Chapter 3. Impact of trade facilitation and paperless trade on trade costs[32]

3.1. Introduction

In December 2013, ministers from all 160 member States of WTO concluded their negotiations on the "Bali Package". The WTO TFA is the centerpiece of this package, [33] thus making it the world's first truly global multilateral trade agreement concluded since the creation of WTO. The objective of the WTO TFA is facilitating the movement, clearance, and release of goods through more efficient customs and border procedures.

While the scope of the Agreement remains limited,[34] it provides a unique and valuable tool for Governments in developing economies to revitalize or accelerate already ongoing trade facilitation reforms aimed at reducing trade costs and enabling greater participation in global value chains (GVCs).[35] In terms of exports and the global macro-economy, the net economic gains from implementation of trade facilitation measures have been estimated at a US$ 960 billion increase in world GDP, a US$ 1.04 trillion increase in global exports and a US$ 20.6 million increase in export supported jobs (Hufbauer and others, 2013). In terms of global trade costs, the WTO Secretariat has also indicated that "by cutting trade bureaucracy the [TFA] deal could reduce advanced economies' cost for doing business internationally by 10%" (Azevêdo, 2014). The dearth of data on the state of implementation of WTO TFA commitments and other trade facilitation measures across countries has, however, made it difficult to reliably estimate the potential impact of such measures on trade costs, even when the scope of the trade facilitation reform envisaged had been clearly defined.[36]

In this context, this study investigates the impact of implementing a variety of trade facilitation measures on trade costs in Asia and the Pacific, using new data from the first United Nations Regional Commission (UNRC) Global Trade Facilitation and Paperless Trade Implementation Survey. Such measures include many of those featured in the WTO TFA as well as more advanced paperless trade measures[37] outside the scope of the WTO TFA. Building on earlier studies (e.g., Arvis et al., 2013), trade cost models are estimated and used to examine the extent

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[33] The Bali Ministerial Declaration also acknowledged the accession of Yemen, adopted decisions on 10 texts concerning the main subjects of the Bali Package: trade facilitation; agriculture and development provisions; and various other decisions such as those related to e-commerce and situation complaints (Bellmann, 2014).

[34] As reminded by Hoekman (2014), among others, trade facilitation reform packages supported by international organizations have encompassed, but typically gone far beyond the scope of measures specified in the WTO TFA, covering hard and soft transport, and logistics infrastructure and services issues, and sometimes extending to trade finance.

[35] Many international organizations, including WTO itself, have launched dedicated assistance programmes to support WTO TFA implementation. See www.tfafacility.org/ .

[36] The policy literature on trade facilitation is notorious in using widely different definitions of trade facilitation, making any attempt to compare estimates of impact of trade facilitation across studies very challenging.

[37] Paperless trade refers to the conduct of trade using electronic rather than paper-based data and documentation.

to which trade costs in Asia-Pacific countries could be reduced through partial or full implementation of WTO TFA-related and other trade facilitation measures.

This study confirms a strong and statistically significant link between trade facilitation reforms and lower trade costs. Specifically, a 10% increase in the implementation of reforms relating to paperless trade, transparency, formalities and institutions is associated with a statistically significant 0.8%, 0.7%, 0.5%, and 0.1% reduction in trade costs, respectively. This suggests that paperless trade measures, which take advantage of modern information and communications technologies to replace typically cumbersome paperwork by electronic information exchange, have as much – if not more – potential for reducing trade costs than more traditional trade facilitation measures.

The counterfactual analysis conducted as part of the study revealed that a partial (full) implementation of both binding and non-binding measures in the WTO TFA is associated with an average 5% (10.5%) trade cost reduction across Asia-Pacific countries. Full implementation of a WTO TFA+ package of measures that include a number of paperless trade measures reduces trade costs by more than 12.5% on average in the implementing Asia-Pacific economies. However, country-specific reductions vary widely, ranging from zero to more than 30% for some of the LDCs and LLDCs that currently have very low levels of trade facilitation implementation. Additional simulations show that bringing the level of maritime connectivity of all the developing countries in Asia-Pacific to the regional average will reduce trade costs by more than 16%, suggesting the need for countries to carefully prioritize measures as they develop and implement trade facilitation reforms aimed at reducing such costs.

Overall, the results are in line with estimates from other studies, thus confirming that there are substantial benefits to partial or full implementation of TF reforms as specified in the WTO TFA. However, the benefits can be substantially increased by looking beyond achieving minimum compliance with the WTO TFA commitments and implementation of TF reforms, by applying modern information and communications technologies aimed at paperless trade through conducting trade procedures on the basis of electronic data and information rather than paper documents. This result is consistent with the fact that member Asia-Pacific economies of ESCAP have been committed to work together on enabling paperless trade since 2012 and are currently negotiating a regional United Nations treaty on the facilitation of cross-border paperless trade.[38] The results also provide strong support for an integrated cross-border approach to trade facilitation.

This chapter extends upon the scope of existing studies[39] by explicitly investigating the impact of implementing TF reform on trade costs, including but not limited to measures in the WTO TFA. In particular, it explores the importance of using electronic rather than paper-based data and documentation to enable paperless trade. It also addresses the lack of data on trade

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[38] For details, refer to: http://communities.unescap.org/cross-border-paperless-trade-facilitation.
[39] Please see appendix 3.3 for a literature review of existing studies.

facilitation across countries by using the recently released United Nations Regional Commissions Global Trade Facilitation and Paperless Trade Implementation Survey 2015.

3.2. Trade cost and trade facilitation: Model and estimation results

To investigate the effect of TF implementation on trade costs across countries, this study first developed a trade cost model. The first sub-section (section 3.2.1) outlines the model and estimation methods, while the second subsection introduce the trade facilitation implementation indicators and data used in the estimation. The last sub-section discusses the estimation results.

3.2.1. Trade cost model

In line with previous studies (see Arvis et al., 2013), overall trade costs can be modelled as a function of natural geographic factors (i.e., distance, landlockedness, and contiguity), cultural and historical distance (i.e., common official language, common unofficial language, former colonial relationships and formerly same country), and the presence of regional trade agreements and liner shipping connectivity (LSCI). In addition to trade facilitation implementation indicators, an index of credit information quality and availability is included in order to capture the impact of the domestic business environment on trade costs in general as well as access to and cost of financial services in particular.[40] The trade cost model is specified as:

$$
\begin{aligned}
\ln(\tau_{ij}) = {} & \beta_0 + \beta_1 \ln(\text{gtariff}_{ij}) + \beta_2 \ln(\text{dist}_{ij}) + \beta_3(\text{contig}_{ij}) + \beta_4(\text{comlang\_off}_{ij}) \\
& + \beta_5(\text{comlang\_ethno}_{ij}) + \beta_6(\text{colony}_{ij}) + \beta_8(\text{comcol}_{ij}) + \beta_8(\text{smctry}_{ij}) \\
& + \beta_8(\text{rta}_{ij}) + \beta_{10}(\text{landlocked}_{ij}) + \beta_{11} \ln(\text{creditindex}_i) + \beta_{12} \ln(\text{LSCI}_i) \\
& + \beta_{13} \ln(\text{TF}_i) + D_j + \varepsilon_{ij}
\end{aligned}
$$

Definition, data sources, and expected signs of all the factors included in the model are summarized in table 3.1. Fixed-effects for partner countries (D_j) are included in order to account for cross-country heterogeneity as well as to increase estimation efficiency. Robust standard errors are also clustered by country pairs. The model is estimated using ordinary least squares across a cross-section of 90 reporting countries. The list of reporting and partner countries included in the estimation is provided in Annexes.

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[40] Duval and Utoktham (2011) found that this indicator, among other non-trade specific indicators of the ease of doing business, had the greatest effect on trade costs in Asia-Pacific countries. This is not unexpected since access to finance is an important determinant of international trade flows, as became evident during the 2008 financial crisis (Liu and Duval, 2009).

Table 3.1. Data source, definition, treatment, source and expected sign

Variable	Definition	Data Treatment	Source	Expected Sign
τ_{ij}	Comprehensive trade costs.	Average of 2012-2013	World Bank-ESCAP Trade Cost Database	N/A
$gtariff_{ij}$	Geometric average tariff factor (1+rate) that each reporting country (i) charges to its trade partner (j) and vice versa, which can be expressed by $$gtariff_{ijt} = \sqrt{tariff_{ijt} \times tariff_{ijt}}$$	Average of 2012-2013	World Integrated Trade Solution (WITS)	+
$dist_{ij}$	Geographical distance between country i and j.	N/A	CEPII	+
$contig_{ij}$	Dummy variable of contiguity equal to 1 if country i and j share a common border and zero otherwise.	N/A	CEPII	−
$comlang\_off_{ij}$	Dummy variable of common language equal to 1 if country i and j use the same common official language and zero otherwise.	N/A	CEPII	−
$comlang\_ethno_i$	Dummy variable of common language equal to 1 if a language is spoken by at least 9% of the population in both countries and zero otherwise.	N/A	CEPII	−
$colony_{ij}$	Dummy variable equal to 1 if country i and j were ever in colonial relationship and zero otherwise.	N/A	CEPII	−
$comcol_{ij}$	Dummy variable equal to 1 if country i and j had a common colonizer after 1945 and zero otherwise.	N/A	CEPII	−
$smctry_{ij}$	Dummy variable equal to 1 if country i and j were or are the same country and zero otherwise.	N/A	CEPII	−
rta_{ij}	Dummy variable equal to 1 if country i and j are members of the same regional trade agreement and zero otherwise.	Latest definition in 2014	De Sousa, J. (2012)	−
$landlocked_{ij}$	Dummy variable equal to 1 if either country i or j is landlocked and zero otherwise.	N/A	CEPII	+
$creditindex_i$	Average depth of credit information index of country i.[41]	0.0001 replacement/ average of DB2013-2015	Doing Business	−
$LSCI_i$	Average scores of liner shipping connectivity index of country i.	Data filling/ average of 2012-2014	UNCTAD	−
TF_i	Percentage of TF implementation of country i, modelled as: (a) overall TF;, (b) general TF + paperless trade; or (ci) transparency + formalities + institutional arrangements + paperless trade).	0.0001 replacement data in 2014-2015	Global Survey on Trade Facilitation and Paperless Trade Implementation: 2014-2015	−

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[41] Data for credit information from the Doing Business Report is lagged one year, i.e., data from the Doing Business Report 2014 are from 2013.

Note: presents the variables, data sources, definitions, data treatment, source and expected sign from econometric estimation. Where available, the average of the most recent data from 2012 onwards is used in the estimation. Data filling for LSCI is required to ensure inclusion of landlocked economies. Port countries are used as proxies for landlocked countries' portal performance. For the TF components and credit information index, zeros are replaced by 0.0001 to prevent observations being omitted from the estimation. The lists of countries included in the analysis are presented in Annexes.

3.2.2. Data on trade facilitation implementation

The impact of trade facilitation on trade costs is captured in the model by including trade facilitation implementation rates calculated on the basis of the United Nations Regional Commissions Global Survey on Trade Facilitation and Paperless Trade Implementation (UNRCs TF Survey) conducted in 2014/15.[42] This Survey provides data on the implementation of a range of TF measures related to the WTO TFA as well as to a complementary regional agreement on the facilitation of cross-border paperless trade under negotiation at ESCAP.[43]

Table 3.2. **Trade facilitation measures considered and their grouping**

	Group	Trade facilitation measure (and question No.) in the UNRC TF Survey
General TF Measures	Institutional arrangement	1. Establishment of a national trade facilitation committee or similar body
		31. Cooperation between agencies on the ground at the national level
	Transparency	2. Publication of existing import-export regulations on the Internet
		3. Stakeholder consultation on new draft regulations (prior to their finalization)
		4. Advance publication/notification of new regulation before their implementation (e.g., 30 days prior)
		5. Advance ruling (on tariff classification)
		9. Independent appeal mechanism (for traders to appeal customs and other relevant trade control agencies' rulings)
	Formalities	6. Risk management (as a basis for deciding whether a shipment will be or not physically inspected)
		7. Pre-arrival processing
		8. Post-clearance audit
		10. Separation of Release from final determination of customs duties, taxes, fees and charges
		11. Establishment and publication of average release times
		12. Trade facilitation measures for authorized operators
		13. Expedited shipments
		14. Acceptance of paper or electronic copies of supporting documents required for import, export or transit formalities

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[42] UNRC TF Survey Dataset as of 30 June 2015.
[43] Implementation of each measure is rated as "fully", "partially", "on a pilot basis" or "not" implemented. More information and survey methodology and data are available at http://unnext.unescap.org/UNTFSurvey2015.asp.

Paperless trade	15. Electronic/automated customs system established (e.g., ASYCUDA)
	16. Internet connection available to customs and other trade control agencies at border- crossings
	17. Electronic Single Window system
	18. Electronic submission of customs declarations
	21. Electronic submission of air cargo manifests
	22. Electronic application and issuance of Preferential Certificate of Origin
	23. E-Payment of customs duties and fees

The list of measures and the groupings considered in the calculation of aggregate implementation rates is shown in table 3.2.[44] General TF measures are all directly related to various WTO TFA provisions and may be further divided into three types of TF measures, i.e., institutional arrangement, transparency and formalities measures. In contrast, most paperless trade measures are not specifically included in the WTO TFA, and their implementation goes beyond the commitments made under that agreement.

The resulting trade facilitation implementation rates for 102 countries divided into regions are shown in figure 3.1a. The global average rate of implementation of this set of TF measures stands at 62%. There is some cross-region heterogeneity in the rates of implementation, ranging from an average of 53% in Africa to 87% in the European Union. While there are notable exceptions, richer and larger economies generally have higher TF implementation rates than other economies. Landlocked, least developed and small island developing economies tend to lag behind.[45] This is highlighted by figure 3.1b, which shows the implementation rates across the Asia-Pacific region.

It is worth noting that the trade facilitation measures and data discussed above capture trade facilitation implementation in its narrow sense of streamlining customs and other trade control agencies procedures, in line with the general scope of the WTO TFA. However, broader definitions of trade facilitation exists, such that the UNCTAD Liner Shipping Connectivity Index and the World Bank Doing Business Credit Information Index (CII) included in the trade cost model may also been seen as capturing distinct but no less important aspects of trade facilitation.

According to figure 3.2, while the Asia-Pacific region as a whole compares favorably with other developing regions in terms of maritime connectivity – largely due to China, which consistently tops the LSCI world rankings – the region is not doing as well in terms of the financing environment in which traders and other businesses operate, as suggested by low CII scores. A closer look reveals, however, that performance varies widely, depending on the subregion considered, with Pacific Island economies consistently and significantly lagging behind other Asia-Pacific subregions.

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[44] For each country, the UNRC TF Survey features data on up to 38 trade facilitation measures. However, not all measures are applicable to all countries (e.g., transit facilitation measures), and data is missing for some of the more advanced measures in some countries. In order to ensure that the trade cost model estimation can be made on the basis of a sufficiently large number of countries, implementation rates are calculated on the basis of a common set of 22 trade facilitation measures only, as shown in table 1.
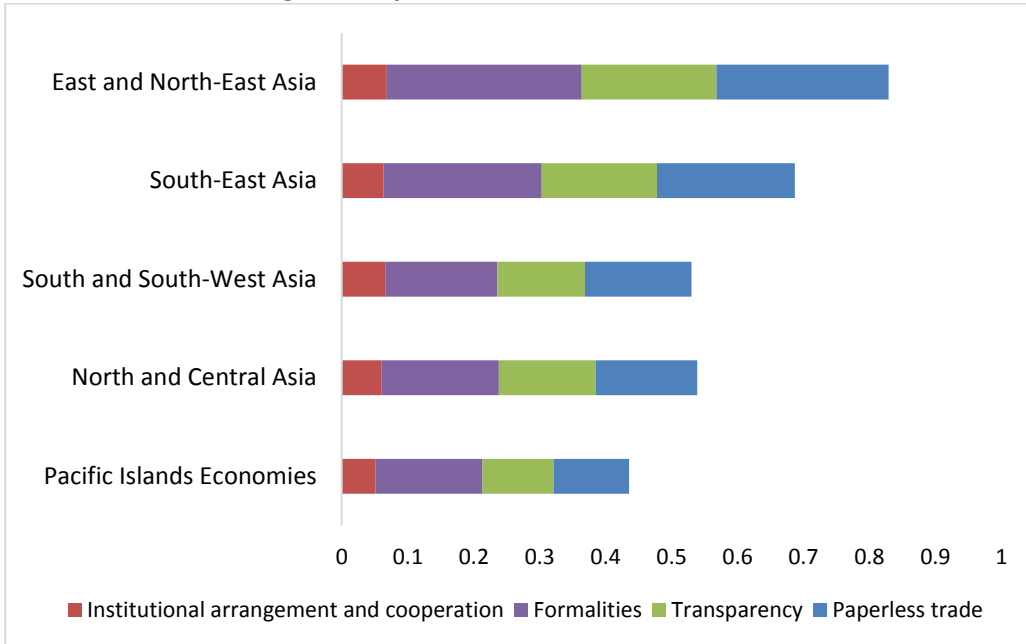
[45] For a more detailed and comprehensive discussion of the UNRC TF Survey results and data for Asia and the Pacific, please refer to UNRC (2015) or to ESCAP (2015).

Figure 3.1. Trade facilitation implementation rates*

3.1a. Regional implementation rates
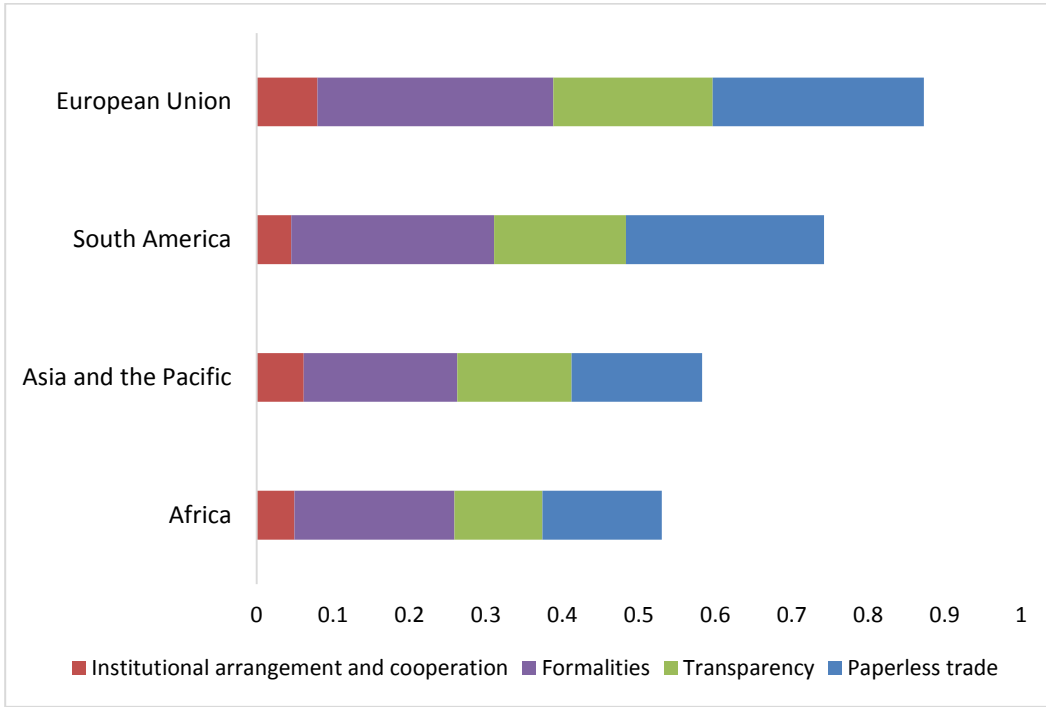
**3.1b. Subregional implementation rates in Asia and the Pacific**

Source: Authors' compilation, based on the UNRC TF Survey 2015.
*Based on implementation rates of 22 of 38 individual trade facilitation measures included in the UNRC TF Survey.
Implementation of transit facilitation and cross-border paperless trade measures are not included.

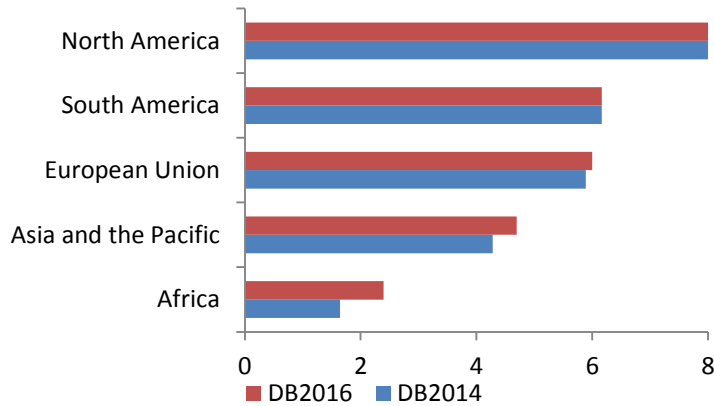## Figure 3.2. Selected broad trade facilitation indicators

3.2a. Liner Shipping Connectivity Index (LSCI)
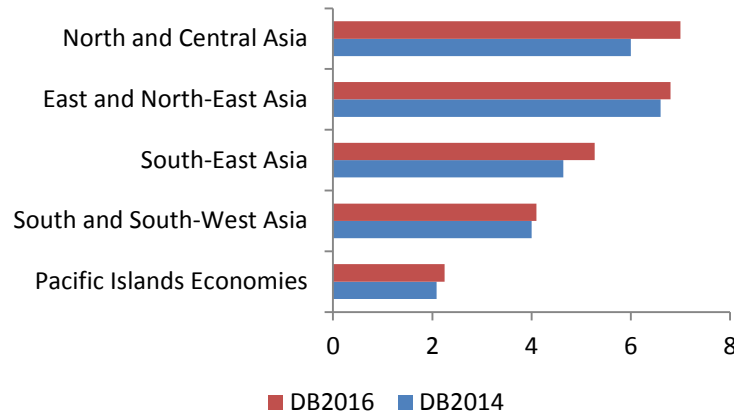

2015 *2010*

2015 *2010*
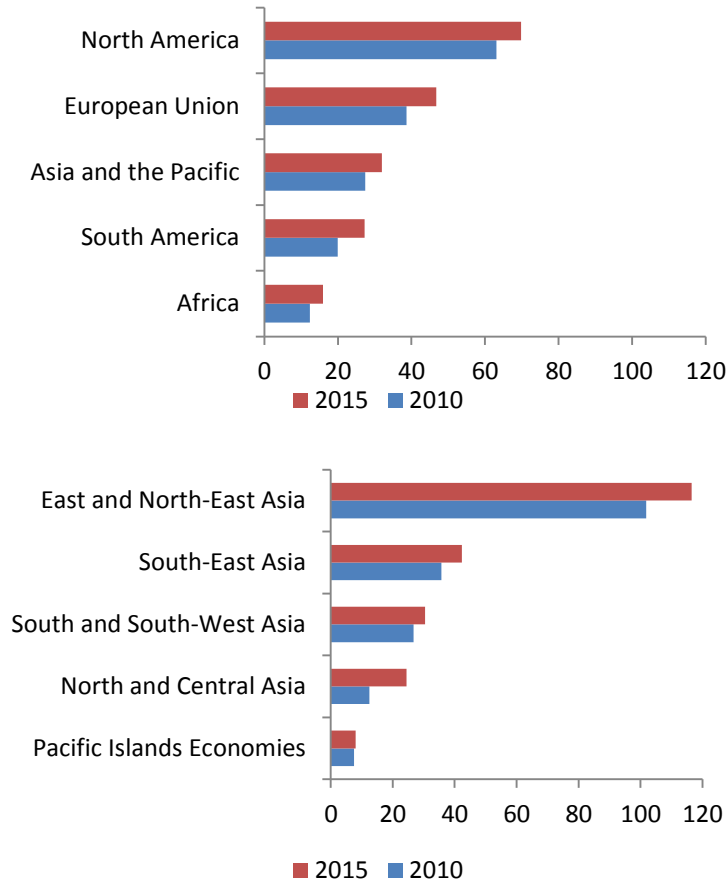
Source: UNCTAD (http://unctadstat.unctad.org/wds/TableViewer/tableView.aspx?ReportId=92)
Note: LSCI is an indicator of maritime infrastructure and services efficiency. A higher LSCI score implies a higher maritime connectivity.

3.2b. Credit Information Index (CII)

DB2016 *DB2014*

North and Central Asia					
East and North-East Asia					
South-East Asia					
South and South-West Asia					
Pacific Islands Economies					

■ DB2016 ■ DB2014

Source: World Bank Doing Business Report, available at www.doingbusiness.org.
Note: CII is one of the World Bank indicators of ease of financing in the World Bank Doing Business Report. CII scores range from zero to 8. Higher scores indicate higher access and quality of credit information, contributing to a better environment for financing transactions.

3.2.3. Results

Panel regression estimates of the trade cost model are shown in table 3.3. The model was estimated using three different specifications of trade facilitation reform: The first model (1) is estimated using the average trade facilitation implementation rate across all 22 trade facilitation measures; model (2) features the average trade implementation rate for general trade facilitation measures (i.e., measures that need to be implemented as part of WTO TFA commitments) as well as the average implementation rates for paperless trade measures (i.e., measures that typically go beyond the WTO TFA commitments); Model (3) distinguishes between the effects of the four groups of TF measures defined in table 3.2 – institutional measures, transparency measures, formalities measures and paperless trade measures.

All the estimated variables have the expected signs when statistically significant. Distance and being landlocked increase trade costs significantly. Having a common border, a common official language, a former common colonizer, and/or a former colonial relationship are all associated with statistically significant and lower trade costs across countries. Having a common unofficial language and/or having formerly belonged to the same country are both statistically insignificant – in line with Arvis et al. (2013).

In terms of policy factors, tariffs, regional trade agreements, maritime connectivity, ease of financing and trade facilitation implementation indicators all have the expected and statistically significant impact on trade costs. Although tariffs have fallen considerably during the past decade, further reducing them globally remains an effective way to reduce trade costs. Indeed, the models suggest that a 10% change in tariff may be expected to reduce overall trade costs by more than 4% on average. The results also show the importance of TF, with a 10% increase in the overall implementation of trade facilitation measures associated with a 2.8% reduction in trade costs – see model (1). This is nearly twice the trade cost reduction that may be expected by a 10% improvement in maritime connectivity (1.4%).

Table 3.3. Trade cost model results

Models:	Beta coefficients			Standardized beta coefficients		
	(1)	**(2)**	**(3)**	**(1)**	**(2)**	**(3)**
$ln(gtariff)_{ij}$	0.482***	0.486***	0.490***	0.0553***	0.0557***	0.0561***
	[3.813]	[3.837]	[3.886]	[3.813]	[3.837]	[3.886]
$ln(dist)_{ij}$	0.204***	0.203***	0.200***	0.399***	0.397***	0.392***
	[34.45]	[34.02]	[33.43]	[34.45]	[34.02]	[33.43]
$ln(contig)_{ij}$	-0.118***	-0.120***	-0.119***	-0.0492***	-0.0498***	-0.0496***
	[-4.042]	[-4.097]	[-4.089]	[-4.042]	[-4.097]	[-4.089]
$ln(comlang\_off)_{ij}$	-0.0766***	-0.0770***	-0.0809***	-0.0657***	-0.0661***	-0.0694***
	[-3.647]	[-3.656]	[-3.830]	[-3.647]	[-3.656]	[-3.830]
$ln(comlang\_ethno)_{ij}$	0.0139	0.0147	0.0157	0.0124	0.0130	0.0140
	[0.707]	[0.740]	[0.791]	[0.707]	[0.740]	[0.791]
$ln(colony)_{ij}$	-0.141***	-0.140***	-0.142***	-0.0493***	-0.0491***	-0.0496***
	[-5.124]	[-5.111]	[-5.136]	[-5.124]	[-5.111]	[-5.136]
$ln(comcol)_{ij}$	-0.0812***	-0.0789***	-0.0746***	-0.0589***	-0.0572***	-0.0540***
	[-4.951]	[-4.820]	[-4.589]	[-4.951]	[-4.820]	[-4.589]
$ln(smctry)_{ij}$	-0.0488	-0.0498	-0.0533	-0.0142	-0.0145	-0.0155
	[-1.102]	[-1.125]	[-1.200]	[-1.102]	[-1.125]	[-1.200]
$ln(landlocked)_{ij}$	0.232***	0.235***	0.240***	0.266***	0.269***	0.275***
	[18.29]	[18.41]	[18.83]	[18.29]	[18.41]	[18.83]
$ln(rta)_{ij}$	-0.0757***	-0.0773***	-0.0805***	-0.0741***	-0.0757***	-0.0788***
	[-6.725]	[-6.862]	[-7.139]	[-6.725]	[-6.862]	[-7.139]
$ln(creditindex)_i$	-0.00653***	-0.00655***	-0.00626***	-0.0740***	-0.0742***	-0.0710***
	[-6.400]	[-6.390]	[-5.710]	[-6.400]	[-6.390]	[-5.710]
$ln(LSCI)_i$	-0.142***	-0.142***	-0.145***	-0.297***	-0.297***	-0.303***
	[-26.10]	[-25.90]	[-26.21]	[-26.10]	[-25.90]	[-26.21]
$ln(TF\_overall)_i$	-0.276***			-0.178***		
	[-14.11]			[-14.11]		
$ln(TF\_general)_i$		-0.195***			-0.124***	
		[-8.751]			[-8.751]	
$ln(TF\_transparency)_i$			-0.0741***			-0.0583***

	(1)	(2)	(3)	(4)	(5)	(6)
			[-3.993]			[-3.993]
$ln(TF\_formalities)_i$			-0.0481***			-0.0630***
			[-6.828]			[-6.828]
$ln(TF\_institution)_i$			-0.00903***			-0.0310***
			[-3.304]			[-3.304]
$ln(TF\_paperlesstrade)_i$		-0.0678***	-0.0793***		-0.0644***	-0.0754***
		[-5.041]	[-5.929]		[-5.041]	[-5.929]
constant	1.988***	1.791***	1.493***			
	[19.42]	[17.89]	[17.89]			
Observations	4,723	4,723	4,723	4,723	4,723	4,723
R^2	0.651	0.650	0.650	0.651	0.650	0.650
Reporter FE	No	No	No	No	No	No
Partner FE	Yes	Yes	Yes	Yes	Yes	Yes
Clustered SE	Pair	Pair	Pair	Pair	Pair	Pair
Adjusted R^2	0.638	0.637	0.636	0.638	0.637	0.636

Source: Authors' calculations.
Note: Table 3.3 presents panel regression estimates of Equation [1] using data specified in table 3.1.
*** p<0.01, ** p<0.05 and * p<0.1; t-stats. in square parentheses.

The scope for making a 10% improvement varies significantly across factors and it is therefore useful in calculating standardized coefficients, which take into account the underlying data distribution of explanatory factors across the sample of countries considered.[46] As shown in figure 3.3, doing this highlights the importance of maritime connectivity as dominant factor of trade cost variations across countries. It also confirms the importance of trade facilitation in reducing trade costs. However, it also reveals that trade costs are not very sensitive to tariff reductions – essentially because tariffs have already been reduced drastically over the past two decades. It also confirms that distance and landlockedness remain key natural barriers to international trade.

Looking at the impact of trade facilitation implementation in more detail, model (2) suggests that implementation of general TF measures included in the WTO TFA (i.e., a combination of transparency, formalities, and institutional arrangements and cooperation measures) and paperless trade measures are both highly significant determinants of trade costs. According to the model, a 10% increase in the general (paperless) TF index is associated with a 2% (0.7%) decrease in trade costs. In other words, General WTO TFA-related measures contribute about 70%-75% of trade cost reduction while application of modern information and communication technology to trade procedures contributes an additional 25%-30%.

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[46] Standardized regression coefficients may be interpreted as follows: A one standard deviation change in the explanatory variable results in a [standardized beta coefficient] change in trade costs.

In turn, model (3) suggests that a 10% increase in paperless trade, transparency, formalities and institutional TF implementation indices are associated with statistically significant 0.8%, 0.7%, 0.5% and 0.1% reductions in trade costs, respectively. This strongly supports the recommendation that countries should not seek to simply meet the basic obligations associated with the WTO TFA but should be proactive in applying modern information and communications technologies to trade procedures as well as implementing electronic Single Window systems and other paperless trade measures. At the same time, it also shows that transparency measures, which are often less complex and less costly to implement than other measures, can go a long way towards reducing trade costs.[47] The statistically significant but more limited contribution of trade facilitation institutional arrangements to reducing trade costs may be explained in part by the fact that many of the more advanced economies – and best trade facilitation performer – do not have trade facilitation-specific institutional arrangements in place as broader coordination mechanisms are already embedded in the ongoing operation and systems of the agencies involved.

Figure 3.3. Sensitivity of trade costs to natural and policy factors
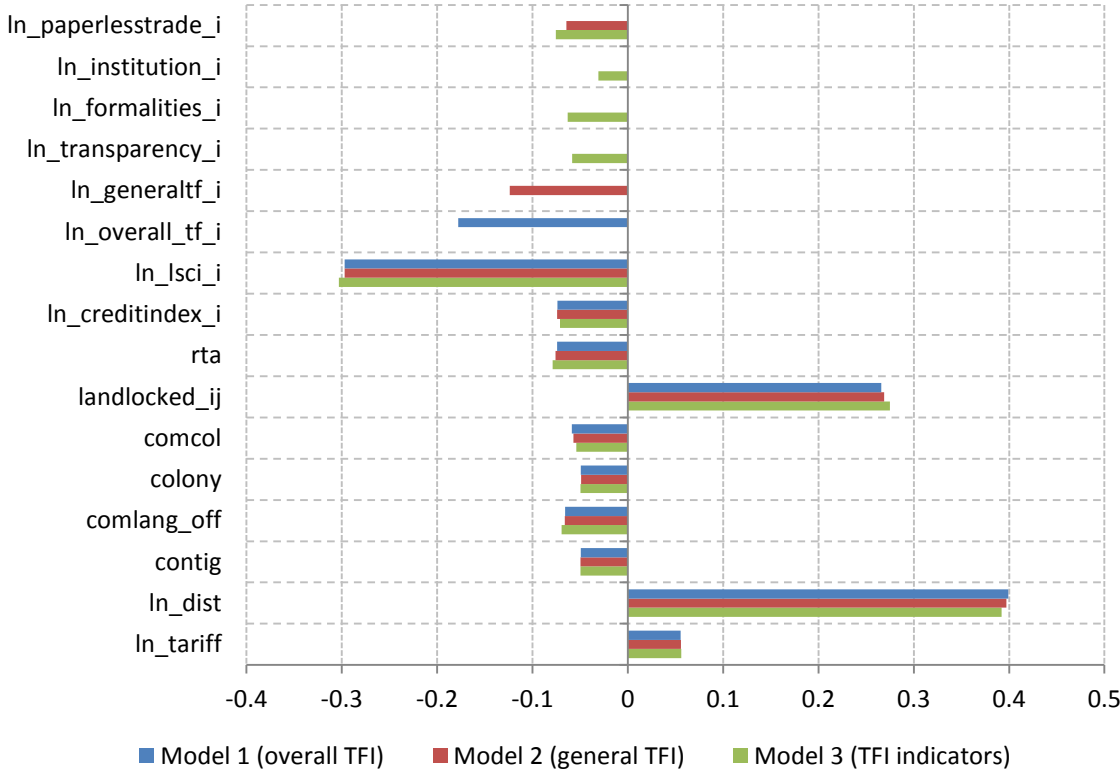
Source: Authors' own calculations.
Note: The figure shows standardized regression coefficients of all models in this study.

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[47] At the same time, however, the standardized regression coefficients shown in figure 3.3 suggest that, across the whole sample of countries included in the estimation, there may be slightly more scope for trade cost reductions through improvement in formalities rather than through transparency measures, as the latter have already been at least partially implemented in most of the countries considered.

3.2.4. Impact of trade facilitation implementation on trade costs in Asia-Pacific: A "what if" analysis

Based on the trade cost model estimated earlier, this study investigated in greater detail the potential of trade facilitation measures in reducing trade costs across countries by conducting counterfactual simulations ("what if' analyses). In doing so, three groups of TF measures were considered: (a) measures that are binding under the WTO TFA; (b) measures that are binding under the WTO TFA as well as those included in the WTO TFA but are non-binding; and (c) binding and non-binding WTO TFA measures as well as other paperless trade measures not specifically included in the WTO TFA. Details regarding allocation of the 22 TF measures included in this study to each of the three groups are provided in table A3.4 in annex 3.1. The following two scenarios are considered for each group:

(a) Scenario 1: Partial TF implementation scenario. All countries that have either not implemented, or have implemented on a pilot basis the TF measures considered, take action and achieve at least partial implementation;

(b) Scenario 2: Full TF implementation scenario: All countries that have not achieved full implementation of the TF measures considered take action and achieve full implementation.

Results of the simulations are shown in table 3.4 for Asia-Pacific economies. Implementation of binding and non-binding WTO TFA measures results in a 5% reduction in trade costs, on average, under a partial implementation scenario, and an 11% reduction under the more ambitious full implementation scenario. In contrast, implementing only binding WTO TFA measures results, at best, in a 6.77% decrease in trade costs on average in these countries. Under a WTO TFA + scenario where paperless trade measures not included in the WTO TFA are implemented, the average trade cost reduction across countries increases to more than 13%.

Table 3.4 also shows the average trade costs reduction of Asia-Pacific economies and the rest of the world associated with the different types of trade facilitation measures identified above. Both the partial and full implementation scenarios suggest that, among WTO TFA measures, those related to formalities will have the highest impact on trade costs on average, both in the case of binding and non-binding measures. The largest reduction of trade costs, however, is achieved through partial or full implementation of paperless trade measures beyond those required or specified in the WTO TFA.

Intraregional trade costs in Asia-Pacific are also expected to decline significantly as a result of WTO TFA implementation, although by less than trade costs between Asia-Pacific economies and the rest of the world (table 3.4). This may be mainly attributed to the fact that trade facilitation has been a core component of many regional and subregional integration initiatives in the Asia-Pacific region. As a result, average intraregional trade cost reductions from WTO TFA implementation are not expected to exceed 9%, even under the scenario of full implementation of both binding and non-binding measures. Again, the largest share of trade costs

reductions can be attributed to the implementation of paperless trade measures, followed by formalities measures.

Table 3.4. Changes in international trade costs of Asia-Pacific as a result of WTO TFA implementation

Asia-Pacific	WTO TFA (Binding only)		WTO TFA (Binding + non-binding)		WTO TFA+ (Binding + non-binding + other paperless trade)	
	Partially implemented	Fully implemented	Partially implemented	Fully implemented	Partially implemented	Fully implemented
Model 1 Overall TF	-3.15%	-6.77%	-5.38%	-11.11%	-6.71%	-13.16%
Model 3 Transparency	-0.79%	-1.67%	-1.13%	-3.09%	-1.13%	-3.09%
Formalities	-2.25%	-3.17%	-2.66%	-3.95%	-2.66%	-3.95%
Institution	-0.10%	-0.35%	-0.10%	-0.35%	-0.10%	-0.35%
Paperless trade	-	-	-1.45%	-2.34%	-2.91%	-4.83%

Source: Authors' calculations.

At the individual country level, trade cost reductions associated with the various scenarios vary from zero to 30% or more, depending on each country's existing level of TF implementation. As figure 3.4 shows, most of the least developed and landlocked countries in Asia and the Pacific can expect trade cost reductions of 5% to 10% from their own full implementation of WTO TFA binding measures alone. Trade costs reductions in most of these countries increase to between 10% and 15% when they fully implement both binding and non-binding measures. Implementation of a WTO TFA+ package of measures, emphasizing the adoption of modern information and communications technologies, generates trade cost reductions of more than 15% in most LDCs and LLDCs. While these numbers are promising, it is worth emphasizing that the estimates are based on the full implementation of each measure, which may be difficult to achieve in the short to medium term. Several LDCs and LLDCs including, for example, Bhutan and Uzbekistan, are also not WTO members; as such, they may not have access to the technical assistance committed by development partners under the WTO TFA.

Importantly, the trade costs reduction estimates presented above are those associated with self-implementation by a country of WTO TFA measures and other selected trade facilitation measures. However, a country may also see its trade costs fall because of the WTO TFA implementation in partner countries. This is in fact how the most advanced economies are expected to benefit from the agreement, as they have in principle already implemented most measures. Average trade costs reductions in Asia-Pacific associated with WTO TFA implementation in partner countries – but not in own country - range from 4% to 7.5%. Such cost reductions are significant and important in terms of improving the overall efficiency of the

multilateral trading system, contributing to making it more inclusive and sustainable and facilitating development of global production networks. However, they should be clearly differentiated from trade cost reductions achieved through self-implementation of trade facilitation reform since they do not inherently affect a country's relative trade competitiveness.

Table 3.5. Changes in intraregional trade costs in Asia-Pacific as a result of WTO TFA implementation

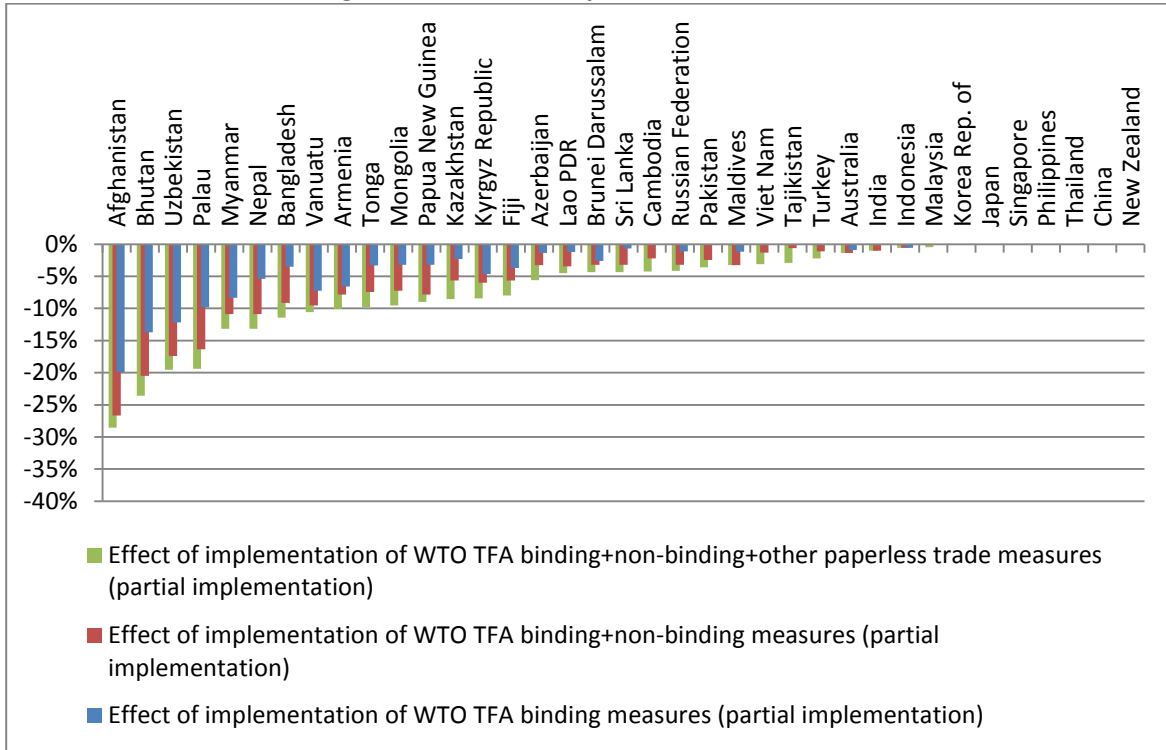| Intra-Asia-Pacific	WTO TFA (Binding only)		WTO TFA (Binding + Non-binding)		WTO TFA+ (Binding + Non-binding + other paperless trade)	
	Partially implemented	Fully implemented	Partially implemented	Fully implemented	Partially implemented	Fully implemented
Model 1 Overall TF	-1.95%	-5.06%	-3.61%	-8.62%	-4.63%	-10.28%
Model 3 Transparency	-0.48%	-1.19%	-0.73%	-2.38%	-0.73%	-2.38%
Formalities	-1.33%	-2.13%	-1.65%	-2.80%	-1.65%	-2.80%
Institution	-0.05%	-0.30%	-0.05%	-0.30%	-0.05%	-0.30%
Paperless trade	-	-	-1.01%	-1.72%	-2.11%	-3.66%

Source: Authors' calculations.

Indeed, an interesting finding from the counterfactual simulation of TF implementation on trade costs is that many developing economies in Asia and the Pacific can expect only limited trade cost reductions from their own WTO TFA implementation, essentially because they have already implemented most of the measures featured in the agreement. This is particularly true for ASEAN and East Asian economies, where implementation of some of the most advanced measures featured in the WTO TFA – such as Single Windows – had been initiated well before the
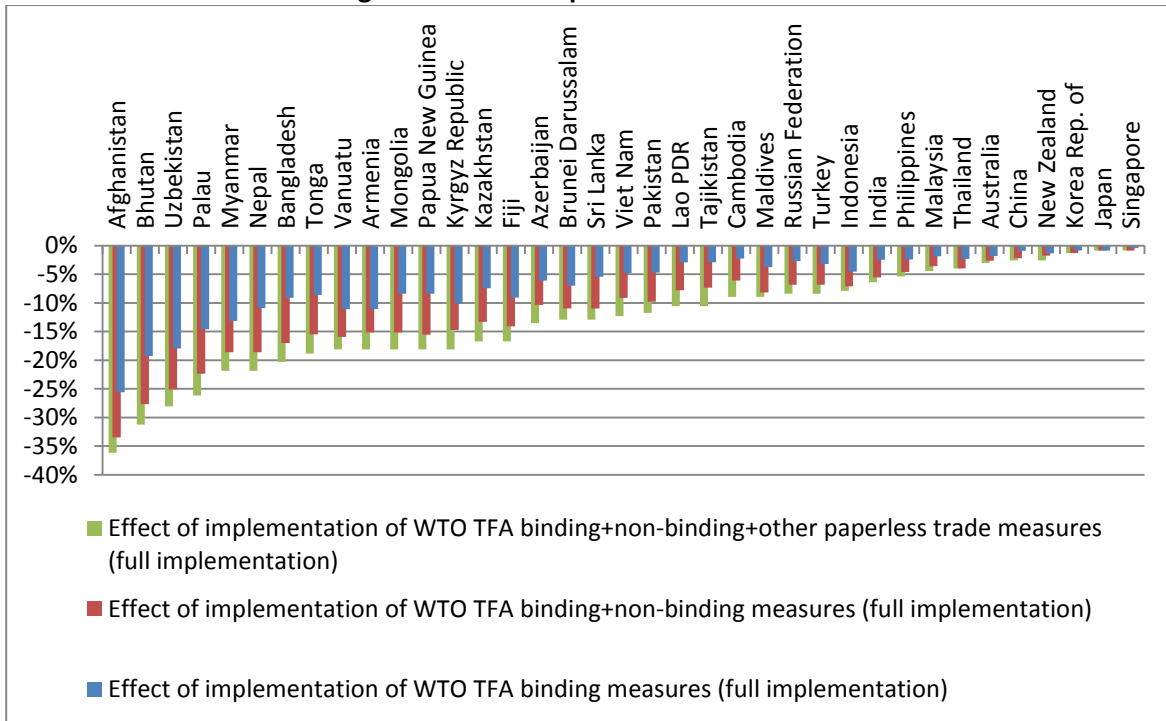
WTO TFA was concluded. For those countries, making significant progress in reducing trade costs through trade facilitation necessarily implies implementation of WTO TFA+ measures, such as those aimed at enabling electronic exchange of data and documents across countries and along international supply chains (i.e., cross-border paperless trade).

Figure 3.4. Trade cost reductions from trade facilitation in Asia-Pacific countries

Figure 3.4a. Partial implementation scenario

■ Effect of implementation of WTO TFA binding+non-binding+other paperless trade measures (partial implementation)

■ Effect of implementation of WTO TFA binding+non-binding measures (partial implementation)

■ Effect of implementation of WTO TFA binding measures (partial implementation)

Figure 3.4b. Full implementation scenario

■ Effect of implementation of WTO TFA binding+non-binding+other paperless trade measures (full implementation)

■ Effect of implementation of WTO TFA binding+non-binding measures (full implementation)

■ Effect of implementation of WTO TFA binding measures (full implementation)

Source: Authors' calculations.

To put these results into perspective, it is useful to contrast them with the trade costs reductions that may be associated with broader trade facilitation reforms, which often encompass measures aimed at improving trade-related infrastructure and services, and the overall business environment.[48] In that context, the following additional counterfactual simulation was conducted as part of this study using the results of model 1:

(a) Scenario 3: Improvement in maritime connectivity. All countries with LSCI scores below the developing country average / OECD average take action and bring their LSCI score to that level;

(b) Scenario 4: Improvement in access to financing. All countries with CII scores below the developing country average / OECD average take action and bring their CII score to that level.

Table 3.6. Changes in trade costs of Asia-Pacific as a result of port connectivity and trade finance improvement

	Asia-Pacific with ROW	Intra-Asia-Pacific
Maritime connectivity	-5.27% / -10.77%	-3.46% / -8.50%
Credit information	-1.27% / -1.42%	-0.97% / -1.00%

Source: Authors' calculations.
Note: counterfactual estimates based on Model 1 and assuming port connectivity and credit information levels are brought up to the developing economies average / the OECD average.

As shown in table 3.7, the simulation results suggest that improvement in maritime connectivity, as described in scenario 3, would reduce intraregional trade costs in Asia and the Pacific by 8.5% and overall international trade costs of the region by nearly 11%, while improved access to finance through improvement in credit information availability and quality (scenario 4) could reduce trade costs by 1.0% to 1.5%.[49] Taken together, the size of the trade costs reductions associated with these broader trade facilitation measures appears to be very significant, although they cannot be easily compared to those associated with the narrower WTO TFA and paperless trade measures. This is not unexpected and is, in fact, consistent with earlier findings from the literature that improvements in port efficiency and the overall business environment are essential

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[48] See WTO 2015b for a recent and rather comprehensive discussion of trade facilitation definitions.

[49] It is worth noting here that these regional estimates are calculated on the basis of the same group of countries than in earlier simulations, i.e., they include a significant number of Asia-Pacific developing countries who see no individual cost reductions under the scenarios considered since their maritime connectivity and credit information systems are already at or above the developing economies average (or the even the OECD average in the case of credit information). A more detailed analysis at the individual country level reveals that the trade cost reductions from improvements in maritime connectivity for below average countries are significantly larger than those from WTO TFA or paperless trade implementation.

to reducing international trade costs and enabling firms to efficiently conduct international transactions.

3.3. Conclusion

Using the new data from the survey, as detailed in chapter 2, together with the latest available data from the ESCAP-World Bank Trade Cost Database, this chapter investigates the impact of implementing trade facilitation measures on trade costs. This not only includes many of those featured in the WTO TFA but also more advanced paperless trade measures outside the scope of the WTO TFA. The econometric analysis shows that a 10% increase in the implementation of the comprehensive set of trade facilitation measures considered is associated with a 2.8% decrease in trade costs. A more disaggregated analysis, whereby trade facilitation measures are categorized into four categories (transparency, formalities, institutional arrangement and cooperation, and paperless trade) suggests that implementation of paperless trade and formalities measures have the greatest impact on reducing trade costs.

A counterfactual analysis conducted to simulate the impact of various trade facilitation implementation scenarios on Asia-Pacific countries revealed the following: (a) partial (full) implementation of binding and non-binding measures included in the WTO TFA is associated with an average 5% (10.5%) trade cost reduction in Asia-Pacific; (b) intraregional trade costs reductions are also significant but lower than those likely to be experienced by Asia and Pacific region countries extraregionally; (c) paperless trade measures have the highest impact on trade costs among all types of trade facilitation measures considered followed by formalities measures; and (d) country-specific reductions vary from zero per cent to more than 30%, depending on the current state of implementation of trade facilitation in each country.

The estimated impact of a full implementation of the WTO TFA is associated with an 8.62% decrease in intraregional trade costs in the Asia-Pacific region and an 11.11% decrease in international trade costs between the Asia-Pacific region and the world. In comparison, full implementation of the WTO TFA is associated with a reduction in world trade costs of 14.3%, according to the latest World Trade Report (WTO 2015b).[50] The reduction estimate for Asia in the World Trade Report is just below 14%. Our lower estimates may be explained by the fact that our analysis considered a wider range of other trade facilitation measures and factors besides the WTO TFA. Indeed, the results confirmed the prime importance of maritime connectivity in reducing trade costs and highlighted the need for WTO TFA implementation to take place as part of a comprehensive approach to reducing trade costs.

Overall, our estimates still suggest that trade costs savings for Asia and the Pacific from even partial implementation of both binding and non-binding WTO TFA measures could reach at least USD 263 billion a year.[51] That said, developing countries that have long been involved in simplifying, harmonizing, and automating trade procedures at the national and (sub)regional level may experience relatively small trade cost reductions from WTO TFA given their already advanced

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[50] Estimates are based on Moisé and Sorescu, 2013.
[51] - and up to USD 640 billion a year if full implementation of a WTO TFA+ package of measures can be achieved.

level of trade facilitation. Further facilitation of trade in these economies will involve developing legal and technical frameworks to support cross-border paperless trade, i.e., enabling the electronic exchange and legal recognition of trade data and documents between public and private actors located in different countries along the international supply chain. However, such efforts should take place within the context of broader trade facilitation programmes and strategies encompassing trade-related infrastructure and services, particularly those related to port connectivity.

Annex 3.1. List of reporting countries and trading partners

Table A3.1. Reporting countries

1. Armenia	24. Ecuador	47. Malawi	70. Senegal
2. Australia	25. Egypt, Arab Rep.	48. Malaysia	71. Singapore
3. Austria	26. El Salvador	49. Maldives	72. Spain
4. Azerbaijan	27. Fiji	50. Mali	73. Sri Lanka
5. Bangladesh	28. Finland	51. Mexico	74. Suriname
6. Barbados	29. France	52. Mongolia	75. Sweden
7. Benin	30. Gambia	53. Myanmar	76. Switzerland
8. Bhutan	31. Germany	54. Namibia	77. Tajikistan
9. Bolivia	32. Ghana	55. Nepal	78. Tanzania
10. Botswana	33. Greece	56. Netherlands	79. Thailand
11. Brazil	34. Guatemala	57. New Zealand	80. Togo
12. Brunei Darussalam	35. Honduras	58. Nicaragua	81. Tonga
13. Burkina Faso	36. India	59. Niger	82. Turkey
14. Cambodia	37. Indonesia	60. Nigeria	83. Uganda
15. Cameroon	38. Japan	61. Pakistan	84. United Arab Emirates
16. Chile	39. Jordan	62. Palau	85. Uruguay
17. China	40. Kazakhstan	63. Papua New Guinea	86. Uzbekistan
18. Colombia	41. Kenya	64. Paraguay	87. Vanuatu
19. Comoros	42. Kyrgyzstan	65. Peru	88. Viet Nam
20. Congo (Republic of.)	43. Lao PDR	66. Philippines	89. Yemen
21. Costa Rica	44. Lebanon	67. Qatar	90. Zimbabwe
22. Cote d'Ivoire	45. Lesotho	68. Republic of Korea	
23. Dominican Republic	46. Madagascar	69. Russian Federation	

Note: Table A3.1 presents the 90 reporting countries used in the empirical models.

Table A3.2. Partner countries

1. Afghanistan	42. Cote d'Ivoire	83. Kyrgyzstan	124. Qatar
2. Albania	43. Croatia	84. Lao PDR	125. Republic of Korea
3. Algeria	44. Cyprus	85. Latvia	126. Romania
4. Angola	45. Czech Republic	86. Lebanon	127. Russian Federation
5. Antigua and Barbuda	46. Denmark	87. Lesotho	128. Rwanda
6. Argentina	47. Dominica	88. Lithuania	129. Saudi Arabia
7. Armenia	48. Dominican Republic	89. Luxembourg	130. Senegal
8. Australia	49. Ecuador	90. Macao, China	131. Seychelles
9. Austria	50. Egypt (Arab Rep.)	91. Macedonia, FYR	132. Singapore
10. Azerbaijan	51. El Salvador	92. Madagascar	133. Slovak Republic
11. Bahamas, The	52. Equatorial Guinea	93. Malawi	134. Slovenia
12. Bahrain	53. Estonia	94. Malaysia	135. South Africa
13. Bangladesh	54. Fiji	95. Maldives	136. Spain
14. Barbados	55. Finland	96. Mali	137. Sri Lanka
15. Belarus	56. France	97. Malta	138. St. Kitts and Nevis
16. Belgium	57. Gabon	98. Mauritania	139. St. Lucia
17. Belize	58. Gambia	99. Mauritius	140. Suriname
18. Benin	59. Georgia	100. Mexico	141. Sweden
19. Bhutan	60. Germany	101. Moldova	142. Switzerland
20. Bolivia	61. Ghana	102. Mongolia	143. Syrian Arab Republic
21. Bosnia and Herzegovina	62. Greece	103. Morocco	144. Tajikistan
22. Botswana	63. Grenada	104. Mozambique	145. Tanzania
23. Brazil	64. Guatemala	105. Myanmar	146. Thailand
24. Brunei Darussalam	65. Guinea	106. Namibia	147. Togo
25. Bulgaria	66. Guyana	107. Nepal	148. Tonga
26. Burkina Faso	67. Honduras	108. Netherlands	149. Trinidad and Tobago
27. Burundi	68. Hong Kong, China	109. New Zealand	150. Tunisia
28. Cambodia	69. Hungary	110. Nicaragua	151. Turkey
29. Cameroon	70. Iceland	111. Niger	152. Uganda
30. Canada	71. India	112. Nigeria	153. Ukraine
31. Cape Verde	72. Indonesia	113. Norway	154. United Arab Emirates
32. Central African Republic	73. Iran (Islamic Rep. of)	114. Oman	155. United Kingdom
33. Chad	74. Ireland	115. Pakistan	156. United States
34. Chile	75. Israel	116. Palau	157. Uruguay
35. China	76. Italy	117. Panama	158. Uzbekistan
36. Colombia	77. Jamaica	118. Papua New Guinea	159. Venezuela
37. Comoros	78. Japan	119. Paraguay	160. Viet Nam
38. Congo (Dem. Rep)	79. Jordan	120. Peru	161. Yemen
39. Congo (Rep. of)	80. Kazakhstan	121. Philippines	162. Zambia
40. Cook Islands	81. Kenya	122. Poland	
41. Costa Rica	82. Kuwait	123. Portugal	

Note: Table A3.2 presents the 162 partner countries used in the empirical models.

Table A3.3. Coding and scoring of different stage of implementation

Definition of stage of implementation	Coding/ Scoring
Full implementation: The trade facilitation measure implemented is in full compliance with commonly accepted international standards, recommendations and conventions (such as the Revised Kyoto Convention, UN/CEFACT Recommendations, or the WTO Trade Facilitation Agreement). It is implemented in law and in practice. It is available to essentially all relevant stakeholders nationwide, supported by an adequate legal and institutional framework as well as adequate infrastructure, and financial and human resources.	3
Partial implementation: A measure is considered to be partially implemented if at least one of the following is true: (a) the trade facilitation measure is not in full compliance with commonly accepted international standards, recommendations and conventions; (b) the country is still in the process of rolling out the implementation of measure; (c) the measure is practiced on an unstainable, short-term or ad-hoc basis; (d) the measure is not implemented in all targeted locations (such as key border crossing stations); or (e) not all targeted stakeholders are fully involved.	2
Pilot stage of implementation: A measure is considered to be at the pilot stage of implementation if, in addition to meeting the general attributes of partial implementation, it is available only to (or at) a very small portion of the intended stakeholder group (location) and/or is being implemented on a trial basis. When a new trade facilitation measure is under pilot stage of implementation, the old measure is often continuously used in parallel to ensure the service is provided in case of disruption of new measure. This stage of implementation also includes relevant rehearsals and preparation for the fully-fledged implementation.	1
Not implemented: This simply means a trade facilitation measure has not been implemented. However, this stage does not rule out initiatives or efforts towards implementation of the measure. For example, under this stage, (pre)feasibility or planning of implementation can be carried out, and consultation with stakeholders on the implementation may be arranged.	0

Note: Table A3.3 presents coding and scoring of trade facilitation measures in four categories.

Table A3.4 Nature and relationships between selected trade facilitation measures considered and the WTO TFA provisions*

Trade facilitation measure	Corresponding WTO TFA Article	Binding or non-binding nature of the WTO TFA Article
Institutional arrangement		
1. Establishment of a national trade facilitation committee or similar body	Section 3, Article 23: Institutional Arrangements	Binding
31. Cooperation between agencies on the ground at the national level	Section 1, Article 8: Border Agency Cooperation	Binding
Transparency		
2. Publication of existing import-export regulations on the Internet	Section 1, Article 1.2: Information Available through Internet	Non-binding (Phrasing: shall, to the extent practicable and in a manner consistent with its domestic law and legal system)
3. Stakeholder consultation on new draft regulations (prior to their finalization)	Section 1, Article 2: Opportunity to Comment, Information Before Entry into Force, and Consultations	Non-binding (Phrasing: shall, to the extent practicable and in a manner consistent with its domestic law and legal system)
4. Advance publication/ notification of new regulation before their implementation (e.g., 30 days prior)	Section 1, Article 2.1: Opportunity to Comment and Information Before Entry into Force	Non-binding (Phrasing: shall, to the extent practicable and in a manner consistent with its domestic law and legal system)
5. Advance ruling (on tariff classification)	Section 1, Article 3 : Advance Rulings	Binding
9. Independent appeal mechanism (for traders to appeal Customs and other relevant trade control agencies' rulings)	Section 1, Article 4: Procedures for Appeal and Review	Binding
Formalities		
6. Risk management (as a basis for deciding whether a shipment will be or not physically inspected)	Section 1, Article 7.4 : Risk Management	Non-binding (Phrasing: shall, to the extent possible)
7. Pre-arrival processing	Section 1, Article 7.1: Pre-arrival Processing	Binding
8. Post-clearance audit	Section 1, Article 7.5: Post-Clearance Audit	Binding
10. Separation of Release from final determination of customs duties, taxes, fees and charges	Section 1, Article 7.3: Separation of Release from Final Determination of Customs Duties, Taxes, Fees and Charges	Binding
11. Establishment and publication of average release	Section 1, Article 7.6: Establishment and Publication of	Non-binding (Phrasing: members are

times	Average Release Times	encouraged)
12. Trade facilitation measures for authorized operators	Section 1, Article 7.7: Trade Facilitation Measures for Authorized Operators	Binding
13. Expedited shipments	Section 1, Article 7.7: Expedited Shipments	Binding
14. Acceptance of paper or electronic copies of supporting documents required for import, export or transit formalities.	Section 1, Article 10.2: Acceptance of Copies	Non-binding (Phrasing: shall endeavor to accept)

Paperless trade facilitation

15. Electronic/automated Customs System (e.g., ASYCUDA)	N/A	
16. Internet connection available to Customs and other trade control agencies at border-crossings	N/A	
17. Electronic Single Window System	Section 1, Article 10.4: Single Window	Non-binding (Phrasing: shall endeavor to establish)
18. Electronic submission of Customs declarations	N/A	
21. Electronic Submission of Air Cargo Manifests	N/A	
22. Electronic Application and Issuance of Preferential Certificate of Origin	N/A	
23. E-Payment of Customs Duties and Fees	Section 1, Article 7.2: Electronic Payment	Non-binding (Phrasing: shall, to the extent practicable)

Note: Table A3.4 presents justifications for classing WTO TFA measures as binding or non-binding.

*Measures which are binding under the WTO TFA correspond to group one (1) of TF measures in the counterfactual analysis presented in the chapter. Group 2 consists of the measures in group one (1) as well as non-binding WTO TFA measures. All measures, including paperless trade measures, identified as N/A constitute group 3.

Annex 3.2. Trade cost reductions from paperless trade facilitation in Asia-Pacific countries

Figure A3.1. Partial implementation scenario

- ■ Effect from implementation of WTO TFA binding+non-binding+other paperless trade measures (partial implementation)
- ■ Effect from implementation of WTO TFA binding+non-binding measures (partial implementation)
- ■ Effect from implementation of WTO TFA binding measures (partial implementation)

Figure A3.2. Full implementation scenario

- ■ Effect from implementation of WTO TFA binding+non-binding+other paperless trade measures (full implementation)
- ■ Effect from implementation of WTO TFA binding+non-binding measures (full implementation)
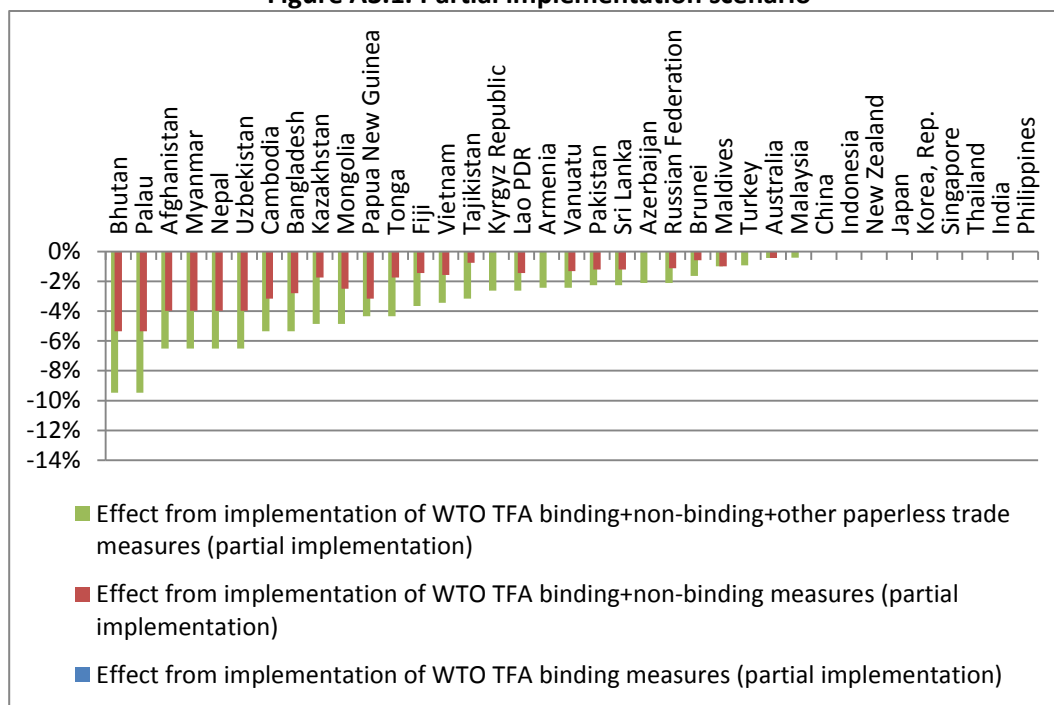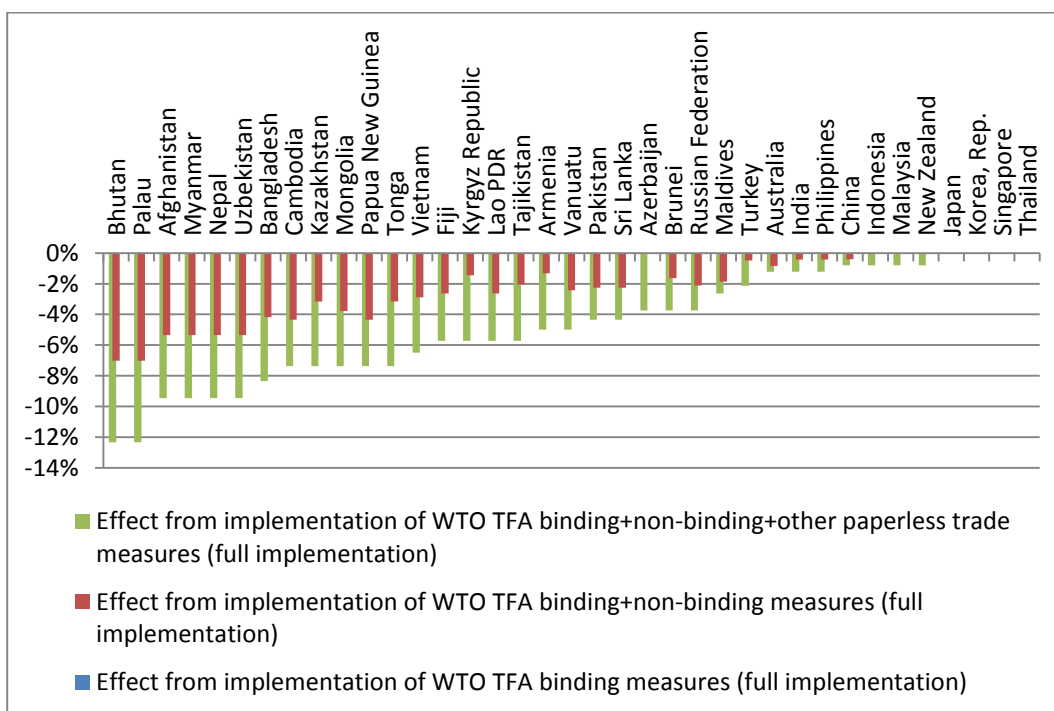- ■ Effect from implementation of WTO TFA binding measures (full implementation)

Source: Authors' calculations.

Annex 3.3. Literature Review[52]

The importance of reducing trade costs to support sustained and sustainable development of the Global economy has been widely acknowledged at the policy level, as evidenced by the focus of – and extensive discussions at – the Fifth Global Review on Aid for Trade held in July 2015.[53] This is particularly important for developing economies, where trade costs typically remain high and have not fallen as fast as in more developed economies (Arvis et al., 2015).

A wide consensus exists in the literature that further reductions in trade costs will come from addressing non-tariff barriers (NTBs) to trade, including implementation of trade facilitation measures (Duval et al., 2015, among other sources). The importance of reducing not only tariff but also non-tariff barriers to trade is highlighted in a seminal study by Anderson and Van Wincoop (2004), who found that ad-valorem trade costs between countries amounted to a staggering 170%, but that tariff costs only amounted to about 8%. However, measuring the importance and impact of individual non-tariff cost components has remained difficult.[54]

Building on the inverse gravity approach pioneered by Novy (2013), several studies inferred aggregate trade costs from gross trade and output data, and set out to directly measure the contribution of tariffs and NTBs on such comprehensive trade costs. A first regional analysis in Asia and the Pacific by Duval and Utoktham (2011) found that while tariff costs accounted for 0-10% of trade costs across countries, natural trade costs such as geography (i.e., distance, landlockedness etc.), cultural distance and historical relationships (i.e., language, colonization etc.) between countries accounted for an additional 10%-30% of trade costs (see figure A3.3). More importantly, policy-related NTBs accounted for the remaining 60%-90% of trade costs. The study found that international trade costs in that broad category were affected by liner shipping (maritime) connectivity, the domestic business environment of the trading partners, the availability and use of ICT services, the direct cost of trade procedures as well as by other policy related factors – the effect of which was difficult to disentangle, given the lack of data.
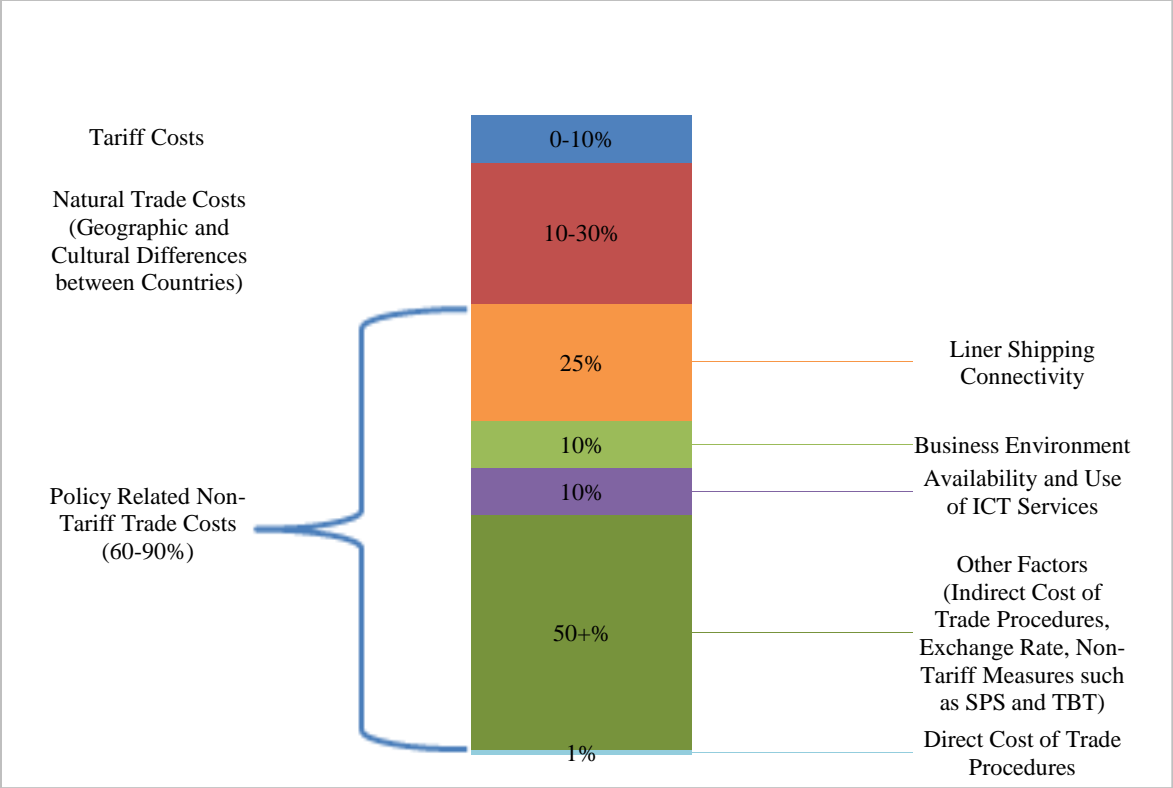
Figure A3.3. What explains trade costs across countries in Asia and the Pacific?

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[52] There are two main sources of empirical evidence, which are typically used to demonstrate the benefits of TF: econometric models and general equilibrium models. The general equilibrium models are more widely used to show the welfare effects of TF, while econometric models generally used to demonstrate the impact of trade policy on trade flows and the cost of trade. Econometric analyses overwhelmingly find that trade facilitation is associated with lower trade costs. However, as Hoekman and Shepherd (2013) pointed out, equivalent conclusions can be drawn from computable general equilibrium models. These models are typically used to analyse the impact on welfare costs across the economy. Baldwin and others (2012) for example found that GVCs enable companies to specialize in activities in which they are competitive; trade facilitation helps companies to exploit these niches by lowering the cost of trade.

[53] The theme of the Fifth AfT Global Review was "Reducing Trade Costs for Inclusive, Sustainable Growth". See https://www.wto.org/english/tratop_e/devel_e/a4t_e/a4tmonit_e.htm.

[54] There is considerable difficulty in precisely disaggregating the plethora of individual components that constitute NTBs to trade. As Kee and others (2009) pointed out, previous studies have used a wide range of approaches to measure NTBs. These include frequency and coverage type measures, price comparison measures, quantity impact measures or residuals from gravity regressions.

Tariff Costs — 0-10%

Natural Trade Costs (Geographic and Cultural Differences between Countries) — 10-30%

25% — Liner Shipping Connectivity

10% — Business Environment

10% — Availability and Use of ICT Services

Policy Related Non-Tariff Trade Costs (60-90%)

50+% — Other Factors (Indirect Cost of Trade Procedures, Exchange Rate, Non-Tariff Measures such as SPS and TBT)

1% — Direct Cost of Trade Procedures

Note: Figure A3.3 is a simplified representation of the results from Duval and Utoktham, 2011.

Arvis and others (2013) extended this type of analysis by developing the ESCAP-World Bank Trade Cost Database and conducting a comprehensive analysis of trade costs across 178 countries. Upon controlling for natural sources of trade costs (i.e., tariffs, transportation, language etc.) and other NTBs earlier identified in the literature, they confirmed the importance of liner shipping connectivity – and logistics performance in general – and the business environment in determining trade costs. Furthermore, the existence of a regional trade agreement (RTA) was shown to significantly reduce trade costs. That later result was corroborated by Novy (2013), who found that the existence of a free trade agreement between trading partners was associated with a 7%-12% decrease in trade costs.

While previous studies have demonstrated that TF can lead to higher trade flows and lower trade costs, very few studies have investigated the impact of the WTO TFA and/or paperless trade upon trade costs. With regards to the WTO TFA, Moïsé and Sorescu (2013) collected data to construct 16 OECD TF Indicators (TFIs) corresponding to the main policy areas covered by the agreement, and estimated the impact on trade costs across WTO member and observer States using the ESCAP-World Bank Trade Cost Database. Their analysis, updated in OECD (2015) based on more recent TFI and trade cost data, suggested that implementation of the TF measures featured in the agreement would bring a 16.5%, 17.4% and 14.6% reduction in trade costs across low-income (LICs), lower-middle income (LMICs) and upper-middle income (UMICs) countries,

respectively.[55] Measures with the greatest potential for reducing trade costs include harmonizing and simplifying documents (up to 4.2% for LICs), streamlining border procedures (up to 3.9% for LMICs), and automating trade and customs procedures (up to 3.6% for LICs).[56] These estimates unfortunately do not take into account the policy-related factors previously identified in the literature as highly significant, such as maritime connectivity and the business environment, possibly leading to overestimation of impact.

With regard to the implementation of paperless trade reforms, the literature is still emerging and evidence of benefits is typically based on case studies and ad hoc evidence.[57] On the basis of an APEC survey on paper documents for trade in 1999, DTAC and FTEC (2001) found that removing the mandatory requirements for paper documents would result in savings amounting to 1.5% to 15% of the price of landed goods – depending on the specific product. A more recent study – surveying firms in the Republic of Korea – also found that businesses benefited to the tune of US$ 2.6 billion annually from the introduction of paperless trade; these savings accrued from reductions in labor costs, printing and delivery of documents (Hyundai Research Institute, 2006). In Singapore, the introduction of an electronic Single Window for trade documents reduced processing times from four days to 15 minutes and lowered the cost of submission per document by 71% (UNNExT, 2010). In the case of Japan, the introduction of an electronic Single Window and associated simplified procedures resulted in annual savings exceeding US$ 500 million for an initial investment of about US$ 90 million (UNNExT, 2011).[58]

Shepherd and Duval (2014) recently reviewed studies related to paperless trade and found that cost reductions associated with implementation of this type of trade facilitation measure ranged from 20% to 87% per transaction across studies and countries. However, the differences in the scope of paperless trade considered as well as in the methodologies applied and data availability limited the comparability of the results across studies. Using data from the ESCAP Survey on Trade Facilitation and Paperless Trade Implementation 2013,[59] they found that full implementation of the paperless trade measures included in the survey would result in a 24% decline in exporting time and 17% reduction in direct export costs across the Asia-Pacific region, increasing the annual export potential of the region by US$ 257 billion.

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[55] These figures are shown to be 1%-4% lower should countries limit themselves to mandatory provisions only. Trade costs were estimated to decline 11.8% across OECD economies, and 12.6%, 13.7% and 12.8% across low-income, lower-middle income and upper-middle income countries, should those countries limit themselves to mandatory provisions of the WTO TFA (OECD, 2015).

[56] The study concluded that the sum of implementing all TF measures outlined in the WTO TFA was greater than the individual components, and advised that TF be implemented comprehensively rather than with a focus on isolated measures.

[57] The UNNExT Brief (2009) indicated savings from automation of trade procedures and introduction of electronic Single Windows ranging from US$ 168 million in Hong Kong, China, to US$ 1.5 billion in Thailand and US$ 1.8 billion in the Republic of Korea.

[58] It also yielded benefits of US$ 533 million per year, with an implementation cost of US$ 94million.

[59] See Wang and Duval, 2014.