STUDIES IN TRADE AND INVESTMENT

84

REDUCING TRADE COSTS IN ASIA-PACIFIC DEVELOPING COUNTRIES

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YANN DUVAL
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Foreword

International trade has been a major engine in economic growth and development in Asia and the Pacific. At the same time, rising inequality within and between countries of the region, together with a significant slowdown in economic growth in major export markets during the past decade, suggest that new and better ways to trade are needed to enable the region to maintain competitiveness as well as achieve sustainable and inclusive development. The International Trade Cost Database, maintained by ESCAP, in collaboration with the World Bank, reveals that although tariffs on trade for many countries and subregions in Asia and the Pacific are at historic lows, overall trade costs continue to remain excessively high. Further efforts to reduce transaction costs are necessary in order to ensure that more economies, firms and people can benefit from trade and participation in international production networks.

The United Nations Regional Commission for Asia and the Pacific (ESCAP) has long been active in efforts to facilitate trade and enhance regional connectivity. Aside from its extensive capacity-building and legislative activities in trade facilitation, supported by the United Nations Network of Experts for Paperless Trade and Transport in Asia and the Pacific (UNNExT), it has also produced a significant stream of research and analysis during the past decade, related to reducing trade costs, particularly since the establishment of the Asia-Pacific Research and Training Network on Trade (ARTNeT) in 2004.

This monograph, *Reducing Trade Costs in Asia-Pacific Developing Countries*, is an attempt to draw key lessons and findings from the most recent research work done at ESCAP in this area, complemented by insights gained from national and regional-level capacity-building activities conducted in the region.

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Acronyms and abbreviations

ADB	Asian Development Bank
APTA	Asia-Pacific Trade Agreement
ARTNeT	Asia-Pacific Research and Training Network on Trade
BPA	business processes analysis
ESCAP	Economic and Social Commission for Asia and the Pacific
FDI	foreign direct investment
GVCs	global value chains
ICT	information and communication technology
IMF	International Monetary Fund
IPNs	international production networks
LDCs	least developed countries
LLDCs	landlocked developing countries
NTBs	non-tariff barriers
NTMs	non-tariff measures
OECD	Organisation for Economic Co-operation and Development
RFID	radio frequency identification
SIDS	Small Island Developing States
SMEs	small and medium-sized enterprises
SPS	sanitary and phytosanitary measures
TBTs	technical barriers to trade
TFA	Trade Facilitation Agreement
TID	Trade and Investment Division
TPAD	Trade Process Analysis Database
TTFMM	Trade and Transport Facilitation Monitoring Mechanism
UNCTAD	United Nations Conference on Trade and Development
WTO	World Trade Organization

Introduction

International trade in Asia and the Pacific has experienced an unprecedented rate of growth during the past two decades, growing at a rate of 8.11% a year between 1995 and 2014.1 This is substantially higher than the world GDP, which grew at a rate of just 4.78% a year during the same period.2 Although recent years have witnessed a slowdown in global trading activity – particularly in the Asia-Pacific region – international trade continues to play an important role in contributing to economic growth, productivity and output across many economies by helping to boost jobs and lift people out of poverty.3 Trade is also critical for the transfer of technology, knowledge and skills, and thus for economic development overall, as emphasized by UNCTAD (2015).

Nevertheless, international trade is not a panacea. Cross-border trade processes themselves are imperfect and characterized by friction that increases the cost and reduce the benefits of trade. The range of factors that influence trade costs are complex, diverse and, in some cases, unobservable (Anderson and van Wincoop, 2004a). They can include tariff restrictions, natural trade costs and policy-related non-tariff barriers (NTBs). Natural trade costs accrue from the physical and cultural distances between trading nations and are difficult to address through policy measures. NTBs refer to other non-tariff-related factors that affect trade costs and can potentially be addressed by policymakers. This includes, but is not limited to: (a) the regulatory environment; (b) ease of conducting business; (c) access to finance; (d) the depth of infrastructure; (e) access to information computer technology (ICT); and (f) administrative procedures such as the time, cost and complexity involved in submitting and processing documentation, and clearing goods through customs, in line with protocol. Trade costs can accrue at all stages of the international trade chain, as goods are moved from the factory floor of one country to the sales-front of another (OECD/WTO, 2015).

Higher trade costs can hinder the ability of countries – especially least developed countries (LDCs), landlocked developing countries (LLDCs), and Small Island Developing States (SIDS) – to fully exploit market access prospects presented by the multilateral trading system. This is because companies can be priced out of trading opportunities by countries with lower (i.e., more competitive) trade costs (Hamanaka and Domingo, 2012). They can also dilute or entirely annul the comparative advantages of nations by rendering their exports uncompetitive compared to other nations. In addition, as companies increasingly divide their operations around the world – from product design to component manufacture, assembly and marketing – higher trade costs can constrain the ability of companies from participating in these international production networks (IPNs).

Lower and more competitive trade costs can encourage engagement in IPNs, and enable countries and firms to draw greater benefits from this ever-finer division of labour and operations around the world. They can also assist countries in moving up the global value chains (GVCs), to participate in higher value-added activities. Higher trade costs can isolate countries from global markets because they reduce consumer access to more competitively priced goods produced in other countries as well as reduce producer access to more competitively priced inputs from other countries. This can negatively affect their development opportunities (Hoekman, 2014).

[1] This is the compound annual growth rate. Total merchandise trade flows (exports plus imports) increased from US$ 2.89 trillion in 1995 to US$ 13.75 trillion in 2014. The data were obtained from the ESCAP statistics database (accessed November 2015).

[2] This is the compound annual growth rate. World GDP increased from US$ 30.63 trillion in 1995 to US$ 77.87 trillion in 2014. The data were obtained from the World Bank Development Indicators database (accessed November 2015).

[3] Constantinescu and others (2015) argued that the slowdown in global trade was due to a structural change in the trade-to-GDP relationship caused by international vertical specialization.

Previous research shows that trade facilitation – broadly defined here as increasing the efficiency of international import, export and transit procedures – is essential to lowering trade costs, boosting trade, encouraging export diversification and increasing net economic welfare. In many countries, the policy focus over the past two decades has been on minimizing, reducing or removing tariff and quota restrictions to reduce trade costs (Duval and others, 2015). However, with tariffs now shown to account for only around 2%-3% of trade costs, attention to policy-related NTBs is crucial to achieving further significant trade cost reductions. This monograph evaluates the current level of trade costs in the Asia-Pacific region and outlines recent evidence with regard to the impacts of various trade facilitation measures in reducing trade costs.

Part I of this monograph provides an overview of trade costs in Asia and the Pacific, based on the most recent update of the ESCAP-World Bank Trade Cost Database. Policies and factors affecting international trade costs are identified. Key findings and implications from a micro-level analysis of trade procedures in a wide range of Asia-Pacific developing economies are presented. Highlights and recommendations from some of the most recent ESCAP studies on trade facilitation and trade costs in Asia-Pacific are also summarized.

Part II features abbreviated versions of five individual ESCAP studies summarized in Part I. The first paper analyses and identifies obstacles faced by small and medium-sized enterprises (SMEs) in the Asia-Pacific region, in participating in IPNs. The second paper examines how issues related to freedom of transit and transit facilitation are addressed in existing trade agreements in the Asia-Pacific region, with a view to identifying good practices as well as the extent to which existing agreements meet transit provisions set out in the WTO Trade Facilitation Agreement (TFA). The third paper estimates agricultural trade costs in the Asia-Pacific region and analyses the patterns, composition and determinants of those costs. The fourth paper investigates the impact of reducing trade costs on foreign direct investment (FDI). Finally, the fifth paper estimates the potential economic benefits – export gains and cost savings – from partial or full implementation of trade facilitation measures related to paperless trade.

PART I

Reducing trade costs in Asia and the Pacific:

Key findings and the way forward

A. Overview of trade costs in developing countries

1. Trade cost trends across Asia-Pacific subregions

The ESCAP-World Bank Trade Cost Database is the first database of its type to systematically measure bilateral trade costs across countries and over time. It provides estimates of trade costs across 178 developed and developing countries, annually, during 1995-2012.[4] The systematic bilateral trade costs are computed using the inverse gravity model (see Novy, 2013), which estimates trade costs using data on bilateral trade and gross national output, as inputs.

Trade costs in this database are presented in ad valorem equivalents (i.e., they are expressed as a proportion of the estimated value of the good concerned). The interpretation of trade costs is as follows: trade costs are inferred as being higher when countries trade more domestically than they do internationally, and lower when they trade more internationally than they do domestically. This is because if trade costs vis-à-vis another country fall then some of the production previously consumed domestically will be shipped overseas.

The approach by Novy (2013) to measuring bilateral trade costs has several advantages over alternative methods. First, it is comprehensive in that it encompasses all costs involved in trading internationally with another partner (i.e., beyond the national border) relative to those involved with trading intra-nationally (i.e., domestically). Second, it has the advantage of not requiring an explicit, predefined list of potential trade cost factors for estimation.[5] Some trade cost factors – such as tariffs and transport costs – can be readily measured; however, other trade costs are more difficult to quantify (e.g., language barriers, information costs, security costs, regulatory barriers, heterogeneous business and investment conditions, access to financing and behind-the-border factors). The approach to measuring trade costs developed by Novy (2013) also has the advantage of calculating a "top-down" trade cost measure that overcomes these obstacles, because it captures both observed and unobserved sources of trade costs. Third, the trade cost measure is fully-grounded in theory – based on a rearrangement of the Anderson and Van Wincoop (2004a) gravity model of trade.

This section presents total trade costs of country aggregates in selected Asia-Pacific subregions with (a) large developed economies (Germany, Japan and the United States), (b) large developing ESCAP economies (China, India, Indonesia and the Russian Federation) and (c) their top five trading partners. The international bilateral trade costs captured by the database are in broad aggregate form, including direct trade costs, indirect

[4] Trade costs are available for total trade and for the two subsectors of trade in manufactured goods and trade in agriculture. Trade costs for energy are excluded.

[5] A pre-defined list of potential factors is typically required by "bottom-up" models. "Top-down" models are less likely to suffer from omitted variable bias.

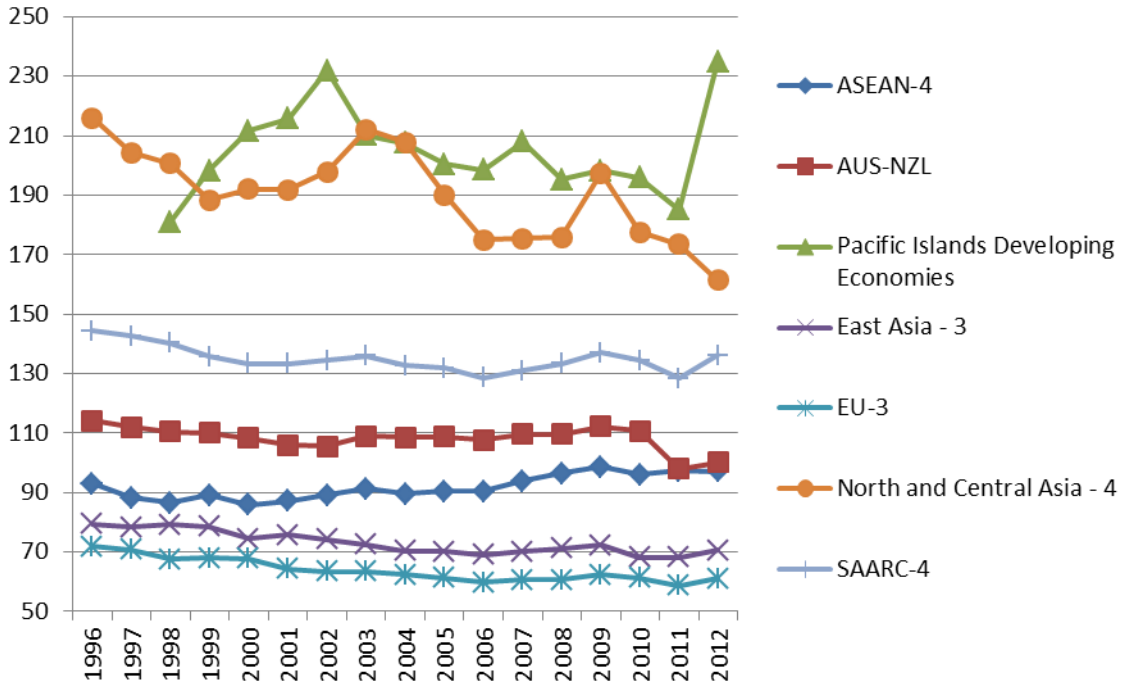
trade costs associated with regulatory import and export requirements, and costs resulting from currencies, language, culture, geography and distance. They include all known and unknown factors such as domestic and international shipping and logistics costs.

Figure 1 shows the trade costs of key Asia-Pacific subregional country aggregates with large developed country markets, and their evolution from 1996 to 2012. Trade costs are shown to vary substantially across country aggregates. East Asia-3 has the lowest trade costs in the Asia-Pacific region, almost on a par with the extraregional benchmark, the European Union (EU-3). The trade costs of North and Central Asia (NCA-4) are around three times higher than those of East Asia-3; however, the former has made much greater progress in reducing trade costs since 1996. The trade costs of South Asian economies (SAARC-4), the European Union (EU-3) and East Asia-3 also appear to have fallen since 1996. In contrast, the trade costs of ASEAN-4, although already low compared with other country aggregates, did not fall during the reporting period. Trade costs in developed Pacific island nations (AUS-NZL) appear to have been somewhat static during the reporting period, before sharply declining in 2011-2012. In contrast, trade costs in developing Pacific island nations (Dev. Pacific) are the highest across all the country aggregates considered, with no clear trend towards falling trade costs. This may be due, in part, to the geographical isolation of the islands, and to comparatively lower levels of trade compared with their larger developed Pacific island nation counterparts.

Figure 2 shows the trade costs of key Asia-Pacific subregional country aggregates with large developing country markets in the Asia-Pacific region, and their evolution from 1996 to 2012. In line with figure 1– which looks at trade costs with large developed countries – the trade costs of North and Central Asia with large Asia-Pacific developing countries are almost three times higher than those of East Asia-3; however, they have declined steadily during the past 10 years. The trade costs of South Asian economies (SAARC-4), the European Union (EU-3) and East Asia-3 with large developing Asia-Pacific economies have also declined since 1996, in line with figure 1. The trade costs of ASEAN-4 with large developing Asia-Pacific economies have also declined since 1996, in contrast to figure 1 in which trade costs with large developed Asia-Pacific economies showed no clear declining trend. The trade costs of East Asia-3 with large developing Asia-Pacific economies (figure 2) are substantially lower than any other country aggregate, including the European Union (EU-3). This is in contrast to figure 1, in which East Asia-3 and the European Union (EU-3) trade costs were almost on a par with large developed economies. Trade costs of developed Pacific island countries (AUS-NZL) with large developing Asia-Pacific economies also show a clear downward trend in contrast to figure 1. The trade costs of developing Pacific island countries (Dev. Pacific) are highest across all country aggregates, and show no clear trend towards declining, in line with figure 1.

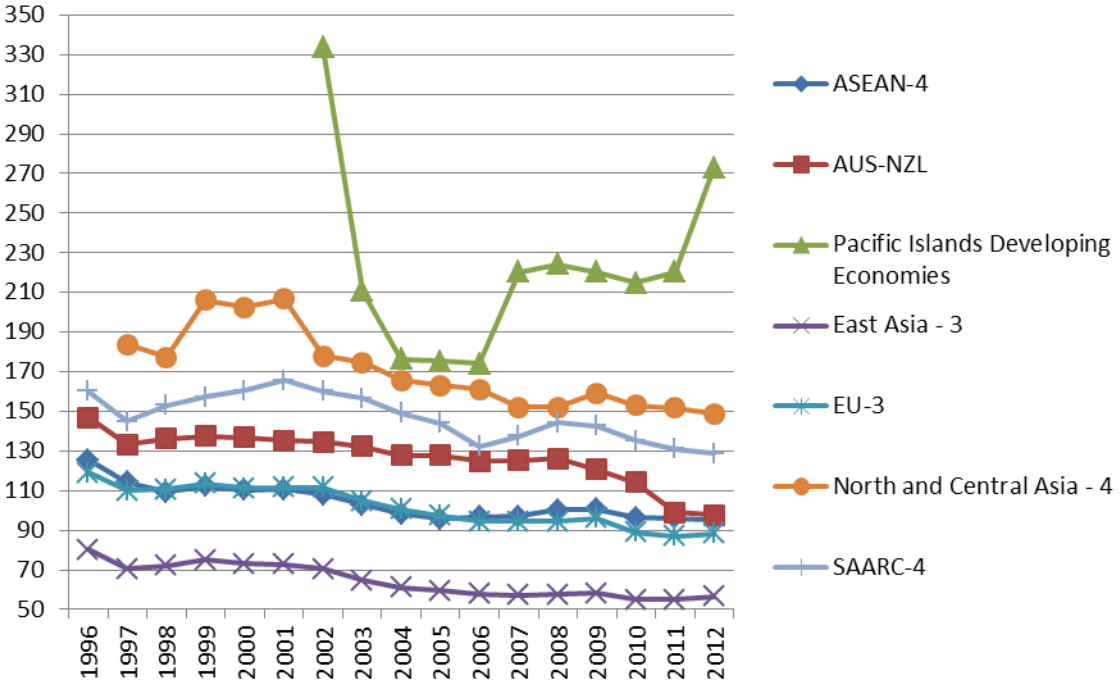
Figure 3 shows trade costs of each Asia-Pacific country grouping with its top five trading partners from 1996 to 2012. This aggregate trade cost measure is arguably the measure closest to "actual" trade costs, since it is based on trade flows with the most significant trade partners of each country. Unsurprisingly, trade costs with the top five trading partners are lower than with large developed countries, and lower than with large developing economies. These trade costs are, in fact, up to one-third lower than those with large developed or developing countries in ASEAN-4, developed Pacific islands (AUS-NZL), East Asia-3, the European Union (EU-3) and South Asian nations (SAARC-4). They are also more than one-half lower with the top five trading partners than with large developed or developing countries in: developing Pacific islands (Dev. Pacific), and North and Central Asia (NCA-4). Trade costs of East Asia-3 are significantly lower than those of all other Asia-Pacific subregional groups, but remain substantially higher than those of the European Union (EU-3). Although trade costs in figure 3 are lower than those in figures 1 and 2, they are still around three times higher in North and Central Asia (NCA-4) than in East Asia-3. Trade costs of ASEAN-4, although already low when compared with other country aggregates, show no clear pattern of declining during the reported period, in line with figure 1. Trade costs in developed Pacific island nations (AUS-NZL) appear to have been somewhat static during the reporting period, before sharply declining in 2011-2012, in line with figure 1. Trade costs in developing Pacific island nations (Dev. Pacific) are the highest across all country aggregates considered, with no clear trend towards falling trade costs, in line with both figure 1 and figure 2.

Figure 1. Trade costs of Asia-Pacific subregional country aggregates with large developed economies



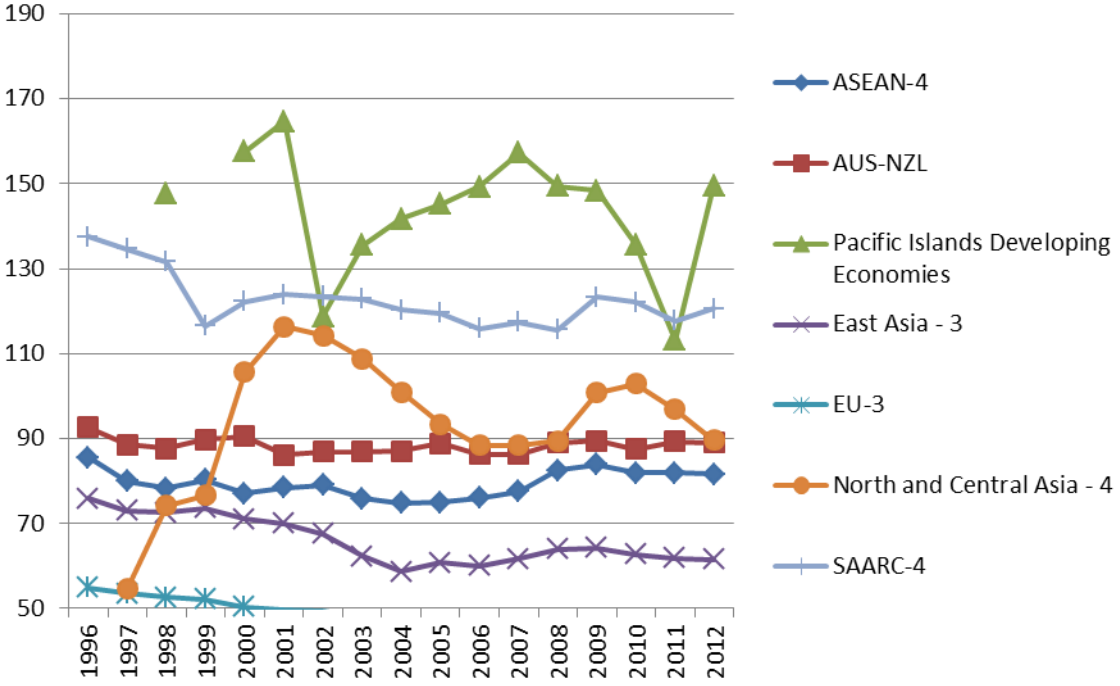
Source: ESCAP-World Bank Trade Costs Database (accessed August 2015).
Notes: Trade costs are tariff equivalents calculated as trade-weighted average trade costs of countries in each country aggregate group with the three largest developed economies (Germany, Japan and the United States).
Definitions: ASEAN-4 includes the four largest economies in the Association of Southeast Asian Nations – Indonesia, Malaysia, the Philippines and Thailand. AUS-NZL includes developing Pacific island nations, Australia and New Zealand. Dev. Pacific includes the largest developing Pacific island nations – Fiji and Papua New Guinea. East Asia-3 includes the three largest economies in East-Asia – China, Japan and the Republic of Korea. EU-3 includes the three largest economies in the European Union – Germany, France and the United Kingdom. NCA-4 includes the four largest economies in North and Central Asia – Georgia, Kazakhstan, Kyrgyzstan and the Russian Federation. SAARC-4 includes the four largest economies in the South Asian Association for Regional Cooperation – Bangladesh, India, Pakistan and Sri Lanka.

Figure 2. Trade costs of Asia-Pacific subregional country aggregates with large developing Asia-Pacific economies



Source: ESCAP-World Bank Trade Costs Database (accessed August 2015).
Notes: Trade costs are tariff equivalents calculated as trade-weighted average trade costs of countries in each country aggregate group with the four largest developing Asia-Pacific economies (China, India, Indonesia and the Russian Federation).

Figure 3. Trade costs of Asia-Pacific subregional country aggregates with their top five trading partners



Source: ESCAP-World Bank Trade Costs Database (accessed August 2015).
Notes: Trade costs are tariff equivalents calculated as trade-weighted average trade costs of countries in each country aggregate group with its five largest trading partners.

Overall, the trade costs of Asia-Pacific developing economies are generally slightly higher when trading with large (essentially outside-the-region) developed countries than when trading with large Asia-Pacific developing countries. However, this may be explained essentially by "natural" trade costs associated with trading with outside-the-region developed economies rather than by policy-driven regional integration processes, however. Indeed, besides the wide disparities in trade costs observed across the different subregions, one of the most striking results is the limited evidence of significant trade cost reductions during the past 10 years in ASEAN-4 despite the large number of intergovernmental trade agreements and initiatives by economies in this group. In contrast, East Asia-3, already characterized by its lowest trade costs in the region, appears to have continued making progress overtime, maintaining or deepening the trade costs gaps with other Asia-Pacific subregions.

2. Intraregional and extraregional trade costs

Table 1 shows intraregional and extraregional trade costs between country aggregates, averaged during 2008-2013. It also presents the changes in these trade costs from 2002-2007 to 2008-2013. East Asia-3 has the lowest intraregional trade costs in the Asia-Pacific region (51%), followed closely by developed Pacific islands (AUS-NZL) (54%). However, they remained higher than intraregional trade costs in the European Union (EU-3) (43%). In addition, intraregional trade costs in East Asia-3 fell by 5% during 2008-2013, compared with 2002-2007, and decreased with all extraregional groups. The highest intraregional trade costs were in the developing Pacific islands (Dev. Pacific) (133%), followed by North and Central Asia (NCA-4) (121%). These intraregional trade costs were more than twice those of East Asia-3.

Table 1. Intraregional and extraregional trade costs in the Asia-Pacific region (percentage)

Region	ASEAN-4	East Asia-3	North and Central Asia - 4	Pacific Islands Developing Economies	SAARC-4	AUS-NZL	EU-3
ASEAN-4	76% (9%)						
East Asia-3	75% (5%)	51% (-5%)					
North and Central Asia - 4	351% (9%)	177% (-7%)	121% (9%)				
Pacific Islands Developing Economies	175% (-11%)	174% (-9%)	368% (34%)	133% (-10%)			
SAARC-4	128% (2%)	125% (-0%)	282% (13%)	317% (2%)	114% (10%)		
AUS-NZL	101% (4%)	89% (-3%)	338% (-5%)	73% (-22%)	142% (-1%)	54% (1%)	
EU-3	108% (2%)	85% (-4%)	152% (-8%)	211% (-6%)	114% (3%)	109% (0%)	43% (-4%)

Source: ESCAP-World Bank Trade Costs Database (accessed August 2015).
Notes: Trade costs are tariff equivalents calculated as average trade costs during 2008-2013. Intraregional trade costs are highlighted. The change from 2002-2007 to 2008-2013 is shown in parentheses.

In line with expectations, the highest extraregional trade costs are typically observed in developing Pacific islands (Dev. Pacific) as well as in North and Central Asia (NCA-4). This is mainly due to the fact that many of these nations face the geographical obstacles of being either landlocked or sealocked, which raises the cost of trade. In addition, there may be greater incentives to trade with countries that have higher connectivity and closer proximity, due to the lower volume of trade.

Intraregional trade costs for ASEAN-4 are around 76%, which is only marginally higher than extraregional trade costs between ASEAN-4 and East Asia-3 (75%). SAARC-4 has intraregional trade costs of around 114%, the same as extraregional trade costs with the European Union (EU-3). This suggests a need for greater trade facilitation efforts and improved connectivity among SAARC-4 nations. Overall, table 1 reveals that it is often cheaper for developing Asia-Pacific economies to trade with partners outside the Asia-Pacific region than those within the region.

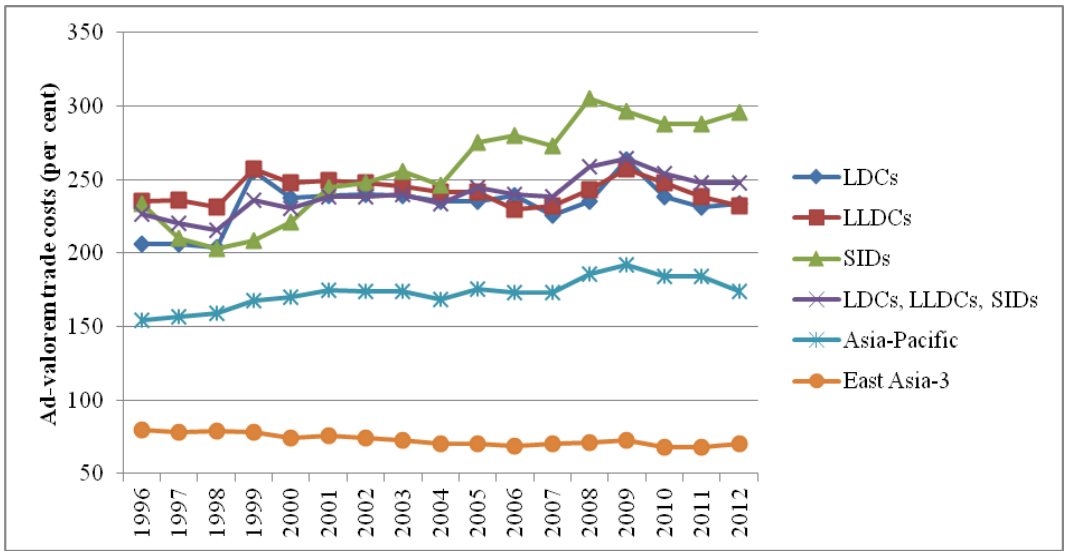
3. Trade costs across LDCs, LLDCs and SIDS

Figure 4 shows the trade costs of Asia-Pacific LDCs, LLDCs and SIDS with large developed country markets, and their evolution from 1996 to 2012. The Asia-Pacific region and East Asia (East Asia-3) are also included as benchmarks for comparison purposes. In line with expectations, trade costs with large developed country markets are highest across SIDS, where trade costs are more than four times those of East Asia-3. Although trade costs across SIDS appear to have declined in recent years, they continue to remain high compared with other groups. SIDS face high trade costs because they face significant geographical obstacles, as they are sea-locked and are distant from trading partners. The trade costs of LDCs are almost on a par with LLDCs, which is not surprising given that four countries appear in both groups; however, they are lower than those of SIDS. Nevertheless, the trade costs of LDCs and LLDCs are roughly 50% higher than the Asia-Pacific regional average, and more than three times those of East Asia-3.

Figure 5 shows the trade costs of LDCs, LLDCs and SIDS with large developing country markets in the Asia-Pacific region, and their evolution from 1996 to 2012. The qualitative conclusions drawn from figure 4 remain broadly similar to those for figure 5.The highest trade costs are observed across SIDS, they are around four times those of East Asia-3, and the trade costs of LDCs are almost on a par with LLDCs; however, they are higher than those of Asia-Pacific and more than three times those of East Asia-3.

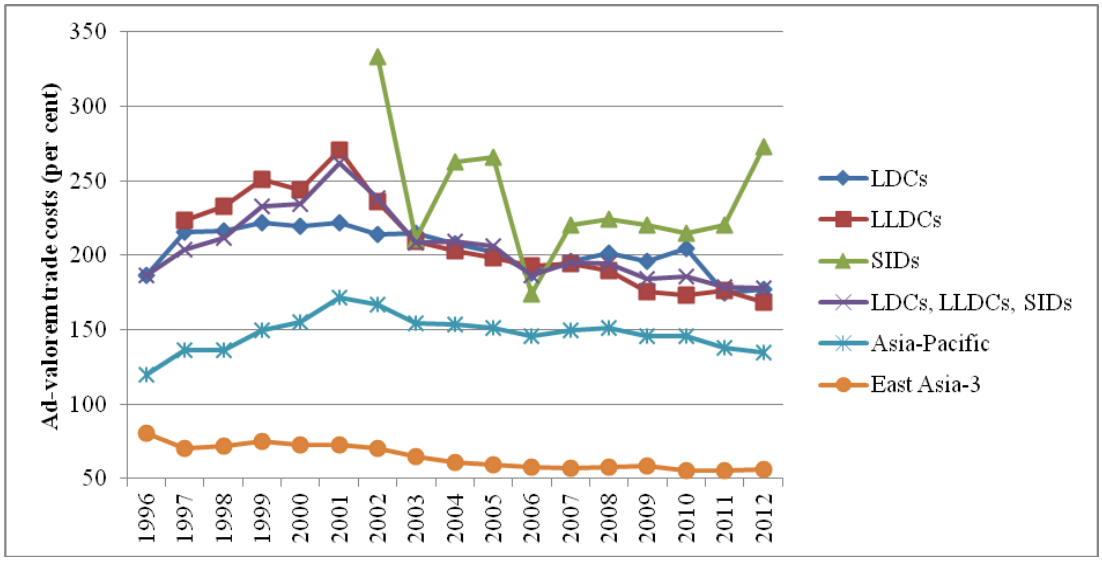
Figure 6 shows the trade costs of LDCs, LLDCs and SIDS with their respective top five trading partners from 1996 to 2012. The trade costs of all three groups are lower than those observed with developed and developing country markets in figure 4 and figure 5, respectively. The trade costs appear to have peaked during the 2007-2009 financial crisis; however, they show a clear downward post-crisis trend from 2010 onwards. While the trade costs of SIDS are around three times those of East Asia-3, the trade costs of LDCs and LLDCs are just twice those observed in East Asia-3.

Figure 4. Trade costs of LDCs, LLDCs and SIDS with large developed economies



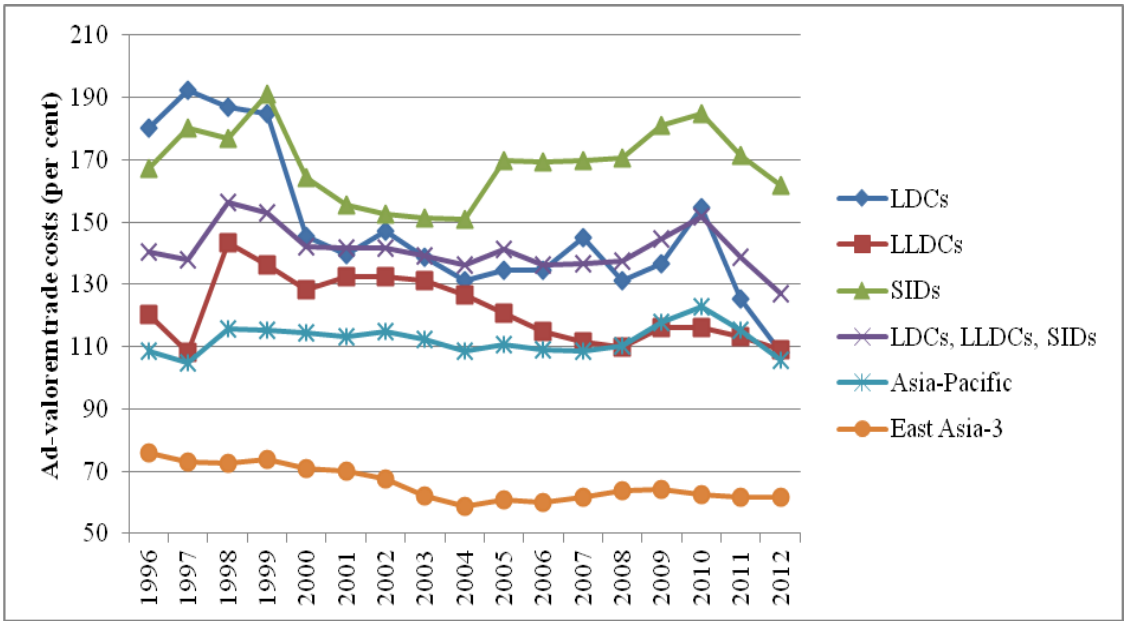
Source: ESCAP-World Bank Trade Costs Database (accessed August 2015).
Notes: Trade costs are tariff equivalents calculated as trade-weighted average trade costs of countries in each country aggregate group with the three largest developed economies (Germany, Japan and the United States).
Definitions: LDCs include Afghanistan, Bangladesh, Bhutan, Cambodia, Kiribati, the Lao People's Democratic Republic, Myanmar, Nepal, Tuvalu and Vanuatu. LLDCs include Afghanistan, Armenia, Azerbaijan, Bhutan, Kazakhstan, Kyrgyzstan, Lao PDR, Mongolia, Nepal, Tajikistan, Turkmenistan, and Uzbekistan. SIDS include Cook Islands, Fiji, Kiribati, Maldives, Marshall Islands, Micronesia, Nauru, Palau, Papua New Guinea, Samoa, Tonga, Tuvalu and Vanuatu. Asia-Pacific includes all ESCAP member States for which data are available. East Asia-3 includes the three largest economies in East-Asia – China, Japan and the Republic of Korea.

Figure 5. Trade costs of LDCs, LLDCs and SIDS with large developing Asia-Pacific economies



Source: ESCAP-World Bank Trade Costs Database (accessed August 2015).
Notes: Trade costs are tariff equivalents calculated as trade-weighted average trade costs of countries in each country aggregate group with the four largest developing Asia-Pacific economies – China, India, Indonesia and the Russian Federation.

Figure 6. Trade costs of LDCs, LLDCs and SIDS with their top five trading partners



Source: ESCAP-World Bank Trade Costs Database (accessed August 2015).
Notes: Trade costs are tariff equivalents calculated as trade-weighted average trade costs of countries in each country aggregate group with their five largest trading partners.

The comprehensive trade costs discussed in this section are highly aggregated measures of trade facilitation performance and can vary substantially, depending on trading partners or the types of goods traded. Although trade costs with developed and developing country markets have fallen for many economies, evidence suggests that they continue to remain high, particularly across LDCs, LLDCs and SIDS.

B. What policies and factors matter most in reducing trade costs?

1. Sources of trade costs

The sources of trade costs are multifarious and highly complex. This presents a challenge for policymakers with regard to which sources of trade costs to address and in which way to prioritize the implementation of different trade facilitation measures. A recent study by Duval and Utoktham (2015) set out to measure the contribution of different factors to trade costs across countries.[6] As explained in box 1, they broke down trade costs into three categories: (a) tariff costs; (b) natural trade costs; and (c) non-tariff policy-related trade costs. Using econometric analysis and bilateral data from the ESCAP-World Bank Trade Cost database for Asia-Pacific countries, they then estimated the relative importance of each category and that of the policy factors that might help address them.[7] Figure 7 illustrates the results of their study.

[6] This section is an update of the analysis presented in Duval and Utoktham (2011), using the most recent data available, including updated trade cost data as of August 2015. For a similar study at the global level, see Arvis and others, 2013.
[7] These results do not apply directly to LLDCs due to availability of data.

Box 1. Disaggregating trade costs: A simple categorization

The sources of trade costs, which are complex, diverse and in some cases unobservable, can be broadly defined in three categories: (a) tariff trade costs; (b) natural trade costs; and (c) policy-related non-tariff trade costs. The first category of trade costs comprises tariffs imposed on imported goods and services. The second category of natural trade costs, is inherent to the location, culture and/or history of the trading partners. They are typically observed as exogenous (i.e., taken as given and unchangeable) because they are difficult to address through policy in the short to medium term. Natural trade costs include geographical factors such as: (a) sharing a common land border (i.e., contiguity); (b) access to the sea (or landlocked); and (c) geographical distance from trading partners (i.e., remoteness). Natural trade costs also include factors that measure the cultural and historical distances between countries, such as: (a) use of a common language (both official and unofficial); (b) having formerly been the same country (i.e., India and Pakistan); and (c) having formerly been in a colonial relationship (i.e., a former colony, a former coloniser, and/or formerly having been subject to a common coloniser).

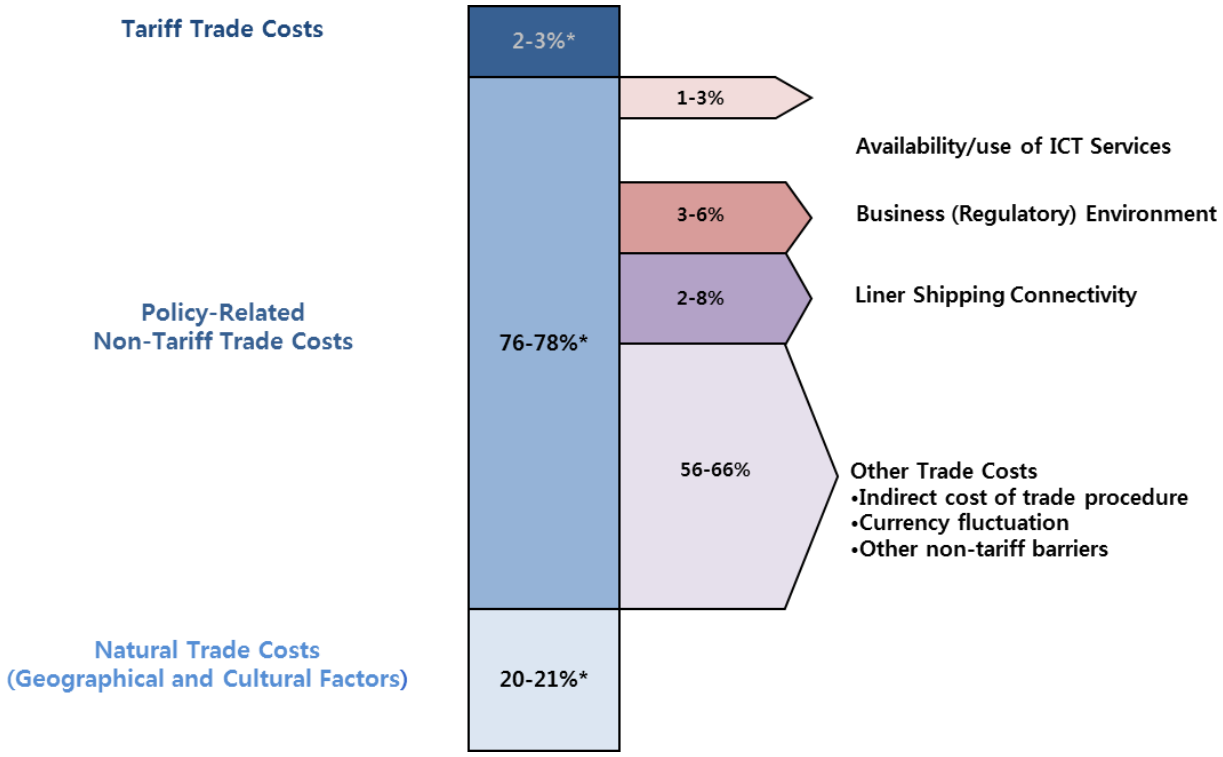
The third category, policy-related non-tariff trade costs, comprises those that can potentially be reduced through policy-related measures because they have endogenous causes. They include, but are not limited to direct behind-the-border and at-the-border trade costs, the availability and use of information communication technology (ICT) services, the business regulatory environment, international supply chain connectivity, exchange rates movements, and other NTMs such as sanitary and phytosanitary (SPS) measures, and technical barriers to trade.

2. Types of trade costs

Estimates revealed that tariffs accounted for just 2-3% of bilateral comprehensive trade costs across countries. This is interesting because much of the focus of trade facilitation during the past decade has been on reducing tariffs. Natural trade costs were shown to vary substantially, depending on the partner countries considered; however, on average, they accounted for 20%-21% of bilateral comprehensive trade costs. Finally, policy-related non-tariff trade costs were shown to account for the bulk of bilateral comprehensive trade costs across countries (around 76%-77%).

Policy-related non-tariff trade costs have the potential for reduction through trade facilitation measures. Within this category, liner shipping connectivity was shown to be the largest source of trade costs, explaining around 2%-8% of trade costs across countries. This suggests that policies aimed at developing access to effective maritime services and related port infrastructure should be given higher priority for implementation if countries aim to reduce trade costs. However, enhancing liner shipping connectivity is likely to be challenging in many LDCs, given the costs associated with developing required hard infrastructure.

Figure 7. Factors influencing trade costs of Asia-Pacific economies



Source: Duval and Utoktham, 2015
Note: This figure is based on a casual observation of the data only. Natural trade costs for landlocked countries may be outside of the range shown in the figure.

The behind-the-border business regulatory environment was shown to be the second most important source of policy-related non-tariff trade costs, explaining around 3%-6% of trade costs across countries. Around half of this trade-cost effect is accounted for by the credit indicator alone. This provides support for prioritization of behind-the-border policies and measures aimed at increasing the availability of trade financing. It could also be achieved by increasing the transparency and availability of information on the creditworthiness of exporters and trading partners.

Access and usage of ICT services is found to be the third-most important source of policy-related non-tariff trade costs, explaining around 2%-6% of trade costs across countries. This suggests that policies and measures aimed at enhancing ICT infrastructure and services, and increasing their usage through education, should be given special attention in those countries aiming to streamline trade costs and facilitate trade. Policies aimed at liberalizing logistics and information technology services could also be considered, as could the fostering of healthy competition among service providers.[8]

Interestingly, the direct cost of moving goods from factory to the ship deck and vice versa – including other factors such as inland transportation, customs clearance and preparation of documents – was found to account for just 1%-3% of trade costs across countries. This suggests that indirect and hidden costs associated with trade (e.g., reluctance to engage in new, regulated or perishable products because of uncertainties regarding time and costs of trade, or the lack of transparent procedures) are more important than the actual

[8] The updated estimates of Duval and Utoktham (2015) are broadly consistent with results from their earlier 2011 study as well as those of Wilson, Mann and Otsuki (2003) which found that IT services were the most important policy-related non-tariff trade cost, followed by port efficiency.

direct costs of completing trading procedures. Disentangling these indirect and hidden costs remains a significant challenge. Nevertheless, the fact that more than 50% of changes in non-tariff policy-related trade costs across economies are not captured by relatively wide-ranging trade cost factors considered in the study suggests that they play a vital role in trade facilitation.

In addition to these measures, the establishment of public-private partnerships can help accelerate the development of national information technology as well as transport and logistics infrastructure. For LLDCs, close cooperation with transit neighbours is essential to improving access to maritime services and in bringing trade costs down to more competitive levels. Given scarce resources, it may also be more cost-effective for countries to improve the business environment for trade by implementing measures that aim to speed up the movement of goods between factory and port (or vice versa). Measures aimed at facilitating access to trade finance and financial services could also be prioritised.

The performance of different trade facilitation measures can be affected by a wide range of policies and government actions. Although non-tariff trade costs account for a major component of trade costs across countries, much of the effort in reducing trade costs during the past decade has focused on reducing tariffs. This suggests that further reductions in trade costs need to come from addressing non-tariff measures, particularly improving port efficiency (i.e., liner shipping connectivity), increasing access and use of ICT services and improving the business regulatory environment – particularly access to trade financing. Nevertheless, given the highly complex, interconnected nature of trade costs, it is important for policymakers to lower trade costs with trade facilitation measures through a comprehensive approach rather than focusing on isolated factors.

C. Key findings from micro-level trade process analyses

1. Business process analysis for trade facilitation

The research literature on trade facilitation has typically focused on identifying measures that can help reduce trade costs across countries and/or sub-sectors over time. However, there have been comparatively fewer studies analysing bottlenecks and inefficiencies in the import and export processes at the firm level. This is mainly due to the time, cost and complexity involved in mapping out the entire trading processes for individual, firms, products, and routes, both across countries and over time. The process of moving goods across borders is highly complex, and as agents must comply with a number of commercial, transport and regulatory requirements, and follow complex administrative procedures which may require documentation. Many of those involved in the trading process are aware of the need to streamline and simplify procedures; however, a lack of data increases the difficulty in identifying bottlenecks and inefficiencies in the system.

To address this issue, since 2009 international organizations (i.e., ESCAP, ECE and ADB), in collaboration with other relevant organizations and agencies in ESCAP member States, have successfully mapped out more than 50 product-specific trade processes across more than 15 developing Asian economies. These studies use business process analysis (BPA) to detail existing import and export processes along the entire international supply chain.[9] As each BPA analysis provides a “snapshot” of the trade processes and procedures for a particular

[9] The UNNExT BPA methodology has been shown to be an effective tool for designing and motivating trade facilitation reforms in the Asia and the Pacific.

route, product, and/or country, ESCAP set out to consolidate all this information into a comprehensive Trade Process Analysis Database (TPAD, 2015), enabling researchers to compare the costs, time, number of documents and number of agents associated with different trade procedures. This section briefly outlines the results of these studies and policy recommendations, using a meta-analysis of BPA studies included in TPAD (UNNExT, 2014; ESCAP, 2015a).

Evidence from the Trade Process Analysis Database**Error! Reference source not found.**Table 2 and 3 detail the complexity, time and costs associated with 17 export and import processes across seven developing Asian economies (Bangladesh, Cambodia, China, Lao People's Democratic Republic, Myanmar, Nepal and Thailand). The typical procedures for export and import processes included customs clearance, arrangement of transport, conclusion of contracts and the preparation of documents. Between 8 and 15 procedures were required to complete export processes, while between 5 and 12 procedures were required to complete import processes. On average, export processes required around 25% more procedures than import processes.[10] This finding is, in part, due to the fact that many of the BPA analyses focused on agricultural and textile products – both of which are essential for inclusive and sustainable development in the region.

Table 2. Complexity, time and cost of selected export processes in developing Asia

Origin	Product exported	Destination	No. of business procedures	Number of documents needed (incl. copies)	Time (days)	Cost (US$)
Bangladesh	Woven garments	India	12	68	40	1 015
Bangladesh	Shrimp	Japan	12	75	37	500
Bangladesh	Jute Hessian Bag	India	12	33	30	316
Cambodia	Cassava	China	13	60	5	741
Cambodia	Maize	China	13	60	5	741
Cambodia	Rice	France/Italy/Germany	12	51	26	1 029
Cambodia	Cashew nut	India	11	36	23	1 129
Cambodia	Silk	Germany	10	54	21	270
China	Garments	Japan	11	26	9	440
China	Electronics	Thailand	13	31	22	298
Lao PDR	Maize	Thailand	8	10	17	702
Myanmar	Rice	Ivory Coast/Burkina Faso	10	42	12	124
Myanmar	Mango	China	8	23	11	1 492
Nepal	Cardamom	India	9	38	13	2 052
Nepal	Vegetable ghee	India	14	48	42	1 076
Nepal	Vegetable ghee	China	8	48	11	833
Thailand	Jasmine rice	United States	15	72	15	129
Total			191	775	337	12 887
Average			11	46	20	758

Source: Trade Process Analysis Database, 2015.

[10] This may be due in part to the fact that many e BPAs included in TPAD are related to agricultural and food exports. Many documents are already prepared by traders as part of the export process, so all relevant information is available for import clearance.

Table 3. Complexity, time and cost of selected import processes in developing Asia

Origin	Product exported	Destination	No. of business procedures	Number of documents needed (incl. copies)	Time (days)	Cost (US$)
Bangladesh	Wheat	India	12	49	27	183
Bangladesh	Cotton fabric	India	6	28	8	415
Bangladesh	Raw sugar	Thailand	6	19	10	525
Cambodia	Pharmaceuticals	Indonesia	7	25	22	200
China	Textiles	Japan	8	37	9	440
China	Auto-parts	Japan	8	37	12	440
Lao PDR	Animal feed	Thailand	10	33	15	500
Myanmar	Palm oil	Malaysia	11	61	11	185
Nepal	Rice	India	11	49	18	960
Nepal	Textiles	India	5	25	5	320
Total			84	363	136	4 168
Average			8.4	36.3	13.64	416.8

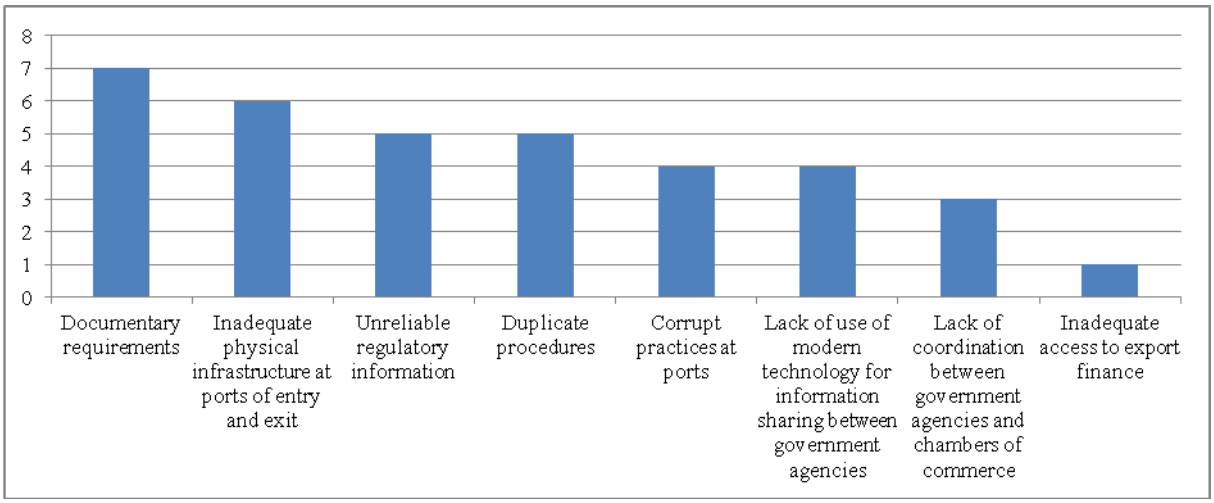
Source: Trade Process Analysis Database, 2015.

The number of documents required for exporting was shown to range from 10 (for maize from Lao People's Democratic Republic to Thailand) to 75 (for shrimp from Bangladesh to Japan). The number of documents required for importing ranged from 19 (for raw sugar from Thailand to Bangladesh) to 61 (for palm oil from Malaysia to Myanmar). Although there was substantial cross-country product-route heterogeneity in document requirements, overall they were found to be 20% higher for export processes than for import processes. In the case of shrimp, SPS certificates were acquired within 17.5 days in Bangladesh and within 14 days in Thailand – accounting for almost half the time for the entire export process. In contrast, just one day was required to obtain an SPS certificate for products in Nepal, Cambodia, Myanmar and Sri Lanka.

2. Meta-analysis and implications for reducing trade costs

A meta-analysis of BPA studies covering 15 LDCs, LLDCs and developing Asia-Pacific economies revealed that the top barriers to trade facilitation included cumbersome documentary requirements, inadequate infrastructure at ports of entry and exit, and unreliable regulatory information (figure 8). Processes and procedures with higher numbers of documentary requirements were found to be less predictable as documents, not only due to preparation time, but also because they may have been rejected by controlling agencies for various reasons (e.g., need for originals rather than copies, errors and omissions, incompleteness etc.). Inadequate infrastructure at ports of entry and exit were often found to compound the effects of complex documentary requirements and inspections. Unreliable information concerning regulations, laws and administrative processes were also found to be a major barrier to trade, as traders often struggled to identify which procedures to follow and which rules were applicable.

Figure 8. Common barriers for trade facilitation



Source: Trade Process Analysis Database, 2015.

The following 10 recommendations for reducing trade costs emerged from the meta-analysis:

(a) Full and inclusive representation of the private sector

Research into the TPAD database revealed that the private sector is directly involved in all procedures and steps in the trade process. Therefore, private sector support as well as government and trade-related agency support is crucial to reducing the time and cost of trade. Governments have a role to play in streamlining procedures over which it has direct control (i.e., customs and other regulatory procedures); however, Chambers of Commerce and/or Industry Associations often also play a role in issuing trade-related documents (i.e., certificates of origin and/or quality certificates). Since the procedures put in place by these entities may not always facilitate trade, private sector consultation, collaboration and coordination initiatives are necessary to streamline trade procedures. Similarly, private sector intermediaries (i.e., transport and logistics service providers and customs brokers) do not always have an incentive to support trade facilitation measures, as the services they render may become rendered redundant if processes are simplified. In such cases, Governments can address such issues by ensuring more inclusive engagement of the private sector in trade facilitation bodies.

(b) Consistent implementation and performance monitoring

The meta-analysis of the BPA studies demonstrated that even relatively simple trade facilitation measures – such as the provision of customs clearance services during holidays and weekends as well as the harmonization of working hours at border checkpoints on both sides of a land border – are not always implemented. There is also substantial variation in the implementation of trade facilitation measures across different border crossings and trade routes. Further, regulatory authorities often have a limited view of the entire trade process, often only aware of their own internal efficiency or inefficiency. Traders also have limited awareness and information about procedural bottlenecks. Intermediaries often hold much of the information on the time and cost associated with specific trade procedures. An independent assessment of trade-related

agencies could help identify inefficiencies and priorities for reform. Establishment of national trade facilitation performance monitoring mechanisms may be considered.[11]

(c) Prioritization of paperless trade and single windows

Data revealed that preparation of documents and information (even before goods move from the factory or arrive at the port) accounts for the largest share of time required to complete a trade process. The development of Single Window facilities for submission and processing of information could reduce trade costs. This would benefit regulatory and control agencies as well as public and private agents in the trade process. There are currently "extended" national Single Windows operating in the Republic of Korea and Singapore. The use of ICT systems would also reduce excessive reliance on paper documents and increase the transparency and predictability of the trade process. Radio frequency identification (RFID) tracking of container systems could also provide real-time information about the time taken to move goods and exchange electronic documents for all transactions.

(d) Risk management to reduce physical inspections

Inspections and testing procedures are often required at various stages of the trade process, typically at the border or port, but often as part of document preparation for exports. Research shows that this often increases the average transaction time required to complete export and import processes, and reduces predictability of the process. These are key factors in enabling firm participation in international production networks. The frequency of inspections and testing could be reduced through appropriate risk management techniques that are typically used by customs agencies but could be extended to other regulatory agencies. Inter-agency risk management systems with joint (multi-agency) inspections could also reduce multiple inspections and testing. By setting up certification programmes, the quality and characteristics of goods could also be assured at the factory gate, rather than for each shipment of goods.

(e) Hard infrastructure investment

Almost all the TPAD studies observed a serious lack of physical trade-related and border infrastructure across developing countries – especially least developed countries. The upgrading of physical infrastructure (i.e., building roads, bridges, and/or testing facilities) was found to be the second most frequently cited recommendation of the studies, after paperless trade and Single Windows. However, in order to maximize the potential of these facilities it is important to build human and institutional capacity.

(f) Competition between service providers

Inland carriage, handling and terminal handling were found to be the most time-consuming components of the trade process. The BPA studies in TPAD demonstrated that service providers (i.e., buy-ship-pay providers) played an important role in international supply chains. Governments could encourage healthy competition across transport, logistics and other trade-related service providers by reviewing policies that may unduly protect specific service providers.

[11] ADB and ESCAP have recommended and developed the concept of integrated and sustainable trade and transport facilitation monitoring mechanisms (TTFMM).

(g) Payment system review

Analysis of the buy-ship-pay process revealed that in some cases, the payment process accounted for a large proportion of the time required for export or import. This was in part due to the payment method (i.e., open account method) or negotiated payment terms. Data revealed delays in payment receipt of up to two weeks after submission of necessary documentation to the bank as specified in the letter of credit (L/C). In some cases, the cost of two L/Cs was the same as the direct cost of exporting a 20-foot container (excluding international shipping).

(h) Industry-specific programmes

The product-specific studies show substantial variation in the complexity and length of trade processes, depending on the types of goods traded. In some cases, mandatory sampling and testing for agricultural goods and food products accounted for almost half of the export time – often due to limited testing facilities in the exporting country.[12] Such industry-specific bottlenecks could be addressed through implementation of sector-specific trade facilitation measures.

(i) Procedures in bilateral and regional free trade agreements

Several BPA studies found that additional documentary requirements (i.e., certificates of origin) for preferential treatment outlined in trade agreements lead to significant delays. Future agreements should provide clear guidelines on obtaining and exchanging documents and simplify related procedures.

(j) International harmonization of documentary requirements

The analyses show that different documentation is often required for exporting a specific product to different destinations, which leads to confusion and delays. The process could be simplified through alignment and harmonization of national procedures and documents to international standards and Conventions. It is also important to harmonize and align standards in the private sector – through international associations – as individual buyers often require different types and quality of certificates in varying formats. As highlighted in several ESCAP Resolutions since 2012, harmonization of legal and technical frameworks underpinning paperless trade systems are necessary to ensure electronic documents can be used and recognized by stakeholders across countries in international supply chains.

Analyses of micro-level trade processes in Asia and the Pacific should be interpreted carefully because BPA studies included in TPAD were conducted at different times and for different products, routes and modes of transport. Nevertheless, they reveal important bottlenecks and barriers to trade facilitation. These analyses should be seen as complementary to studies that analyse trade facilitation using more aggregate trade cost measures.

[12] This finding is consistent with macro-level results using ESCAP-World Bank trade cost data, which show that countries with low manufacturing costs do not necessarily have low agricultural trade costs (and vice versa).

D. Key findings and recommendations from recent ESCAP studies

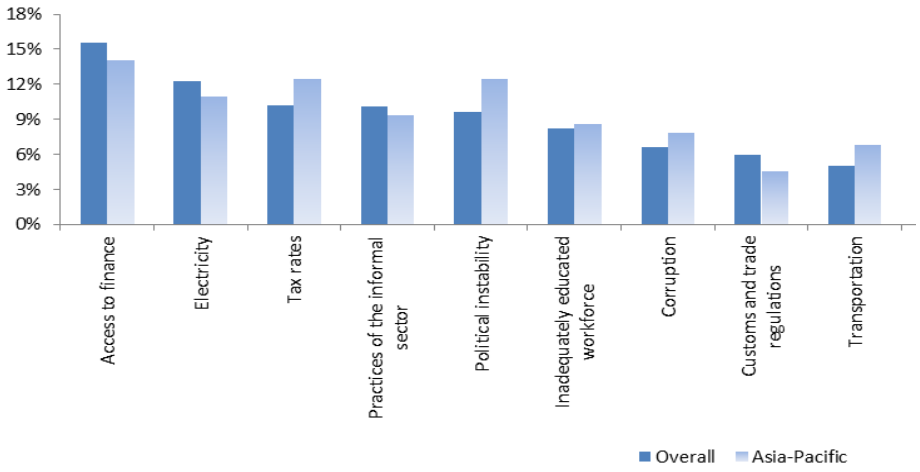
This section outlines some of the key findings and recommendations from five recent ESCAP studies on trade facilitation and reducing trade costs in the Asia-Pacific region featured in Part II of this monograph. These studies find that trade costs can be reduced through: (a) improved maritime and international logistics services – particularly in the agricultural sector (Part II, chapter III); (b) strengthened provisions in existing and new transit agreements – especially for LLDCs (Part II, chapter II); and (c) through implementation of paperless trade measures (Part II, chapter V). They also find that there are benefits to implementing trade facilitation measures and reducing trade costs such as: encouraging participation in export and international production networks, particularly for SMEs and for attracting foreign direct investment (Part II, chapters I and IV, respectively).

1. Financing, quality certification and reduced clearance times the key to SME participation in trade

The first ESCAP study presented in Part II found that a reduction in customs and clearance times increased the likelihood of participation in export and international production networks (IPNs) relatively more often for SMEs than that for larger enterprises. It also highlighted the importance of modern ICT and international quality certification as critical to SME participation in IPNs – with SMEs that rely on both at least 13% more likely to be involved in such networks.

The study found that access to finance was a key obstacle to business operations in the Asia-Pacific region (figure 9). In fact, some 60% of Asia-Pacific SMEs were shown to rely exclusively on internal financing compared to a global average of 40%. Access to a variety of external trade finance sources – especially bank financing and supplier credit – was shown to increase the likelihood of SME participation in direct export and IPNs. Overall, this study highlighted the importance of supply chain financing in facilitating direct export participation of SMEs, in addition to reducing trade costs.

Figure 9. Main obstacles to business operations by exporting SMEs

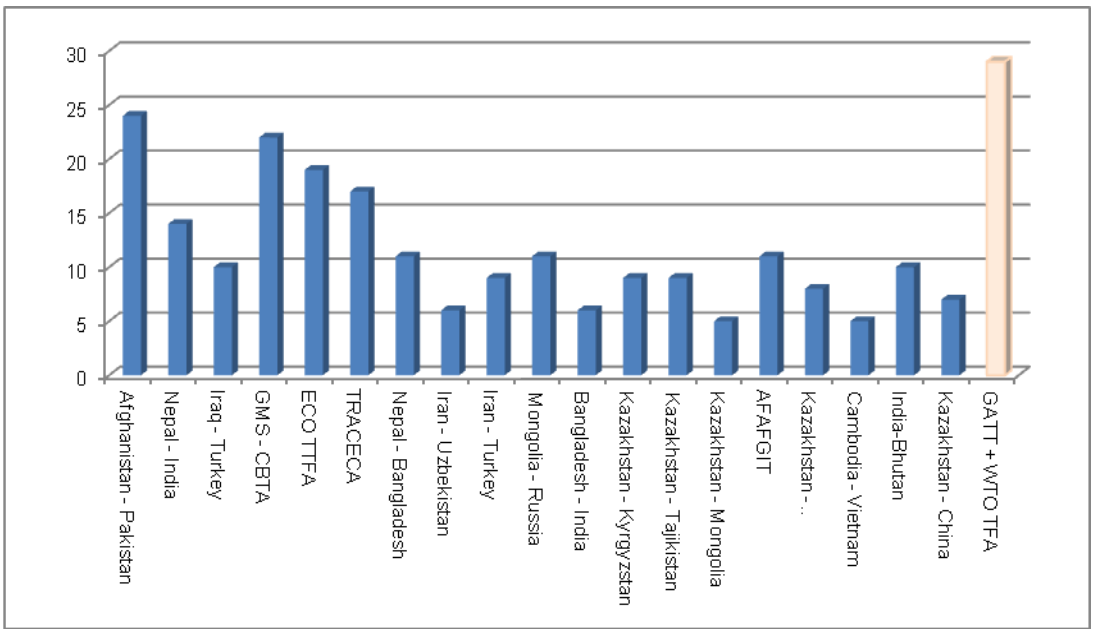


Source: Duval and Utoktham, 2014.

2. WTO Trade Facilitation Agreement important to facilitating transit and reducing trade costs of LLDCs in Asia and the Pacific

LLDCs typically face higher costs of trade because they lack direct access to the sea, thereby reducing their competitiveness in terms of trade and investment. The ESCAP study presented in Part II, chapter II, found that the WTO Trade Facilitation Agreement (WTO TFA) has the potential to reduce trade costs and boost trade for LLDCs through the article on "Freedom of Transit" which protected the "legitimate" interests of transit countries' access to the sea. It was argued that this would enable LLDCs to integrate into GVCs and to transition from landlocked to land-linked. The WTO TFA was found to contain ambitious measures not, or rarely, found in bilateral, regional transport or transit agreements (figure 10). These included: (a) advance clearance of goods in transit (found in one existing treaty only); (b) renewal of guarantees (found in one existing treaty only); and (c) designation of national coordinators (found in three existing treaties). However, some measures widely found in related treaties were absent from WTO rules and the WTO TFA. This included: (a) mutual recognition of customs seals (found in five treaties); (b) simplified immigration formalities for drivers (five treaties); and (c) freedom of transit for passengers (10 agreements).

Figure 10. Trade facilitation potential of selected transport and transit agreements



Source: Cousin and Duval, 2014.

Notes: The trade facilitation potential scores shown are based on the presence (or absence) of 37 facilitation provisions in each of the agreements considered.

Following an analysis of transit provisions in preferential trade agreements, international transport agreements and transit agreements in the Asia-Pacific region, the study concluded that the existing legal environment for transit was highly complex. It recommended close and earlier inter-agency coordination, to help foster more transparency, reduce conflicting rules on transit and increase the likelihood of measures being implemented. It also suggested there was a need for strengthening multilateral rules and building on "good practices" found in existing bilateral, regional and multilateral instruments.[13] In fact, the Afghanistan-Pakistan

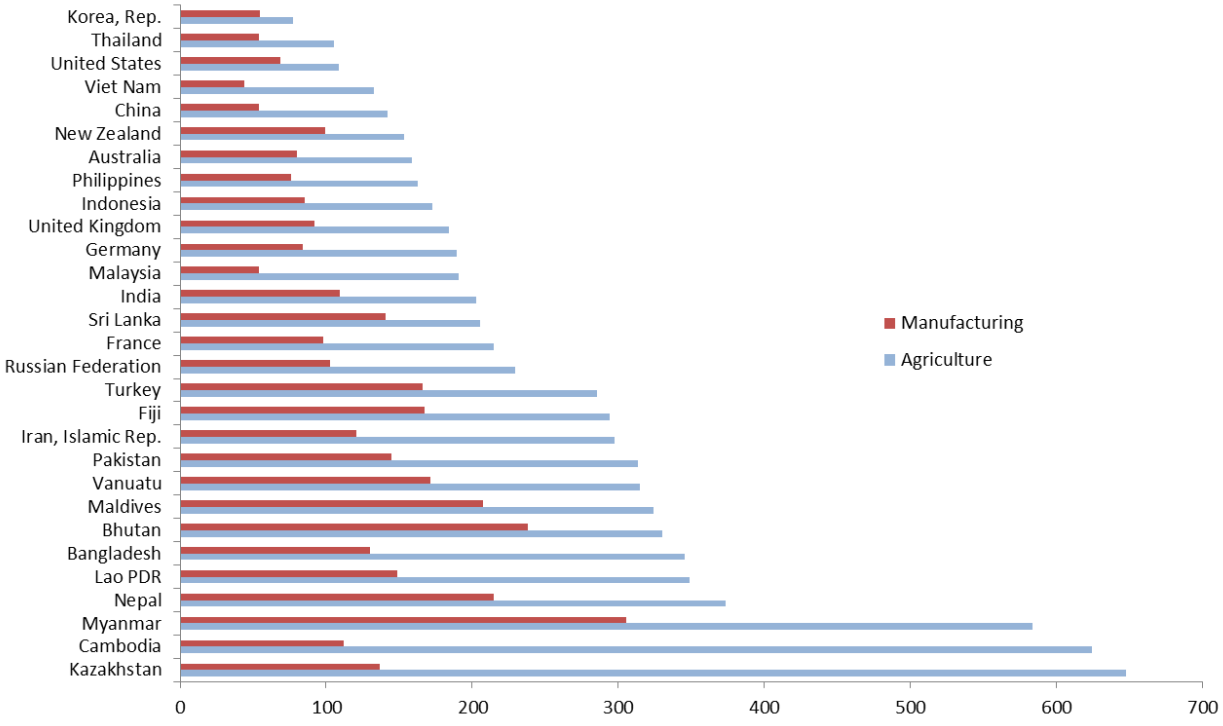
[13] Transit facilitation has been widely overlooked in PTAs, with many countries addressing such matters using a variety of other bilateral and regional instruments such as international transport or transit specific agreements.

transit agreement was shown to have the highest legal potential among all other agreements reviewed (figure 10), although informal discussions with officials from both countries indicated significant challenges in implementation. The Convention on International Transport of Goods under Cover of TIR Carnets (TIR Convention) – not mentioned in the WTO TFA – also provided more concrete and detailed mechanisms for transit facilitation. Overall, the study suggested that incorporating these agreements into implementation plans would be an effective way to further the objectives of the WTO TFA and reduce trade costs in the Asia-Pacific region.

3. Logistics services and non-tariff measures the key to reducing trade costs in agriculture in Asia and the Pacific

Agriculture remains the backbone of many Asia-Pacific developing economies and employs around half of the Asian working population. It is therefore important to reduce trade costs in this sector in order to maximize the export potential of agricultural goods. The ESCAP study presented in Part II, chapter III, found that trade costs in the agricultural sector were typically twice as high as those in the manufacturing sector (figure 11). Agricultural trade costs within each of the different Asian subregions and country groups were also not found to differ sharply – especially when excluding tariffs. The study observed that agricultural tariffs were below 5% in most subregions; however, they remained high South Asian countries (SAARC) as well as between East and North-East Asian countries (ENEA). Nevertheless, agricultural trade costs overall appeared to have fallen between most subregions and country groups between 2008 and 2013 – although improvements were slower in Asian subregions compared to developed country groups such as the European Union or NAFTA.

Figure 11. Agricultural and manufacturing comprehensive trade costs, excluding tariffs, between selected economies and Japan, 2008-2013



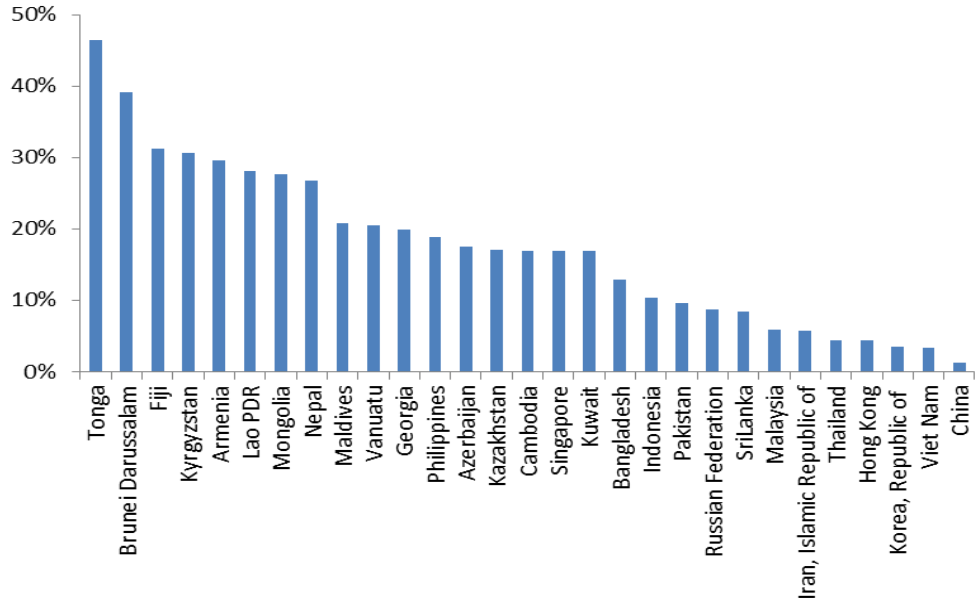
Source: ESCAP-World Bank Trade Costs Database, 2015.

Further analysis also revealed that geographic distance was the single most important factor in determining agricultural trade costs, followed by maritime logistics performance and the ease of obtaining credit. Access and use of ICT and tariffs in partner countries were also shown to account for a significant but smaller share of agricultural trade costs. Interestingly, geographic distance and tariffs ceased to remain the most important factors when considering trade costs between ASEAN and OECD countries, while maritime logistics services and non-tariff measures such as SPS/TBT requirements became key determinants. Overall, this study suggested a need for individual Asian developing countries to enhance maritime and other international services while further building capacity to comply with non-tariff measures.

4. Foreign direct investment strongly affected by trade facilitation and trade costs

In the ESCAP study featured in Part II, chapter IV, Duval and Utoktham found that countries that implemented trade facilitation reforms, and improved trade efficiency and connectivity, were generally expected to attract higher levels of FDI (figure 12). The analysis revealed that the quality of the regulatory environment was a key determinant to attracting FDI and high trade costs had a negative effect on FDI. In fact, a 1% reduction in comprehensive international trade costs – excluding tariffs – between the source and host countries was shown to be associated with an average 0.8% increase in FDI. Higher import tariffs in the host country were also shown to have a significant but negative impact on FDI flows.

Figure 12. Impact of trade cost improvements on FDI in selected Asia-Pacific countries



Source: Duval and Utoktham, 2014b.

The study demonstrated that if high tariff countries in the Asia-Pacific region reduced tariffs to the developing country average, FDI inflows to the region would be expected to increase by around 6%-7%. Similarly, if measures were taken by high trade cost countries in the Asia-Pacific region to reduce overall trade costs to the developing country average, FDI inflows to the region would be expected to increase by around 20%. A moderate improvement in the quality of the domestic business environment by an average of just 10% was also shown to be associated with a 60% increase in FDI inflows. An improvement in liner shipping connectivity of all lagging countries in the sample to the developing country average would also be expected to increase FDI significantly. However, improving liner shipping connectivity may require substantial investment in maritime infrastructure across many economies. Overall, the study supported the view that trade facilitation – especially reducing trade costs – should be a core component of any FDI development strategy.

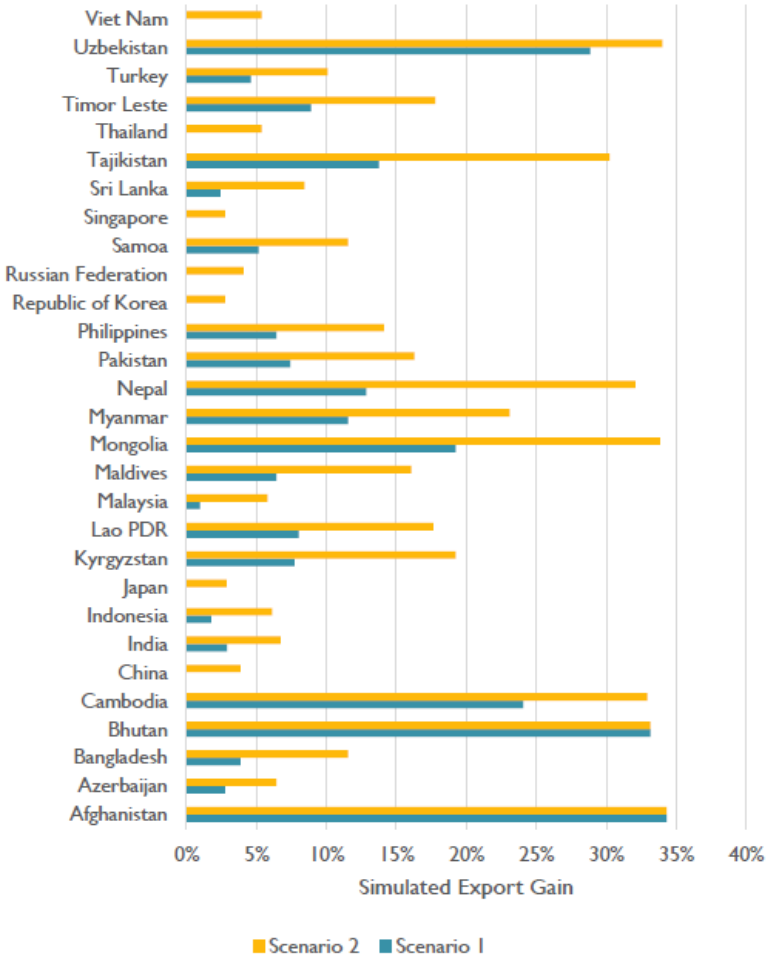
5. Significant benefits associated with cross-border paperless trade implementation

Cross-border paperless trade may be generally defined as trade taking place on the basis of electronic communications, including the exchange of trade-related data and documents in electronic form between relevant stakeholders across borders. In the ESCAP study presented in Part II, chapter V, Shepherd and Duval (2014) found that there were substantial economic benefits – export gains and saving in lower trade costs – of implementing cross-border paperless trade reforms (figure 13). Using data from the ESCAP Trade Facilitation Survey (2014), the study found that partial implementation of cross-border paperless trade was associated with a US$ 36 billion increase in annual exports, while full implementation was associated with a US$ 257 billion increase in annual exports. The time to export was expected to fall by 24% to 44%, and direct costs were expected to fall by 17% to 31%. The direct cost savings to trade in the Asia-Pacific region were estimated at US$ 1 billion annually. These estimates were likely to be in the lower range of potential gains because the model did not take into account the dynamic gains of multilateral implementation of cross-border paperless trade.

A key policy recommendation from the analysis was that the implementation of cross-border paperless trade measures had as much potential to reduce trade costs and to boost intraregional and extraregional trade as more traditional trade facilitation measures. Even countries with stronger implementation of paperless trade were found to have areas where improvements could be made. In countries with little or no implementation of paperless trade measures, the recommendation was to begin by implementing general paperless initiatives such as customs automation and an electronic Single Window.

By getting involved in regional cooperation on cross-border paperless trade at an earlier stage, countries that require more fundamental reform could avoid having to re-engineer the process at a later point, and thereby benefit from overall implementation cost savings. Nevertheless, Aid for Trade and capacity-building to support reform processes should be an integral part of the process of implementing cross-border paperless trade reforms. Going forward, a strong regional arrangement among ESCAP member States would be needed to address the complex legal and technical challenges associated with exchanging electronic trade data and documents across borders.

Figure 13. Simulated export gains under partial (scenario one) and full (scenario two) implementation of cross-border paperless trade



Source: Shepherd and Duval, 2014.

E. The way forward

Significant progress has been made by countries in the Asia-Pacific region in reducing tariffs during the past decade; however, further efforts must be made to address non-tariff barriers to trade. Implementation of trade facilitation measures – including but not limited to those featured in the WTO Trade Facilitation Agreement – are critical to reducing trade costs and increasing participation in global value chains and international production networks. It is therefore important to undertake trade facilitation reforms in a comprehensive manner, rather than focusing on isolated measures. Research shows that improved liner shipping connectivity is critical to reducing trade costs in the Asia-Pacific region; however, this is likely to be challenging for LDCs, LLDCs and SIDS because of the financial cost associated with developing the required infrastructure. In such circumstances, policymakers could focus on: (a) liberalizing logistics; (b) facilitating adoption of modern information and communication technologies; (c) promoting competition among service providers; (d) improving access to credit and trade finance; and (e) strengthening transit provisions in existing agreements.

ESCAP has provided a platform for the negotiation and implementation of regional arrangements aimed at reducing trade costs and increasing connectivity for several decades. This includes one of the very first preferential trade agreements signed in the 1970s (APTA), and the Intergovernmental Agreement on the Asian Highway Network and on Dry Ports enacted in 2003 and 2013, respectively. Following the adoption of an ESCAP Resolution on enabling paperless trade for trade facilitation in 2012, ESCAP members are now negotiating the text of a unique regional treaty on the facilitation of cross-border paperless trade. The first intergovernmental steering group meeting, tasked with finalizing the agreement, highlighted the complementarity between this regional initiative and the implementation of the WTO Trade Facilitation Agreement when it met in April 2015. Regional approaches and programmes are important to ensuring that actions taken at the national level as well as decisions taken at the global level are relevant and effectively implemented. Sustained and coordinated actions at the national, subregional, regional and global levels will be essential to bringing trade costs in all developing countries to a level at which the inclusive and sustainable development benefits of trade can be reaped.

As countries invest more resources and efforts in facilitating trade and reducing trade costs, it will be important that they put in place effective national monitoring mechanisms to identify progress made as well as the remaining or emerging sources of costs along the supply chain. The trade and transport facilitation monitoring mechanism (TTFMM) developed by ADB and ESCAP may be particularly relevant in that context.[14] Continuous efforts may also be needed by international organizations to further refine indicators of trade facilitation performance and collect cross-country data in this area. This includes further development by ESCAP of a new database of trade costs in services (box 2) and the regular update of the global United Nations Regional Commissions Joint Survey, which provides data on implementation of 38 trade facilitation and paperless trade measures in 44 Asia-Pacific countries and 119 economies globally.

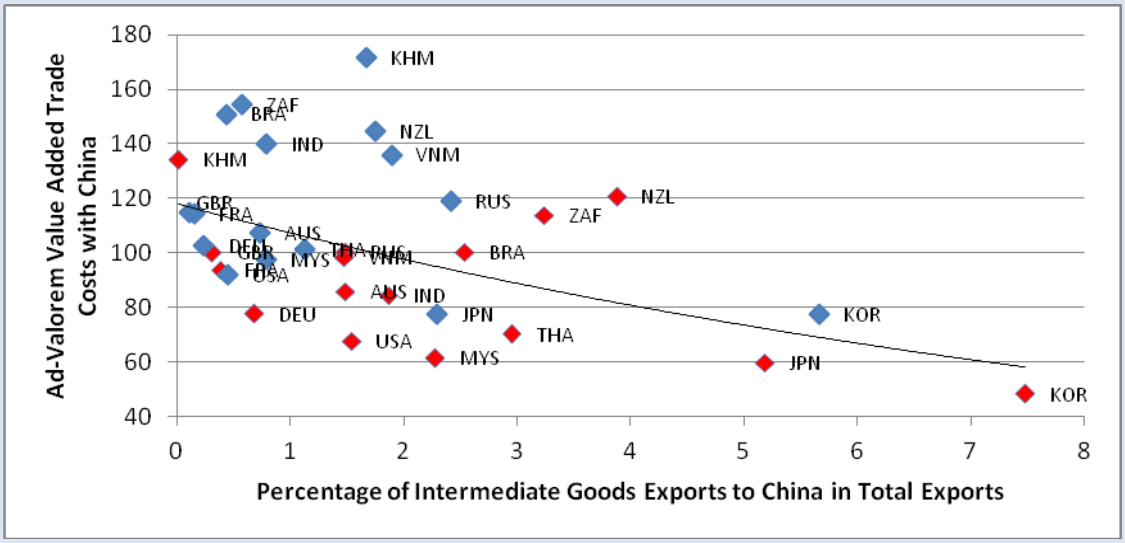
[14] www.unescap.org/resources/towards-national-integrated-and-sustainable-trade-and-transport-facilitation-monitoring

Box 2 . Measuring value-added trade costs in services

UNCTAD (2015) reported that global services exports accounted for around 20% of total goods and services trade, increasing by 5.5% in 2013 alone. This share is even higher across developing economies, with the services sector accounting for 51.4% of GDP in 2010. While there have been many attempts to comprehensively measure bilateral trade costs in the goods sector (i.e., the ESCAP-World Bank Trade Cost Database), there have been very few attempts to measure trade costs in the services sector, mainly due to severe data limitations on the gross trade side and gross output side. Measuring trade costs in the services sector is critical to developing more targeted trade facilitation measures for reducing the cost of trade.

In that context, Duval, Saggu, and Utoktham (2015) combined increasingly available trade in value-added data and more commonly available national sectoral GDP data to develop the very first Value-Added Trade Cost Database (2015) – for goods and services – both at the national and the disaggregated sectoral levels. The study observed that value-added trade costs declined as countries became increasingly integrated into IPNs and GVCs (see figure below). Across developed and developing economies, value-added trade costs were, on average, found to be much higher in the services sector compared with the goods sector. Higher trade costs in services tended to be associated with high trade costs in goods, and vice versa. Value-added trade costs were found to be lowest in East Asia-3 compared with other regional groups in the Asia-Pacific region, and even lower than EU-3 from 2005 onwards.

Value-added trade costs with China and integration in to GVCs



Source: Duval, Saggu and Utoktham, 2015.

PART II

Chapter I

Facilitating participation of SMEs in trade:

Financing and communications technology as key enablers [15]

Introduction

Small and medium-sized enterprises (SMEs) are key contributors to economic development, both in developed and developing countries. Kushnir and others (2010) find that formal SMEs contribute up to 45 per cent of the world's employment on average; and up to 33 per cent of employment in developing countries. The fact that countries in higher income groups typically have higher SME employment highlights the need to support the development of such enterprises in lower income developing countries (figure 1).

Figure 1. SME employment and SMEs per 1,000 people by income group

Source: International Finance Corporation (online accessed in January 2014 at www.ifc.org/wps/wcm/connect/Industry_EXT_Content/IFC_External_Corporate_Site/Industries/Financial+Markets/msme+finance/sme+banking/msme-countryindicators).

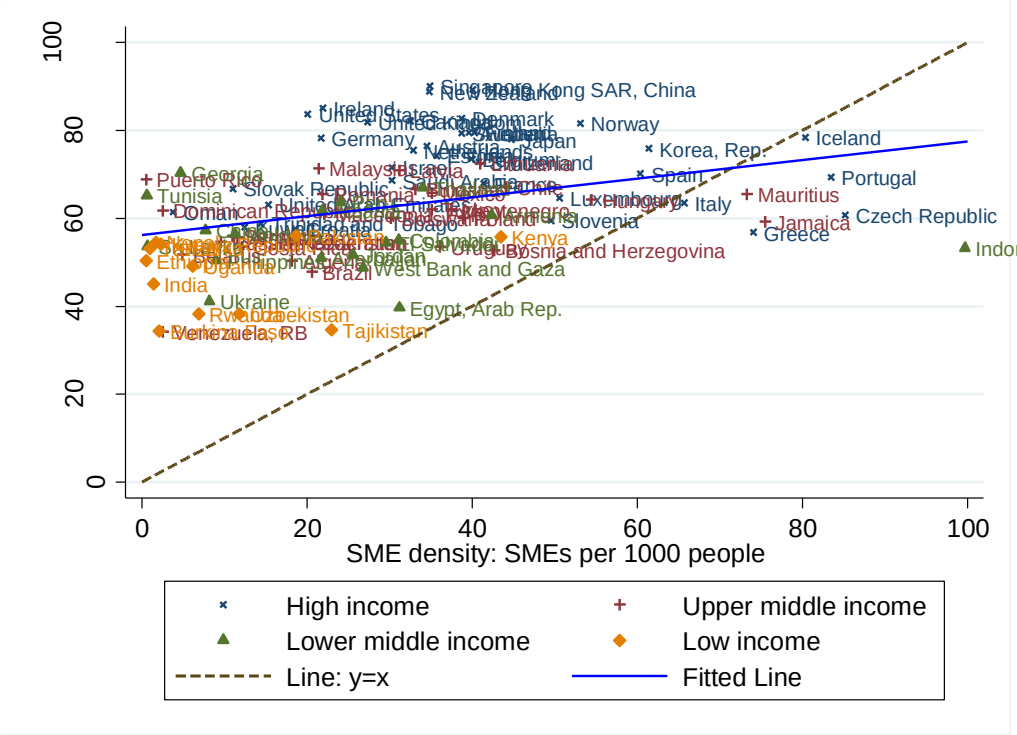
Note: Average of latest data available for each country is used; Low income: USD 975 or less; lower middle income: USD 976 to US$ 3,855; upper-middle income: US$ 3,856 to US$ 11,905; high income: US$ 11,906 or more.

[15] This chapter is a shortened, updated and edited version of Duval and Utoktham (2014). The full and original paper is available at: www.unescap.org/sites/default/files/Staff%20Working%20Paper%2003-14_1.pdf

As shown in figure 2, a conducive domestic business environment – including easy access to business services (e.g., financial and information and communications technology services) as well as streamlined investment and business regulations and procedures (e.g., to start a business, pay taxes or hire employees) – is essential for SME development. In particular, as international trade remains an important engine of growth and development in most developing economies, facilitating the participation by networks (IPNs), has become one of the keys to achieving more inclusive and sustainable development in these economies.

In that context, the objective of the analysis presented here is to identify trade facilitation-related factors that affect the participation of SMEs in direct or indirect exporting, with particular attention given to the efficiency of trade procedures as well as the use of different sources of financing, modern information and communications technologies (ICTs) and the quality of the logistics infrastructure. The study also assesses how the importance of the various trade facilitation factors vary, depending on whether firms engage in international trade through direct exports or through a production network, and whether they are in the Asia-Pacific region.

Figure 2. Ease of doing business and SME density, by income group



Source: International Finance Corporation (accessed online in January 2014 at www.ifc.org/wps/wcm/connect/Industry_EXT_Content/IFC_External_Corporate_Site/Industries/Financial+Markets/msme+finance/sme+banking/msme-countryindicators) and Doing Business: Distance to Frontier (online: http://www.doingbusiness.org/data/distance-to-frontier)
Note: Latest data of SME density and doing business score in a corresponding year are used for scatterplot.

The definition of SMEs usually varies across countries as well as international organizations. This paper follows the World Bank's Enterprise Survey definition: (a) small enterprises are firms with 5 to 19 employees; (b) medium enterprises are firms with 20-99 employees; and (c) large enterprises are firms with 100 employees or more.[16] For the purpose of this study, participation by SMEs in IPN follows the definition by Wignaraja (2012), i.e., firms are considered members of a production network if they export directly or indirectly.

Following a brief review of the existing empirical economic literature on the determinants of SME participation in exporting (section A) and a brief review of obstacles to SME establishment and operations based on the most recent World Bank Enterprise Survey data (section B), empirical models of SME export participation are estimated and discussed in section C. Conclusion and policy recommendations that stem from the results are presented in section D.

A. Review of the literature

Previous empirical literature has identified a relatively large number of factors that affect a firm's decision to export. These factors may be broadly categorized as firm characteristics, including measures of a firm's efficiency, and factors related to the external environment. A firm's characteristics that are often cited in the literature include size, foreign ownership, productivity, human capital and technological adoption. Other characteristics that have been studied for their impact on participation in exporting – and typically used to infer a firm's efficiency – include sourcing of input/raw materials for production, the business sector, access to knowledge and technology, capital stock, productivity and age of the firm.

External factors of importance to the participation of SMEs in trade typically relate to the quality of the domestic business climate, which may be referred to as behind-the-border factors from a trade facilitation perspective. Other external factors that are often referred to include access to finance, quality of institutions, transport connectivity, quality of technology and rate of adoption in the home country as well as the complexity of customs procedures. A summary of recent empirical studies of firms' participation in exporting is given in table 1.

Overall, while a relatively large number of studies have been conducted on determinants of export participation, few have focused explicitly on SMEs, particularly in developing countries. Unlike the study presented here, the past literature also does not distinguish between determinants of direct export and IPN participation, nor does it examine differences between firms globally and in the Asia-Pacific region. Finally, while access to finance is often highlighted as an important factor, the literature provides no analysis of the relative importance of different forms of financing. The importance of other trade facilitation-related factors included in the present study has also been largely ignored in previous studies.

[16] Another widely-cited definition of SMEs (referred to as micro, small and medium-sized enterprises; MSMEs) is from that used by the European Commission (http://ec.europa.eu/enterprise/policies/sme/facts-figures-analysis/sme-definition/index_en.htm). However, this study follows the definition of SMEs from the World Bank's Enterprise Survey to reflect more on the size in developing countries. For a country-specific SME definition, see IFC (www.ifc.org/wps/wcm/connect/Industry_EXT_Content/IFC_External_Corporate_Site/Industries/Financial+Markets/msme+finance/sme+banking/msme-countryindicators).

Table 1. Summary of recent empirical studies of firms' participation in exporting

Research/study	Summary and findings related to SMEs, export participation, institutional arrangements, or inclusiveness
Amornkitvikai and others (2012). Factors affecting the export participation and performance of Thai manufacturing small and medium-sized enterprises.	The study used cross-sectional data (2007) on Thai manufacturing SMEs to identify factors affecting export participation. It found that government assistance, foreign ownership, municipal location, R&D and skilled labour have a significant positive effect on the participation by a firm in the export market. However, size of firm (small or medium), age and labour productivity had a mixed effect on export participation, depending on the models.
Amrouk and others (2013). The impact of commodity development projects on smallholders' market access in developing countries: Case studies of FAO/CFC projects.	The study found that extension services, provided credit as well as change in agricultural assets are crucial determinants of market access by smallholders. Smallholders with better wealth endowment and location tend to be those who gain access to markets. Improvement of credit support activities is essential in enabling market participation, particularly by poorer smallholders.
Bellone and others (2008).. Financial constraints as a barrier to export participation.	The study assessed the link between financial constraints and export participation of French manufacturing firms from 1996 to 2004. The results support the fact that financial constraints are barriers to export participation. Characteristics of firms – i.e., size, wage and productivity – have a positive effect on export participation. Firms with either domestic or foreign subsidiaries tend to export more. In addition, export starters do not exhibit ex ante financial advantages and there is no significant evidence that firms who become exporters will face fewer financial constraints.
Cardoza and others (2012).. Institutional determinants of Chinese SMEs' internationalization – the case of Jiangsu Province.	The study assessed factors affecting export intensity (ratio of international sales to total sales) in Jiangsu Province of China. Estimated using OLS, the model suggests that limited access to finance, domestic inefficiencies in logistics and distribution, costs of internationalization (including international transport costs and payment collection costs), and adverse regulatory frameworks affect decision to participate in export markets. Three other factors, i.e., government assistance, state participation, and public procurement, are not statistically significant.
Harvie and others (2010). Firm characteristic determinants of SME participation in production network.	This study identified determinants of participation in production network in 2009 in some ASEAN countries and China. Productivity, foreign ownership, financial characteristics, innovation efforts, and managerial/entrepreneurial attitudes are important firm characteristics in determining SME participation in the network. Firm size also matters.
Hessels and Terjesen (2007). SME choice of direct and indirect export modes: resource dependency and institutional theory perspectives.	The study examined participation in the export market in the Netherlands. It found that institutional theory (which describes how firms adopt legitimate business/industry practices) may be relevant in explaining choice of whether or not to export, whereas resource dependency theory (which describes how firms in the industry access resources) may be relevant in explaining the choice between becoming direct or indirect exporters.
Hoekman and Shepherd (2013). Who profits from trade facilitation	The study found that export time – as a measure of trade facilitation – size of firms and ownership are positively related to participation in direct export. Trade facilitation matters for all firm sizes.

initiatives?	
Li and Wilson (2009). Trade facilitation and expanding the benefits of trade: evidence from firm level data.	The study showed that improvement in trade facilitation tends to increase probability of SMEs to export. In particular, better ICT services, streamlined clearance and less transportation obstacles increase the chance of export participation.
Ottaviano and Martincus (2009). SMEs in Argentina: Who are the exporters?	The study examined the determinants of export participation in Argentina. It found that the number of employees, sourcing input from abroad, investment in product improvement and average productivity (measured by sales per employee) are associated with higher exporting probability.
Roberts and Tybout (1997). The decision to export in Colombia: an empirical model of entry with sunk costs.	The study found sunk costs (measured by past export participation), firm-specific characteristics (measured by industry dummy, ownership structure and location), efficiency of firms (measured by capital stock and age of firms) are significant factors determining current export participation.
Wignaraja (2012). Engaging Small and Medium-sized enterprises in production networks: Firm-level analysis of five ASEAN economies.	The study analysed the determinants of export participation in ASEAN. Firm size, foreign ownership and higher workers' education, obtaining international-agreed certificates (such as ISO) or foreign technology and having access to bank credit induces SMEs to participate in exporting. Firm age is negatively associated with the participation in exporting. Practices by competitors in informal sectors, political instability, and access to finance, tax rates and corruption were also found to be the top five obstacles in conducting SME business.

B. Exporting SMEs: Preliminary insights derived from firm-level data

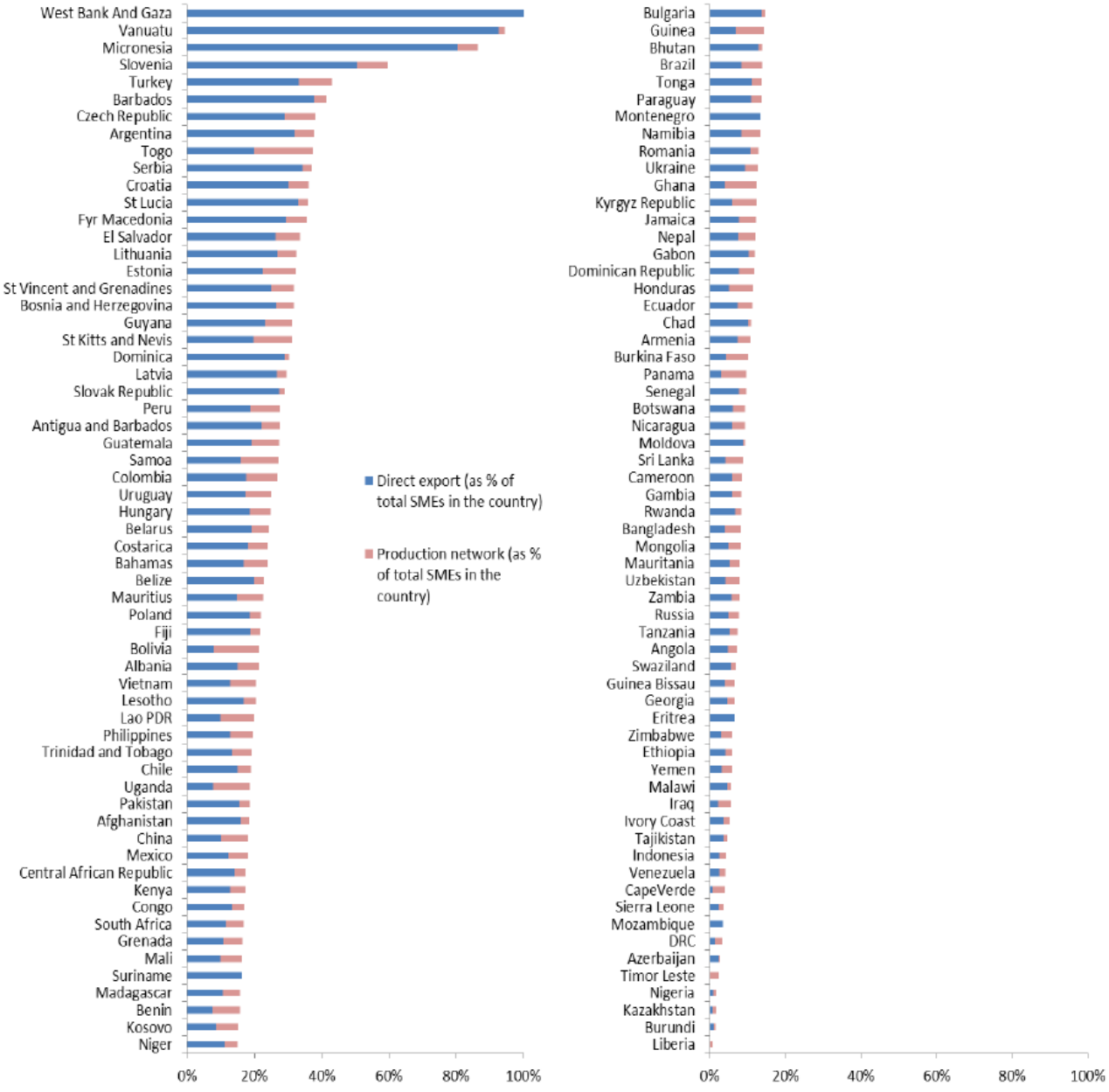
Given the global and regional scope of the analysis, this study relies on the standardized dataset of the World Bank Enterprise Surveys (2006-2014) on enterprises and their characteristics in 122 countries. Four of the Enterprise Surveys are firm-level surveys of a representative sample of an economy's private sector. Eighty per cent of the 53,500 firms included in the standardized dataset are SMEs. The demographic description of export participation by SMEs and large enterprises (LEs) in the dataset is provided in annex table 1(a).

An overwhelming majority of SMEs do not engage in either direct or indirect exporting. Those who do export, however, do so directly rather than indirectly.[17] Figure 3 illustrates the percentage of SME firms engaged in direct exporting or in an IPN (i.e., defined here as engaged in direct and/or indirect exporting) in each country included in the dataset. On average, only 14 per cent and 19 per cent of SMEs in the Enterprise Survey participate in direct exporting and IPN, respectively. These proportions are similar to those in the Asia-Pacific region.[18]

[17] This is also true for large enterprises see annex in full paper for details). Available at www.unescap.org/sites/default/files/Staff%20Working%20Paper%2003-14_1.pdf.

[18] See annex in full paper for details. Available at www.unescap.org/sites/default/files/Staff%20Working%20Paper%2003-14_1.pdf.

Figure 3. Percentage of SMEs involved in direct exporting or IPNs



Source: Authors' calculation based on World Bank Enterprise (Version 5, February 2014), Available at http://www.enterprisesurveys.org/

1. Obstacles to business operations

Table 2 shows the percentage of firms in the dataset that identified one of 15 obstacles as the most important in their business operations. Access to finance is the top obstacle (among 15) reported by SME exporter, both globally and in Asia and the Pacific, followed by obstacles of electricity and tax rates. An inadequately educated workforce ranks as one of the main obstacles for LEs – more so than for SMEs. Customs and trade regulations and transportation also feature among the top 10 main obstacles in exporters' operations.

Even though obstacles may not vary much among SMEs and large enterprises, an interesting finding is that SME exporters in Asia and the Pacific appear to be relatively more affected than LEs by political instability, transportation, tax administration and access to land, and to a lesser extent, by practices of the informal sector, customs and trade regulations, and tax rates. This differs somewhat from the global overall situation, where SME exporters appear to be relatively more affected than LEs by access to finance, corruption, and customs and trade regulations.

Table 2. Most important obstacle in business operations*

(Unit: Per cent)

		Access to finance		**Electricity**		**Tax rates**		**Practices of the informal sector**		**Political instability**	
	Export status	**LEs**	**SMEs**	**LEs**	**SMEs**	**LEs**	**SMEs**	**LEs**	**SMEs**	**LEs**	**SMEs**
Overall	Exporter	13.2	15.6	12.1	12.2	10.3	10.2	9.9	10.1	10.7	9.7
	Non- exporter	11.5	17.0	13.7	13.1	9.0	10.8	11.9	12.2	11.0	8.3
Asia-Pacific	Exporter	15.4	14.0	11.1	10.9	12.1	12.5	8.7	9.4	11.4	12.5
	Non- exporter	13.1	16.2	7.7	10.4	11.7	13.1	9.8	10.9	17.8	11.2
Others	Exporter	12.6	16.0	12.4	12.6	9.8	9.6	10.2	10.3	10.6	8.9
	Non- exporter	11.1	17.2	15.2	13.9	8.3	10.1	12.4	12.5	9.3	7.5
		Inadequately educated workforce		**Corruption**		**Customs and trade regulations**		**Transportation**		**Crime, theft and disorder**	
	Export status	**LEs**	**SMEs**	**LEs**	**SMEs**	**LEs**	**SMEs**	**LEs**	**SMEs**	**LEs**	**SMEs**
Overall	Exporter	12.6	8.2	5.3	6.6	4.3	5.9	5.5	5.1	2.9	3.4%
	Non- exporter	10.8	7.7	5.2	6.6	4.0	3.1	4.0	3.3	6.0	5.6%
Asia-Pacific	Exporter	9.7	8.6	9.5	7.9	4.2	4.6	5.3	6.8	1.7	2.0%
	Non- exporter	11.9	9.0	5.7	6.4	3.8	2.3	4.2	4.6	3.9	3.9%
Others	Exporter	13.4	8.1	4.1	6.3	4.4	6.3	5.6	4.6	3.2	3.8%
	Non- exporter	10.6	7.3	5.1	6.6	4.1	3.3	3.9	2.9	6.6	6.0%
		Tax administration		**Access to land**		**Business licensing and permits**		**Labour regulations**		**Courts**	
	Export status	**LEs**	**SMEs**	**LEs**	**SMEs**	**LEs**	**SMEs**	**LEs**	**SMEs**	**LEs**	**SMEs**
Overall	Exporter	3.5	3.3	2.4	3.0	2.4	2.8	4.0	2.7	0.8	1.1
	Non- exporter	3.2	3.2	2.9	3.3	2.0	2.5	3.4	2.5	1.4	1.0
Asia-Pacific	Exporter	1.8	2.8	1.4	3.0	3.5	2.1	4.2	2.7	0.2	0.1
	Non- exporter	2.2	3.1	3.5	3.3	1.4	3.1	2.9	1.8	0.3	0.5
Others	Exporter	4.0	3.5	2.7	3.0	2.2	3.0	4.0	2.7	0.9	1.4
	Non- exporter	3.5	3.2	2.7	3.2	2.1	2.3	3.5	2.7	1.7	1.2

Source: Authors' calculation based on World Bank Enterprise Surveys (version 5, February 2014).
Available at www.enterprisesurveys.org/CustomQuery.
* Each firm was asked which of 15 obstacles was most important to its operation.

Figures 4 and 5 list the obstacles that SMEs exporters identified as the most important in their business operations. On average, SME exporters reported similar obstacles regardless of whether all sectors are considered (including agriculture and services) or only the manufacturing sector: Access to finance, tax rates and electricity remain the top 3 obstacles at the global level. However, SME exporters in Asia and the Pacific appear to be relatively more concerned than others about tax rates, political instability and corruption, and relatively less so about access to finance and electricity.

Figure 4. Most important obstacle in SME exporters' business operations (all sectors)*

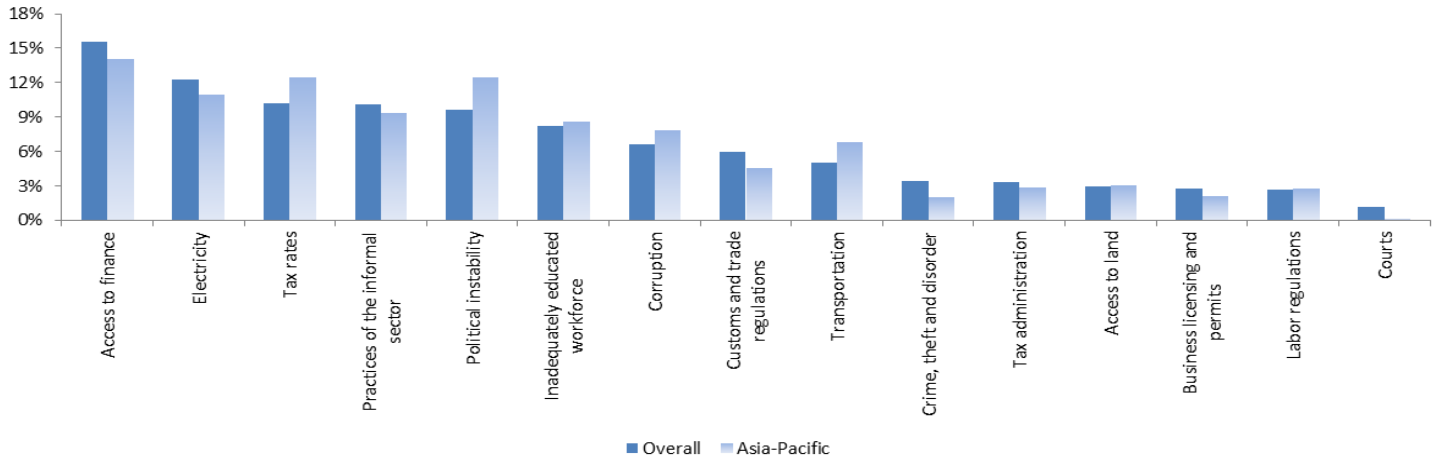
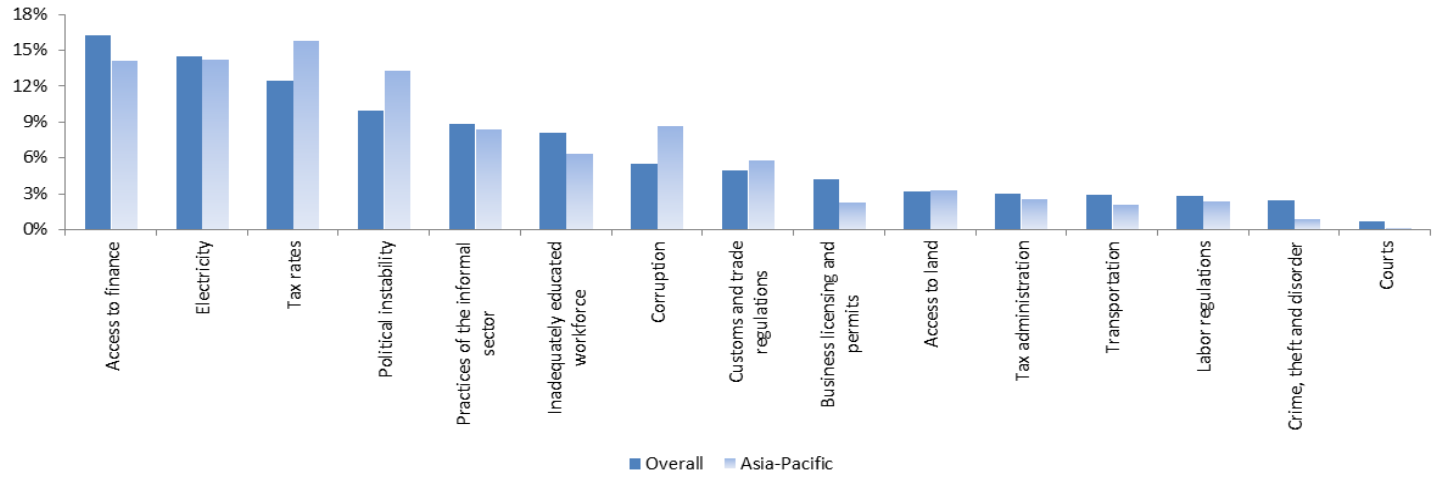


Figure 5. Most important obstacle in SME exporters' business operations (manufacturing sector)*



Source: Authors, calculated from Enterprise Surveys (Version 5, February 2014: http://www.enterprisesurveys.org/CustomQuery)

*Each firm was asked which of 15 obstacles was most important to its operation

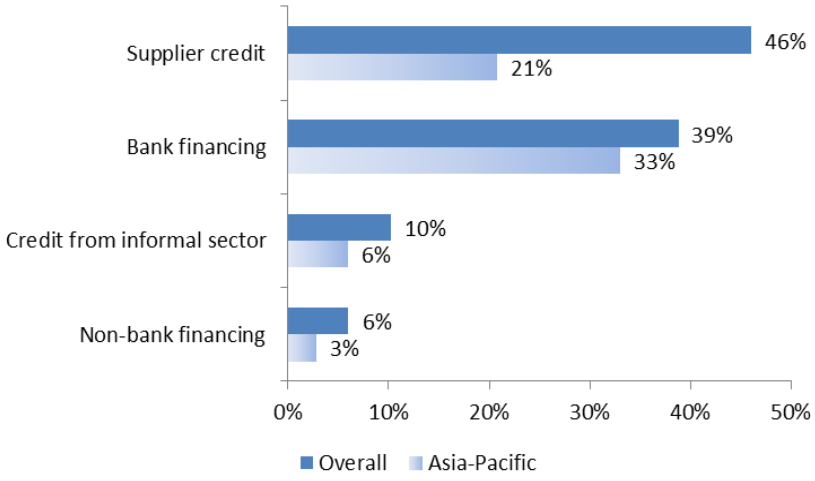
Asia-Pacific SME manufacturing exporters identified customs and trade regulations as a more important obstacle than transportation, although transportation was seen as more important than trade regulations when SME exporters from the agriculture and services sectors were included. This suggests that the transport infrastructure in rural areas and urban centres in Asia-Pacific may be relatively more underdeveloped than that available to manufacturing exporters – typically located in manufacturing zones and/or near major ports.

2. Sources of financing

Given that access to finance is the number one obstacle identified by SMEs, understanding how SME exporters finance their operations is important. Figures 6 and 7 depict the types of working capital used by SMEs engaged in direct exports or IPNs. Supply chain financing (supplier credit) is the most important source of financing for exporting SMEs (46 per cent), followed by bank financing. These two sources of financing account for about 80 per cent of exporting SMEs' working capital at the global level. Reliance on non-bank financing (e.g., factoring companies) is very limited (6 per cent) and less than reliance on credit from the informal sector (10 per cent).

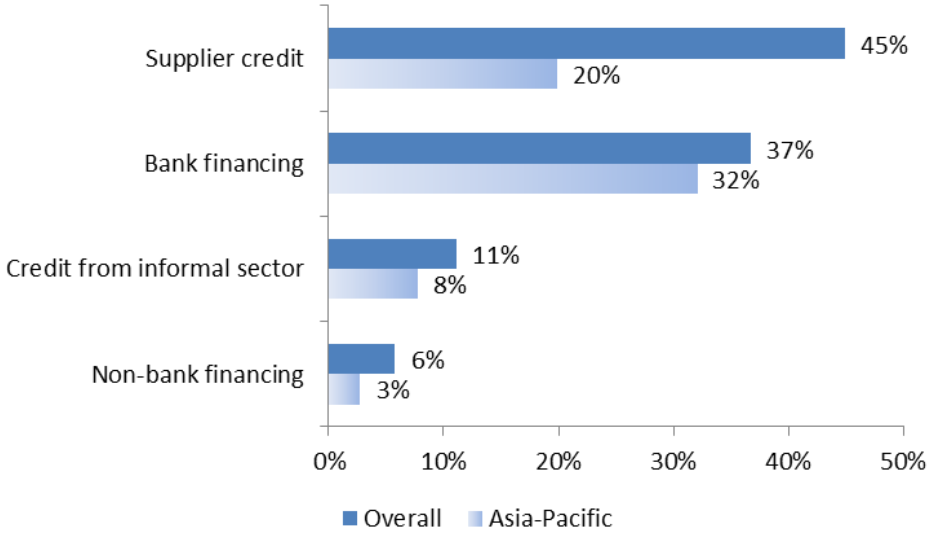
The available data suggest that, in contrast to the global situation in developing countries, exporting SMEs in Asia and the Pacific rely more on banks than on supplier credit to finance their operations. Almost 60 per cent of Asian and Pacific exporting SMEs rely exclusively on internal financing, while only 40 per cent do so globally.

Figure 6. Sources of external financing for direct export SMEs



Source: Authors' calculation based on World Bank Enterprise Surveys (Version 5, February 2014 – www.enterprisesurveys.org/CustomQuery

Figure 7. Sources of external financing for IPN SMEs

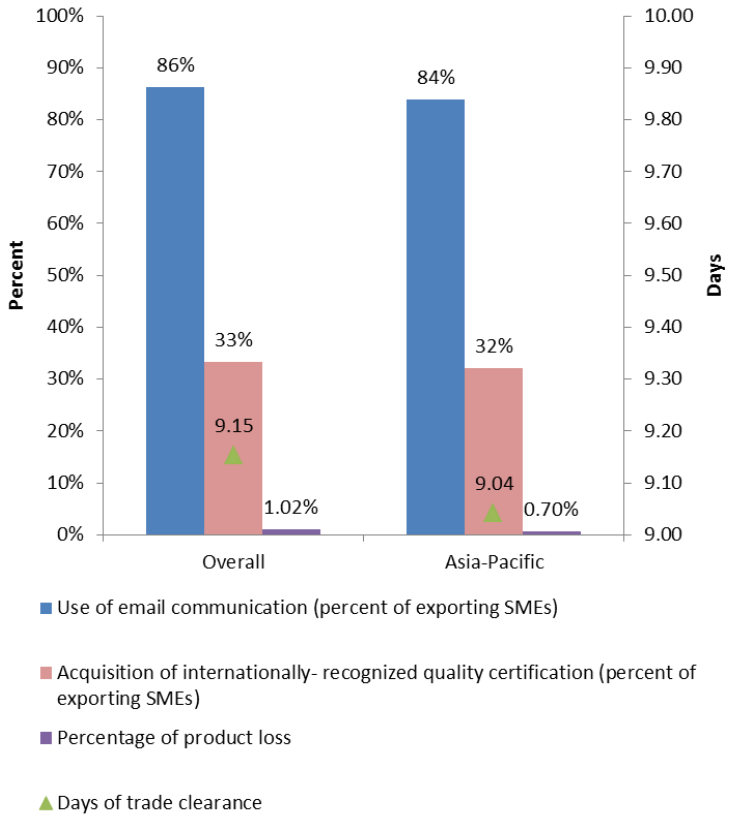


Source: Authors' calculation based on World Bank Enterprise Surveys (Version 5, February 2014 – www.enterprisesurveys.org/CustomQuery).

3. Trade facilitation and use of ICT

Four indicators related to trade facilitation and use of ICT were identified in the firm-level dataset, i.e., internationally-recognized quality certification, percentage of product loss (as a proxy of logistics infrastructure quality), days of trade clearance and use of e-mail. The first three indicators provide indications of the ability of the firms in completing trade-related procedures in an efficient manner, while the last indicator is a proxy of exporting SMEs' use of modern ICT. Figure 8 provides an overview of these indicators for SMEs engaged direct exporting. The average levels for the use of e-mail communication, internationally recognized quality certification and percentage of product loss of exporting SMEs observed were found to be very similar at the global level and in Asia and the Pacific.

Figure 8. Trade facilitation performance and ICT use of SMEs engaged in direct exporting



Source: Authors' calculation based on World Bank Enterprise Surveys (Version 5, February 2014 www.enterprisesurveys.org/CustomQuery).

C. Key factors in SME participation in exporting and IPNs

While the descriptive analysis of the World Bank Enterprise Survey data provides some preliminary insights of the obstacles faced by SMEs engaged in direct or indirect exporting, an empirical analysis is required to identify statistically significant characteristics and factors that distinguish SMEs participating in exporting and IPNs from those that do not. To formally estimate the relationship between various firm characteristics as well as trade facilitation and trade finance on the participation of firms in direct export and IPNs – in the manufacturing sector only – a series of regression models was used in the study.

The description of the variables used to specify various firm characteristics in the models of export and IPC participation are shown in Table 3- see annex 1 for technical details of the empirical model estimated. Econometric estimates of the models are reported in annex 2, from tables 2(a) to 2(d). More simply put, the impact of variables on SME participation in exports are listed in annex table 2(a) and IPNs in annex table 2(b) across firms of all sizes globally (model 1), SMEs globally (model 2), firms of all sizes within the Asia-Pacific subset

(model 3) and SMEs within the Asia-Pacific subset (model 4).[19] The marginal effects on SME participation in exports and IPNs are shown in annex tables 2(c) and 2(d), respectively.[20]

This study relied on the standardized World Bank Enterprise Survey data discussed above to estimate the models. As in Hoekman and Shepherd (2013), and to ensure that only the most reliable data were used, the dataset employed to estimate the models comprised only data from enterprise surveys for which survey administrators indicated that (a) questions in the survey were answered truthfully or somewhat truthfully, and (b) figures were taken directly from the record or estimates computed with some precision, i.e., data were dropped if either criterion was not satisfied. In addition, the dataset uses stratified random sampling based on size of firm, location and business sector.[21]

When considering the global dataset of SMEs (model 2), the importance of access to, and use of modern information and communications technology as well as international quality certification are found to be the key indicators to SME participation in exporting. Use of e-mail and international quality certification have the highest marginal effects of any other explanatory variables included in the models, with firms that either use e-mail or are certified being found at least 8 per cent more likely to be involved in exporting or IPN. The importance of modern information technology appears to be particularly crucial to participation in IPNs (as opposed to only direct exports), as the model suggests that firms using e-mail are 13 per cent more likely to be involved in such networks.

The results also confirm the importance of access to finance. Having access to formal external sources of working capital was also found to increase the probability of export participation on average for the global dataset, depending on the types of financing. Supply chain financing (supplier credit) was found to be highly significant, increasing the probability of SMEs participation in direct exporting and IPN participation probability by 2 per cent and 3.5 per cent, respectively. Non-bank financial institution credit is significant, both for SME direct exporting and IPN, and increases the probability of participation by 1.8 per cent and 3.1 per cent, respectively. Bank financing increases the probability of SME participation in direct export and IPN by 2.1 per cent and 4.4 per cent, respectively.[22] The results also highlight the importance of access to informal sources of financing (e.g., from family and friends), with those SMEs having such access being up to 2.7 per cent more likely to participate in IPNs – although apparently through indirect exports.

Logistics infrastructure and trade facilitation are found to be important factors affecting SME participation in export, with a 1 percent increase in product loss during transit (a proxy for quality of infrastructure) reducing the likelihood that a firm would participate in direct export by approximately 0.3 percent. A one day increase in the time taken to complete customs and related clearance processes also reduces the likelihood that a firm would participate in either direct export or IPNs by approximately 0.4 percent.

[19] See full paper annex for descriptive statistics of variables. The full working paper is available at www.unescap.org/sites/default/files/Staff%20Working%20Paper%2003-14_1.pdf.

[20] Evaluation of marginal effects of explanatory variables is calculated at their means, i.e., they show how the dependent variable (e.g., direct export participation) changes as a result of a change of one given explanatory variable by one unit, holding all other variables at their average values.

[21] For more information on data stratification, see www.enterprisesurveys.org//Methodology.

[22] All three formal sources of credit are significant when firms of all sizes are considered (model 1).

Table 3 .Variable description and expected sign

Variable	Unit	Expected signs	Source	Description
exporting_status	-		Author's calculation based on ESD[23]	Dummy variable indicating 1 if a firm participates in direct exporting; 0 otherwise.
pn_exporting_status	-		Author's calculation based on ESD	Dummy variable indicating 1 if a firm participates in IPN[24]; 0 otherwise.
firm_age	Year	?	Author's calculation based on ESD	Age of a firm from its establishment to the year of survey.
foreign_ownership_pct	%	+	ESD	Percentage of foreign ownership.
unskilled2workers_pct	%	-	Author's calculation based on ESD	Percentage of unskilled labour to total labour.
dum_email	-	+	Author's calculation based on ESD	Dummy variable indicating 1 if a firm uses e-mail to communicate with clients/suppliers; 0 otherwise.
dum_qcert	-	+	Author's calculation based on ESD	Dummy variable indicating 1 if a firm obtains internationally-recognized quality certification; 0 otherwise
capu_pct	%	+	Author's calculation based on ESD	Capacity utilization.
dum_wk_bank_pct	-	+	Author's calculation based on ESD	Dummy variable indicating 1 if a firm has working capital financed by banks; 0 otherwise.
dum_wk_supp_pct	-	+	Author's calculation based on ESD	Dummy variable indicating 1 if a firm has working capital financed by supplier credit; 0 otherwise.
dum_wk_nonbank_pct	-	+	Author's calculation based on ESD	Dummy variable indicating 1 if a firm has working capital financed by non-bank financial institutions; 0 otherwise.
dum_wk_informal_pct	-	+	Author's calculation based on ESD	Dummy variable indicating 1 if a firm has working capital financed by informal sectors (e.g., Moneylenders, friends, relatives); 0 otherwise.
product_loss_pct	%	-	ESD	Percentage of products shipped to supply domestic markets lost due to breakage or spoilage.
days_tradeclearance	Day	-	Author's calculation based on ESD	Average number of days to clear imports and/or exports from customs; the country-average is used if firm-specific data are missing.

[23] ESD: Enterprise Survey Data. Available online at www.enterprisesurveys.org/.

[24] Indication of a firm participating in a production network is when a firm participates in either direct or indirect exports or both, i.e., the sum of direct and indirect exports is greater than zero.

Foreign ownership was found to be statistically significant but its marginal effect on export participation was small. Other characteristics, such as firm age, the percentage of unskilled workers or capacity utilization, were generally not found to be significant in affecting SME participation in either direct or indirect exporting.

In comparing the marginal effects of the model estimates using firms of all sizes (model 1 and 3) rather than only SMEs (model 2 and 4), the time to complete customs and trade procedures was found to have a stronger effect on SME export participation than on large firms, providing further evidence of the importance of trade facilitation for SMEs.

In considering the estimates obtained using the Asia-Pacific SME dataset (model 4) as opposed to the Global SME dataset (model 2), the results remain broadly the same as those found for SMEs in developing countries globally. However, a few differences exist. The most striking one is the fact that the marginal effect of supplier credit on SME direct export participation is approximately twice that of the marginal effect of bank financing in Asia and the Pacific (3.2 per cent vs. 1.6 per cent), highlighting the importance of supply chain financing for the region. Access to informal finance was not found to be a significant determinant of either direct exporting or IPN participation for Asia-Pacific SMEs. The importance of international quality certification is relatively less important for Asia-Pacific SMEs, although it remains very significant. Finally, foreign ownership has a significant and positive, albeit minor, effect on export participation by Asia-Pacific SMEs.[25]

D. Conclusion and policy recommendations

The objective of this study was to identify key firm characteristics as well as external factors affecting SME participation in direct exporting and IPNs. Enterprise level data from developing countries were analysed to identify the main obstacles to establishment and operation of direct and indirect small and medium-sized exporters. Models of SME exports and IPN participation were estimated, revealing the importance of several trade facilitation- and trade- related factors. Use of modern information and communication technology was found to be the most important factor in increasing the probability of participation by SMEs, both in direct exports and in IPNs, followed by international quality certification and access to finance. Poor logistic infrastructures as well as delays in customs and trade clearance were also found to significantly affect SME participation, both in direct and indirect exporting.

Looking specifically at Asia-Pacific SMEs, the analysis further highlighted the importance of supply chain financing in enabling SME participation in exports in that region, relative to other financing methods. In addition, comparing the marginal effects of various factors on SMEs and LEs, a reduction in customs and trade clearance times was found to increase the likelihood of participation by SMEs in exports or IPNs relatively greater than that of LEs.

With the aim of fostering more inclusive and sustainable development in the Asia-Pacific region, the following three main policy recommendations for developing national Governments and development partners can be drawn from the results of this study:

[25] The robustness of the results was checked by re-estimating the models by alternatively dropping each of the factors, including trade clearance time. The results were found to be robust and still held both in the direct export and the IPN models. The results can be provided upon request.

(a) Given the importance of ICT in enabling participation of SMEs in trade, prioritize efforts to provide affordable access to the Internet and related services, including building the capacity of SMEs and individuals in using the services;

(b) Noting that (i) supplier credit was found to be at least as important an enabler of SME participation in exporting as is bank financing, and (ii) access to finance remains a key obstacle to SME development, encourage the further development of supply chain finance in partnership with the private sector in addition to the more traditional bank and non-bank financial services;

(c) Recognizing that the streamlining of customs and trade procedures was found to be of particular benefits to SMEs, actively seek to simplify and increase transparency of the business environment in general, and trade procedures in particular, including through – but not limited to – implementation of measures included in the WTO trade facilitation agreements.

Annex 1. Econometric model: Modelling export participation by SMEs

Following previous literature, binomial logit models were used to estimate the relationship between various firm characteristics as well as trade facilitation and trade finance on the participation of firms in direct export and IPNs. Country, year, sector, and firm-size fixed effects are included in the models. The models for direct export (D0) and IPN (P0) are:[26]

(D0): xifst= b0 + b1 (firm_ageifst) + b2 (foreign_ownership_pctifst) + b3 (unskilled2workers_pctifst) + b4 (dum_emailifst) + b5 (dum_qcertifst) + b6 (capu_pctifst) + b7 (dum_wk_bankifst) + b8 (dum_wk_suppifst) + b9 (dum_wk_nonbankifst) + b10 (dum_wk_informalifst) + b11 (product_loss_pctifst) + b12 (days_tradeclearanceifst) + μi + μf + μs + μt + eifst

(P0): pnifst = b0 + b1 (firm_ageifst) + b2 (foreign_ownership_pctifst) + b3 (unskilled2workers_pctifst) + b4 (dum_emailifst) + b5 (dum_qcertifst) + b6 (capu_pctifst) + b7 (dum_wk_bankifst) + b8 (dum_wk_suppifst) + b9 (dum_wk_nonbankifst) + b10 (dum_wk_informalifst) + b11 (product_loss_pctifst) + b12 (days_tradeclearanceifst) + μi + μf + μs + μt + eifst

for home country i, firm size f, sector s, at year t where,

x	denotes indicator variable of direct export participation: 1 if participating in direct export, 0 otherwise.
pn	denotes indicator variable IPN participation: 1 if participating in either direct or indirect export, 0 otherwise.
firm_age	denotes years of formal operation of a firm (calculated by survey year minus year of formal establishment).
foreign_ownership_pct	denotes percentage of foreign ownership in a firm.
unskilled2workers_pct	denotes percentage of unskilled labour to total workers.
dum_email	denotes indicator variable of email communication: 1 if using e-mail to communicate with clients/suppliers, 0 otherwise.
dum_qcert	denotes indicator variable of international-recognized quality certification: 1 if a firm obtains one(s), 0 otherwise.
capu_pct	denotes percentage of capacity utilization.
dum_wk_bank	denotes indicator variable of access of working capital from banks: 1 if a firm obtains one(s), 0 otherwise.
dum_wk_supp	denotes indicator variable of access of working capital from supplier credits: 1 if a firm obtains one(s), 0 otherwise.
dum_wk_nonbank	denotes indicator variable of access of working capital from non-bank financial institutions: 1 if a firm obtains one(s), 0 otherwise.
dum_wk_informal	denotes indicator variable of access of working capital from informal sources: 1 if a firm obtains one(s), 0 otherwise.
product_loss_pct	denotes percentage of products shipped to supply domestic markets lost due to breakage or spoilage.
days_tradeclearance	denotes Average number of days to clear imports and/or exports from customs.
μi / μf / μs / μt	denotes country, firm size, sector and year fixed effect, respectively.

[26] Data description and variable description and expected signs are given in annex tables 1and 2.

Annex 2

Annex Table 1. Demographic description of export participation of SMEs and LEs

1(a). Direct export participation of firms in the sample

Region	Export status	SMEs		LEs		Total	
		Number	% of total	Number	% of total	Number	% of total
Global	Exporter	5 115	9.6	4 409	8.2	9 524	17.8
	Non-exporter	37 650	70.4	6 326	11.8	43 976	82.2
	Total	42 765	79.9	10 735	20.1	53 500	100.0
Asia-Pacific	Exporter	1 386	2.6	1 448	2.7	2 834	5.3
	Non-exporter	12 047	22.5	2 421	4.5	14 468	27.0
	Total	13 433	25.1	3 869	7.2	17 302	32.3

1(b). International production network participation[27] of firms in the sample

Region	IPN status	SMEs		LEs		Total	
		Number	%	Number	%	Number	%
Global	IPN member	7 043	13.2	5 229	9.8	12 272	22.9
	Non-member	35 722	66.8	5 506	10.3	41 228	77.1
	Total	42 765	79.9	10 735	20.1	53 500	100.0
Asia-Pacific	IPN member	2 014	3.8	1 795	3.4	3 809	7.1
	Non-member	11 419	21.3	2 074	3.9	13 493	25.2
	Total	13 433	25.1	3 869	7.2	17 302	32.3

Source: Author's calculation from standardized dataset (2006-2014), Enterprise Surveys.

Note: Exporters are those firms whose direct exports are greater than zero; non-exporters are those firms whose direct exports equal zero. The definition is slightly different from the dataset where less than 10 per cent direct exports are considered to be non-exporters.

[27] Indication of participation in a production network is when a firm participates in either direct or indirect exports or both, i.e., the sum of direct and indirect exports is greater than zero.

Annex Table 2

2(a). Empirical result: Logit estimates of direct export participation

Variables	(1) All: Global	(2) SMEs	(3) Asia-Pacific	(4) Asia-Pacific SMEs
firm_age	-0.000245*	-0.000146	-0.000204	-0.000138
	[-1.894]	[-0.829]	[-1.571]	[-0.738]
foreign_ownership_pct	0.0113***	0.0135***	0.0159***	0.0159***
	[7.814]	[8.280]	[9.592]	[7.278]
unskilled2workers_pct	0.000602	0.00144	3.14e-05	0.00159
	[0.701]	[1.498]	[0.0113]	[0.565]
dum_email	1.413***	1.711***	1.540***	1.844***
	[7.933]	[11.70]	[5.248]	[7.565]
dum_qcert	0.890***	1.050***	0.559***	0.677***
	[9.852]	[9.345]	[3.227]	[4.351]
modiv_capu_pct	0.000503	0.00221	0.000872	0.00358
	[0.408]	[1.595]	[0.504]	[1.537]
dum_wk_bank_pct	0.323***	0.319***	0.349***	0.277***
	[7.314]	[5.135]	[6.207]	[2.782]
dum_wk_supp_pct	0.356***	0.325***	0.524***	0.508***
	[4.927]	[3.674]	[3.505]	[2.735]
dum_wk_nonbank_pct	0.261***	0.268***	0.254	0.372**
	[2.816]	[2.768]	[1.058]	[2.025]
dum_wk_informal_pct	0.0766	0.168*	0.0207	-0.0306
	[0.911]	[1.846]	[0.137]	[-0.221]
product_loss_pct	-0.0479***	-0.0537***	-0.0728**	-0.106**
	[-3.702]	[-2.651]	[-2.231]	[-2.561]
days_tradeclearance	-0.0353***	-0.0658***	-0.0283***	-0.0649*
	[-6.807]	[-5.198]	[-2.873]	[-1.668]
size_dum_1	-1.959***		-1.941***	
	[-18.76]		[-13.13]	
size_dum_2	-1.093***		-1.111***	
	[-12.89]		[-7.796]	
Constant	-2.367***	-4.594***	-3.834***	-3.483***
	[-9.008]	[-13.64]	[-3.921]	[-4.775]
Observations	18,517	13,858	6,382	4,490
Country FE	Yes	Yes	Yes	Yes
Clustered SE	Country	Country	Country	Country
Pseudo R-squared	0.307	0.223	0.269	0.167
*** p<0.01, ** p<0.05, * p<0.1				
t-stat. in square brackets				

2(b). Empirical result: Logit estimates of IPN participation

Production network participation – logit estimates				
	(1) All: Global	(2) SMEs	(3) Asia-Pacific	(4) Asia-Pacific SMEs
firm_age	-0.000239**	-0.000276*	-0.000291***	-0.000340***
	[-2.281]	[-1.647]	[-3.855]	[-3.130]
foreign_ownership_pct	0.0114***	0.0129***	0.0154***	0.0142***
	[7.824]	[8.285]	[6.394]	[5.212]
unskilled2workers_pct	-0.000123	0.000613	-0.000776	0.000470
	[-0.190]	[0.649]	[-0.587]	[0.308]
dum_email	1.106***	1.280***	1.292***	1.399***
	[7.968]	[12.27]	[5.763]	[7.498]
dum_qcert	0.859***	0.962***	0.504***	0.558***
	[8.469]	[8.045]	[2.759]	[3.505]
modiv_capu_pct	0.000212	0.00156	-0.000278	0.00178
	[0.149]	[0.980]	[-0.125]	[0.623]
dum_wk_bank_pct	0.340***	0.363***	0.413***	0.384***
	[6.073]	[5.724]	[4.095]	[3.092]
dum_wk_supp_pct	0.304***	0.301***	0.349***	0.400***
	[5.056]	[4.571]	[2.688]	[3.130]
dum_wk_nonbank_pct	0.204**	0.250**	0.131	0.237
	[2.194]	[2.210]	[1.195]	[1.182]
dum_wk_informal_pct	0.133*	0.224***	0.178	0.219
	[1.786]	[3.068]	[1.128]	[1.447]
product_loss_pct	-0.0326***	-0.0289*	-0.0248	-0.0284
	[-2.609]	[-1.866]	[-1.062]	[-1.065]
days_tradeclearance	-0.0233***	-0.0337***	-0.0210***	-0.0395*
	[-5.755]	[-5.477]	[-2.623]	[-1.821]
size_dum_1	-1.805***		-1.880***	
	[-18.27]		[-9.953]	
size_dum_2	-0.977***		-0.950***	
	[-9.874]		[-5.428]	
Constant	-1.574***	-3.526***	-2.512***	-3.771***
	[-5.860]	[-10.05]	[-3.435]	[-2.812]
	18,517	13,858	6,450	4,563
	Yes	Yes	Yes	Yes
	Country	Country	Country	Country
	0.277	0.184	0.250	0.139
***p<0.01; **p<0.05; *p<0.1. t-stat. in square brackets.				

2(c). Empirical result: Logit estimates of direct export participation – marginal effects

Direct export participation: logit estimates – marginal effect				
	(1)	(2)	(3)	(4)
Variables	All: Global	SMEs	Asia-Pacific	Asia-Pacific SMEs
firm_age	-2.64e-05*	-8.94e-06	-2.07e-05	-7.47e-06
	[-1.882]	[-0.822]	[-1.543]	[-0.720]
foreign_ownership_pct	0.00122***	0.000829***	0.00161***	0.000864***
	[7.121]	[7.839]	[6.480]	[5.228]
unskilled2workers_pct	6.48e-05	8.83e-05	3.18e-06	8.61e-05
	[0.703]	[1.513]	[0.0113]	[0.576]
dum_email	0.124***	0.0912***	0.127***	0.0914***
	[12.32]	[16.13]	[10.90]	[9.421]
dum_qcert	0.112***	0.0884***	0.0611***	0.0439***
	[9.618]	[7.355]	[3.673]	[4.052]
modiv_capu_pct	5.42e-05	0.000135	8.85e-05	0.000194
	[0.408]	[1.588]	[0.501]	[1.486]
dum_wk_bank_pct	0.0363***	0.0208***	0.0373***	0.0160**
	[6.948]	[4.840]	[5.212]	[2.488]
dum_wk_supp_pct	0.0393***	0.0204***	0.0608***	0.0321***
	[4.745]	[3.584]	[3.113]	[2.613]
dum_wk_nonbank_pct	0.0308***	0.0183**	0.0282	0.0235*
	[2.611]	[2.480]	[1.007]	[1.771]
dum_wk_informal_pct	0.00845	0.0109*	0.00212	-0.00164
	[0.887]	[1.740]	[0.136]	[-0.226]
product_loss_pct	-0.00516***	-0.00329***	-0.00738**	-0.00577***
	[-3.765]	[-2.664]	[-2.456]	[-2.919]
days_tradeclearance	-0.00380***	-0.00403***	-0.00287***	-0.00352*
	[-6.745]	[-5.520]	[-2.851]	[-1.769]
size_dum_1	-0.188***		-0.154***	
	[-21.89]		[-12.58]	
size_dum_2	-0.108***		-0.107***	
	[-17.31]		[-12.80]	
Observations	18,517	13,858	6,382	4,490
Country FE	Yes	Yes	Yes	Yes
Clustered SE	Country	Country	Country	Country
***p<0.01; **p<0.05; *p<0.1.				
t-stat. in square brackets.				

2(d). Empirical result: Logit estimates of IPN participation – marginal effects

Production network participation: logit estimates – marginal effect				
Variables	(1) **All: Global**	(2) **SMEs**	(3) **Asia-Pacific**	(4) **Asia-Pacific SMEs**
firm_age	-3.98e-05**	-3.16e-05	-4.65e-05***	-3.64e-05***
	[-2.275]	[-1.634]	[-3.957]	[-3.009]
foreign_ownership_pct	0.00190***	0.00147***	0.00246***	0.00152***
	[7.570]	[8.254]	[5.867]	[5.070]
unskilled2workers_pct	-2.05e-05	7.01e-05	-0.000124	5.04e-05
	[-0.190]	[0.651]	[-0.587]	[0.309]
dum_email	0.159***	0.131***	0.177***	0.138***
	[10.44]	[15.21]	[8.574]	[9.265]
dum_qcert	0.159***	0.138***	0.0847***	0.0675***
	[8.127]	[6.945]	[2.790]	[3.241]
modiv_capu_pct	3.52e-05	0.000179	-4.44e-05	0.000191
	[0.149]	[0.977]	[-0.125]	[0.621]
dum_wk_bank_pct	0.0585***	0.0441***	0.0692***	0.0442***
	[5.832]	[5.399]	[3.672]	[2.848]
dum_wk_supp_pct	0.0513***	0.0351***	0.0596**	0.0473***
	[4.974]	[4.516]	[2.501]	[2.917]
dum_wk_nonbank_pct	0.0358**	0.0310**	0.0218	0.0276
	[2.085]	[2.038]	[1.160]	[1.079]
dum_wk_informal_pct	0.0228*	0.0274***	0.0298	0.0252
	[1.719]	[2.868]	[1.065]	[1.328]
product_loss_pct	-0.00542***	-0.00331*	-0.00396	-0.00305
	[-2.628]	[-1.875]	[-1.078]	[-1.077]
days_tradeclearance	-0.00387***	-0.00385***	-0.00335***	-0.00423*
	[-5.756]	[-5.599]	[-2.612]	[-1.835]
size_dum_1	-0.266***		-0.241***	
	[-23.28]		[-15.71]	
size_dum_2	-0.151***		-0.145***	
	[-11.51]		[-6.537]	
Observations	18,517	13,858	6,450	4,563
Country FE	Yes	Yes	Yes	Yes
Clustered SE	Country	Country	Country	Country
*** p<0.01, ** p<0.05, * p<0.1 t-stat. in square brackets				

Chapter II

Including landlocked developing countries: Trade facilitation potential of existing Asian transit agreements[28]

Introduction

Freedom of transit is an issue particularly relevant to the ESCAP region. The region hosts 12 of the world's 31 landlocked developing countries, including four least developed countries (Afghanistan, Bhutan, the Lao People's Democratic Republic and Nepal).[29] Due mainly to their lack of direct access to the sea, these countries face higher costs of trade (figure 1), making it more difficult for them to maintain competitiveness in terms of both trade and investment. Freedom of transit is fundamental to the integration of landlocked countries into the international economy and their economic development; enabling them in particular to make the transition from landlocked to "land-linked".[30]

Recognizing the fact that transit issues are of the utmost importance to many landlocked countries, during their sixty-seventh annual Commission session ESCAP member States endorsed the recommendation that transit facilitation should be addressed as part of an integrated approach to trade facilitation. In ESCAP Resolution 68/3 on "Enabling paperless trade for inclusive and sustainable intraregional trade facilitation", the ESCAP members also mandated the Secretariat to, inter alia, "continue and further strengthen [its] support for capacity-building activities related to trade facilitation […], including transit facilitation, particularly with regard to least developed and landlocked developing countries […]".

In line with these mandates, this paper examines how freedom of transit and transit facilitation are addressed in trade and transportation as well as transit specific agreements in the ESCAP region, with a view to identifying good practices and the extent to which existing agreements meet the transit facilitation provisions set out in the final agreed text of the WTO TFA. Section A provides an introduction to the concept of freedom of transit and how it has been addressed through various types of agreements, particularly in preferential trade agreements. An analysis of the trade facilitation potential of selected international transport and transit agreements involving Asian landlocked developing countries is presented in section B, followed by the conclusion and implications in section C.

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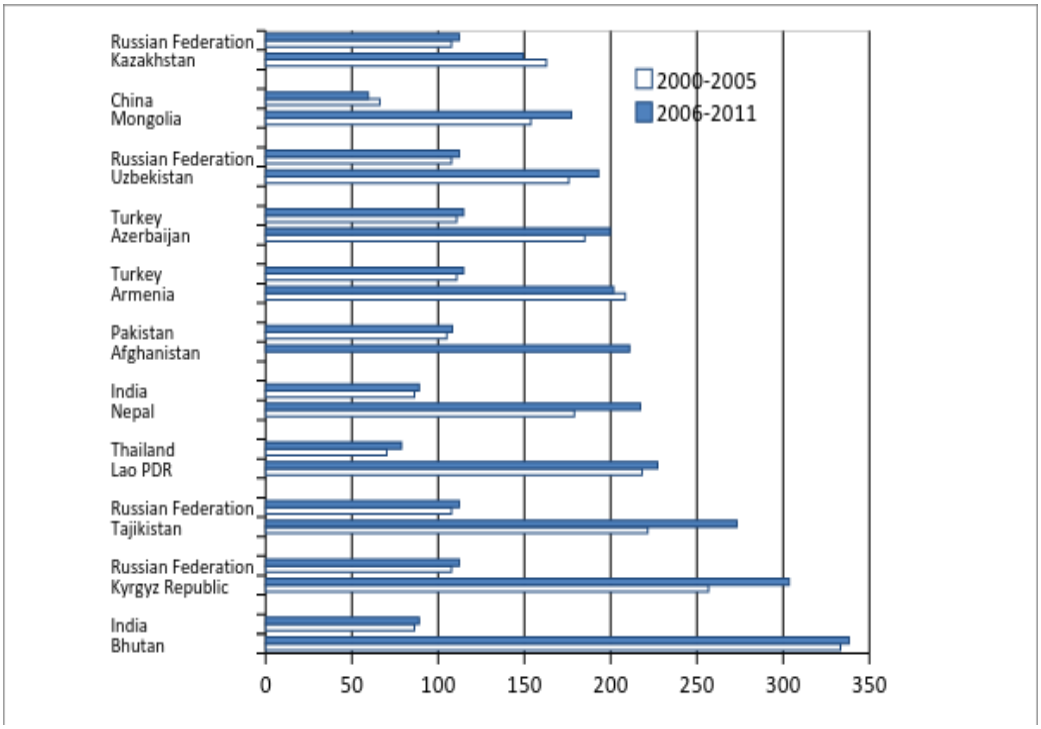
[28] This chapter is a shorter and updated version of an ESCAP working paper by Duval and Cousin (2014) available at http://www.unescap.org/sites/default/files/swp114.pdf
The original paper featured an analysis of the Draft Consolidated Negotiating Text of the World Trade Organization Trade Facilitation Agreement (WTO TFA) (rev. 17) as of July 2013. This analysis has been updated by A. Saggu in this chapter to reflect the final text of the WTO TFA as of July 2014.

[29] See www.unescap.org/media-centre/impact-story/new-vision-landlocked-development-countries

[30] Becoming "land-linked" is a development strategy adopted by some landlocked countries and which involves the provision of efficient international transit services through their own territories, thereby enhancing their strategic position and contribution to the development of international trade. See, for example, "Landlocked Developing Countries Series, No. 1: Transit Transport Issues in Landlocked and Transit Developing Countries", United Nations, New York, 2003.

Figure 1. Trade costs (excluding tariffs) of Asian landlocked countries and their main transit countries with the United States



Source: ESCAP-World Bank Trade Cost Database (August 2013 update).

A. Freedom of transit: A key component of trade facilitation

Trade facilitation is a notion of flexible and evolving scope, adaptable to the diversity of situations to which it is applied.[31] The definition developed by the World Trade Organization (WTO) recognizes freedom of transit – Article V of the General Agreement on Tariffs and Trade (GATT) – as an integral component of trade facilitation, in addition to the disciplines concerning fees and formalities connected with importation and exportation (GATT, Article VIII) and transparency requirements (GATT, Article X).

The definition of transit in GATT (Articled V) is limited to so-called through transit, involving at least three countries. Traffic is qualified as being "in transit when the passage across [the] territory [of a State] is only a portion of a complete journey beginning and terminating beyond the frontier" of that State.[32] However, this definition, together with the WTO concepts of trade facilitation and freedom of transit, are prone to evolution as WTO seeks to "clarify and improve" related GATT provisions.

[31] While trade facilitation is understood as broadly being "the simplification, standardization and harmonization of procedures and associated information flows required to move goods from seller to buyer and to make payments" by UN/CEFACT, a narrower definition was developed in the WTO context.

[32] The UNCTAD Trust Fund for Trade Facilitation Negotiations, Technical Note 8 – "Freedom of Transit", Rev2, February 2009, states that: "It should be noted that in the context of Customs transit regimes (see UNCTAD Technical Note on Customs Transit), other parts of a journey are also defined as constituting transit, notably inward transit (from a Customs office of entry to an inland Customs office), outward transit (from the inland Customs office to the Customs office of exit) and interior transit (from one inland Customs office to another in the same country)."

Freedom of transit is currently dealt with under Article 11 of the WTO TFA, and explained in detail in Article 11 of the WTO Agreement on Trade Facilitation Self-Assessment Guide Rev.8. Freedom of transit is a development of the right of the original landlocked countries to access to the sea. Although numerous international Conventions grant freedom of transit – especially for landlocked States – they also protect the rights and "legitimate interests" of the transit country; freedom of transit is thus balanced with national sovereignty. International treaties on transit aim to solve this tension, allowing the transit State to set the conditions under which the other member State's traffic will be allowed to cross its territory.[33] In this paper, the term "freedom of transit" combines both GATT Article V and WTO TFA Article 11.

B. Transit facilitation: A complex system of legal instruments

Freedom of transit is addressed through a wide range of international legal instruments. These instruments vary in type as well as geographical scope. For example, transit is sometimes covered by international trade agreements, but also often by road transport agreements or even specific transit agreements. In addition, if global legal instruments (such as GATT) provide – usually broad – principles related to transit, these are usually coupled with more specific (sub)regional and bilateral treaties.

Kunaka and others (2013)[34] found several reasons that explain this tendency for countries to negotiate and conclude such a diversity of agreements addressing transit. The first is political in nature: formally expressing through one – or more – treaty their will to cooperate and improve their relations makes it easier to implement reform. Others stem from economic considerations and include: (a) needs for setting the conditions under which transit can be performed across respective territories in an equitable manner; (b) detailing bilaterally the implementation of broader commitments, such as the ones contained in multilateral treaties; or (c) sending a positive signal to markets.

This diversity of instruments raises a number of issues, which can have positive or negative impacts in terms of trade facilitation. On the one hand, the ability of countries to negotiate and conclude various bilateral transit-related treaties can constitute a quicker and more flexible way for cooperation than multilateral instruments, due to a smaller number of individual interests to conciliate. Initiation and gradual improvement of varied transit mechanisms on a smaller scale may also facilitate the emergence of best-practice models to be transposed at a multilateral level. Inclusion of transit facilitation provisions, both in trade agreements and in transport agreements may also in principle provide for more broad-based support for implementation of freedom of transit.

On the other hand, there is no guarantee that provisions related to transit are consistent across the different agreements signed by a given country, particularly since the line ministries in charge of negotiating often differ according to the type of agreement being signed. The multiplicity of bilateral instruments also inherently creates a legal environment that is difficult to apprehend and analyse comprehensively. This is particularly true with regard to transit facilitation. Apart from the Vienna Convention Article 80[35] – which is only

[33] UNCTAD Trust Fund for Trade Facilitation Negotiations, Technical Note 8: "Freedom of Transit", Rev2, February 2009.

[34] See Kunaka and others, "Quantitative Analysis of Road Transport Agreements (QuARTA)", World Bank, 2013.

[35] Vienna Convention on the Law of the Treaties, 1969, Article 80(1): "Treaties shall, after their entry into force, be transmitted to the Secretariat of the United Nations for registration or filing and recording, as the case may be, and for publication."

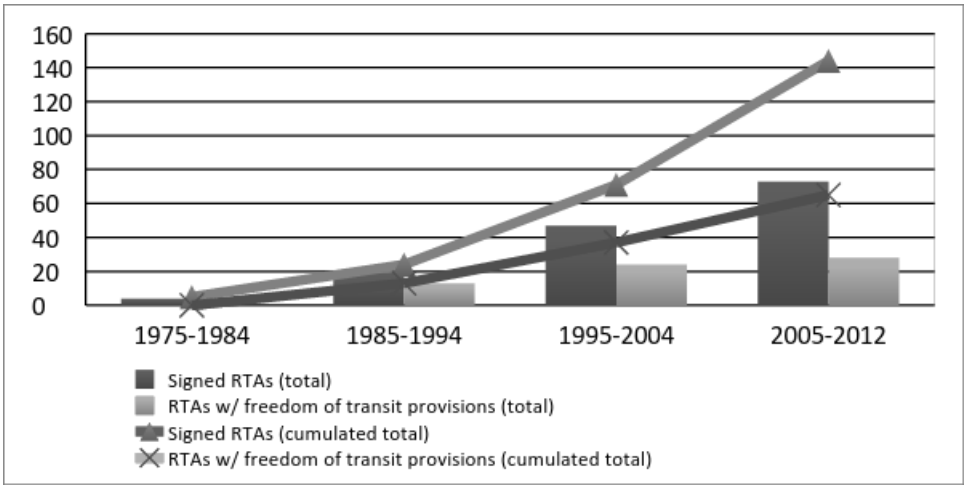
partially implemented – and the WTO transparency mechanism for regional trade agreements (RTAs),[36] countries are not committed to publishing their international transit-related treaties. Importantly, bilateral agreements tend to reflect the relative bargaining power of the negotiating partner, leading to transit-related provisions and agreements that provide for differential amounts of freedom of transit and transit facilitation, which may ultimately conflict with multilateral commitments.

C. Transit provisions in preferential trade agreements

Freedom of transit is an important component of the WTO TFA. However, analysis of bilateral and regional trade agreements in the ESCAP region suggests that only a few such agreements include provisions on transit facilitation.[37] In a first attempt to understand the extent to which preferential trade agreements (PTAs) entered into by ESCAP countries may facilitate transit, a search of the Asia-Pacific Trade and Investment Agreement Database (APTIAD) was undertaken for transit-related provisions in PTAs involving countries of the Asia-Pacific region. International transit was found to be only marginally addressed in PTAs, with just a minority of these agreements covering international transit directly (i.e., by specifying their own rules on transit) or indirectly (i.e., by referring to another agreement, e.g., GATT Article V).

Of 153 agreements, 66 grant freedom of transit for all contracting parties. Among those, 32 refer explicitly to GATT Article V. Although the number of PTAs covering transit has continued to grow in absolute terms, such agreements have become proportionally less prevalent (figure 2).

Figure 2. Relatively fewer PTAs include freedom of transit



In the agreements where it is mentioned, freedom of transit is essentially considered from a broader trade facilitation viewpoint. It is generally granted, but its technical aspects related to implementation are not covered. A detailed review of the 66 agreements with transit-related provisions showed that none of them

[36] GATT Article XXIV (7).

[37] ESCAP, Asia-Pacific Trade and Investment Report 2011, United Nations, 2011. See also, Duval,"Trade facilitation in regional trade agreements: Recent trends in Asia and the Pacific", ESCAP Trade and Investment Division Working Paper, No. 02/1125, March 2011.

mentioned anything about key underlying transit facilitation measures, such as those related to recognition of customs seals, escort fees or transit guarantees.

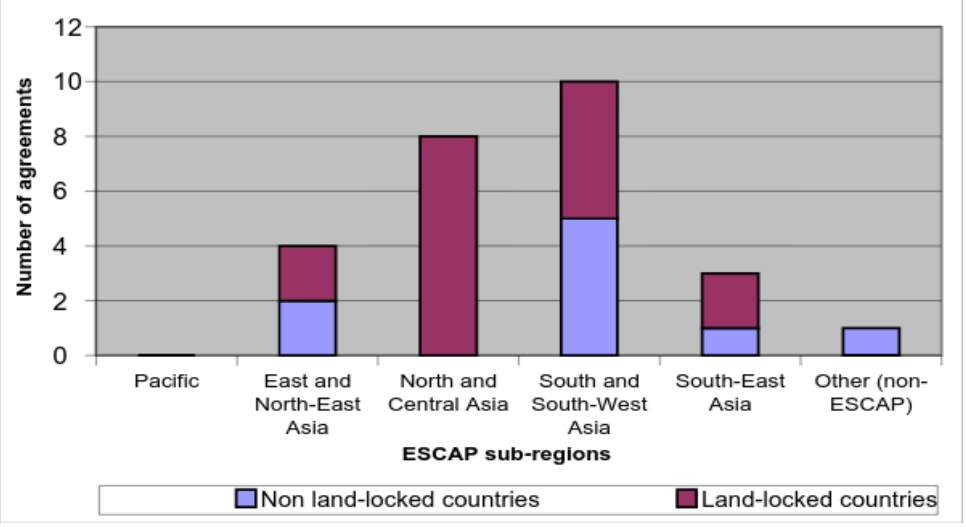
In fact, no PTAs were identified that featured transit provisions which clearly exceeded those of GATT Article V or the WTO TFA. To the extent that they specify that WTO rules prevail in the case of inconsistencies between the PTA and the WTO agreement, as in the case of the Japan-Philippines agreement (Article 11), PTAs covering transit may have, at best, a potential to facilitate transit similar to the WTO TFA.

D. Trade facilitation potential of selected transport and transit agreements

1. Sample and analytical template

The methodology followed in this analysis was inspired by the Quantitative Analysis of Road Transport Agreements (QuARTA) approach taken by Kunaka and others (2013), including the selection of a sample of agreements and development of an analytical template. A sample of 19 international transport and transit agreements was selected with a view to ensuring adequate representation across ESCAP subregions (figure 3).[38] Given the importance of international transit for landlocked countries, priority is given to agreements to which at least one landlocked State is a member – all 12 ESCAP landlocked States are represented at least once. The sample is also representative of the diversity in the types of agreements: bilateral and multilateral, "transit" and "road transport" agreements, and "water transit" agreements. Table 1 provides a detailed list of agreements selected.

Figure 3. Distribution of selected transit agreements, by ESCAP subregion



[38] Unlike the case of trade agreements, existing databases on transit-related agreements are few and far from exhaustive. The collection by ESCAP Trade and Investment Division of texts of international transport and transit agreements through the United Nations Treaties website and other relevant online sources, and through collaboration with the WTO Secretariat, resulted in an initial database of 116 bilateral agreements involving countries in the ESCAP region; Many more agreements exist but their text could not be located.

Table 1. List of agreements selected for analysis

	Agreement's short name	Agreement's title	ESCAP contracting parties	Date of signature
1	**AFAFGIT**	ASEAN Framework Agreement on the Facilitation of Goods in Transit	Brunei Darussalam, Indonesia, Lao, Malaysia, Myanmar, Philippines, Singapore, Thailand, Viet Nam	1998
2	**Afghanistan - Pakistan**	Afghanistan - Pakistan Transit Trade Agreement	Afghanistan, Pakistan	2010
3	**Bangladesh - India**	Trade Agreement Between the Government of the Republic of Bangladesh and the Government of the Republic of India - Protocol on Inland Water Transit and Trade	Bangladesh, India	
4	**Cambodia - Vietnam**	Agreement on the transit of goods between the Government of the Kingdom of Cambodia and the Government of the Socialist Republic of Vietnam	Cambodia, Viet Nam	2000
5	**ECO TTFA**	ECO Transit transport framework agreement	Afghanistan, Turkmenistan, Tajikistan, Pakistan, Iran, Turkey, Kazakhstan, Kyrgyzstan	
6	**GMS - CBTA**	Agreement between and among the governments of the Lao's People Democratic Republic, the Kingdom of Thailand, and the Socialist Republic of Viet Nam for facilitation of cross-border transport of goods and people	Cambodia, China, Lao, Myanmar, Thailand, Viet Nam	1999
7	**India-Bhutan**	Agreement on Trade, Commerce and Transit between the Government of the Republic of India and the Royal Government of Bhutan	Bhutan, India	2006
8	**Irak - Turkey**	Transit Agreement Between the Government of the Republic of Turkey and the Government of the Republic of Irak	Irak, Turkey	1968
9	**Iran - Turkey**	International Road Transport Agreement Between the Government of the Republic of Turkey and the Government of the Islamic Republic of Iran	Iran, Turkey	1980
10	**Iran - Uzbekistan**	International Road Transport Agreement Between the Government of the Republic of Uzbekistan and the Government of the Islamic Republic of Iran	Iran, Uzbekistan	
11	**Kazakhstan - China**	Agreement Between the Government of the Republic of Kazakhstan and the Government of the People's Republic of China on International Road Transport	China, Kazakhstan	1992
12	**Kazakhstan - Kyrgyz Republic**	Agreement Between the Government of the Republic of Kazakhstan and the Kyrgyz Republic on International Road Transport	Kazakhstan, Kyryz Republic	
13	**Kazakhstan - Mongolia**	Agreement between the Government of the Republic of Kazakhstan and the Government of Mongolia on the International Transport of Passengers and Goods by Road	Kazakhstan, Mongolia	1993
14	**Kazakhstan - Tajikistan**	Agreement Between the Government of the Republic of Kazakhstan and the Government of the Republic of Tajikistan on International Road Transport	Kazakhstan, Tajikistan	
15	**Kazakhstan - Turkmenistan**	Agreement between the Government of Kazakhstan and the Government of Turkmenistan on International Road Transport of Passengers and Cargo	Kazakhstan, Turkmenistan	1997
16	**Mongolia - Russia**	Agreement Between the Government of Mongolia and the Government of the Russian Federation Concerning Access to the Sea and Transit Transport for Mongolia Across the Territory of the Russian Federation	Mongolia, Russia	1992
17	**Nepal - Bangladesh**	Transit Agreement Between His Majsty's Government of Nepal and the Government of the People's Republic of Bangladesh	Bangladesh, Nepal	1976
18	**Nepal - India**	Treaty of Transit Between His Majesty's the Government of Nepal and the Government of India	India, Nepal	1999
19	**TRACECA**	Basic Multilateral Agreement on International Transport for Development of the Europe - the Caucasus - Asia corridor	Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Tajikistan, Turkey, Uzbekistan	1998

Since the analysis in this chapter is aimed at determining the potential trade-facilitating effect of Asian transit agreements by comparing the requirements of the selected agreements with those provided in WTO rules and WTO TFA art. 11, the QuARTA analytical template is both simplified as well as completed with transit-related requirements specified in GATT Article V and the WTO TFA text. The analyse template generally follows the structure provided for in WTO TFA Article 11 as detailed in the WTO Trade Facilitation Agreement Self-Assessment Guide: (a) charges, regulations and formalities; (b) non-discrimination principle; (c) transit procedures and controls; (d) guarantee-related provisions; and (e) cooperation and coordination.[39] In each case, the present analysis determines whether the transit agreement provisions are generally consistent with, more restrictive than, or more facilitative than the WTO TFA requirements.

It is worth noting that the final WTO TFA text agreed on at the Bali Ministerial is arguably more facilitating than earlier drafts known as the Draft Consolidated Negotiating Texts (DCNTs). Indeed, significant portions of the DCNT texts were ultimately deleted including, for example, paragraphs 1-2 on "Scope" in Article 11 and two of the three provisions on strengthening non-discrimination (see annex).

E. Findings and discussion

It is important to remember that this chapter provides an analysis of the scope and potential facilitation effect of agreements, and specific provisions within them, from a legal point of view. It does not reflect the actual environment for goods in transit. Indeed, depending on practical constraints faced during implementation of the agreements as well as the willingness and intent of the parties, even identical provisions in two different agreements can, in practice, lead to different levels of facilitation.

The findings, which are summarized in table 2, show the scope of each of the 19 agreements in the sample and the extent to which they feature various transit facilitating provisions. The provisions reviewed are introduced and discussed in turn below, in the light of WTO rules and the WTO TFA text, with a view to identifying good practices.

As mentioned above, WTO rules[40] require that "contracting parties shall grant freedom of transit through their territories to goods (including baggage) and vessels and other means of transport […] via the routes most convenient for international transit, for traffic in transit to or from the territory of other contracting parties". Traffic in transit includes passage across a territory "with or without trans-shipment, warehousing, breaking bulk or change in the mode of transport".

1. Definitions of "international transit"

Definitions of "international transit" were found in 14 agreements of the sample. The form of transit covered then is systematically through transit, i.e., "when the passage through [the] territory [of a Contracting Party] is only a portion of a complete journey starting and ending beyond the frontiers of a Contracting Party

[39] See WTO Document TN/TF/W/143/rev.8 for the WTO TFA text and its explanation. Available at the WTO website as well as at https://docs.wto.org/dol2fe/Pages/FE_Search/FE_S_S009-DP.aspx?language=E&CatalogueIdList=128650,122575,118877,116022,115125,91612,78895,108141,95823,64673&CurrentCatalogueIdIndex=0&FullTextSearch=.

[40] GATT Article V:1 and V:2.

across whose territory the traffic passes".[41] However, a certain disparity appears in several regards. Two agreements provide additional geographical restrictions, mainly in relation to the goals and purposes of the agreements: Bangladesh-India limits its definition of transit to the "passage of goods between two places in one country through the territory of the other"[42] contracting party – thereby excluding transit to a third country. However, Kazakhstan-Turkmenistan[43] excludes transit between two places of the same territory, specifying that traffic in transit must reach a third country.

Disparity is also observable in the transport operations encompassed under the definition of transit. Most of the agreements are less extensive than WTO rules, sometimes not evoking such operations (e.g., the Islamic Republic of Iran-Uzbekistan) or only some of the operations (e.g., Afghanistan-Pakistan includes the passage of goods "with or without transshipment, or change in the mode of transport",[44] but it does not refer to warehousing nor breaking bulk). However, two of the agreements actually appear to be more extensive than GATT Article V in this regard – "the assembly, disassembly or reassembly of machinery and bulky goods" is included in the definition of transit in the Nepal-Bangladesh and Nepal-India agreements.[45]

2. Freedom of transit

All the agreements selected in this analysis cover transit of goods. Furthermore, a majority go beyond GATT requirements (limited to goods), encompassing passengers in their scope (e.g., Kazakhstan-Kyrgyz Republic: Freedom of transit for passengers[46]). Freedom of transit is also almost always granted to vessels, in accordance with GATT Article V. Yet, additional restrictions appear to be generally imposed in this regard, as many of the agreements require the vessels to be registered in one of the contracting parties to benefit from freedom of transit. A few marginal exceptions to that requirement can be found; e.g., the Kazakhstan-Tajikistan agreement[47] states that while motor vehicles in transit have to be registered in a contracting party, trailers may be registered in a third country.

3. Modes of transport and trade routes

Although GATT Article V suggests that traffic should be allowed to transit freely via any available route, agreements selected show that traffic in transit can face different conditions depending on the mode of transport or route used. First, most agreements apply to some specific modes of transport only. Eight of the 19 agreements in the sample only cover one mode of transport (i.e., one inland water transit and seven international road transport agreements). As for the other 11 agreements, while all of them deal with road transport, only some of them also provide freedom of transit for rail transport (seven), inland water transport (four), maritime transport (six) and air transport (four).

Second, it appears that agreements covering different modes of transport apply different treatments among them. For example, the Afghanistan-Pakistan agreement (covering road, rail and sea) institutes two

[41] GMS-CBTA Article 3(u).
[42] Protocol on inland water transit and trade, Préambule.
[43] Article 2(8).
[44] Article 2.
[45] Article 2.
[46] Article 1.
[47] Article 6(2).

different types of permits: (a) "permit A" for goods imported or exported by sea, valid for 15 days; and (b) "permit B" for goods not imported or exported by sea, valid for 30 days.[48] In this particular case, this differentiated treatment is more favourable to goods transiting by road and rail than to goods transiting by sea.

Third, an obvious limitation to the freedom of transit principle is prescription of designated trade routes and/or of designated exit and entry points. Although such measures may be contradictory to GATT Article V, they were found in a majority of treaties from the sample. Such a limitation could fall under some exceptions listed in the GATT agreement, such as security exceptions (GATT Article XXI). However, these exceptions are specific to certain circumstances and require justifications (e.g., "protection of its essential security interests"). From the sample, it appears that only one agreement specifies the criteria used to determine these routes (Kazakhstan-China – prescribed routes for oversized and overweighed vehicles, and transport of dangerous goods[49]).

4. Charges, regulations and formalities

(a) Exemption from charges and reasonableness principles

WTO law[50] states that traffic in transit "shall be exempt from customs duties and from all transit duties or other charges imposed in respect of transit, except charges for transportation or those commensurate with administrative expenses entailed by transit or with the cost of services rendered." Moreover, all charges imposed on traffic in transit "shall be reasonable."

From the sample studied, it appears that the exemption of traffic in transit from customs duties, fees and charges principle is generally granted. Likewise, the reasonableness principle is present in a majority of agreements – although a significant number do not stipulate anything in this regard.

(i) Transit traffic quotas

According to WTO TFA, this reasonableness principle also applies to regulations. "Any regulations or formalities in connection with traffic in transit imposed by a Member shall not be: (a) maintained if the circumstances or objectives giving rise to their adoption no longer exist or if the changed circumstances or objectives can be addressed in a reasonably available less trade-restrictive manner; and (b) applied in a manner that would constitute a disguised restriction on traffic in transit." [51]

If quotas are not expressly mentioned in this provision, such restrictions to international transport can safely be qualified as a regulation "in connection with traffic in transit". Consequently, a highly facilitative agreement would ideally prohibit the use of quotas. When such restrictions are considered as being necessary, an international agreement authorising quotas would preferably explicitly limit their use to the circumstances justifying their allowance, in order to prevent unnecessary or disguised restrictions to traffic in transit. Quotas are mentioned in 10 agreements in the sample. Half of them prohibit the use of quotas, allowing transit in an open-ended manner. Among the five other agreements authorizing transport quotas, two different situations can be found:

[48] Protocol Article 25(2).
[49] Article 7(1).
[50] GATT Article V.3 and V.4.
[51] WTO TFA Article 1.

Agreements justifying quotas or restricting the use of quotas to specific situations – two agreements of the sample fall under this category. The Afghanistan-Pakistan agreement stipulates that the parties may agree to set up a quota system for the issuance of transit permits "to respect a fair share of traffic between the two Contracting Parties". Likewise, Bangladesh and India agreed to respect "as far as practicable" an equitable share of transit cargo on an equal tonnage basis. Agreements allowing quotas without justification or limits – the Islamic Republic of Iran-Turkey agreement, for example, simply states that the carriage of goods in transit "shall be subject to prior permit based on quota".

(ii) Periodical review

An earlier draft of the WTO TFA (DCNT rev. 17) required States to "periodically review [their] charges on traffic in transit with a view to reducing them".[52] This requirement – which rarely features in international transit agreements – was deleted from the final WTO TFA text. The WTO TFA text now requires that Members "promptly publish…information in a non-discriminatory and easily accessible manner [for]…fees and charges imposed by or for governmental agencies on, or in connection with, importation, exportation or transit." This is a more diluted form of the negotiated explicit requirement prior to finalization.

(iii) Transparency

New rules related to transparency were also required in the draft agreement (DCNT rev. 17), "[e]ach member shall notify the Committee on the objective and duration of all charges, regulations or formalities in connection with traffic in transit on a regular basis"[53]. This requirement – mentioned in only a minority of agreements – was also removed from the final WTO TFA text.

Obligations related to transparency can vary considerably from one agreement to another. In some instances, they are worded in broad and flexible terms; e.g., the Kazakhstan-Kyrgyz Republic agreement's[54] transparency requirement consists of an obligation to exchange information about changes in national laws that affect implementation, without explicitly clarifying the types of regulations covered under this statement. However, some of the other agreements' obligations are more extensive. For example, the TTFA stipulates that the parties "shall give due advance notice […] of any additional requirement or modification in prescribed documentation and procedures to be introduced in regard to traffic in transit".[55] In principle, this allows those agencies and operators to anticipate upcoming modifications to transit regulations and procedures. In some instances, countries also commit to providing transport operators with additional and operational tools designed to facilitate transit operations. These include, among others, the publication of transit regulations and procedures in English[56] and the establishment of enquiry points where transporters can acquire information on relevant measures.[57]

(b) Non-discrimination

The principle of non-discrimination is a key aspect of general WTO law. The WTO TFA transposes this principle to traffic in transit, requiring that members not treat goods passing in transit to another member's territory or final destination any differently to domestic traffic. The requirement is known as 'Treatment

[52] Idem.
[53] WTO TFA Article 11(4).
[54] Article 17(1).
[55] TTFA Article 31.
[56] GMS-CBTA Article 1.
[57] Afghanistan-Pakistan Article 29(b).

Preceding Transit' and states that "Each Member shall accord to products which will be in transit through the territory of any other Member treatment no less favourable than that which would be accorded to such products if they were being transported from their place of origin to their destination without going through the territory of such other Member." [58] It is important to note that DCNT (rev. 17) also contained provisions on non-discrimination and national treatment, however, these were deleted from the final WTO TFA.[59]

The general idea of non-discrimination with regards to traffic in transit was found in a majority of agreements. However, only two of them actually cover the three main aspects of non-discrimination as generally provided by WTO law. The non-discrimination sub-principle is the most usually referred to, with 10 agreements granting it, followed by treatment preceding transit (five agreements) and national treatment (four agreements).

(c) Transit procedures and controls

The WTO TFA completes GATT Article V with a new set of requirements designed to simplify transit procedures and controls applied to traffic in transit. Interestingly, these requirements find few, if any, direct equivalence in the treaties from the sample. Thus, the analysis here proposes to group the different requirements under broader topics.

(i) Preferential facilitation measures for the goods

Several WTO TFA provisions fall under this category. First, WTO TFA Article 11(6) states that "formalities, documentation requirements and customs controls in connection with traffic in transit shall not be more burdensome than necessary to: (a) identify the goods; and (b) ensure fulfillment of transit requirements."

Second, WTO TFA Article 11(7) requires that goods in transit that have been authorized at the border be exempted from "any customs charges nor unnecessary delays or restrictions until they conclude their transit", such as en-route controls.

Third, WTO TFA Article 11(8) prohibits "technical regulations and conformity assessment procedures ... for goods in transit."

Fourth, WTO TFA Article 11(9) provides an obligation of "advance filing and processing of transit documentation and data prior to the arrival of goods."

A small minority of selected treaties provide such facilitative measures (8 out of 19). Moreover, requirements provided can be very different from one treaty to another, and few match WTO TFA requirements; international treaties deal with these issues whether in a broader way, or through other obligations having a facilitative effect on the transit procedures. Some treaties provide specific provisions that affect procedures and customs controls. These include provisions concerning: (a) simplification of customs formalities; (b) exemption from physical inspections; (c) exemption from en route inspections; and (d) advance clearance of goods. While such provisions individually contribute to the general preferential facilitation measures for goods in transit, they must be cumulated to reach the level of facilitation envisaged in the WTO TFA.

[58] Definition of transit, Article 11(4), (5) and (6).

[59] The non-discrimination requirement stated that a Member shall not discriminate against goods in transit or transport means of other Members except as permitted by other WTO agreements and for justified reasons, and the national treatment requirement stated that a Member shall not treat goods that will pass in transit through another Member's territory to the final destination less favourably than if the goods were shipped to the destination without passing through that other Member's territory.

Obligations to exempt traffic in transit from physical customs inspections are the most commonly specified. The Mongolia-Russian Federation agreement is a pertinent illustration: "The cargo and means of transport of the State lacking access to the sea shall as a rule be subject only to external customs inspection unless, for reasons of ordre public and, in particular, public security, morals and health, or with a view to protecting the environment, cultural heritage or industrial, commercial and intellectual property, it is necessary to conduct a full or partial internal inspection."[60]

Even though the definition of "ordre public" provides a large interpretation margin to the Russian administration, this article broadly covers obligations from both WTO TFA Articles 11(6) and 11(8). External inspection is a particularly non-burdensome customs control – WTO TFA Article 11(6) – and quality controls or controls of compliance with technical standards do not seem to fall under the "reasons of ordre public", allowing internal inspection (WTO TFA art. 11(8)). However, this obligation does not provide for simplification of formalities and document requirements – WTO TFA Article 11(6)) – or exemption from en-route controls (WTO TFA Article 11(7)).

In the same way, prohibition to imposing formalities, procedures and controls "more burdensome than necessary" is addressed in some of the agreements through the broader obligation of periodical review of formalities mentioned above. For example, the Greater Mekong Subregion Cross-Border Transport Agreement (GMS-CBTA) provides an obligation to "review periodically the need for and usefulness of all documents and procedures required for cross-border traffic",[61] and to "reduce, to the extent possible, procedures and formalities required for cross-border traffic".[62] It is noteworthy that the only one non-binding provision on advance clearance of goods in transit in the sample was found in GMS-CBTA.[63] With regard to the other three requirements, they are punctually evoked in several treaties – but none of the agreements studied covers them all.

However, some agreements provide facilitation measures that arguably go beyond the WTO TFA's requirements, such as Single Window inspection, single-stop inspection or establishment of a Customs Transit System.[64]In this regard, GMS-CBTA clearly represents a best-practice example as it not only cumulates most of the WTO TFA requirements, but also provides for Single Window inspection and single-stop inspection measures (box 3).

(ii) Immigration formalities

Immigration formalities are not specifically covered by WTO rules. However, some – mainly multilateral – agreements in the sample do include provisions to facilitate delivery of visas to drivers and persons engaged in international transit operations.

The modalities vary from one agreement to another, but some common features include: a multiple-entry visa for a minimum validity period ranging from six months (Afghanistan-Pakistan[65]) to one year (ECO,

[60] Mongolia-Russian Federation Article 7(2).
[61] Article 35(b)(v).
[62] Article 35(b)(i).
[63] Article 4(d).
[64] A Customs Transit System is established in the Afghanistan-Pakistan agreement. However, this measure would need to be clarified so as to be able to assess its legal – and facilitative – effects.
[65] Article 20.

TTFA[66]). Requirements in terms of length of stay can be flexible (GMS-CBTA: "multiple entry/exit visa for a minimum validity period of one year")[67] or more specific (ECO-TTFA: "multiple entry and transit visas valid for a period of one year with a right of staying on the territory of each Contracting Party for 15 days in transit for each trip, and for up to five more days in place of loading and discharge").[68]

(iii) Customs seals

Customs sealing is another aspect not raised in WTO texts but is found in several bilateral or multilateral agreements on transit. Customs-sealing regulations can be grouped under two categories: (a) mutual recognition of customs seals; and (b) unilateral recognition of customs seals. Mutual recognition means that customs authorities of each country will recognize seals opposed by the other country's customs authorities. This potentially facilitates transit by exempting sealed cargoes from physical inspections and double-checks.

From the sample, mutual recognition of customs seals appears to typically belong to multilateral agreements (ECO-TTFA and GMS-CBTA), but some bilateral treaties also provide such provisions: "If the lead seals affixed by the customs authorities of one of the Contracting Parties […] are found intact […], vehicles will be inspected by the customs authorities of the other Contracting Party externally; be sealed off and be permitted to enter and leave the country." (Iraq-Turkey[69]).

In contrast, unilateral recognition is found exclusively in bilateral agreements. In some instances, one party has exclusivity on the recognition of customs seals (Nepal-Bangladesh[70]). For example, in the Nepal-Bangladesh agreement, the coastal State (Bangladesh) unilaterally grants the right of transit to the State lacking access to the sea (Nepal). Generally, mutual recognition is agreed on when both countries believe they have a clear reciprocal interest in facilitating transit through the other's territory.

(d) Guarantees and escorts

(i) Guarantees (limitations of)

The WTO TFA adds new requirements to WTO rules regarding transit guarantees; guarantees imposed by customs "shall be limited to ensuring that requirements arising from such traffic in transit are fulfilled"[71], "shall be discharged without delay" [72] and allow "renewal of guarantees without discharge for subsequent consignments." [73]

Few of these requirements were found in the sample, as guarantees are rarely invoked. Only three treaties provide a limit on guarantees. The limits in two of the agreements are expressed in absolute terms (GMS-CBTA – "The amount of security to be provided […] shall be a maximum of SDR 70,000";[74] and Iraq-Turkey – "Enterprises and companies of transport […] will, as custom guarantee, deposit a sum equivalent to US$ 12,000 in

[66] Article 12.
[67] Annex 5 Article 2(b)(ii).
[68] Article 12(1).
[69] Protocol art. 3.
[70] Protocol art. 3.
[71] WTO TFA Article 11(11).
[72] WTO TFA Article 11(12).
[73] WTO TFA Article 11(13).
[74] Annex 6 Article 11(c).

local currency, which can be either in cash or in letter of credit"[75]), and in one of the agreements in relative terms (Nepal-India – goods "shall be covered by an insurance company or a bank guarantee, at the option of the importer, for an amount equal to the Indian customs duties on such goods"[76]).

The rules on guarantees also can differ within the same treaty according to the means of transportation. For example, in the Nepal-India agreement, a distinction is made between goods moving by rail and goods moving by road in trucks belonging to listed companies on the one hand, and goods moving by road in trucks of other companies on the other hand[77]. None of the treaties analysed provide a time limit on the discharge of guarantee. In addition, the possibility of renewable guarantees was found only once, in the Afghanistan-Pakistan treaty – "Persons who regularly carry out Customs transit operations shall be entitled to lodge a revolving guarantee, acceptable to customs, valid for at least one year".[78]

(ii) Escorts (limitation of)

Based on the WTO TFA, future international trade law may also limit escorts: "Each Member may require the use of customs convoys or customs escorts for traffic in transit only in circumstances presenting high risks".[79] The issue of escorts is actually addressed only by a small minority of treaties. A few are consistent with the WTO TFA, limiting mandatory escorts on traffic in transit to some exceptional circumstances (Afghanistan-Pakistan – escorts required "in very exceptional cases, where goods are precious and highly susceptible to diversion en route"[80]) or on some specific routes. One treaty, GMS-CBTA,[81] goes further than the WTO TFA by exempting all traffic in transit from mandatory escorts.

(e) Cooperation and coordination

The WTO TFA provides additional facilitative measures through cooperation between the parties. This includes a general obligation to "cooperate and coordinate with one another with a view to enhancing freedom of transit",[82] and an incentive to "appoint a national transit coordinator".[83]

Cooperation measures are provided by a large number of treaties, mainly through an obligation to exchange information related to transit. In most cases, they consist of a transposition of GATT Article X, with an obligation of transparency on procedures and regulations (ASEAN Framework Agreement – "The Contracting Parties shall ensure transparency of its respective laws, regulations and administrative procedures which affect the facilitation of transit transport of goods under this Agreement. […] Parties shall deposit with the ASEAN Secretariat [their] laws, regulations and procedures"[84]). However, they also include an obligation to exchange operational information designed to improve enforcement of national transit regulations: "The Customs authorities [shall] communicate to each other, as promptly as possible, (a) information relating to goods declarations, completed and accepted in their territory which are suspected to be false; (b) information to enable

[75] Exchange of letters I, a.
[76] Memorandum, Import procedure par. 9(b).
[77] Memorandum, Import procedure par. 9.
[78] Afghanistan-Pakistan Protocol 3 Article 9(3) and (4).
[79] WTO TFA Article 11(15).
[80] Protocol 3 Article 16(a).
[81] Article 7(a).
[82] WTO TFA Article 11(16).
[83] WTO TFA Article 11(17).
[84] Article 27(1) and (2).

the authenticity of seals claimed to have been affixed in their territory to be verified",[85] and (c) "any serious inaccuracy in a goods declaration or of any other serious irregularities discovered"[86] (ECO-TTFA).

Obligation to designate a "national transit coordinator", although rarely invoked, was found in two treaties: the ASEAN Framework Agreement[87] and GMS-CBTA.[88] This can be seen as an encouraging sign from a WTO prospective.

Table 2. Scope and provisions of selected Asian transport and transit agreements for trade facilitation

2.A. Scope

		Afghanistan - Pakistan	Nepal - India	Irak - Turkey	GMS - CBTA	ECO TTFA	TRACECA	Nepal - Bangladesh	Iran - Uzbekistan	Iran - Turkey	Mongolia - Russia	Bangladesh - India	Kazakhstan - Kyrgyz Republic	Kazakhstan - Tajikistan	Kazakhstan - Mongolia	AFAFGIT	Kazakhstan - Turkmenistan	Cambodia - Vietnam	India-Bhutan	Kazakhstan - China	GATT / DNCT
Scope	Explicit allowance of transit for vehicles	X	X	X	X	X	X	X		X	X	X	X	X			X	X	X	X	X
	Traffic types																				
	Goods	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	Passengers			X	X	X	X			X			X	X	X		X			X	
	Transport modes																				
	Roads	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X
	Railways	X	X			X	X	X								X		X			X
	Inland waters					X	X				X	X						X			X
	Sea	X	X			X	X	X											X		X
	Air		X				X	X											X		X
	Pipelines						X														X
	Prescribed routes																				
	No prescribed routes for transit						X		X	X	X		X	X			X		X		X
	If routes prescribed, criteria used for route specification are indicated																			X	

(cont'ed)

[85] ECO TTFA Annex 7 Section 2 Article 10.

[86] ECO TTFA Annex 7 Section 2 Article 11.

[87] Article 29.

[88] Article 28.

2.B. Charges, regulations and formalities - Non-discrimination

		Afghanistan - Pakistan	Nepal - India	Irak - Turkey	GMS - CBTA	ECO TTFA	TRACECA	Nepal - Bangladesh	Iran - Uzbekistan	Iran - Turkey	Mongolia - Russia	Bangladesh - India	Kazakhstan - Kyrgyz Republic	Kazakhstan - Tajikistan	Kazakhstan - Mongolia	AFAFGIT	Kazakhstan - Turkmenistan	Cambodia - Vietnam	India-Bhutan	Kazakhstan - China	GATT / DNCT
Charges, regulations and formalities	**Duties, fees and charges**																				
	Exemption from charges	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X		X	X	X
	Reasonableness and cost-related fees principles	X	X	X	X	X	X	X	X		X						X				X
	Quotas																				
	Transit allowed in an open-ended manner, unless WTO-consistent justification	X			X	X			X				X	X							X
	Periodical review																				
	Obligation of periodical review of formalities and/or elimination of superfluous procedures	X			X	X															X
	Transparency																				
	Obligation to publish/make publicly available transit requirements	X			X											X					X
Non-discrimination	**Non-discrimination obligations**																				
	Non-discriminatory treatment of goods, vehicle and driver	X	X		X	X	X	X		X	X	X				X			X		X
	Most-Favoured Nation principle	X	X		X	X	X	X		X	X					X			X		X
	National treatment principle	X									X	X				X					X
	Treatment preceding transit principle	X	X			X				X						X					X

(cont'ed)

2.C. Transit procedures and controls – Guarantees and escorts – Cooperation

		Afghanistan - Pakistan	Nepal - India	Irak - Turkey	GMS - CBTA	ECO TTFA	TRACECA	Nepal - Bangladesh	Iran - Uzbekistan	Iran - Turkey	Mongolia - Russia	Bangladesh - India	Kazakhstan - Kyrgyz Republic	Kazakhstan - Tajikistan	Kazakhstan - Mongolia	AFAFGIT	Kazakhstan - Turkmenistan	Cambodia - Vietnam	India-Bhutan	Kazakhstan - China	GATT / DNCT
Transit procedures and controls	**Preferential facilitation measures for goods**																				
	- Simplification of customs formalities	X		X	X	X	X														X
	- Exemption from physical routine customs inspection	X	X	X				X			X										X
	- Exemption from en route inspections	X			X		X														X
	- Single-window inspection				X																
	- Single-stop inspection				X																
	- Advance clearance of goods																				X
	- Establishment of a Customs Transit System	X				X															
	Expeditious treatment of special cargoes	X			X								X	X	X		X			X	
	Immigration formalities & Customs seals																				
	Simplified immigration formalities for the drivers	X			X	X	X					X									
	Mutual recognition of customs seals	X		X	X	X													X		
Guarantees and escorts	**Guarantees & Escorts**																				
	Disciplines on the amount of guarantees		X	X	X																X
	Time limit on discharge of guarantee																				X
	Renewal of guarantee allowed	X																			X
	Exemption from customs escorts				X																X
	Conditional allowance of customs escorts	X	X																		X
Cooperation	**Prescribed means of cooperation**																				
	Obligation to exchange information on transit	X			X	X							X	X		X					X
	Designation of national transit coordinators				X											X					X

F. Conclusion and implications

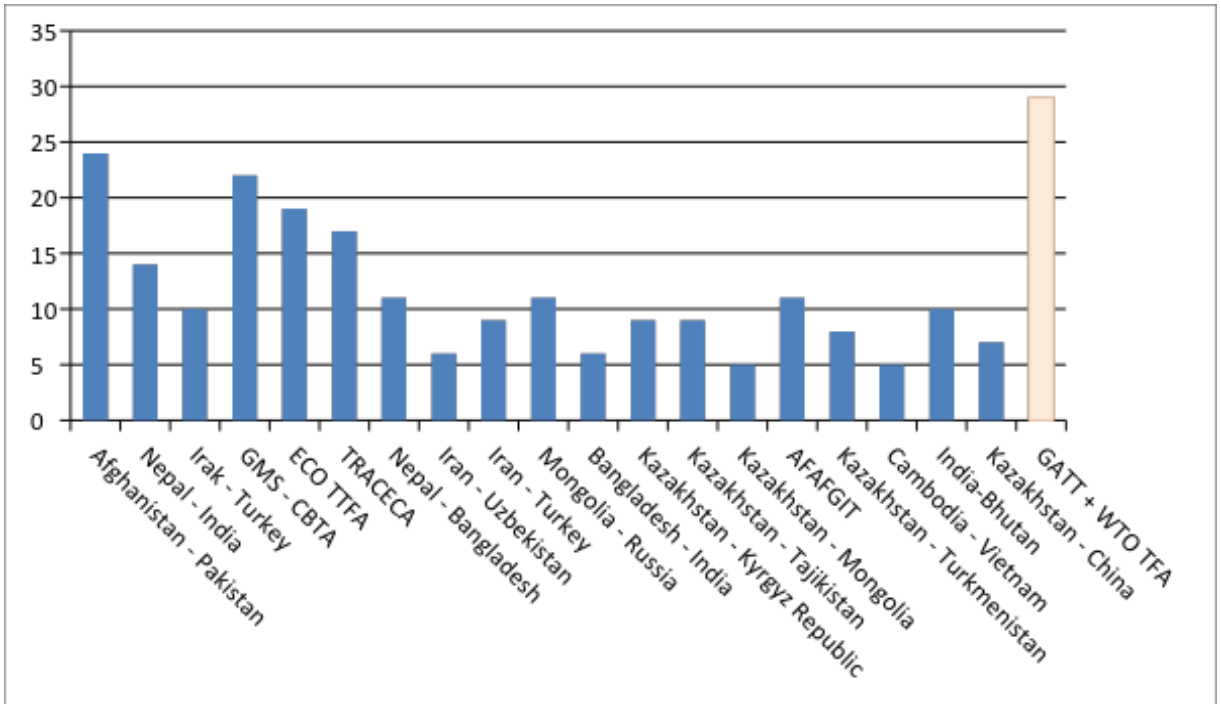
The importance of transit facilitation for the development of landlocked developing countries cannot be overstated as effective participation by these countries in global trade is likely to remain elusive without freedom of transit. The negotiations on trade facilitation at WTO identified transit as a key component of the trade facilitation agenda and provided a unique opportunity to clarify and strengthen the rules in this area.

The analysis of selected Asian transit-related agreements presented in this chapter suggests that little attention has been given to transit facilitation matters in preferential trade agreements, with many countries dealing with these matters through a variety of other bilateral and regional instruments, notably international transport or transit specific agreements. In fact, it appears that PTAs and international transit agreements do not play the same role with regard to transit facilitation. The first type tends to provide general political support for freedom of transit without providing extensive implementation tools. The second type also has political implications, but often goes far deeper into concrete implementation aspects. As such, the use of the two types of instruments may be seen as complementary.

At the same time, the analysis in this chapter highlights some of the challenges arising from addressing transit issues through a variety of separate trade, transport, and/or transit specific treaties and instruments, rather than through a more integrated approach. Such an approach can indeed lead to legal contradictions and inconsistencies, possibly best illustrated by the fact that WTO rules grant freedom of transit through the most convenient routes, while a large number of bilateral transport and transit specific agreements reviewed prescribe specific trade routes for traffic in transit, some of which may or may not be most convenient. Addressing such legal inconsistencies would be important in ensuring the continuing credibility of the multilateral trading system.

As illustrated by figure 4, with the notable exception of the Afghanistan-Pakistan transit trade agreement, “good practices” and innovative transit facilitating measures were found in multilateral rather than bilateral agreements. This confirms the general superiority of such instruments over bilateral ones for achieving a more balanced outcome and inclusive growth. In bilateral agreements, international transit is addressed through each party’s interest, and a balanced outcome may therefore be particularly difficult to achieve when the treaty is being negotiated between a landlocked and a coastal country. On the contrary, multilateral agreements may reflect a common interest at the regional or global level. An integrated approach, granting freedom of transit as a regional common interest, would thus allow transit facilitation to be considered as part of an overall regional development strategy as it was considered, in the context of the WTO negotiations, as part of a global development agenda.

Figure 4. Trade facilitation potential of selected transport and transit agreements



Source: Authors' estimation.

Note: score calculated as the sum of X marks in table 2 for each agreement. Higher score indicates wider scope and higher overall trade facilitation potential. Maximum score possible is 38.

In referring to figure 4, the WTO TFA – as of July 2014 – included particularly ambitious and innovative measures that are not, or rarely, found in the bilateral or regional transport or transit agreements reviewed in this chapter. Some of these measures included, for example, advance clearance of goods in transit (found in one treaty only), renewal of guarantees (one treaty) and designation of national coordinators (three treaties). At the same time, however, some measures widely found in bilateral and multilateral treaties were found to be absent from WTO rules and the WTO TFA, e.g., mutual recognition of customs seals (five treaties), simplified immigration formalities for drivers (five treaties) and freedom of transit for passengers (10 agreements).

In general, the differences found in the transit facilitation measures included in trade agreements and those included in international transport and transit specific agreements suggest a need for closer collaboration and coordination between: (a) the agencies responsible for trade (who lead trade negotiations); (b) those responsible for transport (who lead transport agreement negotiations); and (c) the various control agencies and private sector operators at the relevant border crossings and along transit corridors. Closer, and earlier, collaboration would contribute not only to more transparent and less conflicting rules on transit; they would also increase the chance that transit facilitation measures would be effectively applied and implemented on the ground. The WTO TFA is promising in this regard, as it mandates the establishment of national transit coordinators in addition to requiring Members to "establish and/or maintain a national committee on trade facilitation or designate an existing mechanism to facilitate both domestic coordination and implementation of the provisions of this Agreement."[89]

[89] WTO TFA Article 23.2

The WTO TFA – used as the benchmark for the trade facilitation potential analysis of bilateral and regional transit agreements in this chapter – looks particularly promising for transit countries, as Article 11 on Freedom of Transit then contained (albeit in brackets) many specific provisions, particularly with regard to broadening the scope of GATT Article V and the strengthening of non-discrimination. A number of these provisions did not find their way into the final text of Article 11 agreed by WTO members in Bali on 8 December 2013. Nonetheless, the Bali text clearly enhances the freedom of transit of WTO members, with specific provisions on guarantees and institutional aspects having been agreed upon. This should be welcoming news for WTO landlocked developing economies in particular, as it may provide a unique opportunity for them to further advance freedom of transit through the new WTO Committee on Trade Facilitation, established to afford "Members the opportunity to consult on any matters related to the operation of this Agreement or the furtherance of its objectives".[90]

It is worth pointing out again that the analysis presented in this chapter only provides a preliminary assessment of the trade facilitation "potential" of various transit-related agreements based on the legal provisions they contain. However, it remains to be established whether the agreements with the highest "potential" actually lead to the highest level of transit facilitation in practice. For example, while the Afghanistan-Pakistan transit agreement was found to have the highest legal potential among other bilateral agreements reviewed, informal discussions with officials from both countries suggest that implementation has been very challenging. Similarly, discussions with cross-border logistics service providers in the Greater Mekong Subregion suggest that the GMS-CBTA, while featuring leading edge transit facilitation measures, may not as yet have facilitated transit more than some of the existing and much simpler bilateral transit treaties among GMS countries.

Another issue that may deserve further attention is the relationship between the multilateral trade and transport instruments and how to enhance linkages between them. Indeed, instruments such as the Convention on International Transport of Goods under Cover of TIR Carnets (TIR Convention), [91] while not mentioned in the WTO TFA, provide for very concrete and detailed mechanisms for transit facilitation.[92] As WTO TFA implementation begins, incorporating these existing instruments into implementation plans may be an effective way of furthering the objectives of the new WTO Agreement.

[90] WTO TFA Article 23.12

[91] As of May 2013, there were 68 parties to the Convention, including 67 States and the European Union. See www.unece.org/tir/welcome.html .

[92] See also ESCAP (2007), Towards a Harmonized Legal Regime on Transport Facilitation in the ESCAP Region, ST/ESCAP/2489, for a list of other relevant transport instruments and useful guidelines on legal frameworks for transport facilitation.

Annex

Differences between the DCNT and WTO TFA

The final WTO TFA text agreed at the Bali Ministerial is arguably more flexible than earlier drafts (known as the Draft Consolidated Negotiating Texts). Indeed significant portions of the draft text were ultimately deleted. This annex highlights differences between the Draft Consolidated Negotiating Text of the World Trade Organization Trade Facilitation Agreement (rev. 17) as of July 2013 and the final text of the World Trade Organization Trade Facilitation Agreement as of July 2014. Strikeouts and underlining of text are used to indicate removals and additions to the text, respectively.

Article 11. Freedom of Transit

1. [Goods subject to the provisions on Freedom of Transit of GATT 1994 and of this Agreement include those moved [via fixed infrastructure] [, inter alia pipelines and electricity grids].] [1bis For greater certainty, nothing in Article V of the GATT 1994 or this Agreement shall be construed to require a Member:
(a) to build infrastructure of any kind in its territory, or to permit the building of infrastructure by others, in order to facilitate the transit of goods;
(b) [to provide access to any infrastructure for transit unless such infrastructure is open to general use by third parties. For the purpose of this Agreement, the term "general use by third parties" does not include access to infrastructure granted on a contractual basis.]]

2. [Each Member undertakes that if it establishes or maintains a State enterprise or if an enterprise has, formally or in effect, exclusive or special privileges, such enterprise shall, in its regulations, formalities [fees] and charges – including transportation charges –, on or in connection with traffic in transit, comply with the provisions on traffic in transit of this Agreement [and otherwise act solely in accordance with commercial considerations.]]25
~~3. [[~~Any ~~charges,~~ regulations or formalities in connection with traffic in transit imposed by a Member shall not be: (a) Member in accordance with Article V of GATT 1994:
(a) shall not be more restrictive on traffic in transit than necessary [to fulfil a legitimate objective].
~~(b) shall not be~~ maintained if the circumstances or objectives giving rise to their adoption no longer exist or if the changed circumstances or objectives can be addressed in a reasonably available less trade-restrictive manner~~;.~~
(b)~~(c) shall not be~~ applied in a manner that would constitute a disguised restriction on traffic in transit.

2. Traffic in transit traffic.] [Except as otherwise provided in Article V of GATT 1994, no Member shall not be conditioned upon collection impose charges for reasons of any fees or charges kind, including for allowing transit through its territory.] [Any charge imposed by a Member consistently with Article V of GATT 1994, shall: (a) Only be imposed for the administrative procedures entailed or transit services provided in connection with the transit movement in question; respect of transit, except the charges for transportation or those commensurate with (b) Not exceed the approximate administrative expenses entailed by transit or with the cost of services the transit service rendered.; and

3. (c) Not be calculated on ad valorem basis.] [Each Member shall periodically review its charges on traffic in transit with a view to reducing them, where practicable.]] 3bis [Each Member shall notify the Committee on the objective and duration of all charges, regulations or formalities in connection with traffic in transit on a regular

basis.] [Members may draw the Committee's attention to examine any measure that under their judgement should have been notified by another Member.] [3ter Members shall not seek, take, or maintain any voluntary restraints or any other similar measures on traffic in transit. This is without prejudice to existing and future national regulations, bilateral or multilateral arrangements related to regulating on traffic in transit.]

4. [Members shall not apply discriminatory measures to goods in transit, or to vessels or other means of transport, consistent with of other Members, for reasons of any kind. This does not exclude the right to resort to the exceptions already laid down in WTO rules. Agreements, for valid reasons and provided that the measure concerned does not constitute a disguised restriction on international trade.]

5. [With respect to all regulations and formalities imposed on or in connection with traffic in transit, including charges for transportation, traffic regulations, safety regulations and environmental regulations, Members shall accord to traffic in transit treatment no less favourable than that accorded to [export or import traffic/domestic traffic/traffic which is not in transit]. This principle refers to like products being transported on the same route under like conditions.]

Each Member shall accord to products which will be in transit through the territory of any other Member treatment no less favourable than that which would be accorded to such products if they were being transported from their place of origin to their destination without going through the territory of such other Member.

Members are encouraged to make available, where practicable, physically separate infrastructure (such as lanes, berths and similar) for traffic in transit.

6~~8~~. Formalities, documentation requirements, and customs controls, in connection with traffic in transit, shall not be more burdensome than necessary to: (a) identify the goods; and ~~an~~ (b) ensure fulfilment ~~fulfillment~~ of transit requirements.

7~~9~~. Once goods have been put under a transit procedure and have been authorized to proceed from the point of origination in a Member's territory, they will not be subject to any ~~further~~ customs charges nor unnecessary delays , ~~formalities [~~or restrictions ~~customs inspections]~~ until they conclude their transit at the point of destination within the Member's territory.

8~~10~~. Members shall not apply technical regulations and conformity assessment procedures within the meaning of the Agreement on Technical Barriers to Trade to ~~on~~ goods in transit.

9~~11~~. Members shall allow and provide for advance filing and processing of transit documentation and data prior to the arrival of goods.

10~~12~~. Once traffic in transit has reached the customs office where it exits the territory of a ~~the~~ Member, that office shall promptly terminate the transit operation if transit requirements have been met.

~~13.~~ 11. Where a Member requires ~~Members may require~~ a guarantee in the form of a surety, deposit or other appropriate monetary or non-monetary13 instrument for traffic in transit, such guarantee ~~which~~ shall be limited to ensuring ~~[reasonable and shall not be applied in a manner~~ that requirements arising from such ~~would constitute a disguised restriction on~~ traffic in transit are fulfilled~~.]~~.

12~~14~~. Once the Member has determined that its transit requirements have been satisfied, the guarantee shall be discharged without delay.~~26~~

13. Each Member shall, in a manner consistent with its laws and regulations ~~15. [Members shall, where practicable~~, allow comprehensive guarantees which include multiple transactions for same operators or renewal of guarantees without discharge for subsequent consignments. ~~once a previous one is proved to have~~

14. Each Member shall make publicly available the relevant information it uses to set the guarantee, including single transaction and, where applicable, multiple transaction guarantee.

15. Each Member may require the use of customs convoys or customs escorts for traffic in transit only in circumstances presenting high risks or when compliance with customs laws and regulations cannot be ensured through the use of guarantees. General rules applicable to customs convoys or customs escorts shall be published in accordance with Article 1

16~~17~~. Members shall endeavour to cooperate and coordinate with one another with a view to enhancing ~~enhance~~ freedom of transit. Such cooperation and coordination may include, but is not limited to, an understanding on:

(a~~i~~) charges;

(b~~ii~~) formalities and legal requirements; and

(c~~iii~~) the practical operation of transit regimes.

17~~18~~. Each Member shall endeavour to appoint a national transit coordinator to which all enquiries and proposals by other Members relating to the good functioning of transit operations can be addressed.

Chapter III

Agricultural trade costs in the Asia-Pacific region:

A need for a sectoral approach to trade facilitation[93]

Introduction

As developing and emerging economies in the Asia-Pacific region seek ways to maintain growth in a difficult global economic environment, enhancing competitiveness in international markets has become a priority. Reducing international trade transaction costs can go a long way towards making a country more competitive. While costs vary substantially across developing countries in the region, most still face very high extra- and intraregional trade costs on average. This is particularly true for trade in agriculture and food products.

Agriculture is the backbone of most Asian and Pacific economies, and approximately 50% of the Asian working population is employed in the agricultural sector (figure 1). In view of the export potential of agricultural products in the region, it is particularly important to reduce trade costs in this sector. Not least, a more competitive agricultural sector may contribute to urgently needed poverty alleviation in developing countries in the region.[94]

With rising incomes, changing food habits and a growing population in the region, agricultural trade is expected to expand in the coming years. In fact, agricultural commodity production and consumption is already shifting away from developed countries towards developing regions such as Asia and the Pacific (OECD-FAO 2009). However, as figure 2 illustrates, agricultural trade costs remain exceedingly high, particularly when compared with manufacturing trade costs.

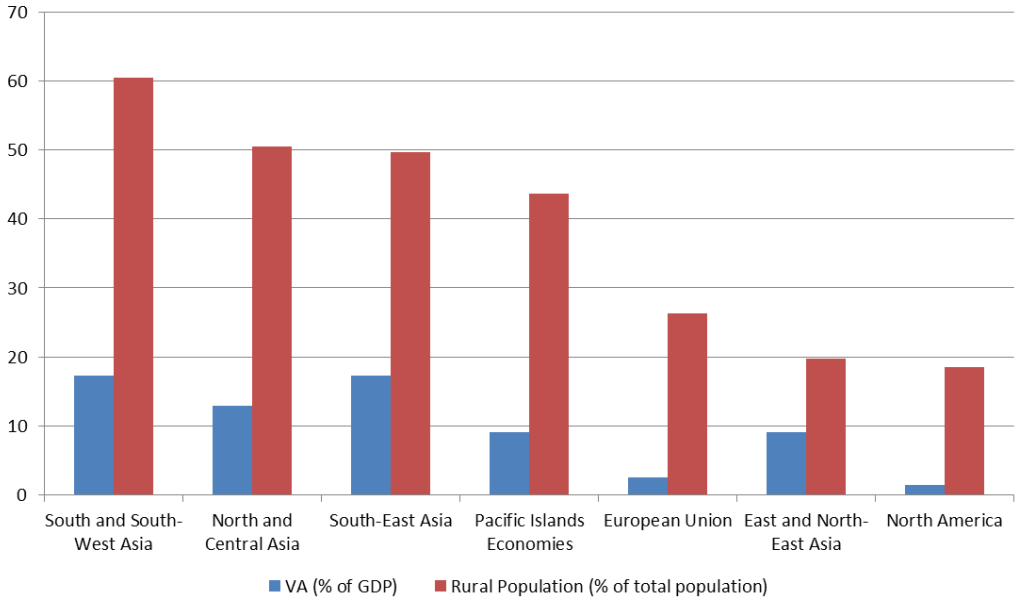
Given the important role of agricultural trade in the Asia-Pacific region, it is essential to have a deeper understanding about the level of agricultural trade costs and to what extent these costs may have decreased over time. Thus, this paper presents intra-, inter- and extraregional agricultural trade costs of Asia-Pacific subregions, and compares them with those in member countries of the European Union-3 (EU-3): France, Germany and the United Kingdom of Great Britain and Northern Ireland) as well as MERCOSUR-4 (Brazil, Argentina, Colombia and Chile) and the United States of America.

Section A summarizes comprehensive trade cost patterns in Asia and the Pacific and some other regions. Section B separately discusses the tariff and non-tariff components of agricultural trade costs. Section C presents the results of an empirical assessment investigating the impact of tariff and other policy- and non-policy-related factors that influence comprehensive trade costs in agriculture. The conclusion is given in Section D.

[93] This chapter is a shorter, updated and edited version of Duval, Utoktham, Wermelinger and Lee (2012). The full working paper is available at http://www.unescap.org/sites/default/files/TIDwp02_12.pdf

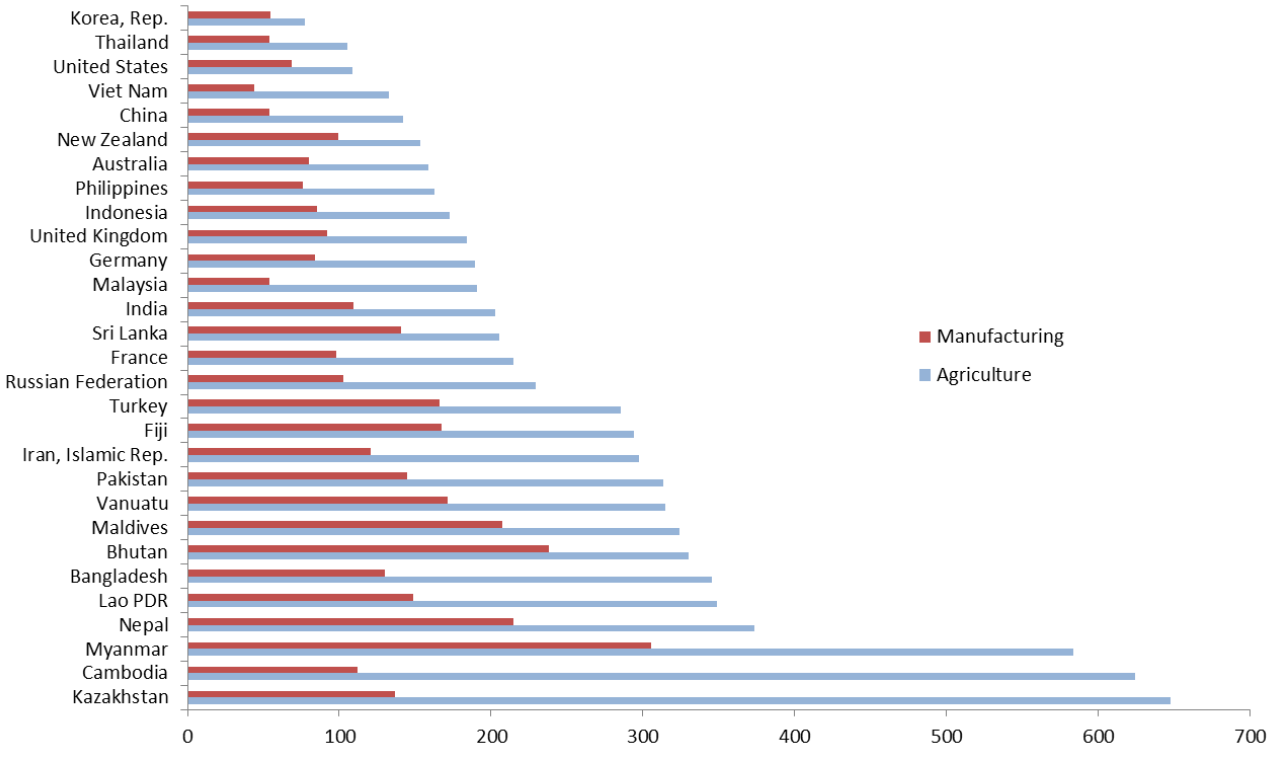
[94] The Asia-Pacific region is home to more than two-thirds of the world's poor (ESCAP, 2010).

Figure 1. Value-added in agriculture as a percentage of GDP, and economically active population in rural areas as a percentage of total population, 2014



Source: Databank, World Bank, September 2015.

Figure 2. Agricultural and manufacturing comprehensive trade costs, excluding tariffs, between selected economies and Japan, 2008-2013



Source: Author's calculation, based on the ESCAP-World Bank Trade Costs Database.

A. Patterns of comprehensive agricultural trade costs

Broadly defined, international trade costs include all costs incurred in getting a good to a final user, other than the marginal cost of producing the good (Anderson and van Wincoop, 2004). In particular, this includes transportation costs (both freight costs and time costs), policy barriers (tariffs and non-tariff barriers), costs of information and contract enforcement, costs associated with the use of different currencies, and legal and regulatory costs, both direct and indirect. This broad definition of trade costs is adopted in this chapter and we therefore rely on the data contained in the ESCAP-World Bank Trade Costs Database, which features aggregate bilateral costs of trade in goods from 1995 to 2013, both for trade in agricultural goods and trade in manufacturing goods.

The descriptive analysis in this and the next section considers only those countries and subregions listed in table 1. Most country groups are based on existing subregional integration initiatives or free trade agreements, e.g., ASEAN and the South Asian Association in Regional Cooperation (SAARC). Other regions and subregions are defined according to the practice of the United Nations.

Table 1. Countries and regions included in the subregional analysis

Asian and South Pacific economies				
Australia and New Zealand (AUS-NZL)	**East Asia-3**	**Association of Southeast Asian Nations -4 (ASEAN-4)**	**South Asian Association for Regional Cooperation (SAARC-4)**	**North and Central Asia-4 (NCA-4)**
Australia New Zealand	China Japan Republic of Korea	Indonesia Malaysia Philippines Thailand	Bangladesh India Pakistan Sri Lanka	Georgia Kazakhstan Kyrgyzstan Russian Federation
Pacific Island Developing Economies (PAC-2)	**EU-3**	**United States**	**South America-4 (SA-4)**	
Fiji Papua New Guinea	France Germany United Kingdom	United States	Argentina Brazil Chile Colombia	

This section presents average trade cost patterns between and within Asia-Pacific and other subregions in the agricultural sector. In particular, table 2 shows average bilateral comprehensive trade costs for these country groups during 2008-2013 and how these costs have changed since 2003-2007. Average trade costs between North and Central Asian-4 (NCA) countries and other groups are particularly high; the highest costs are found with PAC-2 (402%). Intra-NCA trade costs are, however, lower than NCA-4 trade costs with all other subregions and country groups considered. In accordance with conventional trade theories, trade costs are lower within free trade regimes compared with trade costs between country groups, which are not in the same trading regime. Given the geographic proximity of countries within the investigated groups, the finding is also consistent with the argument of higher trade costs for regions/countries geographically further away. ASEAN-4, East Asia-3 and PAC-2 are exceptions in the case of Asia-Pacific; their trade costs are the lowest with some other subregions rather than within the group.

Overall, the Asia-Pacific subregions and the other country groups shown in table 2 have managed to reduce their average intra- and extra-regional trade costs since 2003; however, some exceptions exist (e.g., in the case of NCA-4 with most regions). While East Asia-3 considerably reduced trade costs with most of the other country groups (ranging from 5% to 33% cost reductions), other Asia-Pacific subregions show lower reductions on average.

Table 2. Trade-weighted average of agricultural trade costs between and within country groups: Average for 2008-2013 – in tariff equivalent percentages – and change since 2003-2007 (in percentage)

	ASEAN-4	East Asia-3	NCA-4	PAC-2	SAARC-4	AUS-NZL	EU-3	SA-4
ASEAN-4	159 (1.8)							
East Asia-3	129 (-9.3)	152 (-1.7)						
NCA-4	327 (-5.5)	171 (4.2)	142 (19.5)					
PAC-2	303 (-9.3)	286 (-39.2)		304 (-5.5)				
SAARC-4	177 (-9.6)	193 (-13.5)	235 (9.1)	402 (-11.9)	146 (-1.4)			
AUS-NZL	136 (-13.7)	133 (-18.0)	373 (-11.5)	88 (-39.2)	163 (-12.0)	92 (-8.3)		
EU-3	194 (-6.0)	193 (-10.3)	231 (0.2)	86 (-64.0)	214 (-2.0)	164 (-18.6)	70 (-19.3)	
SA-4	175 (-7.7)	172 (-19.1)	144 (2.5)		283 (-10.7)	229 (-10.2)	169 (-7.2)	126 (-10.1)
USA	113 (-3.1)	112 (-11.7)	292 (9.4)	179 (-29.5)	150 (-5.8)	142 (-4.4)	136 (-5.3)	128 (-2.4)

Source: ESCAP-World Bank Trade Cost Database, updated June 2015. Available at http://databank.worldbank.org/data/views/variableselection/selectvariables.aspx?source=escap-world-bank-international-trade-costs and www.unescap.org/tid/artnet/trade-costs.asp.

Notes: Trade costs may be interpreted as tariff equivalents. Percentage changes in trade costs between 2002-2007 and 2008-2013 are shown in parentheses.

B. Tariff and non-tariff components of comprehensive agricultural trade costs

There are many potentially important determinants of agricultural trade costs. This section separately investigates the tariff and non-tariff components of comprehensive agricultural trade costs between and within Asia-Pacific and other sub-regions.

There has been considerable progress in tariff reduction since 2000. However, tariff rates on agricultural goods exceed the rates applied to manufactured goods in some developed and developing economies (see annex 1). The level of agricultural tariff protection is particularly high in East Asia-3 and SAARC-4. Unilateral reforms as well as bilateral and regional trade agreements since 2001 have led to significant tariff reductions in Asian and Pacific countries. The progress of liberalization is, however, slower in the agricultural sector compared with manufacturing.

Table 3 shows the average bilateral tariff rates on agricultural goods between and within Asia-Pacific and other subregions as well as the respective percentage changes since 2003-2007. It can be seen that average bilateral tariffs in most of the Asia-Pacific subregions decreased considerably with all other subregions. Particularly interesting is the fact that SAARC-4 imposes relatively high tariffs on most of the regions as well as on themselves. Among Asia-Pacific subregions, the intraregional tariff rates of NCA in 2008-2013 were approximately 1%. This is largely attributed to the free trade agreement between NCA countries.

Despite some progress in agricultural tariff liberalization, Asia-Pacific countries should continue their efforts to reduce tariffs, as their imposition not only creates a direct cost in the customs duties collected, but also indirect costs in the form of additional documentation requirements and controls – both of which are included in the non-tariff comprehensive trade cost component. Reduced or zero tariffs may therefore result in multiplier effects with regard to the reduction of total trade costs (Duval and Utoktham, 2011c).

Overall, the analysis shows that direct tariff costs account for a relatively small portion (ranging from 1% to 18%) of total comprehensive agricultural trade costs in all the investigated country groups of Asia and the Pacific. Therefore, the focus of trade policymakers in the promotion of trade has shifted towards non-tariff costs. The non-tariff comprehensive trade cost component corresponds to the difference between total comprehensive ad valorem trade costs and applied tariff rates, and thus not only includes border and behind-the-border trade restrictive policies (such as SPS, TBT, quotas, import and export licences, export restrictions, customs surcharges, and anti-dumping, safeguard measures and discretionary licensing),[95] but also any form of other costs such as distance, culture, history, logistics infrastructure and services, exchange rates, the business environment, level bureaucratic border and behind-the-border procedures.

Agricultural non-tariff comprehensive trade costs between and within Asia and the Pacific and other subregions are illustrated in table 4. Non-tariff trade costs between subregions are always higher than those within the subregion, except in the case of ASEAN-4, NCA-4 and PAC-2. This is consistent with the existence of natural trade costs (e.g., geographic distance), which cannot be influenced by policy interventions.[96] Overall, compared with the other investigated Asia-Pacific subregions, AUS-NZL has the lowest non-tariff comprehensive trade cost levels, followed by ASEAN-4 and East Asia-3. The number ranges from 92% trade between AUS-NZL, to high levels of 355% for trade with AUZ-NZL; NCA-4 has high non-tariff trade costs with all other subregions, which

[95] Table 2 in annex 3 presents UNCTAD's list of non-tariff trade policies.

[96] The costs due to geographical distance may however decrease with better infrastructure and transportation means.

illustrates the trade challenges developing landlocked countries face in Asia-Pacific. While, in most cases, non-tariff trade costs were reduced between and within the investigated country groups during the past decade, ASEAN-4, East Asia-3 and AUS-NZL are among the subregions that made high progress in trade cost reduction.

Table 3. Trade-weighted average of agricultural tariffs between and within country groups: Average of 2008-2013 – in tariff equivalent percentages – and change since 2003-2007 (in percentage)

Region	ASEAN-4	East Asia-3	NCA-4	PAC-2	SAARC-4	AUS-NZL	EU-3	SA-4
ASEAN-4	8 (57.8)							
East Asia-3	7 (-33.5)	21 (-9.0)						
NCA-4	5 (-10.9)	10 (6.1)	1 (-58.5)					
PAC-2	10 (7.7)	9 (-5.9)		9 (-24.2)				
SAARC-4	16 (-20.7)	18 (-11.3)	13 (-9.2)	10 (-19.1)	15 (-39.0)			
AUS-NZL	6 (-3.3)	7 (-6.1)	4 (1.3)	10 (-0.9)	12 (-3.9)	0 N/A		
EU-3	6 (-9.8)	8 (-7.5)	6 (-2.4)	4 (-32.5)	13 (-5.2)	3 (-7.8)	0 N/A	
SA-4	8 (-11.3)	10 (-16.9)	6 (-18.0)	4 (36.3)	16 (-13.6)	2 (-20.7)	5 (-17.4)	1 (-70.4)
USA	6 (-1.2)	8 (-3.2)	4 (-7.8)	5 (-26.4)	13 (-5.2)	2 (212.9)	4 (0.7)	4 (-7.2)

Source: ESCAP-World Bank Trade Cost Database, updated June 2015. Available at www.unescap.org/tid/artnet/trade-costs.asp.

Notes: Trade costs may be interpreted as tariff equivalents. Percentage changes in trade costs between 2002-2007 and 2008-2013 are in parentheses.

Table 4. Trade-weighted average of agricultural non-tariff comprehensive trade costs between and within country groups – average for 2008-2013 in tariff equivalent percentages – and change since 2003-2007 (in percentage)

AB	ASEAN-4	East Asia-3	NCA-4	PAC-2	SAARC-4	AUS-NZL	EU-3	SA-4
ASEAN-4	141 (-2.4)							
East Asia-3	115 (-3.7)	109 (-0.2)						
NCA-4	304 (-3.1)	147 (15.2)	141 (80.4)					
PAC-2	274 (-3.0)	258 (-33.7)		276 (-0.0)				
SAARC-4	139 (-5.3)	149 (-11.9)	198 (13.3)	333 (25.9)	115 (14.1)			
AUS-NZL	124 (-13.6)	118 (-18.2)	355 (-11.5)	72 (-36.1)	136 (-12.0)	92 (-8.3)		
EU-3	177 (-5.4)	172 (-9.8)	213 (7.8)	81 (24.8)	179 (-1.0)	157 (-18.5)	70 (-19.3)	
SA-4	155 (-6.9)	147 (-17.9)	134 (4.8)		229 (-6.5)	224 (-9.6)	157 (-6.0)	124 (-6.2)
USA	101 (-2.9)	97 (-12.2)	278 (19.5)	167 (-22.7)	122 (-5.2)	137 (-6.9)	127 (-5.4)	119 (-2.0)

Source: ESCAP-World Bank Trade Cost Database, updated June 2015.
Available at www.unescap.org/tid/artnet/trade-costs.asp.
Notes: Trade costs may be interpreted as tariff equivalents. Percentage changes in trade costs between 2002-2007 and 2008-2013 are in parentheses.

C. Determinants of comprehensive agricultural trade costs

This section examines the determinants of agricultural trade costs, particularly the relative contribution to agricultural trade costs of natural factors (including geographic or cultural distance and language)[97] as well as those related to policies and regulations (tariff and non-tariff). To do so, a simple trade cost model is developed here, featuring natural factors as well as a number of policy related factors known to affect trade costs. Indicators used to represent these policy-related determinants of trade costs are presented below, followed by the model specification and a discussion of the estimation results.

Following Duval and Utoktham (2010), depth of credit information is used as a proxy for ease of getting credit, an important factor in agricultural trade where completing a trade transaction typically takes longer than when trading manufacturing goods. A proxy for ease of access as well as use of information and communication technologies (ICT) in partner countries (i.e., Internet users per 100 people) is also included in the trade cost model, given the importance of ICT access and usage found in earlier studies on trade facilitation (e.g., Shepherd and Wilson, 2009, among others). Taking into account previous literature on trade facilitation and trade costs,

[97] Anderson and van Wincoop (2004); Chen and Novy (2009); and Jack and others (2008).

which suggests the central role of maritime and port logistics performance in trade costs of goods (e.g., Duval and Utoktham, 2011b and 2011c), UNCTAD's liner shipping connectivity index is also included in the model.

Table 5 illustrates the progress of depth of credit information in each region. All regions, especially in North and Central Asia, have improved their credit data acquisition quality.

Table 5. Depth of credit information (scale 0-8: 0 is worst, 8 is best)

Region	Depth of credit information index (0-8)				Getting credit (score)			
	2004-2006	2007-2009	2010-2012	2013-2015	2004-2006	2007-2009	2010-2012	2013-2015
ASEAN-4	2.7	3.8	4.3	5.5	50.0	60.4	65.6	56.0
East Asia-3	5.0	5.3	6.0	6.6	53.1	65.3	67.4	58.9
NCA-4	0.0	1.4	5.0	6.3	28.1	39.1	68.8	67.0
PAC-2	1.8	2.0	2.0	2.3	48.4	50.0	50.0	38.3
SAARC-4	0.0	1.7	5.0	4.1	34.4	47.4	57.8	48.1
AUS-NZL	5.0	5.0	5.0	6.5	90.6	90.6	90.6	93.8
EU-3	5.0	5.2	5.3	6.7	75.0	79.2	79.2	69.7
SA-4	5.3	5.3	5.3	6.5	57.8	57.8	58.9	56.5
USA	N/A	N/A	N/A	8.0	93.8	93.8	93.8	94.6

Source: Doing Business, available at www.doingbusiness.org.

Table 6 illustrates the progress with regard to Internet users per 100 people and liner shipping connectivity index. Again, North and Central Asia takes the lead in the highest development rate for both ICT development and cross-border facilitation. Moderate progress can be observed in other subregions of Asia.

Table 6. Internet users per 100 people and liner shipping connectivity index

Region	Internet users per 100 people		Liner shipping Connectivity Index (maximum value in 2004 = 100)	
	2004-2006	2012-2014	2004-2006	2013-2015
ASEAN-4	17.7	37.5	35.2	48.3
East Asia-3	49.8	72.3	81.7	112.0
NCA-4	8.4	47.1	7.9	22.4
PAC-2	5.1	22.0	7.0	8.9
SAARC-4	2.8	14.0	24.9	33.3
AUS-NZL	64.1	82.8	24.0	25.5
EU-3	59.9	85.4	76.0	86.5
SA-4	21.0	57.6	22.1	36.9
USA	67.2	83.6	85.6	94.9

Source: World Development Indicator Databank, online available at http://data.worldbank.org.
Note: LSCI for North and Central Asia is available only for non-landlocked countries.

One of the crucial trade impediments in the agricultural sector is non-tariff measures (NTMs) rather than tariff measures. Table 7 gives an overview of average OTRI (Overall Trade Restrictiveness Index); TTRI (Tariff Trade Restrictiveness Index) and NTM (non-tariff measures) by country groups.[98] It is worth noting that, according to these indices, NTMs rose only in the European Union between 2005 and 2007. Following Hoekman and Nicita (2008), who included the NTM index in an extended gravity model, NTM is included here in the trade cost model.

Table 7. Trade restrictiveness index (2005-2007)

Regional Grouping	Trade restrictiveness (%)	2005	2006	2007
ASEAN	OTRI	38.77	41.22	33.33
	TTRI	7.06	9.06	4.67
	NTM	31.71	31.91	30.32
AUS/NZL	OTRI	38.38	34.33	32.66
	TTRI	2.24	3.23	2.97
	NTM	36.14	31.10	29.69
East and North-East Asia	OTRI	47.07	53.61	35.81
	TTRI	28.00	28.30	27.84
	NTM	19.07	17.65	15.43
North and Central Asia	OTRI	44.27	33.63	31.73
	TTRI	11.78	4.54	4.17
	NTM	32.49	29.63	28.44
SAARC	OTRI	48.30	45.53	32.61
	TTRI	31.32	20.81	14.64
	NTM	25.46	26.80	21.92
European Union	OTRI	54.99	58.00	58.48
	TTRI	24.80	16.35	14.01
	NTM	30.18	41.92	44.47
MERCOSUR	OTRI	42.01	39.58	38.98
	TTRI	11.65	10.46	11.32
	NTM	30.36	29.12	27.66
NAFTA	OTRI	41.02	32.83	21.09
	TTRI	20.63	14.75	8.45
	NTM	20.39	18.08	12.64

Source: World Trade Indicator Database.[99]

Note: ASEAN – Cambodia, Indonesia, Malaysia, the Philippines, Thailand and Viet Nam; AUS/NZL – Australia, and New Zealand; East and North-East Asia – China, Japan, Republic of Korea, and Mongolia; SAARC – Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka; European Union – Austria, Belgium, Bulgaria (2007), Cyprus (2004), Czech Rep. (2004), Denmark, Estonia (2004), Finland, France, Germany, Greece, Hungary (2004), Ireland, Italy, Latvia (2004), Lithuania (2004), Luxembourg, Malta (2004), Netherlands, Poland, Portugal, Romania (2007), Slovakia (2004), Slovenia, Spain, Sweden and the United Kingdom; MERCOSUR – Argentina, Brazil, Paraguay, Uruguay and Venezuela; NAFTA – Canada, Mexico and the United States.

[98] For details, see the methodology of non-tariff measures (NTMS) in Hoekman and Nicita, 2008. See also Kee and others, 2009, based on World Bank Policy Research Working Paper 3840, February 2006.

[99] Available at http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/TRADE/0,,contentMDK:22421950~pagePK:148956~piPK:216618~theSitePK:239071,00.html.

The following reduced form equation is estimated using a cross-country panel of 60 countries for 2005-2007:

$$\ln(CTC_{ij}) = \beta 0 + \beta 1 \ln(distance_{ij}) + \beta 2(cult_{ij}) + \beta 3 \ln(tariff_{ij} * ji) + \beta 4 \ln(NTMij) + \beta 5 \ln(lsci_{ij}) + \beta 6 \ln(internet_{ij}) + \beta 7(creditinfo_{ij}), \quad (1)$$

where

CTC_{ij} is comprehensive trade costs between country i and country j

$distance_{ij}$ is bilateral distance in kilometres

$cult_{ij}$ is a set of dummy variables of cultural distance, which consists of

- contig: dummy variable indicating if countries i and j are contiguous
- comlang_off: dummy variable indicating if countries i and j have a common official language

$tariff_{ij} * ji$ is a geometric average of $tariff_{ij}$ and tariffji

NTM_{ij} is a geometric average of NTM_i and NTM_j

$lsci_{ij}$ is a geometric average of liner shipping connectivity index of country i and j

$internet_{ij}$ is a geometric average of Internet users per 100 inhabitants in country i and j

$creditinfo_{ij}$ is a geometric average of ease of doing business indicators of i and j, which is proxied by the depth of credit information index (0-6).

Detailed information about the variables and data used in the estimations (including their expected sign) are in Annex 2, along with the list of countries included in the analysis and results of the empirical model estimations. The model is estimated for all countries included in the analysis (model 1), as well as for a subset of ASEAN and OECD economies trading within and among each other (model 3), and for a subset of ASEAN countries trading with OECD and OECD with ASEAN (model 5).

Model (1) suggests that physical distance is an important factor of trade costs, as well as sharing official language, with a 10% increase in distance between partner countries, implying a 1.6% increase in comprehensive trade costs. Having a common border with a partner country has a moderate impact on trade costs and contributes to their reduction by approximately 19%. Reductions in tariff or non-tariff measures (NTM) by 10% result in a reduction in agricultural comprehensive trade costs by nearly 6% and 3%, respectively. A 10% improvement in the liner shipping connectivity index also implies a reduction in trade costs by almost 2%.

For behind-the-border indicators, having a decent quality ICT infrastructure such as a streamlined Internet connection has a minimal effect on trade costs. For the doing business factor, the credit information index contributes at least a 3.6% trade cost reduction if the index increases from 5 to 6.

The relative contributions by each factor are reported in table 8. Based on estimates from model (1), (2) or (3), natural barriers contribute between 19% and 30% to total comprehensive trade costs. Tariffs account for up to 5% in these models. Non-tariff measures appear to play only a minor role in trade costs in the three models; however, the role is more significant (up to 5%) with the trade between OECD and ASEAN developing countries. Trade-related infrastructure, i.e., the LSCI variable, contributes between 5% and more than 15% to total trade costs. Ease of access as well as use of information and communication technologies, proxied by Internet users per 100 inhabitants, account for less than 2% and the depth of credit information accounts 2% to 6%.

From the estimation results of the sub-sample including only ASEAN countries' trade costs with OECD countries in model (5), distance is not the main contributor to trade costs variation anymore and port connectivity becomes even more important compared to the other models. The drastic reduction in the contribution by distance to trade costs when one focuses solely on trade between ASEAN and OECD may derive from the fact that OECD countries are mostly European and thus geographically close together. The distances between each ASEAN country and each OECD country are large but not that much different from each other. This would make trade cost variations due to distance minimal among the ASEAN-OECD country pairs, with liner shipping connectivity and logistics services explaining a larger share of the variation in trade costs between the countries.

The significant positive contribution of NTMs to agricultural trade costs in the case of ASEAN-OECD trade, combined with the non-significance of tariff costs, also implies that product standards and conformance issues among countries in these two groups may need particular attention. These results indeed suggest that although tariffs may at times be prohibitive, real or perceived inability to meet NTMs, such as SPS/TBT requirements, likely account for a larger share of agricultural trade costs.

Table 8. Relative contributions by different factors to comprehensive trade costs (in percentage)

	(1)	(2)	(3)	(5)
ln of distance	19.35	23.37	29.65	1.18
Contiguity	3.46	1.97	3.24	0.00
Common official language	0.13	0.16	1.09	1.63
ln of geometric average bi-directional tariff	2.32	1.27	3.22	-2.18
ln of non-tariff barriers	-0.66	0.27	-1.01	4.74
ln of LSCI	10.98	4.76	15.05	26.17
ln of Internet users	2.01	0.53	0.56	0.75
Credit information	4.24	2.03	5.46	14.13
Partner fixed-effects		26.40		
Income group fixed-effects	1.98	0.00	-1.52	-0.76
Year fixed-effects	0.01	0.01	0.15	0.38
Total variation explained by model	43.82	60.77	55.89	46.04
Residual	56.18	39.23	44.11	53.96
Total	100.00	100.00	100.00	100.00

D. Conclusion

Agriculture remains the backbone of most Asia-Pacific developing economies, and approximately 50% of the Asian working population was employed in the agricultural sector. In view of the export potential of agricultural products in the region, it is urgent that trade costs are reduced in this sector, particularly since they are typically twice as high as those for manufactured goods.

Agricultural trade costs within each of the different Asian subregions and country groups are not found to differ sharply, particularly when tariff costs are excluded. Indeed, while agricultural tariffs amount to less than 5% in most subregions, they remain high between South Asian countries (SAARC) as well as between East and North-East Asian countries (ENEA). Agricultural trade costs appear to have fallen between 2003 and 2009 within and between most subregions and country groups examined, although improvements in trade costs appear to have been slower in Asian subregions than in developed country groups (i.e., European Union and NAFTA).

The trade cost model and analyses reveal that, when a wide range of countries are considered, geographic distance is the single most important factor accounting for differences in trade costs between country pairs, followed by maritime logistics performance and ease of getting credit. Access to, and use of ICT in partner countries and tariff rates of partner countries are also found to account for a significant but a small and similar share of agricultural trade cost variations across countries.

Interestingly, when the analysis focused only on trade costs between ASEAN and OECD countries, the importance of geographic distance and tariff costs in explaining trade cost differences across countries vanished, while the importance of maritime logistics services and non-tariff measures such as SPS/TBT requirements become the key determinants. These results clearly suggest a need for many individual Asian developing countries to enhance maritime and other international logistics services while further building capacity to comply with non-tariff measures.

Annex 1

Annex Table 1. Comparison of bilateral agricultural tariff rates and manufacturing tariff rates – selected countries and subregions

Region	2002-2007			2008-2013			Percentage differential		
	Agriculture, hunting, forestry; fishing (A+B)	Manufact-uring (D)	Total Goods (GTT)	Agriculture, hunting, forestry; fishing (A+B)	Manufact-uring (D)	Total Goods (GTT)	Agriculture, hunting, forestry; fishing (A+B)	Manufact-uring (D)	Total Goods (GTT)
ASEAN-4	8.84%	9.77%	9.71%	8.47%	8.78%	8.77%	-0.37%	-0.99%	-0.95%
East Asia-3	12.32%	8.46%	8.71%	12.06%	7.40%	7.62%	-0.27%	-1.06%	-1.09%
NCA-4	7.19%	7.77%	7.65%	5.65%	6.09%	5.96%	-1.54%	-1.68%	-1.68%
PAC-2	13.14%	8.69%	8.43%	8.24%	8.99%	8.79%	-4.90%	0.30%	0.35%
SAARC-4	13.24%	13.60%	13.45%	11.32%	11.15%	11.11%	-1.92%	-2.45%	-2.35%
AUS-NZL	5.11%	7.84%	7.74%	4.89%	5.82%	5.80%	-0.22%	-2.02%	-1.94%
EU-3	5.62%	4.96%	5.00%	4.50%	4.27%	4.29%	-1.12%	-0.69%	-0.71%
SA-4	9.29%	10.56%	10.51%	7.81%	9.65%	9.62%	-1.49%	-0.92%	-0.89%
USA	6.30%	6.74%	6.71%	5.73%	5.69%	5.68%	-0.57%	-1.05%	-1.03%

Sources: ESCAP Trade Cost database; ESCAP-World Bank Trade Cost Database, updated June 2015. Available at www.unescap.org/tid/artnet/trade-costs.asp.

Annex 2

Annex Table 2. Trade cost model variables and data sources

Variable name	Source	Expected sign	Description
ln(ctcij)	ESCAP/TID		Natural log of comprehensive trade costs CTC (T_{ij}).
ln(distanceij)	CEPII	+	Natural log of geodesic distance, following the great circle formula, which uses latitudes and longitudes of the most important cities/agglomeration (dense of population) In kilometres between reporting country and its trade partner.
contig	CEPII	-	Dummy variable indicating "1" if two countries are contiguous and "0" otherwise.
comlang_off	CEPII	-	Dummy variable indicating "1" if two countries share official language and "0" otherwise.
ln(tariffij*ji)	TRAINS	+	Natural log of geometric average of tariffij and tariffji
ln(NTMij)	WB TI*	+	Natural log of geometric average of NTMi and NTMj
ln(lsciij)	WB TI*	-	Natural log of geometric average of liner shipping connectivity index of reporter and partner (maximum value in 2004 = 100): The higher the LSCI, the better the port connectivity, which implies lower trade costs.
ln(internetusers_per100pplij)	WB TI*	-	Natural log of Internet users (per 100 people): the more Internet users, the better ICT infrastructure and services, which implies lower trade costs.
creditinfoij	WB TI*/WB DB**	-	Geometric average of getting credit: depth of credit information index (0-6): the more credit information available, the easier and cheaper the credit, which implies lower trade costs.

** World Bank Trade Indicator Database, available at http://info.worldbank.org/etools/wti/1a.asp.*
*** World Bank Doing Business Data, available at www.doingbusiness.org.*

Annex Table 3. Countries included in the analysis

East Asia and Pacific (10)		Europe and Central Asia (29)			North America (2)
Australia	Korea (Rep. of)	Austria*	Ireland	Romania	Canada
Brunei Darussalam	Malaysia	Czech Republic	Italy	Russian Federation	United States of America
China	New Zealand	Denmark	Kazakhstan*	Slovakia*	
Indonesia	Philippines	Estonia	Latvia	Slovenia	South Asia (3)
Japan	Thailand	Finland	Lithuania	Spain	Bangladesh
		France	Moldova*	Sweden	India
		Germany	Netherlands	Switzerland	Sri Lanka
		Greece	Norway	Turkey	
		Hungary*	Poland	United Kingdom	
		Iceland	Portugal		
Latin America and Caribbean (11)			**Middle East and North Africa (2)**		**Sub-Saharan Africa (3)**
Argentina	Colombia	Peru	Malta*	Oman	Cameroon
Bolivia	Mexico	Uruguay			Namibia
Brazil	Nicaragua	Venezuela			South Africa
Chile	Paraguay				

** Indicates the additional coverage only in Model 2.*

Annex Table 4. Estimation results

Models (1), (3) and (5) are estimated using Ordinary Least Squares. Models (2), (4) and (6) are estimated using Poisson Pseudo Maximum Likelihood (PPML), following Chen and Novy (2009). Standard errors are reported with clustering unit "country pair" (to take account of possible correlations of errors within country pairs). Models (1) and (2) report estimates for all countries included in the analysis. Models (3) and (4) report estimates for a subset of ASEAN economies trading with both ASEAN and OECD countries, and OECD countries trading with ASEAN and OECD. Models (5) and (6) report estimates for a subset of ASEAN countries trading with OECD and OECD with ASEAN.

VARIABLES	(1) All: OLS with bilateral variables	(2) All: PPML with bilateral variables	(3) ASEAN/ OECD: OLS	(4) ASEAN/OECD: PPML	(5) AO/OA: OLS	(6) AO/OA: PPML
ln(distanceij)	0.160***	0.168***	0.167***	0.170***	0.140**	0.137**
	[18.03]	[15.63]	[16.04]	[14.68]	[2.465]	[2.210]
contig	-0.210***	-0.259***	-0.133***	-0.170***		
	[-5.454]	[-5.550]	[-2.835]	[-3.288]		
comlang_off	-0.0276	-0.0119	-0.0989***	-0.111***	-0.174*	-0.147
	[-0.895]	[-0.326]	[-2.941]	[-2.637]	[-1.756]	[-1.150]
ln(tariffij*ji)	0.586***	0.578***	0.890***	0.957***	1.179**	0.766
	[4.043]	[3.321]	[4.463]	[4.747]	[1.988]	[1.112]
ln(NTMij)	0.288**	0.306*	0.452***	0.530***	1.889***	1.838***
	[2.263]	[1.901]	[2.609]	[2.796]	[5.353]	[4.919]
ln(lsciij)	-0.181***	-0.182***	-0.163***	-0.163***	-0.225***	-0.219***
	[-16.04]	[-13.78]	[-12.25]	[-11.41]	[-4.962]	[-4.832]
ln(internetusers_per100pplij)	-0.0295	-0.0293	-0.0162	-0.00182	-0.0259	0.00796
	[-1.255]	[-0.949]	[-0.457]	[-0.0448]	[-0.295]	[0.0801]
creditinfoij	-0.0461***	-0.0564***	-0.0996***	-0.116***	-0.123***	-0.121***
	[-6.516]	[-6.938]	[-6.020]	[-6.644]	[-3.384]	[-3.108]
Constant	0.643***	0.632***	0.564***	0.565***	0.809	0.685
	[6.560]	[5.628]	[4.030]	[3.584]	[1.409]	[1.117]
Observations	2,017	2,017	903	903	190	190
R-squared	0.438	0.321	0.559	0.452	0.460	0.366
Reporter FIXED-EFFECTS	No	No	No	No	No	No
Partner FIXED-EFFECTS	No	No	No	No	No	No
Income group	Yes	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes	Yes
Clustered SE	Country pair	Country pair	Country pair	Country pair	Country pair	Country pair
Adj. R-squared	0.434	.	0.552	.	0.424	.
Robust in brackets *** p<0.01, ** p<0.05, * p<0.1 t-stat. in square brackets						

See full paper appendix for additional robustness checks of this model. The full paper is available at www.unescap.org/resources/agricultural-trade-costs-asia-and-pacific-patterns-compositions-and-determinants.

Chapter IV

Financing for development:

Impact of reducing trade costs on foreign direct investment[100]

Introduction

Foreign direct investment (FDI) has long been known as an important source of financing for development in host (recipient) countries. UNCTAD (2012b) found that FDI positively contributes to host economies, including through higher employment and wages, tax revenue increases, export generation and capital formation. Identifying factors that make a host country more attractive to FDI therefore remains an important policy issue.

Trade facilitation has often been promoted as a way to attract more FDI, particularly FDI related to international production networks, which typically require that low transaction costs be maintained between the members of the network (e.g., ADB/ESCAP, 2013; UNECE, 2012101; UNECE, 2003). However, little empirical evidence exists of the actual link between trade facilitation and FDI. This chapter therefore quantifies the impact of trade facilitation, defined here in its broadest sense, i.e., lower trade costs, on FDI.

This study uses bilateral FDI data from 2006 onward, both from developed and from developing countries, to estimate FDI gravity models and examine the effect of various trade facilitation-related indicators on FDI, including ESCAP-World Bank bilateral trade costs,[102] maritime connectivity, ease of doing business and the use of the Internet. Changes in effects when considering only FDI flows between developing countries (South-South) are also presented.[103]

Section A reviews selected literature on FDI and linkages to trade facilitation, with particular emphasis on findings from FDI gravity models. Section B provides a brief overview of FDI flows in developing and developed economies, while the methodology and data used to assess the impact of trade facilitation and FDI are presented in section C. The results from the gravity model estimation and a counterfactual simulation of trade facilitation improvements in developing countries are presented in section D followed by the conclusion and policy recommendations in section E.

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[100] This chapter is a shortened, updated and edited version of Duval and Utoktham (2014). The full working paper is available at http://www.unescap.org/sites/default/files/Staff%20Working%20Paper%2004-14.pdf

[101] http://tfig.unece.org/contents/tf-introduction.htm.

[102] See Arvis and others (2013) for an introduction.

[103] Horizontal FDI typically refers to the situation where firms duplicate the production activities they have at source in host countries, while vertical FDI refers to firms who locate different stages of production in different countries. Horizontal FDI is sometimes referred to as market-oriented or import-substituting investment, while vertical FDI is referred to export-platform investment (e.g., Markusen and Venables, 2005).

A. Literature review: Trade and FDI

The literature on FDI and trade is vast, ranging from studies of the relationship between FDI and trade as complements or substitutes (e.g., Swenson, 2004), to studies examining the factors affecting the decision by firms to engage in FDI rather than exporting (e.g., Helpman and others, 2004; Markusen and Venables, 2005)[104]. From a policymaker's perspective, however, the identification of factors attracting FDI is particularly relevant.

Blonigen (2005), in a review of the FDI literature, identified five common factors affecting FDI: exchange rates; domestic taxes; quality of institutions; trade protectionism; and the substitution or complementarity effects between trade and FDI. Recent literature generally finds that FDI and trade are complements, particularly since the emergence of regional and global value chains and distributed manufacturing. Evidence of tariff-jumping FDI as described by Carr and others (2001) is limited and trade protectionism is generally found to have a negative effect on FDI (see, for example, Tekin-Koru, 2009 and WTO, 1996).

Gravity models of FDI flows are commonly used to identify determinants of FDI. Most FDI models feature both macroeconomic indicators as well as indicators more closely related to trade facilitation. Table 1 provides an overview of recent studies featuring gravity models of FDI.

Existing studies are often based on very limited and dated FDI data, with many recent studies (2008-2012) still using FDI data from 2005 or earlier. This is of concern, given the changing nature of FDI associated with growing regional and global production networks. Second, trade costs and trade facilitation indicators are typically not included in the FDI models. Bilateral distance and indicators of trade openness found in most models indeed do not adequately capture or provide sufficient insight of the links between trade-related procedures, infrastructure and services, and FDI.[105]

While FDI gravity models are relatively common, the theoretical literature providing a microeconomic foundation for the gravity model of FDI is very limited. Gravity models of trade with micro foundation were introduced by Anderson and van Wincoop (2003). Kleinert and Toubal (2010) recently introduced an FDI gravity framework based on proximity-concentration models and factor-proportion theory, using affiliate sales data. However, such data are typically not available between developing countries. Thus, the analysis presented in this chapter relies on a standard gravity model of bilateral FDI flows, with control variables based on those proposed in Blonigen (2005), and Braconier and others (2005). The model is then extended to include relevant trade costs and trade facilitation factors (see section C for details).

[104] For example, Helpman and others (2004) showed that the most productive firms engage in foreign market investment, while the less productive ones export. Markusen and Venables (2005) also found that countries with moderate trade costs engaged in market-oriented assembly while those with lower trade costs engaged in export-platform production.

[105] The examples provided in Carr and others, 2001, clearly suggest the need to include distance, trade costs and investment costs as separate determinants of FDI.

Table 1. Selected studies using a gravity model of FDI

Study	Country/period covered	Source of FDI	Control variables (excluding distance and GDP)	Main findings
Del Bo (2009)	1982-2005; cross countries with the United States	OECD and Bureau of Economic Analysis	Exchange rate volatility Political risk Financial development Trade openness Energy use Labour education Quality of labour Common language	Exchange rate variability and political instability have negative effect on FDI flows
Frankel, and others (2004)	1992-2000; G-5 flows to emerging economies	Eurostat	GDP growth Trade openness Inflation Dummy of fixed exchange rate Economic risk	FDI flows are positively related to economic growth, trade openness and negatively related to country risk ; Effects of exchange rate on FDI are mixed; Inflation is not significant
Furceri and Borelli (2008)	1995-2004; European economies	UNCTAD	GDP per capita Openness Barriers to trade Inflation Investment price Dummy of Asian crisis Dummy of Russian Federation crisis Exchange rate volatility	Relationship between FDI and exchange rate volatility depends on degree of openness and is negative in more open economies; Inflation and price of investment (proxied by investment deflator) have no significant impact on FDI
Gao (2004)	1994-1997; 24 OECD economies to host countries	OECD and UNCTAD	GDP per capita Average GDP growth prior to 1994 Common language Contiguity Colonial link Free trade agreement	GDP growth prior to 1994, GDP per capita, and common language are significant and positively related to FDI; FDI flows within Asia are less sensitive to host countries' income and are more affected by distance
Hattari and Rajan (2009)	1990-2005; developing Asia	UNCTAD	Difference in real GDP per capita Real export Change in real exchange rate Market capitalization of listed companies Political risk Corporate tax rate Trade agreement Financial openness Legal origin of United Kingdom Free trade agreement Common language	Lag of exports, stock market capitalization, financial openness, political risk, legal origin of the United Kingdom and free trade agreement dummy have a positive effect on FDI. Change in the real exchange rate, distance and corporate tax have a negative effect on FDI
Jeon, Tang and Zhu (2004)	1980-1997; 27 OECD countries and 20 non-OECD countries	International Direct Investment Statistics Yearbook,	Product of tele/cell density Trade openness FDI openness Interaction of tele/cell density and distance	IT development in source and host countries encourages FDI significantly. Impacts from G7 on OECD members are more prominent compared to non-OECD

		OECD		countries. In addition, the impact of the 1990s was more significant than that of the 1980s.
Kleinart and Toubal (2010)	1986, 1990, 1994, 1998; cross countries	Affiliate sales from Braconier and others (2005) excluding Swedish FDI	Relative factor endowment Sum of GDP Contiguity Trade protection index Investment Index (based on the World Economic Forum survey)	Differences are found between horizontal and vertical FDI with relative factor endowment and bilateral wealth (sum of GDP) are significant in explaining FDI flows; Trade protection and the investment index are not statistically significant
Petri (2012)	1998-2003; Developing Asia	UNCTAD	Population GDP per capita Common language Waterway Airport Science and technology achievement index Science and technology policy index Regional blocs	Asian FDI flows are correlated with high intellectual property right regime, and negatively correlated with low technology achievement.

B. World FDI flows at a glance

Data in table 3 show FDI from developed countries account for approximately 50 percent or more of World FDI during 2009-2011.[106] While FDI still flows from developed countries to other developed countries, the situation is changing as a growing share of FDI goes to developing economies. As of 2011, FDI to developing and transition economies represented 51% of total FDI (table 3). The main FDI recipients in developing, as illustrated in tables 3 and 4, only provide a very general overview of FDI trend, and bilateral FDI data are essential to better understand FDI patterns. As the availability of such bilateral data is limited, the study combines two sources – OECD and UNCTAD. The OECD database includes flows of OECD members as reporting countries to and from the rest of the world, i.e., North-North and North-South flows. FDI flows among developing economies, i.e., South-South flows, are obtained from the UNCTAD database.[107]

Based on this bilateral FDI dataset, table 4 shows FDI flows both from developed and from developing countries or regions to host countries and their evolution from 1996 to 2010. Developed hosts received FDI mainly from other developed economies. However, sources of FDI for developing Asia-Pacific as well as Latin America and the Caribbean regions were often other developing countries. Europe also received FDI mostly from developing world regions during the period considered, with a significant increase in investment in all regions. Within Asia-Pacific, South and South-West Asia is the region where FDI from developing countries appears to have grown the least. In contrast, East and North-East Asia as well as South-East Asia have attracted increasingly large flows.

[106] See UNCTAD, 2012b.

[107] UNCTAD provides data only among developing Asian countries upon request.

Table 2. FDI Outflows by Region: 1996-2011

	Outflows: USD Million				Outflows: % of world total			
	1996	**2001**	**2006**	**2011**	**1996**	**2001**	**2006**	**2011**
Developing Asia and the Pacific	49644.32	45478.64	145842.6	317503.4	12.48%	6.08%	10.31%	18.74%
East and North-East Asia	33316.14	20273.24	78003.47	167235.8	8.38%	2.71%	5.51%	9.87%
South-East Asia	14829.01	20749.84	28603.78	59889.77	3.73%	2.78%	2.02%	3.53%
South and South-West Asia	531.283	1926.702	15736.1	17697.65	0.13%	0.26%	1.11%	1.04%
North and Central Asia	926.7244	2517.283	23459.04	72569.91	0.23%	0.34%	1.66%	4.28%
Pacific Islands Economies	41.16453	11.57416	40.21324	110.3147	0.01%	0.00%	0.00%	0.01%
Other Developing Regions								
Africa	1813.343	-2644.31	8225.171	3512.398	0.46%	-0.35%	0.58%	0.21%
Latin America and the Caribbean	8395.072	36565.34	79670.23	99653.1	2.11%	4.89%	5.63%	5.88%
Developed Economies								
Asia and the Pacific	27329.97	50925.01	75856.01	137207.4	6.87%	6.81%	5.36%	8.10%
Australia	5142.191	13675.11	25409.46	19998.7	1.29%	1.83%	1.80%	1.18%
Japan	23426.4	38333.24	50264.4	114352.9	5.89%	5.13%	3.55%	6.75%
New Zealand	-1238.62	-1083.34	182.1493	2855.789	-0.31%	-0.14%	0.01%	0.17%
EU-5	128817.1	234415.5	463689.3	336066.8	32.38%	31.35%	32.77%	19.83%
France	30421	86767.01	110673	90146.03	7.65%	11.61%	7.82%	5.32%
Germany	50804.71	39683.64	118701	54368.4	12.77%	5.31%	8.39%	3.21%
Italy	6465.318	16003.34	43796.52	47210.35	1.63%	2.14%	3.09%	2.79%
Spain	7078.558	33106.36	104248	37255.62	1.78%	4.43%	7.37%	2.20%
United Kingdom	34047.47	58855.12	86270.69	107086.4	8.56%	7.87%	6.10%	6.32%
North America	97522.22	160901.8	270433.7	446224.9	24.52%	21.52%	19.11%	26.34%
Canada	13096.22	36028.82	46213.72	49568.94	3.29%	4.82%	3.27%	2.93%
United States	84426	124873	224220	396656	21.22%	16.70%	15.84%	23.41%
World	397769.7	747656.8	1415094	1694396	100.00%	100.00%	100.00%	100.00%
Developing economies	65406.24	83087.38	239336	383753.7	16.44%	11.11%	16.91%	22.65%
Transition economies	947.1836	2741.616	23724.31	73134.75	0.24%	0.37%	1.68%	4.32%
Developed economies	331416.3	661827.8	1152034	1237508	83.32%	88.52%	81.41%	73.04%

Source: Author's calculation, based on UNCTAD online database at http://unctadstat.unctad.org.

Note: ESCAP regional members: (a) East and North-East Asia – China; Democratic People's Republic of Korea; Hong Kong, China; Macao, China; Mongolia; and the Republic of Korea; (b) South-East Asia – Brunei Darussalam; Cambodia; Indonesia; Lao PDR; Malaysia; Myanmar; the Philippines; Singapore; Thailand; Timor-Leste; and Viet Nam; (c) South and South-West Asia – Afghanistan; Bangladesh; Bhutan; India; Islamic Republic of Iran; Maldives; Nepal; Pakistan; Sri Lanka; and Turkey; (d) North and Central Asia – Armenia; Azerbaijan; Georgia; Kazakhstan; Kyrgyzstan; Russian Federation; Tajikistan; Turkmenistan; and Uzbekistan; (e)Pacific Island economies – American Samoa; Palau; Papua New Guinea; Samoa;, Solomon Islands; Tonga; Tuvalu; and Vanuatu

Table 3. FDI inflows by region, 1996-2011

	Inflows: USD Million				Inflows: share to the world			
	1996	**2001**	**2006**	**2011**	**1996**	**2001**	**2006**	**2011**
Developing Asia and the Pacific	96010.48	114385.6	276289	467960.8	24.56%	13.82%	18.88%	30.70%
East and North-East Asia	54221.52	74958.47	124405.4	220936.1	13.87%	9.06%	8.50%	14.49%
South-East Asia	32915.17	22094.77	64037.64	116559.2	8.42%	2.67%	4.38%	7.65%
South and South-West Asia	4101.97	10865.4	48103.56	54817.75	1.05%	1.31%	3.29%	3.60%
North and Central Asia	4642.053	6256.837	38444.21	74046.34	1.19%	0.76%	2.63%	4.86%
Pacific Islands Economies	129.766	210.1535	1298.154	1601.335	0.03%	0.03%	0.09%	0.11%
Other Developing Regions								
Africa	6038.584	19960.82	36782.88	42651.85	1.54%	2.41%	2.51%	2.80%
Latin America and the Caribbean	46265.34	80725.33	98175.35	216988.3	11.84%	9.75%	6.71%	14.23%
Developed Economies								
Asia and the Pacific	8807.52	17160.88	29069.01	42927.53	2.25%	2.07%	1.99%	2.82%
Australia	4660.917	11031.12	31049.65	41316.69	1.19%	1.33%	2.12%	2.71%
Japan	227.9852	6242.954	-6506.5	-1758.33	0.06%	0.75%	-0.44%	-0.12%
New Zealand	3918.617	-113.192	4525.871	3369.175	1.00%	-0.01%	0.31%	0.22%
EU-5	66151.79	172792.8	357043.3	193832.1	16.92%	20.88%	24.40%	12.72%
France	21961.46	50476.82	71848.02	40945.01	5.62%	6.10%	4.91%	2.69%
Germany	6572.646	26414.07	55626.11	40402.08	1.68%	3.19%	3.80%	2.65%
Italy	3535.094	14870.56	42580.92	29059.37	0.90%	1.80%	2.91%	1.91%
Spain	9647.285	28408.13	30802.38	29476.32	2.47%	3.43%	2.10%	1.93%
United Kingdom	24435.3	52623.24	156185.9	53949.35	6.25%	6.36%	10.67%	3.54%
North America	94093.76	187141.1	297429.9	267868.5	24.07%	22.61%	20.33%	17.57%
Canada	9633.764	27663.42	60293.91	40931.51	2.46%	3.34%	4.12%	2.69%
United States	84460	159477.6	237136	226937	21.61%	19.27%	16.20%	14.89%
World	390899.5	827617.3	1463351	1524422	100.00%	100.00%	100.00%	100.00%
Developing economies	148993.4	216865.1	427163.4	684399.3	38.12%	26.20%	29.19%	44.90%
Transition economies	5871.134	9511.127	54318.43	92162.89	1.50%	1.15%	3.71%	6.05%
Developed economies	236035	601241.1	981869.3	747860	60.38%	72.65%	67.10%	49.06%

Source: Author's calculation, based on UNCTAD online database at http://unctadstat.unctad.org).
Note: Composition of ESCAP regional members is the same as shown in table 2.

Table 4. Bilateral flows among countries and regions

Source-Host	Year	Africa	AUS-NZL	Caribbean	Central America	East and North-East Asia	European Union	Japan	North America	Pacific Island economies	South America	South and South-West Asia	South-East Asia
AUS-NZL	1996	68.1	N/A	N/A	N/A	65.0	3 398.7	189.0	3659.0	N/A	N/A	N/A	510.8
	2001	7.8	N/A	N/A	N/A	N/A	N/A	553.0	2 016.0	N/A	32.0	0.5	509.0
	2006	N/A	1 890.0	27.9	N/A	822.0	4 013.8	2 340.0	6 460.0	700.8	169.0	N/A	431.1
	2010	318.0	965.0	73.0	177.0	3 661.0	N/A	5 730.0	18280.0	33.0	874.7	450.0	5 235.8
East and North-East Asia	1996	N/A	N/A	N/A	N/A	23 117.1	N/A	N/A	N/A	0.9	N/A	100.8	837.0
	2001	N/A	N/A	N/A	N/A	24 426.4	N/A	N/A	N/A	0.3	N/A	48.4	N/A
	2006	N/A	N/A	N/A	N/A	40 641.9	N/A	N/A	N/A	N/A	N/A	208.8	1 567.3
	2010	N/A	N/A	N/A	N/A	101 166.0	N/A	N/A	N/A	N/A	N/A	665.9	3 258.3
European Union	1996	419.3	1 823.2	835.2	305.9	1 421.2	48 846.9	418.0	28 401.8	1.3	1 979.7	372.4	1 679.4
	2001	1 319.5	586.2	4 520.4	389.2	418.3	204 842.6	6 368.9	56 924.4	2.7	1 465.0	162.8	698.2
	2006	4 023.9	4 248.0	32 216.7	1 686.9	3 746.3	469 979.2	14 270.6	75 210.2	613.4	5 288.1	1 771.7	6 678.8
	2010	2 888.3	N/A	8 365.2	1 777.6	22 086.4	267 754.3	N/A	108 007.1	N/A	10 572.4	1 713.1	3 772.4
Japan	1996	230.0	4.6	N/A	118.0	240.0	2 099.4	N/A	2 250.5	N/A	75.4	1.8	999.0
	2001	N/A	N/A	N/A	45.3	55.2	8 492.0	N/A	5 696.0	N/A	1 410.0	118.0	729.8
	2006	443.8	35.2	260.5	10.3	N/A	N/A	N/A	N/A	126.3	1 595.3	N/A	1 102.9
	2010	36.5	N/A	566.8	N/A	1 217.8	463.4	N/A	3 223.6	1.3	N/A	4.2	1 749.6
North America	1996	91.0	5 324.0	N/A	N/A	2 30.0	55 390.0	13 958.0	15 380.0	N/A	24 33.0	393.0	1 488.0
	2001	534.0	6 562.0	N/A	N/A	1991.0	88 549.0	N/A	34 470.0	N/A	13 61.0	336.0	890.0
	2006	819.0	2 039.0	N/A	3 867.0	3 628.0	19 8818.0	18 710.0	33900.0	N/A	N/A	482.0	3 210.0
	2010	2 039.0	8859.0	427.0	1295.0	2 979.0	130 030.0	22 530.0	27 300.0	1.0	3148.0	834.0	947.0
Pacific Island economies	1996	N/A	N/A	N/A	N/A	0.1	N/A	N/A	N/A	N/A	N/A	1.1	N/A
	2001	N/A	N/A	N/A	N/A	5 04.0	N/A	N/A	N/A	4.4	N/A	N/A	N/A
	2006	N/A	N/A	N/A	N/A	1 657.0	N/A	N/A	N/A	N/A	N/A	0.2	31.6
	2010	N/A	N/A	N/A	N/A	2 324.0	N/A	N/A	N/A	N/A	N/A	0.1	37.9

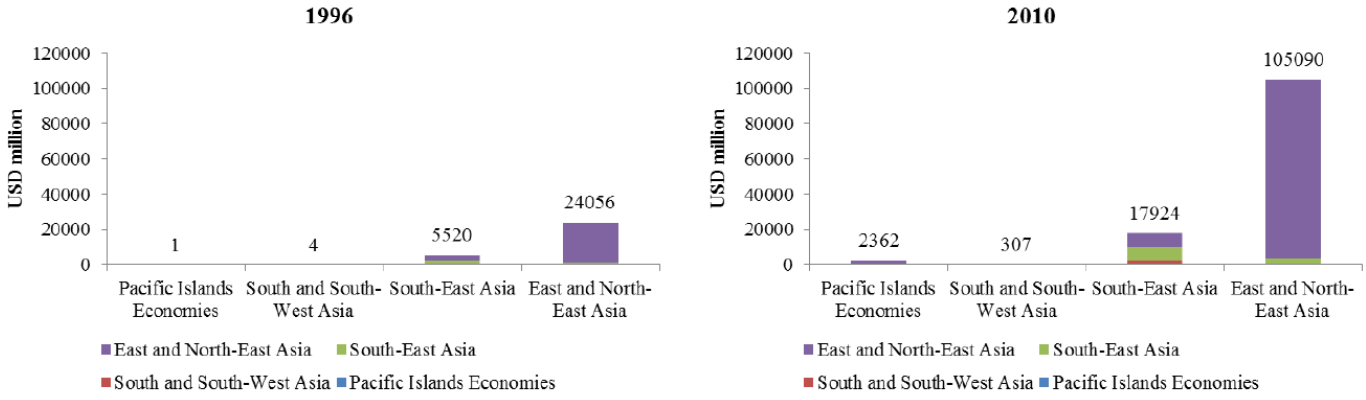
South and South-West Asia	1996	N/A	N/A	N/A	N/A	1.1	4 74.0	24.0	143.0	N/A	N/A	3.3	N/A
	2001	N/A	N/A	N/A	N/A	9.3	2845.0	139.0	280.0	1.2	N/A	2.8	21.3
	2006	9.0	108.0	27.0	N/A	19.0	14 548.0	N/A	1 036.0	N/A	N/A	46.6	N/A
	2010	N/A	9.0	N/A	N/A	82.9	5518.0	356.0	419.0	N/A	6.0	211.5	12.3
South-East Asia	1996	N/A	N/A	N/A	N/A	3 258.7	N/A	N/A	N/A	51.6	N/A	0.6	2 209.1
	2001	N/A	N/A	N/A	N/A	5 328.8	N/A	N/A	N/A	N/A	N/A	56.1	1 715.5
	2006	N/A	N/A	N/A	N/A	4 445.0	N/A	N/A	N/A	N/A	N/A	700.7	5 241.8
	2010	N/A	N/A	N/A	N/A	7 935.3	N/A	N/A	N/A	N/A	N/A	2 041.2	7 947.5

Source: Author's compilation, based on OECD iLibrary (online database, based on inflows data) and UNCTAD based on FDI inflows (upon request); Unit is in US$ million; data reported only on positive flows.

Note: Composition of ESCAP regional members is the same as in table 16.

Figure 1 provides an overview of FDI flows among Asia-Pacific developing economies. East and North-East Asia is the source and recipient of most of the FDI flows from the region. FDI flows to and from Pacific Islands and South and South West Asia, while they have grown since 1996, remain very small. Interestingly, South-East Asia FDI appears to be directed not only towards itself but also to East and North-East Asia and, increasingly, South and South West Asia.

Figure 1. FDI flows among developing Asia and the Pacific countries



Source: Author's compilation, based on bilateral FDI inflows from UNCTAD.
Note: The figure shows how each Asia-Pacific subregion (x-axis) receives FDI flows from its own as well as other subregions.

C. Impact of trade facilitation on FDI: Data and methodology

To formally estimate the significance of trade facilitation factors on FDI, a series of regression models was used. See annex for technical details of the empirical model estimated, and annex tables 1 and 2 for estimates by the models. More simply put, the impact is estimated of variables listed in table 5 on FDI in the baseline model (Model M0).

Two different models were developed to account for trade costs and facilitation effects in FDI gravity models. The first model (Model M1) incorporates the non-tariff and tariff cost components of the ESCAP-World Bank international trade cost measure.[108] Bilateral trade costs excluding tariff (NTC) between source and host country are included in the models as well as the average NTCs between host country and the rest of the world, where the world is proxied by the three largest world importers.[109] Similarly, bilateral average tariffs between

[108] Details on the decomposition of the ESCAP-World Bank international trade cost measure into a tariff and a non-tariff component is available in Duval and Utoktham (2011).The tariff cost component is the geometric average of the average import tariff rates imposed by country i and j on each other.

[109] As discussed in Arvis and others (2013), using a small defined set of countries for which bilateral data are widely available is preferable to using a world simple average subject to composition effects. The largest world importers are China, Germany and the United States which together account for approximately 30 per cent of world imports.

source and host countries are included in model M1 as well as the average tariff of host countries with the rest of the world. Finally, indicators of ease of doing business (i.e., Distance to frontier from the World Bank Doing Business Database) in host countries are included in the model – capturing behind-the-border trade and investment facilitation, including domestic taxes and institutional factors highlighted by Blonigen (2005).

In model M2, all NTC variables are replaced by factors related to underlying international trade cost components, i.e., maritime transport connectivity of the host country with the source country as well as with the rest of the world, Internet users per 100 people – as a proxy of ICT access and use – and exchange rate volatility.[110]

RFE inclusion in the model follows Kleinert and Toubal (2010). RFE is defined as the ratio of skilled labour in country i to total skilled labour in both source and host countries over the unskilled labour country i to total unskilled labour in source and host countries.[111] The ratio is used to measure whether a host country has relatively more (or less) endowment in skilled rather than unskilled labour. Differences in labour endowments across countries are expected to significantly affect FDI flows, as firms develop international production networks (vertical FDI), breaking down the production process in different stages and moving production of intermediate goods requiring unskilled labour to countries where this type of labour is cheaper and more abundant.[112]

However, the viability of international production networks not only depends on whether cheaper factors of production can be accessed overseas, but also on how efficiently – i.e., cost effectively – intermediate goods can be moved in and out of the countries where they are being processed before being assembled into final goods. International trade transaction costs can therefore be expected to be crucial determinants of vertical FDI in this context. Therefore the above empirical mode is extended by incorporating various trade cost components, including tariff- and trade facilitation-related indicators.

[110] Tomlin (2000) uses both exchange rate growth and standard deviation in the model. Tenreyro (2007) uses volatility. Volatility is defined as: $v_{ijt} = SD[\ln(e_{ijt,m})-\ln(e_{ijt,m-1})]$, m=1, 2, …, 12, where SD stands for standard deviation, e denotes exchange rate between countries i and j at year t.

[111] Let S be skilled labour, L be unskilled labour. RFE_{ij} is defined as $RFE_{ij} = (S_i/(S_i+S_j))/(L_i/(L_i+L_j))$.

[112] See Braconier and others, 2005, for more details.

Table 5. Variable descriptions, data sources and expected signs

Variable	Unit	Expected signs	Source	Description
fdi_ij	US dollar		OECD iLibrary/UNCTAD	Foreign direct investment flows from host country i to source country j
gdp_i	US dollar	+	WB-WDI	Gross domestic product of host country i
gdp_j	US dollar	+	WB-WDI	Gross domestic product of source country j
dist	Kilometre	-	CEPII	Distance between host country i and source country j
contig	-	+	CEPII	Dummy variable indicating 1 if 2 countries share common border, zero otherwise
comlang_off	-	+	CEPII	Dummy variable indicating 1 if 2 countries share common official language, zero otherwise
rfe_i	-	+	Author's calculation from ILO database	Relative factor endowment (see definition in main text)
ntc_ij	Per cent	-	Author's calculation based on ESCAP-WB Trade Costs Database	Tariff-equivalent trade cost, excluding tariff. Based on Anderson and van Wincoop (2004), it is calculated by: (((1+trade costs)/(1+geometric_avg_tariff))-1)-1)*100
ntc_iw	Per cent	-	Author's calculation based on ESCAP-WB Trade Costs Database	Tariff-equivalent trade cost, excluding tariff of source country with three main importers (China, Germany and the United States)
tariff_ij	0.0001+percent	-	Author's calculation based on TRAINS	Geometric average tariff of host country i charging on importation from source country j and tariff of host country j charging on importation from source country i
tariff_iw	0.0001+percent	-	TRAINS (accessed through WITS)	Simple average tariff of host country i charging on importation from the rest of the world
d2f_i	Score (0-100)	+	WB Doing Business	Ease of doing business index: distance to frontier of host country i
volatility_ij	-	+	Author's calculation based on IMF-IFS data	Exchange rate volatility (see definition in main text)
lsbci_ij	Index	+	UNCTAD's LSBCI-Version 1	Liner shipping bilateral connectivity index between host country i and source country j
intusers_i	Users/100 people	+	WB-WDI	Internet users per 100 people of host country i

D. Data and model estimation

Data sources for all variables are provided in table 5.[113] As explained above, bilateral FDI flows among OECD countries (North[114]-North) as well as between OECD countries to developing countries (North-South) are obtained from the OECD iLibrary database, while bilateral data on FDI among developing Asian countries (South-South) is obtained from UNCTAD.[115] The combined data includes 63 source countries and 152 host countries, resulting in an unbalanced FDI dataset of 20,000 bilateral FDI flows from 2006 to 2011.[116] The study treats missing values as missing and zero, and negative foreign investment data as zero. Indeed, while there is a possibility that a missing value is either unreported FDI (non-zero values) or zero value,[117] assuming that unreported FDI is zero might lead to biases in the estimation of the model. Negative bilateral investment data in turn indicate that no foreign investments from a given source country into a host country have taken place, making it sensible to treat the negative values as zero.

Labour data for constructing RFE, which is specific to the vertical FDI model, is obtained from International Labour Organization Statistics (http://laboursta.ilo.org). Labour data is defined under International Standard Classification of Occupations (ISCO) in this study. Skilled labour is defined as occupation group 0/1 (professional, technical and related workers) and group 2 (administrative and managerial workers) in ISCO-1968. When a country uses ISCO-88, occupational group 1 (legislators, senior officials and managers), group 2 (professionals) and group 3 (technicians and associate professionals) are used. This skilled/unskilled labour definition follows that of Braconier and others (2005).

GDP in current US dollar and Internet users per 100 people are obtained from the World Bank's World Development Indicators. Geographical distance between most populated cities (in kilometres), contiguity and bilateral common language dummy variables are obtained from CEPII (www.cepii.fr). Data on exchange rate growth and volatility is obtained from International Financial Statistics, International Monetary Fund (IFS-IMF). Since the exchange rate from the source is in local currency per US dollar, the study transforms it to be bilateral exchange rate by dividing local currency per US dollar of source country by local currency of host country.

Tariff data is from the UNCTAD TRAINS database, downloaded through WITS: World Integrated Trade Solutions (http://wits.worldbank.org). Trade cost, excluding tariff indicator is based on the ESCAP-World Bank

[113] See full paper annex for the list of countries included, descriptive statistics of variables and the correlation matrix. The full working paper is available at www.unescap.org/resources/impact-trade-facilitation-foreign-direct-investment.

[114] The Republic of Korea is also a member of the United Nations and ESCAP, where it is listed among developing countries. Therefore, in this analysis, the Republic of Korea is included in the "South" group of countries rather than the "North" group – which brings together all other OECD Members.

[115] The data are available upon request.

[116] An important feature of this dataset is that it does not include bilateral FDI flows from developing countries to developed countries (South-North). Data for 2007 are dropped due to missing data in the liner shipping bilateral connectivity index for that particular year.

[117] Zero and negative values of investment are approximately 50 per cent of the non-missing data in FDI data from 1995-2010.

Trade cost database from Arvis and others (2013).[118] Ease of doing business index (distance to frontier) is downloaded from Doing Business (www.doingbusiness.org). Cross-border proxy, the liner shipping bilateral connectivity index (LSBCI), is from the UNCTAD database's LSBCI version 1, which is available upon request.

E. Impact of trade facilitation on FDI: Gravity model results and counterfactual simulation

1. Overall findings

This section starts by discussing the gravity model results when the full dataset of FDI flows from developing and developed countries is used. See annex table 1 for technical details of the results. The results when model estimation is restricted to South-South FDI flows are presented next, followed by a simulation of the particular NTC in model (M1).[119] The positive effect of a common language between partners on FDI inflows remains when the models are extended, highlighting the importance of "cultural distance" in attracting FDI.

Estimation results from Model (M1) suggest that, excluding tariffs, bilateral trade costs (NTC) between source and host countries have a significant effect on FDI. Tariffs are also found to have a negative effect on FDI, with results suggesting that a host country's general openness to trade may be more important to foreign direct investors than receipt of bilateral preferential market access. More generally, it supports the finding of Tekin-Koru (2009) and others that there is no evidence of quid pro quo FDI (tariff-jumping FDI), i.e., trade and investment are generally complementary.

In both models (M1) and (M2), the host country's domestic business environment has a strong positive effect on FDI. However, access and affordability of modern information and communication technologies (ICT) – proxied by the number of Internet users per 100 people – is not found to be significant across the models. The exchange rate effect on FDI is also not found to be statistically significant (exchange rate volatility). The latter result may be explained by the fact that tools are increasingly available for international investors to hedge against exchange rate risks.[120]

RFE is found to have a positive and generally significant effect on FDI inflows, except in model M2, where the RFE is positive but not statistically significant. These results provide some support for the growing importance of vertical FDI, where source countries with highly-skilled labour invest in host countries with relatively more unskilled labour as part of the development of international production networks.[121]

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[118] The data are available on the World Bank website (http://data.worldbank.org/data-catalog/trade-costs-dataset) and the ESCAP website (www.unescap.org/tid/artnet/trade-costs.asp).

[119] Correlation coefficients between trade costs (excluding tariff) and distance are less than 0.6.

[120] See Del Bo, 2009.

[121] RFE is significant in M0 and M1.

Bilateral cross-border trade connectivity, as proxied by UNCTAD bilateral LSCI, exhibits a very significant and positive relationship with FDI. This suggests the strong preference of foreign investors for locations that have good transport and logistics linkages to their (source) country.

Based on model (M1), a 1% decrease is found in bilateral trade costs, excluding tariff (NTC), lead to an approximately a 0.8% increase in FDI inflows. In model (M2), a 1% increase in bilateral LSCI results in a 0.6% increase in FDI flows. In contrast, a 1% improvement in the domestic business environment indicator of the host country increases FDI inflows by more than 4.3% in model (M2). These results confirm the importance of trade costs and connectivity in general in attracting FDI, but also highlight the essentiality of a conducive business regulatory environment in the host country.

The results presented above are based on available data from all developed and developing countries considered in this study. It is interesting to note the impact of trade facilitation improvements on FDI.

As shown in annex table A1, the standard gravity variables in the baseline model (M0) exhibit expected signs. GDP (economy size) and sharing of a common language positively affects FDI, while distance has a negative effect on FDI. All variables in the baseline model are statistically significant, except for sharing of a common border (contiguity). The effect of distance on FDI loses its statistical significance when the model is extended. This may be explained by the fact that geographic distance between partners in (M0) was a proxy for other factors now included directly in the extended models, in examining how results change when only developing country investment flows are included in the estimation.

2. South-South FDI and trade facilitation

As shown in annex table 2, when only South-South FDI flows are considered (i.e., between developing Asian countries), significant differences emerge. Contiguity (common border between source and host country) and geographic distance are found to be much more important factors in the case of South-South FDI flows. The importance of liner shipping connectivity becomes more limited while the quality of business environment remains important. Internet usage and exchange rate volatility remain insignificant.

The level of import tariff between source and host country is not significant. At the same time, the strong negative relationship between host countries import tariff on the rest of the world and FDI inflows remain. Excluding tariffs, the importance of low bilateral trade costs between host and developing country remain.[122]

[122] At the same time, however, the weakly significant positive relationship between FDI inflows and average trade costs of the host country with the main world importers (China, Germany and the United States) in the context of South-South FDI, suggest that developing country investors may sometime prefer to invest in countries whose markets are difficult to access for other investor and traders.

Together with the other findings, these results suggest that developing country investors – presumably from upper middle-income countries – are trying to gain or maintain a competitive advantage by investing in neighbouring countries with lower production (labour) costs and different endowments. While these investors attach importance to bilateral trade costs and the domestic business environment in the host country, convenience of proximity and cultural ties matter the most.

3. Impact of trade facilitation improvements on FDI: A counterfactual simulation

To better understand how FDI flows would change as a result of reductions in trade costs or other trade facilitation related improvements, a counterfactual simulation was conducted in which the trade costs and other trade facilitation factors of below-average developing countries were brought to the developing country average. Average changes to trade costs and related trade facilitation indicators in developing countries implied in the simulation are reported table 6, together with the impact on FDI flows.

As shown in table 6, the simulation does not imply very large changes in either tariffs or other trade costs across developing countries. The 28% reduction in average tariffs across the Asia-Pacific region only results in a 6% increase in FDI inflows. In contrast, the simulated 14% average reduction in non-tariff trade costs across the region increases FDI flows to Asia-Pacific by 20%.

Not unexpectedly, improving the quality of the business environment in the host country appears to be the most effective way of increasing FDI inflows, with the simulated 10% average improvement in business environment in the Asia-Pacific region resulting in a 61% increase in FDI flows.

Table 6. Counterfactual simulation of trade facilitation improvements in FDI host countries

Area of improvement (in host countries)	All-country		Asia-Pacific	
	Implied average change in developing countries (%)	Average impact on bilateral FDI flows (%)	Implied average change in Asia-Pacific developing countries (%)	Average impact on bilateral FDI flows (%)
Bilateral trade costs between host and source countries, excluding tariffs.	-12	16	-14	20
Bilateral tariff of host country on source country.	-14	1	-20	1
Average tariff of host country on trade partners.	-20	4	-28	6
Doing business score.	7	42	10	61
Bilateral liner shipping connectivity index.	122	39	61	27

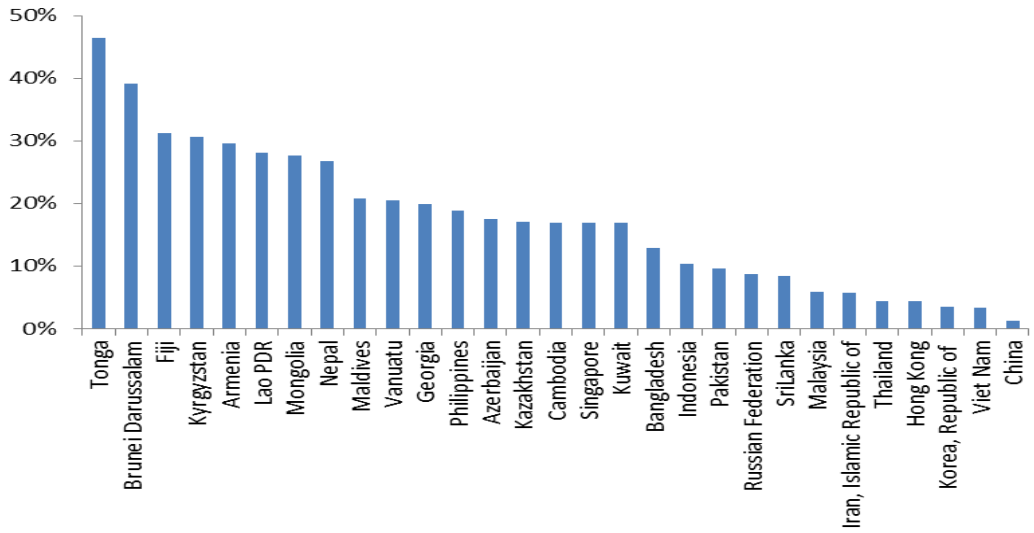
Notes: The impacts from simulated improvements are based on models M1 for trade costs, and model M2 for tariffs, Internet users and bilateral LSCI (see annex table A2). Asia-Pacific refers to all the developing countries member of ESCAP for which data were available (see annex table A1).

In contrast, increasing FDI by enhancing seaport connectivity appears to be less promising and certainly challenging. Gaps between developing countries in these two areas appear to be very wide, as evidenced by the large average changes in LSCI index implied by the simulation (122% up) (table 6). Closing the liner shipping connectivity gap is not feasible in the short term and without massive investment in hard infrastructure. Therefore, improving the quality of the business environment as well as focusing on making administrative trade procedures simpler and more transparent would appear to provide higher return on investment in terms of attracting FDI.

It is important to look beyond regional or global averages, however, as countries are affected differently, depending on how far they are from the global developing country average. Figures 2 and 3 show the impact on FDI in different host countries as a result of improving to the global developing country average. Figure 2 suggests that focusing on reducing bilateral trade costs with its source country may be a pertinent strategy for most developing host countries aiming to increase FDI inflows.

Figure 3 suggests that different countries have to set different priorities when reducing trade costs. For example, Cambodia may best focus on enhancing quality of business environment, while Vanuatu may focus on enhancing port connectivity.

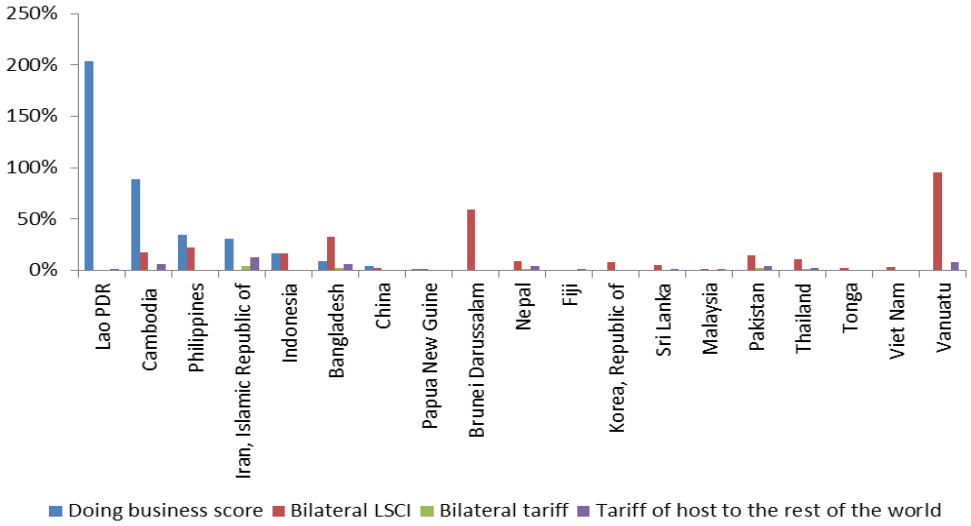
Figure 2. Impact of trade cost improvements on FDI in selected Asia-Pacific countries



Source: Author's compilation.

Note: This shows the percentage increase in FDI flows to a host country when that host country reduces its trade costs to the global developing country average. The impacts are calculated based on model M2.

Figure 3. Impact of tariff reduction and increase use trade facilitation and tariff in developing economies on their FDI flows, by host countries – ESCAP members



Source: Author's compilation.

Note: this shows the percentage increase in FDI flows to a host country when that host country reduces its trade costs to the global developing country average. The impacts are calculated based on model M3.

F. Conclusion

An augmented FDI gravity model framework was applied in order to determine the effect of comprehensive international trade costs and related factors and components on FDI flows. The results showed that international trade costs of both a non-tariff and tariff nature are important determinants of FDI inflows. International trade costs and the various trade cost components and factors examined in this study were found to be negatively related to FDI inflows, confirming that FDI and trade may best be seen as complements rather than substitutes when designing investment policy frameworks.

Although, as often pointed out in advocacy material related to trade facilitation, the importance of reducing international trade costs was found to be important; the quality of the business environment in the host country was confirmed to be an essential driver of FDI inflows. This also generally held true for South-South FDI, although it appeared that proximity and cultural similarities were key factors for FDI between developing countries. Overall, the results provide further support for implementation of coordinated trade and investment

policies, such as measures aimed at reducing the costs associated with importing and exporting intermediate goods and services linked to FDI in priority sectors identified in the national development strategy.[123]

While the strong link between FDI and trade costs was found to be generally robust across the various models, data samples and estimation methods used in the course of the above analysis, further research will be useful in confirming the results and estimates of the impact of various trade costs component and factors on FDI. In particular, augmenting the bilateral FDI data used in this study, and testing the significance of alternate indicators of connectivity and trade facilitation (e.g., the logistics performance index) may be pursued. Nonetheless, these findings provide evidence of a strong link between trade facilitation and FDI.

[123] See also Anukoonwattaka, 2011.

Annex

Econometric Analysis

Model Specification

The models are estimated using pseudo-poisson maximum likelihood (PPML). This method, introduced by Silva and Tenreyro (2006), solves several problems related to estimation of gravity models. In particular, it takes zero investment flows into account and is unbiased when heteroskedasticity exists. Because of the limited availability of data for several explanatory variables and the need to focus on recent FDI flow patterns, all models are estimated using data from 2006 to 2011. Year and income group fixed effect based on GNI per capita (using the World Bank Atlas method) are included in all the models.[124]

This chapter estimates the following gravity models of FDI:

Baseline Gravity Model (A):

(M0): $fdi_{ijt} = b0 + b1\ln(gdp_{it}) + b2\ln(gdp_{jt}) + b3\ln(dist_{ij}) + b4\,(contig_{ij}) + b5\,(comlang_{ij}) + b16(RFE_{ij}) + e_{ijt}$

Augmented Gravity Models (B and C):

(M1): $fdi_{ijt} = b0 + b1\ln(gdp_{it}) + b2\ln(gdp_{jt}) + b3\ln(dist_{ij}) + b4\,(contig_{ij}) + b5\,(comlang_{ij}) + b6\,(RFE_{ij}) + b7\ln(geometric\_avg\_tariff_{ijt}) + b8\ln(tariff_{jwt}) + b9\ln(d2f_{jt}) + b10\ln(ntci_{jt}) + b11\ln(ntcj_{wt}) + e_{ijt}$

(M2): $fdi_{ijt} = b0 + b1\ln(gdp_{it}) + b2\ln(gdp_{jt}) + b3\ln(dist_{ij}) + b4\,(contig_{ij}) + b5\,(comlang_{ij}) + b6\,(RFE_{ij}) + b7\ln(geometric\_avg\_tariff_{ijt}) + b8\ln(tariff_{jwt}) + b9\ln(d2f_{jt}) + b11\ln(lsbci_{jt}) + b12\ln(lsbcij_{wt}) + b13\ln(intusers_{jt}) + b10\,(volatility_{ijt}) + e_{ijt}$

for host country i, source country j at year t where

fdi	denotes FDI flows.
gdp	denotes Gross Domestic Product
dist	denotes distance between 2 countries
contig	denotes existence of contiguity (common border) between two countries
comlang	denotes existence of common official language between two countries
RFE	denotes relative factor endowment

Income group and year fixed effects as well as source country fixed effects are included in models M1 and M2.

[124] The groups are: low income, US$ 1,025 or less; lower middle income, US$ 1,026-US$ 4,035; upper middle income, US$ 4,036-US$ 12,475; and high income, 12,476 or more. Since the data are unbalanced panel data for source and host countries, income group is used instead of particular country's fixed effect in order to at least capture a more balanced variation within income group.

Estimation Results

Annex Table 1. Regression – all countries

Variables	(M0) Classic Gravity	(M1) Host's side NTC	(M2) Host's TF sub-indicators
ln_gdp_i	0.486***	0.473***	0.441***
	[5.628]	[5.061]	[6.997]
ln_gdp_j	0.614***	1.396***	1.316***
	[12.30]	[2.688]	[3.082]
ln_dist	-0.437***	0.0896	0.0816
	[-4.819]	[0.832]	[1.095]
contig	-0.115	0.00868	0.428**
	[-0.305]	[0.0324]	[2.292]
comlang_off	1.218***	0.743***	0.913***
	[7.412]	[3.811]	[5.953]
ln_tariff_ij		0.000242	-0.0508**
		[0.00864]	[-2.567]
ln_tariff_iw		-0.223***	-0.154***
		[-4.198]	[-3.644]
ln_d2f_i		1.417*	4.303***
		[1.676]	[5.440]
ln_lsbci_ij			0.603***
			[5.261]
ln_intusers_i			-0.362
			[-1.594]
volatilityij			1.403
			[0.339]
rfe_i	0.199***	0.214***	0.0527
	[6.401]	[3.165]	[0.821]
ln_ntc_ij		-0.819***	
		[-2.938]	
ln_ntc_iw		0.136	
		[0.383]	
Constant	-7.979***	-38.83***	-51.82***
	[-3.545]	[-2.621]	[-4.681]
Observations	13,771	9,368	12,159
Source's income group FE	Yes	Yes	Yes
Host's Income group FE	Yes	Yes	Yes
Year	Yes	Yes	Yes
Source FE	No	Yes	Yes
Host FE	No	No	No
Clustered SE	Country pair	Country pair	Country pair
Pseudo R-squared	0.191	0.415	0.572
*** p<0.01, ** p<0.05			
t-stat. in square brackets.			

Annex Table 2. Regression – South (host) – South (source)

Variables	(M0) Classic Gravity	(M1) Host's side NTC	(M2) Host's TF sub-indicators
ln_gdp_i	0.858***	1.267***	0.957***
	[3.767]	[7.083]	[6.356]
ln_gdp_j	0.873***	1.186**	2.299**
	[6.301]	[2.303]	[2.179]
ln_dist	-0.345	-0.653***	-1.033***
	[-1.199]	[-4.839]	[-4.771]
contig	2.287***	1.367***	0.858**
	[5.658]	[5.188]	[1.983]
comlang_off	1.311***	1.439***	1.374***
	[2.649]	[3.556]	[3.279]
ln_tariff_ij		0.0399	0.0439
		[0.739]	[0.673]
ln_tariff_iw		-0.116***	-0.165***
		[-2.998]	[-3.186]
ln_d2f_i		4.742***	2.665
		[2.850]	[1.381]
ln_lsbci_ij			0.183
			[0.600]
ln_intusers_i			-0.0189
			[-0.0677]
volatilityij			-14.70
			[-1.171]
rfe_i	0.212***	0.107	0.140***
	[2.647]	[1.911]	[2.669]
ln_ntc_ij		-0.843**	
		[-2.105]	
ln_ntc_iw		1.342	
		[1.682]	
Constant	-27.10***	-65.25***	-71.58**
	[-3.249]	[-3.776]	[-2.208]
Observations	1 264	565	1 002
Source's income group FE	Yes	Yes	Yes
Host's Income group FE	Yes	Yes	Yes
Year	Yes	Yes	Yes
Source FE	No	Yes	Yes
Host FE	No	No	No
Clustered SE	Country pair	Country pair	Country pair
Pseudo R-squared	0.849	0.994	0.930
*** p<0.01, ** p<0.05 t-stat. in square brackets.			

Chapter V

Estimating the benefits of cross-border paperless trade in Asia and the Pacific[125]

Introduction

Cross-border paperless trade refers to "trade taking place on the basis of electronic communications, including exchange of trade-related data and documents in electronic form".[126] The more general concept of paperless trade has been widely discussed in the trade facilitation literature, where it has been part of customs reforms efforts in a variety of countries during recent years. This chapter focuses specifically on cross-border aspects, rather than those related to issues within each country, and provides a simple estimate of the possible trade gains and cost savings from partial or full implementation of cross-border paperless trade in the Asia-Pacific region.

Although the precise measures covered by cross-border paperless trade initiatives vary from country to country and from analysis to analysis, it is necessary to use a relatively precise definition in order to calculate an estimate of the possible benefits. With that aim in mind, this chapter considers the following six measures as representative of cross-border paperless trade reforms, based on the structure of a survey administered by ESCAP at its 2013 Asia-Pacific Trade Facilitation Forum:

1. Laws and regulations for electronic transactions;
2. Recognized certification authority;
3. Engagement of cross-border electronic data exchanges;
4. Electronic exchanges of Certificates of Origin;
5. Electronic exchange of sanitary and phytosanitary certificates;
6. Retrieval of letters of credit by banks and insurers electronically without lodging paper-based documents.

An estimate is made here of the possible economic benefits – export gains and direct cost savings – from the partial or full implementation of this set of measures. Of course, these measures cannot be implemented in a vacuum: cross-border paperless trade may be seen as the culmination of a step-by-step process involving implementation of various other trade facilitation measures, with reforms frequently taking place in a number of areas simultaneously. Although it is possible to take account of these factors to some extent, it is not possible to

[125] This chapter is a shortened, updated and edited version of Shepherd and Duval (2014). The full working paper is available at http://www.unescap.org/sites/default/files/Benefits%20of%20Cross-Border%20Paperless%20Trade.pdf

[126] http://unnext.unescap.org/fcpt-igm-wp1e.pdf.

forecast in detail the path of reform within the region, nor the economic circumstances under which it might take place. The approach of this report is therefore to conduct counterfactual simulations: "what if" exercises based on the current reality of cross-border paperless trade implementation, and two ambitious but realistic reform scenarios. Increased implementation of cross-border paperless trade is high on the trade facilitation agenda in the Asia-Pacific. UNESCAP (2013) provides a discussion of the possible scope of a regional arrangement on cross-border paperless trade, based on a thorough review of the various possibilities, as well as existing national practice.[127]

Against that background, it is important for policymakers to have an idea of the types of economic benefits that could come from increased implementation of cross-border paperless trade. Although studies have been carried out addressing the benefits that have accrued from such initiatives, in particular national contexts, they have dealt with only a small number of countries. There is no cross-country or regional level evaluation of the possible benefits of cross-border paperless trade. This chapter is designed to fill that void, by covering as many Asian and Pacific countries as possible. It provides a region-level view of the possible implications of cross-border paperless trade for trade costs and exports. This information should be helpful to policymakers in prioritizing these measures in their broader trade facilitation reform agendas.

Section A provides a review of the previous empirical literature on the benefits of cross-border paperless trade. Section B presents the three-stage methodology used in this report for estimating possible benefits. Section C presents and discusses the results, focusing on trade outcomes (exports) and trade cost savings. Finally, section D presents the conclusion and provides some policy implications.

[127] The impetus for this move comes from ESCAP's member States with Resolution 68/3, adopted in 2012, titled "Enabling Paperless Trade and Cross-Border Recognition of Electronic Data and Documents for Inclusive and Sustainable Intraregional Trade Facilitation". It invites member States to work towards the development of regional arrangements on the facilitation of cross-border paperless trade. In addition, it sets out a number of specific steps they can take along that path, and provides guidelines for the ESCAP Secretariat to support the process. Although considerable efforts will be required – including capacity-building, as set out in the Resolution – the recent WTO Trade Facilitation Agreement suggests that there may be sufficient momentum to move forward on this issue in the short to medium term. This point is especially true for the Asia-Pacific, which is a region with a history of significant and effective trade facilitation reforms in a wide range of areas.

A. Literature review

This section provides an overview of previous studies that estimate the economic benefits from paperless trade, or particular elements of it. As will be seen, results vary considerably from one study to another, depending on the survey data, assumptions, and baselines used, as well as the methodology adopted. Section A.1 addresses estimates of impact at the micro-level, namely evidence on the number of documents, amount of time, or cost saved by moving to paperless trading in a per transaction sense. Section A.2 addressed macro-level impacts, that is to say total costs saved or resulting trade impacts.

1. Estimates of micro-level impacts

A variety of countries in the Asia-Pacific region and elsewhere have implemented elements of a paperless environment for cross-border trade transactions. UNNExT (2009) reported a number of summary figures from single-country studies. In Singapore, the introduction of a Single Window reduced processing times from four days to 15 minutes or less. Thailand has implemented various trade facilitation measures in preparation for a move to a Single Window, and the time taken for exporting declined from 24 days to 14 days between 2006 and 2009. Some of the studies cited by the UNNExT report have also provided quantifications of these benefits. For example, UNNExT cited a study of automation in Hong Kong, China, which found estimated savings of US$ 167.5 million. The same source indicates that the business savings from automation in the Republic of Korea amounted to US$ 1.8 billion. Finally, the benefits of Thailand's Single Window are stated to be $1.5 billion, for an initial investment of US$ 31 million, according to the Government of Thailand.

UNNExT (2010) examined the case of Singapore in more detail. It reported data showing that implementation of the country's electronic Single Window had reduced the number of trade documents from between three and 35 to just one, lowered the submission cost per document from US$ 6.25 to US$ 1.80, and decreased the processing time per permit to 10 minutes, down from between four hours and seven days. Studies have found that the Singaporean system reduced document processing costs by 20% or more. According to freight forwarders, there have been savings of 25%-35% in handling trade documentation.

UNNExT (2011) reported on the paperless trade experience of Japan. As part of its border clearance automation process, Japan introduced a Single Window. To make the Single Window work most effectively, it was necessary to simplify documentary processes in order to allow streamlined processing. Japan reduced its documentary requirements from 16 to 8 (50%) as a result of this process. An independent report cited in UNNExT (2011) indicated that the benefits to the Japanese economy were in the order of US$ 532.9 million annually, for a cost of US$ 93.6 million. Overall lead time for imports by sea fell from 7 to 2.6 days between 1991 and 2009.

Thailand's Single Window experience was examined by UNNExT (2012). According to the World Bank's Doing Business database, Thailand saw significant improvements in import and export performance between 2007 and 2011, with the Single Window beginning operation in 2008. The numbers of documents required for importing and exporting fell by 75% and 56%, respectively. Time for processing was reduced by 41% on the import side, and by 42% on the export side. Corresponding cost reductions were 24% and 26%, respectively.

2. Estimates of macro-level impacts

DFAT and FTEC (2001), which provided an estimate of the direct and indirect economic benefits from paperless trade among APEC economics, focused on the removal of mandatory requirements for paper-based documents in international trade. In terms of methodology, the report used an APEC survey of the requirements for paper-based documents for 1999, combined with information from users on the percentage savings from the implementation of paperless systems in individual sectors. Depending on the product in question, the report found that cost savings could amount to between 1.5% and 15% of the landed price of goods, although the 15% figure is arguably an outlier; 4.4% appears to be a more reasonable upper bound, based on the information presented. To provide a quantitative impact assessment, the report took the figure of a 3% reduction in cost, and applied it to the baseline of all intra-APEC trade, which produced a total cost saving of around US$ 60 billion annually. However, the report noted that adoption costs for paperless trade technologies were also significant, perhaps amounting to 25% of the total gains. In terms of per-transaction costs, the data collected by DFAT and FTEC (2001) found that paperwork added around US$ 75-US$ 125 to each trade transaction. This number is an estimate provided by traders.

Hyundai Research Institute (2006) used results from a survey answered by 81 firms on the costs and benefits of adopting paperless trade in the Republic of Korea. Overall, it found that businesses gained by Won 2.6 trillion (US$ 2.4 billion) from the introduction of trade automation, at an adaptation and maintenance cost of Won 91.1 billion (US$ 85.2 million). The gains measured in the survey included reductions in the cost of labour, printing and document delivery as well as incidental expenses such as costs related to cargo custody and inventory management. It is not clear from the report whether the figures presented were for the firms surveyed or for the economy as a whole, but it is assumed here that they were scaled up from the survey sample to the whole economy, thus representing macro-level impacts.

APEC PSU (2011) studied one specific aspect of cross-border paperless trade, i.e., electronic certificates of origin. The report was based on a small survey of Korean and Taiwanese traders, who at the time of the study, benefitted from a new electronic certificate of origin programme. The traders assessed the per transaction cost savings based on the new procedure, in terms of cost reductions related to document preparation and border clearance. As a counterfactual exercise simulating the uptake by other APEC economies of electronic certificates of origin for intraregional trade, the report extrapolated these results (in percentage of baseline terms) to other APEC economies, using the corresponding figures for per shipment document preparation and border clearance costs in the World Bank's Doing Business database.[128] The report found that such region-wide adoption of electronic certificates of origin would result in cost savings of 6.79% of the baseline, or more than US$ 7.5 billion annually based on 2010 data.[129]

[128] Based on the survey results, the report applies reductions of 87% and 52%, respectively, to the cost of document preparation, and customs clearance and technical control on the export side, and reductions of 49% and 88%, respectively, on the import side.

[129] For further discussion see the full working paper at www.unescap.org/sites/default/files/Benefits%20of%20Cross-Border%20Paperless%20Trade.pdf.

3. Summary

First, it is difficult to untangle the effects of cross-border paperless trade initiatives from other initiatives such as documentary simplification, automation of national procedures and moving to a national Single Window. Indeed, in practice these activities are typically undertaken with some degree of overlap. In terms of establishing causality, therefore, it is very difficult to assign particular numbers to particular steps. Estimating the possible economic impacts of cross-border paperless trade will therefore inevitably also capture elements of companion initiatives.

Second, many of the contributions reviewed here are highly country specific. Context matters in the assessment of costs and benefits, and more importantly in the way that paperless trade initiatives are implemented on the ground. National context is also important because it establishes the baseline against which progress is measured. The exercise of estimating possible regional benefits therefore needs to confront the difficulty that national starting points are different. Therefore a baseline measurement that is comparable across the region is needed.

Third, only two of the reviewed studies are based on counterfactuals, i.e., an assessment of possible benefits from the implementation of a system that is not currently in place. The remaining studies measure actual benefits and costs based on historical implementation. The methodologies in these two cases are necessarily very different. It is not possible to directly apply the historical measurement examples to calculate counterfactuals without making strong assumptions as to the similarity of national circumstances and implementation patterns.

As a result of these points, the estimates discussed in the above subsections and summarized in table 1 vary widely. For example, estimates of cost reductions per transaction associated with the implementation of certain paperless trade initiatives range from 20% to 87%, considering only estimates that apply the same baseline. Reported time reductions range from 41% to 99%, although baselines may differ in some cases, which makes direct comparison difficult. This large variance in findings is due in part to the application of different methodologies and the use of small survey samples to establish baseline information as well as differences in national starting and ending points.

Table 1. Savings due to implementation of various paperless trade initiatives

Country	Reduction in No. of Documents	Time savings	Cost savings per Transaction	Total Cost savings	Source
APEC economies	NA	NA	1.5%-15%[130]	$60bn	DFAT and FTEC (2001)
APEC economies	NA	NA	87% for exports subject to certificate of origin; 49% for imports subject to certificate of origin	6.8% or $7.5bn	APEC PSU (2011)
Hong Kong, China	NA	NA	NA	$167.5m	UNNExT (2009)
Japan	50%	62.9%	NA	$0.53bn	UNNExT (2011)
Korea	NA	NA	NA	$1.8bn-$2.4bn	Hyundai Research Institute (2006); UNNExT (2009)
Singapore	97%	99%	20%-35%	NA	UNNExT (2010)
Thailand	75% for imports; 56% for exports	41% for imports; 42% for exports	24% for imports; 26% for exports	$1.5bn	UNNExT, (2009); UNNExT (2012)

Source: As indicated in the table.

B. Methodology

The literature review shows that analysts have applied a wide variety of methodologies and produced significantly different results in examining the impact of paperless trade and related measures. Most of the methodologies are highly specific, in the sense of application to a single country only. They use data that cannot be easily gathered for the Asia-Pacific region as a whole and assumptions that are likely to vary substantially from one country to another.

The study detailed in this chapter therefore developed an alternative methodology to assess the benefits of cross-border paperless trade in Asia and the Pacific as a whole. The methodology needs to rely on commonly available data that cover as many Asia-Pacific countries as possible. It needs to take account of different baselines in different countries, in the sense that the level of implementation of paperless trade, and trade facilitation measures more generally, differs substantially across countries. In terms of results, the methodology should be able to provide information in terms of time, cost and trade outcomes. Any methodology should also be as simple and transparent as possible, so that it can be easily replicated and extended by other analysts.

[130] Expressed relative to the landed cost of goods. All other cost reductions are expressed relative to the initial cost baseline.

With these objectives in mind, this section develops a methodology for estimating the benefits of cross-border paperless trade in the Asia-Pacific. The methodology consists of three stages:

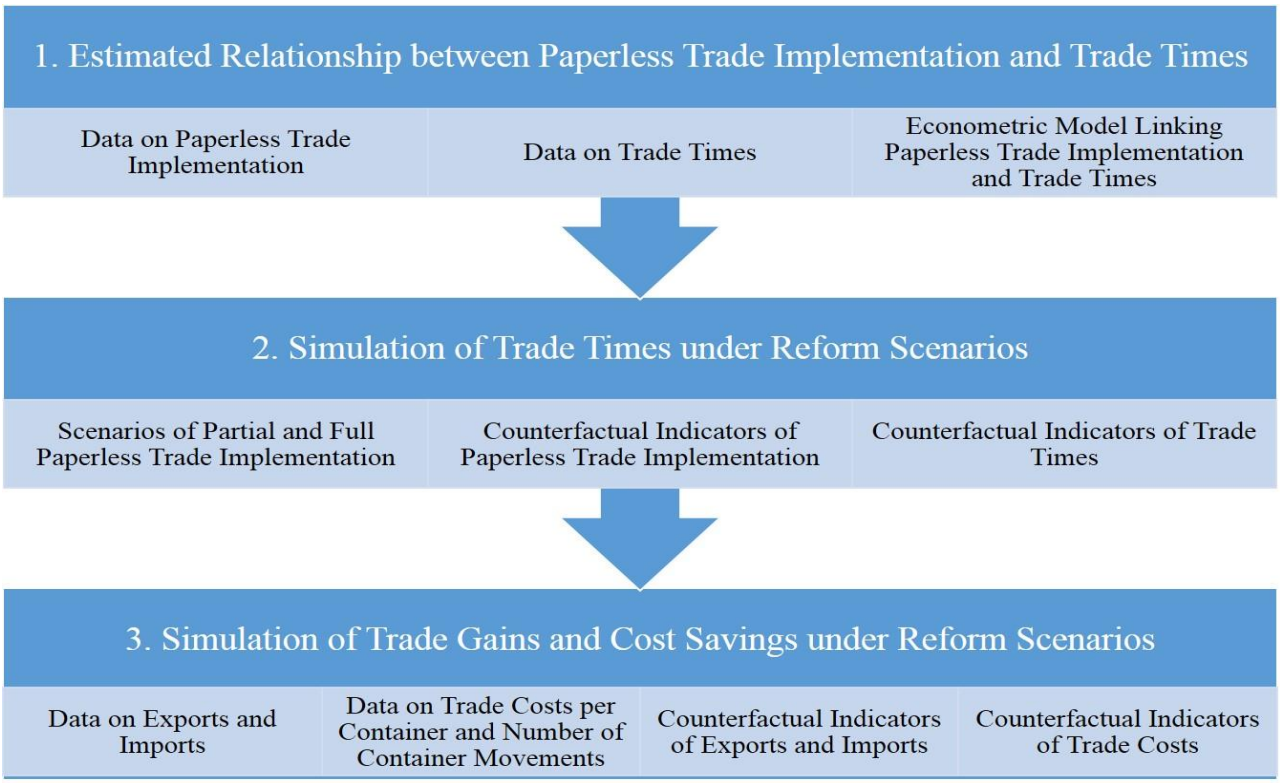
(a) Estimation of the relationship between cross-border paperless trade reforms on the one hand, and import and export times on the other;
(b) Simulation of export and import times under different scenarios of paperless trade reform across the region; and
(c) Simulation of export and import gains as well as cost savings, corresponding to the scenarios in stage 2.

The reason for proceeding in this way is that there is no direct, cross-country estimate of the general relationship between cross-border paperless trade reforms and either trade costs or trade outcomes. However, there is good evidence of the relationship between trade times and trade outcomes, and it is straightforward to estimate a relationship between time and cost. The most innovative part of the methodology is therefore the first stage, which estimates a relationship between time and paperless trade reforms. The outputs from that stage will feed into all other stages, and provide the basis for estimating the impacts on trade costs and trade outcomes of different reform scenarios within the region.

It is important to highlight the fact that the approach taken here is likely to produce low-end estimates of the possible economic impacts of cross-border paperless trade in the Asia-Pacific region. One reason for believing this to be the case is that the model is based on unilateral reform by each country. To keep it technically simple and transparent, it does not take account of the dynamic gains that accrue when trade partners reform reciprocally or multilaterally. Indeed, such reform is necessary in some cases, such as electronic certificates of origin. A second reason for believing these estimates are towards the low end of what is reasonable is that in terms of implementation on the ground, cross-border paperless trade typically requires improvement of general trade facilitation and paperless trade procedures. Reforms are therefore grouped together, and do not occur entirely independently. In reality, therefore, countries that pursue cross-border paperless trade from a current low baseline of implementation are likely to benefit more than estimated here due to the additional, positive effects of more basic reforms. The simultaneity of reform paths is again excluded from the model to keep it as simple and transparent as possible.

Each of the three stages of the estimation process is discussed in detail in the annex. The explanation is presented in as non-technical a manner as possible, but necessarily involves a certain level of analytical detail. To assist with presentation, figure 1 provides a graphical overview of the report's methodology.

Figure 1. Methodology for calculating trade gains and cost savings from paperless trade reforms



C. Results

1. Relationship between paperless trade reforms and trade times

From the previous section, the first stage in the application of the methodology is to estimate a relationship between paperless trade reform implementation and trade times. Results are very similar for both export times and import times (annex table 1). This finding means that paperless trade reforms – as well as other trade facilitation reforms – have similar impacts on export and import times, and do not affect one substantially more than the other. Results for all variables – paperless trade implementation as well as the control variable – are in line with expectations: paperless trade is associated with lower export and import times, an effect which is strongly statistically significant; other trade facilitation reforms have a similar association, but it is not statistically significant.

For both export and import times, a 10% increase in a country's paperless trade implementation score – as measured by the ESCAP survey and the quantitative translation methodology outlined in the previous section – is associated with an approximately 6% decrease in trade times. For a hypothetical country with the regional average level of paperless trade implementation, this result means that implementing one extra measure would be associated with a decrease in trade times of about 8%. This figure is very reasonable in terms of the underlying economics, as well as accrued policy experience. It is perhaps in the low end of what is to be expected in light of the results, which cover implementation of different numbers of measures in each of the countries considered.

2. Simulated export and import times under reform scenarios

As discussed in the previous section, this report considers two reform scenarios – scenario one in which all countries in the region achieve at least partial implementation of cross-border paperless trade, and scenario two in which all countries in the region achieve full implementation of cross-border paperless trade.

The first step in running the counterfactual simulations is to calculate the overall paperless trade scores countries would have if they partially (scenario one) or fully (scenario two) implemented the cross-border paperless trade measures captured in the ESCAP survey. Results from that exercise are shown in figure 2. The figure shows baseline numbers (actual 2013 data form the survey) compared with counterfactuals for both scenarios.

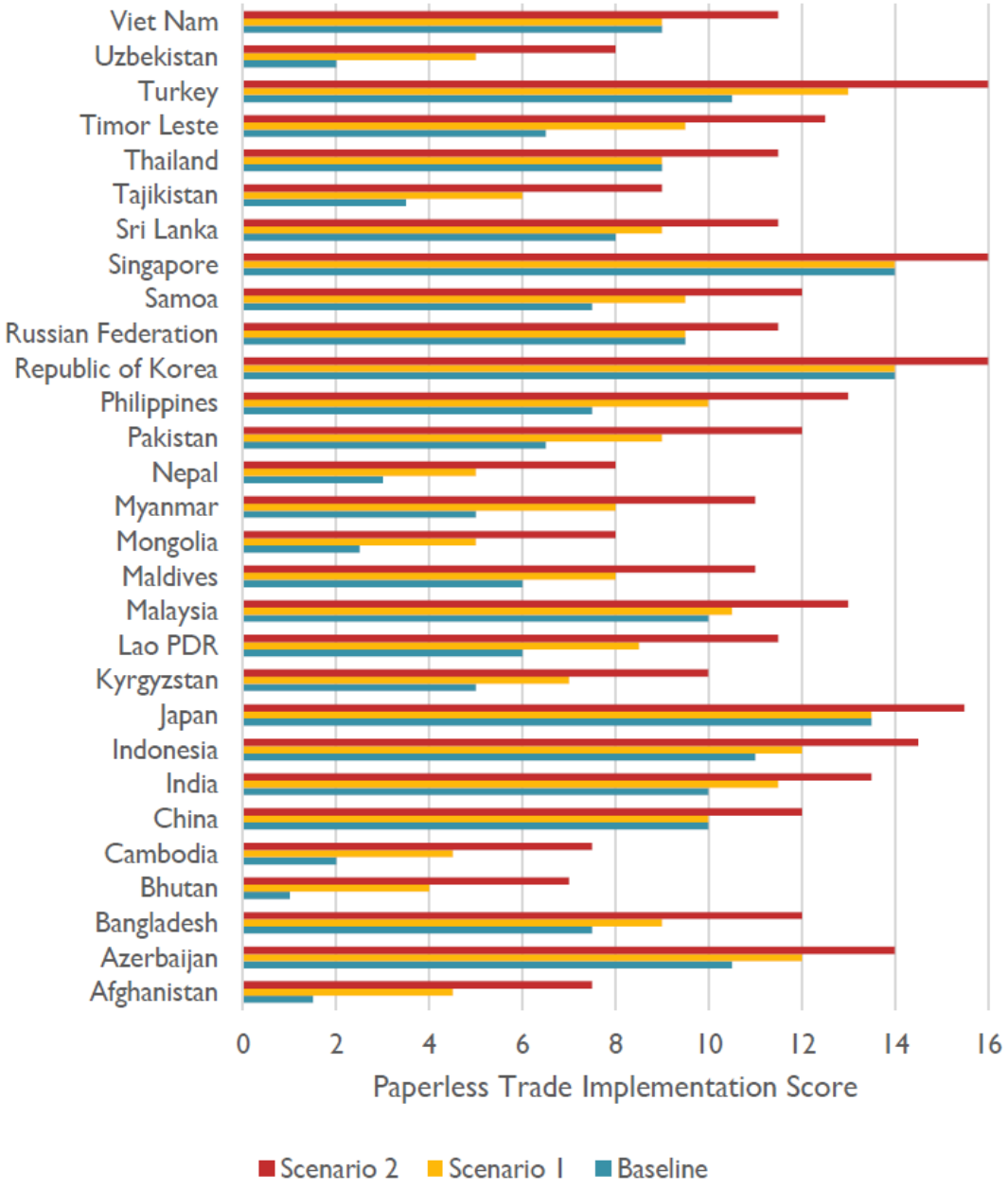
In scenario one, the regional average overall paperless trade implementation score improves by 49%. In scenario two overall paperless trade implementation scores improve by an average of 112%. Both scenarios, but particularly the second one, can therefore be seen as ambitious in terms of the current implementation baseline, but not unreasonable in the light of the substantial reforms already undertaken in some Asian and Pacific countries.

The next step in the methodology is translating changes in paperless trade implementation scores into changes in import and export times.[131] The results are shown in figure 3, and are expressed in terms of percentage changes in export time.[132] The regional average for scenario one is a 24% decrease in export time, but the range across countries is very wide. Those countries that have already implemented significant reforms, such as Singapore, see no change to their score in that scenario, but others, such as Afghanistan, experience very large decreases (98%). The counterfactual changes are even larger in scenario two; the regional average is a 44% decrease in export time, but the range runs from Singapore and the Republic of Korea (8%) to Afghanistan and Uzbekistan (98%). Although these figures are, in some cases, very large, they are by no means outside the range reported in table 1. Indeed, the average under scenario two is almost identical to the time decrease reported for Thailand following its implementation of paperless trade (UNNExT, 2009 and 2012). The large figures for countries such as Bhutan, Afghanistan, and Uzbekistan are in line with the result reported by UNNExT (2010) for Singapore. These comparisons provide further evidence that the counterfactual scenarios, although ambitious, are reasonable in the context of reform efforts previously undertaken in the Asia-Pacific region.

[131] This is achieved by converting the changes to percentages and applying the estimated elasticities from the previous stage.

[132] Percentage changes in import time are not presented separately due to space considerations, and the fact that they are very close to the results for export time due to the very similar estimated elasticities for the two cases.

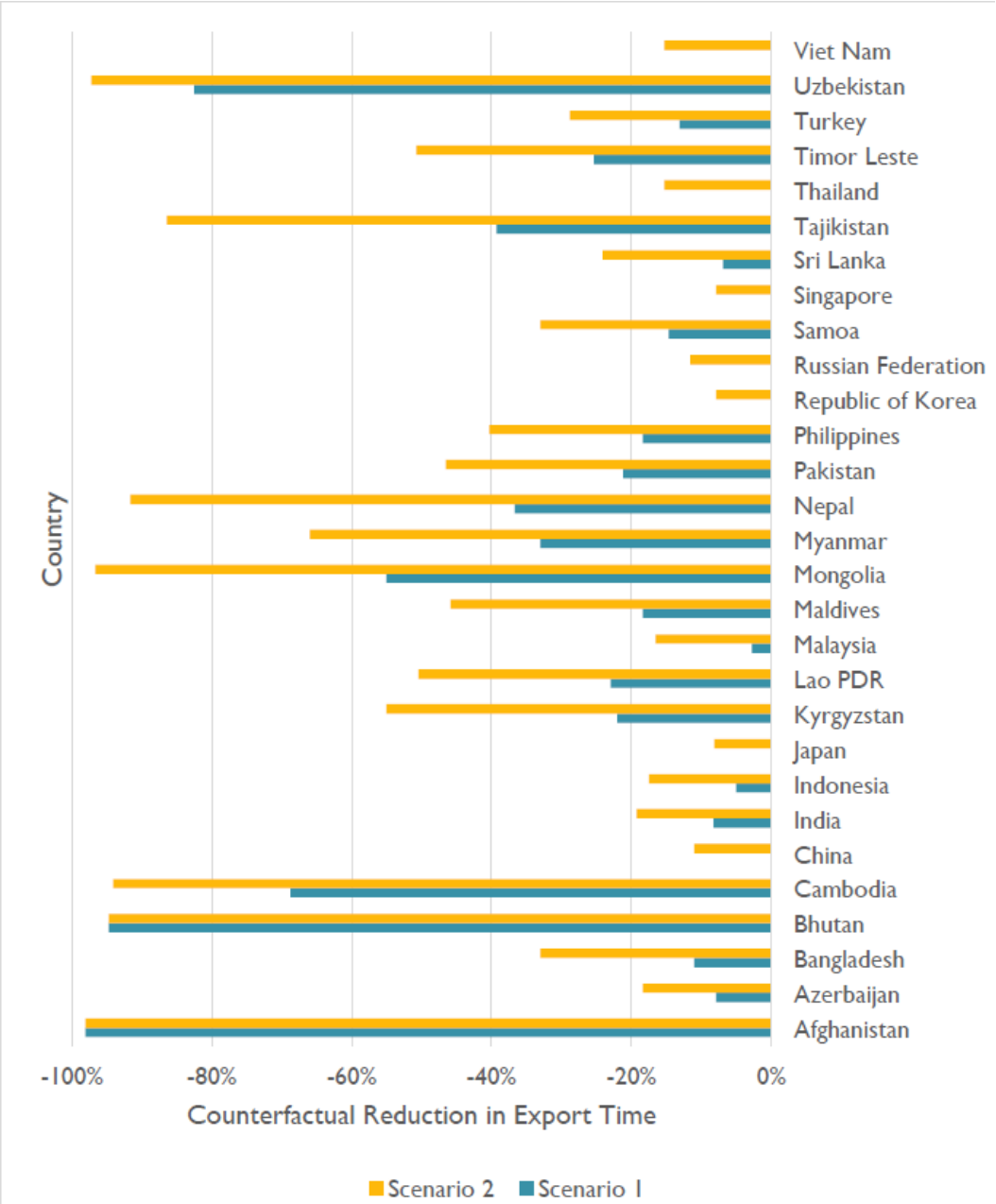
Figure 2. Paperless trade implementation scores for the baseline, 2013: Scenario one – 50 per cent and scenario two – full implementation



Sources: The ESCAP survey and author's calculation.

Note: The data cover 16 measures, with zero corresponding to no implementation, 0.5 to partial implementation and 1 to full implementation of each measure.

Figure 3. Simulated export time reductions under partial (scenario one) and full (scenario two) implementation of cross-border paperless trade



. *Source:* Author's calculation

3. Simulated trade outcomes under reform scenarios

The final stage in the analysis is to present simulated changes in trade for each counterfactual reform scenario. Trade gains and cost savings are considered separately.

(a) Trade gains

This stage of the analysis takes the simulated changes in import and export times and translates them into simulated changes in imports and exports.[133] The presentation of results focuses on exports only, due both to consideration of space and because results for imports and exports are very similar.

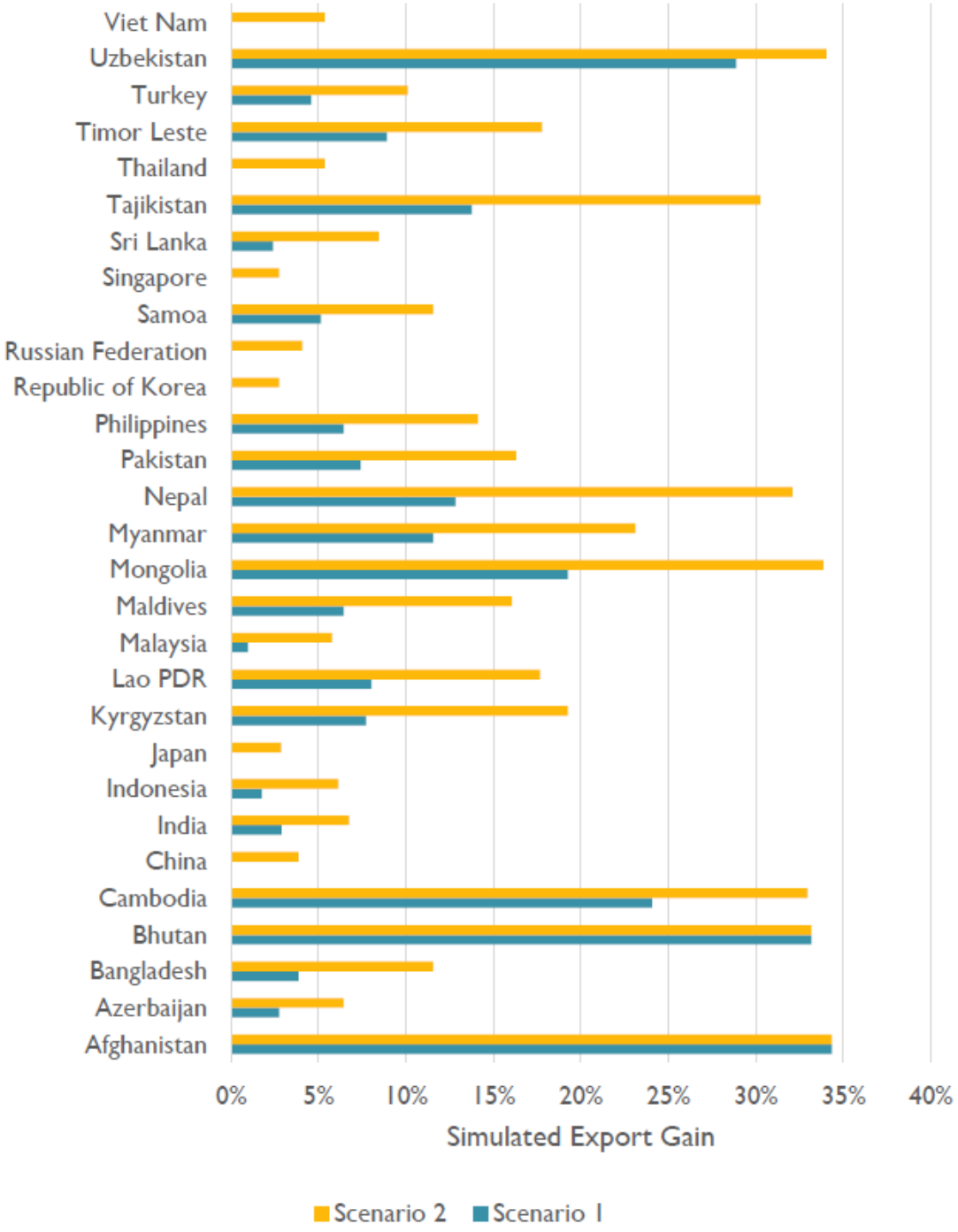
Figure 4 shows percentage export gains under the two reform scenarios. For partial reform (scenario one), the regional average gain in exports is around 9%. This figure seems reasonable, but cannot be compared with the previous literature, as none of the studies reviewed above attempted to analyse or project trade gains. However, as was the case for trade times, the range across countries is again relatively wide. Those countries that have already taken significant steps to implement paperless trade do not gain at all under scenario one, because they have already achieved at least partial implementation of all cross-border paperless trade measures. Singapore is an example of such a country. On the other hand, the largest export gain of 34% accrues to Afghanistan, which still has major steps to undertake in terms of its implementation of cross-border paperless trade.

How reasonable are these numbers? One well-known point of comparison is Wilson and others (2005), who calculated the potential gains from trade facilitation reform globally, including improvements to the customs environment. The reform scenario considered is improvement halfway to the global average. On that basis, East Asia and the Pacific, South Asia and Central Asia combined would experience a counterfactual export gain of around 7%, considering only improvements in customs procedures.[134] The export gain reported by this study (9%) is very similar in magnitude. The comparison suggests that the figures presented here are entirely reasonable in light of previous work.

For scenario two, the reform counterfactual is more ambitious, so the simulated export gains are correspondingly larger. The regional average in this case is around 15%. The range is again wide, running from Singapore (3%), to Afghanistan and Uzbekistan (34%). As in the time simulations discussed above, the driving force behind the cross-country differences in simulated impact is the baseline level of paperless trade implementation; those countries that are more advanced in terms of implementation tend to gain less, because they have already undertaken many or most of the measures considered by the reform scenario.

[133] This is achieved using an estimated elasticity from the academic literature.

Figure 4. Simulated export gains under partial (scenario one) and full (scenario two) implementation of cross-border paperless trade



Source: Author's calculation.

By taking baseline exports and the simulated changes, and then summing up across all countries in the region, it is possible to arrive at a bottom-line figure for the export gains that could result from implementation of cross-border paperless trade. Partial implementation (scenario one) is associated with a total potential export gain of US$ 36 billion. Full implementation (scenario two) is associated with a potential export gain of US$ 257 bn. It is again important to emphasize the fact that these figures are not forecasts, but counterfactual simulations assuming that all other factors remain constant.

(b) Cost savings

To calculate cost savings, it is first necessary to estimate a relationship between trade costs and trade times. [135] The results are similar for exports and imports – a 10% reduction in trade time is associated with about a 7% reduction in export cost and a 5% reduction in import cost. These results make it straightforward to translate time savings into cost savings, and suggest that the rate will be somewhat less than 1:1.

On this basis, the regional average export cost saving is 17% in scenario one, and 31% in scenario two. The previous work examined in the literature review can be used to check the reasonableness of these results. Four of the seven studies summarized in table 2 present cost savings per transaction (container), which can be directly compared with the results here. The range runs from 20% to 87%, with a simple average for exports of 54%. The simple average of the two scenarios considered here is 24%. For reasons discussed above, it is likely that the estimates and simulations presented here are towards the low end of the probable range, and this comparison of average figures tends to support that view. Nonetheless, there is a reasonable correspondence between the results presented here and previous work.

To calculate total cost savings per country, it is necessary to convert the percentage changes into counterfactual totals by multiplying by baseline cost and the total number of containers, summing up over exports and imports. The regional average is US$ 60 million per country annually, with a maximum of US$ 295 million (India) for scenario one. The same figures for scenario two are US$ 415 million and US$ 4 billion (China), respectively. The total regional cost saving (summing up across exports and imports) is around US$ 1 billion for scenario one and US$ 7 billion for scenario two.

[135] To do so, a simple econometric model is appropriate. Estimation results are in annex table 2.

Table 2. Simulated total cost savings in partial (scenario one) and full (scenario two) implementation of cross-border paperless trade[136]

Country	Scenario 1	Scenario 2
Afghanistan		
Azerbaijan		
Bangladesh	-44	-131
Bhutan		
Cambodia	-51	-68
China	0	-3 520
India	-295	-688
Indonesia	-88	-308
Japan	0	-223
Kyrgyzstan		
Lao PDR		
Malaysia	-55	-332
Maldives	-5	-12
Mongolia		
Myanmar	-13	-25
Nepal		
Pakistan	-102	-225
Philippines	-138	-304
Republic of Korea	0	-84
Russian Federation	0	-229
Samoa		
Singapore	0	-244
Sri Lanka	-69	-240
Tajikistan		
Thailand	0	-206
Timor Leste		
Turkey	-223	-490
Uzbekistan		
Viet Nam	0	-148

Source: Author's calculation.

[136] This table cannot be calculated for landlocked countries or other countries with severe data limitations, as no cross-country data are available on their container movements.

D. Conclusion and policy implications

This chapter shows that cross-border paperless trade has significant potential for reducing trade costs and boosting trade in the Asia-Pacific region. Specifically, partial implementation of cross-border paperless trade measures would be associated with an export increase of US$ 36 billion annually. Under a more ambitious scenario of full region-wide implementation of cross-border paperless trade, the export gain would be in the order of US$ 257 billion annually. The time required to export would fall by 24% to 44%, and the direct costs by 17% to 31%, depending on the reform scenario considered. Total direct cost savings across all trade would be approximately US$ 1 billion annually for partial reform, and US$ 7 billion annually for full implementation. For the technical reasons discussed above, there is every reason to believe that these are low-end estimates of the possible economic gains from reform.

These figures are all based on counterfactual simulations. The results should not be interpreted as forecasts of the likely impact of particular reforms, but instead as general indications of the direction and relative magnitude of the changes that would take place if reform occurred today and all other factors were held constant. The methodology produces results that are remarkably consistent with previous work that has addressed particular aspects of cross-border paperless trade at the national or regional level.

Many Asia-Pacific countries are strong performers in the area of trade facilitation, and some have led the region and the world in implementing highly-efficient paperless trade reforms. In general, the region has a good record of designing and implementing trade facilitation reforms that have lowered trade costs and boosted exports. However, the ESCAP 2013 survey used in this chapter shows that the extent of implementation of key measures – including paperless trade – varies substantially from one country to another as well as across subregions. Regional groupings such as ASEAN and APEC are working towards bringing about a certain degree of homogeneity, or at least the acceptance of common targets, in the area of trade facilitation. However, addressing the very real difficulties faced by low-income Asia-Pacific countries as well as landlocked countries needs to be a priority for enabling the regional trade policy community to move forward.

One key policy message that emerges in this chapter is that “new generation” trade facilitation measures, such as cross-border paperless trade, have just as much potential as more traditional measures for reducing trade costs and increasing intraregional and extraregional trade. The gains from comprehensive trade facilitation reform have not yet been reaped; even strong performers have areas in which improvements can be made, while weaker performers need to make progress on a broad front in order to catch up with the rest of the region and improve their trade integration.

For those countries with much to do in terms of implementing cross-border paperless trade, it is clear that the first policy priority should be on general paperless initiatives, such as customs automation and an electronic Single Window. These systems need to be fully in place before the cross-border aspects that are more narrowly understood can be properly dealt with. However, the two processes need to work together. For example, it is possible to build capabilities into paperless trading systems so that cross-border expansion is more straightforward than if that possibility had not been allowed for. The two policy areas can therefore work in

tandem. This point is particularly true for those countries that still have to make fundamental reforms to border processes; by getting involved in regional cooperation on cross-border paperless trade at an early stage, they can avoid having to re-engineer processes at a later point and thereby enjoy considerable overall implementation cost savings.

It is well known that the economic gains from trade facilitation reforms are very large. In realistic scenarios, they usually dwarf the gains from additional tariff liberalization, given the already generally low level of the latter. Trade facilitation – understood broadly as policy measures that reduce all types of trade costs – is a vital area for analysts and policymakers in moving forward. As the recent WTO Trade Facilitation Agreement makes clear, the costs of implementing trade facilitation can sometimes be significant. That is also the case for the implementation of paperless trade. As a result, Aid for Trade and capacity-building to support the reform process need to be an integral part of ongoing discussions. The key for enabling policymakers to move forward will be to combine reformist will with adequate human, technical and financial resources. A strong regional arrangement on cross-border paperless trade facilitation would certainly help in this regard.

Annex

Detailed methodology

Step 1. Estimation of the relationship between paperless trade reforms and trade times

The World Bank's Doing Business database provides comprehensive information on import and export times around the world.[137] The times are based on a hypothetical transaction taking place under circumstances set out in a detailed scenario given to data providers. They include the time required for four steps: (a) document preparation; (b) inland transit; (c) customs clearance and inspections; and (d) port and terminal handling. The data do not include the time required for movement of goods between seaports; trade times are thus measured as the times required moving goods between the seller's factory or the buyer's warehouse and the sea vessel. In the remainder of this chapter, "trade time" is used specifically to refer to two components of the Doing Business data, i.e., document preparation, and customs clearance and inspections. These are the two parts of the overall time figure that can be expected to be influenced by cross-border paperless trade reforms. ("Export time" and "import time" are used in the corresponding senses.)

Although actual trade times differ in particular cases, the Doing Business data provide a useful guide to the relative difficulty of exporting and importing in different countries. They have been extensively used by analysts, including in the Asia-Pacific region.[138] They have also been validated through publication in a leading economics journal, and extensive subsequent use by researchers around the world (Djankov and others, 2010).[139]

The other ingredient required for the first stage of the analysis is a common baseline indicator of the extent of paperless trade reforms in the various countries of the Asia-Pacific region. ESCAP has provided these data, based on the 2013 Asia-Pacific Trade Facilitation Forum Survey, with subsequent follow-up to ensure maximum accuracy of responses.[140] The survey asked respondents to indicate the extent of implementation of various trade facilitation measures – full, partial or none. The measures covered include paperless trade and, more specifically, cross-border paperless trade. Because reforms that enable cross-border paperless trade rely on, and often accompany, reforms affecting paperless trade in general, it is convenient for the analysis to group the two sets of reforms together, under the heading of "paperless trade".

In addition to information on the implementation of other trade facilitation measures, respondents to the 2013 ESCAP survey supplied details on the following aspects of paperless trade:

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[137] All data used in this report are for 2013 or the latest year for which data are available.

[138] For example, APEC uses Doing Business time data as performance indicators for its Supply Chain Connectivity Framework Action Plan (APEC PSU, 2013); ESCAP (2013) also uses such data in its International Supply Chain Connectivity Index.

[139] See the full paper for a more detailed description of trade times for Asia-Pacific countries. Available at www.unescap.org/sites/default/files/Benefits%20of%20Cross-Border%20Paperless%20Trade.pdf.

[140] See Tengfei and Duval, 2013, for details.

(a) Electronic/automated customs system;
(b) Internet connection available to customs and other trade control agencies at border crossings;
(c) Electronic Single Window system;
(d) Electronic submission of customs declarations;
(e) Electronic application and issuance of trade licences;
(f) Electronic submission of sea cargo manifests;
(g) Electronic submission of air cargo manifests;
(h) Electronic application and issuance of preferential certificate of origin;
(i) Electronic payment of customs duties and fees;
(j) Electronic application for customs refunds;
(k) Laws and regulations for electronic transactions;
(l) Recognized certification authority;
(m) Engagement of cross-border electronic data exchange;
(n) Electronic exchange of certificate of origin;
(o) Electronic exchange of Sanitary and phytosanitary certificates; and
(p) Retrieval of letters of credit electronically by banks and insurers, without lodging paper-based documents.

Items (a) to (j) refer to paperless trade facilitation as narrowly understood, and the remainder deal with cross-border paperless trade specifically. As indicated above, this chapter groups the two sets of information together under the heading of paperless trade. When the term" cross-border paperless trade" is used in relation to the survey data, it refers to items (k) to (p).

To make it possible to estimate the relationship between paperless trade reforms and trade times, it is necessary to convert ESCAP's qualitative data into quantitative data. To do so, a simple scale is applied: no implementation corresponds to zero; partial implementation corresponds to 0.5; and full implementation corresponds to 1.[141]

Once the two sets of data are in place, it is possible to use basic econometric models to estimate relationships between paperless trade reform implementation on the one hand, and export and import times on the other.[142] The models can also control for other factors that determine export and import times, but not many due to the small number of observations in the dataset (29), which is the number of countries for which survey results are available. In terms of control variables, the models used here include implementation of other trade facilitation reforms.[143]

[141] See full paper for a more detailed description paperless trade implementation in the Asia-Pacific. The full working paper is available at www.unescap.org/sites/default/files/Benefits%20of%20Cross-Border%20Paperless%20Trade.pdf.

[142] Estimation is conducted by ordinary least squares, which is a standard statistical technique.

[143] Data on other trade facilitation reforms are also sourced from the 2013 ESCAP survey. These data cover the following areas: national trade facilitation body; publication of existing import-export regulations on the Internet; stakeholder consultations on new draft regulations (prior to their finalization); advance publication/ notification of new regulations before their implementation; advance ruling (on tariff classification); risk management; pre-arrival processing; post-clearance audit; independent appeal mechanism; separation of release from

The outputs from stage one of the analyses are estimated elasticities (i.e., sensitivities) of trade times with regard to implementation of paperless trade reforms. These estimates provide the analysis with quantitative information on the percentage impact on trade times that a 10% change in a country's paperless trade implementation score has, from the ESCAP survey. These numbers are the crucial building blocks for the remainder of the analysis.

Step 2. Simulation of export and import times under reform scenarios

The remaining two stages in the methodology rely on counterfactual simulations, i.e., "what if" scenarios for further implementation of paperless trade reforms. The report considers two scenarios:

(a) All countries in the region achieve at least partial implementation of cross-border paperless trade;
(b) All countries in the region achieve full implementation of cross-border paperless trade.

To conduct the simulations, the first requirement is the construction of counterfactual paperless trade implementation scores. To do so, it is necessary to take the actual scores and replace those cross-border paperless trade components (six measures) lower than a certain value with a different, counterfactual value. For the first simulation, all scores below 0.5 for individual cross-border paperless trade facilitation measures are replaced with 0.5; those that are greater than 0.5 remain the same. For the second simulation, all scores for individual cross-border paperless trade facilitation measures are set equal to 1. In both cases, the scores for individual measures are freshly summed up to produce counterfactual values of overall paperless trade implementation (including both general and cross-border elements) under each scenario.

The next requirement for the simulations is to translate the changes in paperless trade implementation scores between the actual and counterfactual values into changes in import and export times. To do that, the changes are first expressed as percentages of the baseline values. These percentage changes in paperless trade implementation scores are then translated into percentage changes in import and export times, using the estimated elasticities from the econometric models from stage one of the methodology. It is assumed that no country can have an import or export time less than one day.

To sum up, the second step of the methodology therefore constructs the following type of statement for each country, using scenario one to provide the example: "if country x were to at least partially implement all cross-border paperless trade reforms, it would be associated with a reduction in import time of y% and a reduction in export time of z%, keeping all other factors constant".

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final determination of customs duties, taxes, fees and charges; establishment and publication of average release times; trade facilitation measures for authorized operators; expedited shipments; and national Single Window.

Step 3. Simulation of trade gains and cost savings under reform scenarios

Results from the counterfactual exercises in stage two are used to produce overall indicators of the economic impact of paperless trade reforms in stage three. The process involves translating counterfactual values for trade times into simulation results, in terms of outcome variables of interest. Results focus on two areas: trade gains and cost savings. Each one is dealt with separately, because of the slightly different approaches used in the two cases. It is important to stress that in both cases, however, the results must be interpreted in the same way; they are not forecasts of the future impacts of reforms, but counterfactual simulations based on the assumption that all other factors remain constant.

(a) Trade gains

Djankov and others (2010) showed that a 10% decrease in Doing Business export time is associated with a 3.5% increase in exports. This result has been widely cited in the academic and policy literature, and is generally accepted in the trade community as the best estimate of the relationship between Doing Business trade times and trade outcomes. Assuming that imports and exports are equally sensitive to time – which is reasonable – this result provides the basis for translating changes in time, based on the counterfactual values from stage two into changes in imports and exports. The trade simulation proceeds by first expressing the counterfactual trade times as percentage changes relative to the baselines reported in the Doing Business database. Next, those percentage changes are multiplied by the Djankov and others (2010) elasticity to produce counterfactual values for imports and exports. The results can be expressed in terms of percentage changes, so that they are easily comparable across countries. By summing up changes across countries, it is also possible to provide a figure for total potential trade gains to the region.

(b) Cost savings

There is no ready-made results linking trade times and trade costs, as captured in the Doing Business database. As a result, it is necessary to estimate the relationship between time and cost per container using a simple econometric model. On the basis of the model, it is possible to obtain an estimate of the relationship between a 10% decrease in trade time and the associated decrease in trade costs per container. Rather than changes in trade costs per container, it is of more relevance to produce figures for the total cost savings potentially associated with paperless trade reforms. To do so, it is necessary to multiply cost savings per container by the total number of container movements, sourced from the World Development Indicators.[144] The final figures represent each country's potential cost savings from partial or full implementation of paperless trade, and they can be summed up to produce an indication of possible cost savings for the region as a whole.

[144] The data cover all container movements, not just imports and exports. However, there is no way to net out domestic container movements, so the total figure is used in this analysis.

Annex Table 1. Regression results for trade times and paperless trade implementation

	(1) Log (export time)	(2) Log (import time)
Log (trade facilitation)	-0.204	-0.281
	(0.145)	(0.132)
Log (paperless trade)	-0.550***	-0.598**
	(0.047)	(0.068)
Constant	4.043***	4.344***
	(0.000)	(0.000)
Observations	29	29
R2	0.547	0.479

Note: Regression is by ordinary least squares in both cases. The dependent variable is listed at the top of each column. Prob. values based on robust standard errors are in parentheses under the coefficient estimates. Statistical significance is indicated as follows: * (10%), ** (5%), and *** (1%).

Annex Table 2. Regression results for trade costs and trade times

	(1) Log (export cost)	(2) Log (import cost)
Log (export time)	0.693***	
	(0.120)	
Log (import time)		0.518***
		(0.118)
Constant	4.054***	4.601***
	(0.398)	(0.374)
Observations	29	29
R2	0.464	0.421

Note: Regression is by ordinary least squares in both cases. The dependent variable is listed at the top of each column. Prob. values based on robust standard errors are in parentheses under the coefficient estimates. Statistical significance is indicated as follows: * (10%), ** (5%), and *** (1%).

Annex Table 3. Detailed simulation results

Scenario 1

Country	Export time/cost reduction (%)	Import time/cost reduction (%)	Export gain (%)	Import gain (%)
Afghanistan	-95	-97	33	34
Azerbaijan	-7	-7	2	2
Bangladesh	-10	-10	3	3
Bhutan	-143	-146	34	34
Cambodia	-60	-61	21	21
China	0	0	0	0
India	-7	-7	3	3
Indonesia	-4	-4	2	2
Japan	0	0	0	0
Kyrgyzstan	-19	-19	7	7
Lao PDR	-20	-20	7	7
Malaysia	-2	-2	1	1
Maldives	-16	-16	6	6
Mongolia	-48	-49	17	17
Myanmar	-29	-29	10	10
Nepal	-32	-32	11	11
Pakistan	-18	-19	6	7
Philippines	-16	-16	6	6
Republic of Korea	0	0	0	0
Russian Federation	0	0	0	0
Samoa	-13	-13	4	5
Singapore	0	0	0	0
Sri Lanka	-6	-6	2	2
Tajikistan	-34	-35	12	12
Thailand	0	0	0	0
Timor Leste	-22	-22	8	8
Turkey	-11	-12	4	4
Uzbekistan	-72	-73	25	25
Viet Nam	0	0	0	0

Scenario 2

Country	Export time/cost reduction (%)	Import time/cost reduction (%)	Export gain (%)	Import gain (%)
Afghanistan	-191	-194	35	35
Azerbaijan	-16	-16	6	6
Bangladesh	-29	-29	10	10
Bhutan	-286	-291	34	34
Cambodia	-131	-133	33	34
China	-10	-10	3	3
India	-17	-17	6	6
Indonesia	-15	-15	5	5
Japan	-7	-7	2	3
Kyrgyzstan	-48	-49	17	17
Lao PDR	-44	-44	15	16
Malaysia	-14	-15	5	5
Maldives	-40	-40	14	14
Mongolia	-105	-107	34	34
Myanmar	-57	-58	20	20
Nepal	-80	-81	28	28
Pakistan	-40	-41	14	14
Philippines	-35	-36	12	12
Republic of Korea	-7	-7	2	2
Russian Federation	-10	-10	4	4
Samoa	-29	-29	10	10
Singapore	-7	-7	2	2
Sri Lanka	-21	-21	7	7
Tajikistan	-75	-76	26	27
Thailand	-13	-13	5	5
Timor Leste	-44	-45	15	16
Turkey	-25	-25	9	9
Uzbekistan	-143	-146	35	35
Viet Nam	-13	-13	5	5

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