *Econometric Analysis of Cross Section and Panel Data*. MIT press.

WORLD BANK, . (2013): "Where Did All the Poor Go? Cambodia," Poverty Assessment PREM Unit East Asia Pacific Washington DC.

——— (2015): "Cambodia Economic Update: Maintaining High Growth," Cambodia Economic Update, Washington DC.

WORLD BANK GROUP, ., AND . WORLD TRADE ORGANIZATION (2015): *The Role of Trade in Ending Poverty*, no. 22081 in World Bank Publications. The World Bank.

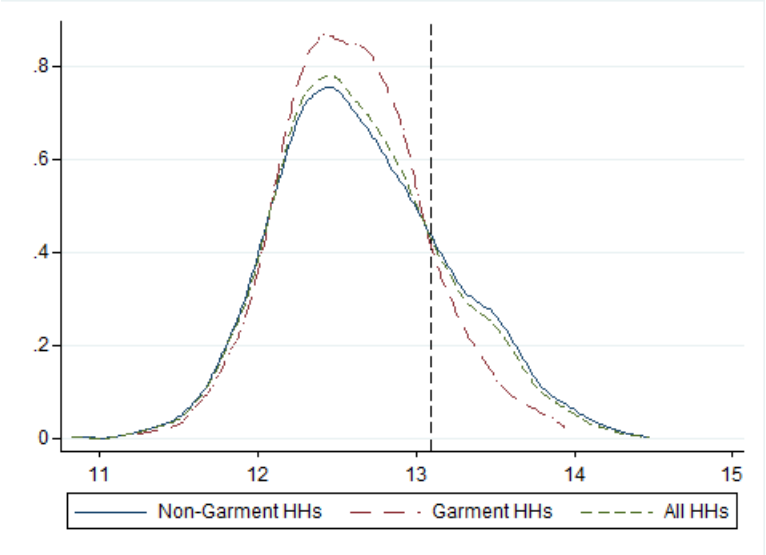
WOUTERSE, F., AND J. E. TAYLOR (2008): "Migration and Income Diversification:: Evidence from Burkina Faso," *World Development*, 36(4), 625–640.

YAMAGATA, T. (2006): "The Garment Industry in Cambodia: Its Role in Poverty Reduction through Export-oriented Development," Discussion Paper 62, Institute of Developing Economies, JETRO.

YAMAGATA, T. (2009): "Industrialization and Poverty Reduction," in *Poverty Reduction and Beyond: Development Strategies for Low-Income Countries*, ed. by T. Y. Takashi Shiraishi, and S. Yusuf. Palgrave McMillan.

Appendix to Chapter 2

Figure A1: Density Plots of Consumption per capita



Notes: Authors' calculations based on the 2011 Cambodia Socio-Economic Survey. Garment households are households with at least one member (migrant or current member) working in the garment sector; non-garment households are those included in the control group. The variable of interest is monthly per capita consumption in Phnom Penh prices (log). The vertical line marks the 5^{th} quintile.

Table A1: Description of Variables

Variable	Description
Urban household	Dummy takes 1 if the household lives in an urban area.
Household size	Number of household members.
Male headship	Dummy takes 1 if the head of the household is male.
Age of head	Age of the household head.
Married head	Dummy takes 1 if the head of the household is married.
Khmer head	Dummy takes 1 if the head of the household is of Khmer ethnicity.
Head's education	Number of years of education of the household head.
Employed head	Dummy takes 1 if the household head has a job.
Dependency ratio (%)	Ratio between dependents (children aged below 14 and seniors aged above 65) and working-age members (individuals aged 15-64 years).
House ownership	Dummy takes 1 if the household owns the dwelling unit in which it resides.
Wall	Dummy takes 1 if the primary construction material of the dwelling unit's walls is of superior quality, i.e. made out of concrete, brick, stone or cement/asbestos.
Electricity	Dummy takes 1 if the household has access to electricity.
Water	Dummy takes 1 if the household has access to an improved water source.
Primary education at most	Dummy takes 1 if the household has at least one working current member who has completed some level of primary education at most.
Secondary education at most	Dummy takes 1 if the household has at least one working current member who has completed some level of secondary education at most.
Tertiary education	Dummy takes 1 if the household has at least one working current member who has completed some level of tertiary education at most.
Nb of working female members	Number of current female household members who are employed.
Food insufficiency (% 12 months)	Percentage share of the last 12 months during which the household reported not having enough food.
School enrollment (% children aged 6-14)	Proportion of children aged 6-14 years attending school.

Table A1: Description of Variables (Cont'd)

Variable	Description
Asset ownership (% 15 durable goods)	Percentage of durable goods owned by the household out of a list of 15 goods: (i) radio, (ii) television, (iii) bicycle, (iv) motorcycle, (v) video/vcd/dvd recorder or player, (vi) refrigerator, (vii) electric fan, (viii) electric kitchen or gas stove, (ix) cell phone, (x) electric iron, (xi) desktop or laptop computer, (xii) plough, (xiii) harrow/rake/hoe/spade/axe, (xiv) batteries and (xv) bed sets (bed mattress).
Poverty	Dummy takes 1 if the household's monthly per capita aggregate consumption is below the national poverty line, which includes a food component and a non-food allowance. In 2011, the poverty lines for Phnom Penh, other urban areas and rural areas stood at CR 182,935; CR 146,846.94 and CR 134,507.02 respectively. Poverty lines were determined using 2009 data, a detailed description of the methodology can be found in World Bank (2013).
Extreme poverty	Dummy takes 1 if the household's monthly per capita aggregate consumption is below the food component of the poverty line. In 2011, the food component for Phnom Penh, other urban areas and rural areas stood at CR 118,444.51; CR 97,986.32 and CR 89,752.28 respectively. The food component is based on a minimum caloric intake recommended by FAO.
Poverty gap	Average distance of household consumption to the poverty line, as a proportion of the poverty line. The distance is considered to be zero for the non-poor.
Consumption per capita	Total monthly per capita consumption in Phnom Penh prices.
House services expenditures per capita,	All housing services (sewage, lighting, cooking) expenditures in Phnom Penh prices, monthly, per capita.
Food expenditures per capita	Food expenditures in Phnom Penh prices, monthly, per capita.
Transport and communication expenditures p.c.	Transport & communications expenditures in Phnom Penh prices, monthly, p.c.
Personal expenditures per capita	Personal use goods (clothing, soap) expenditures in Phnom Penh prices, monthly, per capita
Entertainment expenditures per capita	Recreation expenditures in Phnom Penh prices, montly, per capita
School expenditures per capita	Education expenditures in Phnom Penh prices, montly, per capita.
Health expenditures per capita	Health expenditures in Phnom Penh prices, monthly, per capita.

Table A1: Description of Variables (Cont'd)

Variable	**Description**
Durables expenditures per capita	Durables expenditures in Phnom Penh prices, monthly, per capita.
Other expenditures per capita	Other expenditures (domestic salaries, gift received, charity) in Phnom Penh prices, monthly, per capita.
Number of migrants	Number of migrants reported by the household, includes both employed and unemployed migrants.
Migrant household	Dummy takes 1 if the household reports at least one migrant.
Remittances-recipient household	Dummy takes 1 if the household reports at least one migrant who sends remittances.
Number of remittances-sending migrants	Number of remittances-sending migrants
Garment remittances per cap.	Total value of remittances received by the household from its garment migrants, normalized by the household size.
Remittances from all migrants	Total value of remittances received by the household from its migrants.
Remittances from employed migrants	Total value of remittances received by the household from its employed migrants.
Remittances from non-garment migrants	Total value of remittances received by the household from its non-garment migrants.
Ratio of other remittances to household size	Remittances received by the household from other relatives, normalized by household size.
Ratio of other remittances to the nb. of migrants	Remittances received by the household from other relatives, normalized by the number of migrants.
Ratio of other remittances to the number of remittances-sending migrants	Remittances received by the household from other relatives, normalized by the number of remittances-sending migrants.
Ratio of other remittances to total remittances	Remittances received by the household drom other relatives, normalized by the total amount of remittances from the migration module.
Ratio of other remittances to total consumption	Remittances received by the household from other relatives, normalized by consumption spending (monthly).
Receipt of remittances from other relatives	Dummy takes 1 if the household receives remittances from other relatives.
Remittances, other relatives	Total value of remittances received by the household from other relatives.
Garment	Dummy takes 1 if at least one current household member or migrant works in the garment industry.

Table A1: Description of Variables (Cont'd)

Variable	Description
Garment, migrant $<$ 5 years	Dummy takes 1 if at least one current household member or migrant of less than 5 years works in the garment industry.
Garment, migrant $<$ 10 years	Dummy takes 1 if at least one current household member or migrant of less than 10 years works in the garment industry.
Garment, migrant $>$ 10 years	Dummy takes 1 if at least one current household member or migrant of more than 10 years works in the garment industry.
Garment, remittances-sending migrant	Dummy takes 1 if at least one current household member or remittances-sending migrant works in the garment industry.
Garment, above-the-median remittances	Dummy takes 1 if at least one current household member works in garment and/or the household receives above-the-median per capita garment remittances from its migrants working in the garment industry.
Garment, previously in garment	Dummy takes 1 if at least one current household member or one migrant who was already working in garment before migrating, works in the garment industry.
Garment, previously in agriculture	Dummy takes 1 if at least one current household member or one migrant who was employed in agriculture before migrating, works in the garment industry.
Garment, previously in services	Dummy takes 1 if at least one current household member or one migrant who was employed in services before migrating, works in the garment industry.
Garment, previously in industry	Dummy takes 1 if at least one current household member or one migrant who was employed in non-garment industry before migrating, works in the garment industry.
Garment, previously unemployed	Dummy takes 1 if at least one current household member or one migrant who was unemployed before migrating, works in the garment industry.
Garment, above-the-median # of workers	Dummy takes 1 if the ratio of current household members and migrants working in garment to the size of the household (including migrants) is above the sample median.
Garment, below-the-median # of workers	Dummy takes 1 if the ratio of current household members and migrants working in garment to the size of the household (including migrants) is below the sample median.
Garment, at least one male worker	Dummy takes 1 if at least one garment worker, current household member or migrant, is male

Table A1: Description of Variables (Cont'd)

Variable	Description
Garment, all female workers	Dummy takes 1 if all garment workers, current household members and migrants included, are female.
Garment, primary education	Dummy takes 1 if at least one current household member or migrant working in the garment industry has completed primary education at most.
Garment, secondary education	Dummy takes 1 if at least one current household member or migrant working in the garment industry has completed secondary education at most.
Age of garment workers	Average age of garment migrants.
Log transfer cost	Price of a service of domestic transfer of 2,000,000 riels of money, province-level mean, log.
Log price of ampicillin	Price of a 250 mg capsule of ampicillin, province-level mean, log.
Damaged crops (%)	Probability of damaged crops due to floods/rain during past season, province-level mean, log.
Area (m^2)	Total area in m^2 of plots owned or freely used by household for farming activities, log.
Log crop yield (kg/m^2)	Crop yield computed as the ratio of crop production to harvested land (kg/m^2), log.
Log labor productivity (kg/worker)	Output per worker computed as the ratio of total crop production to the number of working-age household members (kg/worker), log.
Paddy	Dummy takes 1 if the household produces paddy (dry, wet, sticky).
Crop variety	Variety of crops grown by the household.
Log draft power costs	Expenses related to hired draft power (tractors/animals), including human labor, log.
Log fertilizer expenditures	Chemical fertilizers, pesticide, weedicide & fungicide expenses, log.
Log crop costs	Total expenses related to the cultivation of crops including fruits and vegetables, log.
Log livestock & poultry	Expenses related to livestock and poultry-raising activities, log.
Log agricultural costs	Total expenses related to agricultural activities, including crop cultivation and livestock and poultry-raising activities, log.
Number of animals	Number of cattle, ovine and poultry animals owned by the household end-2010.

Notes: Authors' elaboration based on the 2011 Cambodia Socio-Economic Survey.

Table A2: Assessing SUTVA

	All HHs		Garment HHs		Non-Garment HHs		Mean Comparison	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Diff. (1)-(3)	P-value
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Receipt of remittances from other relatives	0.225	0.497	0.246	0.501	0.220	0.496	0.026	0.375
Remittances received from other relatives	99,985	686,725	94,610	517,065	101,232	720,084	-6,622	0.787
Normalized by household size	23,541	213,742	18,889	90,538	24,620	233,032	-5,730	0.308
Normalized by the number of migrants	76,009	411,549	55,549	25,2671	84,799	464,541	-29,249	0.145
Normalized by the nb. of remittances-sending migrants	77,508	343,076	66,911	348,629	82,641	339,637	-15,730	0.500
Normalized by the total amount of remittances	0.850	4.818	0.731	5.926	0.908	4.127	-0.177	0.636
Normalized by consumption spending (monthly total)	0.008	0.053	0.007	0.033	0.008	0.056	-0.001	0.523

Notes: Authors' calculations based on the 2011 Cambodia Socio-Economic Survey. SUTVA: Stable Unit-Treatment Value Assumption. Garment households are households with at least one member, migrant or current member, working in the garment sector; non-garment households are households included in the control group. Table A1 in the Appendix provides the description of variables.

Table A3: Alternative Propensity Score Models, Full Sample

	Consumption per cap., log (1)	Asset ownership (2)	Poverty (3)	Extreme poverty (4)	Poverty gap (5)	Food insufficiency (6)	School enrollment (7)
Adding **Head married**							
ATT	-0.091***	-1.136*	-0.009	-0.007	-0.003	-0.873***	3.336**
	(0.015)	(0.626)	(0.012)	(0.006)	(0.003)	(0.285)	(1.597)
Median bias	0.6	0.6	0.6	0.6	0.6	0.6	1.1
Pseudo R^2	0.001	0.001	0.001	0.001	0.001	0.001	0.001
LR test (p-value)	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Rosenbaum test	1.5	1	3	> 3	> 3	> 3	>3
Adding **Khmer head**							
ATT	-0.092***	-1.107*	-0.009	-0.007	-0.003	-0.842***	3.216**
	(0.015)	(0.599)	(0.013)	(0.006)	(0.003)	(0.274)	(1.578)
Median bias	0.6	0.6	0.6	0.6	0.6	0.6	0.8
Pseudo R^2	0.001	0.001	0.001	0.001	0.001	0.001	0.001
LR test (p-value)	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Rosenbaum test	1.5	1	3	> 3	>3	>3	>3
Adding **Water**							
ATT	-0.091***	-1.170**	-0.010	-0.008	-0.003	-0.891***	3.273*
	(0.016)	(0.592)	(0.013)	(0.006)	(0.003)	(0.293)	(1.675)
Median bias	0.5	0.5	0.5	0.5	0.5	0.5	1.0
Pseudo R^2	0.001	0.001	0.001	0.001	0.001	0.001	0.001
LR test (p-value)	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Rosenbaum test	1.5	1.1	3	>3	>3	>3	>3
Observations	3518	3518	3518	3518	3518	3518	1799
# of Treated Obs.	667	667	667	667	667	667	289
# of Control Obs.	2851	2851	2851	2851	2851	2851	1510

Notes: Bootstrapped standard errors based on 500 replications reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1. ATT: Average Treatment effect on the Treated. Median bias: median post-matching absolute bias. Pseudo R^2: pseudo R^2 derived from the estimation of the propensity score on the sample of garment households and their matched non-garment counterparts. LR test (p-value): p-value of the likelihood-ratio test of the joint significance of all covariates in the logit model of the propensity score after matching. Rosenbaum test: the level of e^{γ} beyond which the ATT is no longer significant at the 10 percent confidence level (Section 2.4.5).

Table A4: Alternative Propensity Score Models, Bottom 40 Percent

	Consumption per cap., log (1)	Asset ownership (2)	Poverty (3)	Extreme poverty (4)	Poverty gap (5)	Food insufficiency (6)	School enrollment (7)
Adding **Head married**							
ATT	0.029*	2.546**	-0.077*	-0.032	-0.016*	-1.748**	9.249***
	(0.017)	(1.088)	(0.040)	(0.021)	(0.010)	(0.828)	(2.782)
Median bias	2.7	2.7	2.7	2.7	2.7	2.7	3.8
Pseudo R^2	0.001	0.001	0.001	0.001	0.001	0.001	0.003
LR test (p-value)	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Rosenbaum test	1.5	1.4	1	>3	1.6	>3	>3
Adding **Khmer head**							
ATT	0.028*	2.581**	-0.073*	-0.034	-0.017	-2.020**	9.432***
	(0.016)	(1.028)	(0.042)	(0.021)	(0.010)	(0.983)	(2.727)
Median bias	2.2	2.2	2.2	2.2	2.3	2.2	3.0
Pseudo R^2	0.001	0.001	0.001	0.001	0.001	0.001	0.002
LR test (p-value)	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Rosenbaum test	1.5	1.4	1	>3	1.6	>3	>3
Adding **Water**							
ATT	0.030*	2.570**	-0.079*	-0.033	-0.017*	-1.756**	9.213***
	(0.016)	(1.074)	(0.041)	(0.021)	(0.010)	(0.748)	(2.755)
Median bias	2.4	2.4	2.4	2.4	2.4	2.4	3.4
Pseudo R^2	0.001	0.001	0.001	0.001	0.001	0.001	0.003
LR test (p-value)	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Rosenbaum test	1.5	1.4	1	>3	1.7	>3	>3
Observations	1052	1052	1052	1052	1052	1052	713
# of Treated Obs.	200	200	200	200	200	200	127
# of Control Obs.	852	852	852	852	852	852	586

Notes: Bootstrapped standard errors based on 500 replications reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1. ATT: Average Treatment effect on the Treated. Median bias: median post-matching absolute bias. Pseudo R^2: pseudo R^2 derived from the estimation of the propensity score on the sample of garment households and their matched non-garment counterparts. LR test (p-value): p-value of the likelihood-ratio test of the joint significance of all covariates in the logit model of the propensity score after matching. Rosenbaum test: the level of e^{γ} beyond which the ATT is no longer significant at the 10 percent confidence level (Section 2.4.5). The description and source of variables are provided in Table A1 in the Appendix.

Table A5: Covariate Balancing after Entropy Reweighting

	Mean		Variance	
	Garment	Non-Garment	Garment	Non-Garment
Head's education	5.024	5.023	11.33	11.33
Head's education^2	36.56	36.56	1620.57	1622.83
Male headship	0.811	0.810	0.154	0.154
Age of head	50.90	50.89	144.47	144.43
Employed head	0.892	0.892	0.097	0.096
Household size	5.661	5.660	5.013	5.012
Urban household	0.229	0.229	0.177	0.177
Dependency ratio	50.03	50.01	2905.22	2904.84
House ownership	0.971	0.971	0.028	0.028
Wall	0.140	0.141	0.121	0.121
Electricity	0.443	0.443	0.247	0.247

Notes: Entropy balancing of covariates across treatment and control groups based on the first and second moments. Garment households are households with at least one member (current or migrant) working in the garment sector, while non-garment households are included in the control group. The description and source of variables are provided in Table A1 in the Appendix.

Table A6: Marginal Effect of Garment Participation on Consumption per capita, by Decile

	Decile 1 (1)	≤ Decile 2 (2)	≤ Decile 3 (3)	≤ Decile 4 (4)	≤ Decile 5 (5)	≤ Decile 6 (6)	≤ Decile 7 (7)	≤ Decile 8 (8)	≤ Decile 9 (9)	≤ Decile 10 (10)
Garment	0.082	0.059***	0.051**	0.054***	0.040**	0.020	-0.006	-0.020	-0.052**	-0.087**
	(0.077)	(0.020)	(0.022)	(0.017)	(0.017)	(0.019)	(0.018)	(0.017)	(0.024)	(0.035)
Head's education	0.044**	0.020*	0.025***	0.026***	0.023***	0.024***	0.023***	0.021***	0.020***	0.014***
	(0.017)	(0.011)	(0.007)	(0.005)	(0.005)	(0.007)	(0.005)	(0.005)	(0.005)	(0.005)
Head's education^2	-0.004**	-0.002	-0.002***	-0.002***	-0.001**	-0.001**	-0.001*	-0.001	-0.000	0.000
	(0.002)	(0.001)	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)
Male headship	-0.041	0.005	0.029	0.051	0.051	0.033	0.036	0.041	0.044	0.028
	(0.108)	(0.028)	(0.035)	(0.031)	(0.031)	(0.034)	(0.034)	(0.034)	(0.039)	(0.039)
Age of head	-0.000	-0.001	-0.002	-0.001	-0.001	-0.001	-0.000	-0.000	0.000	0.001
	(0.003)	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Employed head	0.018	0.033	-0.025	-0.042	-0.056	-0.048	-0.049	-0.045	-0.056*	-0.049
	(0.116)	(0.041)	(0.078)	(0.053)	(0.041)	(0.041)	(0.037)	(0.035)	(0.029)	(0.031)
Household size	-0.028	-0.029**	-0.028***	-0.035***	-0.038***	-0.043***	-0.052***	-0.060***	-0.071***	-0.081***
	(0.023)	(0.011)	(0.007)	(0.005)	(0.005)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Urban household	-0.202	-0.074	-0.072	-0.094*	-0.099*	-0.084*	-0.074*	-0.047	-0.036	-0.009
	(0.118)	(0.057)	(0.054)	(0.053)	(0.048)	(0.046)	(0.037)	(0.038)	(0.035)	(0.046)
Dependency ratio	-0.000	-0.000	-0.000**	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
House ownership	-0.149	-0.073	0.017	0.038	0.089**	0.127***	0.145***	0.143***	0.123***	0.142***
	(0.159)	(0.108)	(0.043)	(0.033)	(0.036)	(0.024)	(0.025)	(0.037)	(0.033)	(0.022)
Wall	-0.208***	-0.099	-0.050	-0.015	-0.009	-0.006	-0.003	0.039	0.106**	0.233***
	(0.036)	(0.077)	(0.102)	(0.072)	(0.031)	(0.034)	(0.035)	(0.035)	(0.041)	(0.047)
Electricity	0.148	0.114***	0.123***	0.111***	0.139***	0.157***	0.163***	0.192***	0.224***	0.249***
	(0.108)	(0.034)	(0.037)	(0.038)	(0.028)	(0.022)	(0.017)	(0.017)	(0.018)	(0.023)
Observations	224	488	759	1,052	1,347	1,665	2,007	2,415	2,889	3,518
R^2	0.513	0.520	0.472	0.472	0.484	0.482	0.491	0.534	0.553	0.602
Adjusted R^2	0.151	0.357	0.359	0.390	0.422	0.432	0.451	0.503	0.529	0.584
District Fixed-Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Regressions over sub-samples of consumption deciles based on entropy matching. *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors clustered at the province level in parentheses. Constant included but not reported. The first regression is run on the first decile, the second regression on an augmented sample comprising the second decile, and so forth until the full sample is reached. The description and source of variables are provided in Table A1 in the Appendix.

Table A7: Marginal Effect of Garment Participation on Asset Ownership, by Decile

	Decile 1 (1)	≤ Decile 2 (2)	≤ Decile 3 (3)	≤ Decile 4 (4)	≤ Decile 5 (5)	≤ Decile 6 (6)	≤ Decile 7 (7)	≤ Decile 8 (8)	≤ Decile 9 (9)	≤ Decile 10 (10)
Garment	1.020	2.256	1.838	1.348	0.409	0.866	-0.425	-0.764	-1.448	-1.810*
	(3.285)	(2.770)	(1.810)	(1.398)	(1.094)	(1.097)	(1.063)	(1.004)	(0.919)	(0.966)
Head's education	1.682**	1.126	0.782	0.567	0.327	0.783**	0.740**	0.650***	0.783***	0.891***
	(0.777)	(1.115)	(0.649)	(0.444)	(0.386)	(0.328)	(0.265)	(0.231)	(0.189)	(0.186)
Head's education^2	-0.084	-0.069	0.018	0.021	0.035	-0.008	0.007	0.014	0.002	-0.004
	(0.070)	(0.082)	(0.052)	(0.052)	(0.053)	(0.042)	(0.032)	(0.026)	(0.021)	(0.018)
Male headship	2.828	5.518***	6.544**	6.142***	6.496***	4.367**	4.637***	4.887***	4.457***	3.842***
	(1.784)	(1.873)	(2.640)	(1.907)	(1.755)	(1.559)	(1.524)	(1.216)	(1.249)	(1.227)
Age of head	0.158	0.130**	0.089**	0.110***	0.065**	0.063*	0.097**	0.103***	0.125***	0.124***
	(0.092)	(0.060)	(0.033)	(0.029)	(0.028)	(0.032)	(0.035)	(0.031)	(0.028)	(0.025)
Employed head	2.197	1.038	1.496	1.674	0.703	-0.350	0.405	0.198	-0.391	-0.495
	(3.285)	(2.241)	(2.814)	(1.897)	(1.836)	(2.220)	(1.891)	(1.691)	(1.467)	(1.410)
Household size	2.375*	1.299***	1.819***	1.792***	1.732***	1.804***	1.744***	1.664***	1.540***	1.419***
	(1.282)	(0.375)	(0.301)	(0.274)	(0.238)	(0.229)	(0.196)	(0.190)	(0.155)	(0.140)
Urban household	-4.237	9.123**	6.338*	4.466	6.370*	4.045	5.549*	5.356	5.847**	5.892**
	(7.709)	(4.327)	(3.668)	(3.307)	(3.091)	(2.463)	(3.035)	(3.134)	(2.682)	(2.373)
Dependency ratio	-0.006	-0.026***	-0.019***	-0.026***	-0.024***	-0.033***	-0.034***	-0.035***	-0.037***	-0.041***
	(0.018)	(0.007)	(0.006)	(0.006)	(0.006)	(0.008)	(0.009)	(0.009)	(0.009)	(0.009)
House ownership	24.378***	3.851	5.936	4.579	5.181	6.192	5.920	8.490***	7.225***	8.827***
	(8.376)	(10.595)	(3.650)	(3.625)	(3.398)	(3.997)	(3.895)	(2.827)	(1.921)	(1.157)
Wall	2.728	0.944	-0.837	2.178	2.568	2.107	2.139	2.212	3.532**	4.944***
	(1.770)	(3.219)	(4.106)	(2.936)	(1.929)	(1.949)	(1.700)	(1.710)	(1.313)	(1.197)
Electricity	9.854	10.789**	8.307***	8.587***	9.106***	10.526***	9.375***	9.742***	10.308***	10.780***
	(7.949)	(4.704)	(2.050)	(1.607)	(1.863)	(1.606)	(1.464)	(1.410)	(1.088)	(1.006)
Observations	224	488	759	1,052	1,347	1,665	2,007	2,415	2,889	3,518
R^2	0.792	0.652	0.585	0.552	0.524	0.508	0.497	0.501	0.508	0.535
Adjusted R^2	0.638	0.533	0.495	0.482	0.466	0.461	0.456	0.468	0.481	0.515
District Fixed-Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Regressions over sub-samples of consumption deciles based on entropy matching. *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors clustered at the province level in parentheses. Constant included but not reported. The first regression is run on the first decile, the second regression on an augmented sample comprising the second decile, and so forth until the full sample is reached. The description and source of variables are provided in Table A1 in the Appendix.

Table A8: Marginal Effect of Garment Participation on Poverty, by Decile

	≤ Decile 3 (1)	≤ Decile 4 (2)	≤ Decile 5 (3)	≤ Decile 6 (4)	≤ Decile 7 (5)	≤ Decile 8 (6)	≤ Decile 9 (7)	≤ Decile 10 (8)
Garment	-0.087	-0.115*	-0.103**	-0.061	-0.033	-0.023	-0.014	-0.010
	(0.068)	(0.068)	(0.043)	(0.039)	(0.034)	(0.027)	(0.021)	(0.017)
Head's education	-0.063***	-0.069***	-0.066***	-0.056***	-0.046***	-0.037***	-0.029***	-0.024***
	(0.018)	(0.023)	(0.019)	(0.017)	(0.013)	(0.011)	(0.009)	(0.008)
Head's education^2	0.004***	0.004**	0.003*	0.003*	0.002*	0.001	0.001	0.001
	(0.001)	(0.002)	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Male headship	-0.102	-0.220***	-0.213***	-0.122	-0.092	-0.087	-0.072	-0.059
	(0.087)	(0.075)	(0.080)	(0.082)	(0.071)	(0.059)	(0.049)	(0.041)
Age of head	0.004	0.001	0.001	0.000	-0.000	0.000	-0.000	0.000
	(0.003)	(0.002)	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Employed head	0.162	0.228**	0.194**	0.131	0.109*	0.090**	0.072**	0.057**
	(0.155)	(0.110)	(0.091)	(0.080)	(0.060)	(0.045)	(0.033)	(0.027)
Household size	0.066***	0.097***	0.100***	0.086***	0.079***	0.069***	0.058***	0.049***
	(0.019)	(0.018)	(0.017)	(0.019)	(0.014)	(0.011)	(0.008)	(0.005)
Urban household	0.105	0.214*	0.249*	0.168	0.151	0.112	0.091	0.077
	(0.135)	(0.125)	(0.134)	(0.115)	(0.103)	(0.087)	(0.070)	(0.061)
Dependency ratio	0.001**	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
House ownership	-0.095	-0.155	-0.176	-0.260**	-0.233**	-0.235**	-0.183**	-0.141*
	(0.295)	(0.231)	(0.123)	(0.132)	(0.117)	(0.109)	(0.085)	(0.077)
Wall	-0.223	-0.228	-0.196*	-0.128	-0.124*	-0.104**	-0.089**	-0.080***
	(0.270)	(0.180)	(0.104)	(0.082)	(0.067)	(0.050)	(0.038)	(0.029)
Electricity	-0.380**	-0.344***	-0.342***	-0.302***	-0.263***	-0.234***	-0.204***	-0.179***
	(0.151)	(0.113)	(0.067)	(0.048)	(0.034)	(0.027)	(0.022)	(0.021)
Observations	641	971	1,232	1,523	1,809	2,152	2,531	2,960
McFadden R^2	0.316	0.303	0.314	0.328	0.343	0.372	0.392	0.409
District Fixed-Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Probit regressions over sub-samples of consumption deciles based on entropy matching and estimated at sample means. *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors in clustered at the province level parentheses. Since the dependent variable is equal to 1 for all the observations in the first and second deciles, i.e. households in the two lowest deciles are below the poverty line, regressions are run as of the third decile. The second regression is run on an augmented sample comprising the fourth decile, and so forth until the full sample is reached. The description and source of variables are provided in Table A1 in the Appendix.

Table A9: Marginal Effect of Garment Participation on Extreme Poverty, by Decile

	Decile 1 (1)	≤ Decile 2 (2)	≤ Decile 3 (3)	≤ Decile 4 (4)	≤ Decile 5 (5)	≤ Decile 6 (6)	≤ Decile 7 (7)	≤ Decile 8 (8)	≤ Decile 9 (9)	≤ Decile 10 (10)
Garment	-0.530***	-0.458***	-0.277***	-0.243***	-0.168***	-0.101***	-0.068***	-0.047***	-0.036***	-0.032***
	(0.149)	(0.092)	(0.067)	(0.044)	(0.030)	(0.020)	(0.017)	(0.014)	(0.012)	(0.010)
Head's education	-0.096	-0.026	-0.030	-0.022	-0.014	-0.011	-0.009	-0.006	-0.005	-0.005
	(0.099)	(0.051)	(0.030)	(0.023)	(0.018)	(0.013)	(0.011)	(0.008)	(0.007)	(0.006)
Head's education^2	0.005	-0.002	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(0.013)	(0.008)	(0.005)	(0.003)	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Male headship	0.439***	0.271***	0.108***	0.049**	0.033**	0.024**	0.019*	0.012	0.009	0.007
	(0.162)	(0.063)	(0.032)	(0.023)	(0.015)	(0.012)	(0.011)	(0.008)	(0.006)	(0.006)
Age of head	0.003	0.003	0.004***	0.002**	0.001**	0.001**	0.001**	0.001**	0.000***	0.000**
	(0.005)	(0.003)	(0.002)	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Employed head	-0.239	-0.187	-0.030	-0.054	-0.041	-0.022	-0.019	-0.015	-0.010	-0.010
	(0.379)	(0.234)	(0.101)	(0.095)	(0.075)	(0.048)	(0.044)	(0.033)	(0.023)	(0.022)
Household size	0.118***	0.095***	0.067***	0.050***	0.036***	0.024***	0.021***	0.015***	0.012***	0.011***
	(0.035)	(0.028)	(0.012)	(0.007)	(0.006)	(0.005)	(0.004)	(0.004)	(0.004)	(0.003)
Urban household	0.213	-0.014	-0.012	0.033	0.032	0.015	0.017	0.015	0.014	0.012
	(0.253)	(0.216)	(0.118)	(0.100)	(0.075)	(0.048)	(0.043)	(0.036)	(0.029)	(0.026)
Dependency ratio	0.002	0.002**	0.001**	0.001*	0.001**	0.000***	0.000**	0.000**	0.000**	0.000**
	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
House ownership		-0.457*	-0.542*	-0.198	-0.236	-0.202	-0.157	-0.112	-0.106	-0.023
		(0.277)	(0.293)	(0.283)	(0.280)	(0.225)	(0.178)	(0.151)	(0.139)	(0.064)
Wall		0.719***	0.873***	0.855***	0.558**	0.474**	0.197	0.133	0.114	0.068
		(0.059)	(0.030)	(0.149)	(0.230)	(0.230)	(0.291)	(0.218)	(0.194)	(0.121)
Electricity	-0.513***	-0.357***	-0.178***	-0.122***	-0.093***	-0.071***	-0.069***	-0.058***	-0.051***	-0.051***
	(0.155)	(0.023)	(0.024)	(0.019)	(0.017)	(0.015)	(0.015)	(0.013)	(0.013)	(0.012)
Observations	142	252	352	440	531	629	712	818	903	982
McFadden R^2	0.296	0.377	0.390	0.381	0.394	0.413	0.397	0.411	0.423	0.427
District Fixed-Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Probit regressions over sub-samples of consumption deciles based on entropy matching and estimated at sample means. *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors clustered at the province level in parentheses. The first regression is run on the first decile, the second regression on an augmented sample comprising the second decile, and so forth until the full sample is reached. The description and source of variables are provided in Table A1 in the Appendix.

Table A10: Marginal Effect of Garment Participation on the Poverty Gap, by Decile

	Decile 1 (1)	≤ Decile 2 (2)	≤ Decile 3 (3)	≤ Decile 4 (4)	≤ Decile 5 (5)	≤ Decile 6 (6)	≤ Decile 7 (7)	≤ Decile 8 (8)	≤ Decile 9 (9)	≤ Decile 10 (10)
Garment	-0.046	-0.042***	-0.036***	-0.033***	-0.024**	-0.012*	-0.007	-0.005	-0.003	-0.003
	(0.041)	(0.014)	(0.012)	(0.009)	(0.009)	(0.007)	(0.006)	(0.005)	(0.004)	(0.004)
Head's education	-0.027**	-0.014*	-0.017***	-0.015***	-0.013***	-0.011***	-0.010***	-0.009***	-0.008***	-0.007***
	(0.011)	(0.008)	(0.005)	(0.004)	(0.003)	(0.002)	(0.002)	(0.002)	(0.002)	(0.001)
Head's education^2	0.003**	0.001	0.001***	0.001***	0.001***	0.001***	0.001***	0.000***	0.000***	0.000***
	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Male headship	0.030	-0.001	-0.016	-0.025	-0.022	-0.012	-0.010	-0.009	-0.006	-0.007
	(0.061)	(0.019)	(0.026)	(0.021)	(0.017)	(0.015)	(0.013)	(0.011)	(0.010)	(0.009)
Age of head	0.000	0.001	0.002	0.001	0.001	0.001	0.000	0.000	0.000	0.000
	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Employed head	-0.014	-0.025	0.012	0.013	0.015	0.010	0.010	0.011	0.008	0.007
	(0.071)	(0.029)	(0.050)	(0.033)	(0.025)	(0.023)	(0.020)	(0.018)	(0.015)	(0.014)
Household size	0.018	0.021***	0.020***	0.021***	0.020***	0.017***	0.016***	0.014***	0.013***	0.012***
	(0.012)	(0.007)	(0.005)	(0.004)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Urban household	0.109	0.040	0.043	0.051	0.044	0.034	0.026	0.022	0.021	0.020
	(0.067)	(0.033)	(0.034)	(0.030)	(0.027)	(0.025)	(0.021)	(0.019)	(0.016)	(0.014)
Dependency ratio	0.000	0.000	0.000**	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
House ownership	0.081	0.046	-0.014	-0.020	-0.027	-0.025**	-0.030***	-0.032***	-0.025***	-0.023***
	(0.097)	(0.080)	(0.029)	(0.025)	(0.016)	(0.011)	(0.009)	(0.008)	(0.006)	(0.005)
Wall	0.130***	0.062	0.027	0.008	0.004	0.004	0.002	0.000	0.001	0.002
	(0.021)	(0.051)	(0.067)	(0.045)	(0.022)	(0.017)	(0.014)	(0.011)	(0.009)	(0.007)
Electricity	-0.085	-0.084***	-0.085***	-0.070***	-0.066***	-0.059***	-0.052***	-0.045***	-0.041***	-0.039***
	(0.065)	(0.024)	(0.025)	(0.020)	(0.018)	(0.014)	(0.013)	(0.012)	(0.011)	(0.010)
Observations	224	488	759	1,052	1,347	1,665	2,007	2,415	2,889	3,518
R^2	0.549	0.541	0.480	0.463	0.454	0.438	0.425	0.421	0.410	0.407
Adjusted R^2	0.215	0.385	0.368	0.379	0.388	0.384	0.379	0.383	0.378	0.381
District Fixed-Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Regressions over sub-samples of consumption deciles based on entropy matching. *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors clustered at the province level in parentheses. The first regression is run on the first decile, the second regression on an augmented sample comprising the second decile, and so forth until the full sample is reached. The description and source of variables are provided in Table A1 in the Appendix.

Table A11: Marginal Effect of Garment Participation on Food Insufficiency, by Decile

	Decile 1	≤ Decile 2	≤ Decile 3	≤ Decile 4	≤ Decile 5	≤ Decile 6	≤ Decile 7	≤ Decile 8	≤ Decile 9	≤ Decile 10
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Garment	0.815	-2.554	-1.603*	-1.417*	-0.556	-0.343	0.053	-0.119	-0.121	-0.155
	(1.722)	(2.044)	(0.818)	(0.776)	(0.449)	(0.454)	(0.431)	(0.478)	(0.387)	(0.362)
Head's education	-0.742	-1.185	-0.894	-0.794**	-0.530*	-0.563**	-0.409*	-0.346*	-0.313*	-0.295*
	(1.109)	(1.144)	(0.645)	(0.379)	(0.279)	(0.226)	(0.213)	(0.171)	(0.176)	(0.164)
Head's education^2	0.054	0.092	0.058	0.050*	0.031	0.036*	0.022	0.018	0.017	0.016
	(0.063)	(0.088)	(0.043)	(0.028)	(0.021)	(0.018)	(0.016)	(0.012)	(0.013)	(0.011)
Male headship	-6.317	-2.311	-2.681	-2.603	-2.578*	-2.466**	-2.580**	-2.211**	-2.009**	-1.808**
	(5.871)	(2.081)	(2.240)	(1.679)	(1.313)	(1.190)	(1.135)	(0.975)	(0.887)	(0.832)
Age of head	-0.197	-0.113	-0.037	-0.030	-0.021	-0.017	-0.007	-0.003	-0.001	0.000
	(0.254)	(0.107)	(0.034)	(0.026)	(0.022)	(0.021)	(0.017)	(0.015)	(0.012)	(0.011)
Employed head	-4.449	-3.488	-1.505	-0.936	-0.361	-0.234	0.085	0.072	0.171	0.071
	(6.992)	(3.294)	(2.456)	(1.407)	(1.100)	(1.057)	(0.988)	(0.910)	(0.656)	(0.581)
Household size	0.335	0.350	0.321	0.220	0.197	0.168	0.201*	0.190*	0.219**	0.225**
	(0.631)	(0.480)	(0.234)	(0.174)	(0.157)	(0.121)	(0.112)	(0.096)	(0.086)	(0.086)
Urban household	-10.428	-11.727***	-8.005***	-6.216***	-4.433***	-2.722	-2.198	-2.106	-1.599	-1.436
	(6.450)	(2.933)	(2.146)	(1.709)	(1.229)	(1.674)	(1.409)	(1.378)	(1.551)	(1.388)
Dependency ratio	-0.005	-0.007	-0.006	-0.005	-0.002	-0.000	0.000	0.002	0.001	0.002
	(0.020)	(0.011)	(0.007)	(0.005)	(0.004)	(0.003)	(0.003)	(0.002)	(0.002)	(0.002)
House ownership	-31.567***	-14.425	-1.289	-0.504	-1.756	-1.217	-0.951	-0.811*	-0.565	-0.815*
	(10.743)	(10.984)	(2.128)	(1.325)	(1.097)	(0.730)	(0.563)	(0.421)	(0.392)	(0.449)
Wall	-43.958***	-25.271*	-1.294	-1.016	-1.367	-1.345	-0.889	-0.574	-0.437	-0.519
	(8.034)	(13.907)	(1.655)	(1.395)	(1.393)	(1.017)	(0.825)	(0.624)	(0.538)	(0.480)
Electricity	-10.504	2.285	0.753	0.270	0.694	0.707	0.356	0.306	-0.050	-0.268
	(8.212)	(2.455)	(1.307)	(0.900)	(0.697)	(0.616)	(0.604)	(0.594)	(0.757)	(0.827)
Observations	224	488	759	1,052	1,347	1,665	2,007	2,415	2,889	3,518
R^2	0.696	0.490	0.497	0.555	0.547	0.526	0.486	0.470	0.453	0.450
Adjusted R^2	0.470	0.316	0.389	0.486	0.492	0.481	0.445	0.435	0.423	0.425
District Fixed-Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Regressions over sub-samples of consumption deciles based on entropy matching. *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors clustered at the province level in parentheses. The first regression is run on the first decile, the second regression on an augmented sample comprising the second decile, and so forth until the full sample is reached. The description and source of variables are provided in Table A1 in the Appendix.

Table A12: Marginal Effect of Garment Participation on School Enrollment, by Decile

	Decile 1 (1)	≤ Decile 2 (2)	≤ Decile 3 (3)	≤ Decile 4 (4)	≤ Decile 5 (5)	≤ Decile 6 (6)	≤ Decile 7 (7)	≤ Decile 8 (8)	≤ Decile 9 (9)	≤ Decile 10 (10)
Garment	8.613	11.354**	8.159*	6.084*	0.548	1.312	0.205	0.655	0.797	0.488
	(8.224)	(4.392)	(4.299)	(3.183)	(3.008)	(2.650)	(2.201)	(1.954)	(1.935)	(1.636)
Head's education	2.348	2.420	1.757	1.300	1.203	0.467	0.358	0.471	0.385	0.507
	(2.962)	(2.512)	(1.906)	(1.406)	(1.248)	(1.014)	(0.941)	(0.770)	(0.716)	(0.674)
Head's education^2	-0.263	-0.302	-0.201	-0.149	-0.158	-0.081	-0.023	-0.022	-0.010	-0.017
	(0.328)	(0.297)	(0.222)	(0.172)	(0.139)	(0.115)	(0.097)	(0.076)	(0.066)	(0.056)
Male headship	-12.549	-9.116*	-3.382	-2.800	-1.492	-1.319	-3.116*	-2.719*	-2.374	-1.550
	(11.857)	(5.170)	(4.676)	(3.101)	(2.781)	(2.155)	(1.596)	(1.415)	(1.520)	(1.628)
Age of head	0.030	-0.128	-0.149	-0.128	-0.068	-0.010	-0.007	-0.000	0.016	0.024
	(0.355)	(0.171)	(0.212)	(0.166)	(0.134)	(0.119)	(0.100)	(0.101)	(0.089)	(0.082)
Employed head	-18.168	-7.324	-6.916	-6.084	3.309	3.022	1.346	0.452	0.880	0.468
	(18.562)	(10.552)	(5.762)	(4.079)	(5.125)	(5.127)	(4.798)	(4.730)	(4.073)	(3.785)
Household size	1.228	-0.175	1.019	0.805	1.074*	0.463	0.308	0.059	-0.008	-0.027
	(2.188)	(1.280)	(0.935)	(0.591)	(0.575)	(0.506)	(0.474)	(0.433)	(0.421)	(0.398)
Urban household	10.585	10.458*	3.676	3.605	0.914	3.817	6.377	6.883	6.926	6.149
	(25.435)	(5.266)	(5.714)	(4.366)	(4.459)	(6.224)	(5.850)	(5.548)	(5.520)	(5.086)
Dependency ratio	-0.008	-0.017	-0.042**	-0.047**	-0.032*	-0.031**	-0.023	-0.024	-0.022	-0.022
	(0.056)	(0.024)	(0.019)	(0.017)	(0.018)	(0.014)	(0.016)	(0.015)	(0.014)	(0.014)
House ownership	-13.108	10.643	36.733	22.172	26.431	24.897	23.104	20.689*	17.597*	10.846
	(36.680)	(12.708)	(22.138)	(24.398)	(17.596)	(15.398)	(14.340)	(11.303)	(9.188)	(8.638)
Wall	-4.943	22.015	-5.171	-3.107	1.114	0.277	-3.336	-1.671	-0.563	-1.375
	(30.363)	(19.625)	(6.344)	(5.973)	(5.089)	(4.029)	(4.156)	(3.594)	(2.615)	(2.193)
Electricity	10.357	2.582	-0.872	2.423	4.555	2.536	-0.557	-0.894	0.133	0.392
	(23.110)	(9.850)	(6.037)	(2.496)	(5.002)	(4.258)	(4.591)	(4.189)	(3.923)	(3.825)
Observations	167	358	530	713	886	1,065	1,235	1,403	1,585	1,799
R^2	0.717	0.552	0.454	0.408	0.340	0.303	0.266	0.252	0.238	0.232
Adjusted R^2	0.433	0.340	0.276	0.263	0.212	0.193	0.166	0.163	0.159	0.163
District Fixed-Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Regressions over sub-samples of consumption deciles based on entropy matching. *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors clustered at the province level in parentheses. The first regression is run on the first decile, the second regression on an augmented sample comprising the second decile, and so forth until the full sample is reached. The description and source of variables are provided in Table A1 in the Appendix.

Table A13: First-Stage Regressions

	(1)	(2)	(3)	(4)	(5)
Age of garment workers	-0.058***	-0.103***	-0.084***	-0.084***	-0.085***
	(0.016)	(0.021)	(0.012)	(0.012)	(0.010)
Log price of ampicillin	-3.303***	-3.850***	-3.337***	-3.312***	-3.774***
	(0.876)	(0.465)	(0.643)	(0.713)	(0.665)
Log transfer cost	-1.702***	-3.144***	-1.424**	-1.358**	-1.557**
	(0.495)	(0.807)	(0.544)	(0.616)	(0.515)
Urban household	0.100	-0.598	0.395*	0.436	0.418*
	(0.266)	(0.604)	(0.191)	(0.246)	(0.197)
Head's education	-0.048				
	(0.057)				
Head's education^2	0.001				
	(0.005)				
Male headship	-0.210				
	(0.470)				
Age of head	-0.025**				
	(0.012)				
Employed head	-0.726***				
	(0.177)				
Dependency ratio	-0.003				
	(0.002)				
House ownership	-1.976***				
	(0.374)				
Wall	-0.061				
	(0.225)				
Electricity	-0.278				
	(0.207)				
Log area (m^2)		0.352	-0.019	0.002	-0.031
		(0.236)	(0.106)	(0.104)	(0.116)
Damaged crops (%)		-2.737	-3.133**	-3.067**	
		(1.544)	(1.078)	(1.079)	
Log fertilizer expenditures		-0.309**			
		(0.119)			
Crop variety		-0.161			
		(0.212)			
Paddy		-0.515*			
		(0.268)			
Log crop yield (kg/m^2)		0.379			
		(0.236)			
Number of animals			0.005		0.004
			(0.006)		(0.006)
Observations	154	108	133	133	133
Adjusted R^2	0.257	0.333	0.309	0.312	0.294
Root MSE	1.381	1.282	1.333	1.330	1.347
First-stage F-stat	25.30	22.96	28.74	26.16	46.60
Zone Fixed-Effects	Yes	Yes	Yes	Yes	Yes

Notes: The dependent variable is the per capita value of remittances received by a household from its garment migrant(s), in riels (log). Standard errors are clustered at the province level. *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors in parentheses. Sampling weights are used in all regressions. Constant included but not reported. Root MSE: root mean squared error. Instruments: (i) Age of garment workers; (ii) Price of ampicillin; (iii) Transfer cost. The description and source of variables are provided in Table A1 in the Appendix.

CHAPTER 3

Time to Take Off: Export Accelerations in the Developing World

---

[1]

[1]This Chapter draws on the IMF working paper 17/43 *Launching Export Accelerations in Latin America and the World* prepared under the supervision of Valerie Cerra as a background paper for the IMF cluster report 17/66 *Trade Integration in Latin America and the Caribbean* when I was an intern at the IMF in summer 2016. I am particularly grateful to Martha Denisse Pierola for sharing material on her export acceleration identification methodology. Earlier versions of this Chapter benefited from the useful comments of Metodij Hadzi-Vaskov, Andras Komaromi, Pierre Mandon, Patrick Plane, as well as participants of the IMF WHD Seminar in Washington D.C., the 9th FIW Research Conference in Vienna, the CSAE conference in Oxford, the 22nd Spring Meeting of Young Economists in Halle, the joint conference by the Korea Economic Association and the Asia-Pacific Economic Association in Seoul, and the ASSA American Economic Association Annual Meeting in Philadelphia.

3.1 Introduction

The world economy has recently been marked by a global trade slowdown and sluggish output growth (IMF, 2016). Reinvigorating and sustaining exports can be an engine of growth, as evidenced by abundant research on the growth-effects of trade. In particular, exports are key to relaxing balance-of-payments constraints by addressing deficits and reducing debt. They contribute to domestic revenue mobilization efforts, hence creating fiscal space for much needed social spending and infrastructure investments in developing countries. Exports also provide a basis for learning by doing and generate externalities that enhance the productivity of other sectors. Export-oriented industries not only create jobs, but they also pay higher wages, thus contributing to raising welfare (Lopez-Acevedo and Robertson, 2012). In light of the multi-pronged benefits of exports, this paper investigates the determinants of export accelerations, defined as episodes of strong and sustained export growth, and sheds light on how real GDP per capita, unemployment and income inequality fare in the years following an export takeoff. For this purpose, we examine instances of clear shifts in export growth series. The rationale for this focus is similar to Hausmann, Pritchett, and Rodrik (2005) who assess the predictors of growth accelerations in GDP per capita, adopting Pritchett (2000)'s argument that output performance is not always stable, with countries alternately experiencing phases of growth, stagnation or decline of different durations.

We contribute to the literature on several fronts. First, we explore a rich array of potential predictors of export accelerations for a broad sample of emerging market and developing economies (EMDEs), hence departing from Freund and Pierola (2012) and Eichengreen and Gupta (2013) who put the role of the exchange rate in stimulating export growth at the heart of their analysis, relying on a sample mixing both EMDEs and advanced economies. Second, we emphasize the dynamism of international trade in services (Sáez, Taglioni, Van der Marel, Hollweg, and Zavacka, 2015) and conduct the analysis for both goods and services exports. Third, we add to the literature on turning points and transitions, with other studies focusing on shifts in GDP per capita growth,[2] the savings rate (Rodrik, 2000; Ebeke, 2014), productivity (Cadot, de Melo, Plane, Wagner, and Woldemichael, 2016) and fiscal expenditure (Carrère and de Melo, 2012). Fourth, we use the synthetic control method to carry out two case studies illustrative of post-surge performance, hence contributing to the literature on the relationship between trade and growth, as well as trade and welfare.[3]

[2] See for example Ben-David and Papell (1998); Jones and Olken (2005); Jerzmanowski (2006); Jones and Olken (2008); Guillaumont and Wagner (2012); and Berg, Ostry, and Zettelmeyer (2012).

[3] See Winters (2004) for an overview of the recent literature on trade and growth. Additionally, an extensive

We find that export accelerations have been relatively frequent events across the developing world. Many episodes occurred in the second half of the 1980s, probably reflecting the transition from import substitution strategies to export-led growth, and the first half of the 2000s, in line with the information and communication technology (ICT) revolution and the rise of global value chains (GVCs). The probability of experiencing a goods export acceleration for a given country stands at 26.6 percent in our sample, against 33.1 percent for services. Institutional quality underpinned by macroeconomic stability, a competitive currency and market-oriented agricultural reforms show up as strong predictors of export takeoffs. Lowering barriers to competition in the telecommunication and electricity markets and lifting capital movement restrictions boost services exports, although domestic financial liberalization in the form of banking and securities market reforms does not seem to have a bearing on the initiation of export surges. FDI inflows bolster goods export accelerations, probably on the back of foreign technology transfers and knowledge spillovers. Progress in product diversification triggers not only goods but also services export accelerations, highlighting the servitization of manufacturing and the instrumental role of services inputs in trade in goods.

We also find strong evidence that the fragmentation of production across the world gives EMDEs the opportunity to experience strong and sustained export growth. They seem to take most advantage of the acceleration-triggering effect of "slicing up the value chain" when they act as intermediate input providers for downstream countries, notwithstanding the gains they reap from backward linkages. Considering modern services, only GVC participation through imports of foreign goods and services appears to promote surges, probably because their production and export hinges on quality inputs that are not available locally. Turning to post-acceleration performance based on the case studies of Brazil and Peru, we find that post-surge GDP per capita is higher in the latter, while the evidence is inconclusive for the former. In contrast, both countries experienced lower unemployment rate and income inequality, underscoring the benefits of high and sustained export growth in terms of improved income distribution and labor market conditions.

The remainder of the paper is organized as follows. Section 3.2 describes the methodology used to identify export accelerations and provides stylized facts, including preliminary evidence from event analysis. Section 3.3 presents the empirical analysis of the determinants of export takeoffs, as well as robustness checks. Section 3.4 discusses post-surge performance for Brazil and Peru using the synthetic control method. Section 3.5 concludes.

survey of the literature on trade liberalization, inequality and poverty is provided by Winters, McCulloch, and McKay (2004) and Goldberg and Pavcnik (2007).

3.2 Identification of Export Acceleration Dates

3.2.1 Methodology

Following Freund and Pierola (2012), we define an export acceleration as a significant increase in export growth that is sustained for at least 7 years.[4] Borrowing from Cadot, Disdier, Jaud, and Suwa-Eisenmann (2015), let v_{it} be the level of exports of country i at time t, and $g_{it} = \ln(v_{it}) - \ln(v_{it-1})$ the real growth rate of exports. The term *takeoff* refers to a seven-year period, with the surge date being its first year, and the *baseline* is the seven-year period immediately preceding it. Subsequently, we define g_{it}^1 and g_{it}^0 as the real average export growth during the takeoff and baseline periods respectively. Ultimately, the identification of the timing of export acceleration episodes relies on the simultaneous application of four criteria:

(1) $g_{it}^1 > \bar{g}$

(2) $g_{it}^1 > \alpha * g_{it}^0$ and $g_{it}^1 > g_{it}^0 + \beta$

(3) $min(v_{it}, v_{it+1}, ..., v_{it+6}) > max(v_{it-7}, v_{it-6}, ..., v_{it-1})$

(4) $g_{it}^1 \backslash \{max(g_{it}, g_{it+1}, ..., g_{it+6})\} > g_{it}^0$

Criterion 1 implies that real average export growth during takeoff is strong and above the world median value $\bar{g}$. Criterion 2 ensures that increases in export growth are substantial by imposing that the real average export growth during takeoff increases by one third from the baseline growth rate ($\alpha = 1.3$) and exceeds it by at least 3 percentage points ($\beta = 0.03$).[5] To rule out volatility-driven surges, criterion 3 requires that the minimum level of exports observed during takeoff be higher than the maximum level of exports observed over the baseline period. Finally, criterion 4 avoids retaining accelerations triggered by one-year of very strong growth by imposing that the real average growth rate during takeoff, excluding the year of strongest growth, be greater than real average growth during baseline.

To identify export accelerations, only countries with export spells of at least 14 years are considered, i.e. periods with missing observations are excluded. In the event of contiguous eligible years, we allow countries to have several instances of export accelerations as long as

[4] We also use six and eight-year periods for robustness purposes in Section 3.3.3.

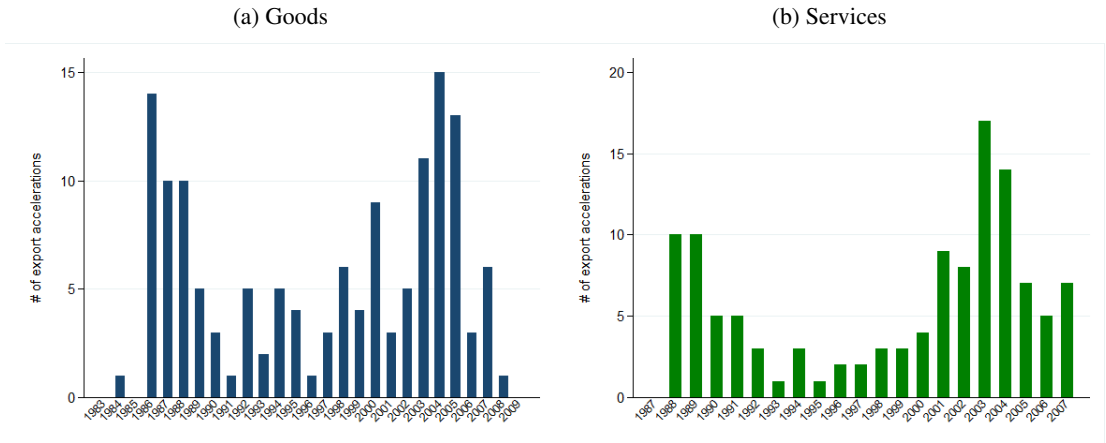
[5] The thresholds are taken from Freund and Pierola (2012), but we also conduct robustness checks by modifying the cutoff parameters in Section 3.3.3.

the dates are at least eight years apart. We investigate the timing of export accelerations for both goods and services exports. Mirror data on merchandise exports are taken from UN COMTRADE over 1976-2015. We focus on aggregate exports excluding fuels (SITC rev. 2 section 3) and minerals (divisions 27, 28 and 68) to avoid identifying surges that are driven by global commodity price booms.[6] Services export series are culled from the joint ITC-UNCTAD-WTO trade in services dataset and span 1980-2013.[7] Given data availability and the definition of the criteria, the earliest possible initiation date of a goods (services) export acceleration is 1983 (1987) and the latest 2009 (2007).

3.2.2 Stylized Facts

Applying the filters on a sample of 149 (138) emerging market and developing economies yields 140 (119) accelerations in goods (services) exports. Figure 3.1 shows the timing of export surges for goods and services separately. Export takeoffs were more frequent in the second half of the 1980s, probably reflecting the transition from import substitution strategies to export-led growth. The first half of the 2000s also hosted a large number of accelerations, especially in services, in line with the information and communication technology revolution and the rise of GVCs.

Figure 3.1: Timing of Export Accelerations



Notes: Authors' elaboration based on UN COMTRADE and the joint ITC-UNCTAD-WTO trade in services database.

The geographical distribution of export accelerations depicted in Figure B1 in the Appendix reveals significant dynamism across the developing world, with a remarkable performance by

[6] We also exclude section 9 "miscellaneous goods" and UN special codes. Table B1 in the Appendix provides more detail on the classification of goods exports.

[7] Table B2 in the Appendix gives the classification of services based on the IMF's Balance of Payments Manual, Fifth Edition.

Costa Rica, which stands out as the only country with three goods export surges during the period under study. Table 3.1 indicates that after normalizing the occurrence of accelerations by the number of countries, emerging and developing Europe appears as the best performing region with an average of 1.30 goods acceleration per country, followed by Latin America and the Caribbean (LAC) (1.19) and Middle-East and North Africa (1.14), while emerging and developing Asia ranks first in terms of the average number of services export accelerations per country (1.25), far ahead of other regions.[8] For both types of exports, the smallest figures are recorded by Sub-Saharan Africa (SSA).

Table 3.1: Stylized Facts by Income Group, Region and Main Source of Export Earnings

	Number of countries		Number of accelerations		Average nb. of accelerations		Prob. of an export acceleration	
	Goods	Services	Goods	Services	Goods	Services	Goods	Services
Whole Sample	149	138	140	119	0.94	0.86	26.62%	33.06%
By Income Group								
Low-income	32	30	23	23	0.72	0.77	18.85%	29.87%
Middle-income	99	90	94	82	0.95	0.91	26.78%	34.17%
Lower-middle-income	47	45	44	44	0.94	0.98	26.35%	37.29%
Upper-middle-income	52	45	50	38	0.96	0.84	27.62%	31.15%
High-income	18	18	23	14	1.28	0.78	34.33%	32.56%
By Region								
Emerging and developing Asia	29	24	26	30	0.90	1.25	23.64%	45.45%
Emerging and developing Europe	10	9	13	8	1.30	0.89	40.63%	38.10%
Commonwealth of Independent States	12	10	8	8	0.67	0.80	33.33%	66.67%
Latin American and Caribbean	32	32	38	26	1.19	0.81	29.92%	27.37%
Middle-East and North Africa	22	20	25	18	1.14	0.90	28.74%	34.62%
Sub-Saharan Africa	44	44	30	29	0.68	0.66	18.75%	25.00%
By Main Source of Export Earnings								
Fuel	28	25	27	17	0.96	0.68	25.96%	28.81%
Non-Fuel	121	113	113	102	0.93	0.90	25.92%	33.89%
Manufactures	16	16	23	19	1.44	1.19	41.82%	41.30%
Primary products	29	27	21	18	0.72	0.67	18.92%	26.06%
Services	44	41	34	28	0.77	0.68	21.66%	25.93%
Diversified	32	29	35	37	1.09	1.28	30.97%	47.44%

Notes: Classification by income group from the World Bank based on per capita gross national income (GNI): (i) low-income: $\leqslant$ \$1,045; (ii) lower-middle-income: \$1,046 - \$4,125; (iii) upper-middle-income: \$4,126 - \$12,745; (iv) high-income: $>$ \$12,745. Analytical breakdowns by region and main source of export earnings taken from the IMF World Economic Outlook database (October 2015). Middle-East and North Africa includes Afghanistan and Pakistan. *Fuel* includes exports under SITC section 3 and *Non-Fuel* encompasses exports under SITC sections 0, 1, 2, 4 and division 68 (Table B1 in the Appendix provides more detail on goods export disaggregation). Countries are categorized into one of these groups when their main source of export earnings exceeded 50 percent of total exports on average between 2010 and 2014. Table B3 in the Appendix indicates the countries included in each grouping.

The sample breakdown by World Bank income group suggests a non-monotonous relation-

[8]Table B3 in the Appendix provides the list of countries included in each regional grouping, together with their associated export acceleration dates, if any. Each country's income group and main source of export earnings are also indicated.

ship between the probability of export takeoffs and the level of development, at least for services where the average number of accelerations per country stands at 0.77 for LICs, against 0.98 for lower-middle-income countries, and 0.78 for high-income EMDEs. Furthermore, countries whose export revenues are primarily sourced from manufactures and those with a diversified source of export earnings witnessed the highest average number of goods and services export accelerations.

Table 3.1 also reports unconditional probabilities computed by dividing the number of export accelerations identified by the number of country-year observations in which an acceleration could have occurred. The denominator is arrived at by summing all the observations in the sample and (i) removing the six-year window after the start of each export takeoff since this period is considered to belong to the same episode; and (ii) dropping for each country in the sample the first and last seven years of data since by definition the initiation of an export surge cannot take place during these years. We find that a given country has a 26.6 percent likelihood of experiencing a goods export acceleration, against 33.1 percent for services. These figures hide substantial disparities across regions and income groups. For instance, high-income EMDEs are about twice as likely to enjoy a goods export acceleration than low-income EMDEs, but the difference is not as sizeable for services, suggesting that exporting services seems at the reach of all EMDEs, at least relative to goods. Similarly, with probabilities of 18.8 and 25 percent only, SSA countries are the least likely to witness export takeoffs in goods and services respectively. In contrast, major exporters of manufactures record probabilities of export accelerations exceeding 40 percent, way above the average figures reported for the whole sample.

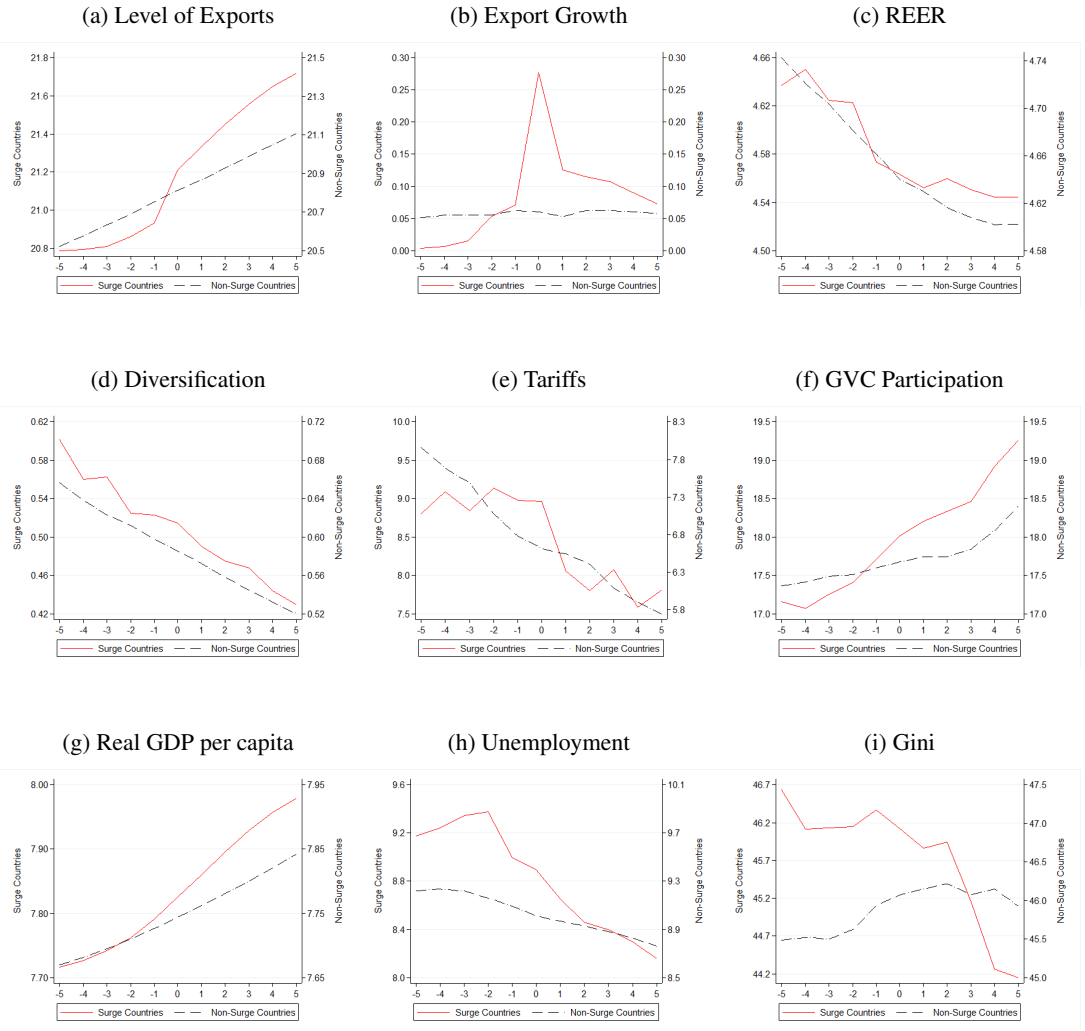
3.2.3 Event Studies

In this section, we examine the time path of selected economic and social indicators of an average country which experienced an export acceleration. Similar to Wacziarg and Welch (2008) with trade liberalization dates, we resort to the event methodology to depict the behavior of selected variables five years around the initiation date of the export surge. This exercise is carried out for both goods and services export acceleration dates with the aim of identifying potential predictors, before turning to a more formal analysis of the determinants of export accelerations in Section 3.3.

Figures 3.2 and 3.3 report the mean evolution of selected variables around the surge year.[9] Analytical time is given on the x-axis with $t = 0$ being the initiation date. The time path

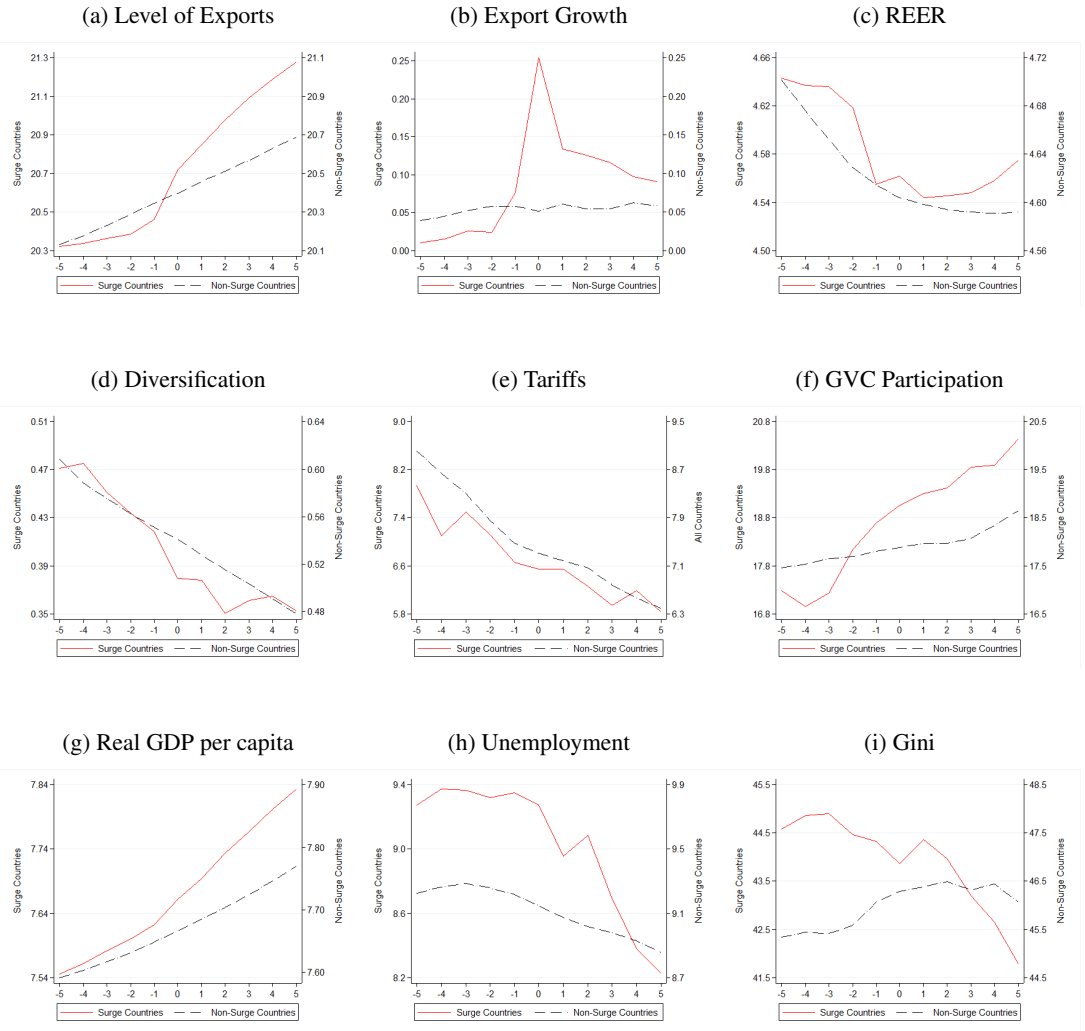
[9] A detailed description of each variable is available in Table B4.

Figure 3.2: Around the Initiation Date of Goods Export Accelerations



Notes: Authors' calculations based on UN COMTRADE, WDI, IFS, IMF Diversification Toolkit and EORA MRIO. (a) log of real merchandise exports (constant 2010 USD); (b) log difference of real merchandise exports, (0.2 = 20%); (c) log of the real effective exchange rate index (2010=100); (d) Theil index at the extensive margin, lower values indicate higher diversification; (e) average of effectively applied rates for all products subject to tariffs,(%); (f) share of foreign value-added in gross exports; (g) log of real GDP per capita (constant 2010 USD); (h) share of unemployed in total labor force (%); (i) Gini index, higher values imply higher income inequality. Analytical time is given on the x-axis. The solid red line refers to the time path of the considered variable for an average country that experienced one export acceleration in $t = 0$, the dashed-dotted black line represents the time path for an average country that did not experience an export acceleration in $t = 0$. Sample restricted to countries with continuously available data over the 5 years before and after the initiation date.

Figure 3.3: Around the Initiation Date of Services Export Accelerations



Notes: Authors' calculations based on UN COMTRADE, the joint ITC-UNCTAD-WTO trade in services database, WDI, IFS, IMF Diversification Toolkit and EORA MRIO. (a) log of real services exports (constant 2010 USD); (b) log difference of real services exports, (0.2 = 20%); (c) log of the real effective exchange rate index (2010=100); (d) Theil index at the extensive margin, lower values indicate higher diversification; (e) average of effectively applied rates for all products subject to tariffs,(%); (f) share of foreign value-added in gross exports; (g) log of real GDP per capita (constant 2010 USD); (h) share of unemployed in total labor force (%); (i) Gini index, higher values imply higher income inequality. Analytical time is given on the x-axis. The solid red line refers to the time path of the considered variable for an average country that experienced an export acceleration in $t = 0$, the dashed-dotted black line represents the time path for an average country that did not experience an export acceleration in $t = 0$. Sample restricted to countries with continuously available data over the 5 years before and after the initiation date.

for an average country that experienced an export acceleration in $t = 0$ is illustrated by the solid red line (left-axis), whereas the dashed-dotted black line stands as a counterfactual by representing the time path for an average country in the sample that did not record an export acceleration in $t = 0$ (right-axis), considering all EMDEs listed in Tables B3.[10] Graphs are generated based on a balanced sample of episodes after restricting the sample to countries with continuously available data five years before and after the surge date in view to ensuring that depicted movements reflect within-country changes only, abstracting from variations that may be induced by the addition or subtraction of particular observations (Freund and Pierola, 2012). Axes are adjusted to reflect the same percentage change for both series.

Graphs (a) and (b) display the mean evolution of the level and growth of exports around the initiation date. As expected, exports increase significantly at the surge time, and export growth accelerates as depicted by the sharp spike during takeoff. As in Cadot, Disdier, Jaud, and Suwa-Eisenmann (2015) and Cadot, de Melo, Plane, Wagner, and Woldemichael (2016), we observe a ratchet effect on real exports since levels seem to remain permanently higher after the initiation date, whereas mean reversion occurs in growth rates, for both goods and services. Two years before the surge date, the average country typically records a real effective exchange rate (REER) depreciation of almost 6 percent, a figure that is larger than the depreciation registered by its non-surge counterpart (Figures 3.2c and 3.3c). Similarly, the downward trend in the Theil index exhibits a sharper slope for surge countries relative to the counterfactual, suggesting that diversification is important for triggering export acceleration episodes (Figures 3.2d and 3.3d). Although the reduction in tariffs during the baseline period is not apparent compared to the counterfactual behavior (Figures 3.2e and 3.3e), the rise in GVC participation is clearly visible, with the foreign value-added content of exports increasing by 5 to 10 percent for the average surge country, against only around 2 percent for the counterfactual (Figures 3.2f and 3.3f).

Graphs (g)-(i) show the average behavior of real GDP per capita, unemployment and income inequality five years before and after a surge starts. The post-acceleration trajectories of these three variables are formally assessed in Section 3.4 using the synthetic control method, but Figures 3.2 and 3.3 offer a first look at the data. Surge countries appear to grow considerably faster after an export acceleration compared to their non-surge counterparts (Figures 3.2g and

[10] We proceed as follows to compute the counterfactual line: for each year identified as an actual initiation date for at least one country, we compute the average value of the variable over the sample of non-surge countries, i.e. countries that did not record an acceleration at the considered date, after organizing the data in five-year windows centered on the "hypothetical" surge year. Then for each of the eleven analytical years comprising the five-year window, we compute the average behavior of the variable across all available years identified as an actual initiation date for at least one country.

3.3g). Unemployment recorded a remarkable fall, with an 8 to 11 percent decrease over the post-acceleration phase, while the counterfactual rate only declined by an approximate 3 percent over the same period (Figures 3.2h and 3.3h). Income inequality in surge countries, measured by the Gini index, fell noticeably by 2 percentage points during the five-year period that followed the export takeoff date, while countries that did not experience an export acceleration only recorded a meagre 0.2 percentage point decrease (Figures 3.2i and 3.3i).

3.3 Correlates of Export Accelerations

3.3.1 Econometric Model

We formally investigate the determinants of export takeoffs using regression analysis. Specifically, we estimate the following probit model of the timing of export accelerations:

$$Pr(EA_{it} = 1) = \phi \left[\delta_0 \ln(GDPcap_{it-2}) + \delta_1 \ln(GDPcap^2_{it-2}) + \delta_2 \ln(Population_{it-2}) + \delta_3 Market\ Access_{it-2} + \delta_4 Human\ capital_{it-2} + \delta_5 X_{it-2} + \sum \lambda_t D_t\right]$$

where ϕ is the cumulative normal distribution. The dependent variable EA_{it} is a dummy that equals 1 over the three-year window centered on the initiation year of the export acceleration (i.e. for $t-1$, t and $t+1$) . As in Hausmann, Pritchett, and Rodrik (2005), Carrère and de Melo (2012) and Ebeke (2014), we impose a three-year window to reduce the likelihood of narrowly missing the timing of an acceleration through quirks in the data or method. The sample is not restricted to countries that have experienced export accelerations,[11] but we adjust it as follows: (i) we drop the first and last seven years of data as export acceleration episodes could not have been calculated for those years given the identification criteria; (ii) since we are interested in uncovering the variables that contribute to triggering export takeoffs, we drop all data pertaining to years $t+2, \ldots, t+7$ of an episode.

We opt for a parsimonious baseline specification controlling for country size, the level of development, market access and human capital. Fernandes, Freund, and Pierola (2016) show that country size and stage of development matter for export performance, as larger countries and developed economies export more because they host large firms that account for a significant share of exports. Export survival also tends to be lower at an early stage of development, suggesting a positive relationship between income and export accelerations. We subsequently include pop-

[11] Table B3 gives the list of countries included in the analysis.

ulation to proxy for country size, and real GDP per capita to capture the level of development, both drawn from WDI. For the latter, we include the squared term to allow for non-linear effects of income so as to account for a possible non-monotonous relationship between the occurrence of export accelerations and the level of development, as suggested by the stylized facts described in Section 3.2.2. In addition, the baseline model controls for country membership in economic integration agreements, computed as the weighted sum of all economic agreements a country participates in taken from Jeffrey Bergstrand's website, with the weights corresponding to the partner's market size (Cadot, Carrère, and Strauss-Kahn, 2014). We also include the secondary school enrollment rate sourced from WDI to account for the importance of the availability of skilled labor in supporting high and sustained export growth. Year dummies D_t are included to capture time-varying unobserved heterogeneity common to all countries, such as international commodity price shocks.

Table B4 in the Appendix provides the description and source of variables, while summary statistics are presented in Table B5. All explanatory variables are lagged by two years to mitigate reverse causality issues. Investigated determinants of the timing of export accelerations are captured by X_{it-2} and are entered one at a time to avoid multicolinearity. They are elaborated in the following three categories.

Macroeconomic Stability and Trade Competitiveness

We test whether export accelerations are more likely to take place in a sound business environment underpinned by political and macroeconomic stability. To this end, we calculate an indicator of government quality as the average of the variables "Corruption", "Law and Order" and "Bureaucracy Quality" which enter in the computation of the ICRG country political risk rating. They measure (i) the extent to which corruption threatens the effective conduct of business; (ii) the strength and impartiality of the legal system and observance of the law; and (iii) the institutional strength and quality of the bureaucracy expected to act as a cushion against drastic changes in policy or interruptions in government services in the event of a change in government.[12] Furthermore, in line with Fosu (2003) who finds that political instability hurts export growth, we consider a measure of the perceptions of the likelihood of political instability and politically-motivated violence drawn from WGI. We complement these indicators with a proxy for economic uncertainty, namely real effective exchange rate (REER) volatility, in line with the literature on the negative impact of exchange rate uncertainty on exports (Arize, Osang, and Slottje, 2000; Rahman and Serletis, 2009; Chit, Rizov, and Willenbockel, 2010). It is calcu-

[12]This measure was also used as an inddicator of government quality by Cadot, Carrère, and Strauss-Kahn (2014).

lated as the standard deviation of the annual REER over the past five years using data from the IMF's IFS. We argue that poor government quality and political and economic instability deter investment and depress export activities, thereby reducing the likelihood of export accelerations (Aizenman and Marion, 1993; Bleaney and Greenaway, 2001).

In addition to institutional quality and macroeconomic uncertainty, we examine whether trade policy and exchange rate competitiveness help predict export takeoffs. Extending the work of Sachs and Warner (1995), Wacziarg and Welch (2008) show that trade liberalization, defined as the implementation of a broad economic reform package including measures aimed at lowering tariffs, raises the trade-to-GDP ratio. In the same vein, several studies have evidenced a positive impact of intermediate input tariff liberalization on export performance thanks to increased availability and diversity of inputs and access to the foreign technology embodied in imported goods. For instance, using firm-level data, Bas (2012) finds that input tariff reductions raise the probability of firm entry into export markets, while Bas and Strauss-Kahn (2014) evidence a positive impact on the number of products exported. Access to imported inputs also enhances export survival (Lopez, 2006; Wagner, 2013) and the volume and diversity of exported products (Edwards, Sanfilippo, and Sundaram, 2017; Feng, Li, and Swenson, 2016). Taken together, these studies suggest that tariff liberalization could play a role in boosting goods exports. Since manufacturing firms also increasingly offer services bundled with the good they sell in foreign markets (Crozet and Milet, 2017), lowering import tariffs should also benefit services exports. Drawing on these bodies of literature, we use data on average applied tariff rates taken from WDI to assess whether reducing barriers to imports contributes to initiating export accelerations. Furthermore, we test whether a competitive currency helps trigger export takeoffs by relying on the REER index taken from IMF's IFS. Based on a sample of Asian countries, Fang, Lai, and Miller (2006) show that exchange rate depreciation fosters exports, while Bernard and Jensen (2004) find a positive effect on the intensive margin of US exports. Depreciation also contributed to Turkey's export boom in the 1980s (Arslan and van Wijnbergen, 1993). Similarly, Freund and Pierola (2012) find that exchange rate depreciation is positively associated with subsequent manufactures export growth in developing countries. Eichengreen and Gupta (2013) confirm the positive and significant effect of real exchange rate depreciation on export growth, with a larger effect for services.

Product Market Reforms and Financial Liberalization

Export growth may also depend on the successful adoption of product market and financial reforms. Taking advantage of Prati, Onorato, and Papageorgiou (2013)'s database, we inves-

tigate the role of structural reforms aimed at stimulating product market competition. First, we use the agricultural reform index which measures the extent of public intervention in the market of the country's main agricultural export commodity by capturing the presence of export marketing boards and the incidence of administered prices. Unsustainable budget deficits, poor management and susceptibility to rent-seeking and corruption are among the reasons that historically motivated the commercialization or privatization of marketing boards in developing countries (Barrett and Mutambatsere, 2008). The push for liberalizing parastatal food marketing systems also aimed at reducing the role of the government in favor of stepped up private sector participation in view to promoting more competitive and efficient markets (Barrett, 1997). We investigate whether agricultural reforms leading to a substitution of sound private agricultural marketing channels for the public market authority would in turn support high and sustained export growth.[13]

Second, we assess whether the degree of liberalization in the telecommunication and electricity markets – captured by the extent of competition in the provision of these services and the existence of an independent regulator – has a bearing on export accelerations. In line with Freund and Weinhold (2002) who emphasize the role of the Internet in spurring growth in services trade, and Lennon, Mirza, and Nicoletti (2009) who show that the quality and quantity of telecommunications infrastructure matter for trade, we argue that firms' access to reliable and quality utilities is crucial for supporting export activities. The literature indicates that services liberalization benefits firms operating in deregulated sectors through a direct competition effect that induces innovation and the adoption of new technologies (Lanau and Topalova, 2016), possibly triggering services export accelerations. Downstream firms using the output of deregulated sectors also enjoy greater availability and higher quality of inputs, consistent with Arnold, Mattoo, and Narciso (2008) who find that reduced barriers to competition in telecommunication services in SSA boost manufacturing productivity. By the same token, Arnold, Javorcik, and Mattoo (2011) and Arnold, Javorcik, Lipscomb, and Mattoo (2016) show that liberalization in services industries such as telecommunications in the Czech Republic and India accelerated foreign entry and intensified competition, yielding productivity gains for downstream manufacturing firms relying on services inputs. Combined with the observation that only the most productive firms are likely to export (Melitz, 2003), these studies suggest that the liberalization of network industries should be conducive to export accelerations. More directly, Bas (2014)

[13]Notwithstanding, Barrett and Mutambatsere (2008) also describe instances of incomplete agricultural market reforms that generated market instability and undermined investor confidence due to insufficient private investment in storage and transport infrastructure, inadequate private commercial trading skills and limited access to finance.

finds that energy, telecommunications and transport services reforms in India enhance manufacturing firms' probability of exporting and export sales share.

Relatedly, financial openness – the deregulation of domestic financial markets and the liberalization of the capital account (Rancière, Tornell, and Westermann, 2008) – may also play a role in igniting export acceleration episodes. Financial liberalization reduces the cost of capital through improved risk sharing and increased availability of foreign capital (Bekaert and Harvey, 2000; Henry, 2000; Bekaert, Harvey, and Lundblad, 2005). For example, Laeven (2003) finds that the liberalization of the banking sector reduces firms' financing constraints. In the same vein, Arnold, Javorcik, Lipscomb, and Mattoo (2016) document India's banking sector liberalization which took, inter alia, the form of interest rate deregulation, increased approval of new banks, higher foreign ownership of private banks and greater flexibility for banks in choosing borrowers and designing loan terms. Banking reforms created strong competition in the sector and went hand in hand with the provision of a wide range of new and high quality services products to manufacturing firms, thereby improving their access to finance and raising their productivity. Similarly, Manova (2008) shows that equity market liberalizations stimulate aggregate exports, especially for sectors that are more dependent on external finance. In line with these studies, we verify whether financial openness bolsters trade by alleviating credit market imperfections, consistent with the micro literature that documents the adverse effects of financing constraints on export participation.[14]

We consider two measures of financial sector reforms, namely the index of domestic financial liberalization and capital account openness, both from Prati, Onorato, and Papageorgiou (2013). Domestic financial liberalization covers reforms pertaining to the banking sector and the securities market. The former measures the reduction or removal of (i) interest rate controls such as floors or ceilings; (ii) credit controls; (iii) competition restrictions such as entry barriers in the banking sector; (iv) the degree of state ownership; and (v) a measure of the quality of banking supervision and regulation. Financial reforms relating to the securities market capture policies

[14] See for example Minetti and Zhu (2011) on Italy; Muûls (2015) on Belgium; Manova, Wei, and Zhang (2015) on China; and Kiendrebeogo and Minea (2016) on Egyptian manufacturing firms. Notwithstanding, financial liberalization could also hinder export takeoffs if it encourages excessive risk-taking, giving rise to more volatile capital flows that are prone to sudden reversals (IMF, 2012). Massive capital inflows following capital account liberalizations may lead to exchange rate appreciation and undermine the competitiveness of the tradable sector (Ostry, Ghosh, Habermeier, Chamon, Qureshi, and Reinhardt, 2010); they may also fuel credit booms and asset price bubbles which can amplify financial fragility and crisis risk (Dell'Ariccia, Igan, Laeven, and Tong, 2012; Mendoza and Terrones, 2012, and Schularick and Taylor, 2012). Kaminsky and Reinhart (1999) find that financial liberalization often precedes banking crises, which have been shown to jeopardize firms' export activity through reduced access to credit, especially trade finance (Iacovone and Zavacka, 2009; Amiti and Weinstein, 2011; Chor and Manova, 2012 and Kiendrebeogo, 2013).

designed to promote the development of bond and equity markets, and access of the domestic stock market to foreigners. The capital account openness index measures the extent to which residents and non-residents can freely move capital into and out of the country. We complement this indicator with foreign direct investment (FDI) inflows expressed as a percentage of GDP and taken from UNCTAD. FDI is one of the modes of supplying non-tradable services (Francois and Hoekman, 2010), typically through a foreign affiliate that establishes a commercial presence in the domestic economy. FDI affects export performance by facilitating the transfer of technology and knowlege spillovers to domestic firms (Fugazza, 2004). Van der Marel (2012) finds a positive association between inward FDI and productivity in services, while Fernandes and Paunov (2012) show that FDI inflows in services boost manufacturing firms' productivity in Chile, therefore suggesting a possible export acceleration-triggering effect.

Export Diversification and GVC Participation

We also assess whether countries with a diversified export portfolio are more likely to experience episodes of high and sustained export growth. We exploit the IMF Diversification Toolkit where the aggregate Theil index of export concentration further maps into the intensive ("within" Theil) and extensive ("between" Theil) margins as in Cadot, Carrère, and Strauss-Kahn (2011). Diversification at the extensive margin occurs when the number of new products exported increases, or when the country starts serving new foreign markets. In contrast, diversification at the intensive margin reflects convergence in export shares among existing exports. The literature disagrees on which margin contributes most to export growth. For instance, Hummels and Klenow (2005) find that 60 percent of large economies' export growth is attributable to the extensive margin, while Helpman, Melitz, and Rubinstein (2008); Brenton and Newfarmer (2007) and Amurgo-Pacheco and Pierola (2008) show the predominance of the intensive margin. Besedes and Prusa (2011) also argue that growth at the intensive margin through higher survival and deepening of trade relationships is more important to long-run export performance. By considering both "within" and "between" components of the Theil index, we investigate which margin is most conducive to export takeoffs.

Finally, we examine whether participation in cross-border production chains has a bearing on export accelerations. We argue that the fragmentation of production across the world gives EMDEs the opportunity to increase their participation in global trade by integrating in specific parts of the value chain. Firms can source intermediate inputs from other countries to produce and sale their output in foreign markets, which can itself be used as an input in the production of other countries' exports. We use data from Aslam, Novta, and Rodrigues-Bastos (2017) who

exploit the EORA Multi-region Input-Output (MRIO) dataset[15] to compute measures of trade in value-added based on Koopman, Wang, and Wei (2014)'s decomposition of gross exports. More specifically, we are interested in (i) the foreign value-added content of exports (FVA) used as a proxy for downstream involvement (or backward participation) of countries in GVCs since it represents the share of gross exports consisting of inputs that have been produced in other countries; (ii) "indirect value-added exports" or DVX, which is the portion of gross exports created in-country that enters as an intermediate input in the value-added exported by other countries (forward participation), including value-added that returns to the original country via imports (Koopman, Powers, Wang, and Wei, 2010; UNCTAD, 2015; IMF, 2015); (iii) " Term 3" in Koopman, Wang, and Wei (2014)'s nine-term decomposition of gross exports which represents the domestic value-added content of intermediate inputs that are re-exported to third countries. We use this variable as a proxy for a country's participation in longer value chains as in IMF (2015). Our overall measure of GVC participation consists of the sum of DVX and FVA, hence reflecting both upstream and downstream involvement in multi-stage trade process.

3.3.2 Baseline Results

Tables 3.2 to 3.4 display the baseline regression estimates, with the left panel reporting the marginal coefficients from the estimation of the probit model of goods export accelerations, and the right panel showing the results for export surges in services. Additional statistics are provided at the bottom of each table. They include the number of export acceleration episodes included in each regression, as well as the pseudo R^2 and McFadden's pseudo R^2 which measure the model's fit. The predictive ability of the probit model is gauged with the percentage of cases correctly classified, i.e. the proportion of export acceleration observations that are correctly predicted.[16] Coefficients on the baseline regressors are broadly significant and bear the expected sign. Population consistently enters with a statistically significant and positive sign, suggesting that large economies have a higher probability of witnessing export takeoffs. Results also reveal a U-shaped relationship between the occurrence of surges and income per capita, confirming the stylized fact discussed in Section 3.2.2. Consistent with Baier and Bergstrand (2007) who find a positive impact of FTAs on members' international trade and Hannan (2016) who demonstrates that trade agreements boost exports, countries belonging to economic zones are more likely to enjoy instances of high and sustained export growth, although the effect is only statistically

[15] See Lenzen, Kanemoto, Moran, and Geschke (2012) and Lenzen, Moran, Kanemoto, and Geschke (2013).

[16] The percentage of cases correctly classified is identified by using the share of observations for which $EA_{it} = 1$ as the cutoff value for determining whether the predicted outcome is positive.

significant for goods. Human capital accumulation increases the probability of occurrence of an export acceleration, underscoring the importance of skilled labor. This is for instance in line with Lennon (2009) who finds that secondary school enrollment positively influences services trade.

Table 3.2: Export Accelerations: Institutional Quality, Macroeconomic Sability and Trade Competitiveness

Dependent variable	Goods Export Acceleration Dummy					Services Export Acceleration Dummy				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Log real GDP cap.	-0.262***	-0.238	-0.188	-0.235	-0.074	-0.232*	-0.075	-0.122	-0.119	-0.321
	(0.097)	(0.166)	(0.162)	(0.172)	(0.201)	(0.128)	(0.205)	(0.208)	(0.219)	(0.294)
Log real GDP cap.^{2}	0.017***	0.014	0.011	0.015	0.003	0.011	0.002	0.005	0.005	0.016
	(0.006)	(0.011)	(0.010)	(0.011)	(0.013)	(0.008)	(0.013)	(0.013)	(0.014)	(0.018)
Log population	0.054***	0.025**	0.049***	0.047***	0.043***	0.031***	0.072***	0.050***	0.041***	0.061***
	(0.009)	(0.011)	(0.007)	(0.007)	(0.010)	(0.009)	(0.012)	(0.008)	(0.008)	(0.014)
Market access	0.337***	0.470***	0.175**	0.233***	0.097	-0.063	-0.067	-0.129	-0.065	-0.169
	(0.082)	(0.117)	(0.089)	(0.090)	(0.109)	(0.083)	(0.128)	(0.091)	(0.092)	(0.168)
Secondary education	0.004***	0.002**	0.003***	0.003***	0.003**	0.002***	0.002	0.002*	0.001	0.004**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)
Governance ICRG	0.044**					0.059***				
	(0.017)					(0.021)				
Political stability		-0.002					0.083**			
		(0.024)					(0.032)			
REER volatility			-0.003***					-0.004***		
			(0.001)					(0.002)		
Log REER index				-0.142***					-0.146***	
				(0.033)					(0.045)	
Tariffs (%)					-0.003					-0.001
					(0.003)					(0.004)
Observations	911	505	567	668	386	827	445	458	522	323
Countries	93	125	60	62	106	92	127	61	63	101
Accelerations included	67	33	43	45	25	55	31	31	34	33
McFadden R^2	0.166	0.130	0.175	0.176	0.135	0.135	0.114	0.208	0.189	0.116
Pseudo R^2	0.145	0.111	0.148	0.146	0.116	0.12	0.112	0.172	0.155	0.122
Observed % of EA = 1	20.86	18.42	19.75	18.86	18.91	20.19	24.49	19.87	18.97	28.79
% correctly classified	69.59	66.14	69.31	70.51	67.62	65.78	64.94	67.90	70.69	62.85

Notes: Probit estimates, robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Coefficients are marginal probabilities evaluated at the sample means. The dependent variable EA is a dummy for the timing of goods (Columns 1-5) or services (Columns 6-10) export accelerations which equals 1 over the 3-year window centered on the initiation date. All RHS variables are lagged by 2 years. The description and source of variables are provided in Table B4.

While enhanced business environment as measured by the ICRG government quality index is positively associated with the probability of observing an export acceleration for both goods and services, lower perceptions of political instability only seem to matter for services exports (Table 3.2). Together with the observation that the size of the coefficient on the government quality index is larger for services, this suggests that services exports are more sensitive to the quality of institutions than goods, in line with Amin and Mattoo (2006) who find that countries with better institutions have larger and more dynamic services sectors, and Nunn (2007) who argues that services require strong institutions. Table 3.2 also indicates that export takeoffs are more likely to occur in a context of low macroeconomic uncertainty. The effect of trade policy measures aimed at cutting tariffs on imported goods is negative, albeit statistically insignificant.

In contrast, we find that a 10 percent depreciation in the REER raises the probability of observing an export acceleration by 1.4 to 1.5 percentage points, hence conveying the message that a competitive currency contributes to launching export takeoffs.

Table 3.3: Export Accelerations: Product Market Reforms and Financial Liberalization

Dependent variable	Goods Export Acceleration Dummy					Services Export Acceleration Dummy				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Log real GDP cap.	-0.191	-0.085	0.292	0.039	-0.108	0.069	0.097	-0.025	-0.117	-0.214**
	(0.134)	(0.121)	(0.213)	(0.149)	(0.089)	(0.175)	(0.177)	(0.267)	(0.190)	(0.100)
Log real GDP cap.^{2}	0.014	0.008	-0.019	-0.004	0.008	-0.008	-0.009	-0.004	0.002	0.013**
	(0.009)	(0.008)	(0.014)	(0.010)	(0.006)	(0.011)	(0.011)	(0.017)	(0.012)	(0.006)
Log population	0.054***	0.053***	0.053***	0.048***	0.051***	0.038***	0.038***	0.034**	0.033***	0.043***
	(0.007)	(0.006)	(0.015)	(0.009)	(0.006)	(0.008)	(0.007)	(0.015)	(0.009)	(0.005)
Market access	0.338***	0.300***	0.413***	0.265***	0.247***	0.134*	0.045	0.100	0.009	0.005
	(0.072)	(0.063)	(0.113)	(0.089)	(0.064)	(0.074)	(0.070)	(0.109)	(0.092)	(0.060)
Secondary education	0.003***	0.002***	0.004***	0.004***	0.002***	0.001*	0.001*	0.003***	0.003***	0.001**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Agriculture index	0.061**					0.102***				
	(0.031)					(0.034)				
Networks index		-0.070					0.105			
		(0.061)					(0.069)			
Financial liberalization			-0.038					0.021		
			(0.141)					(0.135)		
Capital account openness				-0.005					0.103	
				(0.057)					(0.064)	
Log FDI inflow (% GDP)					0.013**					0.004
					(0.006)					(0.006)
Observations	986	1,082	630	881	1,252	827	889	549	712	1,114
Countries	91	97	60	82	139	89	94	59	80	137
Accelerations included	66	69	55	65	74	52	55	44	52	61
McFadden R^2	0.192	0.190	0.198	0.177	0.147	0.183	0.138	0.137	0.157	0.158
Pseudo R^2	0.16	0.156	0.184	0.157	0.122	0.152	0.118	0.132	0.141	0.126
Observed % of EA = 1	19.78	18.95	25.71	21.79	17.97	19.23	18.90	24.41	21.63	16.88
% correctly classified	71.10	71.17	72.06	69.35	68.93	70.38	67.49	68.12	69.94	67.59

Notes: Probit estimates, robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Coefficients are marginal probabilities evaluated at the sample means. The dependent variable EA is a dummy for the timing of goods (Columns 1-5) or services (Columns 6-10) export accelerations which equals 1 over the 3-year window centered on the initiation date. All RHS variables are lagged by 2 years. The description and source of variables are provided in Table B4.

Results for market-oriented structural reforms in the real and financial sectors are summarized in Table 3.3. Agricultural reforms are positively associated with the timing of export surges, with a one-unit rise in the index leading to a 6.1 and 10.2 percentage point increase in the likelihood of experiencing an export acceleration in goods and services respectively. Liberalization of the telecommunication and electricity markets has a positive effect on export initiations only in the case of services.[17] By raising competition through an ease of foreign entry into the domestic market, liberalization of network industries goes hand in hand with the removal of barriers to trade in services (Sáez, Taglioni, Van der Marel, Hollweg, and Zavacka, 2015). Our result is in line with the literature on the direct effects of services liberalization on firms operating in deregulated sectors (Lanau and Topalova, 2016) but does not seem to support the

[17]The coefficient on the index of network liberalization is significant at the 13 percent level.

idea of positive spillovers on downstream manufacturing firms producing and exporting goods. However, stepped-up FDI inflows bolster goods export takeoffs in the recipient country, probably on the back of increased transfer of foreign technology and know-how. Although domestic financial liberalization does not seem to have a bearing on the initiation of export accelerations, there is some evidence that lifting capital movement restrictions stimulates strong and sustained services exports.[18]

Table 3.4: Export Accelerations: Diversification and GVC Participation

Dependent variable	Goods Export Acceleration Dummy					Services Export Acceleration Dummy				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Log real GDP cap.	-0.160**	-0.157**	-0.062	-0.063	-0.066	-0.255**	-0.265**	-0.155	-0.164	-0.166
	(0.080)	(0.080)	(0.100)	(0.102)	(0.101)	(0.106)	(0.106)	(0.117)	(0.127)	(0.128)
Log real GDP cap.^{2}	0.012**	0.012**	0.004	0.004	0.004	0.015**	0.016**	0.008	0.008	0.009
	(0.005)	(0.005)	(0.006)	(0.006)	(0.006)	(0.007)	(0.007)	(0.007)	(0.008)	(0.008)
Log population	0.037***	0.036***	0.024***	0.023***	0.021***	0.032***	0.033***	0.026***	0.027***	0.025***
	(0.005)	(0.005)	(0.007)	(0.007)	(0.007)	(0.005)	(0.005)	(0.007)	(0.007)	(0.007)
Market access	0.185***	0.180***	0.176***	0.200***	0.196***	-0.008	-0.001	0.055	0.056	0.054
	(0.055)	(0.055)	(0.063)	(0.064)	(0.063)	(0.061)	(0.060)	(0.071)	(0.070)	(0.070)
Secondary education	0.001***	0.001***	0.002***	0.002***	0.003***	0.001	0.001	0.002***	0.002**	0.002***
	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Theil index	-0.040***					-0.039***				
	(0.010)					(0.011)				
Theil, extensive margin		-0.026					-0.057***			
		(0.016)					(0.020)			
Theil, intensive margin		-0.045***					-0.033***			
		(0.011)					(0.012)			
Log GVC (% exports)			-0.004					0.027		
			(0.035)					(0.043)		
Log FVA (% exports)				0.030	0.037*				0.044*	0.056**
				(0.021)	(0.020)				(0.025)	(0.025)
Log DVX (% exports)				0.074**					0.064**	
				(0.030)					(0.031)	
Log Term 3 (% exports)					0.115***					0.116***
					(0.032)					(0.035)
Observations	1,391	1,388	961	951	951	1,158	1,157	955	948	948
Countries	128	128	122	122	122	127	127	120	120	120
Accelerations included	81	81	51	51	51	68	68	60	59	59
McFadden R^2	0.159	0.158	0.129	0.139	0.147	0.154	0.153	0.146	0.149	0.157
Pseudo R^2	0.128	0.128	0.102	0.11	0.115	0.124	0.123	0.123	0.125	0.131
Observed % of EA = 1	17.47	17.44	16.03	16.19	16.19	17.27	17.20	18.64	18.57	18.57
% correctly classified	69.81	69.60	68.47	67.82	68.24	67.88	68.02	66.60	66.14	67.72

Notes: Probit estimates, robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Coefficients are marginal probabilities evaluated at the sample means. The dependent variable EA is a dummy for the timing of goods (Columns 1-5) or services (Columns 6-10) export accelerations which equals 1 over the 3-year window centered on the initiation date. All RHS variables are lagged by 2 years. The description and source of variables are provided in Table B4.

Table 3.4 sheds light on the role of export diversification in launching export takeoffs. The coefficient on the Theil index enters with the expected sign, and is quantitatively and qualitatively comparable across goods and services exports. The result for goods is driven by the "within" Theil index, suggesting that a more even distribution of already existing products' export shares matters more than adding new goods to the export basket. In contrast, both margins contribute to initiating services export accelerations. Given that the IMF Diversification

[18]The coefficient on capital account openness is statistically significant at the 11 percent level.

Toolkit provides data for merchandise exports only, this latter result hints at spillovers from goods to services as product diversification seems to promote services export accelerations. The instrumental role of services in the production, distribution and marketing of goods (Nordås, 2010) sheds light on this result, as well as the fact that manufacturing firms increasingly produce and sell services to third parties, a practice described as servitization (Vandermerwe and Rada, 1988) or servicification and shown to contribute to product differentiation and enhanced profit and competitiveness (Crozet and Milet, 2017).[19] Furthermore, Table 3.4 indicates that GVC participation through both backward and forward linkages matters, with participation in longer value chains exhibiting a coefficient that is not only more statistically significant but also three times (twice) larger in size than the one on FVA for goods (services) exports. In other words, EMDEs seem to take most advantage of the acceleration-triggering effect of "slicing up the value chain" when they act as intermediate input providers for downstream countries. In addition, they can increase their likelihood of experiencing export accelerations by importing foreign goods and services that are used as inputs in the production of goods and services that are sold internationally. This latter result is in line with the literature that provides evidence of the direct positive impact of services input use on manufacturing exports. For instance, François and Woerz (2008) and Nordås (2010) find a positive association between business services and exports while Lodefalk (2014) argues that marketing, legal and government services as well as those provided by intermediaries in foreign trade help manufacturing firms break into new markets and expand trade volumes.

3.3.3 Robustness and Sensitivity Checks

In this section, we test the robustness of our results to the choice of parameters in the identification of export accelerations and to the method of estimation. We also examine whether our results remain unchanged when splitting exports between manufactures and primary commodities or when applying a geographical sample breakdown. Finally we consider the symmetric case of export decelerations.

Choice of Parameters

The first set of robustness checks relates to the parameters used in the identification of an export acceleration. The baseline model defines an export acceleration as a significant increase

[19] This is typically the case for electronics firms that offer software and after-sales customer support services bundled with the good they sale in foreign markets.

in export growth that is sustained for at least 7 years (Section 3.2.1). We test whether shortening the horizon to 6 years or lengthening it to 8 years makes any difference. We also check if the main findings are robust to tightening or relaxing the parameters of criterion 2 by modifying (i) the condition that real average export growth during takeoff increases by one third from the baseline growth rate by alternately setting the threshold to $\alpha = 1.1$ and $\alpha = 1.5$; (ii) the change in export growth requirement by successively lowering the acceleration threshold to 2 percentage points ($\beta = 0.02$) and raising it to 4 percentage points ($\beta = 0.04$). Estimates summarized in Table 3.5 are broadly consistent with baseline findings, but some results are worthy of comment. First, the positive effect of capital account openness on the probability of observing a services export acceleration becomes statistically significant when identification requirements are relaxed (Columns 2, 6 and 10), i.e. when the acceleration episode is shortened to 6 years and when parameters for Criterion 2 are set to one tenth ($\alpha = 1.1$) or two percentage points ($\beta = 0.02$). Second and relatedly, the positive effect of FVA on the occurrence of export accelerations is larger and more statistically significant under the 6-year horizon scenario; the overall indicator of GVC participation even exhibits an acceleration-triggering effect for services (Columns 1 and 2).[20] Third, there is some indication that diversification at the extensive margin also contributes to launching goods export accelerations in EMDEs (Columns 1 and 9).

Fourth, in two out of six robustness exercises, the liberalization index for network industries enters with a negative and statistically significant sign (Columns 3 and 9). This result could be explained in light of the literature that underscores the importance of reform sequencing and complementarities when liberalizing network industries (Zhang, Parker, and Kirkpatrick, 2005). For instance, Zhang, Parker, and Kirkpatrick (2008) show that the effectiveness of privatization and regulation reforms in the electricity market depends on the introduction of competition. Based on a sample of African and Latin American countries,Wallsten (2001) finds that privatization may undermine the performance of the telecommunications industry if not combined with effective regulation. The role of effective regulation in conditioning the success of privatization has also been documented by Pollitt (1997), Gutierrez and Berg (2000) and Bortolotti, D'Souza, Fantini, and Megginson (2002). As a result, gains from liberalization may not be straightforward if countries fail to implement a comprehensive reform program combining privatization, competition and the establishment of an independent regulator (Fink, Mattoo, and Rathindran, 2003).

[20]Since the eight-year horizon is more data demanding, it substantially reduces the number of observations, possibly yielding non-significant results in the case of GVC-related variables that are available over a limited time span to begin with.

Table 3.5: Robustness: Choice of Parameters

	6-year horizon		8-year horizon		Criterion 2, $\alpha = 1.1$		Criterion 2, $\alpha = 1.5$		Criterion 2, $\beta = 0.02$		Criterion 2, $\beta = 0.04$	
	Goods	Services	Goods	Services	Goods	Services	Goods	Services	Goods	Services	Goods	Services
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Institutional Quality, Macroeconomic Sability and Trade Competitiveness												
Governance ICRG	0.037**	0.042*	0.057***	0.033*	0.044**	0.051**	0.048***	0.054***	0.043**	0.064***	0.047***	0.054***
	(0.017)	(0.024)	(0.017)	(0.017)	(0.017)	(0.021)	(0.017)	(0.020)	(0.017)	(0.021)	(0.017)	(0.020)
Political stability	-0.005	0.043	0.009	0.081***	0.010	0.080**	-0.002	0.072**	-0.012	0.091***	-0.005	0.075**
	(0.021)	(0.033)	(0.022)	(0.031)	(0.025)	(0.032)	(0.024)	(0.032)	(0.024)	(0.033)	(0.023)	(0.032)
REER volatility	-0.003***	-0.006***	-0.002***	-0.002*	-0.003***	-0.004***	-0.003***	-0.004**	-0.003***	-0.004***	-0.002***	-0.004**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)
Log REER index	-0.123***	-0.375***	-0.135***	-0.128***	-0.143***	-0.147***	-0.143***	-0.150***	-0.142***	-0.150***	-0.136***	-0.149***
	(0.034)	(0.066)	(0.034)	(0.043)	(0.033)	(0.045)	(0.033)	(0.045)	(0.033)	(0.046)	(0.032)	(0.045)
Tariffs (%)	-0.003	-0.006	0.002	-0.003	-0.002	-0.001	-0.003	0.001	-0.004	-0.001	-0.001	0.001
	(0.003)	(0.005)	(0.003)	(0.004)	(0.003)	(0.004)	(0.003)	(0.004)	(0.004)	(0.005)	(0.003)	(0.004)
Product Market Reforms and Financial Liberalization												
Agriculture index	0.076**	0.135***	0.073**	0.091**	0.061**	0.124***	0.060**	0.094***	0.075**	0.098***	0.056*	0.099***
	(0.031)	(0.040)	(0.029)	(0.036)	(0.031)	(0.034)	(0.030)	(0.033)	(0.031)	(0.034)	(0.029)	(0.033)
Networks index	-0.060	0.093	-0.159***	0.100	-0.067	0.095	-0.093	0.101	-0.128**	0.095	-0.086	0.114*
	(0.061)	(0.079)	(0.055)	(0.064)	(0.061)	(0.070)	(0.060)	(0.068)	(0.061)	(0.070)	(0.058)	(0.067)
Financial liberalization	-0.062	-0.118	-0.137	-0.126	-0.056	0.081	-0.082	0.006	-0.060	-0.065	0.008	0.036
	(0.142)	(0.160)	(0.133)	(0.118)	(0.143)	(0.138)	(0.139)	(0.134)	(0.144)	(0.138)	(0.140)	(0.134)
Capital account openness	-0.058	0.191**	0.023	0.054	-0.009	0.132**	0.002	0.088	-0.014	0.129**	-0.035	0.087
	(0.063)	(0.080)	(0.058)	(0.058)	(0.057)	(0.065)	(0.056)	(0.064)	(0.058)	(0.064)	(0.054)	(0.063)
Log FDI inflows (% GDP)	0.006	0.003	0.007	-0.002	0.014**	0.004	0.012**	0.004	0.013**	0.003	0.013**	0.004
	(0.007)	(0.007)	(0.009)	(0.005)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Export Diversification and GVC Participation												
Theil index	-0.043***	-0.050***	-0.022**	-0.038***	-0.040***	-0.039***	-0.039***	-0.042***	-0.044***	-0.041***	-0.038***	-0.042***
	(0.009)	(0.012)	(0.009)	(0.010)	(0.010)	(0.011)	(0.010)	(0.011)	(0.010)	(0.011)	(0.009)	(0.011)
Theil index, extensive	-0.037**	-0.080***	0.006	-0.085***	-0.027	-0.058***	-0.024	-0.072***	-0.029*	-0.062***	-0.022	-0.072***
	(0.016)	(0.022)	(0.014)	(0.019)	(0.016)	(0.020)	(0.016)	(0.019)	(0.017)	(0.020)	(0.016)	(0.019)
Theil index, intensive	-0.046***	-0.040***	-0.033***	-0.024**	-0.045***	-0.032***	-0.044***	-0.032***	-0.049***	-0.034***	-0.043***	-0.033***
	(0.010)	(0.013)	(0.010)	(0.011)	(0.011)	(0.012)	(0.011)	(0.012)	(0.011)	(0.012)	(0.010)	(0.012)
Log GVC (% exports)	-0.004	0.128**	0.007	-0.005	-0.006	0.026	-0.012	0.031	0.002	0.030	0.010	0.034
	(0.034)	(0.053)	(0.033)	(0.039)	(0.035)	(0.043)	(0.035)	(0.042)	(0.035)	(0.043)	(0.034)	(0.042)
Log FVA (% exports)	0.055***	0.078***	0.034	0.010	0.029	0.043*	0.027	0.046*	0.036*	0.051**	0.033	0.049**
	(0.021)	(0.029)	(0.020)	(0.021)	(0.021)	(0.025)	(0.021)	(0.025)	(0.021)	(0.025)	(0.021)	(0.025)
Log DVX (% exports)	0.060**	0.066	0.066**	-0.020	0.073**	0.065**	0.072**	0.068**	0.084***	0.067**	0.084***	0.070**
	(0.027)	(0.043)	(0.027)	(0.029)	(0.030)	(0.032)	(0.029)	(0.031)	(0.030)	(0.031)	(0.029)	(0.031)
Log FVA (% exports)	0.062***	0.093***	0.045**	0.024	0.037*	0.056**	0.035*	0.058**	0.043**	0.064**	0.038**	0.060**
	(0.020)	(0.029)	(0.019)	(0.021)	(0.020)	(0.025)	(0.020)	(0.025)	(0.020)	(0.025)	(0.019)	(0.024)
Log Term 3 (% exports)	0.091***	0.113**	0.114***	0.022	0.115***	0.117***	0.115***	0.117***	0.125***	0.121***	0.120***	0.120***
	(0.029)	(0.054)	(0.029)	(0.032)	(0.032)	(0.036)	(0.031)	(0.035)	(0.033)	(0.035)	(0.032)	(0.035)

Notes: Probit estimates, robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Coefficients are marginal probabilities evaluated at the sample means. The dependent variable EA is a dummy for the timing of goods or services export accelerations taking the value of one over the 3-year window centered on the initiation date. All RHS variables are lagged by 2 years. Variables from the baseline model are included but not reported, full regression tables can be found in the Appendix (Tables B9-B26). The description and source of variables are provided in Table B4.

Alternative Estimation Methods

We also estimate a logit model, where ϕ in the baseline specification becomes the cumulative logistic distribution instead of the cumulative normal distribution. Both probit and logit models usually yield identical results, but divergences may arise as a result of very unbalanced samples with fewer ones than zeros (Carrère and de Melo, 2012). Despite the unbalanced nature of our sample, logit estimates remain remarkably similar to the baseline results (Table 3.6, Columns 1 and 2). In the same vein, we fit a logit model corrected for rare occurrence bias as suggested by King and Zeng (2001). This estimation method addresses the shortcoming of the standard logit and probit regressions which can underestimate the probability of occurrence of an export acceleration given the prevalence of observations for which $EA_{it} = 0$. As displayed in Columns 3 and 4 of Table 3.6, government quality and REER depreciation are no longer statistically associated with export takeoffs although they enter with the right sign.[21] In contrast, the liberalization of network industries is conducive to services export accelerations, probably through increased efficiency following the introduction of competition. In line with the literature, FDI and domestic financial liberalization in the form of banking sector and securities market reforms also display a positive effect on the occurrence of services accelerations. Alternatively, we run random-effects probit regressions (Coumns 5 and 6) and present Poisson Pseudo-Maximum-Likelihood (PPML) estimates to account for the preponderance of zeros for the dependent variable following Santos Silva and Tenreyro (2006, 2010) (Columns 7 and 8). Overall, the results highlight the role of macroeconomic stability, currency competitiveness, agricultural reforms, diversification and GVC participation in launching export accelerations in EMDEs.

Disagreggating Exports

We run additional robustness checks by distinguishing between manufactures and non-fuel primary commodities on the one hand (Table 3.7, Columns 1 and 2); and traditional and modern services on the other (Columns 3 and 4).[22] While the effect of macroeconomic stability and diversification on goods export accelerations seems to be driven by non-fuel primary commodities, FDI inflows appear equally important for both types of goods, consistent with baseline results. Interestingly, tariff liberalization now plays a role in supporting strong and sustained

[21] Political stability remains significant at the 11 percent level.

[22] Manufactures exports are obtained by aggregating SITC rev. 2 sections 5 to 8, excluding division 68. Non-fuel primary commodities refer to food (sections 0, 1, 4 and division 22) and agricultural raw materials (section 2 excluding divisions 22, 27 and 28). Following Ghani (2010), traditional services include transportation (BOP code 205) and travel (BOP code 236), while remaining commercial services are aggregated under modern services. Tables B1 and B2 in the Appendix provide more detail on the classification of goods and services.

Table 3.6: Robustness: Alternative Estimators

	Logit		ReLogit		RE Probit		PPML	
	Goods	Services	Goods	Services	Goods	Services	Goods	Services
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Institutional Quality, Macroeconomic Sability and Trade Competitiveness								
Governance ICRG	0.044***	0.060***	0.116	0.150	0.164	0.199	0.217*	0.279*
	(0.016)	(0.020)	(0.167)	(0.162)	(0.154)	(0.189)	(0.129)	(0.158)
Political stability	-0.003	0.078**	-0.074	0.358	0.274	2.298	-0.017	0.206
	(0.023)	(0.032)	(0.232)	(0.222)	(0.387)	(3.913)	(0.184)	(0.154)
REER volatility	-0.002***	-0.004**	-0.012*	-0.027*	-0.016*	-0.041***	-0.018**	-0.027*
	(0.001)	(0.002)	(0.007)	(0.014)	(0.009)	(0.015)	(0.009)	(0.015)
Log REER index	-0.120***	-0.130***	-0.295	-0.644	-1.130**	-1.302**	-0.721***	-0.914**
	(0.031)	(0.043)	(0.364)	(0.519)	(0.488)	(0.627)	(0.277)	(0.436)
Tariffs (%)	-0.003	-0.001	0.003	-0.018	-0.003	0.350	-0.017	-0.005
	(0.003)	(0.005)	(0.027)	(0.028)	(0.030)	(0.307)	(0.024)	(0.019)
Product Market Reforms and Financial Liberalization								
Agriculture index	0.052*	0.083**	0.157	0.744*	0.716*	0.811	0.261	0.496*
	(0.029)	(0.032)	(0.326)	(0.383)	(0.369)	(0.494)	(0.251)	(0.295)
Networks index	-0.061	0.089	-0.402	1.901***	-0.975	0.957	-0.311	0.189
	(0.056)	(0.062)	(0.662)	(0.541)	(0.755)	(0.736)	(0.517)	(0.482)
Financial liberalization	-0.056	0.048	-0.920	1.262*	0.470	0.784	-0.273	0.209
	(0.145)	(0.132)	(0.703)	(0.708)	(1.280)	(1.253)	(0.774)	(0.844)
Capital account openness	0.005	0.096	-0.488	0.791	0.051	0.426	0.064	0.429
	(0.053)	(0.061)	(0.533)	(0.577)	(0.516)	(0.603)	(0.377)	(0.410)
Log FDI inflows (% GDP)	0.012**	0.003	0.021	0.129*	0.052	0.055	0.072	0.020
	(0.006)	(0.005)	(0.057)	(0.070)	(0.050)	(0.058)	(0.051)	(0.054)
Export Diversification and GVC Participation								
Theil index	-0.037***	-0.035***	-0.248**	-0.307**	-0.288**	-0.281	-0.227**	-0.231**
	(0.009)	(0.010)	(0.115)	(0.124)	(0.124)	(0.174)	(0.093)	(0.100)
Theil index, extensive	-0.023	-0.051***	-0.100	-0.543**	-0.253	-0.261	-0.135	-0.328
	(0.015)	(0.020)	(0.224)	(0.251)	(0.196)	(0.311)	(0.184)	(0.208)
Theil index, intensive	-0.041***	-0.029***	-0.296**	-0.228*	-0.298**	-0.285*	-0.260***	-0.204*
	(0.010)	(0.011)	(0.122)	(0.137)	(0.134)	(0.173)	(0.097)	(0.111)
Log GVC (% exports)	-0.000	0.034	-0.058	0.522	0.096	0.546	0.019	0.138
	(0.032)	(0.039)	(0.473)	(0.434)	(0.511)	(0.659)	(0.370)	(0.329)
Log FVA (% exports)	0.028	0.043*	0.137	0.387	0.402	0.821**	0.192	0.230
	(0.020)	(0.024)	(0.270)	(0.257)	(0.297)	(0.375)	(0.212)	(0.197)
Log DVX (% exports)	0.070**	0.063**	0.554	0.897**	0.855**	0.701	0.494*	0.348
	(0.028)	(0.029)	(0.351)	(0.398)	(0.433)	(0.442)	(0.272)	(0.269)
Log FVA (% exports)	0.032*	0.053**	0.196	0.461*	0.430	0.847**	0.227	0.279
	(0.019)	(0.024)	(0.263)	(0.246)	(0.286)	(0.366)	(0.205)	(0.199)
Log Term 3 (% exports)	0.104***	0.107***	0.890**	1.295***	1.093**	0.907**	0.750**	0.568**
	(0.030)	(0.033)	(0.371)	(0.401)	(0.479)	(0.456)	(0.298)	(0.288)

Notes: *** p<0.01, ** p<0.05, * p<0.1. (i) Logit: coefficients are marginal probabilities evaluated at the sample means, robust standard errors in parenthesis; (ii) ReLogit: King and Zeng (2001)'s logit estimator corrected for rare occurrence bias, simple regression coefficients, robust standard errors clustered at country-level in parentheses; (iii) Random-effects probit: probit regressions with country random-effects, robust standard errors in parentheses; (iv) PPML: poisson pseudo-maximum likelihood regressions following Santos Silva and Tenreyro (2006, 2010), robust standard errors clustered at country-level in parentheses. The dependent variable is a dummy for the timing of goods or services export accelerations taking the value of one over the 3-year window centered on the initiation date. All RHS variables are lagged by 2 years. Variables from the baseline model are included but not reported, full regression tables can be found in the Appendix (Tables B27-B38). The description and source of variables are provided in Table B4.

export growth. Likewise, there is now evidence that financial liberalization matters for goods exports too, with a one unit increase in the capital account openness index boosting the probability of an export surge by 12.9 percentage points. Additionally, Table 3.7 reveals that the previously uncovered negative association between the liberalization of network industries and goods export accelerations is driven by manufactures, the effect being positive for primary commodities. Furthermore, countries whose exports feature higher foreign value-added content are more likely to witness export takeoffs in primary products, while those participating in longer value chains through forward linkages record a higher probability of manufactures export accelerations. Political stability and diversification precede both traditional and modern commercial services exports, consistent with baseline findings. FDI inflows and downstream participation in GVCs only trigger modern services export accelerations. Combined with the fact that intermediate services account for the lion's share of services trade (Miroudot, Lanz, and Ragoussis, 2009), this latter result seems to suggest that EMDEs benefit from importing services inputs that are used in the production of modern services exported to other countries, possibly because of a weak or missing local services supplier base (Markusen, Rutherford, and Tarr, 2005; Nordås, 2010).

Regional Disparities

We also run regressions separately for LAC, Africa and the remainder of EMDEs to check for heterogeneity across regions.[23] We note a few remarkable results. First, structural reforms in the real and financial sectors appear as important pre-conditions in fostering export takeoffs in LAC only, with coefficients at least three times the size of the baseline results. In contrast, FDI inflows are key to triggering export accelerations in Africa and other EMDEs, whereas exchange rate stability and currency depreciation contribute to generating high and sustained export growth primarily in LAC and Africa. Second, a few predictors turn out to matter for all countries, irrespective of the region considered. This is the case for government quality which promotes export accelerations across all EMDEs, and diversification, although its positive effect seems to materialize through the extensive margin for LAC against the intensive margin for other countries. In other words, LAC countries would be more likely to experience goods export accelerations if they expand the range of products they export, while other EMDEs should focus on exporting a more balanced mix of existing goods. Another area of commonality is GVC participation, with both backward and forward linkages having some bearing on the initiation

[23]To enhance sample size and secure a sufficient number of export accelerations for empirical analysis, "Africa" includes both Sub-Saharan Africa and North Africa, while "Other EMDEs" comprises countries in Asia, Europe, the Middle-East and the Commonwealth of Independent States.

of export takeoffs, again with magnified export-promoting effects for LAC.

Export Decelerations

As a final robustness check, we focus on instances of severe export collapses to investigate whether predictors of export takeoffs also play a role in explaining significant falls in export growth. For this purpose, we follow Freund and Pierola (2008) and symmetrically define an export deceleration as an episode of drastic reduction in export growth that is sustained for at least seven years.[24] The filters yield 21 and 12 decelerations in goods and services exports respectively (Table B6 in the Appendix). As an export collapse turns out to be much rarer than a surge, Table 3.7 presents results obtained by using King and Zeng (2001)'s logit estimator corrected for rare occurrence bias. In line with baseline estimates, currency appreciation and exchange rate uncertainty raise the probability of observing a goods export deceleration. Tariffs on imported products enter positively, making the occurrence of decelerations less likely. Interestingly, relaxing restrictions on capital account transactions, opening up to FDI and diversifying the export basket appear to be a hedge against export collapses. In a related vein, political stability and greater foreign value-added content of exports seem to matter for avoiding services export decelerations.[25]

[24] Specifically, we apply the following criteria: (i) real average export growth during the seven-year period immediately following the collapse date is negative; (ii) it decreases by one third from the baseline growth rate and is at least 3 percentage points below it; (iii) the maximum level of exports observed during the collapse period is lower than the minimum level of exports observed during the baseline years; (iv) the real average export growth rate during the collapse period, excluding the year of weakest growth, is lower than real average growth during baseline.

[25] Intriguingly, exchange rate uncertainty and export concentration at the intensive margin also appear to prevent collapses in services exports. Since only one and seven instances of decelerations are included in these regressions, we remain cautious about the interpretation of the results.

Table 3.7: Robustness: Disaggregating Exports, Regional Disparities and Decelerations

	Goods		Services		LAC		Africa		Other EMDEs		Decelerations	
	Manuf.	Primary	Traditional	Modern	Goods	Services	Goods	Services	Goods	Services	Goods	Services
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Institutional Quality, Macroeconomic Sability and Trade Competitiveness												
Governance ICRG	0.025	0.026*	0.050**	0.024	0.326***	0.144***	0.051**	0.004	-0.030	0.185***	-0.608	1.082
	(0.018)	(0.014)	(0.020)	(0.019)	(0.065)	(0.053)	(0.021)	(0.029)	(0.042)	(0.042)	(0.706)	(2.184)
Political stability	-0.023	0.000	0.118***	0.068***	0.041	-0.003	-0.019	0.033	-0.035	0.196***	-0.527	-0.649*
	(0.022)	(0.024)	(0.029)	(0.022)	(0.035)	(0.059)	(0.035)	(0.057)	(0.034)	(0.051)	(1.267)	(0.367)
REER volatility	0.000	-0.002***	0.001	-0.005***	-0.004***	-0.012***	-0.000	-0.006***	-0.008	-0.003	0.003***	-0.095***
	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.004)	(0.000)	(0.002)	(0.009)	(0.006)	(0.001)	(0.034)
Log REER index	-0.063*	-0.084**	-0.063	-0.040	-0.317***	-0.211*	-0.122**	-0.244**	-0.070	-0.327	1.395**	-0.569
	(0.037)	(0.038)	(0.041)	(0.033)	(0.077)	(0.110)	(0.058)	(0.116)	(0.161)	(0.241)	(0.619)	(0.699)
Tariffs (%)	0.001	-0.015***	-0.002	-0.005	-0.001	-0.020*	0.001	0.008	0.004	0.001	0.055**	-0.002
	(0.003)	(0.004)	(0.003)	(0.004)	(0.008)	(0.011)	(0.006)	(0.008)	(0.007)	(0.009)	(0.026)	(0.079)
Product Market Reforms and Financial Liberalization												
Agriculture index	0.087**	0.103***	0.024	0.049*	0.214**	0.296***	-0.018	0.035	-0.026	0.006	0.816	0.252
	(0.034)	(0.021)	(0.031)	(0.029)	(0.088)	(0.069)	(0.037)	(0.063)	(0.075)	(0.071)	(0.800)	(0.997)
Networks index	-0.129*	0.102**	0.084	0.009	0.024	0.568***	0.126	-0.182	0.137	0.217	1.588	-0.892
	(0.069)	(0.047)	(0.061)	(0.045)	(0.178)	(0.145)	(0.099)	(0.136)	(0.145)	(0.138)	(1.399)	(3.143)
Financial liberalization	-0.129	0.012	0.345**	-0.039	-0.253	0.656**	-0.338	-0.260	-0.088	-0.460	-0.713	-
	(0.155)	(0.121)	(0.143)	(0.100)	(0.337)	(0.282)	(0.217)	(0.347)	(0.302)	(0.287)	(2.855)	-
Capital account openness	0.071	0.129**	0.072	0.060	0.454***	0.223	-0.075	0.157	-0.147	-0.140	-5.683***	-
	(0.061)	(0.054)	(0.061)	(0.058)	(0.156)	(0.152)	(0.088)	(0.128)	(0.128)	(0.127)	(2.153)	-
Log FDI inflows (% GDP)	0.020***	0.017***	-0.001	0.009**	-0.015	0.020	0.017**	-0.000	0.014	0.024*	-0.288***	-0.146
	(0.006)	(0.005)	(0.006)	(0.005)	(0.022)	(0.025)	(0.007)	(0.005)	(0.011)	(0.012)	(0.105)	(0.145)
Export Diversification and GVC Participation												
Theil index	-0.008	-0.037***	-0.019*	-0.041***	-0.045	-0.117***	-0.024**	-0.023	-0.055***	-0.054***	0.710**	-0.656**
	(0.010)	(0.008)	(0.011)	(0.008)	(0.036)	(0.033)	(0.012)	(0.016)	(0.018)	(0.020)	(0.355)	(0.260)
Theil, extensive margin	0.016	-0.027*	-0.021	-0.035**	-0.147**	-0.091**	-0.011	-0.049*	0.005	-0.106**	1.007**	-0.151
	(0.016)	(0.014)	(0.020)	(0.014)	(0.063)	(0.045)	(0.018)	(0.026)	(0.030)	(0.043)	(0.496)	(0.436)
Theil, intensive margin	-0.017	-0.040***	-0.019	-0.043***	-0.017	-0.127***	-0.027**	-0.015	-0.088***	-0.028	0.620	-0.934***
	(0.011)	(0.009)	(0.012)	(0.009)	(0.041)	(0.039)	(0.013)	(0.015)	(0.023)	(0.024)	(0.401)	(0.231)
Log GVC (% exports)	0.016	-0.016	0.046	0.036	0.302	0.566***	-0.040	-0.088	-0.002	0.063	-0.532	-8.566
	(0.036)	(0.031)	(0.042)	(0.033)	(0.248)	(0.170)	(0.058)	(0.082)	(0.059)	(0.082)	(1.046)	(6.139)
Log FVA (% exports)	-0.012	0.059***	0.035	0.036**	0.364**	0.234***	0.066*	0.133***	0.027	0.072	-1.109	-3.410*
	(0.021)	(0.017)	(0.024)	(0.018)	(0.146)	(0.083)	(0.036)	(0.050)	(0.033)	(0.044)	(0.744)	(1.832)
Log DVX (% exports)	0.075***	0.024	0.030	-0.034	0.428***	0.485***	0.101**	0.071	0.205***	0.086	0.901	-3.865
	(0.026)	(0.022)	(0.033)	(0.021)	(0.155)	(0.125)	(0.041)	(0.045)	(0.072)	(0.068)	(0.850)	(2.622)
Log FVA (% exports)	-0.005	0.062***	0.050**	0.053***	0.390***	0.201***	0.057*	0.121**	0.021	0.087**	-1.185	-3.673*
	(0.020)	(0.016)	(0.023)	(0.018)	(0.129)	(0.071)	(0.034)	(0.050)	(0.030)	(0.042)	(0.835)	(2.213)
Log Term 3 (% exports)	0.116***	0.035	0.084**	0.009	0.640***	0.653***	0.101**	0.059	0.232***	0.168**	0.748	-4.513
	(0.030)	(0.023)	(0.035)	(0.026)	(0.169)	(0.133)	(0.041)	(0.046)	(0.067)	(0.072)	(1.445)	(3.542)

Notes: Probit estimates, robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Manufactures exports are obtained by aggregating SITC rev. 2 sections 5 to 8, excluding division 68; non-fuel primary commodities refer to food (sections 0, 1, 4 and division 22) and agricultural raw materials (section 2 excluding divisions 22, 27 and 28). Traditional services include transportation (BOP code 205) and travel (BOP code 236), while remaining commercial services are aggregated under modern services (see Tables B1 and B2 in the Appendix for more detail on the classification of goods and services). Coefficients are marginal probabilities evaluated at the sample means. ReLogit estimates for "Decelerations", simple regression coefficients. The dependent variable is a dummy for the timing of goods or services export accelerations (decelerations for the last two columns) taking the value of one over the 3-year window centered on the initiation date. All RHS variables are lagged by 2 years. Variables from the baseline model are included but not reported, full regression tables can be found in the Appendix (Tables B39-B56. "-": no observations. The description and source of variables are provided in Table B4.

3.4 Post-Surge Performance

3.4.1 Synthetic Control Method

Do countries that experience export accelerations enjoy higher GDP per capita and lower unemployment and income inequality during the period following the surge? To address this question, we resort to the synthetic control method (SCM), a transparent statistical methodology developed by Abadie and Gardeazabal (2003) and extended by Abadie, Diamond, and Hainmueller (2010).[26] Formally, SCM compares a treated country with an estimated counterfactual, the synthetic control, which is a linear combination of untreated countries. Weights are chosen so that the synthetic control resembles the treated country in all relevant pre-treatment characteristics which may include pre-treatment realizations of the outcome variable.

Consider a sample of $j = 1, \ldots, J+1$ countries observed over time $t = 1, \ldots, T$ among which country $j = 1$ is the treated unit ("surge country") while the other countries constitute the "donor pool", i.e. the set of potential control units ("non-surge countries"). In our context, the initiation year of the export acceleration is identified as the treatment date. Let T_0 be the number of pre-intervention periods, with $1 \leq T_0 < T$. In addition, let Y_{it}^S be the outcome of the surge country, and Y_{it}^{NS} the outcome of any country in the absence of an export acceleration. Subsequently, the observed outcome is given by:

$$Y_{it} = Y_{it}^{NS} + \alpha_{it} D_{it} \tag{3.1}$$

where $\alpha_{it} = Y_{it}^S - Y_{it}^{NS}$ is the effect of the occurrence of the export acceleration for country i at time t, and D_{it} a dummy variable. Given that only the first country experiences an acceleration and only after T_0:

$$D_{it} = \begin{cases} 1 & \text{if } i = 1 \text{ and } t > T_0 \\ 0 & \text{otherwise} \end{cases}$$

Subsequently, we aim to estimate $(\alpha_{1T_{0+1}}, \ldots, \alpha_{1T})$, i.e. the dynamic treatment effect for each year following the initiation date of the export acceleration, knowing that:

[26] Since its introduction, SCM has been applied in various studies. For instance, Billmeier and Nannicini (2013) use the methodology to quantify the impact of economic liberalization on real GDP per capita, while Abadie, Diamond, and Hainmueller (2015) assess the economic impact of the 1990 German reunification on West Germany. Hannan (2016) analyses the impact of trade agreements on exports, whereas Adhikari, Duval, Hu, and Loungani (2016) examine the economic implications of reforms in selected industrialized economies. Matta, Appleton, and Bleaney (2016) use SCM to estimate the output loss in Tunisia following the Arab Spring.

$$\alpha_{1t} = Y_{1t}^{S} - Y_{1t}^{NS} = Y_{1t} - Y_{1t}^{NS} \text{ for } t > T_0 \tag{3.2}$$

Since Y_{1t}^{NS} is not observed for the surge country over the post-acceleration period $[T_0 + 1, \ldots, T]$, SCM constructs a synthetic control group that yields a reasonable estimate for this missing potential outcome. Following Abadie, Diamond, and Hainmueller (2010), Y_{it}^{NS} is given by a factor model:

$$Y_{it}^{NS} = \delta_t + \theta_t Z_i + \lambda_t \mu_i + \varepsilon_{it} \tag{3.3}$$

where δ_t is an unknown common factor with constant factor loadings across countries, Z_i is a vector of observed covariates with coefficients θ_t, λ_t is a vector of unobserved common factors, μ_i is a vector of unknown factor loadings, and ε_{it} are error terms. Unlike in standard difference-in-differences models, this specification allows controlling for the effect of time-varying unobserved heterogeneity ($\lambda_t \mu_i$).

Let $W = (w_2, \ldots, w_{J+1})$ be a vector of weights such that $w_j \geq 0$ for $j = 2, \ldots, J+1$ and $w_2 + \cdots + w_{J+1} = 1$. Each W then represents a potential synthetic control, i.e. one particular weighted average of control units. Accordingly, the outcome variable for each potential synthetic control unit is given by:

$$\sum_{j=2}^{J+1} w_j Y_{jt} = \delta_t + \theta_t \sum_{j=2}^{J+1} w_j Z_j + \lambda_t \sum_{j=2}^{J+1} w_j \mu_j + \sum_{j=2}^{J+1} w_j \varepsilon_{jt} \tag{3.4}$$

Suppose that there is an optimal vector $W^* = (w_2^*, \ldots, w_{J+1}^*)$ such that:

$$\sum_{j=2}^{J+1} w_j^* Y_{j1} = Y_{11}, \sum_{j=2}^{J+1} w_j^* Y_{j2} = Y_{12}, \ldots, \sum_{j=2}^{J+1} w_j^* Y_{jT_0} = Y_{1T_0} \text{ and } \sum_{j=2}^{J+1} w_j^* Z_j = Z_1 \tag{3.5}$$

Then Equation (3.6) provides an estimator of α_{it} in periods $T_0 + 1, \ldots, T$.

$$\widehat{\alpha_{it}} = Y_{1t} - \sum_{j=2}^{J+1} w_j Y_{jt} \text{ for } t > T_0 \tag{3.6}$$

In practice, W^* is selected such that Equation (3.5) holds approximately. Specifically, let X_1 be the vector of pre-surge characteristics for the treated country, and X_0 the matrix containing

the same variables for the units in the donor pool.[27] W^* is then chosen to minimize the distance $\| X_1 - X_0 W \|$.

In other words, the synthetic control algorithm estimates the missing counterfactual as a weighted average of the outcomes of potential controls. The weights are chosen so that the pre-surge outcome and the covariates of the synthetic control are, on average, very close to those of the surge country. The quality of the pre-surge fit reached by the SCM algorithm is gauged using the root mean squared prediction error (RMSPE) which measures the lack of fit between the path of the outcome variable for the surge country and its synthetic counterpart before the export acceleration date:

$$RMSPE = \sqrt{\frac{1}{T_0}\sum_{t=1}^{T_0}\left(Y_{it} - \sum_{j=2}^{J+1} w_j^* Y_{jt}\right)^2} \tag{3.7}$$

Furthermore, statistical inference is derived through "in-space placebo studies" following Abadie, Diamond, and Hainmueller (2010). Formally, we iteratively reassign the export acceleration date to every potential control, shifting the true surge country to the donor pool, and estimate the associated dynamic treatment effects over $[T_0 + 1, \ldots, T]$. Hence, in each iteration, we proceed as if the control country in the donor pool experienced an export acceleration in the same year as the "true" surge country. The rationale behind these falsification tests is to assess whether the estimated effect of the export acceleration could be driven entirely by chance. If the exercise yields an unusually large treatment effect for the surge country relative to the placebo treatment effects, this would be suggestive of a statistically significant effect of the export acceleration for the surge country.

3.4.2 Data and Case Study Selection

Given the remarkable results found for LAC (Section 3.3.3), we use SCM to implement two data-driven country-case studies focused on Brazil and Peru. The former experienced a goods export acceleration in 2000 while the latter witnessed a surge in services exports in 2005 (Table B3). For each country, we compare the post-acceleration trajectory of real GDP per capita, unemployment and income inequality with the trajectory of a combination of similar but untreated economies. The estimated dynamic treatment effect of the export acceleration is given by the difference in the post-surge values of each outcome variable between the treated country and

[27] The pre-surge characteristics in X_1 and X_0 may include pre-surge values of the outcome variable.

its synthetic control.[28] To implement SCM, we calibrate the synthetic control over the five pre-surge years immediately preceding the export acceleration date, and restrict the sample period to seven post-surge years.[29] We also exploit the flexibility of the methodology to maximize the quality of the counterfactual constructed by the algorithm by excluding from the donor pool countries that also experienced an export takeoff sometime over the thirteen-year sample window. This mitigates concerns over how well the synthetic control is reproducing the outcome that would have been observed for the surge country in the absence of the export acceleration.[30]

For each outcome of interest, we choose a vector of covariates for which we require the treated unit and its synthetic counterpart to exhibit similar pre-acceleration values (Equation (3.5)). The vector of covariates associated with the first outcome of interest, real GDP per capita, comprises a set of standard growth determinants, namely population growth, investment as a share of GDP, government quality and human capital (Barro, 1991). The latter is captured by the Human Assets Index (HAI) from FERDI which combines both education and health dimensions of human capital. We also include a crisis dummy from Laeven and Valencia (2008, 2012) to account for possible post-surge output effects of a banking, currency and/or sovereign debt crisis that may have occurred before the acceleration date (Cerra and Saxena, 2008). Population dynamics and human capital are also accounted for in the vector of covariates pertaining to unemployment, along with the level of development, inflation and the share of urban population. Finally, the vector of covariates for income inequality, captured by the Gini index, includes (i) GDP per capita, to account for the non-linear relationship between inequality and the level of development (Kuznets, 1955; Barro, 2000); (ii) government spending as a share of GDP taken as a proxy for redistributive policies (Perotti, 1992; Dabla-Norris, Kochhar, Suphaphiphat, Ricka, and Tsounta, 2015); (iii) the ratio of female to male labor force participation rate, a key aspect of gender inequality which is strongly associated with income inequality (Gonzales, Jain-Chandra, Kochhar, Newiak, and Zeinullayev, 2015); (iv) the HAI to capture the skill premium in line with Mincer (1958) and the quality of human capital in general; and (v) population growth. Furthermore, we also include the outcome variable measured at each of the five years before the export acceleration in order to maximize the goodness of fit.[31] Table B4 in the appendix

[28] We initially implemented SCM for all LAC countries with available data for the outcome variable. However, poor pre-treatment fit quality and data restrictions led us to only focus on two illustrative case studies, for which the pre-treatment fit was of reasonable quality for all three outcome variables of interest.

[29] This choice is largely dictated by the availability of unemployment and income inequality series.

[30] We also implemented SCM with a donor pool exclusively consisting of LAC countries in view to increasing the "common support" shared by the treated unit and its synthetic counterpart (e.g. cultural and geographic proximity). Despite reducing cross-country heterogeneity, this geographical restriction drastically shrank the sample size, yielding poor pre-surge fits.

[31] For each outcome of interest, countries with missing data over the 13-year window are excluded.

provides the definition and source of the variables.

3.4.3 Results

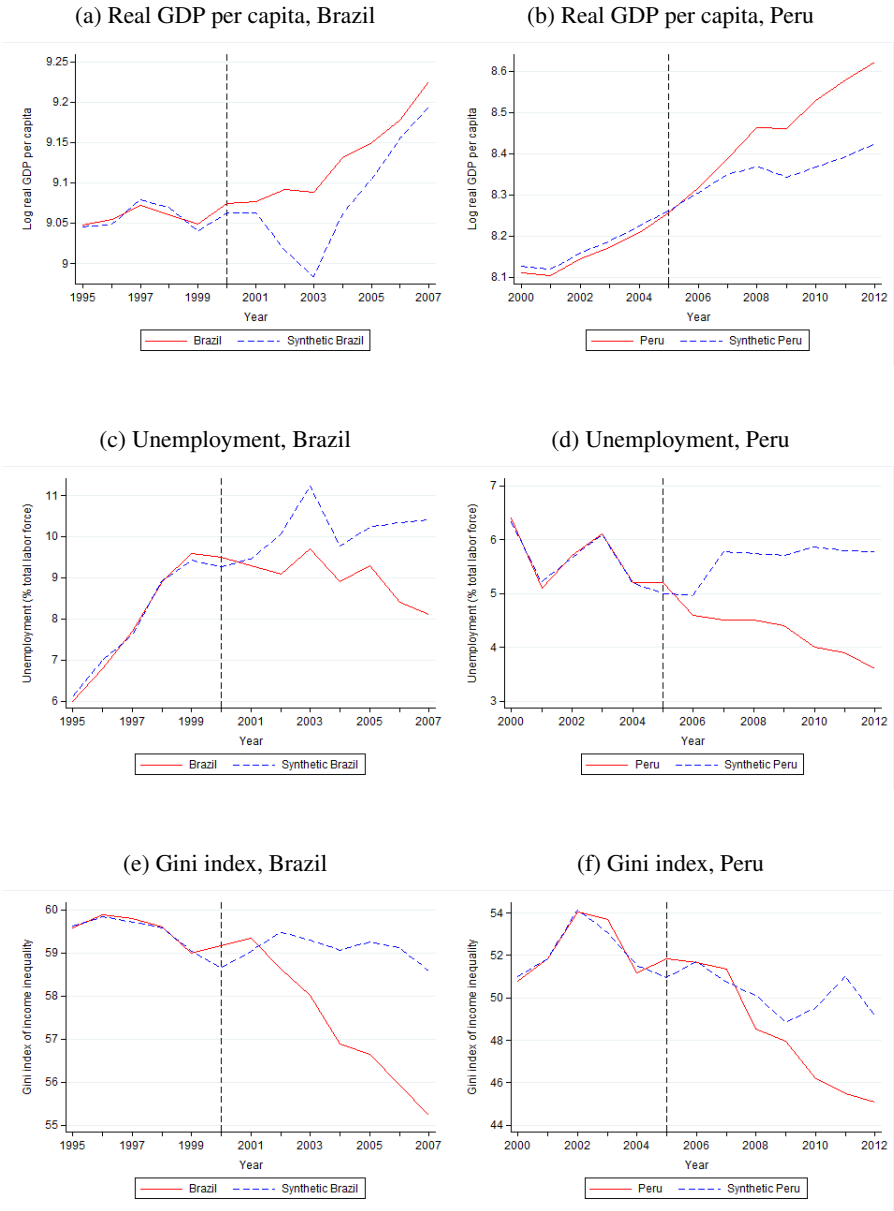
Figure 3.4 contrasts the evolution of the level of real GDP per capita, unemployment and income inequality in Brazil and Peru with that of their synthetic control. The extent to which the solid red line (treated unit) and the dashed blue line (synthetic control unit) coincide before the export acceleration date reflects the quality of the pre-treatment fit reached by the SCM algorithm. Conversely, any divergence observed after the initiation year captures the dynamic treatment effect of the export takeoff. Table B7 provides the list of countries from the donor pool used in the construction of each synthetic control, along with their associated weights. The means of the covariates and outcomes are displayed in Table B8. In addition, as explained in Section 3.4.1, the validity of the SCM results is tested through placebo experiments. For each outcome of interest, the solid red line in Figure 3.5 presents the difference between the treated country and its synthetic control, while the dotted grey lines depict the difference between each of the treated country's potential controls and their respective synthetic control.[32]

Brazil's post-acceleration real GDP per capita trajectory appears to outperform its synthetic counterpart's (Figure 3.4a), a convex combination of Venezuela, Mexico, Jamaica and Malaysia (Table B7). However, this result does not survive placebo testing as 7 out of the 12 permutations are above the baseline effect uncovered for Brazil (Figure 3.5a). Despite the lack of a robust effect on output, Figure 3.4c shows that Brazil's unemployment rate was almost 14 percent lower than the counterfactual by three years after takeoff, and 22 percent lower by seven years later. Although several fake experiments show stronger results than the baseline in the immediate years following the surge, the associated gaps in unemployment start reducing after $T_0 + 3$ (Figure 3.5c). This lends some credence to the quality of the baseline effect. Brazil also enjoyed a steeper reduction in income inequality after 2000, with a Gini index that stood at 55.23 in 2007, against 58.28 for the synthetic control constructed as an average of Botswana, South Africa, El Salvador and Nigeria (Figure 3.4e and Table B8). The placebo test in Figure 3.5e confirms the robustness of this result, as only 2 out of 11 permutations fare better than the treated unit.

On the other hand, results suggest that Peru was better able to reap the benefits of the services export acceleration it experienced in 2005. Peru and its synthetic control started at comparable

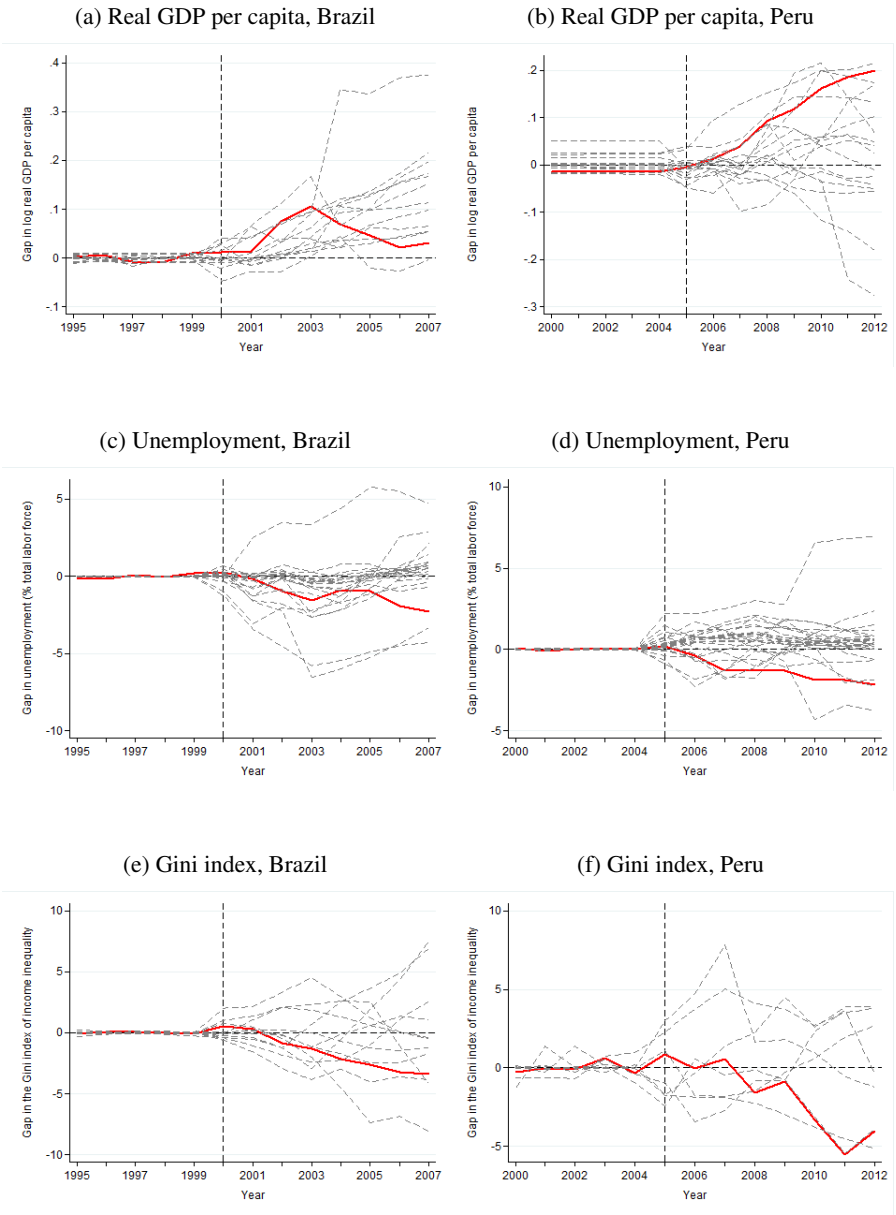
[32] Following Abadie, Diamond, and Hainmueller (2010, 2011), placebo studies based on countries with poor fit do not provide information to measure the relative rarity of the post-surge gap obtained for the treated country. Consequently, we discard countries whose pre-surge RMSPE is larger than the "true" treated country's RMSPE by more than the sample median.

Figure 3.4: Post-Acceleration Performance in Brazil and Peru



Notes: Authors' calculations based on WDI, FERDI, ICRG and Laeven and Valencia (2008, 2012). The solid red line and the dashed blue line represent the time series of the outcome variable of interest for the treated unit and its synthetic counterpart respectively. The donor pool from which the synthetic control is constructed excludes countries with missing data for the outcome variable over the 5 years preceding the surge date and 7 years following it, and those that have experienced an export takeoff over the thirteen-year sample window. The description and source of variables are provided in Table B4.

Figure 3.5: Placebo Experiments



Notes: Authors' calculations based on WDI, FERDI, ICRG and Laeven and Valencia (2008, 2012). The solid red line represents outcome difference between the treated country and its synthetic control. The dotted grey lines depict the outcome difference between each of the treated country's potential controls and their respective synthetic control in placebo experiments. Only gaps such that the ratio of the placebo RMSPE to the "true" RMSPE is lower than the sample median are represented. The "true" surge country is included in the donor pool when conducting falsification tests. The donor pool from which the synthetic control is constructed excludes countries with missing data for the outcome variable over the 5 years preceding the surge date and 7 years following it, and those that have experienced an export takeoff over the thirteen-year sample window. The description and source of variables are provided in Table B4.

levels of GDP per capita before the surge, but Peru's GDP per capita was almost 10 percent higher than the estimated counterfactual three years after the acceleration, and 22 percent larger seven years later (Figure 3.4b). The placebo test in Figure 3.5b confirms the robustness of this result as only 1 out of the 16 fake experiments yields a consistently larger gap in GDP per capita than the one uncovered for Peru. Job creation seems to be an important channel through which the export takeoff positively affected output: Peru's unemployment rate was 22 percent lower than its synthetic control's at $T_0 + 3$ – a convex combination of Burkina Faso, Fiji, Kazakhstan, Yemen and Venezuela (Table B7) – and almost 38 percent lower seven years later (Figure 3.4d). In addition, Figure 3.4f shows that Peru's Gini index dropped sharply relative to its synthetic counterpart's and was 8 percent lower seven years after the surge. Reduced income inequality seems to have contributed to Peru's higher GDP per capita after the 2005 services export surge. The placebo tests lend strong support to these conclusions as none of the other 25 permutations performed in the case of unemployment yields a line that is consistently lower than Peru's over the post-acceleration period (Figure 3.5d). As for income inequality, only 1 out of 7 placebo exercises outperforms the treated unit (Figure 3.5f). In sum, the case studies of Brazil and Peru provide some evidence that export acceleration are followed by higher GDP per capita, and lower unemployment and income inequality.

3.5 Conclusion

Using a large panel of emerging and developing market economies, this paper identifies goods and services export acceleration episodes and investigates their determinants. We find that export takeoffs are more likely to take place in a sound business environment underpinned by political and economic stability, with some evidence that services exports are more sensitive to the quality of institutions than goods. Both goods and services exports positively respond to a depreciated exchange rate and market-oriented agricultural reforms. The liberalization of the telecommunication and electricity markets appears to support export surges in services through a direct competition effect, and possibly by increasing the productivity of downstream services sectors relying on utilities as inputs. Likewise, capital account openness stimulates strong and sustained services exports, but banking sector and securities market reforms do not appear to play a role in launching export accelerations. In contrast, FDI inflows promote both goods and modern services exports, probably on the back of foreign technology transfers and knowledge spillovers.

Another remarkable result is the acceleration-triggering effect of product diversification.

The fact that it also predicts services export takeoffs may highlight both the servitization of manufacturing – the practice of manufacturing firms of offering services bundled with the good they sell in foreign markets – and the key role of services in the production, distribution and marketing of traded goods. We also find evidence that GVC participation matters, both through backward linkages when the foreign value-added content of exports is high, and forward linkages when countries act as intermediate input providers for downstream economies. Interestingly, EMDEs that engage in multi-stage trade process seem to benefit from modern services export accelerations only through backward linkages, possibly because their production and export requires inputs that are missing locally. These main findings are broadly robust to modifying the parameters underlying the identification of export accelerations and to using alternative estimation techniques. When applying a regional breakdown, we note that structural reforms in the real and financial sectors appear as important pre-conditions in fostering export takeoffs in LAC only, with coefficients at least three times the size of the baseline results for the whole sample.

Finally, we assess the post-surge performance of countries that have experienced export accelerations based on the illustrative cases of Brazil and Peru. We find that real GDP per capita is higher in Peru in the years following the surge initiation date. Both countries display a significant fall in the unemployment rate and a sharp reduction in income inequality after the export takeoff. Given these economic and social benefits of rapid export growth, our findings emphasize the role of domestic enabling factors, structural reforms and trade and financial openness in supporting strong and sustained export growth in EMDEs. Several results point to significant complementarities between goods and services, typically because the latter are crucial inputs in the production and export of the former, hence indicating that measures aimed at lowering barriers to trade in services are likely to support trade in goods as well. As such, our paper calls for reducing trade costs in services markets and designing policies aimed at maximizing the positive spillovers across goods and services.

References

ABADIE, A., A. DIAMOND, AND J. HAINMUELLER (2010): "Synthetic Control Methods for Comparative Case Studies: Estimating the Effect of California's Tobacco Control Program," *Journal of the American Statistical Association*, 105(490), 493–505.

——— (2011): "Synth: An R Package for Synthetic Control Methods in Comparative Case Studies," *Journal of Statistical Software*, 42(13), 1–17.

——— (2015): "Comparative Politics and the Synthetic Control Method," *American Journal of Political Science*, 59(2), 495–510.

ABADIE, A., AND J. GARDEAZABAL (2003): "The Economic Costs of Conflict: A Case Study of the Basque Country," *The American Economic Review*, 93(1), 113–132.

ADHIKARI, B., R. A. DUVAL, B. HU, AND P. LOUNGANI (2016): "Can Reform Waves Turn the Tide? Some Case Studies Using the Synthetic Control Method," Wp/16/171, International Monetary Fund.

AIZENMAN, J., AND N. P. MARION (1993): "Macroeconomic Uncertainty and Private Investment," *Economics Letters*, 41(2), 207–210.

AMIN, M., AND A. MATTOO (2006): "Do Institutions Matter More for Services?," *World Bank Policy Research Working Paper Series*, 4032.

AMITI, M., AND D. E. WEINSTEIN (2011): "Exports and Financial Shocks," *Quarterly Journal of Economics*, 126(4), 1841–1877.

AMURGO-PACHECO, A., AND M. D. PIEROLA (2008): "Patterns of Export Diversification in Developing Countries : Intensive and Extensive Margins," Policy Research Working Paper Series 4473, The World Bank.

ARIZE, A. C., T. OSANG, AND D. J. SLOTTJE (2000): "Exchange-Rate Volatility and Foreign Trade: Evidence from Thirteen LDC's," *Journal of Business and Economic Statistics*, 18(1), 10–17.

ARNOLD, J. M., B. JAVORCIK, M. LIPSCOMB, AND A. MATTOO (2016): "Services Reform and Manufacturing Performance: Evidence from India," *Economic Journal*, 126(590), 1–39.

ARNOLD, J. M., B. S. JAVORCIK, AND A. MATTOO (2011): "Does Services Liberalization Benefit Manufacturing Firms? Evidence from the Czech Republic," *Journal of International Economics*, 85(1), 136–146.

ARNOLD, J. M., A. MATTOO, AND G. NARCISO (2008): "Services Inputs and Firm Productivity in Sub-Saharan Africa: Evidence from Firm-Level Data," *Journal of African Economies*, 17(4), 578–599.

ARSLAN, I., AND S. VAN WIJNBERGEN (1993): "Export Incentives, Exchange Rate Policy and Export Growth in Turkey," *The Review of Economics and Statistics*, 75(1), 128–133.

ASLAM, A., N. NOVTA, AND F. RODRIGUES-BASTOS (2017): "Calculating Trade in Value Added," IMF Working Papers 17/178, International Monetary Fund.

BAIER, S. L., AND J. H. BERGSTRAND (2007): "Do Free Trade Agreements Actually Increase Members' International Trade?," *Journal of international Economics*, 71(1), 72–95.

BARRETT, C. B. (1997): "Food Marketing Liberalization and Trader Entry: Evidence from Madagascar," *World Development*, 25(5), 763–777.

BARRETT, C. B., AND E. MUTAMBATSERE (2008): *The New Palgrave Dictionary of Economics* .chap. Marketing Boards. Palgrave Macmillan UK, London, 2 edn.

BARRO, R. J. (1991): "Economic Growth in a Cross Section of Countries," *Quarterly Journal of Economics*, 106, 407–443.

BARRO, R. J. (2000): "Inequality and Growth in a Panel of Countries," *Journal of Economic Growth*, 5(1), 5–32.

BAS, M. (2012): "Input-Trade Liberalization and Firm Export Decisions: Evidence from Argentina," *Journal of Development Economics*, 97(2), 481–493.

——— (2014): "Does Services Liberalization Affect Manufacturing Firms' Export Performance? Evidence from India," *Journal of Comparative Economics*, 42(3), 569–589.

BAS, M., AND V. STRAUSS-KAHN (2014): "Does Importing More Inputs Raise Exports? Firm-level Evidence from France," *Review of World Economics (Weltwirtschaftliches Archiv)*, 150(2), 241–275.

BEKAERT, G., AND C. R. HARVEY (2000): "Foreign Speculators and Emerging Equity Markets," *The Journal of Finance*, 55(2), 565–613.

BEKAERT, G., C. R. HARVEY, AND C. LUNDBLAD (2005): "Does Financial Liberalization Spur Growth?," *Journal of Financial Economics*, 77(1), 3–55.

BEN-DAVID, D., AND D. H. PAPELL (1998): "Slowdowns and Meltdowns: Postwar Growth Evidence from 74 Countries," *Review of Economics and Statistics*, 80(4), 561–571.

BERG, A., J. D. OSTRY, AND J. ZETTELMEYER (2012): "What Makes Growth Sustained?," *Journal of Development Economics*, 98(2), 149–166.

BERNARD, A. B., AND J. B. JENSEN (2004): "Entry, Expansion, and Intensity in the US Export Boom, 1987-1992," *Review of International Economics*, 12(4), 662–675.

BESEDES, T., AND T. J. PRUSA (2011): "The Role of Extensive and Intensive Margins and Export Growth," *Journal of Development Economics*, 96(2), 371–379.

BILLMEIER, A., AND T. NANNICINI (2013): "Assessing Economic Liberalization Episodes: A Synthetic Control Approach," *Review of Economics and Statistics*, 95(3), 983–1001.

BLEANEY, M., AND D. GREENAWAY (2001): "The Impact of Terms of Trade and Real Exchange Rate Volatility on Investment and Growth in Sub-Saharan Africa," *Journal of Development Economics*, 65(2), 491–500.

BORTOLOTTI, B., J. D'SOUZA, M. FANTINI, AND W. L. MEGGINSON (2002): "Privatization and the Sources of Performance Improvement in the Global Telecommunications Industry," *Telecommunications Policy*, 26(5), 243 – 268.

BRENTON, P., AND R. NEWFARMER (2007): "Watching More Than the Discovery Channel : Export Cycles and Diversification In Development," Policy Research Working Paper Series 4302, The World Bank.

CADOT, O., C. CARRÈRE, AND V. STRAUSS-KAHN (2011): "Export Diversification: What's Behind The Hump?," *Review of Economics and Statistics*, 93(2), 590–605.

——— (2014): *Trade and Employment: From Myths to Facts* .chap. 7 Trade Diversification: Drivers and Impacts, pp. 253–307. ILO.

CADOT, O., J. DE MELO, P. PLANE, L. WAGNER, AND M. T. WOLDEMICHAEL (2016): "Industrialization and Structural Change: Can Sub-Saharan Africa Develop without Factories ?," *Revue d'économie du développement*, 24(2), 15–43, English Issue.

CADOT, O., A.-C. DISDIER, M. JAUD, AND A. SUWA-EISENMANN (2015): "Big Hits in Export: Growing by Leaps and Bounds," *Mimeo*, Lausanne.

CARRÈRE, C., AND J. DE MELO (2012): "Fiscal Spending and Economic Growth: Some Stylized Facts," *World Development*, 40(9), 1750–1761.

CERRA, V., AND S. C. SAXENA (2008): "Growth Dynamics: The Myth of Economic Recovery," *American Economic Review*, 98(1), 439–457.

CHIT, M. M., M. RIZOV, AND D. WILLENBOCKEL (2010): "Exchange Rate Volatility and Exports: New Empirical Evidence from the Emerging East Asian Economies," *The World Economy*, 33(2), 239–263.

CHOR, D., AND K. MANOVA (2012): "Off the Cliff and Back? Credit Conditions and International Trade During the Global Financial Crisis," *Journal of International Economics*, 87(1), 117–133.

CROZET, M., AND E. MILET (2017): "Should Everybody Be in Services? The Effect of Servitization on Manufacturing Firm Performance," *Journal of Economics and Management Strategy*, 26(4), 820–841.

DABLA-NORRIS, E., K. KOCHHAR, N. SUPHAPHIPHAT, F. RICKA, AND E. TSOUNTA (2015): "Causes and Consequences of Income Inequality: A Global Perspective," *IMF Staff Discussion Note*, SDN/15/43.

DELL'ARICCIA, G., D. IGAN, L. LAEVEN, AND H. TONG (2012): "Policies for Macrofinancial Stability: How to Deal with Credit Booms," *IMF Staff Discussion Note*, SDN/12/06.

EBEKE, C. (2014): "Private Saving Accelerations," Wp/14/223, International Monetary Fund.

EDWARDS, L., M. SANFILIPPO, AND A. SUNDARAM (2017): "Importing and Firm Export Performance: New Evidence from South Africa," *South African Journal of Economics*, 86(S1), 79–95.

EICHENGREEN, B., AND P. GUPTA (2013): "The Real Exchange Rate and Export Growth: Are Services Different?," *World Bank Policy Research Working Paper Series*, 6629.

FANG, W., Y. LAI, AND S. M. MILLER (2006): "Export Promotion through Exchange Rate Changes: Exchange Rate Depreciation or Stabilization?," *Southern Economic Journal*, 72(3), 611–626.

FENG, L., Z. LI, AND D. L. SWENSON (2016): "The Connection between Imported Intermediate Inputs and Exports: Evidence from Chinese Firms," *Journal of International Economics*, 101(C), 86–101.

FERNANDES, A. M., C. FREUND, AND M. D. PIEROLA (2016): "Exporter Behavior, Country Size and Stage of Development: Evidence from the Exporter Dynamics Database," *Journal of Development Economics*, 119, 121–137.

FERNANDES, A. M., AND C. PAUNOV (2012): "Foreign Direct Investment in Services and Manufacturing Productivity: Evidence for Chile," *Journal of Development Economics*, 97(2), 305–321.

FINK, C., A. MATTOO, AND R. RATHINDRAN (2003): "An Assessment of Telecommunications Reform in Developing Countries," *Information Economics and Policy*, 15(4), 443–466.

FOSU, A. K. (2003): "Political Instability and Export Performance in Sub-Saharan Africa," *Journal of Development Studies*, 39(4), 68–83.

FRANÇOIS, J., AND J. WOERZ (2008): "Producer Services, Manufacturing Linkages, and Trade," *Journal of Industry, Competition and Trade*, 8(3), 199–229.

FRANCOIS, J., AND B. HOEKMAN (2010): "Services Trade and Policy," *Journal of Economic Literature*, 48(3), 642–92.

FREUND, C., AND M. D. PIEROLA (2008): "Export Surges : the Power of a Competitive Currency," Policy Research Working Paper Series 4750, The World Bank.

——— (2012): "Export Surges," *Journal of Development Economics*, 97, 387–395.

FREUND, C., AND D. WEINHOLD (2002): "The Internet and International Trade in Services," *American Economic Review*, 92(2), 236–240.

FUGAZZA, M. (2004): "Export Performance and Its Determinants: Supply and Demand Constraints," *Policy Issues on International Trade and Commodities Study Series*, (26).

GHANI, E. (ed.) (2010): *The Service Revolution in South Asia*, OUP Catalogue. Oxford University Press.

GOLDBERG, P. K., AND N. PAVCNIK (2007): "Distributional Effects of Globalization in Developing Countries," *Journal of Economic Literature*, 45(1), 39–82.

GONZALES, C., S. JAIN-CHANDRA, K. KOCHHAR, M. NEWIAK, AND T. ZEINULLAYEV (2015): "Catalyst for Change: Empowering Women and Tackling Income Inequality," *IMF Staff Discussion Note*, SDN/15/20.

GUILLAUMONT, P., AND L. WAGNER (2012): "Aid and Growth Accelerations: Vulnerability Matters," Working paper no. 2012/31, United Nations University - World Institute for Development Economics Research.

GUTIERREZ, L. H., AND S. BERG (2000): "Telecommunications Liberalization and Regulatory Governance: Lessons from Latin America," *Telecommunications Policy*, 24(10), 865 – 884.

HANNAN, S. A. (2016): "The Impact of Trade Agreements: New Approach, New Insights," Wp/16/117, International Monetary Fund.

HAUSMANN, R., L. PRITCHETT, AND D. RODRIK (2005): "Growth Accelerations," *Journal of Economic Growth*, 10(4), 303–329.

HELPMAN, E., M. MELITZ, AND Y. RUBINSTEIN (2008): "Estimating Trade Flows: Trading Partners and Trading Volumes," *The Quarterly Journal of Economics*, 123(2), 441–487.

HENRY, P. B. (2000): "Stock Market Liberalization, Economic Reform, and Emerging Market Equity Prices," *The Journal of Finance*, 55(2), 529–564.

HUMMELS, D., AND P. J. KLENOW (2005): "The Variety and Quality of a Nation's Exports," *American Economic Review*, 95(3), 704–723.

IACOVONE, L., AND V. ZAVACKA (2009): "Banking Crises and Exports: Lessons from the Past," *World Bank Policy Research Working Paper Series*, 5016.

IMF (2012): "The Liberalization and Management of Capital Flows: An Institutional View," November 2012.

——— (2015): "Adjusting Under Pressure," *Regional Economic Outlook, Western Hemisphere*, Chapter 4. Trade Integration in Latin America and the Caribbean: Hype, Hope and Reality, October 2015.

——— (2016): "Subdued Demand: Symptoms and Remedies," *World Economic Outlook*, Chapter 2. Global Trade: What's behind the Slowdown?, October 2016.

JERZMANOWSKI, M. (2006): "Empirics of Hills, Plateaus, Mountains and Plains: A Markov-Switching Approach to Growth," *Journal of Development Economics*, 81(2), 357–385.

JONES, B. F., AND B. A. OLKEN (2005): "Do Leaders Matter? National Leadership and Growth Since World War II," *Quarterly Journal of Economics*, 120(3).

——— (2008): "The Anatomy of Start-Stop Growth," *Review of Economics and Statistics*, 90(3), 582–587.

KAMINSKY, G. L., AND C. M. REINHART (1999): "The Twin Crises: The Causes of Banking and Balance-of-Payments Problems," *American Economic Review*, 89(3), 473–500.

KIENDREBEOGO, Y. (2013): "How Do Banking Crises Affect Bilateral Exports?," Wp/13/150, International Monetary Fund.

KIENDREBEOGO, Y., AND A. MINEA (2016): "Financial Factors and Manufacturing Exports: Firm-Level Evidence from Egypt," *Journal of Development Studies*, pp. 1–17.

KING, G., AND L. ZENG (2001): "Logistic Regression in Rare Events Data," *Political Analysis*, 9(2), 137–163.

KOOPMAN, R., W. POWERS, Z. WANG, AND S.-J. WEI (2010): "Give Credit Where Credit Is Due: Tracing Value Added in Global Production Chains," Working Paper 16426, National Bureau of Economic Research.

KOOPMAN, R., Z. WANG, AND S.-J. WEI (2014): "Tracing Value-Added and Double Counting in Gross Exports," *American Economic Review*, 104(2), 459–494.

KUZNETS, S. (1955): "Economic Growth and Income Inequality," *American Economic Review*, 45(1), 1–28.

LAEVEN, L. (2003): "Does Financial Liberalization Reduce Financing Constraints?," *Financial Management*, 21(1), 5–34.

LAEVEN, L., AND F. VALENCIA (2008): "Systemic Banking Crises: A New Database," Wp/08/224, International Monetary Fund.

——— (2012): "Systemic Banking Crises Database: An Update," Wp/12/163, International Monetary Fund.

LANAU, S., AND P. TOPALOVA (2016): "The Impact of Product Market Reforms on Firm Productivity in Italy," Wp/16/119, International Monetary Fund.

LENNON, C. (2009): "Trade in Services and Trade in Goods: Differences and Complementarities," Wiiw working paper 53, Vienna Institute of International Economics Studies, Vienna.

LENNON, C., D. MIRZA, AND G. NICOLETTI (2009): "Complementarity of Inputs across Countries in Services Trade," *Annals of Economics and Statistics*, (93/94), 183–205.

LENZEN, M., K. KANEMOTO, D. MORAN, AND A. GESCHKE (2012): "Mapping the Structure of the World Economy," *Environmental Science and Technology*, 46(15), 8374–8381.

LENZEN, M., D. MORAN, K. KANEMOTO, AND A. GESCHKE (2013): "Building Eora: A Global Multi-Region Input–Output Database at High Country and Sector Resolution," *Economic Systems Research*, 25(1), 20–49.

LODEFALK, M. (2014): "The Role of Services for Manufacturing Firm Exports," *Review of World Economics (Weltwirtschaftliches Archiv)*, 150(1), 59–82.

LOPEZ, R. A. (2006): "Imports of Intermediate Inputs and Plant Survival," *Economics Letters*, 92(1), 58–62.

LOPEZ-ACEVEDO, G., AND R. ROBERTSON (2012): *Sewing Success? Employment, Wages, and Poverty following the End of the Multi-Fibre Arrangement*, Direction in Development - Poverty. World Bank, Washington DC.

MANOVA, K. (2008): "Credit Constraints, Equity Market Liberalizations and International Trade," *Journal of International Economics*, 76(1), 33–47.

MANOVA, K., S.-J. WEI, AND Z. ZHANG (2015): "Firm Exports and Multinational Activity under Credit Constraints," *Review of Economics and Statistics*, 97(3), 574–588.

MARKUSEN, J., T. F. RUTHERFORD, AND D. TARR (2005): "Trade and Direct Investment in Producer Services and the Domestic Market for Expertise," *Canadian Journal of Economics/Revue canadienne d'économique*, 38(3), 758–777.

MATTA, S., S. APPLETON, AND M. BLEANEY (2016): "The Impact of the Arab Spring on the Tunisian Economy," *The World Bank Economic Review*, pp. 1–28.

MELITZ, M. J. (2003): "The Impact of Trade on Intra-Industry Reallocations and Aggregate Industry Productivity," *Econometrica*, 71(6), 1695–1725.

MENDOZA, E. G., AND M. E. TERRONES (2012): "An Anatomy of Credit Booms and Their Demise," *Journal Economía Chilena*, 15(2), 04–32, Central Bank of Chile.

MINCER, J. (1958): "Investment in Human Capital and Personal Income Distribution," *Journal of Political Economy*, 66(4), 281–302.

MINETTI, R., AND S. C. ZHU (2011): "Credit Constraints and Firm Export: Microeconomic Evidence from Italy," *Journal of International Economics*, 83(2), 109–125.

MIROUDOT, S., R. LANZ, AND A. RAGOUSSIS (2009): "Trade in Intermediate Goods and Services," OECD Trade Policy Papers 93, OECD Publishing.

MUÛLS, M. (2015): "Exporters, Importers and Credit Constraints," *Journal of International Economics*, 95(2), 333–343.

NORDÅS, H. K. (2010): "Trade in Goods and Services: Two Sides of the Same Coin?," *Economic Modelling*, 27(2), 496–506.

NUNN, N. (2007): "Relationship-Specificity, Incomplete Contracts, and the Pattern of Trade," *Quarterly Journal of Economics*, pp. 569–600.

OSTRY, J. D., A. R. GHOSH, K. HABERMEIER, M. CHAMON, M. S. QURESHI, AND D. B. S. REINHARDT (2010): "Capital Inflows: The Role of Controls," *IMF Staff Position Note*, SPN/10/04.

PEROTTI, R. (1992): "Income Distribution, Politics and Growth," *American Economic Review*, 82(2), 311–316.

POLLITT, M. G. (1997): "The Impact of Liberalization on the Performance of the Electricity Supply Industry," *The Journal of Energy Literature*, 3(2), 3–31.

PRATI, A., M. G. ONORATO, AND C. PAPAGEORGIOU (2013): "Which Reforms Work and Under What Institutional Environment? Evidence from A New Dataset on Structural Reforms," *Review of Economics and Statistics*, 95(3), 946–968.

PRITCHETT, L. (2000): "Understanding Patterns of Economic Growth: Searching for Hills among Plateaus, Mountains, and Plains," *World Bank Economic Review*, 14(2), 221–250.

RAHMAN, S., AND A. SERLETIS (2009): "The Effects of Exchange Rate Uncertainty on Exports," *Journal of Macroeconomics*, 31(3), 500 – 507.

RANCIÈRE, R., A. TORNELL, AND F. WESTERMANN (2008): "Financial Liberalization," *New Palgrave Dictionary of Economics*.

RODRIK, D. (2000): "Saving Transitions," *World Bank Economic Review*, 14(3), 481–507.

SACHS, J. D., AND A. WARNER (1995): "Economic Reform and the Process of Global Integration," *Brookings Papers on Economic Activity*, 1995(1), 1–118.

SÁEZ, S., D. TAGLIONI, E. VAN DER MAREL, C. H. HOLLWEG, AND V. ZAVACKA (2015): *Valuing Services in Trade: A Toolkit for Competitiveness Diagnostics*. World Bank Publications.

SANTOS SILVA, J., AND S. TENREYRO (2006): "The Log of Gravity," *The Review of Economics and Statistics*, 88(4), 641–658.

——— (2010): "On the Existence of the Maximum Likelihood Estimates in Poisson Regression," *Economics Letters*, 107(2), 310–312.

SCHULARICK, M., AND A. M. TAYLOR (2012): "Credit Booms Gone Bust: Monetary Policy, Leverage Cycles, and Financial Crises, 1870-2008," *American Economic Review*, 102(2), 1029–61.

UNCTAD (2015): "Global Value Chains and Development: Investment and Value Added Trade in the Global Economy," Advanced Unedited Version.

VAN DER MAREL, E. (2012): "Trade in Services and TFP: The Role of Regulation," *The World Economy*, 35(11), 1530–1558.

VANDERMERWE, S., AND J. RADA (1988): "Servitization of Business: Adding Value by Adding Services," *European Management Journal*, 6(4), 314–324.

WACZIARG, R., AND K. H. WELCH (2008): "Trade Liberalization and Growth: New Evidence," *World Bank Economic Review*, 22(2), 187–231.

WAGNER, J. (2013): "Exports, Imports and Firm Survival: First Evidence for Manufacturing Enterprises in Germany," *Review of World Economics (Weltwirtschaftliches Archiv)*, 149(1), 113–130.

WALLSTEN, S. J. (2001): "An Econometric Analysis of Telecom Competition, Privatization, and Regulation in Africa and Latin America," *The Journal of Industrial Economics*, 49(1), 1–19.

WINTERS, L. A. (2004): "Trade Liberalisation and Economic Performance: An Overview," *The Economic Journal*, 114(493), F4–F21.

WINTERS, L. A., N. MCCULLOCH, AND A. MCKAY (2004): "Trade Liberalization and Poverty: The Evidence So Far," *Journal of Economic Literature*, 42(1), 72–115.

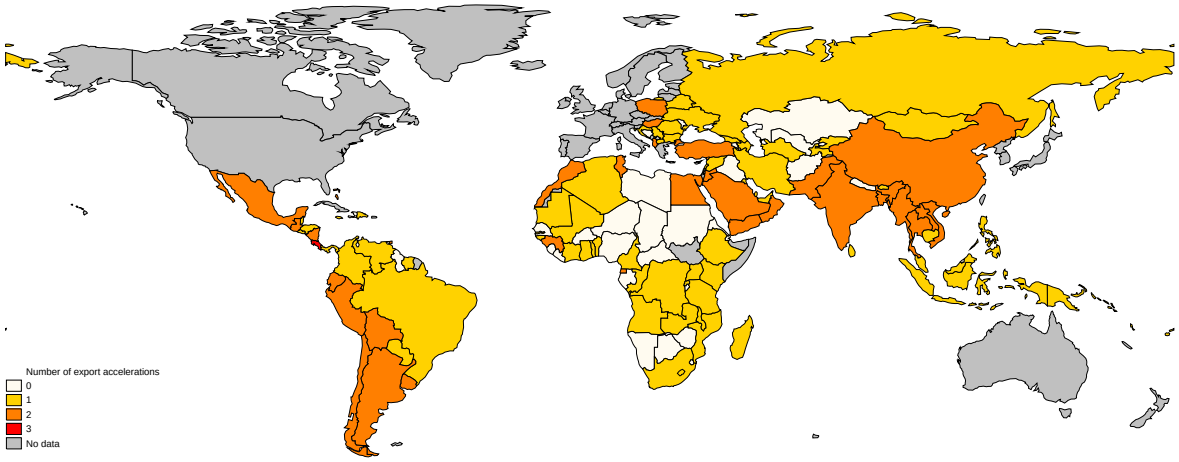
ZHANG, Y., D. PARKER, AND C. KIRKPATRICK (2005): "Competition, Regulation and Privatisation of Electricity Generation in Developing Countries: Does the Sequencing of the Reforms Matter?," *The Quarterly Review of Economics and Finance*, 45(2-3), 358–379.

ZHANG, Y.-F., D. PARKER, AND C. KIRKPATRICK (2008): "Electricity Sector Reform in Developing Countries: An Econometric Assessment of the Effects of Privatization, Competition and Regulation," *Journal of Regulatory Economics*, 33(2), 159–178.

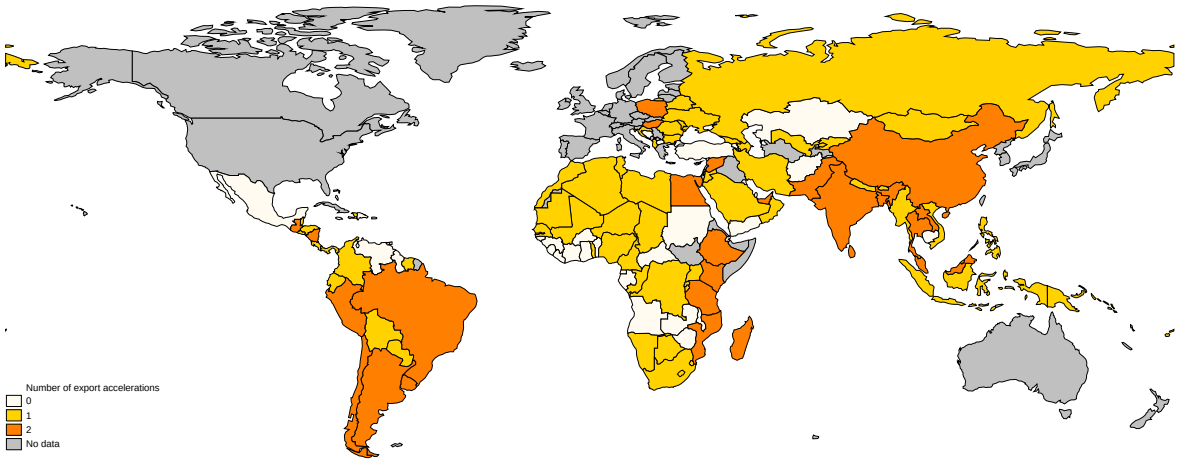
Appendix to Chapter 3

Figure B1: Distribution of Export Accelerations across the World

(a) Goods



(b) Services



Notes: Authors' elaboration based on COMTRADE and the joint ITC-UNCTAD-WTO trade in services database. Countries in grey are excluded from the analysis either because they are advanced economies as per IMF classification or because trade data is unavailable or insufficient to identify episodes of export accelerations.

Table B1: Classification of Goods Exports, SITC Rev. 2

Category	**Section/ Division**	**Description**
Food*	0	Food and live animals.
	1	Beverages and tobacco.
	22	Oil-seeds and oleaginous fruits.
	4	Animal and vegetable oils, fats and waxes.
Agricultural raw materials*	21	Hides, skins and furskins, raw.
	23	Crude rubber (including synthetic and reclaimed).
	24	Cork and wood.
	25	Pulp and waste paper.
	26	Textile fibers (except wool tops) and their wastes.
	29	Crude animal and vegetable materials, n.e.s.
Fuels	3	Mineral fuels,lubricants and related materials
Manufactures	5	Chemicals and related products, n.e.s.
	61	Leather, leather manufactures, n.e.s.and dressed furskins.
	62	Rubber manufactures, n.e.s.
	63	Cork and wood manufactures (excluding furniture).
	64	Paper, paperboard, articles of paper, paper pulp or paper board.
	65	Textile yarn, fabrics, made-up articles and related products.
	66	Non-metallic mineral manufactures, n.e.s.
	67	Iron and steel.
	69	Manufactures of metals, n.e.s.
	7	Machinery and transport equipment.
	8	Miscellaneous manufactured articles.
Ores and minerals	27	Crude fertilizers and crude materials (excluding coal).
	28	Metalliferous ores and metal scrap.
	68	Non-ferrous metals.

Notes: Standard International Trade Classification (SITC) revision 2 and World Bank classification. * Non-fuel primary commodities.

Table B2: BPM5 Classification of Services

Component	Code	Definition
1. Transportation*	205	Sea, air and other including land, internal waterway, space and pipeline transport services that are performed by residents of one economy for those of another, and that involve the carriage of passengers, the movement of goods (freight), rentals (charters) of carriers with crew, and related supporting and auxiliary services.
1.1 Sea transport	206	
1.2 Air transport	210	
1.3 Other transport	214	
2. Travel*	236	Goods and services acquired by personal travelers, for health, education or other purposes, and by business travelers.
2.1 Business	237	
2.2 Personal	240	
3. Communications services°	245	Telecommunication, postal and courier services.
4. Construction services°	249	Work performed on construction projects and installation by employees of an enterprise in locations outside the territory of the enterprise.
5. Insurance services°	253	Provision of various types of insurance to non residents by resident insurance enterprises, and vice versa.
6. Financial services°	260	Financial intermediation and auxiliary services provided by banks, stock exchanges, factoring enterprises, credit card enterprises, and other enterprises.
7. Computer and information services°	262	Computer services (hardware and software related services and data processing services), news agency services (provision of news, photographs, and feature articles to the media), and other information provision services (database services and web search portals).
8. Royalties and license fees°	266	Payments and receipts for the use of intangible non-financial assets and proprietary rights, such as patents, copyrights, trademarks, industrial processes, and franchises.
9. Other business services°	268	Trade-related services, operational leasing (rentals), and miscellaneous business, professional and technical services such as legal, accounting, management consulting, public relations services, advertising, market research and public opinion polling, research and development services, architectural, engineering, and other technical services, agricultural, mining and on-site processing.
9.1 Merchanting and other trade-related services	269	
9.2 Operational leasing services	272	
9.3 Miscellaneous business, professional, and technical services	273	
10. Personal, cultural, and recreational services°	287	
10.1 Audio-visual and related services	288	Services and fees related to the production of motion pictures, radio and television programs, and musical recordings.
10.2 Other personal, cultural, and recreational services	289	Services such as those associated with museums, libraries, archives, and other cultural, sporting, and recreational activities.
11. Government services, n.i.e.	291	Government transactions (including those of international organizations) not contained in other components of the BPM5. Included are all transactions (in both goods and services) by embassies, consulates, military units, with residents of economies in which they are located and all transactions with other economies.

Notes: IMF Balance of Payments Manual, Fifth Edition (BPM5). * Traditional services. ° Modern services. The distinction between traditional and modern services follows Ghani (2010). Definitions taken from WTO's statistical datasets metadata.

Table B3: Export Acceleration Dates in Emerging Market and Developing Countries

Country	Export Acceleration Dates		Main Source of	Income
	Goods	Services	Export Earnings	Group
Latin America and the Caribbean				
North America				
Mexico	1986;1994	...	Manufacturing	Upper-middle
South America				
Argentina	1988;2004	1989;2005	Primary products	Upper-middle
Bolivia	1989;2003	2003	Fuel	Lower-middle
Brazil	2000	1989;1998	Diversified	Upper-middle
Chile	1986;2000	1989;2002	Primary products	High
Colombia	2004	2005	Fuel	Upper-middle
Ecuador	1990;2005	2007	Fuel	Upper-middle
Guyana	...	...	Primary products	Lower-middle
Paraguay	2004	1988	Primary products	Lower-middle
Peru	1988;2004	1994;2005	Diversified	Upper-middle
Suriname	2006	2004	Primary products	Upper-middle
Uruguay	1986;2005	1991;2007	Primary products	High
Venezuela	1988	...	Fuel	Upper-middle
Central America				
Belize	1992	2001	Diversified	Upper-middle
Costa Rica	1986;1994;2007	1988	Diversified	Upper-middle
El Salvador	1994	1997	Diversified	Lower-middle
Guatemala	1991;2005	1989;2001	Diversified	Lower-middle
Honduras	1992	1991	Services	Lower-middle
Nicaragua	1994;2004	1991;2003	Diversified	Lower-middle
Panama	2005	2002	Services	Upper-middle
The Caribbean				
Antigua and Barbuda	2000	...	Services	High
Bahamas, The	1986;2001	...	Services	High
Barbados	...	...	Services	High
Dominica	1987	...	Services	Upper-middle
Dominican Republic	1988	...	Services	Upper-middle
Grenada	...	...	Services	Upper-middle
Haiti	...	2007	Services	Low
Jamaica	1986	...	Services	Upper-middle
St. Kitts and Nevis	...	...	Services	High
St. Lucia	...	...	Services	Upper-middle
St. Vincent & the Grenadines	...	1995	Services	Upper-middle
Trinidad and Tobago	1988;2000	...	Fuel	High
Commonwealth of Independent States				
Armenia	...	...	Services	Lower-middle
Azerbaijan	2005	2003	Fuel	Upper-middle
Belarus	2003	2004	Diversified	Upper-middle
Georgia	2004	2006	Services	Lower-middle
Kazakhstan	...	...	Fuel	Upper-middle

Table B3: Export Acceleration Dates in Emerging Market and Developing Countries (Cont'd)

Country	Export Acceleration Dates		Main Source of	Income Group
	Goods	Services	Export Earnings	
Kyrgyz Republic	2005	2003	Services	Lower-middle
Moldova	...	2003	Diversified	Lower-middle
Russia	2000	2004	Fuel	High
Tajikistan	2004	...	Services	Low
Turkmenistan	2004	...	Fuel	Upper-middle
Ukraine	2004	2004	Diversified	Lower-middle
Uzbekistan	...	2003	Primary products	Lower-middle
Emerging and Developing Asia				
Bangladesh	1987;2003	1988;2003	Manufacturing	Low
Bhutan	1992	2004	Diversified	Lower-middle
Brunei	...	2005	Fuel	High
Cambodia	1987	...	Manufacturing	Low
China	1986;2000	1990;2001	Manufacturing	Upper-middle
East Timor	...	...	Fuel	Lower-middle
Fiji	1989	1989	Services	Upper-middle
India	1987;2002	1994;2002	Diversified	Lower-middle
Indonesia	1987	2004	Diversified	Lower-middle
Kiribati	...	...	Services	Lower-middle
Lao PDR	1988;2007	1992;2005	Diversified	Lower-middle
Malaysia	1987	1988;2005	Manufacturing	Upper-middle
Maldives	...	1989;2006	Services	Upper-middle
Marshall Islands	...	...	Diversified	Upper-middle
Micronesia, Fed. Sts.	...	...	Diversified	Lower-middle
Mongolia	1993	1998	Primary products	Lower-middle
Myanmar	1990;2007	1992	Diversified	Low
Nepal	...	1992	Services	Low
Palau	...	...	Services	Upper-middle
Papua New Guinea	2005	1989	Primary products	Lower-middle
Philippines	1988	2007	Services	Lower-middle
Samoa	1992	2003	Services	Lower-middle
Solomon Islands	2006	1988	Primary products	Lower-middle
Sri Lanka	1986	1990;2007	Diversified	Lower-middle
Thailand	1986;2003	1988;2005	Manufacturing	Upper-middle
Tonga	...	...	Services	Upper-middle
Tuvalu	...	...	Primary products	Upper-middle
Vanuatu	2004	1990;2007	Services	Lower-middle
Vietnam	1987;2002	2003	Manufacturing	Lower-middle
Emerging and Developing Europe				
Albania	1995;2003	1993	Services	Upper-middle
Bosnia and Herzegovina	...	...	Services	Upper-middle
Bulgaria	2001	1998	Diversified	Upper-middle
Croatia	2003	2001	Services	High
Hungary	1988;1996	1990;2002	Manufacturing	Upper-middle

Table B3: Export Acceleration Dates in Emerging Market and Developing Countries (Cont'd)

Country	Export Acceleration Dates		Main Source of Export Earnings	Income Group
	Goods	Services		
Macedonia, FYR	2004	...	Services	Upper-middle
Poland	1988;1998	1989;2004	Manufacturing	High
Romania	1995	2000	Manufacturing	Upper-middle
Serbia	2004	...	Diversified	Upper-middle
Turkey	1986;1998	...	Manufacturing	Upper-middle
Middle East, North Africa, Afghanistan and Pakistan				
Afghanistan	...	...	Primary products	Low
Algeria	2003	2002	Fuel	Upper-middle
Bahrain	2000	2002	Fuel	High
Djibouti	...	...	Services	Lower-middle
Egypt, Arab Rep.	1989;2000	1988;2003	Services	Lower-middle
Sudan	...	...	Primary products	Lower-middle
Iran, Islamic Rep.	1999	2001	Fuel	Upper-middle
Iraq	...	...	Fuel	Upper-middle
Jordan	1984;1998	2005	Services	Upper-middle
Kuwait	1998	...	Fuel	High
Lebanon	1999	...	Services	Upper-middle
Libya	...	2000	Fuel	Upper-middle
Mauritania	2005	1999	Primary products	Lower-middle
Morocco	1986;2002	1996	Services	Lower-middle
Oman	1988;2003	2006	Fuel	High
Pakistan	1986;2002	1989;2002	Manufacturing	Lower-middle
Qatar	1997	...	Fuel	High
Saudi Arabia	1986;2000	1997	Fuel	High
Syrian Arab Republic	1990	1989;2004	Diversified	Lower-middle
Tunisia	1987;2002	2004	Manufacturing	Upper-middle
United Arab Emirates	1989	1990;2001	Fuel	High
Yemen	1987;1998	...	Fuel	Lower-middle
Sub-Saharan Africa				
Angola	2007	...	Fuel	Upper-middle
Benin	1994	...	Diversified	Low
Botswana	...	1999	Manufacturing	Upper-middle
Burkina Faso	...	...	Primary products	Low
Burundi	...	2004	Primary products	Low
Cabo Verde	2006	1994;2002	Services	Lower-middle
Cameroon	2005	2000	Diversified	Lower-middle
Central African Republic	...	...	Primary products	Low
Chad	...	2003	Fuel	Low
Comoros	2001	...	Services	Low
Congo, Dem. Rep.	1999	2003	Primary products	Low
Congo, Rep.	2003	1999	Fuel	Lower-middle
Côte d'Ivoire	2007	...	Primary products	Lower-middle
Equatorial Guinea	1995;2005	...	Fuel	High

Table B3: Export Acceleration Dates in Emerging Market and Developing Countries (Cont'd)

Country	Export Acceleration Dates		Main Source of	Income Group
	Goods	Services	Export Earnings	
Eritrea	...	...	Primary products	Low
Ethiopia	2005	1996;2004	Services	Low
Gabon	...	...	Fuel	Upper-middle
Gambia, The	2008	...	Services	Low
Ghana	2003	...	Diversified	Lower-middle
Guinea	1987;1995	...	Primary products	Low
Guinea-Bissau	1993	...	Primary products	Low
Kenya	2004	1988;2007	Diversified	Low
Lesotho	...	...	Manufacturing	Lower-middle
Liberia	...	...	Primary products	Low
Madagascar	1998	1988;2004	Diversified	Low
Malawi	2007	...	Primary products	Low
Mali	1989	2001	Primary products	Low
Mauritius	1986	2003	Services	Upper-middle
Mozambique	2004	1991;2006	Diversified	Low
Namibia	...	2006	Diversified	Upper-middle
Niger	...	2001	Primary products	Low
Nigeria	...	2000	Fuel	Lower-middle
Rwanda	2005	2003	Services	Low
São Tomé and Príncipe	1997	...	Services	Lower-middle
Senegal	...	2003	Services	Lower-middle
Seychelles	1999	...	Diversified	Upper-middle
Sierra Leone	...	...	Primary products	Low
South Africa	1992	2003	Primary products	Upper-middle
Swaziland	...	1988	Manufacturing	Lower-middle
Tanzania	2003	1991;2001	Diversified	Low
Togo	1997	2004	Diversified	Low
Uganda	2005	2003	Services	Low
Zambia	2004	...	Primary products	Lower-middle
Zimbabwe	...	...	Diversified	Low

Notes: "..." means no acceleration date was identified. The regional and analytical breakdowns of emerging market and developing countries are taken from the IMF World Economic Outlook database (October 2015). The analytical criterion *Main Source of Export Earnings* distinguishes between categories *Fuel* (SITC section 3) and *Non-Fuel* (SITC sections 0, 1, 2, 4 and division 68). Economies are categorized into one of these groups when their main source of export earnings exceeded 50% of total exports on average between 2010 and 2014. *Services* refer to *Services, income, transfers*. *Income Group* reflects the World Bank's 2013 income classification (FY 2015) based on per capita gross national income (GNI) with the following groups: (i) low-income: $\leqslant$ \$1,045; (ii) lower-middle-income: \$1,046 to \$4,125; (iii) upper-middle-income: \$4,126 to \$12,745; (iv) high-income: $>$ \$12,745.

Table B4: Description and Source of Variables

Variable	Description	Source
Log goods exports	Log merchandise exports (constant 2010 $)[33]	Calculated from UN COMTRADE
Goods export growth	Log difference of real merchandise exports	(SITC rev.2) and WDI
Log services exports	Log Services exports (constant 2010 $)[34]	Calculated from ITC-UNCTAD-WTO
Services export growth	Log difference of real services exports	and WDI
Log real GDP cap.	Log GDP per capita (constant 2010 US$)	WDI
Log population	Log total population	WDI
Market access	Sum of all the economic integration agreements (PTA, FTA, Customs Union, Common Market, Economic Union...) a country participates in, weighted by partners' market size as measured by GDP.[35]	Calculated from J. Bergstrand's database and WDI
Secondary education	Secondary school enrollment (% gross)	WDI
Log GVC (% exports)	Share of foreign and domestic value-added exports (including intermediary exports that return home) in gross exports, log	Calculated from EORA MRIO based on Aslam, Novta, and Rodrigues-Bastos (2017)
Log FVA (% exports)	Share of foreign value-added exports in gross exports, log	
Log DVX (% exports)	Share of domestic value-added exports (including intermediary exports that return home) in gross exports, log	
Log Term 3 (% exports)	Share of domestic value-added embedded in intermediate goods exports re-exported to third countries (in gross exports), log	
Governance ICRG	Mean value of "Corruption", "Law and Order" and "Bureaucracy Quality" variables.[36]	ICRG
Political stability	Perceptions of the likelihood of political instability and/or politically motivated violence, including terrorism.[37]	WGI

[33] Exports exclude fuels (SITC section 3) and minerals (SITC divisions 27, 28 and 68). Deflated using US CPI index (100 = 2010).

[34] Deflated using US CPI index (100 = 2010).

[35] The database records the economic integration of bilateral country pairings for 195 countries annually from 1950 through 2011. Depending on the level of economic integration, a country pairing was assigned a number code from 0 to 6. We convert this code into a 0/1 dummy.

[36] "Corruption": corruption within the political system that threatens foreign investment by leading to government instability and a breakdown in law and order. "Law and Order": strength and impartiality of the legal system and observance of the law. "Bureaucracy quality": institutional strength and quality of the bureaucracy that absorbs the shocks to policy formulation and day-to-day administrative functions following a change in government. Higher values indicate better quality of government (lower political risk).

[37] Higher values indicate lower perceptions of political instability and violence.

Table B4: Description and Source of Variables (Cont'd)

Variable	Description	Source
REER volatility	Standard deviation of the annual real effective exchange rate index over the past 5 years	Calculated from IMF IFS
Log REER index	Real effective exchange rate index (100 = 2010)[38]	
Tariffs	Average applied tariff rates, all products (%)	WDI
Log FDI inflow (% GDP)	Foreign direct investment inflows (% GDP), log	UNCTAD
Theil index	Total theil index[39]	
Theil index, intensive margin	Theil, intensive margin	IMF Diversification Toolkit
Theil index, extensive margin	Theil, extensive margin	
Agriculture index	Degree of public intervention in the market of the main agricultural export commodity, with 4 degrees: (i) maximum (public monopoly or monopsony in production, transportation or marketing); (ii) high (administered prices); (iii) moderate (public ownership in relevant producers, concession requirements; (iv) no intervention.[40]	
Electricity & Telecoms index	Degree of competition and liberalization and quality of regulation in the electricity and telecom markets. *Elecricity*: (i) degree of unbundling of generation, transmission, and distribution; (ii) whether a regulator other than government has been established; (iii) whether the wholesale market has been liberalized. *Telecom*: (i) the degree of competition in local services; (ii) whether a regulator other than government has been established; (iii) the degree of liberalization of interconnection changes.	Prati, Onorato, and Papageorgiou (2013)
Financial liberalization	Reforms in the banking sector and securities markets. *Banking sector*: (i) interest rate controls (floors or ceilings); (ii) credit controls (directed credit, subsidized lending); (iii) competition restrictions (limits on branches and entry barriers in the banking sector (licensing	

[38] Higher values indicate an appreciation.
[39] Higher values indicate lower diversification.
[40] Indices range between 0 and 1, higher values indicate greater degree of liberalization.

Table B4: Description and Source of Variables (Cont'd)

Variable	Description	Source
	requirements or limits on foreign banks); (iv) degree of state ownership; (v) quality of banking supervision & regulation (power of independence of bank supervisors, adoption of a Basel I capital adequacy ratio, framework for bank inspections. *Securities market*: degree of liberalization of securities markets: policies to encourage the development of bond and equity markets, to permit access of the domestic stock market to foreigners.	Prati, Onorato, and Papageorgiou (2013)
Capital account openness	Restrictions on capital account transactions.	
Human assets index	Measure of human capital combining 4 indicators: (i) share of (ii) undernourished population; children mortality (aged 5 years or under); (iii) gross secondary school enrollment rate; (iv) adult literacy rate.	FERDI
Inflation	Inflation, consumer prices (annual %)	WDI
Population growth	Log difference of population	
Government spending (% GDP)	General government final consumption expenditure (% GDP)	
Urban	Urban population (% total)	
Gender gap in labor force participation	Ratio of female to male labor force participation rate (%)	
Unemployment	Unemployment (% total labor force)	
Gini index	Gini index of income inequality[41]	
Crisis	Dummy for the occurrence of a banking, currency and/or sovereign debt crisis, including sovereign debt restructuring	Laeven and Valencia (2008, 2012)

Notes: UN COMTRADE: United Nations International Trade Statistics Database; WDI: World Development Indicators; UNCTAD: United Nations Conference on Trade and Development; ITC: International Trade Center; PTA: Preferential Trade Arrangement; FTA: Free Trade Arrangement; EORA MRIO: Eora multi-region input-output table; ICRG: International Country Risk Guide; REER: real effective exchange rate; IMF: International Monetary Fund; IFS: International Financial Statistics database; WGI: Worldwide Governance Indicators; FDI: foreign direct investment; FERDI: Fondation pour les études et recherches sur le développement international.

[41] Higher values indicate higher inequality.

Table B5: Summary Statistics

	Goods						Services					
	Mean	Median	Std. Dev.	Min.	Max.	Obs.	Mean	Median	Std. Dev.	Min.	Max.	Obs.
Export acceleration dummy	0.175	0	0.380	0	1	1,391	0.180	0	0.384	0	1	1,112
Log exports, USD	20.46	20.31	2.051	14.45	26.93	1,391	20.16	20.16	1.845	15.6	24.6	1,073
Export growth	0.052	0.047	0.315	-2.855	2.127	1,391	0.063	0.056	0.262	-1.31	2.875	1,060
Log real GDP per capita	7.551	7.527	1.191	4.898	11.30	1,391	7.757	7.85	1.233	5.077	11.13	1,112
Log population	15.45	15.75	1.989	10.62	20.96	1,391	15.47	15.86	2.026	10.62	20.97	1,112
Market access	0.693	0.771	0.161	0.012	0.871	1,391	0.695	0.774	0.153	0.015	0.861	1,112
Secondary education (% gross)	54.53	57.29	30.75	3.649	119.90	1,127	59.95	65.28	29.89	4.926	119.9	889
Governance ICRG	2.394	2.333	0.763	0.333	4.333	930	2.512	2.5	0.715	0.333	4.417	772
Political stability	-0.367	-0.294	0.931	-2.828	1.414	579	-0.282	-0.257	0.894	-2.828	1.414	507
REER volatility	24.85	8.209	107.20	0.458	1,484	616	12.35	6.576	27.59	0.458	507.7	527
Log REER index	4.669	4.621	0.401	2.929	7.106	657	4.583	4.587	0.327	2.929	5.952	568
Tariffs (%)	12.54	12.11	6.861	0	40.55	429	12.8	12.18	8.245	0	81.56	412
Theil index	3.837	3.843	1.092	1.598	6.383	1,391	3.745	3.694	1.114	1.598	6.331	1,112
Theil, extensive margin	0.519	0.289	0.616	-0.045	2.987	1,387	0.502	0.270	0.612	-0.0491	2.831	1,110
Theil, intensive margin	3.320	3.156	0.977	1.382	5.912	1,391	3.244	3.055	0.988	1.403	5.833	1,112
Log GVC (% exports)	3.774	3.765	0.264	3.137	4.601	932	3.762	3.747	0.261	3.044	4.601	935
Log FVA (% exports)	2.706	2.661	0.578	1.307	4.597	932	2.721	2.683	0.584	1.06	4.597	935
Log DVX (% exports)	3.209	3.265	0.481	-1.135	4.279	932	3.182	3.237	0.471	-1.135	4.261	934
Log Term 3 (% exports)	2.093	2.168	0.448	-2.353	3.093	932	2.074	2.147	0.446	-2.353	3.088	934
Log FDI inflows (% GDP)	0.139	0.417	1.919	-13.37	4.505	1,237	0.280	0.575	1.836	-13.14	4.505	1,012
Agriculture index	0.443	0.333	0.408	0	1	855	0.464	0.333	0.408	0	1	721
Networks index	0.145	0	0.228	0	0.909	950	0.178	0.091	0.235	0	0.818	767
Financial liberalization	0.467	0.500	0.252	0	0.944	582	0.553	0.611	0.214	0	0.944	502
Capital account openness	0.524	0.500	0.265	0	1	805	0.583	0.500	0.262	0	1	665

Notes: Authors' calculations based on UN COMTRADE, ITC-UNCTAD-WTO, WDI, Jeffrey Bergrand's website, ICRG, WGI, IMF IFS, IMF Diversification Toolkit, EORA MRIO dataset based on Aslam, Novta, and Rodrigues-Bastos (2017), and Prati, Onorato, and Papageorgiou (2013). Descriptive statistics computed from the sample of Column 1 (goods) and 6 (services) of Table 3.3. The description and source of variables are provided in Table B4.

Table B6: Export Deceleration Dates

Goods		**Services**	
Afghanistan	1985	Burundi	1996
Burundi	1998	Côte d'Ivoire	1994
Barbados	1986	Congo, Dem. Rep.	1992
Central African Republic	1987	Grenada	2005
Comoros	1994	Haiti	1988
Dominica	1995	Kiribati	1995
Grenada	2004	Libya	1993
Guyana	1985	Mongolia	1989
Haiti	1989	Nepal	2001
Iraq	1991	Sudan	1990
Jamaica	2000	Togo	1993
St. Lucia	1997	Venezuela	1997
Mongolia	2007		
Niger	1990		
Nicaragua	1985		
Rwanda	1991		
Sudan	1985		
Sierra Leone	1985		
Tonga	2007		
Venezuela	2009		
Zimbabwe	2002		

Notes: Authors' elaboration based on Freund and Pierola (2008). An export deceleration is identified by the application of the following criteria: (i) real average export growth during the seven-year period immediately following the collapse date is negative; (ii) it decreases by one third from the baseline growth rate and is at least 3 percentage points below it; (iii) the maximum level of exports observed during the collapse period is lower than the minimum level of exports observed during the baseline years; (iv) the real average export growth rate during the collapse period, excluding the year of weakest growth, is lower than real average growth during baseline.

Table B7: Country Weights in the Synthetic Control

Panel A: Brazil	
Log real GDP cap.	Venezuela (43.3%); Mexico (30.9%); Jamaica (20.9%); Malaysia (4.9%). *Other potential controls:* Burkina Faso; Botswana; Dominican Republic; Gabon; the Gambia; Guinea-Bissau; Guyana; Honduras; Indonesia; Sri Lanka; Mali; Mongolia; Namibia; Niger; Nigeria; Philippines; Senegal; Sierra Leone; El Salvador; South Africa; Zimbabwe.
Unemployment	Indonesia (48.6%); Fiji (36.2%); South Africa (12.2%); Moldova (3%). *Other potential controls:* Armenia; Burundi; Benin; Burkina Faso; Belize; Barbados; Brunei; Bhutan; Botswana; Central African Republic; Dominican Republic; Gabon; The Gambia; Guinea-Bissau; Guyana; Honduras; Iraq; Jamaica; Kazakhstan; Cambodia; Sri Lanka; Lesotho; Mexico; Mali; Mongolia; Mauritius; Malaysia; Niger; Nigeria; Nepal; Philippines; Sudan; Senegal; Sierra Leone; El Salvador; Swaziland; Chad; Venezuela; Zimbabwe.
Gini index	Botswana (47.3%); South Africa (31.6%); El Salvador (10.8%); Nigeria (10.3%). *Other potential controls:* Burkina Faso; Central African Republic; Dominican Republic; Guinea-Bissau; Honduras; Indonesia; Kazakhstan; Cambodia; Sri Lanka; Lesotho; Moldova; Mexico; Mali; Mongolia; Malaysia; Niger; Nigeria; Nepal; Philippines; Senegal; Swaziland.
Panel B: Peru	
Log real GDP cap.	Sierra Leone (12.6%); Kuwait (9.8%); Dominican Republic (8.9%); Brazil (4.3%); Botswana (4.3%); Trinidad and Tobago (4.4%); Gabon (4%); Turkey (3.8%); Kazakhstan (3.2%); Bulgaria (3.1%); Mexico (3%); Jamaica (2.7%); Lebanon (2.7%); Costa Rica (2.6%); Republic of Congo (2.3%); El Salvador (2.2%); Guyana (2%); Venezuela (2%); Albania (1.9%); Liberia (1.9%); Paraguay (1.8%); Armenia (1.7%); Honduras (1.7%); Morocco (1.7%); Côte d'Ivoire (1.5%); Mongolia (1.5%); Yemen (1.5%); Ghana (1.4%); Angola (1.3%); Guinea (1.1%); Guinea-Bissau (1%); Burkina Faso (0.9%); The Gambia (0.9%); Malawi (0.8%).
Unemployment	Burkina Faso (58.3%); Fiji (19.8%); Kazakhstan (9.1%); Yemen (6.8%); Venezuela (6%). *Other potential controls:* Angola; Albania; Armenia; Benin; Bulgaria; The Bahamas; Brazil; Barabados; Botswana; Central African Republic; Côte d'Ivoire; Republic of Congo; Costa Rica; Dominican Republic; Gabon; Ghana; The Gambia; Guinea-Bissau; Equatorial Guinea; Guyana; Honduras; Iraq; Jamaica; Cambodia; Kuwait; Lesotho; Morocco; Mexico; Macedonia; Mongolia; Mauritania; Malawi; Nepal; Paraguay; Qatar; Saudi Arabia; Sudan; Solomon Islands; Sierra Leone; El Salvador; Swaziland; Trinidad and Tobago; Turkey.
Gini index	Paraguay (41.5%); Honduras (26.6%); Costa Rica (23.7%); Albania (8.2%). *Other potential controls:* Armenia; Bulgaria; Brazil; Dominican Republic; Guinea; Kazakhstan; Cambodia; Mexico; Mongolia; El Salvador; Turkey.

Notes: Authors' calculations based on WDI, FERDI, ICRG and Laeven and Valencia (2008, 2012). The donor pool from which the synthetic control is constructed excludes countries with missing data for the outcome variable over the 5 years preceding the surge date and 7 years following it, and those that have experienced an export takeoff over the thirteen-year sample window. Control countries selected by the algorithm to build the synthetic control are given with individual weights in parentheses. Other potential controls are untreated countries that were not selected. The description and source of variables are provided in Table B4.

Table B8: Means of Covariates and Outcomes

	Brazil		Peru	
	Treated	Synthetic	Treated	Synthetic
Real GDP per capita (log)				
Investment (% GDP)	18.69	22.77	17.18	18.76
Population growth	0.02	0.02	0.01	0.02
Human assets index	85.33	81.74	81.50	70.36
Government quality	2.68	2.82	2.58	2.39
Crisis	1.00	0.62	0.00	0.07
Pre-treatment real GDP per capita (log)	9.06	9.06	8.15	8.16
Real GDP per capita (log) at $T_0 + 1$	9.08	9.06	8.32	8.30
Real GDP per capita (log) at $T_0 + 3$	9.09	8.98	8.46	8.37
Real GDP per capita (log) at $T_0 + 5$	9.15	9.10	8.53	8.37
Real GDP per capita (log) at $T_0 + 7$	9.23	9.19	8.62	8.42
RMSPE	0.01		0.00	
Unemployment (% total labor force)				
Population growth	0.02	0.01	0.01	0.02
Human assets index	85.33	79.55	81.50	46.34
Real GDP per capita (log)	9.06	7.94	8.15	7.00
Inflation	19.35	12.71	2.37	4.21
Urban population (% total)	79.05	43.70	73.85	33.07
Pre-treatment unemployment	7.80	7.81	5.70	5.70
Unemployment at $T_0 + 1$	9.30	9.46	4.60	4.96
Unemployment at $T_0 + 3$	9.70	11.24	4.50	5.74
Unemployment at $T_0 + 5$	9.30	10.23	4.00	5.86
Unemployment at $T_0 + 7$	8.10	10.41	3.60	5.78
RMSPE	0.13		0.06	
Gini index of income inequality				
Population growth	0.02	0.02	0.01	0.02
Human assets index	85.33	67.57	81.50	82.36
Real GDP per capita (log)	9.06	8.33	8.15	7.97
Government spending (% GDP)	19.56	21.53	11.48	12.07
Gender gap in labor force participation	64.45	75.08	73.02	55.70
Pre-treatment Gini index	59.57	59.56	52.31	52.32
Gini index at $T_0 + 1$	59.33	59.03	51.67	51.71
Gini index at $T_0 + 3$	58.01	59.30	48.55	50.11
Gini index at $T_0 + 5$	56.64	59.25	46.21	49.53
Gini index at $T_0 + 7$	55.23	58.58	45.11	49.15
RMSPE	0.05		0.33	

Notes: Authors' calculations based on WDI, FERDI, ICRG and Laeven and Valencia (2008, 2012). The donor pool from which the synthetic control is constructed excludes countries with missing data for the outcome variable over the 5 years preceding the surge date and 7 years following it, and those that have experienced an export takeoff over the thirteen-year sample window. The pre-treatment outcome is the value of the outcome averaged over the pre-treatement period to provide a simple reference, but the algorithm minimizes the distance between each yearly value of the outcome for the treated country and its synthetic counterpart. RMSPE: root mean squared prediction error. The description and source of variables are provided in Table B4.

Table B9: Institutional Quality, Macroeconomic Sability and Trade Competitiveness: Horizon 6

Dependent variable	Goods Export Acceleration Dummy					Services Export Acceleration Dummy				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Log real GDP cap.	-0.165*	-0.097	0.097	0.014	0.119	0.013	-0.083	-0.091	-0.294	0.002
	(0.093)	(0.130)	(0.158)	(0.172)	(0.178)	(0.136)	(0.209)	(0.223)	(0.286)	(0.322)
Log real GDP cap.^{2}	0.012**	0.008	-0.006	0.000	-0.008	-0.002	0.003	0.004	0.016	-0.003
	(0.006)	(0.008)	(0.010)	(0.011)	(0.011)	(0.009)	(0.013)	(0.014)	(0.018)	(0.020)
Log population	0.056***	0.036***	0.040***	0.043***	0.048***	0.029**	0.071***	0.049***	0.036***	0.053***
	(0.008)	(0.009)	(0.007)	(0.007)	(0.009)	(0.011)	(0.014)	(0.009)	(0.010)	(0.016)
Market access	0.139*	0.275**	0.014	0.095	0.120	0.129	0.026	-0.104	-0.150	-0.261
	(0.073)	(0.114)	(0.077)	(0.081)	(0.106)	(0.091)	(0.134)	(0.103)	(0.136)	(0.193)
Secondary education	0.002***	0.001	0.001*	0.001*	0.001	0.001	0.002	0.002**	0.002**	0.003*
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)
Governance ICRG	0.037**					0.042*				
	(0.017)					(0.024)				
Political stability		-0.005					0.043			
		(0.021)					(0.033)			
REER volatility			-0.003***					-0.006***		
			(0.001)					(0.001)		
Log REER index				-0.123***					-0.375***	
				(0.034)					(0.066)	
Tariffs (%)					-0.003					-0.006
					(0.003)					(0.005)
Observations	959	592	611	728	443	788	437	416	430	287
Countries	94	128	60	62	107	92	121	58	60	94
Accelerations included	69	32	45	52	31	63	39	33	35	37
McFadden R^2	0.186	0.142	0.169	0.161	0.155	0.107	0.117	0.154	0.15	0.101
Pseudo R^2	0.159	0.115	0.143	0.136	0.129	0.106	0.121	0.148	0.146	0.116
Observed % of EA = 1	20.54	17.23	19.64	19.23	18.51	23.86	27.23	25.00	25.58	35.19
% correctly classified	70.39	67.40	70.54	70.47	67.49	65.61	63.84	66.11	67.21	63.07

Notes: Probit estimates, robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Coefficients are marginal probabilities evaluated at the sample means. The dependent variable EA is a dummy for the timing of goods (Columns 1-5) or services (Columns 6-10) export accelerations which equals 1 over the 3-year window centered on the initiation date. All RHS variables are lagged by 2 years. The description and source of variables are provided in Table B4.

Table B10: Product Market Reforms and Financial Liberalization: Horizon 6

Dependent variable	Goods Export Acceleration Dummy					Services Export Acceleration Dummy				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Log real GDP cap.	-0.131	-0.001	0.168	-0.115	-0.093	0.260	0.143	-0.009	0.096	-0.039
	(0.133)	(0.128)	(0.213)	(0.157)	(0.077)	(0.180)	(0.173)	(0.298)	(0.213)	(0.121)
Log real GDP cap.^{2}	0.011	0.003	-0.011	0.007	0.008	-0.018	-0.011	-0.002	-0.009	0.003
	(0.009)	(0.008)	(0.014)	(0.010)	(0.005)	(0.012)	(0.011)	(0.020)	(0.014)	(0.008)
Log population	0.055***	0.050***	0.058***	0.050***	0.043***	0.044***	0.046***	0.043**	0.030**	0.043***
	(0.007)	(0.007)	(0.015)	(0.010)	(0.005)	(0.010)	(0.009)	(0.018)	(0.013)	(0.007)
Market access	0.221***	0.196***	0.200*	0.103	0.151***	0.214***	0.198***	0.193	0.138	0.086
	(0.065)	(0.062)	(0.114)	(0.091)	(0.056)	(0.081)	(0.074)	(0.124)	(0.111)	(0.077)
Secondary education	0.002***	0.001*	0.004***	0.004***	0.001***	0.001	0.001*	0.002	0.001	0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Agriculture index	0.076**					0.135***				
	(0.031)					(0.040)				
Networks index		-0.060					0.093			
		(0.061)					(0.079)			
Financial liberalization			-0.062					-0.118		
			(0.142)					(0.160)		
Capital account openness				-0.058					0.191**	
				(0.063)					(0.080)	
Log FDI inflows (% GDP)					0.006					0.003
					(0.007)					(0.007)
Observations	1 033	1 127	625	864	1 473	768	841	478	641	1 008
Countries	90	96	59	81	138	89	94	59	80	136
Accelerations included	70	75	59	73	88	59	62	50	59	73
McFadden R^2	0.195	0.164	0.169	0.162	0.153	0.178	0.147	0.128	0.112	0.109
Pseudo R^2	0.162	0.14	0.166	0.154	0.121	0.162	0.135	0.136	0.118	0.103
Observed % of EA = 1	19.75	19.79	27.84	24.65	16.43	23.44	22.47	30.54	27.93	22.02
% correctly classified	71.44	67.88	70.72	68.40	68.30	67.84	66.11	67.16	66.30	64.98

Notes: Probit estimates, robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Coefficients are marginal probabilities evaluated at the sample means. The dependent variable EA is a dummy for the timing of goods (Columns 1-5) or services (Columns 6-10) export accelerations which equals 1 over the 3-year window centered on the initiation date. All RHS variables are lagged by 2 years. The description and source of variables are provided in Table B4.

Table B11: Diversification and GVC Participation: Horizon 6

Dependent variable	Goods Export Acceleration Dummy					Services Export Acceleration Dummy				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Log real GDP cap.	-0.132*	-0.130*	-0.012	-0.037	-0.039	-0.110	-0.133	-0.049	-0.099	-0.093
	(0.074)	(0.074)	(0.091)	(0.094)	(0.093)	(0.119)	(0.118)	(0.128)	(0.137)	(0.138)
Log real GDP cap.^{2}	0.011**	0.011**	0.002	0.004	0.004	0.007	0.009	0.001	0.005	0.004
	(0.005)	(0.005)	(0.006)	(0.006)	(0.006)	(0.008)	(0.007)	(0.008)	(0.009)	(0.009)
Log population	0.035***	0.034***	0.030***	0.033***	0.032***	0.028***	0.030***	0.017**	0.021**	0.019**
	(0.005)	(0.005)	(0.006)	(0.007)	(0.006)	(0.007)	(0.007)	(0.009)	(0.009)	(0.009)
Market access	0.102**	0.101**	0.150**	0.177***	0.178***	0.139**	0.147**	0.245***	0.218***	0.210***
	(0.049)	(0.049)	(0.060)	(0.060)	(0.059)	(0.068)	(0.067)	(0.081)	(0.079)	(0.078)
Secondary education	0.000	0.000	0.001***	0.002***	0.002***	-0.000	-0.000	0.002***	0.002***	0.002***
	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Theil index	-0.043***					-0.050***				
	(0.009)					(0.012)				
Theil index, extensive margin		-0.037**					-0.080***			
		(0.016)					(0.022)			
Theil index, intensive margin		-0.046***					-0.040***			
		(0.010)					(0.013)			
Log GVC (% exports)			-0.004					0.128**		
			(0.034)					(0.053)		
Log FVA (% exports)				0.055***	0.062***				0.078***	0.093***
				(0.021)	(0.020)				(0.029)	(0.029)
Log DVX (% exports)				0.060**					0.066	
				(0.027)					(0.043)	
Log Term 3 (% exports)					0.091***					0.113**
					(0.029)					(0.054)
Observations	1 548	1 546	1 048	1 036	1 036	1 105	1 104	842	837	837
Countries	128	128	123	123	123	127	127	116	116	116
Accelerations included	93	93	60	60	60	77	77	62	62	62
McFadden R^2	0.174	0.174	0.146	0.155	0.16	0.134	0.135	0.159	0.16	0.167
Pseudo R^2	0.138	0.138	0.114	0.122	0.125	0.122	0.122	0.145	0.145	0.151
Observed % of EA = 1	17.18	17.21	16.22	16.41	16.41	21.27	21.20	22.33	22.22	22.22
% correctly classified	69.38	69.47	69.66	69.69	69.02	67.51	66.58	65.32	66.19	66.55

Notes: Probit estimates, robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Coefficients are marginal probabilities evaluated at the sample means. The dependent variable EA is a dummy for the timing of goods (Columns 1-5) or services (Columns 6-10) export accelerations which equals 1 over the 3-year window centered on the initiation date. All RHS variables are lagged by 2 years. The description and source of variables are provided in Table B4.

Table B12: Institutional Quality, Macroeconomic Sability and Trade Competitiveness: Horizon 8

Dependent variable	Goods Export Acceleration Dummy					Services Export Acceleration Dummy				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Log real GDP cap.	-0.190*	-0.003	0.124	0.130	0.368	-0.364***	0.054	-0.406*	-0.375*	-0.176
	(0.101)	(0.171)	(0.154)	(0.167)	(0.230)	(0.129)	(0.225)	(0.224)	(0.213)	(0.317)
Log real GDP cap.^{2}	0.013**	0.002	-0.007	-0.007	-0.023	0.018**	-0.008	0.022	0.021	0.007
	(0.006)	(0.011)	(0.010)	(0.011)	(0.015)	(0.008)	(0.014)	(0.014)	(0.014)	(0.020)
Log population	0.061***	0.035***	0.047***	0.042***	0.056***	0.031***	0.066***	0.042***	0.030***	0.041***
	(0.009)	(0.010)	(0.007)	(0.007)	(0.011)	(0.009)	(0.012)	(0.010)	(0.008)	(0.013)
Market access	0.290***	0.589***	0.119	0.175*	0.145	0.012	0.054	-0.038	0.005	0.077
	(0.081)	(0.127)	(0.088)	(0.090)	(0.121)	(0.082)	(0.131)	(0.111)	(0.098)	(0.173)
Secondary education	0.003***	0.000	0.001	0.001	0.001	0.003***	0.002*	0.002**	0.002**	0.003**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Governance ICRG	0.057***					0.033*				
	(0.017)					(0.017)				
Political stability		0.009					0.081***			
		(0.022)					(0.031)			
REER volatility			-0.002***					-0.002*		
			(0.001)					(0.001)		
Log REER index				-0.135***					-0.128***	
				(0.034)					(0.043)	
Tariffs (%)					0.002					-0.003
					(0.003)					(0.004)
Observations	926	503	570	635	368	782	410	423	488	307
Countries	93	122	60	62	101	93	126	61	62	97
Accelerations included	64	21	36	38	21	43	29	23	25	19
McFadden R^2	0.155	0.138	0.146	0.149	0.139	0.145	0.144	0.163	0.163	0.1
Pseudo R^2	0.135	0.106	0.12	0.119	0.115	0.12	0.127	0.134	0.129	0.096
Observed % of EA = 1	20.09	15.31	17.54	16.69	17.66	17.78	20.49	18.20	16.80	22.15
% correctly classified	69.33	67.40	70.00	71.18	65.76	64.96	65.61	67.14	67.83	64.17

Notes: Probit estimates, robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Coefficients are marginal probabilities evaluated at the sample means. The dependent variable EA is a dummy for the timing of goods (Columns 1-5) or services (Columns 6-10) export accelerations which equals 1 over the 3-year window centered on the initiation date. All RHS variables are lagged by 2 years. The description and source of variables are provided in Table B4.

Table B13: Product Market Reforms and Financial Liberalization: Horizon 8

Dependent variable	Goods Export Acceleration Dummy					Services Export Acceleration Dummy				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Log real GDP cap.	0.068	0.179*	0.363*	0.172	-0.071	-0.042	0.016	-0.417*	-0.325*	-0.216**
	(0.116)	(0.106)	(0.217)	(0.147)	(0.090)	(0.179)	(0.162)	(0.237)	(0.179)	(0.101)
Log real GDP cap.^{2}	-0.001	-0.009	-0.022	-0.011	0.007	-0.002	-0.005	0.022	0.016	0.011*
	(0.008)	(0.007)	(0.014)	(0.010)	(0.006)	(0.012)	(0.010)	(0.015)	(0.012)	(0.006)
Log population	0.059***	0.059***	0.070***	0.063***	0.046***	0.036***	0.032***	0.036***	0.032***	0.037***
	(0.007)	(0.006)	(0.014)	(0.009)	(0.006)	(0.009)	(0.007)	(0.013)	(0.009)	(0.005)
Market access	0.268***	0.264***	0.396***	0.239***	0.195***	0.179**	0.072	0.136	0.050	0.073
	(0.067)	(0.062)	(0.117)	(0.087)	(0.063)	(0.087)	(0.068)	(0.105)	(0.088)	(0.061)
Secondary education	0.001	0.001	0.003***	0.002***	0.001**	0.002**	0.001**	0.003***	0.003***	0.002***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)
Agriculture index	0.073**					0.091**				
	(0.029)					(0.036)				
Networks index		-0.159***					0.100			
		(0.055)					(0.064)			
Financial liberalization			-0.137					-0.126		
			(0.133)					(0.118)		
Capital account openness				0.023					0.054	
				(0.058)					(0.058)	
Log FDI inflows (% GDP)					0.007					-0.002
					(0.009)					(0.005)
Observations	960	1 057	609	859	1 249	736	859	529	689	1 062
Countries	91	97	60	82	135	90	95	60	81	137
Accelerations included	58	61	50	56	62	43	45	36	41	48
McFadden R^2	0.211	0.205	0.192	0.17	0.142	0.175	0.161	0.17	0.157	0.163
Pseudo R^2	0.162	0.156	0.171	0.141	0.107	0.144	0.127	0.151	0.131	0.119
Observed % of EA = 1	17.19	16.65	22.99	18.86	14.89	18.61	16.76	21.55	18.72	14.60
% correctly classified	73.23	72.28	70.94	69.27	71.42	67.80	65.54	67.30	67.78	67.14

Notes: Probit estimates, robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Coefficients are marginal probabilities evaluated at the sample means. The dependent variable EA is a dummy for the timing of goods (Columns 1-5) or services (Columns 6-10) export accelerations which equals 1 over the 3-year window centered on the initiation date. All RHS variables are lagged by 2 years. The description and source of variables are provided in Table B4.

Table B14: Diversification and GVC Participation: Horizon 8

Dependent variable	Goods Export Acceleration Dummy					Services Export Acceleration Dummy				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Log real GDP cap.	-0.074	-0.064	0.028	0.018	0.011	-0.294***	-0.314***	-0.171	-0.192*	-0.190*
	(0.081)	(0.083)	(0.101)	(0.103)	(0.101)	(0.109)	(0.104)	(0.109)	(0.113)	(0.115)
Log real GDP cap.^{2}	0.008	0.007	-0.000	0.000	0.001	0.016**	0.018***	0.008	0.010	0.010
	(0.005)	(0.005)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Log population	0.042***	0.041***	0.033***	0.033***	0.032***	0.024***	0.026***	0.020***	0.022***	0.021***
	(0.005)	(0.005)	(0.006)	(0.007)	(0.007)	(0.005)	(0.005)	(0.006)	(0.006)	(0.006)
Market access	0.168***	0.162***	0.193***	0.220***	0.226***	0.001	0.019	0.055	0.051	0.059
	(0.056)	(0.055)	(0.063)	(0.064)	(0.063)	(0.059)	(0.058)	(0.063)	(0.062)	(0.062)
Secondary education	0.000	0.001	0.001**	0.001**	0.001***	0.001	0.001	0.002***	0.001**	0.001**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Theil index	-0.022**					-0.038***				
	(0.009)					(0.010)				
Theil, extensive margin		0.006					-0.085***			
		(0.014)					(0.019)			
Theil, intensive margin		-0.033***					-0.024**			
		(0.010)					(0.011)			
Log GVC (% exports)			0.007					-0.005		
			(0.033)					(0.039)		
Log FVA (% exports)				0.034	0.045**				0.010	0.024
				(0.020)	(0.019)				(0.021)	(0.021)
Log DVX (% exports)				0.066**					-0.020	
				(0.027)					(0.029)	
Log Term 3 (% exports)					0.114***					0.022
					(0.029)					(0.032)
Observations	1 352	1 349	953	942	942	1 095	1 094	966	958	958
Countries	127	127	121	121	121	128	128	120	120	120
Accelerations included	71	71	43	43	43	55	55	46	45	45
McFadden R^2	0.155	0.159	0.118	0.126	0.137	0.156	0.163	0.144	0.141	0.141
Pseudo R^2	0.117	0.12	0.085	0.091	0.098	0.119	0.123	0.109	0.106	0.107
Observed % of EA = 1	15.31	15.35	13.43	13.59	13.59	15.62	15.54	15.22	14.93	14.93
% correctly classified	69.90	70.20	68.21	67.94	67.83	66.85	67.73	66.25	65.55	66.08

Notes: Probit estimates, robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Coefficients are marginal probabilities evaluated at the sample means. The dependent variable EA is a dummy for the timing of goods (Columns 1-5) or services (Columns 6-10) export accelerations which equals 1 over the 3-year window centered on the initiation date. All RHS variables are lagged by 2 years. The description and source of variables are provided in Table B4.

Table B15: Institutional Quality, Macroeconomic Sability and Trade Competitiveness: Criterion 2, $\alpha = 1.1$

Dependent variable	Goods Export Acceleration Dummy					Services Export Acceleration Dummy				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Log real GDP cap.	-0.262***	-0.204	-0.188	-0.236	-0.076	-0.233*	-0.079	-0.121	-0.121	-0.288
	(0.097)	(0.169)	(0.162)	(0.173)	(0.202)	(0.129)	(0.205)	(0.208)	(0.219)	(0.299)
Log real GDP cap.^{2}	0.017***	0.012	0.011	0.015	0.003	0.011	0.003	0.005	0.005	0.014
	(0.006)	(0.011)	(0.010)	(0.011)	(0.013)	(0.008)	(0.013)	(0.013)	(0.014)	(0.018)
Log population	0.054***	0.032***	0.049***	0.047***	0.044***	0.035***	0.072***	0.050***	0.041***	0.062***
	(0.009)	(0.012)	(0.007)	(0.007)	(0.010)	(0.009)	(0.013)	(0.008)	(0.008)	(0.014)
Market access	0.333***	0.373***	0.163*	0.224**	0.071	-0.056	-0.067	-0.130	-0.066	-0.177
	(0.083)	(0.126)	(0.089)	(0.091)	(0.114)	(0.084)	(0.129)	(0.091)	(0.091)	(0.171)
Secondary education	0.004***	0.002**	0.003***	0.003***	0.003**	0.002***	0.002	0.002*	0.001	0.004**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)
Governance ICRG	0.044**					0.051**				
	(0.017)					(0.021)				
Political stability		0.010					0.080**			
		(0.025)					(0.032)			
REER volatility			-0.003***					-0.004***		
			(0.001)					(0.002)		
Log REER index				-0.143***					-0.147***	
				(0.033)					(0.045)	
Tariffs (%)					-0.002					-0.001
					(0.003)					(0.004)
Observations	910	505	566	667	385	819	443	457	521	320
Countries	93	125	60	62	106	92	127	61	63	101
Accelerations included	68	33	44	46	26	56	31	31	34	33
McFadden R^2	0.165	0.123	0.175	0.175	0.13	0.133	0.118	0.214	0.194	0.117
Pseudo R^2	0.145	0.106	0.148	0.145	0.112	0.119	0.116	0.176	0.159	0.125
Observed % of EA = 1	20.88	18.61	19.79	18.89	18.96	20.64	24.61	19.91	19.00	29.38
% correctly classified	69.56	66.93	69.61	70.17	68.57	64.84	64.33	68.27	71.59	61.88

Notes: Probit estimates, robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Coefficients are marginal probabilities evaluated at the sample means. The dependent variable EA is a dummy for the timing of goods (Columns 1-5) or services (Columns 6-10) export accelerations which equals 1 over the 3-year window centered on the initiation date. All RHS variables are lagged by 2 years. The description and source of variables are provided in Table B4.

Table B16: Product Market Reforms and Financial Liberalization: Criterion 2, $\alpha = 1.1$

Dependent variable	Goods Export Acceleration Dummy					Services Export Acceleration Dummy				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Log real GDP cap.	-0.192	-0.085	0.303	0.038	-0.108	0.130	0.154	0.075	-0.093	-0.216**
	(0.134)	(0.121)	(0.215)	(0.150)	(0.089)	(0.180)	(0.183)	(0.280)	(0.197)	(0.100)
Log real GDP cap.^{2}	0.014	0.008	-0.019	-0.004	0.008	-0.012	-0.013	-0.012	0.001	0.013**
	(0.009)	(0.008)	(0.014)	(0.010)	(0.006)	(0.012)	(0.012)	(0.018)	(0.013)	(0.006)
Log population	0.054***	0.053***	0.054***	0.048***	0.051***	0.043***	0.042***	0.045***	0.040***	0.043***
	(0.007)	(0.006)	(0.015)	(0.009)	(0.006)	(0.008)	(0.008)	(0.015)	(0.010)	(0.005)
Market access	0.335***	0.296***	0.406***	0.257***	0.242***	0.149**	0.063	0.128	0.021	0.004
	(0.072)	(0.064)	(0.114)	(0.091)	(0.064)	(0.074)	(0.070)	(0.113)	(0.094)	(0.060)
Secondary education	0.003***	0.002***	0.004***	0.004***	0.002***	0.001	0.001*	0.003***	0.003***	0.001**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Agriculture index	0.061**					0.124***				
	(0.031)					(0.034)				
Networks index		-0.067					0.095			
		(0.061)					(0.070)			
Financial liberalization			-0.056					0.081		
			(0.143)					(0.138)		
Capital account openness				-0.009					0.132**	
				(0.057)					(0.065)	
Log FDI inflows (% GDP)					0.014**					0.004
					(0.006)					(0.006)
Observations	985	1 081	629	880	1 251	818	880	540	703	1 113
Countries	91	97	60	82	139	89	94	59	80	137
Accelerations included	67	70	56	66	75	53	56	45	53	61
McFadden R^2	0.191	0.189	0.195	0.175	0.147	0.195	0.145	0.145	0.165	0.161
Pseudo R^2	0.16	0.155	0.182	0.155	0.122	0.162	0.124	0.141	0.148	0.127
Observed % of EA = 1	19.80	18.96	25.76	21.82	17.99	19.68	19.32	25.19	22.19	16.89
% correctly classified	70.96	70.68	71.54	69.55	68.91	70.91	67.73	67.59	69.99	67.48

Notes: Probit estimates, robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Coefficients are marginal probabilities evaluated at the sample means. The dependent variable EA is a dummy for the timing of goods (Columns 1-5) or services (Columns 6-10) export accelerations which equals 1 over the 3-year window centered on the initiation date. All RHS variables are lagged by 2 years. The description and source of variables are provided in Table B4.

Table B17: Diversification and GVC Participation: Criterion 2, $\alpha = 1.1$

Dependent variable	Goods Export Acceleration Dummy					Services Export Acceleration Dummy				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Log real GDP cap.	-0.160**	-0.157*	-0.062	-0.063	-0.066	-0.248**	-0.258**	-0.153	-0.161	-0.163
	(0.080)	(0.080)	(0.100)	(0.102)	(0.101)	(0.107)	(0.107)	(0.118)	(0.128)	(0.129)
Log real GDP cap.^{2}	0.012**	0.012**	0.004	0.004	0.004	0.014**	0.015**	0.007	0.008	0.008
	(0.005)	(0.005)	(0.006)	(0.006)	(0.006)	(0.007)	(0.007)	(0.007)	(0.008)	(0.008)
Log population	0.037***	0.036***	0.024***	0.023***	0.021***	0.035***	0.036***	0.027***	0.028***	0.026***
	(0.005)	(0.005)	(0.007)	(0.007)	(0.007)	(0.006)	(0.006)	(0.007)	(0.007)	(0.007)
Market access	0.181***	0.177***	0.173***	0.199***	0.195***	0.001	0.009	0.058	0.059	0.057
	(0.056)	(0.055)	(0.063)	(0.064)	(0.063)	(0.061)	(0.061)	(0.071)	(0.071)	(0.070)
Secondary education	0.001***	0.001***	0.002***	0.002***	0.003***	0.001	0.001	0.002***	0.002**	0.002***
	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Theil index	-0.040***					-0.039***				
	(0.010)					(0.011)				
Theil, extensive margin		-0.027					-0.058***			
		(0.016)					(0.020)			
Theil, intensive margin		-0.045***					-0.032***			
		(0.011)					(0.012)			
Log GVC (% exports)			-0.006					0.026		
			(0.035)					(0.043)		
Log FVA (% exports)				0.029	0.037*				0.043*	0.056**
				(0.021)	(0.020)				(0.025)	(0.025)
Log DVX (% exports)				0.073**					0.065**	
				(0.030)					(0.032)	
Log Term 3 (% exports)					0.115***					0.117***
					(0.032)					(0.036)
Observations	1 390	1 387	960	950	950	1 149	1 148	947	940	940
Countries	128	128	122	122	122	127	127	120	120	120
Accelerations included	82	82	52	52	52	69	69	60	59	59
McFadden R^2	0.159	0.158	0.129	0.139	0.147	0.159	0.159	0.147	0.151	0.159
Pseudo R^2	0.128	0.128	0.102	0.11	0.115	0.129	0.129	0.125	0.127	0.133
Observed % of EA = 1	17.48	17.45	16.04	16.21	16.21	17.58	17.51	18.80	18.72	18.72
% correctly classified	69.86	69.58	68.54	68.32	68.32	68.76	68.99	66.95	66.17	67.77

Notes: Probit estimates, robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Coefficients are marginal probabilities evaluated at the sample means. The dependent variable EA is a dummy for the timing of goods (Columns 1-5) or services (Columns 6-10) export accelerations which equals 1 over the 3-year window centered on the initiation date. All RHS variables are lagged by 2 years. The description and source of variables are provided in Table B4.

Table B18: Institutional Quality, Macroeconomic Sability and Trade Competitiveness: Criterion 2, $\alpha = 1.5$

Dependent variable	Goods Export Acceleration Dummy					Services Export Acceleration Dummy				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Log real GDP cap.	-0.256***	-0.243	-0.172	-0.218	-0.054	-0.227*	-0.055	-0.159	-0.154	-0.328
	(0.097)	(0.167)	(0.163)	(0.174)	(0.201)	(0.127)	(0.207)	(0.207)	(0.217)	(0.293)
Log real GDP cap.^{2}	0.016***	0.014	0.009	0.013	0.001	0.011	0.001	0.007	0.008	0.016
	(0.006)	(0.011)	(0.010)	(0.011)	(0.013)	(0.008)	(0.013)	(0.013)	(0.014)	(0.018)
Log population	0.048***	0.021**	0.044***	0.041***	0.038***	0.033***	0.069***	0.050***	0.041***	0.064***
	(0.009)	(0.010)	(0.007)	(0.007)	(0.010)	(0.009)	(0.012)	(0.008)	(0.008)	(0.013)
Market access	0.319***	0.471***	0.140	0.195**	0.082	-0.079	-0.070	-0.145	-0.082	-0.208
	(0.081)	(0.117)	(0.086)	(0.089)	(0.109)	(0.081)	(0.128)	(0.091)	(0.089)	(0.161)
Secondary education	0.004***	0.002**	0.003***	0.003***	0.002**	0.002***	0.002	0.002*	0.001*	0.004***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)
Governance ICRG	0.048***					0.054***				
	(0.017)					(0.020)				
Political stability		-0.002					0.072**			
		(0.024)					(0.032)			
REER volatility			-0.003***					-0.004**		
			(0.001)					(0.002)		
Log REER index				-0.143***					-0.150***	
				(0.033)					(0.045)	
Tariffs (%)					-0.003					0.001
					(0.003)					(0.004)
Observations	919	508	575	676	392	830	447	461	525	326
Countries	93	125	60	62	106	92	127	61	63	101
Accelerations included	66	32	42	44	25	55	33	31	34	33
McFadden R^2	0.159	0.13	0.165	0.164	0.129	0.133	0.111	0.206	0.187	0.126
Pseudo R^2	0.139	0.11	0.139	0.135	0.109	0.117	0.109	0.17	0.154	0.13
Observed % of EA = 1	20.46	18.11	19.30	18.34	18.37	19.88	23.94	19.74	18.86	28.22
% correctly classified	69.21	65.95	67.83	69.53	66.84	64.82	62.64	67.68	69.71	65.34

Notes: Probit estimates, robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Coefficients are marginal probabilities evaluated at the sample means. The dependent variable EA is a dummy for the timing of goods (Columns 1-5) or services (Columns 6-10) export accelerations which equals 1 over the 3-year window centered on the initiation date. All RHS variables are lagged by 2 years. The description and source of variables are provided in Table B4.

Table B19: Product Market Reforms and Financial Liberalization: Criterion 2, $\alpha = 1.5$

Dependent variable	Goods Export Acceleration Dummy					Services Export Acceleration Dummy				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Log real GDP cap.	-0.166	-0.061	0.355*	0.057	-0.110	0.139	0.177	-0.052	-0.137	-0.205**
	(0.134)	(0.121)	(0.210)	(0.149)	(0.089)	(0.173)	(0.176)	(0.266)	(0.189)	(0.100)
Log real GDP cap.^{2}	0.012	0.006	-0.023*	-0.006	0.008	-0.012	-0.015	-0.002	0.004	0.012*
	(0.009)	(0.008)	(0.014)	(0.010)	(0.006)	(0.011)	(0.011)	(0.017)	(0.012)	(0.006)
Log population	0.049***	0.049***	0.045***	0.043***	0.047***	0.040***	0.039***	0.039***	0.035***	0.043***
	(0.007)	(0.006)	(0.014)	(0.009)	(0.005)	(0.008)	(0.007)	(0.014)	(0.009)	(0.005)
Market access	0.323***	0.291***	0.399***	0.248***	0.231***	0.128*	0.042	0.078	-0.002	-0.005
	(0.072)	(0.063)	(0.113)	(0.089)	(0.063)	(0.072)	(0.068)	(0.106)	(0.090)	(0.059)
Secondary education	0.003***	0.002***	0.004***	0.004***	0.002***	0.001*	0.001*	0.003***	0.003***	0.001***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Agriculture index	0.060**					0.094***				
	(0.030)					(0.033)				
Networks index		-0.093					0.101			
		(0.060)					(0.068)			
Financial liberalization			-0.082					0.006		
			(0.139)					(0.134)		
Capital account openness				0.002					0.088	
				(0.056)					(0.064)	
Log FDI inflows (% GDP)					0.012**					0.004
					(0.006)					(0.006)
Observations	994	1 090	638	889	1 260	830	892	552	715	1 117
Countries	91	97	60	82	139	89	94	59	80	137
Accelerations included	65	68	54	64	73	52	55	44	52	61
McFadden R^2	0.185	0.184	0.197	0.174	0.14	0.184	0.141	0.136	0.154	0.158
Pseudo R^2	0.154	0.15	0.182	0.153	0.115	0.151	0.12	0.131	0.138	0.125
Observed % of EA = 1	19.42	18.62	25.08	21.37	17.70	18.92	18.61	24.28	21.54	16.65
% correctly classified	70.83	70.55	71.47	68.50	68.10	70.60	67.94	67.39	68.95	67.50

Notes: Probit estimates, robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Coefficients are marginal probabilities evaluated at the sample means. The dependent variable EA is a dummy for the timing of goods (Columns 1-5) or services (Columns 6-10) export accelerations which equals 1 over the 3-year window centered on the initiation date. All RHS variables are lagged by 2 years. The description and source of variables are provided in Table B4.

Table B20: Diversification and GVC Participation: Criterion 2, $\alpha = 1.5$

Dependent variable	Goods Export Acceleration Dummy					Services Export Acceleration Dummy				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Log real GDP cap.	-0.162**	-0.159**	-0.062	-0.060	-0.064	-0.247**	-0.262**	-0.143	-0.152	-0.155
	(0.080)	(0.081)	(0.100)	(0.102)	(0.101)	(0.107)	(0.105)	(0.117)	(0.128)	(0.128)
Log real GDP cap.^{2}	0.012**	0.012**	0.004	0.003	0.004	0.014**	0.015**	0.007	0.008	0.008
	(0.005)	(0.005)	(0.006)	(0.006)	(0.006)	(0.007)	(0.007)	(0.007)	(0.008)	(0.008)
Log population	0.034***	0.033***	0.019***	0.019***	0.017**	0.032***	0.033***	0.027***	0.028***	0.026***
	(0.005)	(0.005)	(0.007)	(0.007)	(0.007)	(0.005)	(0.005)	(0.007)	(0.007)	(0.007)
Market access	0.172***	0.168***	0.161**	0.188***	0.185***	-0.015	-0.004	0.043	0.044	0.041
	(0.055)	(0.054)	(0.063)	(0.063)	(0.063)	(0.059)	(0.059)	(0.069)	(0.069)	(0.068)
Secondary education	0.001***	0.001***	0.002***	0.002***	0.002***	0.001	0.000	0.002***	0.002**	0.002***
	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Theil index	-0.039***					-0.042***				
	(0.010)					(0.011)				
Theil, extensive margin		-0.024					-0.072***			
		(0.016)					(0.019)			
Theil, intensive margin		-0.044***					-0.032***			
		(0.011)					(0.012)			
Log GVC (% exports)			-0.012					0.031		
			(0.035)					(0.042)		
Log FVA (% exports)				0.027	0.035*				0.046*	0.058**
				(0.021)	(0.020)				(0.025)	(0.025)
Log DVX (% exports)				0.072**					0.068**	
				(0.029)					(0.031)	
Log Term 3 (% exports)					0.115***					0.117***
					(0.031)					(0.035)
Observations	1 399	1 396	969	959	959	1 161	1 160	958	951	951
Countries	128	128	122	122	122	127	127	120	120	120
Accelerations included	80	80	50	50	50	68	68	60	59	59
McFadden R^2	0.152	0.151	0.124	0.135	0.143	0.155	0.157	0.144	0.148	0.156
Pseudo R^2	0.123	0.122	0.098	0.105	0.111	0.124	0.125	0.121	0.124	0.13
Observed % of EA = 1	17.23	17.19	15.69	15.85	15.85	17.05	16.98	18.37	18.30	18.30
% correctly classified	68.69	68.55	68.32	68.61	68.09	68.05	68.45	66.28	65.83	66.46

Notes: Probit estimates, robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Coefficients are marginal probabilities evaluated at the sample means. The dependent variable EA is a dummy for the timing of goods (Columns 1-5) or services (Columns 6-10) export accelerations which equals 1 over the 3-year window centered on the initiation date. All RHS variables are lagged by 2 years. The description and source of variables are provided in Table B4.

Table B21: Institutional Quality, Macroeconomic Sability and Trade Competitiveness: Criterion 2, $\beta = 0.02$

Dependent variable	Goods Export Acceleration Dummy					Services Export Acceleration Dummy				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Log real GDP cap.	-0.252**	-0.186	-0.188	-0.235	0.010	-0.230*	-0.062	-0.124	-0.119	-0.298
	(0.098)	(0.175)	(0.162)	(0.172)	(0.219)	(0.130)	(0.209)	(0.209)	(0.220)	(0.299)
Log real GDP cap.^{2}	0.016***	0.011	0.011	0.015	-0.002	0.011	0.002	0.005	0.005	0.015
	(0.006)	(0.011)	(0.010)	(0.011)	(0.014)	(0.008)	(0.013)	(0.013)	(0.014)	(0.018)
Log population	0.061***	0.029***	0.049***	0.047***	0.053***	0.033***	0.080***	0.051***	0.041***	0.064***
	(0.009)	(0.011)	(0.007)	(0.007)	(0.011)	(0.009)	(0.013)	(0.008)	(0.008)	(0.014)
Market access	0.358***	0.505***	0.175**	0.233***	0.128	-0.044	-0.033	-0.121	-0.057	-0.133
	(0.084)	(0.119)	(0.089)	(0.090)	(0.111)	(0.085)	(0.131)	(0.092)	(0.093)	(0.171)
Secondary education	0.004***	0.002**	0.003***	0.003***	0.002**	0.002***	0.002	0.002*	0.001*	0.004**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)
Governance ICRG	0.043**					0.064***				
	(0.017)					(0.021)				
Political stability		-0.012					0.091***			
		(0.024)					(0.033)			
REER volatility			-0.003***					-0.004***		
			(0.001)					(0.002)		
Log REER index				-0.142***					-0.150***	
				(0.033)					(0.046)	
Tariffs (%)					-0.004					-0.001
					(0.004)					(0.005)
Observations	907	502	567	668	382	827	445	458	522	323
Countries	93	125	60	62	106	92	127	61	63	101
Accelerations included	69	33	43	45	27	57	33	32	35	35
McFadden R^2	0.175	0.143	0.175	0.176	0.164	0.141	0.119	0.206	0.188	0.119
Pseudo R^2	0.154	0.122	0.148	0.146	0.14	0.126	0.119	0.172	0.156	0.126
Observed % of EA = 1	21.28	18.92	19.75	18.86	19.63	20.68	25.39	20.31	19.35	29.72
% correctly classified	70.23	66.93	69.31	70.51	69.11	65.78	64.94	68.12	70.88	62.54

Notes: Probit estimates, robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Coefficients are marginal probabilities evaluated at the sample means. The dependent variable EA is a dummy for the timing of goods (Columns 1-5) or services (Columns 6-10) export accelerations which equals 1 over the 3-year window centered on the initiation date. All RHS variables are lagged by 2 years. The description and source of variables are provided in Table B4.

Table B22: Product Market Reforms and Financial Liberalization: Criterion 2, $\beta = 0.02$

Dependent variable	Goods Export Acceleration Dummy					Services Export Acceleration Dummy				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Log real GDP cap.	-0.132	-0.018	0.453**	0.082	-0.102	0.047	0.077	-0.090	-0.154	-0.213**
	(0.136)	(0.123)	(0.221)	(0.156)	(0.089)	(0.174)	(0.177)	(0.268)	(0.190)	(0.101)
Log real GDP cap.^{2}	0.011	0.003	-0.029**	-0.007	0.008	-0.006	-0.008	0.001	0.005	0.013**
	(0.009)	(0.008)	(0.015)	(0.011)	(0.006)	(0.011)	(0.011)	(0.017)	(0.012)	(0.006)
Log population	0.060***	0.059***	0.069***	0.055***	0.052***	0.040***	0.040***	0.035**	0.036***	0.045***
	(0.007)	(0.006)	(0.015)	(0.010)	(0.006)	(0.008)	(0.007)	(0.015)	(0.010)	(0.005)
Market access	0.351***	0.326***	0.463***	0.300***	0.252***	0.150**	0.055	0.117	0.015	0.020
	(0.072)	(0.064)	(0.115)	(0.091)	(0.064)	(0.076)	(0.070)	(0.111)	(0.094)	(0.061)
Secondary education	0.003***	0.002***	0.004***	0.004***	0.002***	0.001*	0.001**	0.003***	0.003***	0.001***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Agriculture index	0.075**					0.098***				
	(0.031)					(0.034)				
Networks index		-0.128**					0.095			
		(0.061)					(0.070)			
Financial liberalization			-0.060					-0.065		
			(0.144)					(0.138)		
Capital account openness				-0.014					0.129**	
				(0.058)					(0.064)	
Log FDI inflows (% GDP)					0.013**					0.003
					(0.006)					(0.006)
Observations	982	1 078	627	877	1 249	827	889	549	712	1 114
Countries	91	97	60	82	138	89	94	59	80	137
Accelerations included	68	71	57	67	75	54	57	46	54	63
McFadden R^2	0.205	0.205	0.216	0.188	0.148	0.189	0.144	0.146	0.164	0.163
Pseudo R^2	0.171	0.168	0.199	0.166	0.122	0.158	0.124	0.141	0.148	0.13
Observed % of EA = 1	20.16	19.30	26.32	22.24	18.01	19.71	19.35	25.14	22.19	17.24
% correctly classified	72.00	71.15	73.21	69.90	69.02	71.10	68.28	68.12	69.94	68.49

Notes: Probit estimates, robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Coefficients are marginal probabilities evaluated at the sample means. The dependent variable EA is a dummy for the timing of goods (Columns 1-5) or services (Columns 6-10) export accelerations which equals 1 over the 3-year window centered on the initiation date. All RHS variables are lagged by 2 years. The description and source of variables are provided in Table B4.

Table B23: Diversification and GVC Participation: Criterion 2, $\beta = 0.02$

Dependent variable	Goods Export Acceleration Dummy					Services Export Acceleration Dummy				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Log real GDP cap.	-0.144*	-0.141*	-0.039	-0.039	-0.043	-0.257**	-0.269**	-0.154	-0.171	-0.173
	(0.081)	(0.081)	(0.103)	(0.105)	(0.104)	(0.107)	(0.106)	(0.118)	(0.128)	(0.129)
Log real GDP cap.^{2}	0.011**	0.011**	0.003	0.002	0.003	0.015**	0.016**	0.008	0.009	0.009
	(0.005)	(0.005)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.008)	(0.008)
Log population	0.040***	0.039***	0.029***	0.029***	0.027***	0.034***	0.034***	0.028***	0.030***	0.027***
	(0.005)	(0.005)	(0.007)	(0.007)	(0.007)	(0.006)	(0.006)	(0.007)	(0.007)	(0.007)
Market access	0.198***	0.193***	0.196***	0.224***	0.218***	0.002	0.011	0.071	0.072	0.070
	(0.056)	(0.055)	(0.064)	(0.065)	(0.064)	(0.061)	(0.061)	(0.072)	(0.071)	(0.071)
Secondary education	0.001**	0.001**	0.002***	0.002***	0.003***	0.001	0.001	0.002***	0.002**	0.002***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Theil index	-0.044***					-0.041***				
	(0.010)					(0.011)				
Theil, extensive margin		-0.029*					-0.062***			
		(0.017)					(0.020)			
Theil, intensive margin		-0.049***					-0.034***			
		(0.011)					(0.012)			
Log GVC (% exports)			0.002					0.030		
			(0.035)					(0.043)		
Log FVA (% exports)				0.036*	0.043**				0.051**	0.064**
				(0.021)	(0.020)				(0.025)	(0.025)
Log DVX (% exports)				0.084***					0.067**	
				(0.030)					(0.031)	
Log Term 3 (% exports)					0.125***					0.121***
					(0.033)					(0.035)
Observations	1 387	1 384	957	947	947	1 158	1 157	955	948	948
Countries	128	128	122	122	122	127	127	120	120	120
Accelerations included	83	83	53	53	53	70	70	62	61	61
McFadden R^2	0.17	0.169	0.138	0.15	0.158	0.157	0.157	0.15	0.154	0.162
Pseudo R^2	0.137	0.136	0.11	0.119	0.124	0.128	0.128	0.127	0.13	0.136
Observed % of EA = 1	17.74	17.70	16.41	16.58	16.58	17.62	17.55	19.06	18.99	18.99
% correctly classified	69.86	69.65	68.65	67.69	68.96	67.96	68.02	65.65	66.35	67.30

Notes: Probit estimates, robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Coefficients are marginal probabilities evaluated at the sample means. The dependent variable EA is a dummy for the timing of goods (Columns 1-5) or services (Columns 6-10) export accelerations which equals 1 over the 3-year window centered on the initiation date. All RHS variables are lagged by 2 years. The description and source of variables are provided in Table B4.

Table B24: Institutional Quality, Macroeconomic Sability and Trade Competitiveness: Criterion 2, $\beta = 0.04$

Dependent variable	Goods Export Acceleration Dummy					Services Export Acceleration Dummy				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Log real GDP cap.	-0.283***	-0.283*	-0.192	-0.235	-0.147	-0.229*	-0.052	-0.160	-0.158	-0.334
	(0.094)	(0.158)	(0.161)	(0.171)	(0.187)	(0.127)	(0.206)	(0.206)	(0.216)	(0.292)
Log real GDP cap.^{2}	0.018***	0.016	0.011	0.015	0.007	0.011	0.001	0.007	0.008	0.017
	(0.006)	(0.010)	(0.010)	(0.011)	(0.012)	(0.008)	(0.013)	(0.013)	(0.014)	(0.018)
Log population	0.051***	0.018*	0.046***	0.043***	0.040***	0.032***	0.070***	0.050***	0.041***	0.063***
	(0.009)	(0.010)	(0.007)	(0.007)	(0.009)	(0.009)	(0.012)	(0.008)	(0.008)	(0.013)
Market access	0.309***	0.415***	0.150*	0.200**	0.059	-0.070	-0.066	-0.141	-0.075	-0.191
	(0.079)	(0.110)	(0.086)	(0.088)	(0.103)	(0.082)	(0.127)	(0.091)	(0.091)	(0.165)
Secondary education	0.004***	0.002***	0.003***	0.003***	0.003***	0.002***	0.002	0.002*	0.002*	0.004***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)
Governance ICRG	0.047***					0.054***				
	(0.017)					(0.020)				
Political stability		-0.005					0.075**			
		(0.023)					(0.032)			
REER volatility			-0.002***					-0.004**		
			(0.001)					(0.002)		
Log REER index				-0.136***					-0.149***	
				(0.032)					(0.045)	
Tariffs (%)					-0.001					0.001
					(0.003)					(0.004)
Observations	920	509	567	668	389	829	449	460	524	325
Countries	93	125	60	62	105	92	127	61	63	101
Accelerations included	65	31	41	43	24	55	34	31	34	33
McFadden R^2	0.171	0.136	0.177	0.173	0.138	0.131	0.11	0.2	0.183	0.121
Pseudo R^2	0.146	0.111	0.147	0.141	0.113	0.115	0.108	0.165	0.15	0.126
Observed % of EA = 1	20.00	17.09	19.05	18.11	17.48	19.78	23.83	19.57	18.70	28.00
% correctly classified	70.33	66.01	69.84	69.76	67.87	64.78	62.14	67.83	69.47	65.23

Notes: Probit estimates, robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Coefficients are marginal probabilities evaluated at the sample means. The dependent variable EA is a dummy for the timing of goods (Columns 1-5) or services (Columns 6-10) export accelerations which equals 1 over the 3-year window centered on the initiation date. All RHS variables are lagged by 2 years. The description and source of variables are provided in Table B4.

Table B25: Product Market Reforms and Financial Liberalization: Criterion 2, $\beta = 0.04$

Dependent variable	Goods Export Acceleration Dummy					Services Export Acceleration Dummy				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Log real GDP cap.	-0.216*	-0.100	0.264	0.025	-0.131	0.128	0.164	-0.065	-0.145	-0.206**
	(0.128)	(0.116)	(0.213)	(0.145)	(0.086)	(0.172)	(0.175)	(0.265)	(0.188)	(0.099)
Log real GDP cap.^{2}	0.016*	0.008	-0.018	-0.003	0.009*	-0.012	-0.014	-0.001	0.004	0.012*
	(0.008)	(0.008)	(0.014)	(0.010)	(0.005)	(0.011)	(0.011)	(0.017)	(0.012)	(0.006)
Log population	0.051***	0.050***	0.055***	0.044***	0.048***	0.039***	0.038***	0.037**	0.034***	0.043***
	(0.007)	(0.006)	(0.015)	(0.009)	(0.005)	(0.008)	(0.007)	(0.014)	(0.009)	(0.005)
Market access	0.312***	0.280***	0.400***	0.246***	0.224***	0.136*	0.047	0.086	0.006	0.002
	(0.069)	(0.061)	(0.113)	(0.087)	(0.062)	(0.073)	(0.069)	(0.108)	(0.091)	(0.059)
Secondary education	0.003***	0.002***	0.004***	0.004***	0.002***	0.001*	0.001*	0.003**	0.003***	0.001**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Agriculture index	0.056*					0.099***				
	(0.029)					(0.033)				
Networks index		-0.086					0.114*			
		(0.058)					(0.067)			
Financial liberalization			0.008					0.036		
			(0.140)					(0.134)		
Capital account openness				-0.035					0.087	
				(0.054)					(0.063)	
Log FDI inflows (% GDP)					0.013**					0.004
					(0.006)					(0.006)
Observations	995	1 091	620	890	1 261	831	893	552	715	1 118
Countries	91	97	60	82	139	89	94	59	80	137
Accelerations included	64	67	53	63	72	52	55	44	52	62
McFadden R^2	0.196	0.194	0.198	0.18	0.145	0.183	0.14	0.133	0.152	0.155
Pseudo R^2	0.16	0.155	0.182	0.156	0.118	0.15	0.118	0.128	0.136	0.122
Observed % of EA = 1	18.89	18.15	25.16	20.79	17.29	18.77	18.48	24.09	21.40	16.55
% correctly classified	70.55	71.04	71.13	69.33	68.04	70.16	68.87	67.39	68.53	66.82

Notes: Probit estimates, robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Coefficients are marginal probabilities evaluated at the sample means. The dependent variable EA is a dummy for the timing of goods (Columns 1-5) or services (Columns 6-10) export accelerations which equals 1 over the 3-year window centered on the initiation date. All RHS variables are lagged by 2 years. The description and source of variables are provided in Table B4.

Table B26: Diversification and GVC Participation: Criterion 2, $\beta = 0.04$

Dependent variable	Goods Export Acceleration Dummy					Services Export Acceleration Dummy				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Log real GDP cap.	-0.180**	-0.178**	-0.094	-0.091	-0.095	-0.249**	-0.263**	-0.146	-0.158	-0.160
	(0.078)	(0.078)	(0.096)	(0.097)	(0.096)	(0.107)	(0.105)	(0.117)	(0.127)	(0.127)
Log real GDP cap.^{2}	0.013***	0.013**	0.006	0.005	0.005	0.014**	0.016**	0.007	0.008	0.008
	(0.005)	(0.005)	(0.006)	(0.006)	(0.006)	(0.007)	(0.007)	(0.007)	(0.008)	(0.008)
Log population	0.035***	0.033***	0.020***	0.019***	0.017**	0.031***	0.032***	0.026***	0.028***	0.025***
	(0.005)	(0.005)	(0.007)	(0.007)	(0.007)	(0.005)	(0.005)	(0.007)	(0.007)	(0.007)
Market access	0.169***	0.163***	0.158**	0.180***	0.173***	-0.010	0.001	0.053	0.054	0.050
	(0.054)	(0.053)	(0.061)	(0.062)	(0.061)	(0.060)	(0.059)	(0.070)	(0.070)	(0.069)
Secondary education	0.001***	0.001***	0.002***	0.002***	0.002***	0.001	0.000	0.002***	0.002**	0.002***
	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Theil index	-0.038***					-0.042***				
	(0.009)					(0.011)				
Theil, extensive margin		-0.022					-0.072***			
		(0.016)					(0.019)			
Theil, intensive margin		-0.043***					-0.033***			
		(0.010)					(0.012)			
Log GVC (% exports)			0.010					0.034		
			(0.034)					(0.042)		
Log FVA (% exports)				0.033	0.038**				0.049**	0.060**
				(0.021)	(0.019)				(0.025)	(0.024)
Log DVX (% exports)				0.084***					0.070**	
				(0.029)					(0.031)	
Log Term 3 (% exports)					0.120***					0.120***
					(0.032)					(0.035)
Observations	1 400	1 397	969	959	959	1 162	1 161	959	952	952
Countries	128	128	122	122	122	127	127	120	120	120
Accelerations included	79	79	49	49	49	68	68	60	59	59
McFadden R^2	0.156	0.155	0.126	0.139	0.147	0.152	0.153	0.142	0.146	0.154
Pseudo R^2	0.124	0.123	0.097	0.106	0.112	0.121	0.122	0.119	0.122	0.128
Observed % of EA = 1	16.86	16.82	15.17	15.33	15.33	16.95	16.88	18.25	18.17	18.17
% correctly classified	69.00	68.29	68.73	69.66	69.45	67.47	68.05	66.01	65.97	66.70

Notes: Probit estimates, robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Coefficients are marginal probabilities evaluated at the sample means. The dependent variable EA is a dummy for the timing of goods (Columns 1-5) or services (Columns 6-10) export accelerations which equals 1 over the 3-year window centered on the initiation date. All RHS variables are lagged by 2 years. The description and source of variables are provided in Table B4.

Table B27: Institutional Quality, Macroeconomic Sability and Trade Competitiveness: Logit

Dependent variable	Goods Export Acceleration Dummy					Services Export Acceleration Dummy				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Log real GDP cap.	-0.234**	-0.218	-0.147	-0.193	-0.079	-0.200	-0.085	-0.145	-0.153	-0.332
	(0.091)	(0.168)	(0.151)	(0.167)	(0.200)	(0.130)	(0.210)	(0.198)	(0.209)	(0.300)
Log real GDP cap.^{2}	0.015***	0.013	0.009	0.012	0.003	0.009	0.003	0.007	0.007	0.017
	(0.006)	(0.011)	(0.010)	(0.011)	(0.013)	(0.008)	(0.013)	(0.013)	(0.013)	(0.018)
Log population	0.052***	0.023**	0.044***	0.043***	0.040***	0.029***	0.068***	0.043***	0.035***	0.060***
	(0.008)	(0.010)	(0.007)	(0.007)	(0.009)	(0.008)	(0.012)	(0.008)	(0.008)	(0.013)
Market access	0.332***	0.443***	0.153*	0.210**	0.086	-0.057	-0.054	-0.118	-0.083	-0.162
	(0.081)	(0.116)	(0.085)	(0.090)	(0.101)	(0.077)	(0.125)	(0.081)	(0.084)	(0.171)
Secondary education	0.003***	0.002**	0.003***	0.003***	0.002***	0.002***	0.002	0.001*	0.001*	0.004**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)
Governance ICRG	0.044***					0.060***				
	(0.016)					(0.020)				
Political stability		-0.003					0.078**			
		(0.023)					(0.032)			
REER volatility			-0.002***					-0.004**		
			(0.001)					(0.002)		
Log REER index				-0.120***					-0.130***	
				(0.031)					(0.043)	
Tariffs (%)					-0.003					-0.001
					(0.003)					(0.005)
Observations	911	505	567	668	386	827	445	458	522	323
Countries	93	125	60	62	106	92	127	61	63	101
Accelerations included	67	33	43	45	25	55	31	31	34	33
McFadden R^2	0.17	0.131	0.179	0.179	0.136	0.136	0.114	0.208	0.189	0.117
Pseudo R^2	0.148	0.111	0.151	0.148	0.116	0.12	0.113	0.172	0.155	0.123
Observed % of EA = 1	20.86	18.42	19.75	18.86	18.91	20.19	24.49	19.87	18.97	28.79
% correctly classified	70.80	67.72	71.08	72.01	68.39	66.63	65.39	68.78	71.46	62.23

Notes: Logit estimates, robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Coefficients are marginal probabilities evaluated at the sample means. The dependent variable EA is a dummy for the timing of goods (Columns 1-5) or services (Columns 6-10) export accelerations which equals 1 over the 3-year window centered on the initiation date. All RHS variables are lagged by 2 years. The description and source of variables are provided in Table B4.

Table B28: Product Market Reforms and Financial Liberalization: Logit

Dependent variable	Goods Export Acceleration Dummy					Services Export Acceleration Dummy				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Log real GDP cap.	-0.173	-0.082	0.292	0.046	-0.111	0.067	0.095	-0.040	-0.120	-0.206**
	(0.126)	(0.113)	(0.213)	(0.151)	(0.083)	(0.176)	(0.181)	(0.274)	(0.192)	(0.095)
Log real GDP cap.^{2}	0.013	0.007	-0.019	-0.005	0.008	-0.007	-0.009	-0.003	0.003	0.012**
	(0.008)	(0.007)	(0.014)	(0.010)	(0.005)	(0.011)	(0.012)	(0.018)	(0.012)	(0.006)
Log population	0.048***	0.048***	0.050***	0.045***	0.048***	0.034***	0.035***	0.035**	0.032***	0.038***
	(0.007)	(0.006)	(0.015)	(0.009)	(0.005)	(0.007)	(0.007)	(0.014)	(0.009)	(0.005)
Market access	0.315***	0.283***	0.422***	0.266***	0.230***	0.112	0.042	0.079	-0.002	0.013
	(0.071)	(0.061)	(0.123)	(0.091)	(0.061)	(0.074)	(0.069)	(0.112)	(0.092)	(0.055)
Secondary education	0.003***	0.002***	0.004***	0.004***	0.002***	0.001*	0.001*	0.003**	0.003***	0.001***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)
Agriculture index	0.052*					0.083**				
	(0.029)					(0.032)				
Networks index		-0.061					0.089			
		(0.056)					(0.062)			
Financial liberalization			-0.056					0.048		
			(0.145)					(0.132)		
Capital account openness				0.005					0.096	
				(0.053)					(0.061)	
Log FDI inflows (% GDP)					0.012**					0.003
					(0.006)					(0.005)
Observations	986	1 082	630	881	1 252	827	889	549	712	1 114
Countries	91	97	60	82	139	89	94	59	80	137
Accelerations included	66	69	55	65	74	52	55	44	52	61
McFadden R^2	0.194	0.192	0.197	0.179	0.151	0.179	0.139	0.139	0.157	0.159
Pseudo R^2	0.162	0.157	0.183	0.158	0.124	0.149	0.119	0.134	0.141	0.126
Observed % of EA = 1	19.78	18.95	25.71	21.79	17.97	19.23	18.90	24.41	21.63	16.88
% correctly classified	72.31	72.00	71.91	70.03	69.81	70.86	68.50	67.94	70.23	69.21

Notes: Logit estimates, robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Coefficients are marginal probabilities evaluated at the sample means. The dependent variable EA is a dummy for the timing of goods (Columns 1-5) or services (Columns 6-10) export accelerations which equals 1 over the 3-year window centered on the initiation date. All RHS variables are lagged by 2 years. The description and source of variables are provided in Table B4.

Table B29: Diversification and GVC Participation: Logit

Dependent variable	Goods Export Acceleration Dummy					Services Export Acceleration Dummy				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Log real GDP cap.	-0.142*	-0.142*	-0.069	-0.072	-0.074	-0.244**	-0.255**	-0.153	-0.167	-0.171
	(0.073)	(0.073)	(0.098)	(0.100)	(0.099)	(0.106)	(0.105)	(0.115)	(0.129)	(0.130)
Log real GDP cap.^{2}	0.011**	0.011**	0.004	0.004	0.004	0.014**	0.015**	0.008	0.009	0.009
	(0.005)	(0.005)	(0.006)	(0.006)	(0.006)	(0.007)	(0.007)	(0.007)	(0.008)	(0.008)
Log population	0.035***	0.034***	0.023***	0.022***	0.020***	0.029***	0.030***	0.024***	0.025***	0.023***
	(0.005)	(0.005)	(0.006)	(0.007)	(0.006)	(0.005)	(0.005)	(0.007)	(0.007)	(0.007)
Market access	0.173***	0.169***	0.168***	0.190***	0.182***	0.005	0.010	0.060	0.061	0.061
	(0.052)	(0.052)	(0.063)	(0.064)	(0.063)	(0.057)	(0.056)	(0.071)	(0.070)	(0.069)
Secondary education	0.001**	0.001***	0.002***	0.002***	0.002***	0.001	0.001	0.002***	0.001***	0.002***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Theil index	-0.037***					-0.035***				
	(0.009)					(0.010)				
Theil, extensive margin		-0.023					-0.051***			
		(0.015)					(0.020)			
Theil, intensive margin		-0.041***					-0.029***			
		(0.010)					(0.011)			
Log GVC (% exports)			-0.000					0.034		
			(0.032)					(0.039)		
Log FVA (% exports)				0.028	0.032*				0.043*	0.053**
				(0.020)	(0.019)				(0.024)	(0.024)
Log DVX (% exports)				0.070**					0.063**	
				(0.028)					(0.029)	
Log Term 3 (% exports)					0.104***					0.107***
					(0.030)					(0.033)
Observations	1 391	1 388	961	951	951	1 158	1 157	955	948	948
Countries	128	128	122	122	122	127	127	120	120	120
Accelerations included	81	81	51	51	51	68	68	60	59	59
McFadden R^2	0.163	0.162	0.129	0.14	0.146	0.153	0.152	0.146	0.15	0.157
Pseudo R^2	0.131	0.13	0.102	0.11	0.115	0.123	0.123	0.123	0.126	0.131
Observed % of EA = 1	17.47	17.44	16.03	16.19	16.19	17.27	17.20	18.64	18.57	18.57
% correctly classified	71.17	70.25	69.20	69.40	69.93	68.65	69.06	67.23	67.19	67.72

Notes: Logit estimates, robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Coefficients are marginal probabilities evaluated at the sample means. The dependent variable EA is a dummy for the timing of goods (Columns 1-5) or services (Columns 6-10) export accelerations which equals 1 over the 3-year window centered on the initiation date. All RHS variables are lagged by 2 years. The description and source of variables are provided in Table B4.

Table B30: Institutional Quality, Macroeconomic Sability and Trade Competitiveness: ReLogit

Dependent variable	Goods Export Acceleration Dummy					Services Export Acceleration Dummy				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Log real GDP cap.	-1.065	-1.368	-0.016	0.052	0.095	-2.208*	-1.092	-2.331	-1.738	-2.824
	(0.813)	(1.709)	(1.822)	(1.947)	(1.718)	(1.319)	(1.618)	(2.572)	(2.550)	(1.802)
Log real GDP cap.^{2}	0.072	0.073	-0.002	0.001	-0.021	0.113	0.051	0.114	0.087	0.151
	(0.051)	(0.108)	(0.117)	(0.125)	(0.109)	(0.088)	(0.100)	(0.161)	(0.162)	(0.112)
Log population	0.308***	0.144	0.339***	0.318***	0.250***	0.218**	0.362***	0.381***	0.297***	0.187**
	(0.085)	(0.098)	(0.089)	(0.092)	(0.093)	(0.093)	(0.085)	(0.125)	(0.112)	(0.095)
Market access	2.501**	4.439***	1.899	2.364*	1.041	0.191	0.040	-0.572	0.681	0.311
	(1.104)	(1.600)	(1.379)	(1.269)	(1.168)	(0.770)	(0.941)	(1.027)	(1.032)	(1.094)
Secondary education	0.018**	0.016	0.019**	0.016*	0.017	0.026***	0.013	0.027**	0.022**	0.020**
	(0.007)	(0.010)	(0.008)	(0.008)	(0.011)	(0.008)	(0.008)	(0.011)	(0.010)	(0.009)
Governance ICRG	0.116					0.150				
	(0.167)					(0.162)				
Political stability		-0.074					0.358			
		(0.232)					(0.222)			
REER volatility			-0.012*					-0.027*		
			(0.007)					(0.014)		
Log REER index				-0.295					-0.644	
				(0.364)					(0.519)	
Tariffs (%)					0.003					-0.018
					(0.027)					(0.028)
Observations	945	566	619	694	434	827	445	524	576	360
Countries	93	127	62	62	111	92	127	61	63	103
Accelerations included	67	33	43	45	25	39	22	25	26	18

Notes: King and Zeng (2001)'s logit estimator corrected for rare occurrence bias, simple regression coefficients. Robust standard errors clustered at country-level in parentheses. *** p<0.01, ** p<0.05, * p<0.1. The dependent variable EA is a dummy for the timing of goods (Columns 1-5) or services (Columns 6-10) export accelerations which equals 1 over the 3-year window centered on the initiation date. All RHS variables are lagged by 2 years. The description and source of variables are provided in Table B4.

Table B31: Product Market Reforms and Financial Liberalization: ReLogit

Dependent variable	Goods Export Acceleration Dummy					Services Export Acceleration Dummy				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Log real GDP cap.	-0.300	-0.168	1.972	0.872	-0.229	-0.506	-0.081	-1.017	-1.460	-2.767**
	(1.499)	(1.420)	(1.371)	(1.350)	(0.919)	(1.723)	(1.712)	(1.836)	(1.243)	(1.292)
Log real GDP cap.^{2}	0.036	0.027	-0.126	-0.065	0.026	0.003	-0.021	0.025	0.057	0.162*
	(0.099)	(0.094)	(0.089)	(0.089)	(0.059)	(0.114)	(0.114)	(0.127)	(0.085)	(0.084)
Log population	0.320***	0.341***	0.256*	0.259***	0.351***	0.275**	0.234**	0.205	0.232**	0.364***
	(0.084)	(0.079)	(0.132)	(0.087)	(0.062)	(0.114)	(0.098)	(0.160)	(0.103)	(0.083)
Market access	2.637**	2.546***	3.055**	2.622**	2.401***	2.089**	1.006	1.398	1.018	0.869
	(1.072)	(0.902)	(1.191)	(1.066)	(0.873)	(0.996)	(0.851)	(1.071)	(0.937)	(0.731)
Secondary education	0.011	0.013*	0.021**	0.023***	0.012**	0.021***	0.014*	0.020**	0.024***	0.016***
	(0.007)	(0.007)	(0.009)	(0.007)	(0.006)	(0.008)	(0.007)	(0.008)	(0.008)	(0.006)
Agriculture index	0.157					0.744*				
	(0.326)					(0.383)				
Networks index		-0.402					1.901***			
		(0.662)					(0.541)			
Financial liberalization			-0.920					1.262*		
			(0.703)					(0.708)		
Capital account openness				-0.488					0.791	
				(0.533)					(0.577)	
Log FDI inflows (% GDP)					0.021					0.129*
					(0.057)					(0.070)
Observations	986	1 082	630	881	1 388	827	889	549	712	1 114
Countries	91	97	60	82	139	89	94	59	80	137
Accelerations included	66	69	55	65	74	34	35	28	32	42

Notes: King and Zeng (2001)'s logit estimator corrected for rare occurrence bias, simple regression coefficients. Robust standard errors clustered at country-level in parentheses. *** p<0.01, ** p<0.05, * p<0.1. The dependent variable EA is a dummy for the timing of goods (Columns 1-5) or services (Columns 6-10) export accelerations which equals 1 over the 3-year window centered on the initiation date. All RHS variables are lagged by 2 years. The description and source of variables are provided in Table B4.

Table B32: Diversification and GVC Participation: ReLogit

Dependent variable	Goods Export Acceleration Dummy					Services Export Acceleration Dummy				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Log real GDP cap.	-0.726	-0.702	-0.304	-0.216	-0.231	-2.946**	-3.064**	-1.922	-1.878	-1.954
	(0.833)	(0.859)	(1.188)	(1.220)	(1.236)	(1.460)	(1.417)	(1.239)	(1.342)	(1.371)
Log real GDP cap.^{2}	0.061	0.058	0.014	0.007	0.007	0.171*	0.181*	0.103	0.101	0.105
	(0.051)	(0.053)	(0.076)	(0.078)	(0.079)	(0.096)	(0.093)	(0.079)	(0.085)	(0.087)
Log population	0.269***	0.260***	0.185**	0.168**	0.152*	0.249***	0.257***	0.192**	0.191**	0.170**
	(0.062)	(0.063)	(0.079)	(0.081)	(0.082)	(0.076)	(0.076)	(0.080)	(0.086)	(0.086)
Market access	2.010**	1.979**	2.024**	2.194**	2.157**	0.918	0.928	1.631**	1.632**	1.517*
	(0.810)	(0.806)	(0.856)	(0.916)	(0.919)	(0.754)	(0.752)	(0.808)	(0.812)	(0.789)
Secondary education	0.007	0.007	0.020***	0.021***	0.022***	0.013*	0.011	0.020***	0.020***	0.021***
	(0.006)	(0.006)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.006)	(0.007)	(0.007)
Theil index	-0.248**					-0.307**				
	(0.115)					(0.124)				
Theil, extensive margin		-0.100					-0.543**			
		(0.224)					(0.251)			
Theil, intensive margin		-0.296**					-0.228*			
		(0.122)					(0.137)			
Log GVC (% exports)			-0.058					0.522		
			(0.473)					(0.434)		
Log FVA (% exports)				0.137	0.196				0.387	0.461*
				(0.270)	(0.263)				(0.257)	(0.246)
Log DVX (% exports)				0.554					0.897**	
				(0.351)					(0.398)	
Log Term 3 (% exports)					0.890**					1.295***
					(0.371)					(0.401)
Observations	1 444	1 441	1 013	1 002	1 002	1 158	1 157	955	948	948
Countries	128	128	122	122	122	127	127	120	120	120
Accelerations included	81	81	51	51	51	45	45	39	39	39

Notes: King and Zeng (2001)'s logit estimator corrected for rare occurrence bias, simple regression coefficients. Robust standard errors clustered at country-level in parentheses. *** p<0.01, ** p<0.05, * p<0.1. The dependent variable EA is a dummy for the timing of goods (Columns 1-5) or services (Columns 6-10) export accelerations which equals 1 over the 3-year window centered on the initiation date. All RHS variables are lagged by 2 years. The description and source of variables are provided in Table B4.

Table B33: Institutional Quality, Macroeconomic Sability and Trade Competitiveness: RE Probit

Dependent variable	Goods Export Acceleration Dummy					Services Export Acceleration Dummy				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Log real GDP cap.	-0.833	-0.581	-0.696	-0.819	0.734	-1.037	4.251	0.348	0.233	-3.408
	(0.739)	(2.441)	(2.015)	(2.214)	(1.889)	(1.608)	(9.886)	(3.311)	(3.141)	(7.398)
Log real GDP cap.^{2}	0.059	0.040	0.036	0.050	-0.049	0.050	-0.246	-0.043	-0.021	0.150
	(0.044)	(0.153)	(0.130)	(0.142)	(0.122)	(0.104)	(0.583)	(0.213)	(0.203)	(0.448)
Log population	0.271***	0.495**	0.330***	0.293***	0.353***	0.258**	2.884	0.577***	0.457***	2.040
	(0.072)	(0.198)	(0.091)	(0.093)	(0.116)	(0.113)	(4.642)	(0.162)	(0.145)	(1.721)
Market access	1.463*	6.306***	0.889	1.434	0.692	-0.345	4.728	-0.161	0.678	3.707
	(0.804)	(2.321)	(1.342)	(1.233)	(1.015)	(1.150)	(9.860)	(1.402)	(1.262)	(5.445)
Secondary education	0.013*	0.023	0.018**	0.012	0.015	0.004	0.003	0.004	-0.001	0.104
	(0.007)	(0.016)	(0.009)	(0.009)	(0.011)	(0.011)	(0.043)	(0.012)	(0.012)	(0.092)
Governance ICRG	0.164					0.199				
	(0.154)					(0.189)				
Political stability		0.274					2.298			
		(0.387)					(3.913)			
REER volatility			-0.016*					-0.041***		
			(0.009)					(0.015)		
Log REER index				-1.130**					-1.302**	
				(0.488)					(0.627)	
Tariffs (%)					-0.003					0.350
					(0.030)					(0.307)
Observations	911	505	567	668	386	827	445	458	522	323
Countries	93	125	60	62	106	92	127	61	63	101
Accelerations included	67	33	43	45	25	55	31	31	34	33
Pseudo R^2	0.026	0.144	0.043	0.055	0.064	0.092	0.219	0.097	0.106	0.212

Notes: Probit regressions with country random-effects. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. The dependent variable EA is a dummy for the timing of goods (Columns 1-5) or services (Columns 6-10) export accelerations which equals 1 over the 3-year window centered on the initiation date. All RHS variables are lagged by 2 years. The description and source of variables are provided in Table B4.

Table B34: Product Market Reforms and Financial Liberalization: RE Probit

Dependent variable	Goods Export Acceleration Dummy					Services Export Acceleration Dummy				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Log real GDP cap.	1.033	1.985	5.791**	1.950	0.382	0.718	0.625	0.440	-0.248	-1.789
	(1.842)	(1.981)	(2.481)	(1.889)	(0.938)	(2.271)	(1.668)	(1.936)	(1.377)	(1.478)
Log real GDP cap.^{2}	-0.056	-0.117	-0.383**	-0.128	-0.015	-0.067	-0.062	-0.062	-0.009	0.111
	(0.121)	(0.131)	(0.164)	(0.126)	(0.060)	(0.147)	(0.109)	(0.132)	(0.092)	(0.095)
Log population	0.382***	0.382***	0.380**	0.263***	0.298***	0.411***	0.325***	0.242*	0.216**	0.439***
	(0.097)	(0.097)	(0.165)	(0.091)	(0.063)	(0.140)	(0.103)	(0.141)	(0.090)	(0.095)
Market access	1.918**	2.137**	2.312*	1.459	1.511**	2.599***	0.522	0.656	0.186	0.756
	(0.890)	(0.912)	(1.262)	(1.015)	(0.735)	(0.867)	(0.922)	(0.866)	(0.852)	(0.912)
Secondary education	0.008	0.008	0.012	0.012	0.008	0.004	0.004	0.007	0.010	0.005
	(0.008)	(0.008)	(0.012)	(0.009)	(0.006)	(0.010)	(0.009)	(0.009)	(0.008)	(0.008)
Agriculture index	0.716*					0.811				
	(0.369)					(0.494)				
Networks index		-0.975					0.957			
		(0.755)					(0.736)			
Financial liberalization										
Capital account openness				0.051					0.426	
				(0.516)					(0.603)	
Log FDI inflows (% GDP)					0.052					0.055
					(0.050)					(0.058)
Observations	986	1 082	630	881	1 252	827	889	549	712	1 114
Countries	91	97	60	82	139	89	94	59	80	137
Accelerations included	66	69	55	65	74	52	55	44	52	61
Pseudo R^2	0.056	0.053	0.075	0.051	0.058	0.101	0.087	0.084	0.058	0.091

Notes: Probit regressions with country random-effects. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. The dependent variable EA is a dummy for the timing of goods (Columns 1-5) or services (Columns 6-10) export accelerations which equals 1 over the 3-year window centered on the initiation date. All RHS variables are lagged by 2 years. The description and source of variables are provided in Table B4.

Table B35: Diversification and GVC Participation: RE Probit

Dependent variable	Goods Export Acceleration Dummy					Services Export Acceleration Dummy				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Log real GDP cap.	-0.220	-0.213	1.255	1.443	1.399	-1.778	-1.767	-2.829	-3.233	-3.130
	(0.880)	(0.871)	(1.305)	(1.405)	(1.371)	(1.714)	(1.745)	(1.981)	(2.064)	(2.011)
Log real GDP cap.^{2}	0.028	0.028	-0.071	-0.083	-0.080	0.105	0.105	0.154	0.181	0.176
	(0.055)	(0.054)	(0.083)	(0.088)	(0.086)	(0.111)	(0.113)	(0.122)	(0.126)	(0.123)
Log population	0.215***	0.211***	0.202**	0.204**	0.183**	0.351***	0.349***	0.300**	0.332***	0.311**
	(0.056)	(0.056)	(0.090)	(0.093)	(0.090)	(0.096)	(0.097)	(0.117)	(0.125)	(0.122)
Market access	1.302*	1.285*	0.304	0.311	0.259	0.294	0.283	-0.012	-0.067	-0.109
	(0.734)	(0.728)	(0.956)	(0.973)	(0.967)	(1.041)	(1.040)	(1.273)	(1.272)	(1.255)
Secondary education	0.002	0.002	0.009	0.009	0.009	-0.001	-0.001	0.020*	0.017	0.017
	(0.006)	(0.006)	(0.009)	(0.009)	(0.009)	(0.010)	(0.010)	(0.012)	(0.011)	(0.011)
Theil index	-0.288**					-0.281				
	(0.124)					(0.174)				
Theil, extensive margin		-0.253					-0.261			
		(0.196)					(0.311)			
Theil, intensive margin		-0.298**					-0.285*			
		(0.134)					(0.173)			
Log GVC (% exports)			0.096					0.546		
			(0.511)					(0.659)		
Log FVA (% exports)				0.402	0.430				0.821**	0.847**
				(0.297)	(0.286)				(0.375)	(0.366)
Log DVX (% exports)				0.855**					0.701	
				(0.433)					(0.442)	
Log Term 3 (% exports)					1.093**					0.907**
					(0.479)					(0.456)
Observations	1 391	1 388	961	951	951	1 158	1 157	955	948	948
Countries	128	128	122	122	122	127	127	120	120	120
Accelerations included	81	81	51	51	51	68	68	60	59	59
Pseudo R^2	0.043	0.043	0.077	0.074	0.071	0.094	0.093	0.116	0.116	0.112

Notes: Probit regressions with country random-effects. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. The dependent variable EA is a dummy for the timing of goods (Columns 1-5) or services (Columns 6-10) export accelerations which equals 1 over the 3-year window centered on the initiation date. All RHS variables are lagged by 2 years. The description and source of variables are provided in Table B4.

Table B36: Institutional Quality, Macroeconomic Sability and Trade Competitiveness: PPML

Dependent variable	Goods Export Acceleration Dummy					Services Export Acceleration Dummy				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Log real GDP cap.	-1.198*	-1.261	-0.954	-1.039	-0.448	-0.915	-0.535	-1.087	-0.958	-1.287
	(0.637)	(1.312)	(1.384)	(1.640)	(1.452)	(1.136)	(1.146)	(2.132)	(2.106)	(1.303)
Log real GDP cap.^{2}	0.076*	0.072	0.057	0.064	0.019	0.041	0.020	0.053	0.047	0.066
	(0.039)	(0.085)	(0.088)	(0.105)	(0.094)	(0.074)	(0.071)	(0.136)	(0.136)	(0.081)
Log population	0.254***	0.136*	0.292***	0.253***	0.230***	0.143**	0.222***	0.289***	0.220***	0.186***
	(0.053)	(0.080)	(0.060)	(0.064)	(0.077)	(0.061)	(0.057)	(0.082)	(0.072)	(0.062)
Market access	1.636**	2.820***	0.980	1.169	0.510	-0.345	-0.622	-0.362	-0.307	-0.462
	(0.717)	(1.094)	(0.874)	(0.928)	(0.778)	(0.504)	(0.537)	(0.626)	(0.673)	(0.567)
Secondary education	0.018***	0.012*	0.018***	0.016***	0.013**	0.010*	0.009	0.010	0.009	0.014**
	(0.005)	(0.007)	(0.006)	(0.006)	(0.007)	(0.006)	(0.005)	(0.007)	(0.007)	(0.006)
Governance ICRG	0.217*					0.279*				
	(0.129)					(0.158)				
Political stability		-0.017					0.206			
		(0.184)					(0.154)			
REER volatility			-0.018**					-0.027*		
			(0.009)					(0.015)		
Log REER index				-0.721***					-0.914**	
				(0.277)					(0.436)	
Tariffs (%)					-0.017					-0.005
					(0.024)					(0.019)
Observations	911	505	567	668	386	804	411	458	522	314
Countries	93	125	60	62	106	90	119	61	63	97
Accelerations included	67	33	43	45	25	55	31	31	34	33
R^2	0.194	0.138	0.187	0.182	0.128	0.151	0.135	0.194	0.178	0.149

Notes: Poisson pseudo-maximum likelihood regressions following Santos Silva and Tenreyro (2006, 2010). Robust standard errors clustered at country-level in parentheses. *** p<0.01, ** p<0.05, * p<0.1. The dependent variable EA is a dummy for the timing of goods (Columns 1-5) or services (Columns 6-10) export accelerations which equals 1 over the 3-year window centered on the initiation date. All RHS variables are lagged by 2 years. The description and source of variables are provided in Table B4.

Table B37: Product Market Reforms and Financial Liberalization: PPML

Dependent variable	Goods Export Acceleration Dummy					Services Export Acceleration Dummy				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Log real GDP cap.	-0.855	-0.413	1.383	0.274	-0.678	-0.086	0.170	-0.289	-0.438	-1.604
	(1.147)	(1.108)	(1.163)	(1.065)	(0.702)	(1.420)	(1.339)	(1.430)	(1.161)	(1.046)
Log real GDP cap.^{2}	0.064	0.037	-0.090	-0.025	0.050	-0.013	-0.029	-0.004	0.008	0.092
	(0.075)	(0.073)	(0.075)	(0.070)	(0.045)	(0.092)	(0.088)	(0.097)	(0.078)	(0.067)
Log population	0.267***	0.277***	0.187**	0.217***	0.293***	0.186***	0.194***	0.136	0.156**	0.251***
	(0.057)	(0.053)	(0.086)	(0.061)	(0.045)	(0.070)	(0.057)	(0.089)	(0.066)	(0.052)
Market access	1.771**	1.665**	1.732*	1.278	1.366**	0.471	0.027	0.282	-0.154	-0.214
	(0.811)	(0.679)	(0.966)	(0.808)	(0.613)	(0.690)	(0.569)	(0.707)	(0.620)	(0.491)
Secondary education	0.014**	0.014**	0.016***	0.019***	0.012**	0.009*	0.009	0.011*	0.010*	0.010**
	(0.006)	(0.005)	(0.006)	(0.005)	(0.005)	(0.005)	(0.005)	(0.006)	(0.006)	(0.005)
Agriculture index	0.261					0.496*				
	(0.251)					(0.295)				
Networks index		-0.311					0.189			
		(0.517)					(0.482)			
Financial liberalization			-0.273					0.209		
			(0.774)					(0.844)		
Capital account openness				0.064					0.429	
				(0.377)					(0.410)	
Log FDI inflows (% GDP)					0.072					0.020
					(0.051)					(0.054)
Observations	986	1 082	630	881	1 252	802	852	549	702	1 063
Countries	91	97	60	82	139	87	91	59	79	129
Accelerations included	66	69	55	65	74	52	55	44	52	61
R^2	0.192	0.184	0.205	0.188	0.156	0.175	0.159	0.173	0.172	0.162

Notes: Poisson pseudo-maximum likelihood regressions following Santos Silva and Tenreyro (2006, 2010). Robust standard errors clustered at country-level in parentheses. *** p<0.01, ** p<0.05, * p<0.1. The dependent variable EA is a dummy for the timing of goods (Columns 1-5) or services (Columns 6-10) export accelerations which equals 1 over the 3-year window centered on the initiation date. All RHS variables are lagged by 2 years. The description and source of variables are provided in Table B4.

Table B38: Diversification and GVC Participation: PPML

Dependent variable	Goods Export Acceleration Dummy					Services Export Acceleration Dummy				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Log real GDP cap.	-0.929	-0.948	-0.490	-0.529	-0.555	-1.693	-1.770	-0.987	-1.046	-1.074
	(0.657)	(0.674)	(1.061)	(1.069)	(1.076)	(1.178)	(1.200)	(1.058)	(1.187)	(1.202)
Log real GDP cap.^{2}	0.070*	0.071*	0.031	0.032	0.033	0.098	0.103	0.048	0.053	0.055
	(0.040)	(0.041)	(0.069)	(0.069)	(0.069)	(0.077)	(0.079)	(0.066)	(0.074)	(0.075)
Log population	0.216***	0.211***	0.151**	0.145**	0.135**	0.180***	0.183***	0.131**	0.138**	0.127**
	(0.045)	(0.046)	(0.065)	(0.065)	(0.065)	(0.052)	(0.053)	(0.057)	(0.061)	(0.062)
Market access	1.075*	1.044*	1.157	1.330*	1.298*	-0.191	-0.165	-0.043	-0.041	-0.030
	(0.582)	(0.585)	(0.708)	(0.735)	(0.731)	(0.518)	(0.516)	(0.639)	(0.626)	(0.622)
Secondary education	0.008	0.008	0.014***	0.015***	0.016***	0.005	0.004	0.011**	0.009*	0.010**
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Theil index	-0.227**					-0.231**				
	(0.093)					(0.100)				
Theil, extensive margin		-0.135					-0.328			
		(0.184)					(0.208)			
Theil, intensive margin		-0.260***					-0.204*			
		(0.097)					(0.111)			
Log GVC (% exports)			0.019					0.138		
			(0.370)					(0.329)		
Log FVA (% exports)				0.192	0.227				0.230	0.279
				(0.212)	(0.205)				(0.197)	(0.199)
Log DVX (% exports)				0.494*					0.348	
				(0.272)					(0.269)	
Log Term 3 (% exports)					0.750**					0.568**
					(0.298)					(0.288)
Observations	1 391	1 388	961	951	951	1 112	1 111	911	904	904
Countries	128	128	122	122	122	123	123	116	116	116
Accelerations included	81	81	51	51	51	68	68	60	59	59
R^2	0.16	0.159	0.125	0.135	0.135	0.155	0.151	0.164	0.168	0.169

Notes: Poisson pseudo-maximum likelihood regressions following Santos Silva and Tenreyro (2006, 2010). Robust standard errors clustered at country-level in parentheses. *** p<0.01, ** p<0.05, * p<0.1. The dependent variable EA is a dummy for the timing of goods (Columns 1-5) or services (Columns 6-10) export accelerations which equals 1 over the 3-year window centered on the initiation date. All RHS variables are lagged by 2 years. The description and source of variables are provided in Table B4.

Table B39: Institutional Quality, Macroeconomic Sability and Trade Competitiveness: Disaggregating Goods

Dependent variable	Manufactures Export Acceleration Dummy					Non-Fuel Primary Product Export Acceleration Dummy				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Log real GDP cap.	-0.244**	-0.307**	-0.070	-0.108	-0.136	0.033	0.236*	-0.078	-0.092	0.395*
	(0.108)	(0.130)	(0.219)	(0.202)	(0.185)	(0.086)	(0.139)	(0.135)	(0.152)	(0.213)
Log real GDP cap.^{2}	0.015**	0.019**	0.003	0.006	0.005	0.001	-0.014	0.007	0.009	-0.020
	(0.007)	(0.008)	(0.014)	(0.013)	(0.012)	(0.005)	(0.008)	(0.009)	(0.010)	(0.013)
Log population	0.040***	0.032***	0.063***	0.060***	0.046***	0.054***	0.057***	0.054***	0.053***	0.113***
	(0.009)	(0.009)	(0.008)	(0.008)	(0.009)	(0.007)	(0.011)	(0.008)	(0.007)	(0.015)
Market access	0.189**	0.276***	0.303***	0.334***	0.078	0.379***	0.304**	0.148*	0.210**	0.037
	(0.083)	(0.087)	(0.114)	(0.100)	(0.109)	(0.079)	(0.122)	(0.085)	(0.088)	(0.157)
Secondary education	0.003***	0.003***	0.004***	0.004***	0.004***	0.001	0.000	0.001	0.000	-0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Governance ICRG	0.025					0.026*				
	(0.018)					(0.014)				
Political stability		-0.023					0.000			
		(0.022)					(0.024)			
REER volatility			0.000					-0.002***		
			(0.000)					(0.001)		
Log REER index				-0.063*					-0.084**	
				(0.037)					(0.038)	
Tariffs (%)					0.001					-0.015***
					(0.003)					(0.004)
Observations	923	526	563	648	388	1 052	596	588	660	379
Countries	94	132	60	62	108	93	130	61	62	107
Accelerations included	59	29	39	40	22	65	29	38	41	19
McFadden R^2	0.12	0.16	0.179	0.191	0.143	0.225	0.195	0.234	0.217	0.298
Pseudo R^2	0.111	0.122	0.161	0.166	0.118	0.175	0.167	0.187	0.171	0.254
Observed % of EA = 1	21.45	15.78	22.56	21.61	17.78	18.06	20.97	19.39	18.18	25.86
% correctly classified	65.55	67.68	69.45	70.68	68.30	73.10	69.13	74.49	73.49	75.73

Notes: Probit estimates, robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Coefficients are marginal probabilities evaluated at the sample means. The dependent variable EA is a dummy for the timing of manufactures (Columns 1-5) or non-fuel primary commodity (Columns 6-10) export accelerations which equals 1 over the 3-year window centered on the initiation date. Manufactures exports are obtained by aggregating SITC rev. 2 sections 5 to 8, excluding division 68; non-fuel primary commodities refer to food (sections 0, 1, 4 and division 22) and agricultural raw materials (section 2 excluding divisions 22, 27 and 28). See Tables B1 in the Appendix for more detail on the classification of goods. All RHS variables are lagged by 2 years. The description and source of variables are provided in Table B4.

Table B40: Product Market Reforms and Financial Liberalization: Disaggregating Goods

Dependent variable	Manufactures Export Acceleration Dummy					Non-Fuel Primary Product Export Acceleration Dummy				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Log real GDP cap.	-0.159	-0.020	0.296	0.030	-0.134	-0.001	-0.046	-0.123	-0.158	0.025
	(0.138)	(0.132)	(0.202)	(0.156)	(0.083)	(0.102)	(0.100)	(0.221)	(0.124)	(0.067)
Log real GDP cap.^{2}	0.011	0.003	-0.020	-0.004	0.010*	0.004	0.007	0.015	0.013	0.001
	(0.009)	(0.009)	(0.013)	(0.010)	(0.005)	(0.007)	(0.007)	(0.015)	(0.008)	(0.004)
Log population	0.047***	0.050***	0.041***	0.042***	0.055***	0.052***	0.049***	0.069***	0.061***	0.039***
	(0.007)	(0.007)	(0.015)	(0.009)	(0.005)	(0.006)	(0.005)	(0.013)	(0.008)	(0.004)
Market access	0.292***	0.337***	0.277**	0.148	0.221***	0.196***	0.180***	0.250**	0.150*	0.166***
	(0.075)	(0.070)	(0.116)	(0.095)	(0.056)	(0.056)	(0.056)	(0.103)	(0.079)	(0.050)
Secondary education	0.002***	0.002***	0.003**	0.003***	0.002***	-0.000	-0.000	-0.000	0.000	-0.000
	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)	(0.000)
Agriculture index	0.087**					0.103***				
	(0.034)					(0.021)				
Networks index		-0.129*					0.102**			
		(0.069)					(0.047)			
Financial liberalization			-0.129					0.012		
			(0.155)					(0.121)		
Capital account openness				0.071					0.129**	
				(0.061)					(0.054)	
Log FDI inflows (% GDP)					0.020***					0.017***
					(0.006)					(0.005)
Observations	993	1 067	638	884	1 342	1 090	1 187	643	940	1 548
Countries	91	97	60	82	140	91	97	60	82	137
Accelerations included	57	60	46	55	65	63	67	51	62	73
McFadden R^2	0.16	0.148	0.146	0.137	0.175	0.294	0.27	0.274	0.228	0.22
Pseudo R^2	0.141	0.131	0.144	0.128	0.137	0.208	0.194	0.231	0.182	0.151
Observed % of EA = 1	20.75	20.90	26.18	22.85	16.99	16.42	16.43	23.80	19.15	13.95
% correctly classified	69.39	67.20	70.22	68.55	70.19	74.50	76.33	76.21	73.09	72.61

Notes: Probit estimates, robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Coefficients are marginal probabilities evaluated at the sample means. The dependent variable EA is a dummy for the timing of manufactures (Columns 1-5) or non-fuel primary commodity (Columns 6-10) export accelerations which equals 1 over the 3-year window centered on the initiation date. Manufactures exports are obtained by aggregating SITC rev. 2 sections 5 to 8, excluding division 68; non-fuel primary commodities refer to food (sections 0, 1, 4 and division 22) and agricultural raw materials (section 2 excluding divisions 22, 27 and 28). See Tables B1 in the Appendix for more detail on the classification of goods. All RHS variables are lagged by 2 years. The description and source of variables are provided in Table B4.

Table B41: Diversification and GVC Participation: Disaggregating Goods

Dependent variable	Manufactures Export Acceleration Dummy					Non-Fuel Primary Product Export Acceleration Dummy				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Log real GDP cap.	-0.124	-0.117	-0.181*	-0.153	-0.158*	0.039	0.044	0.212***	0.171**	0.172**
	(0.086)	(0.087)	(0.095)	(0.097)	(0.095)	(0.060)	(0.061)	(0.081)	(0.083)	(0.084)
Log real GDP cap.^{2}	0.010*	0.009	0.011*	0.010	0.010*	0.000	0.000	-0.011**	-0.008	-0.008*
	(0.005)	(0.006)	(0.006)	(0.006)	(0.006)	(0.004)	(0.004)	(0.005)	(0.005)	(0.005)
Log population	0.045***	0.044***	0.029***	0.026***	0.024***	0.029***	0.029***	0.034***	0.037***	0.037***
	(0.005)	(0.005)	(0.006)	(0.007)	(0.006)	(0.004)	(0.004)	(0.006)	(0.006)	(0.006)
Market access	0.187***	0.182***	0.192***	0.207***	0.202***	0.132***	0.128***	0.166***	0.167***	0.165***
	(0.057)	(0.057)	(0.062)	(0.063)	(0.061)	(0.049)	(0.048)	(0.062)	(0.061)	(0.060)
Secondary education	0.002***	0.002***	0.002***	0.002***	0.003***	-0.001**	-0.001**	-0.001	-0.001	-0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)
Theil index	-0.008					-0.037***				
	(0.010)					(0.008)				
Theil, extensive margin		0.016					-0.027*			
		(0.016)					(0.014)			
Theil, intensive margin		-0.017					-0.040***			
		(0.011)					(0.009)			
Log GVC (% exports)			0.016					-0.016		
			(0.036)					(0.031)		
Log FVA (% exports)				-0.012	-0.005				0.059***	0.062***
				(0.021)	(0.020)				(0.017)	(0.016)
Log DVX (% exports)				0.075***					0.024	
				(0.026)					(0.022)	
Log Term 3 (% exports)					0.116***					0.035
					(0.030)					(0.023)
Observations	1 408	1 405	983	978	978	1 608	1 605	1 122	1 110	1 110
Countries	129	129	122	122	122	128	128	124	124	124
Accelerations included	72	72	46	46	46	79	79	50	50	50
McFadden R^2	0.139	0.141	0.097	0.106	0.113	0.225	0.224	0.225	0.238	0.239
Pseudo R^2	0.115	0.116	0.077	0.083	0.089	0.156	0.155	0.164	0.173	0.173
Observed % of EA = 1	17.76	17.72	15.57	15.34	15.34	14.37	14.33	15.78	15.95	15.95
% correctly classified	67.76	67.69	64.90	65.24	64.93	72.51	72.21	71.93	72.43	71.98

Notes: Probit estimates, robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Coefficients are marginal probabilities evaluated at the sample means. The dependent variable EA is a dummy for the timing of manufactures (Columns 1-5) or non-fuel primary commodity (Columns 6-10) export accelerations which equals 1 over the 3-year window centered on the initiation date. Manufactures exports are obtained by aggregating SITC rev. 2 sections 5 to 8, excluding division 68; non-fuel primary commodities refer to food (sections 0, 1, 4 and division 22) and agricultural raw materials (section 2 excluding divisions 22, 27 and 28). See Tables B1 in the Appendix for more detail on the classification of goods. All RHS variables are lagged by 2 years. The description and source of variables are provided in Table B4.

Table B42: Institutional Quality, Macroeconomic Sability and Trade Competitiveness: Disaggregating Services

Dependent variable	Traditional Services Export Acceleration Dummy					Modern Services Export Acceleration Dummy				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Log real GDP cap.	-0.012	0.411**	0.068	0.024	0.329	-0.143	0.071	0.109	0.164	-0.169
	(0.106)	(0.208)	(0.217)	(0.204)	(0.274)	(0.102)	(0.137)	(0.173)	(0.185)	(0.248)
Log real GDP cap.^{2}	-0.003	-0.027**	-0.008	-0.004	-0.024	0.007	-0.004	-0.006	-0.010	0.009
	(0.007)	(0.013)	(0.014)	(0.013)	(0.017)	(0.006)	(0.008)	(0.011)	(0.012)	(0.015)
Log population	0.015*	0.052***	0.025***	0.024***	0.025**	0.023***	0.059***	0.039***	0.035***	0.041***
	(0.009)	(0.010)	(0.008)	(0.007)	(0.010)	(0.008)	(0.009)	(0.007)	(0.007)	(0.011)
Market access	-0.083	-0.042	-0.069	0.006	-0.256**	0.022	0.008	-0.038	-0.004	-0.002
	(0.073)	(0.105)	(0.094)	(0.081)	(0.129)	(0.066)	(0.089)	(0.063)	(0.069)	(0.120)
Secondary education	0.002***	0.001	0.004***	0.003***	0.002	0.001**	0.001	0.001*	0.001**	0.003***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Governance ICRG	0.050**					0.024				
	(0.020)					(0.019)				
Political stability		0.118***					0.068***			
		(0.029)					(0.022)			
REER volatility			0.001					-0.005***		
			(0.001)					(0.001)		
Log REER index				-0.063					-0.040	
				(0.041)					(0.033)	
Tariffs (%)					-0.002					-0.005
					(0.003)					(0.004)
Observations	833	439	532	586	340	899	496	461	547	360
Countries	94	121	61	63	102	94	126	60	63	107
Accelerations included	47	27	27	30	28	50	28	28	31	27
McFadden R^2	0.131	0.145	0.196	0.168	0.098	0.08	0.133	0.19	0.166	0.097
Pseudo R^2	0.113	0.125	0.155	0.136	0.092	0.063	0.101	0.148	0.122	0.087
Observed % of EA = 1	19.21	19.59	17.86	17.75	21.18	15.02	15.12	16.92	14.81	19.17
% correctly classified	73.47	66.52	72.74	67.41	65.00	63.29	65.73	68.55	68.01	61.67

Notes: Probit estimates, robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Coefficients are marginal probabilities evaluated at the sample means. The dependent variable EA is a dummy for the timing of traditional (Columns 1-5) or modern (Columns 6-10) services export accelerations which equals 1 over the 3-year window centered on the initiation date. Traditional services include transportation (BOP code 205) and travel (BOP code 236), while remaining commercial services are aggregated under modern services. See Tables B2 in the Appendix for more detail on the classification of services. All RHS variables are lagged by 2 years. The description and source of variables are provided in Table B4.

Table B43: Product Market Reforms and Financial Liberalization: Disaggregating Services

Dependent variable	Traditional Services Export Acceleration Dummy					Modern Services Export Acceleration Dummy				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Log real GDP cap.	-0.064	-0.068	-0.050	-0.027	0.193*	-0.335**	-0.255**	-0.449**	-0.263*	-0.114
	(0.147)	(0.134)	(0.235)	(0.176)	(0.101)	(0.135)	(0.126)	(0.202)	(0.154)	(0.073)
Log real GDP cap.^{2}	0.003	0.003	-0.002	-0.002	-0.013**	0.021**	0.016**	0.030**	0.017*	0.007*
	(0.010)	(0.009)	(0.015)	(0.012)	(0.006)	(0.009)	(0.008)	(0.013)	(0.010)	(0.004)
Log population	0.027***	0.027***	0.028**	0.011	0.027***	0.034***	0.031***	0.021*	0.021**	0.034***
	(0.007)	(0.006)	(0.014)	(0.010)	(0.005)	(0.007)	(0.006)	(0.013)	(0.009)	(0.004)
Market access	0.062	0.030	-0.010	-0.002	0.029	0.065	0.060	-0.043	-0.014	0.064
	(0.065)	(0.057)	(0.107)	(0.086)	(0.057)	(0.055)	(0.048)	(0.074)	(0.070)	(0.045)
Secondary education	0.001	0.001**	0.002*	0.003***	0.001**	0.001**	0.001***	0.001	0.001**	0.001**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)	(0.001)	(0.001)	(0.000)
Agriculture index	0.024					0.049*				
	(0.031)					(0.029)				
Networks index		0.084					0.009			
		(0.061)					(0.045)			
Financial liberalization			0.345**					-0.039		
			(0.143)					(0.100)		
Capital account openness				0.072					0.060	
				(0.061)					(0.058)	
Log FDI inflows (% GDP)					-0.001					0.009**
					(0.006)					(0.005)
Observations	845	938	498	719	1 130	862	985	615	787	1 220
Countries	91	96	60	82	140	90	96	60	82	138
Accelerations included	45	48	35	42	51	48	52	41	48	56
McFadden R^2	0.134	0.142	0.139	0.139	0.129	0.111	0.117	0.088	0.09	0.12
Pseudo R^2	0.108	0.11	0.132	0.124	0.102	0.082	0.082	0.075	0.074	0.079
Observed % of EA = 1	16.81	15.78	23.70	20.45	16.11	13.81	12.59	17.24	16.14	11.48
% correctly classified	68.76	67.38	70.08	73.30	67.97	64.85	64.06	61.95	64.04	64.84

Notes: Probit estimates, robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Coefficients are marginal probabilities evaluated at the sample means. The dependent variable EA is a dummy for the timing of traditional (Columns 1-5) or modern (Columns 6-10) services export accelerations which equals 1 over the 3-year window centered on the initiation date. Traditional services include transportation (BOP code 205) and travel (BOP code 236), while remaining commercial services are aggregated under modern services. See Tables B2 in the Appendix for more detail on the classification of services. All RHS variables are lagged by 2 years. The description and source of variables are provided in Table B4.

Table B44: Diversification and GVC Participation: Disaggregating Services

Dependent variable	Traditional Services Export Acceleration Dummy					Modern Services Export Acceleration Dummy				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Log real GDP cap.	0.021	0.021	0.166	0.142	0.136	-0.167**	-0.162**	-0.164**	-0.201**	-0.202**
	(0.095)	(0.094)	(0.102)	(0.104)	(0.105)	(0.074)	(0.073)	(0.080)	(0.079)	(0.080)
Log real GDP cap.^{2}	-0.002	-0.002	-0.010	-0.008	-0.008	0.011**	0.011**	0.010**	0.013***	0.013***
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.004)	(0.004)	(0.005)	(0.005)	(0.005)
Log population	0.016***	0.016***	0.015**	0.017**	0.015**	0.021***	0.021***	0.030***	0.033***	0.033***
	(0.006)	(0.006)	(0.007)	(0.007)	(0.007)	(0.004)	(0.004)	(0.005)	(0.006)	(0.006)
Market access	0.015	0.014	0.032	0.032	0.038	0.038	0.036	0.146***	0.122**	0.134***
	(0.056)	(0.056)	(0.061)	(0.060)	(0.060)	(0.040)	(0.040)	(0.052)	(0.048)	(0.050)
Secondary education	0.001***	0.001***	0.001	0.000	0.001	0.000	-0.000	0.002***	0.001***	0.001**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Theil index	-0.019*					-0.041***				
	(0.011)					(0.008)				
Theil, extensive margin		-0.021					-0.035**			
		(0.020)					(0.014)			
Theil, intensive margin		-0.019					-0.043***			
		(0.012)					(0.009)			
Log GVC (% exports)			0.046					0.036		
			(0.042)					(0.033)		
Log FVA (% exports)				0.035	0.050**				0.036**	0.053***
				(0.024)	(0.023)				(0.018)	(0.018)
Log DVX (% exports)				0.030					-0.034	
				(0.033)					(0.021)	
Log Term 3 (% exports)					0.084**					0.009
					(0.035)					(0.026)
Observations	1 164	1 163	966	961	961	1 266	1 265	1 054	1 048	1 048
Countries	129	129	124	123	123	128	128	123	123	123
Accelerations included	57	57	49	48	48	63	63	55	54	54
McFadden R^2	0.115	0.114	0.125	0.122	0.128	0.133	0.131	0.121	0.134	0.132
Pseudo R^2	0.093	0.092	0.101	0.098	0.102	0.087	0.086	0.083	0.091	0.089
Observed % of EA = 1	16.32	16.25	16.56	16.34	16.34	11.61	11.54	12.33	12.21	12.21
% correctly classified	68.30	68.36	69.36	68.78	68.47	67.62	67.83	65.66	66.89	65.65

Notes: Probit estimates, robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Coefficients are marginal probabilities evaluated at the sample means. The dependent variable EA is a dummy for the timing of traditional (Columns 1-5) or modern (Columns 6-10) services export accelerations which equals 1 over the 3-year window centered on the initiation date. Traditional services include transportation (BOP code 205) and travel (BOP code 236), while remaining commercial services are aggregated under modern services. See Tables B2 in the Appendix for more detail on the classification of services. All RHS variables are lagged by 2 years. The description and source of variables are provided in Table B4.

Table B45: Institutional Quality, Macroeconomic Sability and Trade Competitiveness: Latin America and The Caribbean

Dependent variable	Goods Export Acceleration Dummy					Services Export Acceleration Dummy				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Log real GDP cap.	-2.928***	0.399	-4.066***	-3.987***	-1.822	-0.112	-1.108	-0.565	-1.353	-1.299
	(1.088)	(0.543)	(1.161)	(0.993)	(1.133)	(0.803)	(1.017)	(0.694)	(0.909)	(1.190)
Log real GDP cap.^{2}	0.169***	-0.028	0.235***	0.227***	0.106	-0.007	0.052	0.024	0.066	0.067
	(0.065)	(0.033)	(0.068)	(0.058)	(0.066)	(0.047)	(0.059)	(0.040)	(0.053)	(0.070)
Log population	-0.008	-0.003	0.077***	0.061***	-0.007	0.038	0.081**	0.060***	0.054***	0.103***
	(0.032)	(0.013)	(0.017)	(0.015)	(0.014)	(0.025)	(0.034)	(0.017)	(0.020)	(0.032)
Market access	2.070***	3.893**	0.480	0.656*	3.496***	-0.346	-1.154	-0.580	-0.695	-2.525**
	(0.636)	(1.563)	(0.392)	(0.390)	(0.941)	(0.542)	(1.164)	(0.418)	(0.520)	(1.175)
Secondary education	0.007**	-0.000	0.008***	0.009***	-0.000	0.001	0.002	0.003	0.004*	0.003
	(0.003)	(0.001)	(0.002)	(0.002)	(0.001)	(0.003)	(0.003)	(0.002)	(0.003)	(0.003)
Governance ICRG	0.326***					0.144***				
	(0.065)					(0.053)				
Political stability		0.041					-0.003			
		(0.035)					(0.059)			
REER volatility			-0.004***					-0.012***		
			(0.001)					(0.004)		
Log REER index				-0.317***					-0.211*	
				(0.077)					(0.110)	
Tariffs (%)					-0.001					-0.020*
					(0.008)					(0.011)
Observations	186	106	172	193	98	186	100	130	133	108
Countries	22	27	20	21	26	21	29	21	21	27
Accelerations included	24	9	18	19	8	14	7	7	8	8
McFadden R^2	0.305	0.371	0.27	0.317	0.36	0.176	0.249	0.247	0.255	0.258
Pseudo R^2	0.282	0.288	0.233	0.266	0.277	0.159	0.208	0.183	0.198	0.214
Observed % of EA = 1	34.41	23.59	25.00	25.91	22.45	22.58	22.00	16.92	18.80	22.22
% correctly classified	74.73	79.25	72.09	73.58	79.59	66.13	66.00	70.77	69.17	73.15

Notes: Probit estimates, robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Coefficients are marginal probabilities evaluated at the sample means. The dependent variable EA is a dummy for the timing of goods (Columns 1-5) or services (Columns 6-10) export accelerations which equals 1 over the 3-year window centered on the initiation date. All RHS variables are lagged by 2 years. The description and source of variables are provided in Table B4.

Table B46: Product Market Reforms and Financial Liberalization: Latin America and The Caribbean

Dependent variable	Goods Export Acceleration Dummy					Services Export Acceleration Dummy				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Log real GDP cap.	-2.928***	0.399	-4.066***	-3.987***	-1.822	-0.112	-1.108	-0.565	-1.353	-1.299
	(1.088)	(0.543)	(1.161)	(0.993)	(1.133)	(0.803)	(1.017)	(0.694)	(0.909)	(1.190)
Log real GDP cap.^{2}	0.169***	-0.028	0.235***	0.227***	0.106	-0.007	0.052	0.024	0.066	0.067
	(0.065)	(0.033)	(0.068)	(0.058)	(0.066)	(0.047)	(0.059)	(0.040)	(0.053)	(0.070)
Log population	-0.008	-0.003	0.077***	0.061***	-0.007	0.038	0.081**	0.060***	0.054***	0.103***
	(0.032)	(0.013)	(0.017)	(0.015)	(0.014)	(0.025)	(0.034)	(0.017)	(0.020)	(0.032)
Market access	2.070***	3.893**	0.480	0.656*	3.496***	-0.346	-1.154	-0.580	-0.695	-2.525**
	(0.636)	(1.563)	(0.392)	(0.390)	(0.941)	(0.542)	(1.164)	(0.418)	(0.520)	(1.175)
Secondary education	0.007**	-0.000	0.008***	0.009***	-0.000	0.001	0.002	0.003	0.004*	0.003
	(0.003)	(0.001)	(0.002)	(0.002)	(0.001)	(0.003)	(0.003)	(0.002)	(0.003)	(0.003)
Governance ICRG	0.326***					0.144***				
	(0.065)					(0.053)				
Political stability		0.041					-0.003			
		(0.035)					(0.059)			
REER volatility			-0.004***					-0.012***		
			(0.001)					(0.004)		
Log REER index				-0.317***					-0.211*	
				(0.077)					(0.110)	
Tariffs (%)					-0.001					-0.020*
					(0.008)					(0.011)
Observations	186	106	172	193	98	186	100	130	133	108
Countries	22	27	20	21	26	21	29	21	21	27
Accelerations included	24	9	18	19	8	14	7	7	8	8
McFadden R^2	0.305	0.371	0.27	0.317	0.36	0.176	0.249	0.247	0.255	0.258
Pseudo R^2	0.282	0.288	0.233	0.266	0.277	0.159	0.208	0.183	0.198	0.214
Observed % of EA = 1	31.43	30.67	38.07	33.65	24.81	20.54	20.10	25.52	22.11	18.36
% correctly classified	72.86	70.67	71.61	71.09	71.05	75.68	72.17	71.72	67.37	67.63

Notes: Probit estimates, robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Coefficients are marginal probabilities evaluated at the sample means. The dependent variable EA is a dummy for the timing of goods (Columns 1-5) or services (Columns 6-10) export accelerations which equals 1 over the 3-year window centered on the initiation date. All RHS variables are lagged by 2 years. The description and source of variables are provided in Table B4.

Table B47: Diversification and GVC Participation: Latin America and The Caribbean

Dependent variable	Goods Export Acceleration Dummy					Services Export Acceleration Dummy				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Log real GDP cap.	-1.925**	-2.335***	-5.009***	-6.296***	-7.129***	-0.077	-0.065	-0.642	-1.076	-0.994
	(0.792)	(0.833)	(1.605)	(1.876)	(2.059)	(0.587)	(0.567)	(0.940)	(1.057)	(1.014)
Log real GDP cap.^{2}	0.111**	0.134***	0.283***	0.359***	0.409***	-0.004	-0.004	0.024	0.052	0.050
	(0.047)	(0.049)	(0.095)	(0.110)	(0.121)	(0.035)	(0.034)	(0.055)	(0.062)	(0.060)
Log population	0.076***	0.090***	0.050	0.090**	0.118***	0.018	0.014	0.075***	0.108***	0.133***
	(0.015)	(0.018)	(0.038)	(0.042)	(0.043)	(0.014)	(0.016)	(0.026)	(0.031)	(0.028)
Market access	0.423	0.349	1.330	0.945	0.412	-0.361	-0.317	-1.688**	-2.699***	-3.542***
	(0.360)	(0.364)	(1.381)	(1.484)	(1.609)	(0.279)	(0.297)	(0.740)	(0.899)	(0.811)
Secondary education	0.006***	0.007***	0.002	0.000	-0.000	-0.001	-0.002	0.001	-0.001	-0.001
	(0.002)	(0.002)	(0.003)	(0.003)	(0.003)	(0.002)	(0.002)	(0.003)	(0.003)	(0.002)
Theil index	-0.045					-0.117***				
	(0.036)					(0.033)				
Theil, extensive margin		-0.147**					-0.091**			
		(0.063)					(0.045)			
Theil, intensive margin		-0.017					-0.127***			
		(0.041)					(0.039)			
Log GVC (% exports)			0.302					0.566***		
			(0.248)					(0.170)		
Log FVA (% exports)				0.364**	0.390***				0.234***	0.201***
				(0.146)	(0.129)				(0.083)	(0.071)
Log DVX (% exports)				0.428***					0.485***	
				(0.155)					(0.125)	
Log Term 3 (% exports)					0.640***					0.653***
					(0.169)					(0.133)
Observations	293	292	133	133	133	250	250	158	158	158
Countries	30	30	24	24	24	29	29	24	24	24
Accelerations included	25	25	13	13	13	15	15	12	12	12
McFadden R^2	0.221	0.231	0.248	0.288	0.329	0.262	0.263	0.254	0.29	0.37
Pseudo R^2	0.2	0.207	0.231	0.259	0.284	0.196	0.197	0.212	0.235	0.281
Observed % of EA = 1	25.26	25.34	29.32	29.32	29.32	17.60	17.60	22.15	22.15	22.15
% correctly classified	70.31	72.26	68.42	69.17	72.18	70.80	70.00	70.25	74.68	75.95

Notes: Probit estimates, robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Coefficients are marginal probabilities evaluated at the sample means. The dependent variable EA is a dummy for the timing of goods (Columns 1-5) or services (Columns 6-10) export accelerations which equals 1 over the 3-year window centered on the initiation date. All RHS variables are lagged by 2 years. The description and source of variables are provided in Table B4.

Table B48: Institutional Quality, Macroeconomic Sability and Trade Competitiveness: Africa

Dependent variable	Goods Export Acceleration Dummy					Services Export Acceleration Dummy				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Log real GDP cap.	0.382**	0.421	0.108	1.085***	0.194	-0.678**	-1.084**	0.001	-0.095	-1.566**
	(0.153)	(0.333)	(0.106)	(0.307)	(0.441)	(0.270)	(0.507)	(0.297)	(0.470)	(0.780)
Log real GDP cap.^{2}	-0.032***	-0.040	-0.008	-0.080***	-0.022	0.051***	0.073**	0.004	0.009	0.099**
	(0.011)	(0.024)	(0.008)	(0.021)	(0.033)	(0.019)	(0.034)	(0.020)	(0.031)	(0.050)
Log population	0.047***	0.024	0.002	-0.015	0.042	0.092***	0.100***	0.155***	0.192***	0.181***
	(0.012)	(0.019)	(0.002)	(0.017)	(0.027)	(0.024)	(0.026)	(0.051)	(0.043)	(0.053)
Market access	-0.009	0.814**	-0.045	-0.463**	0.056	0.628***	0.143	0.055	0.297	1.031
	(0.143)	(0.331)	(0.046)	(0.215)	(0.357)	(0.213)	(0.413)	(0.200)	(0.332)	(0.805)
Secondary education	0.004***	0.008***	0.000	0.005**	0.006*	-0.000	0.002	-0.004**	-0.002	0.010**
	(0.001)	(0.002)	(0.000)	(0.002)	(0.003)	(0.002)	(0.002)	(0.002)	(0.003)	(0.005)
Governance ICRG	0.051**					0.004				
	(0.021)					(0.029)				
Political stability		-0.019					0.033			
		(0.035)					(0.057)			
REER volatility			-0.000					-0.006***		
			(0.000)					(0.002)		
Log REER index				-0.122**					-0.244**	
				(0.058)					(0.116)	
Tariffs (%)					0.001					0.008
					(0.006)					(0.008)
Observations	378	195	186	190	107	290	148	95	98	78
Countries	36	45	19	20	39	34	42	19	20	36
Accelerations included	16	11	11	11	6	16	8	8	8	10
McFadden R^2	0.199	0.189	0.313	0.223	0.164	0.234	0.144	0.489	0.409	0.248
Pseudo R^2	0.133	0.149	0.223	0.168	0.129	0.179	0.139	0.361	0.317	0.24
Observed % of EA = 1	12.96	17.44	17.20	16.84	16.82	17.59	25.00	26.32	25.51	33.33
% correctly classified	72.75	68.72	73.12	72.63	67.29	74.14	71.62	84.21	86.74	73.08

Notes: Probit estimates, robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Coefficients are marginal probabilities evaluated at the sample means. The dependent variable EA is a dummy for the timing of goods (Columns 1-5) or services (Columns 6-10) export accelerations which equals 1 over the 3-year window centered on the initiation date. All RHS variables are lagged by 2 years. The description and source of variables are provided in Table B4.

Table B49: Product Market Reforms and Financial Liberalization: Africa

Dependent variable	Goods Export Acceleration Dummy					Services Export Acceleration Dummy				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Log real GDP cap.	0.431**	0.497***	0.342	0.698***	0.385**	-0.862***	-0.445	-1.562**	-0.807**	-0.606***
	(0.173)	(0.162)	(0.425)	(0.247)	(0.174)	(0.298)	(0.282)	(0.640)	(0.336)	(0.163)
Log real GDP cap.^{2}	-0.033**	-0.038***	-0.023	-0.051***	-0.031**	0.064***	0.035*	0.132***	0.061***	0.043***
	(0.013)	(0.012)	(0.032)	(0.018)	(0.013)	(0.021)	(0.019)	(0.051)	(0.024)	(0.011)
Log population	0.043***	0.035***	0.036	0.041**	0.028***	0.107***	0.092***	0.253***	0.128***	0.071***
	(0.013)	(0.011)	(0.036)	(0.021)	(0.009)	(0.026)	(0.021)	(0.059)	(0.031)	(0.012)
Market access	0.010	0.041	-0.006	0.046	0.262	0.577**	0.241	1.295***	0.787***	0.401***
	(0.155)	(0.124)	(0.299)	(0.208)	(0.161)	(0.238)	(0.179)	(0.414)	(0.273)	(0.127)
Secondary education	0.003***	0.003***	0.005*	0.003**	0.004***	-0.000	-0.001	-0.009**	-0.001	0.001
	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)	(0.002)	(0.002)	(0.004)	(0.002)	(0.001)
Agriculture index	-0.018					0.035				
	(0.037)					(0.063)				
Networks index		0.126					-0.182			
		(0.099)					(0.136)			
Financial liberalization			-0.338					-0.260		
			(0.217)					(0.347)		
Capital account openness				-0.075					0.157	
				(0.088)					(0.128)	
Log FDI inflows (% GDP)					0.017**					-0.000
					(0.007)					(0.005)
Observations	393	416	188	275	513	265	292	144	211	399
Countries	33	35	18	29	52	31	32	17	27	50
Accelerations included	17	17	13	15	20	17	17	12	14	18
McFadden R^2	0.169	0.217	0.248	0.228	0.183	0.263	0.205	0.272	0.288	0.318
Pseudo R^2	0.115	0.142	0.205	0.173	0.121	0.206	0.162	0.236	0.23	0.21
Observed % of EA = 1	12.98	12.74	21.28	17.09	12.48	19.62	18.15	25.69	21.33	14.79
% correctly classified	69.47	71.64	74.47	75.27	71.74	74.34	69.86	72.92	77.73	78.20

Notes: Probit estimates, robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Coefficients are marginal probabilities evaluated at the sample means. The dependent variable EA is a dummy for the timing of goods (Columns 1-5) or services (Columns 6-10) export accelerations which equals 1 over the 3-year window centered on the initiation date. All RHS variables are lagged by 2 years. The description and source of variables are provided in Table B4.

Table B50: Diversification and GVC Participation: Africa

Dependent variable	Goods Export Acceleration Dummy					Services Export Acceleration Dummy				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Log real GDP cap.	0.309*	0.327**	0.333*	0.380**	0.419**	-0.510***	-0.528***	-0.831***	-0.877***	-0.873***
	(0.159)	(0.164)	(0.181)	(0.192)	(0.197)	(0.187)	(0.185)	(0.263)	(0.272)	(0.270)
Log real GDP cap.^{2}	-0.024**	-0.025**	-0.030**	-0.034**	-0.037**	0.036***	0.037***	0.059***	0.064***	0.063***
	(0.012)	(0.012)	(0.013)	(0.014)	(0.014)	(0.013)	(0.013)	(0.018)	(0.019)	(0.019)
Log population	0.016**	0.016**	0.029***	0.031***	0.027***	0.070***	0.070***	0.087***	0.106***	0.104***
	(0.008)	(0.008)	(0.010)	(0.011)	(0.010)	(0.013)	(0.012)	(0.016)	(0.018)	(0.018)
Market access	0.090	0.085	0.017	0.031	-0.021	0.244*	0.273**	0.194	0.230	0.196
	(0.122)	(0.120)	(0.160)	(0.147)	(0.137)	(0.140)	(0.137)	(0.217)	(0.202)	(0.201)
Secondary education	0.003***	0.003***	0.006***	0.005***	0.005***	-0.001	-0.001	-0.000	-0.001	-0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)
Theil index	-0.024**					-0.023				
	(0.012)					(0.016)				
Theil, extensive margin		-0.011					-0.049*			
		(0.018)					(0.026)			
Theil, intensive margin		-0.027**					-0.015			
		(0.013)					(0.015)			
Log GVC (% exports)			-0.040					-0.088		
			(0.058)					(0.082)		
Log FVA (% exports)				0.066*	0.057*				0.133***	0.121**
				(0.036)	(0.034)				(0.050)	(0.050)
Log DVX (% exports)				0.101**					0.071	
				(0.041)					(0.045)	
Log Term 3 (% exports)					0.101**					0.059
					(0.041)					(0.046)
Observations	552	552	379	376	376	387	387	321	317	317
Countries	48	48	49	49	49	46	46	46	46	46
Accelerations included	22	22	15	15	15	20	20	20	20	20
McFadden R^2	0.175	0.177	0.203	0.223	0.222	0.269	0.275	0.221	0.236	0.234
Pseudo R^2	0.115	0.115	0.134	0.146	0.145	0.192	0.195	0.178	0.189	0.188
Observed % of EA = 1	12.14	12.14	12.67	12.77	12.77	16.02	16.02	19.32	19.56	19.56
% correctly classified	72.46	71.92	72.56	72.61	71.01	73.90	75.19	71.03	69.72	69.09

Notes: Probit estimates, robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Coefficients are marginal probabilities evaluated at the sample means. The dependent variable EA is a dummy for the timing of goods (Columns 1-5) or services (Columns 6-10) export accelerations which equals 1 over the 3-year window centered on the initiation date. All RHS variables are lagged by 2 years. The description and source of variables are provided in Table B4.

Table B51: Institutional Quality, Macroeconomic Sability and Trade Competitiveness: Other EMDEs

Dependent variable	Goods Export Acceleration Dummy					Services Export Acceleration Dummy				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Log real GDP cap.	-0.661**	-0.205	-1.513*	-1.304**	0.469	-0.856***	0.093	-1.974*	-1.647*	0.203
	(0.319)	(0.209)	(0.832)	(0.622)	(0.355)	(0.293)	(0.273)	(1.023)	(0.857)	(0.452)
Log real GDP cap.^{2}	0.040**	0.014	0.098*	0.085**	-0.029	0.044***	-0.008	0.127**	0.109**	-0.012
	(0.018)	(0.012)	(0.051)	(0.039)	(0.022)	(0.017)	(0.016)	(0.062)	(0.052)	(0.027)
Log population	0.062***	-0.000	0.131***	0.110***	0.001	0.012	0.095***	0.107***	0.086***	0.056**
	(0.022)	(0.015)	(0.032)	(0.020)	(0.020)	(0.017)	(0.019)	(0.030)	(0.025)	(0.028)
Market access	0.532***	0.436***	0.839**	0.655***	0.340*	-0.058	-0.044	0.584*	0.586**	-0.202
	(0.151)	(0.134)	(0.343)	(0.203)	(0.196)	(0.135)	(0.159)	(0.319)	(0.272)	(0.250)
Secondary education	0.004***	0.001	0.001	0.000	0.002	0.000	0.003	-0.004	-0.004*	0.009***
	(0.002)	(0.001)	(0.003)	(0.002)	(0.003)	(0.001)	(0.002)	(0.003)	(0.002)	(0.003)
Governance ICRG	-0.030					0.185***				
	(0.042)					(0.042)				
Political stability		-0.035					0.196***			
		(0.034)					(0.051)			
REER volatility			-0.008					-0.003		
			(0.009)					(0.006)		
Log REER index				-0.070					-0.327	
				(0.161)					(0.241)	
Tariffs (%)					0.004					0.001
					(0.007)					(0.009)
Observations	236	198	107	158	128	277	191	111	140	113
Countries	33	53	21	21	39	37	56	21	22	38
Accelerations included	27	13	14	15	11	25	16	16	18	15
McFadden R^2	0.16	0.14	0.224	0.267	0.161	0.201	0.191	0.204	0.242	0.163
Pseudo R^2	0.168	0.114	0.224	0.24	0.153	0.189	0.18	0.215	0.239	0.178
Observed % of EA = 1	32.63	17.17	34.58	27.85	25.00	26.72	26.18	39.64	35.00	38.05
% correctly classified	66.95	66.16	73.83	70.25	71.09	71.48	67.54	72.97	75.00	69.91

Notes: Probit estimates, robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Coefficients are marginal probabilities evaluated at the sample means. The dependent variable EA is a dummy for the timing of goods (Columns 1-5) or services (Columns 6-10) export accelerations which equals 1 over the 3-year window centered on the initiation date. All RHS variables are lagged by 2 years. The description and source of variables are provided in Table B4.

Table B52: Product Market Reforms and Financial Liberalization: Other EMDEs

Dependent variable	Goods Export Acceleration Dummy					Services Export Acceleration Dummy				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Log real GDP cap.	-0.347	-0.404	0.781	-0.116	0.005	0.104	-0.072	-0.371	-0.987***	-0.192
	(0.376)	(0.328)	(0.768)	(0.393)	(0.163)	(0.394)	(0.346)	(0.658)	(0.379)	(0.185)
Log real GDP cap.^{2}	0.027	0.031	-0.045	0.006	0.003	-0.009	0.003	0.022	0.058**	0.012
	(0.024)	(0.021)	(0.051)	(0.026)	(0.010)	(0.025)	(0.022)	(0.042)	(0.024)	(0.011)
Log population	0.055***	0.060***	0.038	0.043**	0.057***	0.026	0.032**	0.014	0.035*	0.041***
	(0.016)	(0.011)	(0.031)	(0.018)	(0.008)	(0.016)	(0.013)	(0.027)	(0.018)	(0.009)
Market access	0.493***	0.346***	0.369**	0.278**	0.217**	0.204	0.082	0.120	-0.050	0.050
	(0.135)	(0.102)	(0.170)	(0.132)	(0.088)	(0.135)	(0.110)	(0.168)	(0.142)	(0.108)
Secondary education	0.003	0.002	0.002	0.004**	0.001	-0.000	0.000	0.003	0.005***	0.001
	(0.002)	(0.001)	(0.003)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.002)	(0.001)
Agriculture index	-0.026					0.006				
	(0.075)					(0.071)				
Networks index		0.137					0.217			
		(0.145)					(0.138)			
Financial liberalization			-0.088					-0.460		
			(0.302)					(0.287)		
Capital account openness				-0.147					-0.140	
				(0.128)					(0.127)	
Log FDI inflows (% GDP)					0.014					0.024*
					(0.011)					(0.012)
Observations	294	339	196	263	431	270	326	207	246	390
Countries	35	38	26	31	57	36	39	26	32	58
Accelerations included	25	27	20	25	31	22	25	20	24	31
McFadden R^2	0.263	0.239	0.257	0.175	0.21	0.182	0.159	0.22	0.2	0.154
Pseudo R^2	0.233	0.21	0.244	0.172	0.181	0.172	0.147	0.209	0.19	0.144
Observed % of EA = 1	26.53	24.48	32.14	28.14	22.04	25.56	23.31	28.99	27.24	23.33
% correctly classified	70.41	69.03	74.49	70.34	69.84	71.11	69.02	73.91	72.76	68.21

Notes: Probit estimates, robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Coefficients are marginal probabilities evaluated at the sample means. The dependent variable EA is a dummy for the timing of goods (Columns 1-5) or services (Columns 6-10) export accelerations which equals 1 over the 3-year window centered on the initiation date. All RHS variables are lagged by 2 years. The description and source of variables are provided in Table B4.

Table B53: Diversification and GVC Participation: Other EMDEs

Dependent variable	Goods Export Acceleration Dummy					Services Export Acceleration Dummy				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Log real GDP cap.	-0.293*	-0.382**	-0.003	-0.069	-0.041	-0.348*	-0.322*	-0.118	-0.222	-0.247
	(0.152)	(0.149)	(0.171)	(0.169)	(0.168)	(0.183)	(0.180)	(0.210)	(0.232)	(0.237)
Log real GDP cap.^{2}	0.021**	0.026***	0.002	0.004	0.002	0.021*	0.020*	0.006	0.012	0.013
	(0.009)	(0.009)	(0.010)	(0.010)	(0.010)	(0.011)	(0.011)	(0.013)	(0.014)	(0.014)
Log population	0.037***	0.029***	0.018*	0.006	0.003	0.022**	0.027**	0.015	0.013	0.007
	(0.009)	(0.009)	(0.011)	(0.011)	(0.011)	(0.011)	(0.010)	(0.012)	(0.013)	(0.013)
Market access	0.187**	0.174**	0.194**	0.220**	0.207**	0.003	0.009	0.116	0.106	0.101
	(0.076)	(0.075)	(0.088)	(0.094)	(0.093)	(0.099)	(0.096)	(0.116)	(0.115)	(0.115)
Secondary education	0.000	0.000	0.002**	0.002**	0.003***	0.000	0.000	0.002**	0.002*	0.002**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Theil index	-0.055***					-0.054***				
	(0.018)					(0.020)				
Theil, extensive margin		0.005					-0.106**			
		(0.030)					(0.043)			
Theil, intensive margin		-0.088***					-0.028			
		(0.023)					(0.024)			
Log GVC (% exports)			-0.002					0.063		
			(0.059)					(0.082)		
Log FVA (% exports)				0.027	0.021				0.072	0.087**
				(0.033)	(0.030)				(0.044)	(0.042)
Log DVX (% exports)				0.205***					0.086	
				(0.072)					(0.068)	
Log Term 3 (% exports)					0.232***					0.168**
					(0.067)					(0.072)
Observations	480	478	378	371	371	424	423	373	370	370
Countries	50	50	49	49	49	52	52	50	50	50
Accelerations included	34	34	23	23	23	33	33	28	27	27
McFadden R^2	0.191	0.2	0.129	0.161	0.177	0.138	0.141	0.139	0.139	0.153
Pseudo R^2	0.165	0.171	0.107	0.132	0.144	0.128	0.129	0.127	0.126	0.137
Observed % of EA = 1	21.25	21.13	17.73	18.06	18.06	22.17	21.99	21.72	21.35	21.35
% correctly classified	71.46	70.92	68.52	69.00	70.08	66.98	65.25	67.02	66.22	68.11

Notes: Probit estimates, robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Coefficients are marginal probabilities evaluated at the sample means. The dependent variable EA is a dummy for the timing of goods (Columns 1-5) or services (Columns 6-10) export accelerations which equals 1 over the 3-year window centered on the initiation date. All RHS variables are lagged by 2 years. The description and source of variables are provided in Table B4.

Table B54: Institutional Quality, Macroeconomic Sability and Trade Competitiveness: Decelerations

Dependent variable	Goods Export Acceleration Dummy					Services Export Acceleration Dummy				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Log real GDP cap.	1.771	-2.897	-5.434**	-3.654	-0.839	-864.664	-10.855***	-11.721**	-10.611*	-11.384
	(4.821)	(4.298)	(2.567)	(2.731)	(4.748)	(573.110)	(3.260)	(5.540)	(5.902)	(8.347)
Log real GDP cap.^{2}	-0.140	0.146	0.321*	0.221	0.019	68.817	0.611***	0.648**	0.586*	0.601
	(0.337)	(0.317)	(0.168)	(0.171)	(0.337)	(45.780)	(0.193)	(0.309)	(0.334)	(0.475)
Log population	-0.375	-0.378	-0.253	-0.210	-0.231	0.758	-0.583	-0.607**	-0.714***	-0.580
	(0.259)	(0.342)	(0.319)	(0.351)	(0.255)	(0.501)	(0.494)	(0.261)	(0.225)	(0.677)
Market access	-0.192	7.765**	6.044*	6.019*	2.431	-0.114	7.693	11.404**	11.494***	10.305
	(2.203)	(3.921)	(3.482)	(3.210)	(4.117)	(15.289)	(13.869)	(4.674)	(3.968)	(16.313)
Secondary education	0.014	0.056**	0.021	0.023	0.039	-0.064***	0.070**	0.045	0.045	0.078*
	(0.023)	(0.026)	(0.032)	(0.036)	(0.031)	(0.016)	(0.028)	(0.047)	(0.049)	(0.046)
Governance ICRG	-0.608					1.082				
	(0.706)					(2.184)				
Political stability		-0.527					-0.649*			
		(1.267)					(0.367)			
REER volatility			0.003***					-0.095***		
			(0.001)					(0.034)		
Log REER index				1.395**					-0.569	
				(0.619)					(0.699)	
Tariffs (%)					0.055**					-0.002
					(0.026)					(0.079)
Observations	1 429	826	881	963	680	1 119	628	678	736	529
Countries	96	136	63	63	121	95	135	62	62	116
Accelerations included	5	4	3	3	3	4	3	1	1	2

Notes: King and Zeng (2001)'s logit estimator corrected for rare occurrence bias, simple regression coefficients. Robust standard errors clustered at country-level in parentheses. *** p<0.01, ** p<0.05, * p<0.1. The dependent variable EA is a dummy for the timing of goods (Columns 1-5) or services (Columns 6-10) export decelerations which equals 1 over the 3-year window centered on the initiation date. All RHS variables are lagged by 2 years. The description and source of variables are provided in Table B4.

Table B55: Product Market Reforms and Financial Liberalization: Decelerations

Dependent variable	Goods Export Acceleration Dummy					Services Export Acceleration Dummy		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Log real GDP cap.	4.661	1.625	8.342	-0.830	-1.874	-32.545	-6.086	-6.861**
	(7.493)	(5.845)	(27.636)	(2.678)	(2.456)	(383.603)	(430.668)	(3.349)
Log real GDP cap.^{2}	-0.365	-0.165	-0.612	0.061	0.087	2.785	0.562	0.362*
	(0.529)	(0.402)	(1.893)	(0.173)	(0.160)	(31.766)	(35.626)	(0.219)
Log population	-0.441**	-0.495***	-1.121	-0.507*	-0.328***	-0.116	-0.046	-0.923***
	(0.201)	(0.156)	(0.877)	(0.285)	(0.112)	(0.240)	(0.225)	(0.334)
Market access	3.179	3.832	-0.182	0.984	5.057**	0.507	3.680	2.588
	(3.994)	(2.998)	(2.884)	(2.754)	(2.188)	(3.196)	(3.614)	(3.049)
Secondary education	0.005	0.012	-0.008	-0.014	0.021*	0.021	0.036	0.019
	(0.023)	(0.011)	(0.026)	(0.016)	(0.012)	(0.036)	(0.029)	(0.018)
Agriculture index	0.816					0.252		
	(0.800)					(0.997)		
Networks index		1.588					-0.892	
		(1.399)					(3.143)	
Financial liberalization			-0.713					
			(2.855)					
Capital account openness				-5.683***				
				(2.153)				
Log FDI inflows (% GDP)					-0.288***			-0.146
					(0.105)			(0.145)
Observations	1 373	1 488	950	1 277	1 895	1 092	1 190	1 459
Countries	92	98	60	83	141	92	98	140
Accelerations included	5	5	2	4	10	3	3	6

Notes: King and Zeng (2001)'s logit estimator corrected for rare occurrence bias, simple regression coefficients. Robust standard errors clustered at country-level in parentheses. *** p<0.01, ** p<0.05, * p<0.1. The dependent variable EA is a dummy for the timing of goods (Columns 1-5) or services (Columns 6-10) export decelerations which equals 1 over the 3-year window centered on the initiation date. All RHS variables are lagged by 2 years. Regressions with domestic financial liberalization and capital account openness are not ran due to insufficient observations. The description and source of variables are provided in Table B4.

Table B56: Diversification and GVC Participation: Decelerations

Dependent variable	Goods Export Acceleration Dummy					Services Export Acceleration Dummy				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Log real GDP cap.	-0.685	-0.136	-1.305	0.321	0.372	-5.967	-5.682	16.338	31.532	74.567
	(2.468)	(3.133)	(4.722)	(4.446)	(4.400)	(3.799)	(3.533)	(121.628)	(161.870)	(169.240)
Log real GDP cap.^{2}	0.018	-0.020	0.061	-0.039	-0.041	0.287	0.267	-1.231	-2.521	-6.123
	(0.160)	(0.204)	(0.324)	(0.295)	(0.291)	(0.261)	(0.241)	(9.495)	(12.942)	(13.654)
Log population	-0.130	-0.157	-0.029	-0.160	-0.165	-0.935***	-0.999***	-1.125	-1.198*	-1.016
	(0.137)	(0.148)	(0.191)	(0.172)	(0.196)	(0.268)	(0.307)	(0.755)	(0.669)	(0.710)
Market access	3.564	3.580	2.037	2.986	2.697	5.829	5.564	-3.212	-0.456	0.236
	(2.264)	(2.228)	(2.886)	(3.201)	(3.008)	(4.994)	(4.743)	(10.189)	(9.363)	(11.373)
Secondary education	0.022	0.024*	0.022	0.026	0.025	0.014	0.015	0.012	0.028	0.036
	(0.014)	(0.013)	(0.028)	(0.024)	(0.025)	(0.016)	(0.016)	(0.032)	(0.022)	(0.025)
Theil index	0.710**					-0.656**				
	(0.355)					(0.260)				
Theil, extensive margin		1.007**					-0.151			
		(0.496)					(0.436)			
Theil, intensive margin		0.620					-0.934***			
		(0.401)					(0.231)			
Log GVC (% exports)			-0.532					-8.566		
			(1.046)					(6.139)		
Log FVA (% exports)				-1.109	-1.185				-3.410*	-3.673*
				(0.744)	(0.835)				(1.832)	(2.213)
Log DVX (% exports)				0.901					-3.865	
				(0.850)					(2.622)	
Log Term 3 (% exports)					0.748					-4.513
					(1.445)					(3.542)
Observations	1 967	1 964	1 472	1 460	1 460	1 490	1 489	1 283	1 273	1 273
Countries	130	130	126	126	126	130	130	124	124	124
Accelerations included	11	11	3	3	3	7	7	2	2	2

Notes: King and Zeng (2001)'s logit estimator corrected for rare occurrence bias, simple regression coefficients. Robust standard errors clustered at country-level in parentheses. *** p<0.01, ** p<0.05, * p<0.1. The dependent variable EA is a dummy for the timing of goods (Columns 1-5) or services (Columns 6-10) export decelerations which equals 1 over the 3-year window centered on the initiation date. All RHS variables are lagged by 2 years. The description and source of variables are provided in Table B4.

CHAPTER 4

Import Uncertainty, Supply Chain Unreliability and Export Dynamics

---

[1]

[1]This Chapter is joint work with Mariana Vijil and Laurent Wagner. It has benefited from useful comments from Patrick Plane and Mary-Françoise Renard. Ana Margarida Fernandes and Hibret Belete Maemir kindly provided access to the Exporter Dynamics Database.

4.1 Introduction

The business literature has extensively analyzed how delays and unpredictable delivery times influence firms' supply chain management decisions (Arvis, Carruthers, Smith, and Willoughby, 2011; Kunaka and Carruthers, 2014). With the development of lean retailing and just-in-time manufacturing practices, together with the increased fragmentation of production across the world,[2] timeliness and reliability have become the watchwords of firms involved in supply-chain trade. Import and export activities have grown increasingly intertwined, with foreign inputs typically imported and incorporated in the production of final goods or transformed and exported to other countries where they may further enter as intermediate inputs in the value-added exported to third countries (Koopman, Powers, Wang, and Wei, 2010; Koopman, Wang, and Wei, 2014). Against this background, unexpected factors such as late shipment arrivals, including truck breakdown-related transport delays, or uncertainty over the time required to clear the consignment after it has reached destination, owing for instance to excessive formalities and physical inspections by border authorities, can lead to postponed delivery of key inputs, thereby disrupting the supply chain. Such uncertainty carries reputational costs for the importing firm, undermining its ability to meet buyer quality requirements and delivery deadlines, and exposing it to the risk of losing sales contracts, market shares and valued customer relationships. Unexpected delays in delivery and their potential snowball effect across the supply chain (Harrigan and Venables, 2006) prompt importers to adopt costly hedging strategies, such as switching to more reliable but expensive transportation modes (Hummels, 2001) or maintaining safety stocks. Evidence suggests that inventory-holding costs can vary from 15 percent of the cost of goods per year to as much as 50 percent (Clark, Kozlova, and Schaur, 2016).

Several studies have formally quantified the effect of timeliness on trade volumes. According to Hummels (2001), each day in transit reduces the probability that the United States imports manufactured goods from a given country by 1.5 percent and is equivalent to an ad valorem tariff rate of 0.8 percent, a figure updated to range between 0.6 and 2.3 percent in Hummels and Schaur (2013). Similarly, Zaki (2014) finds that the average ad valorem tariff rate associated with the time to import stands at 34.2 percent for developing countries. Clark, Kozlova, and Schaur (2016) show that unexpected delays in the arrival date of shipments at ports in the United States reduce imports by 1 to 2 percent. Time costs also impede exports both at the extensive and intensive margins. For instance, Djankov, Freund, and Pham (2010)

[2] World Bank Group; IDE-JETRO; OECD; UIBE; World Trade Organization (2017), *Global Value Chain Development Report 2017: Measuring and Analyzing the Impact of GVCs on Economic Development.* Washington, DC: World Bank.

argue that each additional day required to move products from the factory gate and onto the ship reduces the volume of exports by more than 1 percent, while Li and Wilson (2009) find that it decreases the probability to export and the share of exports in total sales. Freund and Rocha (2011) convey a similar message in the case of African countries and find inland transit delays to matter more than those related to documentation processing and Customs clearance. Likewise, Volpe Martincus, Carballo, and Graziano (2015) show that a 10 percent increase in Customs-driven delays leads to a 3.8 percent decline in firms' exports in Uruguay, with additional negative consequences for export market diversification. Most of these studies concur to say that the negative effects of delays on trade are particularly exacerbated for time-sensitive goods such as perishable agricultural products or parts and components (Hummels and Schaur, 2013). As a result, countries with better ability to export on time are found to be more likely to develop comparative advantage in time-sensitive industries and to export intermediate inputs than final goods (Gamberoni, Lanz, and Piermartini, 2010).

In this paper, we argue that uncertainty in the time required to complete Customs procedures and other border formalities for imported inputs affect importing firms' export dynamics. A large body of literature has documented the positive impact of foreign intermediate goods or input tariff liberalization on productivity by providing firms access to a larger array of intermediate inputs — the variety channel — and to the foreign technology embodied in imported inputs, through the so-called quality channel.[3] Since only the most productive firms self-select into exporting (Melitz, 2003), imports of intermediate inputs matter for export performance. A number of papers have also evidenced the direct relationship between imports and export outcomes. For instance, van der Marel (2017) shows that non-tariff barriers hindering the import of intermediate manufactured products reduce total trade values, the average export per firm and the number of exporting firms. Using data on Argentinian firms, Bas (2012) finds that input tariff liberalization raises the probability of firm entry into export markets, while Bas and Strauss-Kahn (2014) evidence a positive impact on the number of products exported by French manufacturing firms. By the same token, input-importing firms in South Africa (Edwards, Sanfilippo, and Sundaram, 2017) and China (Feng, Li, and Swenson, 2016) exhibit both higher export volume and scope. In addition to supporting the export diversification of importing firms at the intensive and extensive margins, foreign inputs also have a bearing on how long they operate in export markets. Lopez (2006) argues that importing intermediate inputs increases the probability of export survival of Chilean firms, whereas Wagner (2013) finds that importing firms in Germany are less likely to

[3] See for instance Schor (2004); Amiti and Konings (2007); Kasahara and Rodrigue (2008); Topalova and Khandelwal (2011); Halpern, Koren, and Szeidl (2015) and Bas, Johansson, Murtin, and Nicoletti (2016)

exit the export market. Access to foreign inputs also seems to enhance the quality of the export bundle (Kugler and Verhoogen, 2009, 2012; Manova and Zhang, 2012; Fan, Li, and Yeaple, 2015; Bas and Strauss-Kahn, 2015). In line with these studies, Pierola, Fernandes, and Farole (2015) show that Peruvian firms that use imported intermediate inputs not only export and grow more, but they also export high-quality goods and are more geographically diversified.

Drawing on these two strands of literature on the trade-effects of border clearance times and the role of imported inputs in export outcomes, this paper investigates how upstream uncertainty faced by firms in the time to clear imported inputs at the border shapes downstream export dynamics. Our interest is twofold. First, we explore whether unpredictability in the time required to accomplish Customs and other border formalities for imported inputs deters manufacturing firms from entering new export markets. Second, we examine whether it influences the export survival of firms already serving foreign markets based on the export exit rate of incumbents and entrants, and the share of firms that are still in operation in the foreign market one, two or three years after they start exporting. In doing so, we make several contributions to the existing literature. First, we argue that predictability in imported inputs delivery times is more important than actual observed times, and depart from the cross-country studies using single-value, average-type country-level indicators of time-related trade costs such as the Doing Business Indicators. Instead, we compute a novel measure of import uncertainty taking advantage of the time-varying within-country distribution of Customs clearance times across manufacturing firms sourced from the World Bank Enterprise Surveys (WBES), thereby accounting for the heterogeneity of border times at the country-sector-firm-year level (Volpe Martincus, 2016). Specifically, we consider the within-country-sector-year interquartile range of the days elapsed between the time of arrival of imported inputs at the destination port of entry and the time of release from Customs, for a sample of 48 developing countries over 2006-2014.

Second, by matching this dataset with information on firm export dynamics at the origin-destination-sector-year level obtained from the World Bank's Exporter Dynamics Database (EDD), we are able to shed light on how uncertainty in the time to import affects the decision of (i) non-exporters to enter foreign markets; (ii) both new and incumbent exporters to exit foreign markets, and (iii) firms to keep on exporting one, two and three years after the date they started serving the foreign market. Therefore, our paper emphasizes the granular origins of aggregate trade performance by exploiting firm-level information to derive country-sector level indicators of export dynamics. Export outcomes at the macro-level are driven by the activities of firms operating in different sectors, with sometimes only a handful of them — dubbed export superstars — accounting for the lion's share of total exports (Freund and Pierola, 2015).

By constructing a new measure of uncertainty in border clearance times for imports, we quantify a new source of trade costs. Traditionally captured by a wide range of variables including standard gravity-type measures such as bilateral distance, tariffs, contiguity, common language and participation in trade agreements, trade costs also relate to a country's legal and regulatory framework, as well as the availability of quality infrastructure and other trade facilitation measures aimed for instance at reducing administrative red tape. Abundant research highlights the sizeable impact of trade costs on aggregate export volumes,[4] the intensive and extensive margins of trade[5] and export survival[6] on the one hand, and their large growth- and welfare-implications on the other (Anderson and van Wincoop, 2004).

Our results suggest that uncertainty in the time required to clear imported inputs at the border impacts neither the entry nor the exit rate of manufacturing firms in developing countries, but translates into lower survival rates for new exporters, with a smaller number of manufacturing firms continuing to serve the foreign market beyond their first year of entry. Interestingly, this effect grows larger over time as input-importing exporters bear the increasing reputational costs associated with missed delivery deadlines, and appears to be driven by South-North trade, possibly reflecting the time-sensitivity of buyers in developed countries. We also find that the export dynamics-effects of import uncertainty are heterogeneous across export industries. Finally, sunk costs of entry in foreign markets attenuate the negative effect of import uncertainty on survival rates as firms delay exiting the export market. Our findings are robust to the inclusion of other measures of domestic trade costs associated with the import process, including cumbersome formalities to import, ease of access to finance and corrupt practices at the border, confirming the distinctive impact of our measure of import uncertainty on firm export dynamics. Our results suggest that developing countries seeking to promote the survival of newly-exporting firms in foreign markets should consider undertaking policies targeted at reducing the uncertainty these firms face when importing their production inputs.

The remainder of the paper is organized as follows. Section 4.2 describes the import process, introduces the dataset and provides stylized facts. Section 4.3 specifies the econometric model and presents the results. Section 4.4 discusses the quality of our measure of import uncertainty

[4] See for example Limão and Venables (2001); Coulibaly and Fontagné (2006); Blonigen and Wilson (2008) and Volpe Martincus, Carballo, and Cusolito (2017).

[5] See for instance Debaere and Mostashari (2010); Shepherd (2010); Dennis and Shepherd (2011); Albornoz, Calvo Pardo, Corcos, and Ornelas (2012); Regolo (2013); Feenstra and Ma (2014) and Beverelli, Neumueller, and Teh (2015).

[6] See for instance Brenton, Saborowski, and von Uexkull (2010); Brenton, Cadot, and Pierola (2012); Fugazza and Molina (2016); Cadot, Iacovone, Pierola, and Rauch (2013); Araujo, Mion, and Ornelas (2016) and Carrère and Strauss-Kahn (2017).

as well as endogeneity concerns. Section 4.5 concludes.

4.2 Data

4.2.1 Import Uncertainty

Following harmonization efforts promoted by international organizations, including the World Customs Organization (WCO) and the Word Trade Organization (WTO), the import process from the moment the cargo arrives at the border post until it is cleared by Customs is relatively standard across countries (Figure 4.1). As subsequently discussed, each step with its multiple stakeholders can be a source of delay. Taking the maritime transport case as an example,[7] the first step is the arrival of the vessel at the port of entry. At this stage, congestion at port terminals can lead to berthing delays with vessels waiting hours or sometimes even days in the queue, and with delays being charged by the shipping company to the importer through higher shipping rates. After berthing, port operators unload the vessel and place its cargo in a shipyard or warehouse while the importing firm or its representative, the Customs broker, prepares Customs documents, import licenses, Sanitary and Phytosanitary (SPS) certificates and permits if applicable,[8] filled in electronic or paper form depending on Customs and other border control agencies' use of Information Technology (IT) systems. In many countries, SPS agencies and Customs require separate declarations, with significant data gathering and task duplication for the importer or its delegate that can be source of delays. Insufficient container placement capacity, poor efficiency of port operators during cargo movement or the low celerity with which the importer or the Customs broker fill the paperwork can also generate delays.

Once the paperwork is delivered, Customs validate the import transaction by assigning a number and date to the declaration, specifying the taxes and Customs duties payable on the imported good. Delays could arise at this stage owing to low Customs efficiency, for instance due to limited use of IT systems, or to the type of product imported.[9] Likewise, the time taken by the Customs broker or the importer to pay the duties and fees also determines the occurrence of delays; and it may happen that the importer does not have the needed liquidity. Upon payment

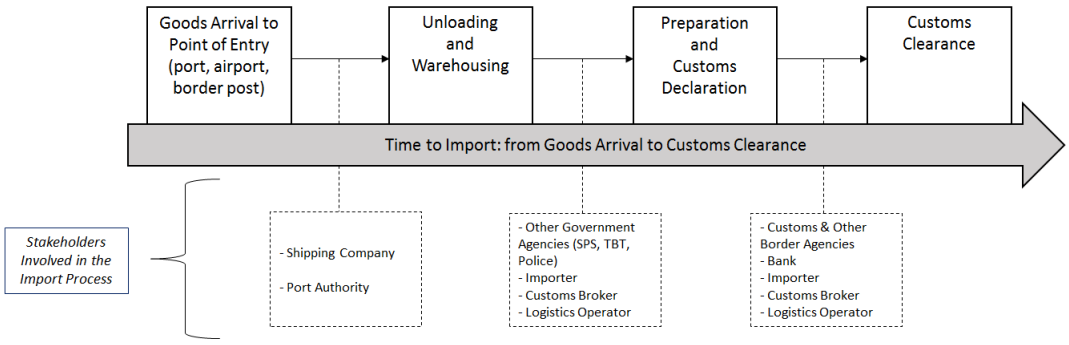
[7] The import process remains similar for other transport modes.

[8] Import licenses are required for goods subject to import quotas, import prohibition (e.g. arms, chemicals) or sanitary and phytosanitary measures (e.g. agricultural goods, food, forestry, cosmetics, pharmaceuticals, etc.).

[9] Imported products are classified based on the Harmonized System (HS) goods nomenclature in view of determining the applicable Customs tariff, an exercise that is not always straightforward depending on the composition and degree of transformation of the imported good. In addition, the computation of the total amount of duties and taxes payable on imported goods also hinges on the verification of unitary values (goods valuation) which can also turn out to be highly technical.

(or warranty of it), the shipment is assigned to a verification channel based on the Customs risk management system, which can be either the green (no inspection), orange (documentary inspection) or red (documentary and physical inspection) channel. Subsequently, other border control agencies also assign the shipment to their own verification channel. However, in practice few of them use a risk-based model and tend to perform a 100 percent of partial or full physical inspections. For instance, SPS agencies collect samples to send to a laboratory or perform on-site tests.

Figure 4.1: Stages of the Import Process: from Goods Arrival to Customs Clearance



Notes: Authors' elaboration. SPS: Sanitary and Phytosanitary; TBT: Technical Barrier to Trade.

This step tends to generate most of the uncertainty in delays arising during the import process, as it is influenced by the Customs channel of inspection and the number of agencies involved in the clearance process. It is especially exacerbated by the poor inter-agency coordination and the time-consuming sequential process (McLinden, Fanta, Widdowson, and Doyle, 2011). For products subject to a physical inspection by Customs or any other border control agency, the cargo must be transferred to a bonded warehouse to be inspected. Containers must be moved to the warehouse, opened, unloaded, reloaded, and closed, sometimes multiple times depending on the number of agency inspections, with direct costs charged to the importer. As in previous steps, the efficiency of port operators in moving the cargo, and their limited use of IT systems to efficiently allocate containers can also generate delays. In addition, rent-seeking practices, including informal payments to obtain a modification of the Customs classification or valuation of the imported good, or to limit or altogether avoid sample testing can occur at this stage considering the multiple officials involved in the clearance process. In a final step, Customs clear the shipment once all border control agencies have provided their clearance, marking the end the import process as defined in this paper. The released shipment can then be picked up by the importing firm either immediately or after some time if the firm decides to take advantage

of port storage facilities.

We rely on the World Bank Enterprise Surveys (WBES) database for the period 2006-2016 to construct our measure of uncertainty in import clearance times, which covers unpredictable delays arising at any stage of the import process as discussed above, from vessel berthing to Customs clearance.[10] The WBES database provides quantitative and qualitative information on the characteristics of firms operating in the manufacturing and services sectors in developing countries; as well as the business environment they face (e.g. access to finance, regulations, taxes and trade costs). Surveys are administered to nationally representative samples of formal firms with at least five workers. We use the standardized version of the database which compiles only those surveys following the WBES Global methodology, yielding information that is comparable across countries and years. We restrict our analysis to manufacturing firms identified through ISIC codes 15 to 36.[11] Since in most low-income countries, only a very limited number of firms operate in some manufacturing sectors defined at the 2-digit ISIC level, we aggregate the 22 ISIC manufacturing divisions into five sectors of interest (Table C1 in the Appendix): (i) manufacture of food, beverage and tobacco products (ISIC codes 15-16); (ii) manufacture of textile and leather-related products (ISIC codes 17-19); (iii) manufacture of wood-related products (ISIC codes 20-22); (iv) manufacture of minerals, metals and chemicals (ISIC codes 23-28); and (v) manufacture of advanced products (ISIC codes 29-36).[12]

We end up with a sample of 16,475 firms whose selected characteristics are displayed in Table 4.1.[13] We find that 30 percent of manufacturing firms are direct exporters and among these, 74 percent import the inputs that enter their production process. In contrast, only one third of firms that exclusively sale in the domestic market are also direct importers, comforting us in our approach. In line with the literature, exporting firms present specific characteristics that distinguish them from their non-exporting counterparts (see for example the discussion by Bernard and Jensen (2007)). In particular, they tend to be older, larger and more productive, and this is also broadly verified across all five export industries. The explanatory variable of interest is captured by the interquartile range of the average number of days to clear imported

[10] The WBES database was accessed in August 2017.

[11] The survey question allowing to identify input-importing firms applies to manufacturing firms only, naturally dictating our sample choice. The Enterprise Surveys classify firms based on the International Standard Industrial Classification of All Economic Activities (ISIC), Revision 3.1.

[12] Recycling (code 37) is excluded from the analysis due to poor data coverage in the World Bank Enterprise Surveys and unavailability in the Exporter Dynamics Database (see Section 4.2.2).

[13] This figure was arrived at by restricting the sample to those firms that reported positive direct exports as a share of total sales and that also provided an indication on whether they import material inputs or supplies. Only manufacturing firms located in the 48 developing countries retained in the econometric analysis are considered (see Section 4.2.2 and Table C1 in the Appendix).

Table 4.1: Selected Characteristics of Firms by Exporter/Importer Status and by Export Industry

	All Sample	Exporters			Non-Exporters		
		All Exporters	Importing Exporters	Non-Importing Exporters	All Non-Exporters	Importing Non-Exporters	Non-Importing Non-Exporters
Aggregate Manufacturing Industry							
Number of firms	16,475	5,407	4,349	1,058	11,068	4,551	6,517
% of sample	100%	30.0%	73.7%	26.3%	70.0%	35.6%	64.4%
Age (years)	19	23	23	20	17	20	16
Size (nb. of employees)	114	246	287	130	58	103	33
TFP	1.75	1.91	1.94	1.84	1.68	1.85	1.58
Manufacture of Food, Beverage and Tobacco Products							
Number of firms	3,471	959	768	191	2,512	886	1,626
% of sample	100%	22.94%	80.8%	19.2%	77.1%	38.7%	61.3%
Age (years)	23	31	32	27	21	22	21
Size (nb. of employees)	144	258	286	138	110	206	49
TFP	1.57	1.86	1.93	1.56	1.49	1.60	1.40
Manufacture of Textile and Leather-Related Products							
Number of firms	4,489	1,896	1,468	428	2,593	846	1,747
% of sample	100%	38.6%	68.6%	31.4%	61.5%	27.7%	72.3%
Age (years)	16	18	19	16	15	18	14
Size (nb. of employees)	174	347	424	181	65	131	39
TFP	1.63	1.70	1.62	1.86	1.60	1.67	1.57
Manufacture of Wood-Related Products							
Number of firms	1,224	265	200	65	959	399	560
% of sample	100%	21.7%	66.1%	33.9%	78.3%	30.7%	69.3%
Age (years)	20	24	23	26	19	22	17
Size (nb. of employees)	48	87	101	57	37	78	20
TFP	1.75	2.15	2.27	1.87	1.62	1.90	1.51
Manufacture of Minerals, Metals and Chemicals							
Number of firms	5,232	1,697	1,469	228	3,535	1,818	1,717
% of sample	100%	31.6%	78.7%	21.3%	68.4%	44.2%	55.8%
Age (years)	20	24	24	23	18	20	17
Size (nb. of employees)	103	213	242	107	52	77	33
TFP	1.94	2.05	2.12	1.74	1.88	2.01	1.77
Manufacture of Advanced Products							
Number of firms	2,059	590	444	146	1,469	602	867
% of sample	100%	24.5%	73.2%	26.4%	75.5%	33.2%	66.8%
Age (years)	17	23	24	20	15	19	13
Size (nb. of employees)	58	141	167	66	31	50	22
TFP	1.69	1.85	1.77	2.05	1.64	1.90	1.51

Notes: Authors' calculations based on the World Bank Enterprise Surveys. Descriptive statistics computed using survey weights, except for the number of firms. Sample restricted to firms that reported a positive or null number to question d3c *"What percentage of this establishment's sales were direct exports?"* and to those that replied yes or no to question d13 *"Were any of the material inputs or supplies purchased [...] imported directly?"* of the Manufacturing Module. Included firms are those located in the 48 developing countries retained in the empirical analysis (see Section 4.2.2 and Table C1 in the Appendix). *Age* is the number of years since the firm began operations; *Size* is the number of permanent, full-time employees; *TFP* stands for total factor productivity.

material inputs or supplies through Customs and other border control agencies, computed over a representative population of manufacturing firms at the country-sector-year level.[14] We choose the interquartile range over other measures of dispersion, such as the standard deviation or the coefficient of variation, which are more sensitive to outliers and difficult to interpret in the face of non-normal distributions.[15] This seems particularly relevant as the distribution of the time to clear imported goods at the border is asymmetric and broad-tailed. Following Arvis, Raballand, and Marteau (2010), it can be described by a log-normal distribution built on two components: (i) the minimum feasible time considering current infrastructure, procedures and services as a baseline; and (ii) the broad tail of the curve that illustrates the not so rare occurrences of the time to clear imported goods through Customs largely in excess of the median or even the mean.

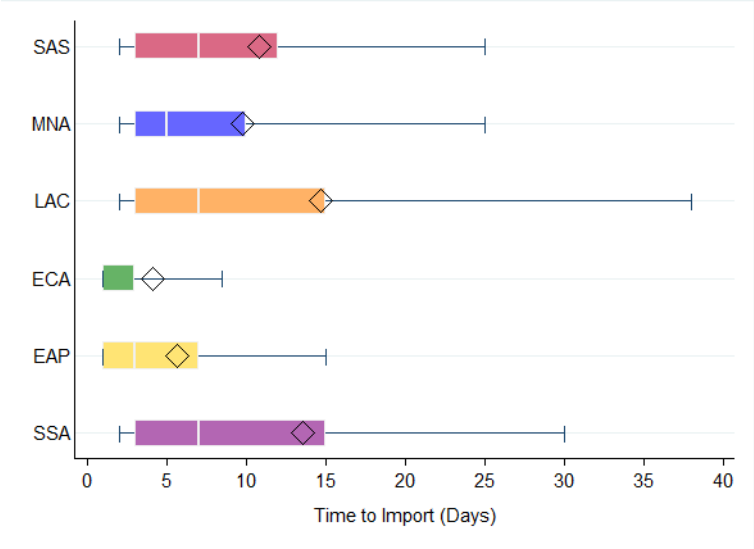
Figure 4.2 presents the regional distribution of both the number of days required to clear goods at the border and uncertainty in import clearance times based on the WBES geographical breakdown. Diamonds indicate means, and whiskers extend to 10 percent and 90 percent points of the distribution. We note that import clearance times are lowest in Europe and Central Asia at less than 5 days on average, while more than three times higher in Latin America and Sub-Saharan Africa. It is also worth mentioning the large differences across countries, even within the same region, as shown by the varying length of the horizontal box plot representing the range between the 25^{th} and 75^{th} percentiles. Furthermore, while import clearance time is fairly heterogeneous across regions, it is also the case for its associated uncertainty. Figure 4.2 thus implies that for an importer operating in a particular sector and in a specific region, for example Latin America and the Caribbean, the effective clearance time might be significantly longer than suggested by a simple average. Cross-country disparities are further investigated in Figure C1 in the Appendix. We find evidence of significant differences in the distribution of import clearance times, with countries such as Albania or Romania displaying close-to-zero interquartile ranges whereas 50 percent of Ivorian importing firms reported experiencing 13 to 60 days of delay in clearing imported inputs through Customs. Consistent with Volpe Martincus (2016) who argues that using distributions rather than point estimates allows improvements to the measurement of border clearance times given the heterogeneity of border times across observations, these

[14] More precisely, question D.14 from the Manufacturing Module of the WBES reads *"In [the last] fiscal year, when this establishment imported material inputs or supplies, how many days did it take on average from the time these goods arrived to their point of entry (e.g. port, airport) until the time these goods could be claimed from Customs?"*.

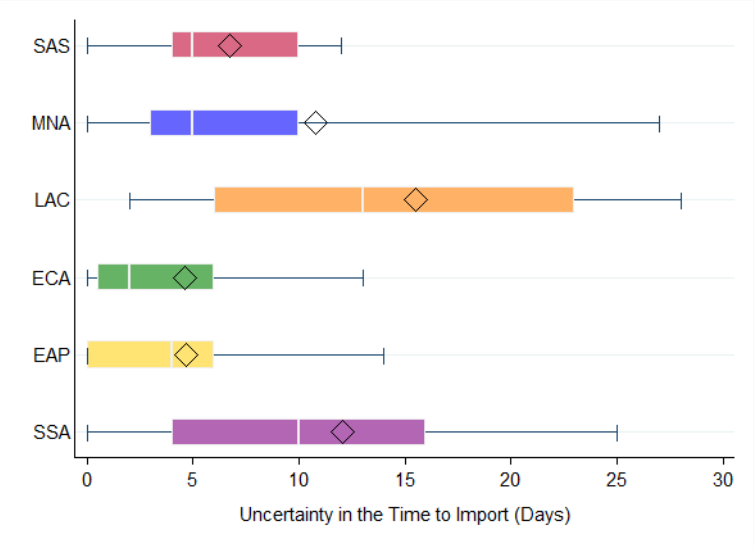
[15] This approach is similar to Fernandes, Hillberry, and Mendoza Alcántara (2017)'s who proxy uncertainty over Customs clearance times with the interquartile range of the time spent in Customs. As an additional caution, we also remove observations that lie below (above) the first (99^{th}) percentile of the distribution to guard against the effect of extreme delays at Customs.

Figure 4.2: Regional Distribution of the Time to Import and Uncertainty in the Time to Import

(a) Time to Import



(b) Uncertainty in the Time to Import



Notes: Authors' elaboration based on the World Bank Enterprise Surveys. Horizontal box plots of the median time to import across regions. Whiskers extend to 10 percent and 90 percent points of the distribution. Diamonds indicate means. Included manufacturing firms are those located in the 48 developing countries retained in the empirical analysis. ECA: Europe and Central Asia; SAS: South Asia; LAC: Latin America and the Caribbean; SSA: Sub-Saharan Africa; MNA: Middle East and North Africa; EAP: East Asia and Pacific. Table C1 in the Appendix indicates the countries included in each region.

stylized facts clearly suggest that relying on a single, average-type measure of time to import is not appropriate to fully grasp the uncertainty that firms face when importing their inputs.

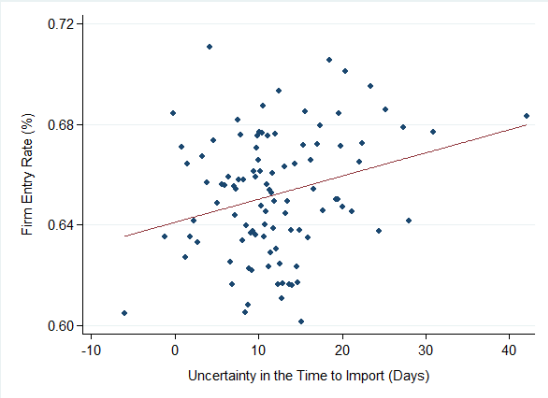
4.2.2 Export Dynamics

We match the WBES with a rich array of variables drawn from the Exporter Dynamics Database (EDD). The latter contains measures of the degree of product and market export diversification, firm dynamics in terms of entry, exit and survival in export markets, as well as the average unit prices of the products they export over the period 1997-2014 (Fernandes, Freund, and Pierola, 2016). Our analysis focuses on the export dynamics of manufacturing firms at the country-destination-sector-year level. More specifically, we investigate whether uncertainty in import clearance times affects firm entry, exit as well as first-, second- and third-year survival rates in export markets. Out of the 72 developing countries originally present in EDD, 48 were successfully matched with the WBES. Since the latter are only conducted every four to six years and data collection takes over a year, we allow matching EDD data with up to three years backward or forward relative to the WBES to enhance the size of the final dataset. Table C2 in the Appendix displays the list of countries included in the analysis along with the corresponding time adjustments, if applicable.

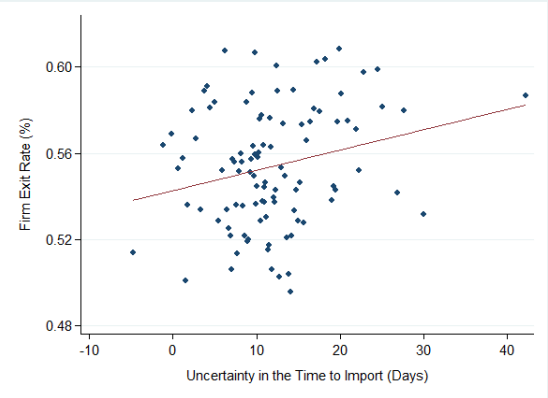
Figure 4.3 presents preliminary evidence of the relationship between uncertainty in the duration of the import process and firms' export dynamics in developing countries. Once country, destination, sector and year fixed-effects are accounted for, increases in import uncertainty appear to be significantly associated with higher exit rates of exporters and lower probability of entering exporters to survive past the first year of exports, thereby hinting at a potential adverse effect on firms' exporting status. However, Figure 4.3 also suggests a positive correlation between import uncertainty and firm entry rates in export markets. Taken together, these scatter plots seem suggestive of export experimentation and failure leading to a substantial turnover rate or churning as firms enter and exit export markets, yielding low survival rates, as described by Brenton, Saborowski, and von Uexkull (2010) and Brenton, Cadot, and Pierola (2012). We hypothesize that such dynamics are driven by uncertainty in the time to import. Specifically, we conjecture that unpredictability in border clearance times for key inputs disrupts the production process, making the importing exporter likely to miss delivery deadlines. If such incident happens frequently, exporting firms risk losing their credibility as reliable suppliers, and time-sensitive buyers may decide to terminate the export relationship.

Figure 4.3: Binned Scatter Plots of the Relationship between Uncertainty in the Time to Import and Export Dynamics

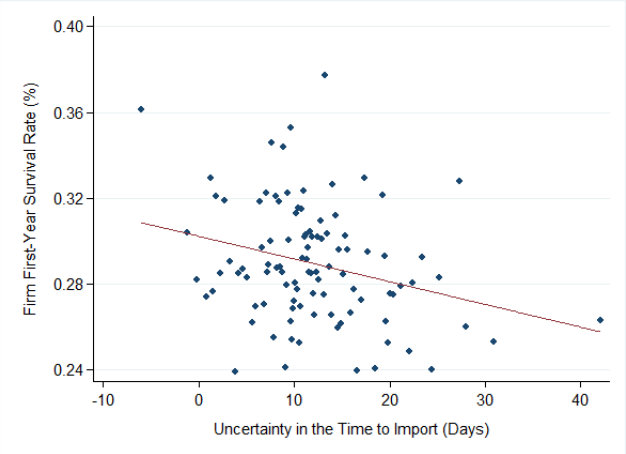
(a) Firm Entry Rate



(b) Firm Exit Rate



(c) Entrant First-Year Survival Rate



Notes: Data are binned according to percentiles of uncertainty in the time to import. Both x and y-axis variables are residualized on origin, destination, sector and year fixed-effects. The description and source of variables are provided in Table C3 in the Appendix.

Armed with these preliminary intuitions, we turn to a formal analysis of the relationship between import uncertainty and export dynamics in the next section.

4.3 Empirical Methodology

4.3.1 Econometric Model

We formally explore the relationship between uncertainty in import clearance times and firm export dynamics by estimating the following baseline model:

$$FirmDynamics_{ijkt} = \delta_0 \ln(Uncertainty_{ikt}) + \delta_1 X_{ikt} + \sum_s \delta_{2s} W_{ij} + \delta_3 EIA_{ijt} + \delta_4 Tariff_{ijkt} + \delta_5 F_{it} + \delta_6 P_{jt} + \sum (\alpha_i O_i + \beta_j D_j + \gamma_k S_k + \theta_t T_t) + \varepsilon_{ijkt}$$

The dependent variable $FirmDynamics_{ijkt}$ is the entry, exit or survival rate of manufacturing firms in sector k of country i and exporting to destination j. $Uncertainty_{ikt}$ is the interquartile range of the time to clear imports at the border, and varies across time by exporting country i and sector k. We include vector X_{ikt} to control for time-varying exporting firm characteristics taken from the WBES and averaged at the country-sector-year level. It comprises (i) firm export intensity defined as direct exports as a fraction of total sales, (ii) import penetration, captured by the proportion of firms that import material inputs or supplies, (iii) the number of years since the firm first started to export as a proxy for average export experience, (iv) the natural logarithm of the number of permanent, full-time employees as a proxy for firm size, and (v) firm total factor productivity (TFP). Consistent with the literature on export dynamics, W_{ij} is a vector of standard time-invariant bilateral gravity variables such as contiguity, distance, and a binary variable for colonial relationship taken from CEPII. EIA_{ijt} is a time-variant dummy provided at Jeffrey Bergstrand's website and indicating whether the pair is involved in an economic integration agreement. $Tariff_{ijkt}$ refers to bilateral applied tariffs derived from WITS.[16] We also include vectors F_{it} and P_{it} to control for country-specific characteristics such as GDP per per capita and the Doing Business indicator of the cost of procedures to start a business as a share of GNI per capita drawn from CEPII to account for the level of development and the average quality of the business environment, respectively. Finally, O_i, D_j, S_k and T_t refer to exporter-, importer-, sector- and year-specific effects respectively.

[16] WITS uses the concept of effectively applied tariff which is defined as the lowest available tariff. If a preferential tariff exists, it is used as the effectively applied tariff. Otherwise, the Most-Favored Nation (MFN) applied tariff is used.

Table 4.2: Summary Statistics

	Mean	Median	Std. Dev.	Min.	Max.	Obs.
Firm entry rate (%)	0.597	0.574	0.306	0	1	14,476
Firm exit rate (%)	0.524	0.500	0.292	0	1	12,744
Entrant 1st year survival rate (%)	0.286	0.250	0.294	0	1	12,654
Entrant 2nd year survival rate (%)	0.151	0	0.228	0	1	11,343
Entrant 3rd year survival rate (%)	0.110	0	0.194	0	1	5,966
Log import uncertainty	2.195	2.303	0.845	0	3.970	14,476
Log time to import (days)	2.422	2.466	0.527	0.916	3.713	14,476
Log median time to import (days)	2.035	1.946	0.653	0.693	4.094	14,476
Common border	0.052	0	0.222	0	1	14,476
Colony	0.008	0	0.087	0	1	14,476
Log distance	8.573	8.819	0.901	5.089	9.886	14,476
Trade agreement	0.536	1	0.499	0	1	14,476
Log tariffs	1.311	1.281	1.249	0	5.972	14,476
Log exporter GDP cap.	8.086	8.383	1.062	5.840	9.673	14,476
Log importer GDP cap.	8.975	9.077	1.532	5.065	11.64	14,476
Log exporter entry cost (% GNI)	3.190	3.437	1.063	0.405	5.308	14,476
Log importer entry cost (% GNI)	2.300	2.389	1.669	-2.303	7.181	14,476
Log documents to import	1.947	1.946	0.333	1.099	3.045	14,390
Log LPI timeliness	1.178	1.203	0.135	0.756	1.379	13,338
High-income destination	0.716	1	0.451	0	1	14,476
Sector 1	0.223	0	0.416	0	1	14,476
Sector 2	0.194	0	0.396	0	1	14,476
Sector 3	0.115	0	0.318	0	1	14,476
Sector 4	0.264	0	0.441	0	1	14,476
Sector 5	0.204	0	0.403	0	1	14,476
Log export uncertainty	1.555	1.609	0.960	0	3.738	11,888
Log time to export (days)	1.879	1.852	0.569	0.693	3.689	13,836
Log median time to export (days)	1.607	1.386	0.647	0.693	3.689	13,836
Panel A: All Firms						
Log direct exports (% sales)	1.675	1.761	1.141	-3.818	3.838	14,476
Log direct imports (%)	-0.744	-0.634	0.504	-2.711	0	14,476
Log experience	2.457	2.510	0.414	0.348	3.570	14,476
Log nb. of employees	4.041	3.955	0.649	2.180	6.073	14,476
Log TFP	0.495	0.511	0.228	-0.780	1.155	14,476
Log collateral (%)	-0.323	-0.220	0.340	-1.871	0	14,456
Log no loan application (%)	-1.076	-0.950	0.679	-4.343	-0.033	14,405
Log bribes (% annual sales)	0.737	0.475	0.724	0	3.024	14,098
Log licensing obstacle (%)	-2.203	-2.066	0.924	-6.335	-0.114	13,469
Panel B: Exporting Firms						
Log direct exports (% sales)	3.448	3.478	0.610	0.692	4.605	14,476
Log direct imports (%)	-0.303	-0.189	0.388	-2.549	0	14,274
Log experience	2.497	2.550	0.450	0.423	3.871	14,410
Log nb. of employees	4.890	4.930	0.899	1.609	7.436	14,463
Log TFP	0.572	0.618	0.313	-0.667	1.433	13,798
Log collateral (%)	-0.287	-0.154	0.400	-3.042	0	13,475
Log no loan application (%)	-1.254	-1.151	0.850	-3.836	0	11,203
Log bribes (% annual sales)	0.502	0.187	0.699	0	3.857	13,148
Log licensing obstacle (%)	-2.079	-1.976	1.031	-5.105	0	10,835

Notes: Authors' calculations based on WBES, CEPII, Jeffrey Bergtrand's website, WITS, Doing Business and LPI. Descriptive statistics computed from the sample of Column 1 of Table 4.3. Variables from WBES calculated over the entire population of firms (Panel A) or the sample of exporting firms only (Panel B). The description and source of variables are provided in Table C3 in the Appendix.

Table C3 in the Appendix provides a detailed description of the variables, while associated summary statistics are presented in Table 4.2. Given the preponderance of zeros for the dependent variables of interest, the baseline model is estimated by Poisson Pseudo-Maximum-Likelihood (PPML) following Santos Silva and Tenreyro (2006, 2010). Standard errors are clustered by exporter-importer pair.

4.3.2 Results

Table 4.3 presents PPML estimates of the baseline model for each dependent variable of interest. Two remarkable results stand out. First, uncertainty in the number of days required to clear imports at the border impacts neither the entry nor the exit rate of manufacturing firms in developing countries (Columns 1 and 2). However, it reduces the survival rate of new exporters (Columns 3-5), suggesting that uncertainty related to import processing times at the border translates into a lower number of entrant firms that continue to serve the foreign market beyond their first year of entry. As the effect is significant only with respect to the export survival of entrants as opposed to the exit rate which pertains to both entrants and incumbents, i.e. any firm that stops serving the foreign market in t despite having exported in $t-1$, regardless of the date of entry, these results suggest that newly-exporting firms are more affected by the detrimental impact of uncertainty than incumbents. Second, the adverse effect on export survival is economically meaningful and grows larger over time, with a doubling of import uncertainty leading to a decrease in the export survival rate of entrants of 4 percent the first year, 6 percent the second and 7 percent the third.

We explain these results in light of our initial assumption (Section 4.2.1) according to which unpredictability in border clearance times for key inputs disrupts the production process, making the importing exporter likely to miss delivery deadlines, and hence lose sales contracts with time-sensitive buyers. The detrimental effect is felt by young exporters that started operating in foreign markets one, two and three years ago, with import uncertainty taking an increasing toll on entrants' export activities with time. This entails that some export relationships are extremely short-lived, time-sensitive buyers ending them as immediately as the very first delivery deadline is missed. This is typically the case for markets such as low-end garments featuring little product differentiation and where buyers can easily switch suppliers owing to low search costs (Brenton, Cadot, and Pierola, 2012). But even when a young exporter succeeds to survive more than a year past its entry date, it continues to incur costs associated with the loss of credibility as a reliable supplier. We argue that these reputational costs accumulate over time whenever the

Table 4.3: Import Uncertainty and Export Dynamics: Core Results

	Firm Entry Rate (1)	Firm Exit Rate (2)	First yr. Survival (3)	Second yr. Survival (4)	Third yr. Survival (5)
Log import uncertainty	0.000	0.000	-0.040***	-0.059***	-0.072**
	(0.006)	(0.007)	(0.014)	(0.021)	(0.036)
Log direct imports (%)	-0.014	-0.004	-0.026	-0.020	0.061
	(0.011)	(0.015)	(0.031)	(0.053)	(0.093)
Log direct exports (% sales)	-0.027***	-0.032***	0.105***	0.113***	0.088
	(0.005)	(0.013)	(0.028)	(0.040)	(0.062)
Log experience	0.001	-0.004	0.115***	0.157***	0.126
	(0.013)	(0.016)	(0.035)	(0.058)	(0.104)
Log nb. of employees	-0.020*	-0.027***	0.081***	0.117***	0.132**
	(0.010)	(0.009)	(0.019)	(0.029)	(0.057)
Log TFP	0.043*	-0.045**	0.175***	0.308***	0.269***
	(0.024)	(0.019)	(0.039)	(0.063)	(0.100)
Common border	-0.033	-0.040	0.065*	0.068	-0.020
	(0.022)	(0.027)	(0.039)	(0.059)	(0.089)
Colony	-0.079*	-0.019	0.148**	0.219*	0.080
	(0.041)	(0.041)	(0.073)	(0.112)	(0.283)
Log distance	0.110***	0.037***	-0.071***	-0.109***	-0.150***
	(0.009)	(0.010)	(0.018)	(0.029)	(0.051)
Trade agreement	-0.063***	-0.035**	0.098***	0.162***	0.194**
	(0.016)	(0.018)	(0.033)	(0.051)	(0.082)
Log tariffs	0.008	0.012*	-0.027**	-0.028*	-0.030
	(0.005)	(0.006)	(0.011)	(0.017)	(0.027)
Log exporter GDP cap.	-0.075	0.056	-0.042	-0.182	2.706*
	(0.097)	(0.117)	(0.181)	(0.260)	(1.640)
Log importer GDP cap.	0.061	0.004	0.122	0.136	0.264
	(0.041)	(0.049)	(0.098)	(0.152)	(0.229)
Log exporter entry cost (% GNI)	-0.021	-0.078*	-0.141*	-0.327***	0.155
	(0.036)	(0.043)	(0.084)	(0.121)	(0.400)
Log importer entry cost (% GNI)	0.013	-0.013	-0.011	-0.021	-0.115
	(0.014)	(0.018)	(0.035)	(0.054)	(0.083)
Constant	-1.036	-1.151	-1.232	-0.556	-25.937*
	(0.863)	(1.032)	(1.642)	(2.424)	(14.823)
Observations	14,476	12,001	11,834	10,755	5,680
R^2	0.182	0.183	0.106	0.100	0.123
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes
Destination Fixed Effects	Yes	Yes	Yes	Yes	Yes
Sector Fixed Effects	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes

Notes: PPML estimates. *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors clustered on exporter-importer pair in parentheses. Log direct imports (%), Log direct exports (% sales), Log experience, Log nb. of employees and Log TFP computed over the sample of exporting firms, except in Column 1. The description and source of variables are provided in Table C3 in the Appendix.

exporter experiences postponed delivery of its imported inputs, which erodes the "patience" and "confidence" of its customers, up to a level that ultimately leads them to terminate the business relationship.

Control variables broadly display the expected sign. The average number of years since firms started exporting in the sector is positively associated with the survival rate of new exporters, suggesting that the latter benefit from lower asymmetries of information associated with the collection of information on market conditions and business opportunities in international markets, possibly through the work performed by production associations or export promotion agencies. For instance, following evidence from Lederman, Olarreaga, and Zavala (2016) for a panel of Latin-American firms between 2006-2010, export promotion agencies improve firm entry and survival in export markets. This is also in line with Carrère and Strauss-Kahn (2017) who show that experience raises the survival of developing countries' exports to the OECD; and Albornoz, Calvo Pardo, Corcos, and Ornelas (2012) who underscore the importance of learning by exporting for survival. Sectors with larger and more productive firms are more likely to enjoy higher rates of export survival and lower exit rates.[17] TFP is also positively associated with firm entry rates, consistent with Melitz (2003) and Bernard, Eaton, Jensen, and Kortum (2003). Standard proxies of bilateral trade costs including tariffs, distance and limited participation in economic integration agreements lower export survival and increase exit rates. High costs of starting a business in the exporting country, which reflect the extent to which the business environment is conducive to firms' activities, also deter the survival of entrants but reduce the exit rate.[18]

Beyond these baseline estimates, we also investigate possible heterogeneity in the impact of unpredictable border clearance times for imports on export dynamics. First, we examine whether the adverse effect of import uncertainty on firm survival rates is more pronounced for exports to high-income countries. The rationale behind this assumption lies in the growing share of trade flows that belong to global value chains (GVCs). Multinational firms based in high-income countries outsource part of their manufacturing process, typically labor-intensive tasks, to suppliers in developing countries. Combined with the observation that importer-exporter rela-

[17] Surprisingly, bilateral distance and the dummy for participation in economic integration agreements do not enter with the expected sign in Column 1. Although these results warrant further investigation, it is also worth noting that Fernandes, Freund, and Pierola (2016) find a positive association between bilateral distance and firm export entry rate.

[18] Since the pool of firms exiting the export market in t comprises firms that were identified as entrants or incumbents in $t-1$, business start-up costs seem to act as a sunk cost of entry into foreign markets that only the most productive firms — presumably the incumbents — can cover. The role of sunk costs in mediating the relationship between import uncertainty and export dynamics is also explored in this paper.

Table 4.4: Import Uncertainty and Export Dynamics: South-North Trade

	Firm Entry Rate (1)	Firm Exit Rate (2)	First yr. Survival (3)	Second yr. Survival (4)	Third yr. Survival (5)
Log import uncertainty	0.009	0.011	-0.061***	-0.085***	-0.091**
	(0.007)	(0.008)	(0.016)	(0.024)	(0.041)
Log direct imports (%)	-0.017	-0.006	-0.026	-0.023	0.086
	(0.014)	(0.018)	(0.037)	(0.058)	(0.104)
Log direct exports (% sales)	-0.026***	-0.027*	0.110***	0.121***	0.122*
	(0.006)	(0.014)	(0.032)	(0.046)	(0.069)
Log experience	-0.015	-0.009	0.076*	0.103	0.129
	(0.015)	(0.018)	(0.040)	(0.066)	(0.117)
Log nb. of employees	-0.012	-0.033***	0.101***	0.129***	0.119*
	(0.012)	(0.010)	(0.021)	(0.032)	(0.062)
Log TFP	0.043	-0.072***	0.239***	0.379***	0.281***
	(0.028)	(0.022)	(0.044)	(0.071)	(0.108)
Common border	-0.007	-0.035	0.019	-0.008	-0.104
	(0.030)	(0.035)	(0.046)	(0.072)	(0.104)
Colony	-0.087**	-0.020	0.122	0.188*	0.077
	(0.039)	(0.040)	(0.076)	(0.112)	(0.279)
Log distance	0.108***	0.031**	-0.067***	-0.092***	-0.149***
	(0.010)	(0.012)	(0.020)	(0.032)	(0.055)
Trade agreement	-0.059***	-0.026	0.100***	0.217***	0.200**
	(0.020)	(0.022)	(0.039)	(0.061)	(0.094)
Log tariffs	0.004	0.014*	-0.020	-0.015	-0.015
	(0.007)	(0.008)	(0.012)	(0.019)	(0.030)
Log exporter GDP cap.	0.079	0.025	0.107	0.058	3.327*
	(0.104)	(0.128)	(0.202)	(0.282)	(1.815)
Log importer GDP cap.	0.019	-0.072	0.186*	0.187	0.319
	(0.047)	(0.055)	(0.111)	(0.166)	(0.244)
Log exporter entry cost (% GNI)	0.045	-0.016	-0.020	-0.205	0.281
	(0.042)	(0.050)	(0.095)	(0.136)	(0.437)
Log importer entry cost (% GNI)	0.016	-0.010	0.010	0.005	-0.058
	(0.016)	(0.020)	(0.037)	(0.059)	(0.093)
Constant	-2.378**	0.438	-3.986**	-3.898	-33.135**
	(0.959)	(1.196)	(1.924)	(2.790)	(16.561)
Observations	10,363	8,693	8,513	7,857	4,290
R^2	0.191	0.198	0.104	0.099	0.120
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes
Destination Fixed Effects	Yes	Yes	Yes	Yes	Yes
Sector Fixed Effects	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes

Notes: PPML estimates. *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors clustered on exporter-importer pair in parentheses. Log direct imports (%), Log direct exports (% sales), Log experience, Log nb. of employees and Log TFP computed over the sample of exporting firms, except in Column 1. The description and source of variables are provided in Table C3 in the Appendix.

Table 4.5: Import Uncertainty and Export Dynamics: South-South Trade

	Firm Entry Rate (1)	Firm Exit Rate (2)	First yr. Survival (3)	Second yr. Survival (4)	Third yr. Survival (5)
Log import uncertainty	-0.014	-0.022	0.020	0.029	-0.025
	(0.012)	(0.015)	(0.030)	(0.000)	(0.000)
Log direct imports (%)	0.004	0.008	-0.036	-0.061	-0.209
	(0.022)	(0.030)	(0.059)	(0.000)	(0.000)
Log direct exports (% sales)	-0.030***	-0.048*	0.084	0.133	-0.060
	(0.010)	(0.026)	(0.056)	(0.000)	(0.000)
Log experience	0.047*	0.012	0.308***	0.420	0.172
	(0.024)	(0.034)	(0.070)	(0.000)	(0.000)
Log nb. of employees	-0.042**	-0.006	-0.017	0.033	0.178
	(0.018)	(0.017)	(0.039)	(0.000)	(0.000)
Log TFP	0.040	0.008	0.012	0.082	0.323
	(0.044)	(0.039)	(0.080)	(0.000)	(0.000)
Common border	-0.022	-0.011	0.089	0.125	0.311
	(0.034)	(0.040)	(0.083)	(0.000)	(0.000)
Log distance	0.127***	0.059***	-0.115***	-0.205	-0.130
	(0.016)	(0.022)	(0.044)	(0.000)	(0.000)
Trade agreement	-0.082***	-0.084***	0.176***	0.104	0.335
	(0.026)	(0.031)	(0.064)	(0.000)	(0.000)
Log tariffs	0.015	0.014	-0.034	-0.057	-0.080
	(0.009)	(0.012)	(0.023)	(0.000)	(0.000)
Log exporter GDP cap.	-0.493**	0.204	-0.412	-0.742	-0.796
	(0.230)	(0.271)	(0.407)	(0.000)	(0.000)
Log importer GDP cap.	0.052	-0.015	-0.023	0.364	0.547
	(0.094)	(0.120)	(0.236)	(0.000)	(0.000)
Log exporter entry cost (% GNI)	-0.194***	-0.193**	-0.473***	-0.683	-0.672
	(0.072)	(0.090)	(0.170)	(0.000)	(0.000)
Log importer entry cost (% GNI)	0.012	-0.002	-0.071	-0.144	-0.581
	(0.027)	(0.039)	(0.083)	(0.000)	(0.000)
Constant	2.851	-1.814	5.351	-8.910	-7.117
	(2.065)	(2.419)	(3.763)	(0.000)	(0.000)
Observations	4,113	3,308	3,317	2,894	1,390
R^2	0.205	0.192	0.139	0.131	0.168
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes
Destination Fixed Effects	Yes	Yes	Yes	Yes	Yes
Sector Fixed Effects	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes

Notes: PPML estimates. *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors clustered on exporter-importer pair in parentheses. Log direct imports (%), Log direct exports (% sales), Log experience, Log nb. of employees and Log TFP computed over the sample of exporting firms, except in Column 1. The dummy variable equal to 1 if the exporter and importer were in a colonial relationship post-1945 was dropped due to insufficient observations for which Colony = 1. The description and source of variables are provided in Table C3 in the Appendix.

tionships involving developed countries tend to rely more heavily on lean supply chain strategies (Volpe Martincus, 2016), this makes buyers in high-income countries particularly sensitive to delivery schedules, and hence more prone to terminate trade relationships with unreliable suppliers in developed countries. We argue that by raising importing firms' probability of missing delivery deadlines, uncertainty in the time required to clear foreign inputs through Customs exerts a stronger effect on firm survival in high-income export markets. To test this prediction, we estimate the baseline regressions in two sub-samples distinguishing between high-income (South-North trade) and non-high-income (South-South trade) destinations. Tables 4.4 and 4.5 present the results. The impact of uncertainty in import clearance times on export survival is mainly driven by South-North trade (Table 4.4), as coefficients on the dependent variable of interest lose statistical significance in the sub-sample of South-South trade (Table 4.5).[19] In a context of global supply chains where time management is critical, this confirms the distinctive sensitivity of buyers in high-income countries to timeliness.

In the same vein, one would expect exports from time-sensitive industries to be more affected by unpredictable delays to clear imported inputs at the border. In the literature, Hummels (2001), Hummels (2007) and Hummels and Schaur (2013) provide a classification of goods according to their time-sensitivity, based on trading firms' choice between using expensive but fast air transportation versus inexpensive and slow sea shipping for their products. Time-sensitive goods include for instance perishable products likely to be spoiled in the event of delayed delivery, seasonal products such as garments and textiles which are subject to fashion cycles, and parts and components which are used as inputs in the production process. With this in mind, we check whether the effect of uncertainty in import clearance times on firm export dynamics varies across the five manufacturing sectors. We augment the baseline regressions with an export sector dummy and its interaction with import uncertainty. Table 4.6 summarizes the sector-specific marginal effects of import uncertainty on firm export entry, exit and survival rates along with their corresponding standard errors computed following Brambor, Clark, and Golder (2006).[20] For each dependent variable of interest, the marginal effect of import uncertainty is displayed for both possible values of the binary variable.

[19] To rule out the concern that results may be driven by sample size, we also carry out alternative regressions by augmenting the baseline model with a dummy equal to 1 if the destination is a high-income country and its interaction term with import uncertainty (see Tables C4 and C5 in the Appendix). The message remains similar.

[20] Full regressions are provided in Tables C6-C10 in the Appendix.

Table 4.6: Import Uncertainty and Export Dynamics: Sector-Specific Marginal Effects

	Firm Entry Rate	Firm Exit Rate	First yr. Survival	Second yr. Survival	Third yr. Survival
Panel A: Sector = 1					
Manufacture of food, beverage and tobacco products	0.016	0.017	-0.082***	-0.104**	-0.068
	(0.016)	(0.019)	(0.028)	(0.043)	(0.065)
Manufacture of textile and leather-related products	0.014	0.000	0.002	-0.070*	-0.134**
	(0.012)	(0.014)	(0.027)	(0.042)	(0.063)
Manufacture of wood-related products	-0.026*	0.024	-0.025	-0.042	-0.044
	(0.015)	(0.017)	(0.034)	(0.047)	(0.094)
Manufacture of minerals, metals and chemicals	0.032***	0.011	-0.053**	-0.040	0.020
	(0.011)	(0.013)	(0.025)	(0.037)	(0.068)
Manufacture of advanced products	-0.030***	-0.034***	-0.039	-0.030	-0.155*
	(0.009)	(0.012)	(0.029)	(0.047)	(0.086)
Panel B: Sector = 0					
Manufacture of food, beverage and tobacco products	-0.006	-0.003	-0.030*	-0.047**	-0.073*
	(0.007)	(0.008)	(0.016)	(0.023)	(0.040)
Manufacture of textile and leather-related products	-0.001	0.000	-0.054***	-0.055**	-0.044
	(0.007)	(0.008)	(0.016)	(0.023)	(0.040)
Manufacture of wood-related products	0.002	-0.005	-0.044***	-0.062***	-0.078*
	(0.007)	(0.008)	(0.016)	(0.024)	(0.043)
Manufacture of minerals, metals and chemicals	-0.013*	-0.003	-0.037**	-0.064***	-0.089**
	(0.007)	(0.008)	(0.015)	(0.024)	(0.039)
Manufacture of advanced products	0.006	0.010	-0.041***	-0.063***	-0.063*
	(0.007)	(0.008)	(0.015)	(0.022)	(0.037)

Notes: *** p<0.01, ** p<0.05, * p<0.1. Coefficients are marginal effects computed using parameter estimates from Tables C6-C10 in the Appendix following Brambor, Clark, and Golder (2006), and conditional on the value taken by the export sector dummy for each manufacturing industry. Standard errors in parenthesis. Table C2 in the Appendix provides more detail on the aggregation of the five manufacturing sectors of interest.

We find that all export sectors exhibit some statistically significant effect of import uncertainty on firm export dynamics. The negative effect of unpredictability in import clearance times on the first and second-year survival rates of entrants in the food, beverage and tobacco industry reflects the time-sensitivity of imported perishable goods that enter in the sector's production process. Together with the practice of SPS agencies in developing countries that rarely adopt a risk management strategy for border control, implementing physical inspections of 100 percent of import shipments, this calls for broader trade facilitation reforms in support of the modernization of other border control agencies, in addition to Customs. Similarly, the adverse effect of import uncertainty on firm export survival rates is verified for the textile and garment industry, as well as manufacturing of ores and chemicals. Since most developing countries are exporters of agricultural raw materials and natural resources, promoting manufacturing activities based on the transformation of these products contributes to value addition and export upgrading, paving the way to industrialization. Likewise, several studies corroborate the historical role of the garment industry in creating jobs and helping countries move up the value chain. Consequently, our results suggest that by reducing export survival, uncertainty in import processing times is an

impediment to developing countries' diversification and structural transformation agenda. Last, and remarkably, import uncertainty now displays a negative effect on both firm entry and exit rates, but only in the case of advanced products exports. We argue that high-technology products such as machinery, motor vehicles and precision instruments exhibit high sunk costs of export entry and exit given their sophistication, translating into lower survival rates only three years after the firm's entry date into the foreign market.

Finally, we examine the role of sunk costs in mediating the relationship between import uncertainty and export dynamics. The theoretical literature on hysteresis in international trade shows that firms must incur a sunk cost of entry to start serving foreign markets, which generates hysteresis in aggregate trade flows by inducing a high persistence in export status, hence raising export survival.[21] In a seminal paper, Roberts and Tybout (1997) find that prior export experience raises the probability of exporting by 60 percentage points for Colombian firms. In other words, sunk costs of entry induce persistence in firms' exporting status by making it hard to switch from non-exporter to exporter status and by entailing that those firms that have already incurred the sunk start-up costs to enter the foreign market are more likely to remain exporters. The hysteresis effect associated with export participation has also been evidenced by Bernard and Wagner (2001) for German firms and Bernard and Jensen (2004) for US firms. Broadly speaking, sunk costs of entry pertain to the start-up costs faced by a firm that wants to export, such as the cost of identifying and informing potential buyers about its products, the cost of learning about the foreign market, including the prevailing regulations and standards, and the cost of setting up new distribution channels at destination (Melitz, 2003). Based on a simple model of exchange rate uncertainty, Brenton, Cadot, and Pierola (2012) confirm the positive relationship between sunk costs and export survival by showing that a firm's option value of staying in the export market increases with sunk costs of reentry, even under the scenario of a negative exchange rate shock.

Against this background, we argue that the adverse impact of uncertainty in import clearance times on firms' export survival rates should decline with increasing levels of sunk costs of reentry, leading exporting firms to wait before exiting the market as any future attempt of reentry would be costly. To test this prediction, we build on Helpman, Itskhoki, Muendler, and Redding (2017) and use the cost induced by procedures to start a business in the destination country, expressed as a share of GNI, as a proxy for the sunk costs absorbed by a firm when entering that foreign market. Table 4.7 presents the regressions including the interaction term between

[21] See the seminal work by (Dixit, 1989a,b); Baldwin (1988); Baldwin and Krugman (1989); Krugman (1989); and Dixit and Pindyck (1994).

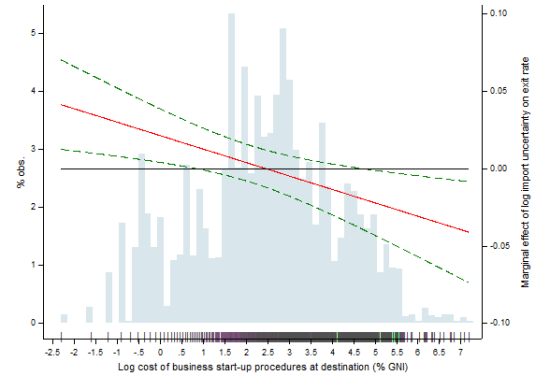
Table 4.7: Import Uncertainty and Export Dynamics: The Role of Sunk Costs

	Firm Entry Rate (1)	Firm Exit Rate (2)	First yr. Survival (3)	Second yr. Survival (4)	Third yr. Survival (5)
Log import uncertainty	0.005	0.020*	-0.066***	-0.103***	-0.093*
	(0.009)	(0.011)	(0.021)	(0.032)	(0.056)
Log import uncertainty ×	-0.002	-0.009**	0.011*	0.020**	0.009
Log importer entry cost (% GNI)	(0.003)	(0.004)	(0.007)	(0.010)	(0.017)
Log importer entry cost (% GNI)	0.017	0.006	-0.035	-0.063	-0.134
	(0.015)	(0.019)	(0.037)	(0.058)	(0.089)
Log direct imports (%)	-0.014	-0.004	-0.026	-0.022	0.061
	(0.011)	(0.015)	(0.031)	(0.053)	(0.093)
Log direct exports (% sales)	-0.027***	-0.032***	0.106***	0.114***	0.089
	(0.005)	(0.013)	(0.028)	(0.040)	(0.062)
Log experience	0.001	-0.005	0.117***	0.161***	0.128
	(0.013)	(0.016)	(0.035)	(0.058)	(0.104)
Log nb. of employees	-0.020*	-0.026***	0.080***	0.116***	0.132**
	(0.010)	(0.009)	(0.019)	(0.029)	(0.057)
Log TFP	0.043*	-0.046**	0.176***	0.311***	0.269***
	(0.024)	(0.019)	(0.039)	(0.063)	(0.101)
Common border	-0.033	-0.040	0.065*	0.066	-0.022
	(0.022)	(0.027)	(0.039)	(0.059)	(0.090)
Colony	-0.078*	-0.019	0.147**	0.217*	0.078
	(0.041)	(0.041)	(0.073)	(0.112)	(0.284)
Log distance	0.110***	0.035***	-0.069***	-0.108***	-0.150***
	(0.009)	(0.010)	(0.018)	(0.029)	(0.051)
Trade agreement	-0.064***	-0.036**	0.099***	0.163***	0.196**
	(0.016)	(0.018)	(0.033)	(0.051)	(0.082)
Log tariffs	0.008	0.012*	-0.027**	-0.028*	-0.030
	(0.005)	(0.006)	(0.011)	(0.017)	(0.027)
Log exporter GDP cap.	-0.074	0.055	-0.047	-0.190	2.719*
	(0.097)	(0.117)	(0.181)	(0.261)	(1.638)
Log importer GDP cap.	0.061	0.004	0.125	0.143	0.263
	(0.041)	(0.049)	(0.098)	(0.152)	(0.229)
Log exporter entry cost (% GNI)	-0.021	-0.078*	-0.141*	-0.327***	0.158
	(0.036)	(0.043)	(0.084)	(0.121)	(0.400)
Constant	-1.046	-1.161	-1.180	-0.472	-26.023*
	(0.863)	(1.033)	(1.641)	(2.428)	(14.805)
Observations	14,476	12,001	11,834	10,755	5,680
R^2	0.182	0.183	0.106	0.100	0.123
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes
Destination Fixed Effects	Yes	Yes	Yes	Yes	Yes
Sector Fixed Effects	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes

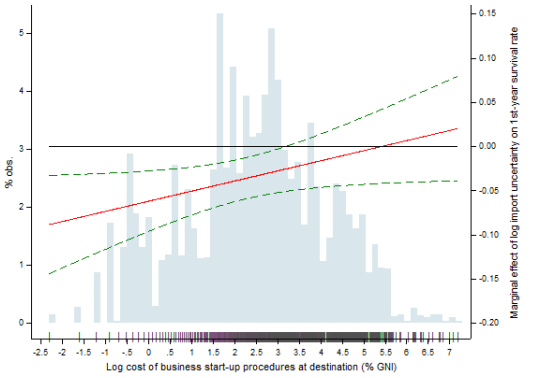
Notes: PPML estimates. *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors clustered on exporter-importer pair in parentheses. Log direct imports (%), Log direct exports (% sales), Log experience, Log nb. of employees and Log TFP computed over the sample of exporting firms, except in Column 1. The description and source of variables are provided in Table C3 in the Appendix.

Figure 4.4: Import Uncertainty and Export Dynamics: Marginal Effect Plots Conditional on Sunk Costs

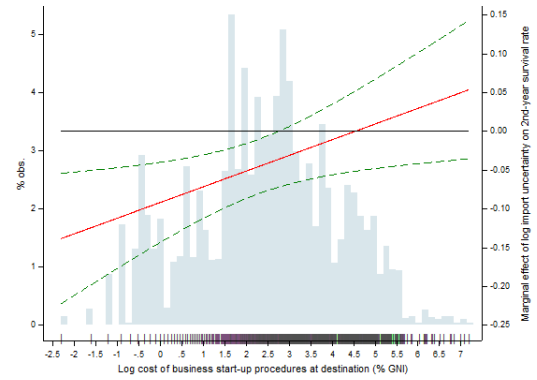
(a) Firm Exit Rate



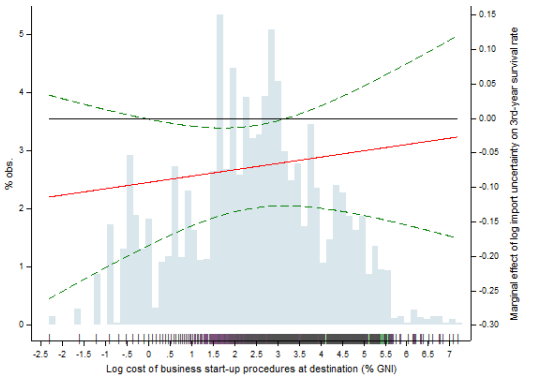
(b) Entrant First-Year Survival Rate



(c) Entrant Second-Year Survival Rate



(d) Entrant Third-Year Survival Rate



Notes: Marginal effect plots constructed using parameter estimates from Columns 2-5 of Table 7 following Brambor, Clark, and Golder (2006) and Berry, Golder, and Milton (2012). Dashed green lines pertain to 90 percent confidence intervals. The vertical axis on the right indicates de magnitude of the marginal effect, the left axis is for the histogram depicting the distribution of observations in the sample across the range of costs associated with business start-up procedures in the destination country. Underneath each marginal effect plot is a rug plot, i.e., a set of tick marks indicating the precise location of individual observations for the variable on the horizontal axis. The description and source of variables are provided in Table C3 in the Appendix.

the cost of business start-up procedures at destination and import uncertainty at origin. Figure 4.4 shows how the total marginal effect of import uncertainty on the exit rate of incumbents and entrants, as well as the first-, second- and third-year survival rates of entrants varies cross the range of possible values of entry costs at destination. Following Brambor, Clark, and Golder (2006) and Berry, Golder, and Milton (2012), the vertical axis on the right indicates the magnitude of the marginal effect, while the left axis is for the histogram depicting the distribution of observations in the sample across the range of costs associated with business start-up procedures in the importing country. We find that the survival-hindering impact of import uncertainty weakens and even turns insignificant as sunk costs of entry in the foreign market rise. These results support the assumption that high sunk costs of entry lead new exporters to "tough it out" and wait for better times instead of exiting the foreign market right away, despite recording lower margins due to unpredictable import clearance times. In addition, the negative and statistically significant coefficient on the interaction term in the firm exit rate regression suggests that this pattern is not exclusive to new exporters as Figure 4.4 describes a diminishing positive effect of import uncertainty on the exit rate which turns insignificant and even becomes negative as the option-value of waiting rises with export entry costs at destination.

4.4 Robustness

In this section, we provide additional regression estimates to ascertain the robustness of our baseline results. We start by providing evidence of the relevance of focusing on uncertainty in border clearance times as captured by the interquartile range of the time to import instead of using average observed times as is common in the literature. Accordingly, Table 4.8 compares the effect of our measure of import uncertainty to that of the average and median time to import.[22] If uncertainty only acts as a proxy for a more classic measure of trade costs, the results would be comparable across the three indicators. This is not the case. Neither the mean nor the median is significantly associated with export survival rates while the effect of the interquartile range remains highly significant. If anything, only the median time to import seems to exhibit some negative influence on export entry rates. As a result, the export dynamics-effects of uncertainty in the time required to import appear distinct from that of the average and median time to import. It is also worth mentioning that results obtained with the median time to import seem to do a better job at highlighting the pertinence of using the interquartile range than those derived from the mean time to import. This is unsurprising from a statistical standpoint as extreme values

[22] Full regression tables can be found in the Appendix (Tables C11 and C12).

tend to influence more the mean than the median. As an illustration, the simple correlation between uncertainty and the mean time to import hovers around 73 percent in our sample, a much higher figure than the 53 percent found for the median time to import. With collinearity likely biasing the coefficients and standard errors of our measure of uncertainty, this in turn explains the lower significance of our estimates in Columns 6 and 8 relative to Columns 16 and 18.

Table 4.8: Import Uncertainty, Mean and Median Time to Import and Export Uncertainty

	Firm Entry Rate		Firm Exit Rate		Entrant First yr. Survival Rate		Entrant Second yr. Survival Rate		Entrant Third yr. Survival Rate	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Log import uncertainty		0.015*		0.011		-0.044**		-0.054*		-0.022
		(0.008)		(0.010)		(0.020)		(0.032)		(0.062)
Log mean time to import	-0.012	-0.042**	-0.011	-0.031	-0.021	0.010	-0.056	-0.013	-0.080	-0.142
	(0.010)	(0.018)	(0.013)	(0.023)	(0.023)	(0.042)	(0.037)	(0.069)	(0.071)	(0.142)
	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
Log import uncertainty		0.009		0.009		-0.047***		-0.068***		-0.047
		(0.007)		(0.008)		(0.016)		(0.025)		(0.047)
Log median time to import	-0.015*	-0.030***	-0.013	-0.035**	-0.009	0.025	-0.007	0.037	-0.066	-0.073
	(0.008)	(0.011)	(0.011)	(0.014)	(0.020)	(0.026)	(0.031)	(0.045)	(0.059)	(0.082)
	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)
Log import uncertainty		0.008		0.009		-0.030*		-0.024		-0.079*
		(0.008)		(0.009)		(0.017)		(0.026)		(0.042)
Log export uncertainty	-0.039***	-0.036***	-0.018**	-0.015	0.005	0.010	-0.009	-0.002	0.043	-0.005
	(0.006)	(0.007)	(0.008)	(0.009)	(0.014)	(0.016)	(0.021)	(0.024)	(0.040)	(0.045)
Log median time to export	0.023**	0.011	0.009	-0.009	-0.004	0.012	0.004	0.026	0.048	0.180*
	(0.010)	(0.011)	(0.013)	(0.015)	(0.024)	(0.027)	(0.035)	(0.040)	(0.079)	(0.093)

Notes: PPML estimates. *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors clustered on exporter-importer pair in parentheses. Control variables included but not reported. Full regression tables are given in the Appendix (Tables C11 and C12). The description and source of variables are provided in Table C3 in the Appendix.

The last panel of Table 4.8 (Columns 21-30) tests the robustness of the baseline results to the introduction of the median time to export and uncertainty in the time to export, similarly captured by the interquartile range of the number of days required to clear exports through Customs.[23] In doing so, we aim to demonstrate that the export-dynamics effects of uncertainty identified on the importing side are distinct from any effect that may arise on the exporting side. Neither the median nor the interquartile range influence survival rates while our core results remain broadly the same, albeit less statistically significant. This seems suggestive of the fact that uncertainty in import times matters more than uncertainty in export times for the survival of young exporters, especially that in practice, the export process tends to be less cumbersome and faster than the import process.[24]

[23] See Table C13 in the Appendix for full regressions.

[24] We do not dwell on the interpretation of regression results for the median and the interquartile range of the time to export since we are cautious about the appropriateness of using the WBES for an analysis of the time to export. The dataset corroborates the common view that only a few firms export in a given sector, in line with the literature, while importing is a more frequent practice, involving both firms that sell domestically and internationally (see for

Next, Table 4.9 presents regression results obtained from the inclusion of additional variables which we suspect of being correlated with both export dynamics and import uncertainty, therefore giving rise to omitted variable bias if not accounted for.[25] First, we consider the number of documents required to import taken from the Doing Business database. Since it covers the documents required for clearance by the entities involved in the import process, including government ministries, Customs authorities, port and container terminal authorities, health and technical control agencies as well as banks, it captures the extent to which importing can be difficult due to cumbersome administrative formalities. Since any misstep in furnishing required documents by the importer or its delegate Customs broker may cause delays that are not necessarily related to the efficiency of the border control process but rather to the characteristics of the importer itself, or the managerial quality and competencies of its broker, we expect this variable to influence import uncertainty, beyond its direct implications for export performance already documented in the literature.[26] In addition, failing to directly take into account broader indicators of trade costs might bias the results if they happen to be correlated with each other. Table 4.9 evidences a negative association of the number of documents required to import with the entry rate and the third-year survival rate of entrants, but its introduction does not change our initial results (Columns 1-5).

Second, following the same rationale, we include an indicator derived from the Logistics Performance Index (LPI) and measuring the timeliness of shipments in reaching their destination within the scheduled or expected delivery time. Again, our baseline estimates remain unchanged, while the LPI index influences neither the entry nor the survival rate of exporting firms (Columns 6-10). This result is meaningful for two reasons. First, the LPI index covers the timeliness of the whole import process, including transportation from the port of origin to the port of destination as well as road transportation to deliver the imported goods to the consignee's warehouse once they have been cleared, blurring the specific role of ports and gov-

instance Table 4.1). As a result, the likelihood of having a sufficient number of exporters to accurately approximate the distribution of the time to export at the country-sector-year level would be limited, hence leading to biased estimates of the interquartile range of the time to export. Additionally, as at least four observations per country-sector-year cluster are required to compute each quartile, small sectors with only a handful of exporting firms, notably in low-income countries, would be dropped from the sample. This self-selection bias is of significance as it is those sectors and countries that are of particular interest from a development policy point of view. In sum, these limitations cast doubt on the relevance of relying on the WBES for conducting an analysis focused on uncertainty in the time to export, and rather call for the use of Customs transaction-level data as in Volpe Martincus (2016), which is beyond the scope of this paper.

[25] Full regressions are provided in the Appendix (Tables C14-C17).

[26] See for instance Li and Wilson (2009); Djankov, Freund, and Pham (2010) and Gamberoni, Lanz, and Piermartini (2010) for studies relying on the Doing Business Indicators to show the adverse impact of delays on trade outcomes.

Table 4.9: Import Uncertainty and Export Dynamics: Robustness Checks

	Firm Entry Rate	Firm Exit Rate	First yr. Survival	Second yr. Survival	Third yr. Survival
	(1)	(2)	(3)	(4)	(5)
Log import uncertainty	-0.004	-0.003	-0.036**	-0.057***	-0.072**
	(0.006)	(0.007)	(0.014)	(0.021)	(0.036)
Log documents to import	-0.082**	0.081	0.052	0.281	-0.526**
	(0.041)	(0.053)	(0.116)	(0.178)	(0.238)
	(6)	(7)	(8)	(9)	(10)
Log import uncertainty	0.007	0.000	-0.045***	-0.074***	-0.090**
	(0.006)	(0.007)	(0.014)	(0.022)	(0.038)
Log LPI timeliness	0.047	-0.145	-0.033	-0.530	2.018
	(0.133)	(0.168)	(0.319)	(0.488)	(1.480)
	(11)	(12)	(13)	(14)	(15)
Log import uncertainty	-0.000	0.003	-0.041***	-0.060***	-0.079**
	(0.006)	(0.008)	(0.015)	(0.022)	(0.036)
Log collateral (%)	-0.034**	0.016	-0.060*	0.000	-0.040
	(0.016)	(0.016)	(0.031)	(0.045)	(0.070)
	(16)	(17)	(18)	(19)	(20)
Log import uncertainty	0.000	0.001	-0.033**	-0.037	-0.080*
	(0.006)	(0.009)	(0.016)	(0.026)	(0.045)
Log no loan application (%)	-0.003	0.002	-0.023	-0.068**	-0.108**
	(0.008)	(0.009)	(0.018)	(0.028)	(0.051)
	(21)	(22)	(23)	(24)	(25)
Log import uncertainty	0.004	-0.001	-0.039***	-0.061***	-0.051
	(0.006)	(0.008)	(0.015)	(0.022)	(0.037)
Log bribes (% annual sales)	-0.008	0.020*	0.012	0.003	-0.006
	(0.009)	(0.012)	(0.027)	(0.039)	(0.065)
	(26)	(27)	(28)	(29)	(30)
Log import uncertainty	-0.001	-0.010	-0.033*	-0.045*	-0.105**
	(0.006)	(0.010)	(0.017)	(0.025)	(0.045)
Log licensing obstacle (%)	-0.006	-0.008	-0.031**	-0.027	-0.073*
	(0.007)	(0.007)	(0.013)	(0.019)	(0.043)

Notes: PPML estimates. *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors clustered on exporter-importer pair in parentheses. Control variables included but not reported. Full regression tables are given in the Appendix (Tables C13-C16). The description and source of variables are provided in Table C3 in the Appendix.

ernment border agencies in generating delays. Therefore, the fact that the coefficient on the LPI index never enters with a statistically significant sign contrary to the one on import uncertainty seems to suggest that the efficiency of Customs and other border agencies matters more than the performance of transportation companies. Second, to the best of our knowledge, this variable is the only available cross-country measure of uncertainty to date, and its statistical insignificance seems to imply that a more refined measure such as the one we use here may be necessary to fully grasp the implications of import uncertainty for export dynamics.

We also check whether our results are affected by the inclusion of proxies for access to finance. As mentioned in Section 4.2.1, liquidity-constrained firms are likely to face difficulties paying on time the duties and fees associated with the import process, thus leading to longer clearance times and higher uncertainty as measured by the interquartile range of the time to import. On the other hand, the micro-literature provides ample evidence of the detrimental impact of financial constraints on export dynamics. Using data for Chinese firms, Manova, Wei, and Zhang (2015) show that credit-constrained firms are less likely to penetrate foreign markets, in line with findings by Minetti and Zhu (2011) and Muûls (2015) for firms in Italy and Belgium respectively. Besides preventing firms from breaking into new markets, lack of access to finance also reduces export intensity (Bellone, Musso, Nesta, and Schiavo, 2010; Kiendrebeogo and Minea, 2016), and survival (Brenton, Cadot, and Pierola, 2012). For instance, Cadot, Iacovone, Pierola, and Rauch (2013) find that firms operating in a foreign market with limited presence of other firms from the same origin are less likely to obtain a credit from banks if they seek to ramp up production and exports, translating into lower survival in the foreign market. If access to finance affects the ability of firms to enter export markets and survive while also influencing the time required to clear foreign inputs at the border, failing to properly control for its effect would yield biased estimates of the impact of import uncertainty on export dynamics. To address this concern, we consider two variables drawn from the WBES. To capture the burden imposed by loan requirements, we include the proportion of firms that had to provide collateral to obtain their most recent loan or line of credit. Alternatively, we use a broader indicator of the difficulties faced by firms to access the financing required to support their export activity, computed as the proportion of firms that needed a loan but did not apply for it owing to complex application procedures, unfavorable interest rates, excessively high collateral requirements, insufficient maturity and loan size, and anticipation of a negative decision by financial services providers. Results are displayed in Columns 11-20 of Table 4.9. Consistent with the literature, we find a detrimental impact of the proportion of loans requiring collateral on firm entry and first-year survival rates, with the coefficient on import uncertainty

remaining unchanged across specifications. This is also broadly the case for the second variable capturing difficulties related to access to finance, which translate into depressed second- and third-year survival rates of entrants.

Furthermore, as described in Section 4.2.1, stages of the import process could be plagued by rent-seeking and corrupt practices, with Customs officials accepting informal payments for instance in exchange for modifying the classification or valuation of the imported good for tax purposes. Inspectors from other government entities such as SPS agencies involved in the clearance process could also engage in kickbacks and other illegal transactions that would ultimately influence the time required to clear foreign inputs at the border. Based on the "efficient grease" theory, one could argue that an importing firm may find it rational to extend bribes so as to reduce the red-tape it faces at the border and speed-up clearance of its foreign inputs through Customs. In other words, corruption would enhance efficiency by helping lower bureaucratic burden and delay (Leff, 1964 and Lui, 1985). However, Kaufmann and Wei (1999) show that firms with the ability to pay more bribes to corruption-prone officials are precisely the ones that suffer more from "bureaucratic harassment" and red tape. In addition to influencing border clearance times, rent-seeking has a direct bearing on firms' export decision, as shown by Olney (2015) who finds that corruption reduces the likelihood that a firm exports directly while raising the probability of resorting to intermediaries to access foreign markets. More generally, the literature has emphasized the trade-effects of institutional quality (see for example Levchenko, 2007 and Nunn, 2007). Accordingly, we check whether our results are immune to the inclusion of two indicators taken from the WBES, namely (i) the share of annual sales spent in informal payments or gifts to public officials to "get things done" regarding Customs, taxes, licenses, regulations and services; and (ii) the proportion of firms identifying business licensing and permits as a major or very severe obstacle. The latter variable is a broad indicator of the quality of firms' interaction with public officials, and reflects firms' perception of the difficulty to obtain operating and import licenses. Columns 21-30 of Table 4.9 show that our core results remain robust after the sequential introduction of these two variables, apart from Column 25 where uncertainty no longer seems to affect the third-year export survival rate once bribery is accounted for. The proportion of sales revenue forgone because of rent-seeking practices is positively associated with firm exit rates, while the share of firms reporting the incidence of hurdles faced in connection with business and import licenses reduces the survival rate of entrants.

While the robustness checks reported in this section show that our core results do not seem to be influenced by omitted variables bias, one may still argue about the presence of endogeneity due to reverse causality. We rule out this concern for the following reasons. First, even

though one could claim that higher firm entry or survival rates in foreign markets may translate into more intense export activity leading to Customs and other border agencies overflow, and ultimately delays in the time required to export, it is difficult to see how this would also directly affect import times as importing and exporting are two separate processes that do not involve the exact same procedures. For instance, data verifications carried out by border agencies for imports are usually not relevant for most exports. Unless the country applies Customs export duties, which few countries do nowadays and only for specific products, Customs agents seldom check export value or classification (McLinden, Fanta, Widdowson, and Doyle, 2011). This also explains why WCO guidelines to measure release times focus on import transactions (World Customs Organization, 2011). Second, another potential reason for reverse causality is that as more firms enter the export market and survive, the private sector could push for Customs reforms to enhance efficacy and reduce delays. This is also unlikely as current evidence deplores the lack of coordination between the private sector and Customs and other border control authorities so much that Article 23.2 of the WTO Trade Facilitation Agreement urges signatories to "establish and/or maintain a national committee on trade facilitation or designate an existing mechanism to facilitate both domestic coordination and implementation of [its] provisions" where the participation of the business community is highly recommended (International Trade Center, 2015).

4.5 Conclusion

As most exporters are also importers of intermediate goods and other inputs required in the production process, trade costs that constrain the capacity of firms to import are also likely to affect their export dynamics, especially in the context of rising GVCs. Using trade flows, Customs transactions and firm-level data, several studies have so far provided evidence on how the reduction of import barriers can shape export performance and diversification patterns. This paper contributes to this literature by quantifying a new source of trade costs based on a novel measure of uncertainty in import clearance times and by exploring its impact on manufacturing firms' export entry, exit and survival decisions. Using the PPML estimator on a sample of 48 developing countries over 2006-2014, we find that supply chain unreliability due to uncertainty in import clearance times impacts neither the entry nor the exit rate but translates into lower survival rates for entrants, reducing the number of firms that continue to serve the foreign market beyond their first year of entry. This effect grows larger over time with the accumulation of reputational costs to input-importing exporters and is mainly driven by South-North trade,

possibly reflecting the time-sensitivity of importers in developed countries. Results also reveal sectoral heterogeneity in the impact of import uncertainty, as well as the mediating role of sunk costs of entry in foreign markets that are found to attenuate the negative effect of uncertainty on export survival rates as firms delay exiting the export market.

Our findings suggest that developing countries seeking to promote the survival of newly-exporting firms in foreign markets should consider undertaking policies targeted at reducing the uncertainty these firms face when importing their production inputs. Predictability in border clearance times is key to a smooth running of the supply chain, allowing firms to deliver on time to time-sensitive foreign customers. Notwithstanding the contribution of firm-specific factors such as limited financial liquidity or willingness to pay bribes in influencing the duration of the import process, our results highlight the role of external factors related to trade facilitation and the investment climate that are outside of firms' control, hence calling for policy action. Specifically, given the lion's share of Aid for Trade flows aimed at enhancing both hard and soft trade-related infrastructure and supporting border-related policies, our findings make the case for stepping up soft investments specifically designed to reduce supply chain unreliability due to unpredictable import clearance times. First, efforts to address coordination failures among public and private actors involved in the movement of goods are key to lowering the dispersion of import times. For instance, incentivizing border control agencies, port operators and other transport and logistics stakeholders participating in the import process to adopt IT and electronically interconnect themselves would facilitate collaboration and information sharing, thus avoiding duplication of requirements for importers, all of which should bring significant gains in reducing import time unreliability. An additional low-cost initiative that could successfully reduce import uncertainty is the use of IT systems for cargo tracking and tracing by port and road freight transport operators. Second, effectively implementing the WTO Trade Facilitation Agreement, especially provisions on advance rulings (Articles 3) and border agency and Customs cooperation (Articles 8 and 12) should significantly increase predictability and reduce the dispersion of border clearance times. Third, supporting the modernization of public border entities other than Customs, such as SPS agencies or the Police, would significantly contribute to lowering supply chain unreliability by shortening the import process as most import clearance delays usually originate from these agencies. In particular, incentivizing them to adopt risk management systems aimed at reducing physical inspections for low-risk consignments without compromising their mandate of protecting the domestic market from phytosanitary threats or illegal trade is key to enhancing predictability in import times.

Finally, our paper calls for a revised methodology to quantify time to trade by using transaction-

level trade data. Nowadays IT systems adopted by public and private operators involved in the trading process, such as ASYCUDA for Customs, Navis for port operators and GPS devices for transport operators, allow moving away from perceptions-based indicators of time to trade, usually derived from expensive surveys administered to truckers, to produce transaction-based objective measures at low cost based on time stamps collected from these IT systems for any container in movement along the logistics supply chain, from port arrival to cargo delivery at the importer's warehouse. Constructing measures of unreliability in times to trade using Big data opens new directions of research on trade costs and their impact on firm trade performance.

References

ALBORNOZ, F., H. F. CALVO PARDO, G. CORCOS, AND E. ORNELAS (2012): "Sequential Exporting," *Journal of International Economics*, 88(1), 17–31.

AMITI, M., AND J. KONINGS (2007): "Trade Liberalization, Intermediate Inputs, and Productivity: Evidence from Indonesia," *American Economic Review*, 97(5), 1611–1638.

ANDERSON, J. E., AND E. VAN WINCOOP (2004): "Trade Costs," *Journal of Economic Literature*, 42(3), 691–751.

ARAUJO, L., G. MION, AND E. ORNELAS (2016): "Institutions and Export Dynamics," *Journal of International Economics*, 98(C), 2–20.

ARVIS, J.-F., R. CARRUTHERS, G. SMITH, AND C. WILLOUGHBY (2011): *Connecting Landlocked Developing Countries to Markets : Trade Corridors in the 21st Century*, no. 2286 in World Bank Publications. The World Bank.

ARVIS, J.-F., G. RABALLAND, AND J.-F. MARTEAU (2010): *The Cost of Being Landlocked : Logistics Costs and Supply Chain Reliability*, no. 2489 in World Bank Publications. The World Bank.

BALDWIN, R. (1988): "Hyteresis in Import Prices: The Beachhead Effect," *American Economic Review*, 78(4), 773–785.

BALDWIN, R., AND P. KRUGMAN (1989): "Persistent Trade Effects of Large Exchange Rate Shocks," *The Quarterly Journal of Economics*, 104(4), 635–654.

BAS, M. (2012): "Input-Trade Liberalization and Firm Export Decisions: Evidence from Argentina," *Journal of Development Economics*, 97(2), 481–493.

BAS, M., A. JOHANSSON, F. MURTIN, AND G. NICOLETTI (2016): "The Effects of Input Tariffs on Productivity: Panel Data Evidence for OECD Countries," *Review of World Economics (Weltwirtschaftliches Archiv)*, 152(2), 401–424.

BAS, M., AND V. STRAUSS-KAHN (2014): "Does Importing More Inputs Raise Exports? Firm-level Evidence from France," *Review of World Economics (Weltwirtschaftliches Archiv)*, 150(2), 241–275.

——— (2015): "Input-Trade Liberalization, Export Prices and Quality Upgrading," *Journal of International Economics*, 95(2), 250–262.

BELLONE, F., P. MUSSO, L. NESTA, AND S. SCHIAVO (2010): "Financial Constraints and Firm Export Behaviour," *The World Economy*, 33(3), 347–373.

BERNARD, A., AND J. WAGNER (2001): "Export Entry and Exit by German Firms," *Review of World Economics (Weltwirtschaftliches Archiv)*, 137(1), 105–123.

BERNARD, A. B., J. EATON, J. B. JENSEN, AND S. KORTUM (2003): "Plants and Productivity in International Trade," *American Economic Review*, 93(4), 1268–1290.

BERNARD, A. B., AND J. B. JENSEN (2004): "Why Some Firms Export," *The Review of Economics and Statistics*, 86(2), 561–569.

BERNARD, A. B., AND J. B. JENSEN (2007): "Firm Structure, Multinationals, and Manufacturing Plant Deaths," *The Review of Economics and Statistics*, 89(2), 193–204.

BERRY, W. D., M. GOLDER, AND D. MILTON (2012): "Improving Tests of Theories Positing Interaction," *The Journal of Politics*, 74(3), 653–671.

BEVERELLI, C., S. NEUMUELLER, AND R. TEH (2015): "Export Diversification Effects of the WTO Trade Facilitation Agreement," *World Development*, 76(C), 293–310.

BLONIGEN, B., AND W. WILSON (2008): "Port Efficiency and Trade Flows," *Review of International Economics*, 16(1), 21–36.

BRAMBOR, T., W. R. CLARK, AND M. GOLDER (2006): "Understanding Interaction Models: Improving Empirical Analyses," *Political Analysis*, 14(01), 63–82.

BRENTON, P., O. CADOT, AND M. D. PIEROLA (2012): *Pathways to African Export Sustainability*, no. 9380 in World Bank Publications. The World Bank.

BRENTON, P., C. SABOROWSKI, AND E. VON UEXKULL (2010): "What Explains the Low Survival Rate of Developing Country Export Flows?," *World Bank Economic Review*, 24(3), 474–499.

CADOT, O., L. IACOVONE, M. D. PIEROLA, AND F. RAUCH (2013): "Success and Failure of African Exporters," *Journal of Development Economics*, 101(C), 284–296.

CARRÈRE, C., AND V. STRAUSS-KAHN (2017): "Export Survival and the Dynamics of Experience," *Review of World Economics (Weltwirtschaftliches Archiv)*, 153(2), 271–300.

CLARK, D. P., V. KOZLOVA, AND G. SCHAUR (2016): "Supply Chain Uncertainty in Ocean Transit as a Trade Barrier," Mimeo.

COULIBALY, S., AND L. FONTAGNÉ (2006): "South–South Trade: Geography Matters," *Journal of African Economies*, 15(2), 313–341.

DEBAERE, P., AND S. MOSTASHARI (2010): "Do Tariffs Matter for the Extensive Margin of International Trade? An Empirical Analysis," *Journal of International Economics*, 81(2), 163–169.

DENNIS, A., AND B. SHEPHERD (2011): "Trade Facilitation and Export Diversification," *The World Economy*, 34(1), 101–122.

DIXIT, A. K. (1989a): "Entry and Exit Decisions under Uncertainty," *Journal of Political Economy*, 97(3), 620–638.

——— (1989b): "Hysteresis, Import Penetration, and Exchange Rate Pass-Through," *The Quarterly Journal of Economics*, 104(2), 205–228.

DIXIT, A. K., AND R. S. PINDYCK (1994): *Investment under Uncertainty*, no. 5474 in Economics Books. Princeton University Press.

DJANKOV, S., C. FREUND, AND C. S. PHAM (2010): "Trading on Time," *The Review of Economics and Statistics*, 92(1), 166–173.

FAN, H., Y. A. LI, AND S. R. YEAPLE (2015): "Trade Liberalization, Quality, and Export Prices," *The Review of Economics and Statistics*, 97(5), 1033–1051.

FEENSTRA, R. C., AND H. MA (2014): "Trade Facilitation and the Extensive Margin of Exports," *The Japanese Economic Review*, 65(2), 158–177.

FENG, L., Z. LI, AND D. L. SWENSON (2016): "The Connection between Imported Intermediate Inputs and Exports: Evidence from Chinese Firms," *Journal of International Economics*, 101(C), 86–101.

FERNANDES, A. M., C. FREUND, AND M. D. PIEROLA (2016): "Exporter Behavior, Country Size and Stage of Development: Evidence from the Exporter Dynamics Database," *Journal of Development Economics*, 119, 121–137.

FERNANDES, A. M., R. HILLBERRY, AND A. MENDOZA ALCÁNTARA (2017): "Trade Effects of Customs Reform: Evidence from Albania," Mimeo.

FREUND, C., AND M. D. PIEROLA (2015): "Export Superstars," *The Review of Economics and Statistics*, 97(5), 1023–1032.

FREUND, C., AND N. ROCHA (2011): "What Constrains Africa's Exports ?," *World Bank Economic Review*, 25(3), 361–386.

FUGAZZA, M., AND A. C. MOLINA (2016): "On the Determinants of Exports Survival," *Canadian Journal of Development Studies / Revue canadienne d'études du développement*, 37(2), 159–177.

GAMBERONI, E., R. LANZ, AND R. PIERMARTINI (2010): "Timeliness and Contract Enforceability in Intermediate Goods Trade," Policy Research Working Paper Series 5482, The World Bank.

HALPERN, L., M. KOREN, AND A. SZEIDL (2015): "Imported Inputs and Productivity," *American Economic Review*, 105(12), 3660–3703.

HARRIGAN, J., AND A. J. VENABLES (2006): "Timeliness and Agglomeration," *Journal of Urban Economics*, 59(2), 300–316.

HELPMAN, E., O. ITSKHOKI, M.-A. MUENDLER, AND S. J. REDDING (2017): "Trade and Inequality: From Theory to Estimation," *Review of Economic Studies*, 84(1), 357–405.

HUMMELS, D. (2001): "Time as a Trade Barrier," GTAP Working Papers 1152, Center for Global Trade Analysis, Department of Agricultural Economics, Purdue University.

——— (2007): "Transportation Costs and International Trade in the Second Era of Globalization," *Journal of Economic Perspectives*, 21(3), 131–154.

HUMMELS, D. L., AND G. SCHAUR (2013): "Time as a Trade Barrier," *American Economic Review*, 103(7), 2935–2959.

INTERNATIONAL TRADE CENTER, . (2015): "National Trade Facilitation Committees – Moving Towards Implementation," Technical Paper xii, 46 pages, ITC, Geneva, in collaboration with UNECE and UNCTAD.

KASAHARA, H., AND J. RODRIGUE (2008): "Does the Use of Imported Intermediates Increase Productivity? Plant-level Evidence," *Journal of Development Economics*, 87(1), 106–118.

KAUFMANN, D., AND S.-J. WEI (1999): "Does "Grease Money" Speed Up the Wheels of Commerce?," NBER Working Papers 7093, National Bureau of Economic Research, Inc.

KIENDREBEOGO, Y., AND A. MINEA (2016): "Financial Factors and Manufacturing Exports: Firm-Level Evidence from Egypt," *Journal of Development Studies*, pp. 1–17.

KOOPMAN, R., W. POWERS, Z. WANG, AND S.-J. WEI (2010): "Give Credit Where Credit Is Due: Tracing Value Added in Global Production Chains," Working Paper 16426, National Bureau of Economic Research.

KOOPMAN, R., Z. WANG, AND S.-J. WEI (2014): "Tracing Value-Added and Double Counting in Gross Exports," *American Economic Review*, 104(2), 459–494.

KRUGMAN, P. (1989): *Exchange Rate Instability*, Cambridge Massachusetts. MIT Press.

KUGLER, M., AND E. VERHOOGEN (2009): "Plants and Imported Inputs: New Facts and an Interpretation," *American Economic Review*, 99(2), 501–507.

——— (2012): "Prices, Plant Size, and Product Quality," *Review of Economic Studies*, 79(1), 307–339.

KUNAKA, C., AND R. CARRUTHERS (2014): *Trade and Transport Corridor Management Toolkit*, no. 18241 in World Bank Publications. The World Bank.

EDWARDS, L., M. SANFILIPPO, AND A. SUNDARAM (2017): "Importing and Firm Export Performance: New Evidence from South Africa," *South African Journal of Economics*, 86(S1), 79–95.

LEDERMAN, D., M. OLARREAGA, AND L. ZAVALA (2016): "Export Promotion and firm Entry into and Survival in Export Markets," *Canadian Journal of Development Studies / Revue canadienne d'études du développement*, 37(2), 142–158.

LEFF, N. H. (1964): "Economic Development Through Bureaucratic Corruption," *American Behavioral Scientist*, 8(3), 8–14.

LEVCHENKO, A. A. (2007): "Institutional Quality and International Trade," *Review of Economic Studies*, 74(3), 791–819.

LI, Y., AND J. S. WILSON (2009): "Time as a Determinant of Comparative Advantage," Policy Research Working Paper Series 5128, The World Bank.

LIMÃO, N., AND A. J. VENABLES. (2001): "Infrastructure, Geographical Disadvantage, Transport Costs, and Trade," *World Bank Economic Review*, 15(3), 451–479.

LOPEZ, R. A. (2006): "Imports of Intermediate Inputs and Plant Survival," *Economics Letters*, 92(1), 58–62.

LUI, F. T. (1985): "An Equilibrium Queuing Model of Bribery," *Journal of Political Economy*, 93(4), 760–781.

MANOVA, K., S.-J. WEI, AND Z. ZHANG (2015): "Firm Exports and Multinational Activity Under Credit Constraints," *The Review of Economics and Statistics*, 97(3), 574–588.

MANOVA, K., AND Z. ZHANG (2012): "Export Prices across Firms and Destinations," *The Quarterly Journal of Economics*, 127(1), 379–436.

MCLINDEN, G., E. FANTA, D. WIDDOWSON, AND T. DOYLE (2011): *Border Management Modernization*, no. 2544 in World Bank Publications. The World Bank.

MELITZ, M. J. (2003): "The Impact of Trade on Intra-Industry Reallocations and Aggregate Industry Productivity," *Econometrica*, 71(6), 1695–1725.

MINETTI, R., AND S. C. ZHU (2011): "Credit Constraints and Firm Export: Microeconomic Evidence from Italy," *Journal of International Economics*, 83(2), 109–125.

MUÛLS, M. (2015): "Exporters, Importers and Credit Constraints," *Journal of International Economics*, 95(2), 333–343.

NUNN, N. (2007): "Relationship-Specificity, Incomplete Contracts, and the Pattern of Trade," *The Quarterly Journal of Economics*, 122(2), 569–600.

OLNEY, W. W. (2015): "Impact of Corruption on Firm-Level Export Decisions," Williams College, Williamstown. Mimeo.

PIEROLA, M. D. C., A. M. FERNANDES, AND T. FAROLE (2015): "The Role of Imports for Exporter Performance in Peru," Policy Research Working Paper Series 7492, The World Bank.

REGOLO, J. (2013): "Export Diversification: How Much Does the Choice of the Trading Partner Matter?," *Journal of International Economics*, 91(2), 329–342.

ROBERTS, M. J., AND J. R. TYBOUT (1997): "The Decision to Export in Colombia: An Empirical Model of Entry with Sunk Costs," *American Economic Review*, 87(4), 545–564.

SANTOS SILVA, J., AND S. TENREYRO (2006): "The Log of Gravity," *The Review of Economics and Statistics*, 88(4), 641–658.

——— (2010): "On the Existence of the Maximum Likelihood Estimates in Poisson Regression," *Economics Letters*, 107(2), 310–312.

SCHOR, A. (2004): "Heterogeneous Productivity Response to Tariff Reduction. Evidence from Brazilian Manufacturing Firms," *Journal of Development Economics*, 75(2), 373–396.

SHEPHERD, B. (2010): "Geographical Diversification of Developing Country Exports," *World Development*, 38(9), 1217–1228.

TOPALOVA, P., AND A. KHANDELWAL (2011): "Trade Liberalization and Firm Productivity: The Case of India," *The Review of Economics and Statistics*, 93(3), 995–1009.

VAN DER MAREL, E. (2017): "Explaining Export Performance through Inputs: Evidence from Aggregated Cross-country Firm-level Data," *Review of Development Economics*, 21(3), 731–755.

VOLPE MARTINCUS, C. (2016): *Out of the Border Labyrinth: An Assessment of Trade Facilitation Initiatives in Latin America and the Caribbean*, no. 7994 in IDB Publications (Books). Inter-American Development Bank.

VOLPE MARTINCUS, C., J. CARBALLO, AND A. CUSOLITO (2017): "Roads, Exports and Employment: Evidence from a Developing Country," *Journal of Development Economics*, 125(C), 21–39.

VOLPE MARTINCUS, C., J. CARBALLO, AND A. GRAZIANO (2015): "Customs," *Journal of International Economics*, 96(1), 119–137.

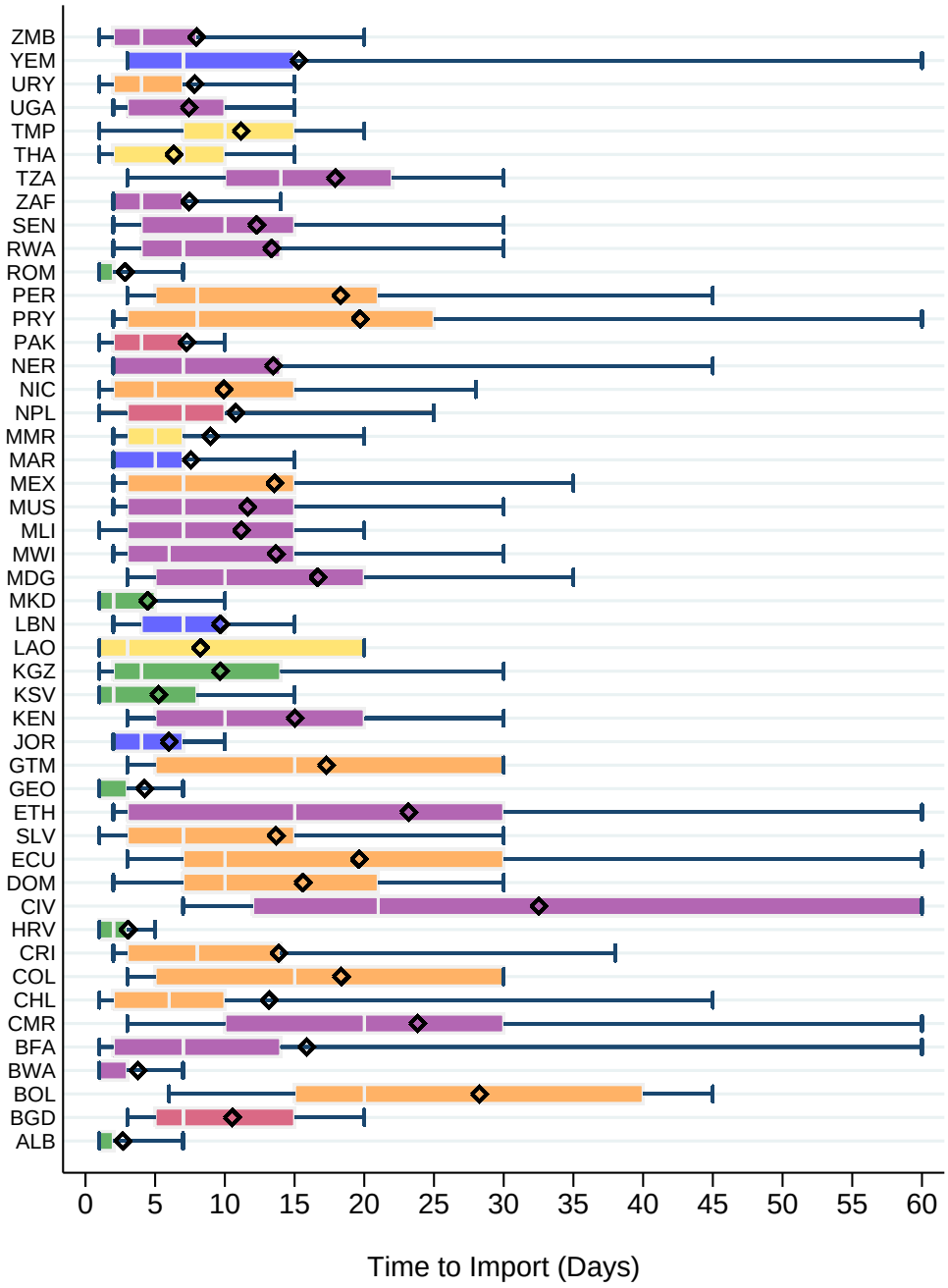
WAGNER, J. (2013): "Exports, Imports and Firm Survival: First Evidence for Manufacturing Enterprises in Germany," *Review of World Economics (Weltwirtschaftliches Archiv)*, 149(1), 113–130.

WORLD CUSTOMS ORGANIZATION, . (2011): "Guide to Measure the Time Required for the Release of Goods," Version 2.

ZAKI, C. (2014): "An Empirical Assessment of the Trade Facilitation Initiative: Econometric Evidence and Global Economic Effects," *World Trade Review*, 13(01), 103–130.

Appendix to Chapter 4

Figure C1: Cross-Country Heterogeneity in the Time to Import



Notes: Authors' elaboration based on the World Bank Enterprise Surveys. Horizontal box plots of the median time to import across regions. Whiskers extend to 10 percent and 90 percent points of the distribution. Diamonds indicate means. Burkina Faso's 90th percentile was recoded from 90 to 60 to enhance visibility. Included manufacturing firms are those located in the 48 developing countries retained in the empirical analysis. Color coding: green for Europe and Central Asia (ECA), cranberry for South Asia (SAS); orange for Latin America and the Caribbean (LAC); purple for Sub-Saharan Africa (SSA); blue for Middle East and North Africa (MNA); yellow for East Asia and Pacific (EAP). Country names associated with displayed country codes are given in Table C1.

Table C1: List of Countries

Country	Country Code	WBES Region	WBES availability	EDD availability	EDD merger year	Nb. of lags
Albania	ALB	ECA	2007 & 2013	2006-2012	2007	0
					2010	-3
Bangladesh	BGD	SAS	2007 & 2013	2006-2014	2007	0
					2013	0
Bolivia	BOL	LAC	2006 & 2010	2006-2012	2007	1
					2010	0
Botswana	BWA	SSA	2006 & 2010	2006-2013	2006	0
					2010	0
Burkina Faso	BFA	SSA	2009	2006-2012	2009	0
Cameroon	CMR	SSA	2009 & 2016	2006-2013	2011	2
Chile	CHL	LAC	2006 & 2010	2006-2012	2006	0
					2010	0
Colombia	COL	LAC	2006 & 2010	2007-2013	2008	2
					2010	0
Costa Rica	CRI	LAC	2010	2006-2012	2010	0
Côte d'Ivoire	CIV	SSA	2009 & 2016	2009-2012	2010	1
Croatia	HRV	ECA	2007 & 2013	2007-2012	2008	1
					2010	-3
Dominican Republic	DOM	LAC	2010	2006-2014	2010	0
Ecuador	ECU	LAC	2006 & 2010	2006-2014	2006	0
					2010	0
El Salvador	SLV	LAC	2006, 2010 & 2016	2006-2009	2006	0
					2007	-3
Ethiopia	ETH	SSA	2011 & 2015	2008-2012	2010	-1
Georgia	GEO	ECA	2008 & 2013	2006-2012	2008	0
					2010	-3
Guatemala	GTM	LAC	2006 & 2010	2006-2013	2006	0
					2010	0
Jordan	JOR	MNA	2013	2006-2012	2010	-3
Kenya	KEN	SSA	2007 & 2013	2006-2014	2007	0
					2012	-1
Kosovo	KSV	ECA	2009 & 2013	2011-2014	2012	3
					2013	0
Kyrgyz Republic	KGZ	ECA	2009 & 2013	2006-2012	2009	0
					2010	-3
Lao PDR	LAO	EAP	2009, 2012 & 2016	2006-2010	2008	-1
					2009	-3
Lebanon	LBN	MNA	2013	2008-2012	2010	-3
Macedonia, FYR	MKD	ECA	2009 & 2013	2006-2010	2008	-1
Madagascar	MDG	SSA	2009 & 2013	2007-2012	2009	0
					2010	-3
Malawi	MWI	SSA	2009 & 2014	2006-2012	2010	1
					2011	-3

Table C1: List of Countries (Cont'd)

Country	Country Code	WBES Region	WBES availability	EDD availability	EDD merger year	Nb. of lags
Mali	MLI	SSA	2007, 2010 & 2016	2006-2008	2006	-1
					2007	-3
Mauritius	MUS	SSA	2009	2006-2012	2009	0
Mexico	MEX	LAC	2006 & 2010	2006-2012	2006	0
					2011	1
Morocco	MAR	MNA	2013	2006-2013	2011	-2
Myanmar	MMR	EAP	2014	2011-2013	2012	-2
Nepal	NPL	SAS	2009 & 2013	2011-2014	2012	3
					2013	0
Nicaragua	NIC	LAC	2006 & 2010	2006-2014	2006	0
					2009	-1
Niger	NER	SSA	2009	2008-2010	2009	0
Pakistan	PAK	SAS	2007 & 2013	2006-2010	2007	0
Paraguay	PRY	LAC	2006 & 2010	2007-2012	2008	2
					2010	0
Peru	PER	LAC	2006 & 2010	2006-2013	2006	0
					2010	0
Romania	ROM	ECA	2009 & 2013	2006-2011	2009	0
					2010	-3
Rwanda	RWA	SSA	2006 & 2011	2006-2012	2007	1
					2011	0
Senegal	SEN	SSA	2007 & 2014	2006-2012	2007	0
					2011	-3
South Africa	ZAF	SSA	2007	2006-2012	2007	0
Tanzania	TZA	SSA	2006 & 2013	2006-2012	2006	0
					2010	-3
Thailand	THA	EAP	2016	2012-2014	2013	-3
Timor-Leste	TMP	EAP	2009 & 2015	2006-2012	2009	0
Uganda	UGA	SSA	2006 & 2013	2007-2010	2008	2
Uruguay	URY	LAC	2006 & 2010	2006-2012	2006	0
					2010	0
Yemen, Rep.	YEM	MNA	2010 & 2013	2008-2012	2010	0
					2011	-2
Zambia	ZMB	SSA	2007 & 2013	2006-2011	2007	0
					2010	-3

Notes: Authors' elaboration based on the World Bank Enterprise Surveys (WBES) and the Exporter Dynamics Database (EDD). ECA: Europe and Central Asia; SAS: South Asia; LAC: Latin America and the Caribbean; SSA: Sub-Saharan Africa, MNA: Middle East and North Africa; EAP: East Asia and Pacific. The last column displays the time adjustments applied to WBES to enhance sample size when matching it with EDD; a positive (negative) number indicates a forward (backward) adjustment of WBES relative to EDD.

Table C2: Concordance between 2-Digit ISIC Codes and 5-Sector Manufacturing Classification

Aggregated sectors	**Original ISIC Rev. 3.1 2-digit code sectors**
1 - Manufacture of Food, Beverage and Tobacco Products	15 - Manufacture of food products and beverages 16 - Manufacture of tobacco products
2 - Manufacture of Textile and Leather-Related Products	17 - Manufacture of textiles 18 - Manufacture of wearing apparel; dressing and dyeing of fur 19 - Tanning and dressing of leather; manufacture of luggage, handbags, saddlery, harness and footwear
3- Manufacture of Wood-Related Products	20 - Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials 21 - Manufacture of paper and paper products 22 - Publishing, printing and reproduction of recorded media
4- Manufacture of Minerals, Metals and Chemical Products	23 - Manufacture of coke, refined petroleum products and nuclear fuel 24 - Manufacture of chemicals and chemical products 25 - Manufacture of rubber and plastics products 26 - Manufacture of other non-metallic mineral products 27 - Manufacture of basic metals 28 - Manufacture of fabricated metal products, except machinery and equipment
5- Manufacture of Advanced Products	29 - Manufacture of machinery and equipment n.e.c. 30 - Manufacture of office, accounting and computing machinery 31 - Manufacture of electrical machinery and apparatus n.e.c. 32 - Manufacture of radio, television and communication equipment and apparatus 33 - Manufacture of medical, precision and optical instruments, watches and clocks 34 - Manufacture of motor vehicles, trailers and semi-trailers 35 - Manufacture of other transport equipment 36 - Manufacture of furniture; manufacturing n.e.c.

Notes: Authors' elaboration based on the World Bank Enterprise Surveys and ISIC Revision 3.1.

Table C3: Description and Source of Variables

Variable	Description	Source
Firm entry rate in t	Number of entrants in t / Number of exporters in t.	EDD, variable C1
Firm exit rate in t	Number of exiters in t / Number of exporters in $t-1$.	EDD, variable C2
Entrant 1st year survival rate in t	Number of surviving entrants in t / Number of entrants in t.	EDD, variable C3
Entrant 2nd year survival rate in t	Number of 2nd year surviving entrants in t / Number of entrants in t.	EDD, variable C5
Entrant 3rd year survival rate in t	Number of 3rd year surviving entrants in t / Number of entrants in t.	EDD, variable C6
Log import uncertainty	Interquartile range of the number of days taken for imported material inputs or supplies to move from the point of entry to being claimed from Customs, log.	WBES, questions d13 and d14
Log time to import	Average number of days taken for imported material inputs or supplies to move from the point of entry to being claimed from Customs, log.	WBES, questions d13 and d14
Log median time to import	Median # of days taken for imported material inputs or supplies to move from the point of entry to being claimed point of entry to being claimed from Customs, log.	WBES, questions d13 and d14
Common border	Dummy takes 1 if exporter and importer share a common border.	CEPII
Colony	Dummy takes 1 if exporter and importer were in a colonial relation post-1945.	CEPII
Log distance	Population-weighted distance, log.	CEPII
Trade agreement	Dummy takes 1 if presence of Non-reciprocal Preferential Trade Arrangement (NR-PTA), PTA, Free Trade Area (FTA), Customs Union (CU), Common Market (CM) or Economic Union (EUN) between exporter and importer, 0 if no agreement.	Jeffrey Bergrand's website
Log tariffs	Average of tariffs weighted by their corresponding trade value, log(tariffs + 1). WITS uses the concept of effectively applied tariff, defined as the lowest available tariff. If a preferential tariff exists, it is used as the effectively applied tariff. Otherwise, the Most-Favored Nation (MFN) applied tariff is used.	WITS
Log exporter GDP cap.	Exporter GDP per capita (current USD), log.	CEPII
Log importer GDP cap.	Importer GDP per capita (current USD), log.	CEPII
Log exporter entry cost (% GNI)	Cost of business start-up procedures in exporting country (% GNI per capita), log.	CEPII
Log importer entry cost (% GNI)	Cost of business start-up procedures in importing country (% GNI per capita), log.	CEPII
Log documents to import	Number of documents required per shipment by government ministries, Customs authorities, port and container terminal authorities, health and technical control agencies and banks to import goods, log.	CEPII, from Doing Business

Table C3: Description and Source of Variables (Cont'd)

Variable	Description	Source
Log LPI timeliness	Frequency with which shipments reach consignee within scheduled or expected delivery times (1=low to 5=high), log.	LPI database
High-income destination	Dummy takes 1 if destination is a high-income country.	World Bank income groups
Sector 1	Dummy takes 1 if manufacturing export industry of food, beverage and tobacco products (agro-industry).	WBES and ISIC rev. 3.1
Sector 2	Dummy takes 1 if manufacturing export industry of textiles and leather-related	WBES and ISIC rev. 3.1
Sector 2	products.	WBES and ISIC rev. 3.1
Sector 3	Dummy takes 1 if manufacturing export industry of wood-related products.	WBES and ISIC rev. 3.1
Sector 4	Dummy takes 1 if manufacturing export industry of mineral, metals and chemicals.	WBES and ISIC rev. 3.1
Sector 5	Dummy takes 1 if manufacturing export industry of advanced products.	WBES and ISIC rev. 3.1
Log export uncertainty	Interquartile range of the number of days taken for direct exports between arrival at the main point of exit and clearance by Customs, log.	WBES, questions d3c and d4
Log time to export	Average number of days taken for direct exports between arrival at the main point of exit and clearance by Customs, log.	WBES, questions d3c and d4
Log median time to export	Median number of days taken for direct exports between arrival at the main point of exit and clearance by Customs, log.	WBES, questions d3c and d4
Log direct exports (% sales)	Share of establishment's total sales accounted for by direct exports, log.	WBES, question d3c
Log total exports (% sales)	Share of establishment's total sales accounted for by direct and indirect exports, log.	WBES, questions d3b and d3c
Log direct imports (%)	Share of firms that import directly their material inputs or supplies, log.	WBES, question d13
Log experience	Number of years since firm started to export directly or indirectly, log.	WBES, question d8
Log number of employees	Average number of permanent, full-time individuals in the firm, log.	WBES, question l1
Log TFP	Revenue-based TFP estimate, based on YKL model (Cobb Douglas function with capital and labor as inputs).	WBES
Log collateral (%)	Share of firms whose most recent bank loan or line of credit required collateral.	WBES, question k13
Log no loan application (%)	Share of firms that needed a loan but did not apply for if due to complex application procedures, unfavorable interest rates, excessively high collateral, requirements, insufficient maturity and loan size, and anticipation of a negative decision by banks, log.	WBES, questions k16 and k17

Table C3: Description and Source of Variables (Cont'd)

Variable	Description	Source
Log bribes (% annual sales)	Share of total annual sales payed in informal payments or gifts to public officials to "get things done" with regard to Customs, taxes, licenses, regulations and services; log(bribes + 1).	WBES, question j7
Log licensing obstacle (%)	Share of firms identifying business licensing and permits as a major obstacle or very severe obstacle, log.	WBES, question j30c

Notes: Exporter in t: any firm (incumbent or entrant) that exports in t; incumbent in t: a firm that exports in both $t-1$ and t; exiter in t: a firm that exports in $t-1$ but that does not export in t; entrant in t: a firm that does not export in $t-1$ but exports in t; Second-year surviving entrant in t: a firm that does not export in $t-1$ but exports in t, $t+1$ and $t+2$; Third-year surviving entrant in t: a firm that does not export in $t-1$ but exports in t, $t+1$, $t+2$ and $t+3$. Indirect exports are sales sold domestically to third party that exports. The World Bank Enterprise Survey's firm-level TFP estimates database is dated May 2017. EDD: Exporter Dynamics Database; WBES: World Bank Enterprise Surveys; CEPII: Centre d'études prospectives et d'informations internationales; WITS: World Integrated Trade Solution; LPI: Logistics Performance Index; ISIC: International Standard Industrial Classification of All Economic Activities.

Table C4: Import Uncertainty and Export Dynamics: Developed Destination Dummy

	Firm Entry Rate (1)	Firm Exit Rate (2)	First yr. Survival (3)	Second yr. Survival (4)	Third yr. Survival (5)
Log import uncertainty	-0.009	-0.023*	0.012	0.041	-0.005
	(0.010)	(0.013)	(0.025)	(0.039)	(0.067)
High-income destination	0.222*	0.706***	-0.218	0.009	-0.722
	(0.129)	(0.174)	(0.286)	(0.475)	(0.734)
Log import uncertainty × High-inc. dest.	0.014	0.032**	-0.071***	-0.130***	-0.085
	(0.011)	(0.015)	(0.027)	(0.042)	(0.073)
Log direct imports (%)	-0.014	-0.004	-0.027	-0.024	0.058
	(0.011)	(0.015)	(0.031)	(0.052)	(0.093)
Log direct exports (% sales)	-0.027***	-0.032**	0.106***	0.115***	0.090
	(0.005)	(0.013)	(0.028)	(0.040)	(0.062)
Log experience	0.001	-0.005	0.118***	0.161***	0.128
	(0.013)	(0.016)	(0.035)	(0.058)	(0.105)
Log nb. of employees	-0.019*	-0.026***	0.079***	0.114***	0.131**
	(0.010)	(0.009)	(0.019)	(0.029)	(0.057)
Log TFP	0.044*	-0.045**	0.175***	0.308***	0.266***
	(0.024)	(0.019)	(0.039)	(0.063)	(0.101)
Common border	-0.033	-0.040	0.065*	0.067	-0.021
	(0.022)	(0.027)	(0.039)	(0.059)	(0.089)
Colony	-0.079*	-0.020	0.149**	0.219*	0.077
	(0.041)	(0.041)	(0.073)	(0.112)	(0.284)
Log distance	0.110***	0.036***	-0.069***	-0.106***	-0.149***
	(0.009)	(0.010)	(0.018)	(0.029)	(0.051)
Trade agreement	-0.064***	-0.037**	0.101***	0.168***	0.200**
	(0.016)	(0.018)	(0.033)	(0.051)	(0.082)
Log tariffs	0.008	0.012*	-0.027**	-0.028*	-0.030
	(0.005)	(0.006)	(0.011)	(0.017)	(0.027)
Log exporter GDP cap.	-0.074	0.056	-0.049	-0.194	2.718*
	(0.097)	(0.117)	(0.181)	(0.260)	(1.638)
Log importer GDP cap.	0.062	0.008	0.116	0.128	0.246
	(0.041)	(0.049)	(0.098)	(0.152)	(0.229)
Log exporter entry cost (% GNI)	-0.021	-0.078*	-0.142*	-0.327***	0.153
	(0.036)	(0.043)	(0.084)	(0.120)	(0.400)
Log importer entry cost (% GNI)	0.013	-0.012	-0.012	-0.022	-0.116
	(0.014)	(0.018)	(0.035)	(0.054)	(0.084)
Constant	-1.027	-1.104	-1.278	-0.672	-26.096*
	(0.863)	(1.032)	(1.638)	(2.417)	(14.808)
Observations	14,476	12,001	11,834	10,755	5,680
R^2	0.183	0.183	0.106	0.101	0.123
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes
Destination Fixed Effects	Yes	Yes	Yes	Yes	Yes
Sector Fixed Effects	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes

Notes: PPML estimates. *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors clustered on exporter-importer pair in parentheses. Log direct imports (%), Log direct exports (% sales), Log experience, Log nb. of employees and Log TFP computed over the sample of exporting firms, except in Column 1. The description and source of variables are provided in Table C3 in the Appendix.

Table C5: Import Uncertainty and Export Dynamics: Marginal Effects Conditional on High-Income Destination Dummy

	Firm Entry Rate (1)	Firm Exit Rate (2)	First yr. Survival (3)	Second yr. Survival (4)	Third yr. Survival (5)
High-income destination dummy = 1	0.005	0.009	-0.059***	-0.089***	-0.090**
	(0.007)	(0.008)	(0.016)	(0.023)	(0.040)
High-income destination dummy = 0	-0.009	-0.023*	0.012	0.041	-0.005
	(0.010)	(0.013)	(0.025)	(0.039)	(0.067)

Notes: *** p<0.01, ** p<0.05, * p<0.1. Coefficients are marginal effects computed using parameter estimates from Columns (1)-(5) of Table C4 following Brambor, Clark, and Golder (2006), and conditional on the value taken by the high-income destination dummy. Standard errors in parenthesis.

Table C6: Import Uncertainty and Export Dynamics: Agro-Industry

	Firm Entry Rate (1)	Firm Exit Rate (2)	First yr. Survival (3)	Second yr. Survival (4)	Third yr. Survival (5)
Log import uncertainty	-0.002	-0.003	-0.030*	-0.047**	-0.073*
	(0.006)	(0.008)	(0.016)	(0.023)	(0.040)
Sector 1	-0.324***	-0.390***	0.485***	0.630***	0.642***
	(0.041)	(0.050)	(0.077)	(0.114)	(0.188)
Log import uncertainty × Sector 1	0.017	0.020	-0.053*	-0.057	0.005
	(0.017)	(0.020)	(0.031)	(0.046)	(0.070)
Log direct imports (%)	-0.014	-0.004	-0.027	-0.021	0.062
	(0.011)	(0.015)	(0.031)	(0.052)	(0.093)
Log direct exports (% sales)	-0.028***	-0.035***	0.115***	0.124***	0.087
	(0.005)	(0.013)	(0.029)	(0.041)	(0.065)
Log experience	-0.000	-0.006	0.123***	0.168***	0.124
	(0.013)	(0.016)	(0.035)	(0.058)	(0.107)
Log nb. of employees	-0.020**	-0.026***	0.079***	0.117***	0.132**
	(0.010)	(0.009)	(0.019)	(0.029)	(0.057)
Log TFP	0.044*	-0.046**	0.177***	0.309***	0.268***
	(0.024)	(0.019)	(0.039)	(0.063)	(0.100)
Common border	-0.032	-0.040	0.065*	0.068	-0.021
	(0.022)	(0.027)	(0.039)	(0.059)	(0.089)
Colony	-0.079*	-0.019	0.147**	0.218*	0.080
	(0.041)	(0.041)	(0.074)	(0.112)	(0.283)
Log distance	0.110***	0.037***	-0.070***	-0.108***	-0.150***
	(0.009)	(0.010)	(0.018)	(0.029)	(0.051)
Trade agreement	-0.063***	-0.035**	0.097***	0.162***	0.195**
	(0.016)	(0.018)	(0.033)	(0.051)	(0.082)
Log tariffs	0.008	0.013*	-0.028***	-0.029*	-0.030
	(0.005)	(0.006)	(0.011)	(0.017)	(0.027)
Log exporter GDP cap.	-0.069	0.059	-0.065	-0.211	2.691
	(0.097)	(0.117)	(0.182)	(0.264)	(1.651)
Log importer GDP cap.	0.061	0.004	0.124	0.139	0.263
	(0.041)	(0.049)	(0.098)	(0.152)	(0.229)
Log exporter entry cost (% GNI)	-0.018	-0.074*	-0.152*	-0.340***	0.151
	(0.036)	(0.044)	(0.084)	(0.121)	(0.401)
Log importer entry cost (% GNI)	0.013	-0.013	-0.011	-0.020	-0.115
	(0.014)	(0.018)	(0.035)	(0.054)	(0.083)
Constant	-0.800	-0.822	-1.462	-0.892	-26.445*
	(0.864)	(1.035)	(1.651)	(2.443)	(14.942)
Observations	14,476	12,001	11,834	10,755	5,680
R^2	0.182	0.183	0.106	0.100	0.123
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes
Destination Fixed Effects	Yes	Yes	Yes	Yes	Yes
Sector Fixed Effects	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes

Notes: PPML estimates. *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors clustered on exporter-importer pair in parentheses. Log direct imports (%), Log direct exports (% sales), Log experience, Log nb. of employees and Log TFP computed over the sample of exporting firms, except in Column 1. Sector 1 is a dummy variable for the manufacturing industry of food, beverage and tobacco products. Table C2 in the Appendix gives more detail on the aggregation of Sector 1. The description and source of variables are provided in Table C3 in the Appendix.

Table C7: Import Uncertainty and Export Dynamics: Textile and Leather-Related Products

	Firm Entry Rate (1)	Firm Exit Rate (2)	First yr. Survival (3)	Second yr. Survival (4)	Third yr. Survival (5)
Log import uncertainty	-0.003	0.000	-0.054***	-0.055**	-0.044
	(0.006)	(0.008)	(0.016)	(0.023)	(0.040)
Sector 2	0.174***	0.234***	-0.280***	-0.168	-0.179
	(0.032)	(0.037)	(0.071)	(0.106)	(0.170)
Log import uncertainty × Sector 2	0.017	0.000	0.056*	-0.015	-0.090
	(0.013)	(0.016)	(0.031)	(0.045)	(0.069)
Log direct imports (%)	-0.013	-0.004	-0.022	-0.022	0.066
	(0.011)	(0.015)	(0.031)	(0.053)	(0.094)
Log direct exports (% sales)	-0.027***	-0.032**	0.114***	0.110***	0.078
	(0.005)	(0.013)	(0.029)	(0.041)	(0.063)
Log experience	0.002	-0.004	0.116***	0.157***	0.123
	(0.013)	(0.016)	(0.035)	(0.058)	(0.104)
Log nb. of employees	-0.021**	-0.027***	0.081***	0.117***	0.127**
	(0.010)	(0.009)	(0.019)	(0.029)	(0.057)
Log TFP	0.045*	-0.045**	0.185***	0.306***	0.263***
	(0.024)	(0.019)	(0.039)	(0.063)	(0.100)
Common border	-0.033	-0.040	0.065*	0.068	-0.020
	(0.022)	(0.027)	(0.039)	(0.059)	(0.089)
Colony	-0.079*	-0.019	0.148**	0.219*	0.079
	(0.041)	(0.041)	(0.073)	(0.112)	(0.283)
Log distance	0.110***	0.037***	-0.072***	-0.109***	-0.148***
	(0.009)	(0.010)	(0.018)	(0.029)	(0.051)
Trade agreement	-0.064***	-0.035**	0.097***	0.163***	0.196**
	(0.016)	(0.018)	(0.033)	(0.051)	(0.082)
Log tariffs	0.008	0.012*	-0.027**	-0.028*	-0.029
	(0.005)	(0.006)	(0.011)	(0.017)	(0.027)
Log exporter GDP cap.	-0.075	0.056	-0.038	-0.183	2.640
	(0.097)	(0.117)	(0.181)	(0.260)	(1.638)
Log importer GDP cap.	0.061	0.004	0.121	0.136	0.262
	(0.041)	(0.049)	(0.098)	(0.152)	(0.229)
Log exporter entry cost (% GNI)	-0.016	-0.078*	-0.134	-0.328***	0.131
	(0.037)	(0.044)	(0.084)	(0.121)	(0.400)
Log importer entry cost (% GNI)	0.013	-0.013	-0.011	-0.021	-0.116
	(0.014)	(0.018)	(0.035)	(0.054)	(0.083)
Constant	-1.045	-1.152	-1.301	-0.541	-25.262*
	(0.863)	(1.033)	(1.643)	(2.420)	(14.803)
Observations	14,476	12,001	11,834	10,755	5,680
R^2	0.182	0.183	0.106	0.100	0.123
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes
Destination Fixed Effects	Yes	Yes	Yes	Yes	Yes
Sector Fixed Effects	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes

Notes: PPML estimates. *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors clustered on exporter-importer pair in parentheses. Log direct imports (%), Log direct exports (% sales), Log experience, Log nb. of employees and Log TFP computed over the sample of exporting firms, except in Column 1. Sector 2 is a dummy variable for the manufacturing industry of textile and leather-related products. Table C2 in the Appendix gives more detail on the aggregation of Sector 2. The description and source of variables are provided in Table C3 in the Appendix.

Table C8: Import Uncertainty and Export Dynamics: Wood-Related Products

	Firm Entry Rate (1)	Firm Exit Rate (2)	First yr. Survival (3)	Second yr. Survival (4)	Third yr. Survival (5)
Log import uncertainty	-0.000	-0.005	-0.044***	-0.062***	-0.078*
	(0.007)	(0.008)	(0.016)	(0.024)	(0.043)
Sector 3	0.205***	0.202***	-0.286***	-0.347***	-0.650**
	(0.037)	(0.045)	(0.087)	(0.123)	(0.263)
Log import uncertainty × Sector 3	0.003	0.029	0.018	0.020	0.034
	(0.015)	(0.018)	(0.037)	(0.052)	(0.109)
Log direct imports (%)	-0.014	-0.006	-0.027	-0.021	0.066
	(0.011)	(0.015)	(0.031)	(0.053)	(0.094)
Log direct exports (% sales)	-0.027***	-0.032**	0.104***	0.111***	0.088
	(0.005)	(0.013)	(0.028)	(0.040)	(0.062)
Log experience	0.001	-0.007	0.113***	0.156***	0.127
	(0.013)	(0.016)	(0.035)	(0.058)	(0.104)
Log nb. of employees	-0.020*	-0.026***	0.081***	0.118***	0.132**
	(0.010)	(0.009)	(0.019)	(0.030)	(0.057)
Log TFP	0.044*	-0.043**	0.177***	0.310***	0.271***
	(0.024)	(0.019)	(0.039)	(0.063)	(0.100)
Common border	-0.033	-0.040	0.065*	0.068	-0.020
	(0.022)	(0.027)	(0.039)	(0.059)	(0.089)
Colony	-0.079*	-0.019	0.148**	0.219*	0.080
	(0.041)	(0.041)	(0.073)	(0.112)	(0.283)
Log distance	0.110***	0.037***	-0.071***	-0.109***	-0.150***
	(0.009)	(0.010)	(0.018)	(0.029)	(0.051)
Trade agreement	-0.063***	-0.035**	0.098***	0.163***	0.195**
	(0.016)	(0.018)	(0.033)	(0.051)	(0.082)
Log tariffs	0.008	0.012*	-0.027**	-0.028*	-0.030
	(0.005)	(0.006)	(0.011)	(0.017)	(0.027)
Log exporter GDP cap.	-0.074	0.066	-0.035	-0.174	2.767*
	(0.098)	(0.116)	(0.180)	(0.261)	(1.623)
Log importer GDP cap.	0.061	0.004	0.121	0.135	0.263
	(0.041)	(0.049)	(0.098)	(0.152)	(0.229)
Log exporter entry cost (% GNI)	-0.022	-0.086**	-0.146*	-0.332***	0.159
	(0.036)	(0.044)	(0.085)	(0.122)	(0.398)
Log importer entry cost (% GNI)	0.013	-0.012	-0.011	-0.020	-0.115
	(0.014)	(0.018)	(0.035)	(0.054)	(0.083)
Constant	-1.039	-1.199	-1.258	-0.586	-26.427*
	(0.863)	(1.030)	(1.639)	(2.425)	(14.678)
Observations	14,476	12,001	11,834	10,755	5,680
R^2	0.182	0.183	0.106	0.100	0.123
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes
Destination Fixed Effects	Yes	Yes	Yes	Yes	Yes
Sector Fixed Effects	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes

Notes: PPML estimates. *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors clustered on exporter-importer pair in parentheses. Log direct imports (%), Log direct exports (% sales), Log experience, Log nb. of employees and Log TFP computed over the sample of exporting firms, except in Column 1. Sector 3 is a dummy variable for the manufacturing industry of wood-related products. Table C2 in the Appendix gives more detail on the aggregation of Sector 3. The description and source of variables are provided in Table C3 in the Appendix.

Table C9: Import Uncertainty and Export Dynamics: Minerals, Metals and Chemicals

	Firm Entry Rate (1)	Firm Exit Rate (2)	First yr. Survival (3)	Second yr. Survival (4)	Third yr. Survival (5)
Log import uncertainty	-0.005	-0.003	-0.037**	-0.064***	-0.089**
	(0.007)	(0.008)	(0.015)	(0.024)	(0.039)
Sector 4	0.103***	0.160***	-0.165**	-0.307***	-0.624***
	(0.030)	(0.036)	(0.067)	(0.101)	(0.191)
Log import uncertainty × Sector 4	0.025**	0.015	-0.016	0.023	0.109
	(0.012)	(0.014)	(0.027)	(0.041)	(0.072)
Log direct imports (%)	-0.014	-0.006	-0.025	-0.023	0.045
	(0.011)	(0.015)	(0.031)	(0.053)	(0.093)
Log direct exports (% sales)	-0.026***	-0.032**	0.104***	0.115***	0.097
	(0.005)	(0.013)	(0.028)	(0.040)	(0.062)
Log experience	0.001	-0.003	0.115***	0.157***	0.127
	(0.013)	(0.016)	(0.035)	(0.058)	(0.104)
Log nb. of employees	-0.023**	-0.028***	0.082***	0.115***	0.119**
	(0.010)	(0.009)	(0.019)	(0.030)	(0.058)
Log TFP	0.036	-0.047**	0.178***	0.303***	0.252**
	(0.024)	(0.019)	(0.040)	(0.064)	(0.102)
Common border	-0.033	-0.040	0.065*	0.068	-0.020
	(0.022)	(0.027)	(0.039)	(0.059)	(0.089)
Colony	-0.079*	-0.019	0.148**	0.219*	0.080
	(0.041)	(0.041)	(0.073)	(0.112)	(0.283)
Log distance	0.110***	0.037***	-0.071***	-0.109***	-0.148***
	(0.009)	(0.010)	(0.018)	(0.029)	(0.051)
Trade agreement	-0.063***	-0.035**	0.098***	0.163***	0.194**
	(0.016)	(0.018)	(0.033)	(0.051)	(0.082)
Log tariffs	0.007	0.012*	-0.026**	-0.028*	-0.032
	(0.005)	(0.006)	(0.011)	(0.017)	(0.027)
Log exporter GDP cap.	-0.087	0.050	-0.030	-0.203	2.608
	(0.097)	(0.117)	(0.181)	(0.262)	(1.629)
Log importer GDP cap.	0.061	0.005	0.121	0.137	0.264
	(0.041)	(0.049)	(0.098)	(0.152)	(0.229)
Log exporter entry cost (% GNI)	-0.021	-0.077*	-0.142*	-0.326***	0.164
	(0.036)	(0.043)	(0.084)	(0.121)	(0.400)
Log importer entry cost (% GNI)	0.013	-0.013	-0.011	-0.021	-0.115
	(0.014)	(0.018)	(0.035)	(0.054)	(0.083)
Constant	-0.917	-1.096	-1.326	-0.386	-25.123*
	(0.865)	(1.033)	(1.647)	(2.439)	(14.721)
Observations	14,476	12,001	11,834	10,755	5,680
R^2	0.183	0.183	0.106	0.100	0.123
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes
Destination Fixed Effects	Yes	Yes	Yes	Yes	Yes
Sector Fixed Effects	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes

Notes: PPML estimates. *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors clustered on exporter-importer pair in parentheses. Log direct imports (%), Log direct exports (% sales), Log experience, Log nb. of employees and Log TFP computed over the sample of exporting firms, except in Column 1. Sector 4 is a dummy variable for the manufacturing industry of mineral, metal and chemical products. Table C2 in the Appendix gives more detail on the aggregation of Sector 4. The description and source of variables are provided in Table C3 in the Appendix.

Table C10: Import Uncertainty and Export Dynamics: Advanced Products

	Firm Entry Rate (1)	Firm Exit Rate (2)	First yr. Survival (3)	Second yr. Survival (4)	Third yr. Survival (5)
Log import uncertainty	0.012*	0.010	-0.041***	-0.063***	-0.063*
	(0.007)	(0.008)	(0.015)	(0.022)	(0.037)
Sector 5	0.388***	0.441***	-0.370***	-0.575***	-0.439**
	(0.026)	(0.035)	(0.070)	(0.115)	(0.222)
Log import uncertainty × Sector 5	-0.048***	-0.044***	0.001	0.033	-0.092
	(0.011)	(0.013)	(0.030)	(0.048)	(0.086)
Log direct imports (%)	-0.013	-0.011	-0.026	-0.018	0.058
	(0.011)	(0.015)	(0.031)	(0.053)	(0.094)
Log direct exports (% sales)	-0.025***	-0.031**	0.105***	0.113***	0.084
	(0.005)	(0.013)	(0.028)	(0.040)	(0.062)
Log experience	-0.005	-0.011	0.115***	0.164***	0.092
	(0.013)	(0.016)	(0.035)	(0.058)	(0.109)
Log nb. of employees	-0.030***	-0.028***	0.081***	0.118***	0.128**
	(0.011)	(0.009)	(0.019)	(0.030)	(0.057)
Log TFP	0.034	-0.041**	0.175***	0.310***	0.259**
	(0.024)	(0.019)	(0.039)	(0.063)	(0.102)
Common border	-0.033	-0.040	0.065*	0.069	-0.022
	(0.022)	(0.027)	(0.039)	(0.059)	(0.089)
Colony	-0.079*	-0.019	0.148**	0.219*	0.080
	(0.041)	(0.041)	(0.073)	(0.112)	(0.283)
Log distance	0.109***	0.036***	-0.071***	-0.109***	-0.152***
	(0.009)	(0.010)	(0.018)	(0.029)	(0.051)
Trade agreement	-0.063***	-0.035**	0.098***	0.162***	0.194**
	(0.016)	(0.018)	(0.033)	(0.051)	(0.082)
Log tariffs	0.009	0.013**	-0.027**	-0.028*	-0.029
	(0.005)	(0.006)	(0.011)	(0.017)	(0.027)
Log exporter GDP cap.	-0.064	0.062	-0.042	-0.183	2.561
	(0.097)	(0.117)	(0.181)	(0.260)	(1.655)
Log importer GDP cap.	0.060	0.003	0.122	0.137	0.263
	(0.041)	(0.049)	(0.098)	(0.152)	(0.229)
Log exporter entry cost (% GNI)	-0.009	-0.068	-0.141*	-0.330***	0.133
	(0.036)	(0.044)	(0.084)	(0.120)	(0.403)
Log importer entry cost (% GNI)	0.013	-0.012	-0.011	-0.021	-0.115
	(0.014)	(0.018)	(0.035)	(0.054)	(0.083)
Constant	-1.151	-1.251	-1.230	-0.554	-24.574
	(0.864)	(1.033)	(1.642)	(2.424)	(14.955)
Observations	14,476	12,001	11,834	10,755	5,680
R^2	0.184	0.183	0.106	0.100	0.123
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes
Destination Fixed Effects	Yes	Yes	Yes	Yes	Yes
Sector Fixed Effects	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes

Notes: PPML estimates. *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors clustered on exporter-importer pair in parentheses. Log direct imports (%), Log direct exports (% sales), Log experience, Log nb. of employees and Log TFP computed over the sample of exporting firms, except in Column 1. Sector 5 is a dummy variable for the manufacturing industry of advanced products. Table C2 in the Appendix gives more detail on the aggregation of Sector 5. The description and source of variables are provided in Table C3 in the Appendix.

Table C11: Import Uncertainty versus Mean Time to Import: Full Regression Table

	Firm Entry Rate		Firm Exit Rate		Entrant First-Year Survival Rate		Entrant Second-Year Survival Rate		Entrant Third-Year Survival Rate	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Log import uncertainty		0.015*		0.011		-0.044**		-0.054*		-0.022
		(0.008)		(0.010)		(0.020)		(0.032)		(0.062)
Log mean time to import (days)	-0.012	-0.042**	-0.011	-0.031	-0.021	0.010	-0.056	-0.013	-0.080	-0.142
	(0.010)	(0.018)	(0.013)	(0.023)	(0.023)	(0.042)	(0.037)	(0.069)	(0.071)	(0.142)
Log direct imports (%)	0.005	-0.015	0.000	-0.004	-0.005	-0.026	-0.014	-0.020	-0.047	0.079
	(0.009)	(0.011)	(0.012)	(0.015)	(0.024)	(0.031)	(0.040)	(0.052)	(0.077)	(0.093)
Log direct exports (% sales)	-0.023***	-0.027***	-0.033***	-0.032**	0.104***	0.105***	0.123***	0.113***	0.097	0.092
	(0.005)	(0.005)	(0.012)	(0.013)	(0.025)	(0.028)	(0.036)	(0.040)	(0.061)	(0.064)
Log experience	-0.014	0.002	-0.010	-0.003	0.121***	0.115***	0.176***	0.157***	0.132	0.134
	(0.011)	(0.013)	(0.014)	(0.016)	(0.030)	(0.035)	(0.052)	(0.058)	(0.095)	(0.104)
Log nb. of employees	-0.021**	-0.021**	-0.027***	-0.028***	0.062***	0.081***	0.089***	0.117***	0.145***	0.124**
	(0.009)	(0.010)	(0.008)	(0.009)	(0.017)	(0.019)	(0.026)	(0.030)	(0.054)	(0.056)
Log TFP	0.069***	0.043*	-0.020	-0.045**	0.119***	0.175***	0.210***	0.308***	0.231**	0.283***
	(0.021)	(0.024)	(0.016)	(0.019)	(0.031)	(0.039)	(0.048)	(0.063)	(0.095)	(0.103)
Common border	-0.026	-0.033	-0.042	-0.040	0.083**	0.065*	0.077	0.068	-0.010	-0.021
	(0.021)	(0.022)	(0.026)	(0.027)	(0.038)	(0.039)	(0.057)	(0.059)	(0.086)	(0.089)
Colony	-0.109**	-0.079*	-0.029	-0.019	0.205***	0.148**	0.210**	0.219*	0.107	0.079
	(0.043)	(0.041)	(0.042)	(0.041)	(0.079)	(0.073)	(0.105)	(0.112)	(0.267)	(0.283)
Log distance	0.114***	0.110***	0.034***	0.037***	-0.072***	-0.071***	-0.099***	-0.109***	-0.133***	-0.151***
	(0.008)	(0.009)	(0.010)	(0.010)	(0.018)	(0.018)	(0.027)	(0.029)	(0.049)	(0.051)
Trade agreement	-0.066***	-0.063***	-0.030*	-0.035**	0.094***	0.098***	0.169***	0.163***	0.230***	0.194**
	(0.015)	(0.016)	(0.017)	(0.018)	(0.032)	(0.033)	(0.049)	(0.051)	(0.082)	(0.082)
Log tariffs	0.007	0.007	0.011*	0.012*	-0.023**	-0.027**	-0.029*	-0.028*	-0.020	-0.031
	(0.005)	(0.005)	(0.006)	(0.006)	(0.010)	(0.011)	(0.016)	(0.017)	(0.026)	(0.027)
Log exporter GDP cap.	-0.117	-0.051	0.086	0.072	-0.352***	-0.048	-0.134	-0.173	2.341	2.879*
	(0.095)	(0.098)	(0.113)	(0.117)	(0.107)	(0.183)	(0.256)	(0.264)	(1.642)	(1.662)
Log importer GDP cap.	0.043	0.061	-0.017	0.004	0.051	0.122	0.007	0.136	0.191	0.262
	(0.039)	(0.041)	(0.048)	(0.049)	(0.093)	(0.098)	(0.150)	(0.152)	(0.235)	(0.229)
Log exporter entry cost (% GNI)	-0.039	-0.035	-0.092**	-0.090**	-0.083	-0.139	-0.283**	-0.330***	0.023	0.173
	(0.035)	(0.037)	(0.043)	(0.045)	(0.075)	(0.084)	(0.121)	(0.121)	(0.401)	(0.402)
Log importer entry cost (% GNI)	0.012	0.013	-0.003	-0.013	-0.019	-0.011	-0.038	-0.021	-0.143*	-0.116
	(0.013)	(0.014)	(0.018)	(0.018)	(0.032)	(0.035)	(0.050)	(0.054)	(0.081)	(0.083)
Constant	-0.489	-1.142	-1.355	-1.199	1.666	-1.205	-0.033	-0.602	-22.167	-27.249*
	(0.833)	(0.862)	(0.991)	(1.031)	(1.025)	(1.651)	(2.330)	(2.436)	(14.875)	(14.971)
Observations	16,221	14,476	13,163	12,001	13,033	11,834	11,879	10,755	6,172	5,680
R^2	0.179	0.183	0.172	0.183	0.098	0.106	0.093	0.100	0.121	0.124
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Destination Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sector Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: PPML estimates. *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors clustered on exporter-importer pair in parentheses. Log direct imports (%), Log direct exports (% sales), Log experience, Log nb. of employees and Log TFP computed over the sample of exporting firms, except in Columns 1 and 2. The description and source of variables are provided in Table C3 in the Appendix.

Table C12: Import Uncertainty versus Median Time to Import: Full Regression Table

	Firm Entry Rate		Firm Exit Rate		Entrant First-Year Survival Rate		Entrant Second-Year Survival Rate		Entrant Third-Year Survival Rate	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Log import uncertainty		0.009		0.009		-0.047***		-0.068***		-0.047
		(0.007)		(0.008)		(0.016)		(0.025)		(0.047)
Log median time to import (days)	-0.015*	-0.030***	-0.013	-0.035**	-0.009	0.025	-0.007	0.037	-0.066	-0.073
	(0.008)	(0.011)	(0.011)	(0.014)	(0.020)	(0.026)	(0.031)	(0.045)	(0.059)	(0.082)
Log direct imports (%)	0.004	-0.017	-0.001	-0.008	-0.007	-0.023	-0.014	-0.022	-0.050	0.062
	(0.009)	(0.012)	(0.013)	(0.015)	(0.024)	(0.031)	(0.041)	(0.053)	(0.078)	(0.093)
Log direct exports (% sales)	-0.023***	-0.027***	-0.034***	-0.035***	0.105***	0.107***	0.127***	0.116***	0.087	0.073
	(0.005)	(0.005)	(0.012)	(0.013)	(0.025)	(0.028)	(0.036)	(0.040)	(0.063)	(0.064)
Log experience	-0.013	0.003	-0.010	-0.001	0.121***	0.112***	0.169***	0.153***	0.141	0.146
	(0.010)	(0.013)	(0.014)	(0.016)	(0.031)	(0.035)	(0.051)	(0.058)	(0.097)	(0.106)
Log nb. of employees	-0.020**	-0.020**	-0.027***	-0.029***	0.062***	0.082***	0.086***	0.120***	0.145***	0.130**
	(0.009)	(0.010)	(0.008)	(0.009)	(0.017)	(0.019)	(0.026)	(0.030)	(0.054)	(0.057)
Log TFP	0.072***	0.049**	-0.018	-0.041**	0.121***	0.171***	0.212***	0.301***	0.248**	0.295***
	(0.020)	(0.024)	(0.016)	(0.019)	(0.031)	(0.040)	(0.048)	(0.064)	(0.098)	(0.110)
Common border	-0.026	-0.033	-0.042	-0.040	0.083**	0.065*	0.077	0.068	-0.010	-0.021
	(0.021)	(0.022)	(0.026)	(0.027)	(0.038)	(0.039)	(0.057)	(0.059)	(0.086)	(0.089)
Colony	-0.109**	-0.079*	-0.029	-0.019	0.205***	0.149**	0.210**	0.220**	0.107	0.080
	(0.043)	(0.041)	(0.042)	(0.041)	(0.079)	(0.073)	(0.105)	(0.112)	(0.268)	(0.283)
Log distance	0.113***	0.110***	0.034***	0.037***	-0.072***	-0.071***	-0.099***	-0.109***	-0.133***	-0.150***
	(0.008)	(0.009)	(0.010)	(0.010)	(0.018)	(0.018)	(0.027)	(0.029)	(0.049)	(0.051)
Trade agreement	-0.066***	-0.063***	-0.030*	-0.035**	0.094***	0.098***	0.169***	0.163***	0.229***	0.194**
	(0.015)	(0.016)	(0.017)	(0.018)	(0.032)	(0.033)	(0.050)	(0.051)	(0.082)	(0.082)
Log tariffs	0.007	0.008	0.011*	0.012*	-0.022**	-0.026**	-0.029*	-0.027	-0.021	-0.032
	(0.005)	(0.005)	(0.006)	(0.006)	(0.010)	(0.011)	(0.016)	(0.017)	(0.026)	(0.027)
Log exporter GDP cap.	-0.117	-0.060	0.085	0.070	-0.351***	-0.047	-0.175	-0.185	2.478	3.015*
	(0.095)	(0.098)	(0.113)	(0.117)	(0.107)	(0.180)	(0.255)	(0.260)	(1.651)	(1.680)
Log importer GDP cap.	0.043	0.062	-0.017	0.005	0.052	0.120	0.007	0.133	0.194	0.266
	(0.039)	(0.041)	(0.048)	(0.049)	(0.092)	(0.098)	(0.151)	(0.152)	(0.236)	(0.229)
Log exporter entry cost (% GNI)	-0.039	-0.027	-0.091**	-0.088**	-0.075	-0.136	-0.247**	-0.319***	0.080	0.228
	(0.034)	(0.036)	(0.041)	(0.044)	(0.075)	(0.084)	(0.121)	(0.121)	(0.400)	(0.404)
Log importer entry cost (% GNI)	0.012	0.013	-0.003	-0.013	-0.019	-0.011	-0.038	-0.020	-0.144*	-0.116
	(0.013)	(0.014)	(0.018)	(0.018)	(0.032)	(0.035)	(0.050)	(0.054)	(0.081)	(0.083)
Constant	-0.497	-1.127	-1.352	-1.185	1.598	-1.231	0.096	-0.595	-23.562	-28.698*
	(0.832)	(0.864)	(0.990)	(1.032)	(1.023)	(1.639)	(2.331)	(2.422)	(14.941)	(15.139)
Observations	16,221	14,476	13,163	12,001	13,033	11,834	11,879	10,755	6,172	5,680
R^2	0.179	0.183	0.172	0.183	0.098	0.106	0.093	0.100	0.121	0.124
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Destination Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sector Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: PPML estimates. *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors clustered on exporter-importer pair in parentheses. Log direct imports (%), Log direct exports (% sales), Log experience, Log nb. of employees and Log TFP computed over the sample of exporting firms, except in Columns 1 and 2. The description and source of variables are provided in Table C3 in the Appendix.

Table C13: Import Uncertainty versus Time to Export and Export Uncertainty, Full Regression Table

	Firm Entry Rate		Firm Exit Rate		Entrant First-Year Survival Rate		Entrant Second-Year Survival Rate		Entrant Third-Year Survival Rate	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Log import uncertainty		0.008		0.009		-0.030*		-0.024		-0.079*
		(0.008)		(0.009)		(0.017)		(0.026)		(0.042)
Log export uncertainty	-0.039***	-0.036***	-0.018**	-0.015	0.005	0.010	-0.009	-0.002	0.043	-0.005
	(0.006)	(0.007)	(0.008)	(0.009)	(0.014)	(0.016)	(0.021)	(0.024)	(0.040)	(0.045)
Log median time to export (days)	0.023**	0.011	0.009	-0.009	-0.004	0.012	0.004	0.026	0.048	0.180*
	(0.010)	(0.011)	(0.013)	(0.015)	(0.024)	(0.027)	(0.035)	(0.040)	(0.079)	(0.093)
Log direct imports (%)	0.019*	0.007	-0.005	-0.028	0.008	-0.008	-0.011	-0.002	-0.013	0.165
	(0.011)	(0.014)	(0.015)	(0.019)	(0.029)	(0.037)	(0.047)	(0.064)	(0.085)	(0.104)
Log direct exports (% sales)	-0.030***	-0.028***	-0.044***	-0.043***	0.139***	0.118***	0.163***	0.142***	0.201***	0.208***
	(0.008)	(0.008)	(0.016)	(0.016)	(0.030)	(0.031)	(0.046)	(0.047)	(0.072)	(0.072)
Log experience	-0.029*	-0.040**	-0.024	-0.043**	0.090**	0.118***	0.062	0.110*	-0.050	-0.010
	(0.016)	(0.017)	(0.018)	(0.019)	(0.037)	(0.040)	(0.062)	(0.065)	(0.103)	(0.108)
Log nb. of employees	-0.035***	-0.037***	-0.035***	-0.034***	0.073***	0.086***	0.155***	0.170***	0.187***	0.177***
	(0.012)	(0.012)	(0.011)	(0.011)	(0.021)	(0.022)	(0.033)	(0.035)	(0.057)	(0.058)
Log TFP	0.020	0.002	-0.039*	-0.059**	0.118***	0.164***	0.237***	0.326***	0.209*	0.233**
	(0.027)	(0.028)	(0.022)	(0.024)	(0.040)	(0.044)	(0.059)	(0.070)	(0.107)	(0.108)
Common border	-0.019	-0.018	-0.035	-0.025	0.092**	0.075*	0.057	0.041	-0.015	-0.031
	(0.024)	(0.025)	(0.028)	(0.029)	(0.040)	(0.042)	(0.060)	(0.062)	(0.092)	(0.093)
Colony	-0.074	-0.056	-0.007	-0.001	0.174**	0.163*	0.165	0.177	0.103	0.081
	(0.047)	(0.047)	(0.045)	(0.046)	(0.084)	(0.088)	(0.132)	(0.132)	(0.307)	(0.314)
Log distance	0.110***	0.108***	0.038***	0.042***	-0.066***	-0.065***	-0.097***	-0.108***	-0.130**	-0.149***
	(0.009)	(0.010)	(0.011)	(0.012)	(0.019)	(0.020)	(0.028)	(0.030)	(0.051)	(0.053)
Trade agreement	-0.073***	-0.072***	-0.029	-0.031	0.113***	0.105***	0.210***	0.186***	0.314***	0.267***
	(0.016)	(0.017)	(0.019)	(0.020)	(0.034)	(0.035)	(0.050)	(0.052)	(0.079)	(0.079)
Log tariffs	0.006	0.008	0.007	0.009	-0.022**	-0.026**	-0.019	-0.018	-0.008	-0.016
	(0.006)	(0.006)	(0.007)	(0.007)	(0.011)	(0.011)	(0.017)	(0.017)	(0.026)	(0.027)
Log exporter GDP cap.	-0.197*	-0.214*	-0.022	0.041	-0.427***	-0.212	-0.394	-0.389	1.918	0.681
	(0.108)	(0.110)	(0.127)	(0.129)	(0.113)	(0.189)	(0.269)	(0.277)	(1.912)	(1.951)
Log importer GDP cap.	0.040	0.042	-0.017	-0.002	0.060	0.129	0.041	0.130	0.230	0.301
	(0.044)	(0.045)	(0.052)	(0.052)	(0.097)	(0.103)	(0.154)	(0.158)	(0.233)	(0.234)
Log exporter entry cost (% GNI)	-0.079**	-0.041	-0.116**	-0.082*	-0.105	-0.113	-0.182	-0.253**	0.031	-0.355
	(0.038)	(0.041)	(0.046)	(0.048)	(0.077)	(0.086)	(0.120)	(0.121)	(0.462)	(0.476)
Log importer entry cost (% GNI)	0.023	0.024	0.001	-0.006	-0.025	-0.014	-0.062	-0.047	-0.110	-0.109
	(0.015)	(0.015)	(0.019)	(0.020)	(0.036)	(0.038)	(0.053)	(0.057)	(0.085)	(0.085)
Constant	0.581	0.303	-0.221	-0.001	1.178	-0.836	-0.145	-0.568	-18.268	-8.396
	(0.875)	(0.865)	(0.979)	(1.060)	(0.983)	(1.547)	(2.238)	(2.343)	(14.951)	(15.294)
Observations	12,753	11,888	11,051	10,369	10,891	10,187	10,168	9,465	5,448	5,227
R-squared	0.189	0.192	0.172	0.180	0.104	0.108	0.098	0.102	0.125	0.127
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Destination Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sector Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: PPML estimates. *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors clustered on exporter-importer pair in parentheses. Log direct imports (%), Log direct exports (% sales), Log experience, Log nb. of employees and Log TFP computed over the sample of exporting firms, except in Columns 1 and 2. The description and source of variables are provided in Table C3 in the Appendix.

Table C14: Import Uncertainty and Export Dynamics: Documents to Import

	Firm Entry Rate (1)	Firm Exit Rate (2)	First yr. Survival (3)	Second yr. Survival (4)	Third yr. Survival (5)
Log import uncertainty	-0.004	-0.003	-0.036**	-0.057***	-0.072**
	(0.006)	(0.007)	(0.014)	(0.021)	(0.036)
Log direct imports (%)	-0.013	-0.007	-0.027	-0.027	0.061
	(0.012)	(0.015)	(0.031)	(0.053)	(0.093)
Log direct exports (% sales)	-0.027***	-0.036***	0.106***	0.103**	0.088
	(0.006)	(0.013)	(0.028)	(0.041)	(0.062)
Log experience	-0.003	-0.010	0.122***	0.154***	0.126
	(0.013)	(0.016)	(0.035)	(0.058)	(0.104)
Log nb. of employees	-0.010	-0.020**	0.073***	0.118***	0.132**
	(0.010)	(0.009)	(0.019)	(0.029)	(0.057)
Log TFP	0.044*	-0.053***	0.181***	0.304***	0.269***
	(0.024)	(0.019)	(0.039)	(0.063)	(0.100)
Common border	-0.031	-0.041	0.064	0.068	-0.020
	(0.022)	(0.027)	(0.040)	(0.059)	(0.089)
Colony	-0.071*	-0.020	0.148**	0.219*	0.080
	(0.040)	(0.042)	(0.074)	(0.112)	(0.283)
Log distance	0.111***	0.038***	-0.071***	-0.109***	-0.150***
	(0.009)	(0.010)	(0.018)	(0.029)	(0.051)
Trade agreement	-0.066***	-0.034*	0.099***	0.161***	0.194**
	(0.016)	(0.018)	(0.033)	(0.051)	(0.082)
Log tariffs	0.009*	0.012*	-0.027**	-0.028*	-0.030
	(0.005)	(0.006)	(0.011)	(0.017)	(0.027)
Log exporter GDP cap.	-0.104	0.070	-0.021	-0.138	-0.707
	(0.098)	(0.118)	(0.182)	(0.264)	(0.497)
Log importer GDP cap.	0.059	0.004	0.119	0.133	0.264
	(0.042)	(0.049)	(0.099)	(0.152)	(0.229)
Log exporter entry cost (% GNI)	0.001	-0.111**	-0.150*	-0.378***	-0.496**
	(0.039)	(0.049)	(0.085)	(0.122)	(0.252)
Log importer entry cost (% GNI)	0.012	-0.014	-0.006	-0.023	-0.115
	(0.014)	(0.018)	(0.035)	(0.054)	(0.083)
Log documents to import	-0.082**	0.081	0.052	0.281	-0.526**
	(0.041)	(0.053)	(0.116)	(0.178)	(0.238)
Constant	-0.727	-1.291	-1.480	-1.225	5.633
	(0.871)	(1.043)	(1.669)	(2.477)	(4.415)
Observations	14,390	11,947	11,765	10,755	5,680
R^2	0.183	0.184	0.106	0.100	0.123
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes
Destination Fixed Effects	Yes	Yes	Yes	Yes	Yes
Sector Fixed Effects	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes

Notes: PPML estimates. *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors clustered on exporter-importer pair in parentheses. Log direct imports (%), Log direct exports (% sales), Log experience, Log nb. of employees and Log TFP computed over the sample of exporting firms, except in Column 1. The description and source of variables are provided in Table C3 in the Appendix.

Table C15: Import Uncertainty and Export Dynamics: LPI Timeliness

	Firm Entry Rate (1)	Firm Exit Rate (2)	First yr. Survival (3)	Second yr. Survival (4)	Third yr. Survival (5)
Log import uncertainty	0.007	0.000	-0.045***	-0.074***	-0.090**
	(0.006)	(0.007)	(0.014)	(0.022)	(0.038)
Log direct imports (%)	-0.010	-0.006	-0.013	-0.008	0.073
	(0.014)	(0.017)	(0.036)	(0.055)	(0.099)
Log direct exports (% sales)	-0.026***	-0.026*	0.102***	0.109**	0.053
	(0.006)	(0.014)	(0.033)	(0.047)	(0.073)
Log experience	-0.012	0.000	0.108***	0.169***	0.158
	(0.013)	(0.017)	(0.037)	(0.061)	(0.111)
Log nb. of employees	-0.023**	-0.026***	0.085***	0.112***	0.133**
	(0.011)	(0.009)	(0.020)	(0.032)	(0.066)
Log TFP	0.013	-0.061***	0.193***	0.304***	0.276***
	(0.025)	(0.020)	(0.043)	(0.065)	(0.103)
Common border	-0.033	-0.036	0.066	0.082	-0.004
	(0.023)	(0.027)	(0.041)	(0.062)	(0.094)
Colony	-0.067	0.002	0.169**	0.226*	0.233
	(0.043)	(0.042)	(0.081)	(0.124)	(0.399)
Log distance	0.114***	0.039***	-0.073***	-0.103***	-0.170***
	(0.009)	(0.011)	(0.019)	(0.030)	(0.052)
Trade agreement	-0.071***	-0.042**	0.097***	0.172***	0.183**
	(0.016)	(0.018)	(0.033)	(0.055)	(0.086)
Log tariffs	0.008	0.014**	-0.032***	-0.036**	-0.037
	(0.005)	(0.007)	(0.011)	(0.017)	(0.028)
Log exporter GDP cap.	-0.010	0.070	-0.214	-0.233	-3.294**
	(0.101)	(0.124)	(0.200)	(0.285)	(1.522)
Log importer GDP cap.	0.036	-0.009	0.077	-0.037	0.051
	(0.043)	(0.051)	(0.101)	(0.158)	(0.240)
Log exporter entry cost (% GNI)	-0.087*	-0.149**	-0.085	-0.473***	-1.670***
	(0.051)	(0.064)	(0.111)	(0.154)	(0.637)
Log importer entry cost (% GNI)	0.009	-0.014	-0.029	-0.078	-0.147*
	(0.014)	(0.018)	(0.035)	(0.055)	(0.084)
Log LPI timeliness	0.047	-0.145	-0.033	-0.530	2.018
	(0.133)	(0.168)	(0.319)	(0.488)	(1.480)
Constant	-0.751	-0.810	0.439	2.428	30.550**
	(0.937)	(1.065)	(1.678)	(2.482)	(13.482)
Observations	13,338	11,159	10,967	9,889	4,948
R^2	0.192	0.192	0.110	0.107	0.136
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes
Destination Fixed Effects	Yes	Yes	Yes	Yes	Yes
Sector Fixed Effects	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes

Notes: PPML estimates. *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors clustered on exporter-importer pair in parentheses. Log direct imports (%), Log direct exports (% sales), Log experience, Log nb. of employees and Log TFP computed over the sample of exporting firms, except in Column 1. The description and source of variables are provided in Table C3 in the Appendix.

Table C16: Import Uncertainty and Export Dynamics: Access to Finance

	Firm Entry Rate		Firm Exit Rate		Entrant First-Year Survival Rate		Entrant Second-Year Survival Rate		Entrant Third-Year Survival Rate	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Log import uncertainty	-0.000	0.000	0.003	0.001	-0.041***	-0.033**	-0.060***	-0.037	-0.079**	-0.080*
	(0.006)	(0.006)	(0.008)	(0.009)	(0.015)	(0.016)	(0.022)	(0.026)	(0.036)	(0.045)
Log direct imports (%)	-0.009	-0.013	-0.008	0.006	-0.024	-0.020	-0.024	0.044	0.029	0.065
	(0.012)	(0.012)	(0.015)	(0.018)	(0.031)	(0.038)	(0.053)	(0.064)	(0.094)	(0.130)
Log direct exports (% sales)	-0.027***	-0.027***	-0.033**	-0.014	0.100***	0.073**	0.107***	0.096*	0.088	0.068
	(0.005)	(0.005)	(0.013)	(0.016)	(0.028)	(0.033)	(0.041)	(0.049)	(0.065)	(0.076)
Log experience	0.001	0.001	-0.003	0.010	0.119***	0.135***	0.165***	0.214***	0.092	0.113
	(0.013)	(0.013)	(0.017)	(0.021)	(0.036)	(0.044)	(0.061)	(0.073)	(0.107)	(0.123)
Log nb. of employees	-0.022**	-0.021**	-0.037***	-0.019	0.088***	0.083***	0.115***	0.143***	0.133**	0.018
	(0.010)	(0.010)	(0.009)	(0.012)	(0.019)	(0.025)	(0.030)	(0.039)	(0.058)	(0.078)
Log TFP	0.039	0.042*	-0.043**	-0.007	0.152***	0.121**	0.301***	0.235**	0.246**	-0.148
	(0.024)	(0.024)	(0.020)	(0.028)	(0.040)	(0.054)	(0.065)	(0.093)	(0.101)	(0.184)
Common border	-0.034	-0.032	-0.045*	-0.014	0.072*	0.048	0.080	0.042	-0.021	-0.115
	(0.022)	(0.022)	(0.027)	(0.028)	(0.039)	(0.042)	(0.060)	(0.063)	(0.090)	(0.097)
Colony	-0.084**	-0.083**	-0.034	-0.011	0.156**	0.196**	0.183	0.170	0.177	0.057
	(0.040)	(0.041)	(0.038)	(0.042)	(0.077)	(0.087)	(0.119)	(0.135)	(0.287)	(0.415)
Log distance	0.109***	0.109***	0.038***	0.048***	-0.070***	-0.064***	-0.108***	-0.102***	-0.150***	-0.157***
	(0.009)	(0.009)	(0.011)	(0.011)	(0.018)	(0.020)	(0.029)	(0.031)	(0.051)	(0.055)
Trade agreement	-0.064***	-0.064***	-0.041**	-0.034*	0.098***	0.132***	0.153***	0.222***	0.198**	0.242***
	(0.016)	(0.016)	(0.018)	(0.019)	(0.033)	(0.035)	(0.052)	(0.056)	(0.082)	(0.094)
Log tariffs	0.008	0.007	0.013*	0.005	-0.028**	-0.027**	-0.026	-0.033*	-0.030	-0.037
	(0.005)	(0.005)	(0.007)	(0.007)	(0.011)	(0.012)	(0.017)	(0.018)	(0.027)	(0.028)
Log exporter GDP cap.	-0.109	-0.087	0.080	-0.100	-0.047	-0.071	-0.189	-0.302	2.652	0.955
	(0.100)	(0.098)	(0.117)	(0.128)	(0.181)	(0.196)	(0.260)	(0.282)	(1.644)	(2.676)
Log importer GDP cap.	0.063	0.064	0.014	-0.026	0.116	0.219**	0.115	0.213	0.281	0.384
	(0.041)	(0.042)	(0.050)	(0.055)	(0.098)	(0.106)	(0.152)	(0.165)	(0.229)	(0.265)
Log exporter entry cost (% GNI)	-0.025	-0.024	-0.090**	-0.108**	-0.141*	-0.152	-0.344***	-0.485***	0.139	-0.479
	(0.036)	(0.036)	(0.044)	(0.051)	(0.084)	(0.095)	(0.121)	(0.137)	(0.401)	(0.700)
Log importer entry cost (% GNI)	0.013	0.012	-0.013	-0.018	-0.015	0.007	-0.022	-0.032	-0.124	-0.169*
	(0.014)	(0.014)	(0.018)	(0.019)	(0.035)	(0.039)	(0.054)	(0.057)	(0.083)	(0.093)
Log collateral (%)	-0.034**		0.016		-0.060*		0.000		-0.040	
	(0.016)		(0.016)		(0.031)		(0.045)		(0.070)	
Log no loan application (%)		-0.003		0.002		-0.023		-0.068**		-0.108**
		(0.008)		(0.009)		(0.018)		(0.028)		(0.051)
Constant	-0.748	-0.942	-1.309	0.177	-1.164	-1.622	-0.282	0.633	-25.403*	-8.364
	(0.881)	(0.872)	(1.037)	(1.132)	(1.645)	(1.774)	(2.429)	(2.609)	(14.868)	(24.470)
Observations	14,456	14,405	11,600	9,572	11,506	9,293	10,493	8,410	5,604	4,210
R^2	0.183	0.183	0.182	0.174	0.107	0.110	0.100	0.108	0.125	0.146
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Destination Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sector Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: PPML estimates. *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors clustered on exporter-importer pair in parentheses. Log direct imports (%), Log direct exports (% sales), Log experience, Log nb. of employees and Log TFP computed over the sample of exporting firms, except in Columns (1) and (2). The description and source of variables are provided in Table C3 in the Appendix.

Table C17: Import Uncertainty and Export Dynamics: Corruption

	Firm Entry Rate		Firm Exit Rate		Entrant First-Year Survival Rate		Entrant Second-Year Survival Rate		Entrant Third-Year Survival Rate	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Log import uncertainty	0.004	-0.001	-0.001	-0.010	-0.039***	-0.033*	-0.061***	-0.045*	-0.051	-0.105**
	(0.006)	(0.006)	(0.008)	(0.010)	(0.015)	(0.017)	(0.022)	(0.025)	(0.037)	(0.045)
Log direct imports (%)	-0.009	-0.001	0.006	-0.024	-0.040	-0.031	-0.038	-0.027	0.003	-0.062
	(0.012)	(0.013)	(0.016)	(0.020)	(0.033)	(0.038)	(0.054)	(0.062)	(0.099)	(0.116)
Log direct exports (% sales)	-0.026***	-0.024***	-0.030**	-0.053***	0.113***	0.085**	0.134***	0.085*	0.137**	-0.065
	(0.006)	(0.006)	(0.013)	(0.019)	(0.030)	(0.035)	(0.043)	(0.052)	(0.067)	(0.086)
Log experience	-0.004	-0.019	-0.002	-0.064***	0.109***	0.199***	0.166***	0.270***	0.178	0.444***
	(0.013)	(0.015)	(0.016)	(0.023)	(0.036)	(0.048)	(0.061)	(0.076)	(0.114)	(0.147)
Log nb. of employees	-0.033***	-0.030***	-0.031***	-0.017	0.085***	0.074***	0.126***	0.134***	0.181***	0.161***
	(0.010)	(0.011)	(0.009)	(0.012)	(0.019)	(0.024)	(0.030)	(0.036)	(0.059)	(0.061)
Log TFP	0.039	0.025	-0.061***	-0.026	0.182***	0.178***	0.371***	0.344***	0.458***	0.027
	(0.026)	(0.027)	(0.020)	(0.029)	(0.042)	(0.052)	(0.067)	(0.091)	(0.102)	(0.154)
Common border	-0.030	-0.032	-0.026	-0.041	0.056	0.068	0.045	0.067	-0.039	0.016
	(0.022)	(0.023)	(0.028)	(0.030)	(0.040)	(0.043)	(0.061)	(0.067)	(0.093)	(0.102)
Colony	-0.086**	-0.096**	-0.011	-0.029	0.151*	0.251***	0.200	0.188	-0.040	0.053
	(0.042)	(0.040)	(0.044)	(0.044)	(0.082)	(0.091)	(0.128)	(0.133)	(0.361)	(0.221)
Log distance	0.115***	0.109***	0.044***	0.043***	-0.074***	-0.052**	-0.112***	-0.073**	-0.157***	-0.063
	(0.009)	(0.009)	(0.011)	(0.012)	(0.018)	(0.021)	(0.030)	(0.032)	(0.053)	(0.059)
Trade agreement	-0.066***	-0.075***	-0.032*	-0.048**	0.103***	0.118***	0.186***	0.242***	0.241***	0.278***
	(0.016)	(0.016)	(0.018)	(0.020)	(0.033)	(0.037)	(0.052)	(0.056)	(0.083)	(0.088)
Log tariffs	0.007	0.008	0.016**	0.013*	-0.025**	-0.028**	-0.024	-0.020	-0.013	-0.043
	(0.005)	(0.005)	(0.007)	(0.007)	(0.011)	(0.012)	(0.017)	(0.018)	(0.027)	(0.030)
Log exporter GDP cap.	-0.079	-0.155	0.097	-0.091	-0.069	-0.035	-0.303	-0.023	2.895*	2.507
	(0.098)	(0.107)	(0.118)	(0.130)	(0.189)	(0.196)	(0.274)	(0.284)	(1.661)	(1.802)
Log importer GDP cap.	0.042	0.043	0.009	-0.025	0.145	0.143	0.134	0.088	0.288	0.184
	(0.042)	(0.042)	(0.050)	(0.058)	(0.098)	(0.110)	(0.153)	(0.165)	(0.237)	(0.246)
Log exporter entry cost (% GNI)	-0.003	-0.032	-0.095**	-0.075	-0.105	-0.209**	-0.255**	-0.452***	0.190	-0.181
	(0.036)	-0.039	(0.046)	(0.053)	(0.086)	(0.092)	(0.123)	(0.130)	(0.404)	(0.425)
Log importer entry cost (% GNI)	0.011	0.008	-0.009	-0.020	-0.012	0.003	-0.012	-0.014	-0.070	-0.098
	(0.014)	(0.014)	(0.018)	(0.020)	(0.035)	(0.040)	(0.055)	(0.059)	(0.083)	(0.088)
Log bribes (% annual sales)	-0.008		0.020*		0.012		0.003		-0.006	
	(0.009)		(0.012)		(0.027)		(0.039)		(0.065)	
Log licensing obstacle (%)		-0.006		-0.008		-0.031**		-0.027		-0.073*
		(0.007)		(0.007)		(0.013)		(0.019)		(0.043)
Constant	-0.903	0.170	-1.507	0.320	-1.328	-1.648	-0.061	-0.951	-28.841*	-21.990
	(0.867)	(0.982)	(1.041)	(1.251)	(1.716)	(1.958)	(2.544)	(2.717)	(15.007)	(16.379)
Observations	14,098	13,469	11,110	9,307	11,124	8,954	10,047	8,189	5,304	4,065
R^2	0.186	0.188	0.190	0.187	0.110	0.113	0.107	0.107	0.135	0.132
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Destination Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sector Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: PPML estimates. *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors clustered on exporter-importer pair in parentheses. Log direct imports (%), Log direct exports (% sales), Log experience, Log nb. of employees and Log TFP computed over the sample of exporting firms, except in Columns 1 and 2. The description and source of variables are provided in Table C3 in the Appendix.

CHAPTER 5

Conclusion

Historical evidence shows that countries can successfully develop by opening up to trade and pursuing manufacturing export-led strategies. Drawing on the case of Cambodia where the garment industry provides the bulk of manufacturing jobs and accounts for an overwhelming share of the export bundle, Chapter 2 provides micro evidence of the welfare-enhancing potential of trade openness through manufacturing exports. It relies on propensity score matching estimators to show that households with at least one member employed in the textile and apparel sector are less likely to report food insufficiency and and their children are more likely to be enrolled in school. However, the positive effect of garment participation on consumption and asset ownership is restricted to households in the bottom 40 percent of the consumption distribution, who also enjoy magnified effects in terms of non-monetary welfare indicators, while displaying lower incidence and depth of poverty. We explain these results in light of the nature of garment jobs whose labor-intensity and low education entry barriers make them an attractive alternative for the poorest households but not necessarily for the better-off. Using instrumental-variables, we also show that remittances from the textile and apparel sector relax household budget constraints, increasing expenditures on education, health, and productivity-raising investments in agriculture. In other words, the export-oriented garment industry delivers better livelihoods for households in the lower-end of the income spectrum, including those living in rural areas. Nonetheless, this should not rule out concerns over health and safety standards in factories and the discontent expressed by workers in the face of limited minimum-wage increases relative to the rise in rent and food costs. Accordingly, incorporating the psychological and physical aspects of working in textile and apparel factories may provide a more precise attempt at capturing the welfare implications of the industry.

Besides, recent studies have raised concerns over the future of manufacturing export-led growth. Particularly worrisome is the trend towards premature deindustrialization characterizing developing countries, with the share of manufacturing value-added in GDP both small and declining much sooner compared to the historical norm reflecting the experience of early industrializers (Rodrik, 2014, 2016; Cadot, de Melo, Plane, Wagner, and Woldemichael, 2016). Put differently, considering the inverted U-shaped relationship between manufacturing and GDP per capita, this means that the peak level of income at which manufacturing's share begins to shrink has been dropping and the turning point arriving sooner in time. In the case of Africa, Page (2012) also deplores the decline in the degree of diversification and sophistication of the export bundle which supposedly accompanied the fall in manufactur-

ing employment and output shares. Relatedly, McMillan and Rodrik (2011) and McMillan, Rodrik, and Verduzco-Gallo (2014) document a growth-reducing structural change in Latin America and Sub-Saharan Africa since 1990, with labor moving in the "wrong" direction, shifting from more to less productive activities (including informality), and bypassing manufacturing.[1] Timmer, de Vries, and de Vries (2015) also provide evidence of a negative dynamic reallocation effect by showing that resources moved to services activities with slow-growing productivity. In addition, the fourth industrial revolution is changing the global manufacturing landscape with possible adverse effects on employment as increased industrial automation and robotics reduce the labor intensity of manufacturing, thereby diluting its long-praised ability to provide employment opportunities for the low-skilled (Hallward-Driemeier and Nayyar, 2017). Taken together, these developments cast doubt on whether manufacturing can remain an engine of structural transformation and growth going forward.

Against this background, the focus is increasingly turning to services whose production and trade has boomed on the back of technological progress, falling transportation and communications costs and rising international production networks. The role of the services sector as a credible driver of growth has been historically relegated to the sidelines owing to poor productivity growth (Baumol, 1967), especially in low-end services, and limited scope for large-scale job creation for the low-skilled, as is typically the case for modern skill-intensive services such as IT and finance (Rodrik, 2016). However, Ghani and O'Connell (2016) argue that services can also play a growth escalator role, hence offering an alternative structural change paradigm for low-income countries. They provide evidence of labor productivity growth convergence in both manufacturing and services, with faster convergence in the latter. They also show the increasing dynamism of services which are creating more jobs than manufacturing and at an earlier stage of development. Mishra, Lundstrom, and Anand (2011) even find that the sophistication of services exports helps achieve economic growth, in the same spirit of Hausmann, Hwang, and Rodrik (2007). The optimism over services-led growth is also shared by Dihel and Goswami (2016) who document a booming trade in services across Africa accounting for a large share of GDP growth, job creation, poverty reduction and gender parity. They argue that trade in services offers countries the opportunity to diversify their exports and enhance their participation in GVCs.

Yet, Chapter 3 calls for nuance in opposing manufacturing and services export-led

[1] McMillan, Rodrik, and Verduzco-Gallo (2014) indicate however that structural change started to contribute positively to Africa's aggregate productivity growth after 2000.

growth paradigms. It adopts a macro-perspective to investigate the determinants of robust goods and services export performance defined as episodes of strong and sustained export growth. Institutional quality underpinned by macroeconomic stability, a depreciated exchange rate, export diversification and market-oriented agricultural reforms show up as strong predictors of export takeoffs. Lowering barriers to competition in the telecommunication and electricity markets and lifting capital movement restrictions mainly bolster services exports, while FDI inflows are conducive to goods export accelerations, probably on the back of foreign technology transfers. We also find evidence that GVC participation matters, both through backward linkages when the foreign value-added content of exports is high, and forward linkages when countries act as intermediate input providers for downstream economies. Once launched, export takeoffs seem to be followed by years of high real GDP per capita and low unemployment and income inequality as illustrated by the cases of Brazil and Peru, highlighting the role of trade and export performance in supporting growth and job creation. Overall, our results emphasize the contribution of domestic enabling factors, structural reforms and trade and financial openness to rapid and sustained export growth. They also point to significant complementarities between goods and services, typically because the latter are crucial inputs in the production and export of the former, but also due to the servitization of manufacturing, as firms in the sector also offer services bundled with the good they sell in foreign markets. As such, Chapter 3 lends support to the idea that lowering barriers to trade in services is likely to support trade in goods and urges for the design of policies aimed at maximizing the positive spillovers across goods and services. Access to granular export series at the origin-destination-sector level can allow further investigation of the linkages between goods and services, hence offering avenues for future research.

Finally, Chapter 4 quantifies a new source of domestic trade costs related to import processing times at the border that generate supply chain unreliability by exposing importing firms to unexpected delays in the provision of critical inputs which ultimately undermine their export performance. We find that uncertainty in the time required to clear imported inputs through Customs impacts neither the entry nor the exit rate of manufacturing firms, but translates into lower survival rates for new exporters, reducing the number of firms that continue to serve the foreign market beyond their first year of entry. As such, import uncertainty appears to affect more entrants than incumbents. Interestingly, this effect grows larger over time owing to rising reputational costs to input-importing exporters due to missed delivery deadlines, and is mainly driven by South-North trade, possibly reflecting the time-

sensitivity of buyers in developed countries. We also find evidence of heterogeneous effects across export industries, while sunk costs of entry in foreign markets attenuate the negative effect of uncertainty on survival rates as firms delay exiting the export market. Our results suggest that developing countries seeking to promote the survival of newly-exporting firms in foreign markets should consider undertaking policies targeted at reducing the uncertainty these firms face when importing their production inputs. Specifically, they highlight the role of external factors related to trade facilitation and the investment climate that are outside of firms' control, hence calling for policy action. Measures such as those included in the AfT initiative can contribute to curbing import uncertainty for instance by supporting the modernization of Customs and other border control agencies through stepped-up computerization and collaboration. Leveraging transaction-based objective measures of time to trade should open new directions of research on trade costs and their impact on firm export performance.

References

BAUMOL, W. J. (1967): "Macroeconomics of Unbalanced Growth: The Anatomy of Urban Crisis," *The American Economic Review*, 57(3), 415–426.

CADOT, O., J. DE MELO, P. PLANE, L. WAGNER, AND M. T. WOLDEMICHAEL (2016): "Industrialization and Structural Change: Can Sub-Saharan Africa Develop without Factories ?," *Revue d'économie du développement*, 24(2), 15–43, English Issue.

DIHEL, N., AND A. G. GOSWAMI (2016): *The Unexplored Potential of Trade in Services in Africa: From Hair Stylists and Teachers to Accountants and Doctors*. World Bank, Washington DC.

GHANI, E., AND S. D. O'CONNELL (2016): "Can Service Be a Growth Escalator in Low-Income Countries ?," *Revue d'économie du développement*, 24(2), 143–173, English Issue.

HALLWARD-DRIEMEIER, M., AND G. NAYYAR (2017): *Trouble in the Making? The Future of Manufacturing-Led Development*, no. 27946 in World Bank Publications. The World Bank.

HAUSMANN, R., J. HWANG, AND D. RODRIK (2007): "What You Export Matters," *Journal of Economic Growth*, 12(1), 1–25.

MCMILLAN, M., D. RODRIK, AND I. N. VERDUZCO-GALLO (2014): "Globalization, Structural Change, and Productivity Growth, with an Update on Africa," *World Development*, 63(C), 11–32.

MCMILLAN, M. S., AND D. RODRIK (2011): "Globalization, Structural Change and Productivity Growth," NBER Working Papers 17143, National Bureau of Economic Research, Inc.

MISHRA, S., S. LUNDSTROM, AND R. ANAND (2011): "Sophistication in Service Exports and Economic Growth," *World Bank - Economic Premise*, (55), 1–4.

PAGE, J. (2012): "Can Africa Industrialise?," *Journal of African Economies*, 21(AERC Supplement 2), 86–125.

RODRIK, D. (2014): "An African Growth Miracle?," NBER Working Papers 20188, National Bureau of Economic Research, Inc.

——— (2016): "Premature Deindustrialization," *Journal of Economic Growth*, 21(1), 1–33.

TIMMER, M., G. DE VRIES, AND K. DE VRIES (2015): *Patterns of Structural Change in Developing Countries*pp. 65–83, Routledge Handbooks. Routledge.