Report on
the Comprehensive Trade Costs of
Lao People's Democratic Republic[1]

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I. Introduction

International trade continues to be a primary engine of growth and development for most economies of the region, including Lao PDR. As such, trade facilitation, i.e., the reduction in international trade transaction costs, is essential to ensuring that enterprises in Lao PDR can effectively engage in international trade and integrate into regional and global value chains.

In an effort to better measure trade facilitation performance in the region and to increase understanding of trade costs between countries in Asia and the Pacific and beyond, ESCAP developed a database of bilateral comprehensive trade cost (CTC).[2] CTC is an all-inclusive measure of bilateral trade cost based on micro-economic theory. It is calculated using macro-economic data as opposed to perception (survey) data. The latest version of the ESCAP Trade Cost database was released in December 2011. However, trade cost for some of the least developed countries (LDCs), including Lao PDR, are not featured in this Database due to unavailability of disaggregated trade data for these countries.

In that context, the Office of the National Trade Facilitation Secretariat, Ministry of Industry and Commerce, Lao PDR, requested ESCAP to develop bilateral trade cost estimates for Lao PDR to enable it to monitor the country's progress in facilitating trade. As a result, the ESCAP Trade and Investment Division (TID) developed an alternative way to generate bilateral trade cost estimates for Lao PDR and its partner countries.[3] The Lao PDR Comprehensive Trade Cost dataset generated using this alternative data source contains bilateral trade cost information between Lao PDR and 46 partner countries at the aggregate level and for the period 1995-2010.[4]

This report provides a preliminary analysis of the data contained in the Lao PDR Comprehensive Trade Cost Database and its implications. Interested stakeholders may conduct more detailed analysis using the Database provided separately.[5]

The next section elaborates briefly on the definition and interpretation of bilateral comprehensive trade costs (CTC) and CTC-excluding-tariff (NT-CTC). Section 3 presents an overview of Lao PDR bilateral comprehensive trade cost (excluding tariff) with various trade partners. Section 4 introduces some of the main factors responsible for differences in trade costs across Asia-Pacific countries and discusses the performance of Lao PDR on the basis of available indicators related to these factors. Section 5 concludes and proposes a way forward for policy makers, researchers and practitioners on trade facilitation for Lao PDR.

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[2] http://www.unescap.org/tid/artnet/trade-costs.asp
[3] This is done essentially by using bilateral trade data from the IMF Direction of Trade Statistics (IMF–DOTS) instead of COMTRADE data.
[4] Sectoral trade costs (for agriculture and manufacturing goods) could unfortunately not be estimated as IMF-DOTS only provide aggregate bilateral trade data.
[5] See Annex 1 for an explanatory note for database users.

II. Understanding Comprehensive Trade Costs: Further Elaboration[6]

The bilateral comprehensive trade cost measure (CTC) featured in the Lao PDR Trade Cost Database - submitted along with this report - is truly comprehensive in the sense that it includes *all costs involved in trading goods internationally with another partner (i.e. bilaterally) relative to those involved in trading goods domestically (i.e., intranationally)*.[7] This measure captures the cost of trade in its wider sense, including not only international transport costs and tariffs but also other trade cost components discussed in Anderson and van Wincoop (2004), such as direct and indirect costs associated with differences in languages, currencies as well as cumbersome import or export procedures.

As trade facilitation-related costs are generally understood to exclude tariff, the Lao PDR Trade Cost Database also include estimates for NT-CTC, i.e., CTC excluding import tariff costs. When the focus is specifically on trade facilitation and logistics matters, as in this report, the use of NT-CTC is most appropriate. Following Anderson and van Wincoop (2004), comprehensive trade costs excluding tariff (NT-CTC) encompass *all additional costs other than tariff costs involved in trading goods bilaterally rather than domestically.*

Bilateral NT-CTC, as defined above, is presented in this country report as "ad valorem equivalent" values, i.e., in percentage of the value of goods. One of the explanations for the relatively high ad valorem values found is that NT-CTC is an average trade cost of all goods that are tradeable, many of which are not traded in practice for various reasons, including for example inability to meet international product standards of partner countries.

It is important to note that NT-CTC measures overall trade costs between two partner countries, i.e., it is an average of the import and exports costs of both trading partners with each other (excluding tariffs imposed by each country on each other). Hence, NT-CTC of Lao PDR with Viet Nam is equal to the NT-CTC of Viet Nam with Lao PDR.

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[6] Details on calculation and methodology, as well as further details regarding interpretation of comprehensive trade costs, are provided in Annex 1.

[7] There have been many attempts to develop trade costs measures. Much efforts have focused on direct measurement of various trade cost components, such as international transport costs (using actual shipping costs of a standard container to various destinations or more aggregate CIF/FOB trade data), or costs of moving goods from the factory to the deck of a ship at the nearest sea port (including, e.g., cost of preparing trade documentation, customs clearance, goods transport and handling to the port). However, these approaches do not provide a comprehensive measure of international trade costs - and combining the different measures and indicators into a comprehensive measure is hardly feasible.

III. Lao PDR Comprehensive Trade Costs (excluding tariff)

Lao PDR Trade Costs: An Overview

Figure 1 shows bilateral NT-CTC between Lao PDR and a number of its trade partners, including its top 5 trading partners in terms of import volume (Thailand, China, Vietnam, Republic of Korea and Japan). Non-tariffs trade costs of Lao PDR are lowest with Thailand, Viet Nam, and China, in this order. It is worth noting that Lao PDR – China trade costs are, on average, almost three times higher than those between Lao PDR and Thailand, However.

Figure 1. Bilateral Comprehensive Trade Costs (excluding Tariff) of Lao PDR

Partner	Tariff-equivalent trade cost (percent)
Thailand	48%
Viet Nam	79%
China	130%
Republic of Korea	151%
France	197%
Germany	197%
Japan	204%
United States	225%
United Kingdom	232%
Netherlands	237%
Italy	241%
Malaysia	249%
Cambodia	250%
Denmark	254%
Australia	265%
India	281%
Switzerland	302%
Sweden	307%
Poland	307%
Russian Federation	317%
Spain	338%
Indonesia	342%
South Africa	355%
Portugal	365%
Norway	368%
Austria	371%
Turkey	383%
Senegal	401%
Slovenia	432%
Peru	437%
Chile	455%
Pakistan	461%
Finland	478%
Brazil	485%
Hungary	486%
Philippines	490%
Czech Republic	528%
Argentina	563%
Morocco	579%
Slovak Republic	767%

Note: Latest data is not available for Bulgaria, Canada, Egypt, Greece, Moldova and, New Zealand.
Source: Lao PDR Trade Cost Database [modified from ESCAP Trade Cost Database]

Lao PDR trade costs with ASEAN countries provide a mixed picture (Trade costs with ASEAN countries are shown in yellow in Figure 1, while those with other countries are shown in blue). For example, Lao PDR – Cambodia and Lao PDR – Malaysia trade costs are found to be five times those between Lao PDR and Thailand; and the trade costs are even higher with ASEAN members that are located further away from Lao PDR, such as Indonesia and the Philippines.

It is worth noting that the higher trade costs cannot be attributed to the larger physical distance between Lao PDR and these countries, however. Indeed, Lao PDR–Indonesia trade costs are found to be not only higher than those between Lao PDR and most European countries (which are clearly much more geographically distant from Lao PDR than Indonesia), but also higher than those between Lao PDR and India or Russia. These findings suggest that there is ample room to enhance trade integration of Lao PDR in ASEAN.

Looking at trade costs between Lao PDR and developed economies, Lao PDR trade costs (NT-CTC) are lowest with the two largest European economies (Germany and France), with Lao PDR – Japan trade costs (NT-CTC) slightly higher. Lao PDR – USA trade costs (NT-CTC) are found to be about 10% higher than those between Lao PDR and Germany.

Table 1 provides a more detailed view of Lao PDR trade costs (NT-CTC) with key trade partners, as well as trade costs of these trade partners with each other. It highlights the fact that Lao PDR trade costs remain high when compared to those of other countries – e.g., they are on average more than twice as high as those of Viet Nam.

Table 1. Trade Costs (NT-CTC) of Selected Economies with Each Other, 2008-2010

	LAO	KHM	VNM	THA	IND	CHN	JPN	KOR	DEU	USA
Lao, P.D.R.		250%	79%	48%	281%	130%	204%	151%	197%	225%
(LAO)		(9%)	(N/A)	(-25%)	(-14%)	(-25%)	(-15%)	(-49%)	(-8%)	(-22%)
Cambodia	250%		76%	83%	206%	143%	158%	135%	159%	111%
(KHM)	(9%)		(3%)	(-15%)	(-17%)	(7%)	(-5%)	(-19%)	(-5%)	(-18%)
Viet Nam	79%	76%		63%	112%	75%	72%	59%	93%	83%
(VNM)	(N/A)	(3%)		(-12%)	(-18%)	(0%)	(-10%)	(-24%)	(-6%)	(-27%)
Thailand	48%	83%	63%		96%	64%	58%	68%	92%	77%
(THA)	(-25%)	(-15%)	(-12%)		(10%)	(8%)	(6%)	(-6%)	(12%)	(17%)
India	281%	206%	112%	96%		83%	123%	86%	93%	92%
(IND)	(-14%)	(-17%)	(-18%)	(10%)		(-11%)	(8%)	(-12%)	(-2%)	(4%)
China, P.R.	130%	143%	75%	64%	83%		55%	43%	62%	58%
(CHN)	(-25%)	(7%)	(0%)	(8%)	(-11%)		(0%)	(-18%)	(-11%)	(-3%)
Japan	204%	158%	72%	58%	123%	55%		60%	88%	71%
(JPN)	(-15%)	(-5%)	(-10%)	(6%)	(8%)	(0%)		(-11%)	(2%)	(9%)
Republic of Korea	151%	135%	59%	68%	86%	43%	60%		75%	64%
(KOR)	(-49%)	(-19%)	(-24%)	(-6%)	(-12%)	(-18%)	(-11%)		(-16%)	(-2%)
Germany	197%	159%	93%	92%	93%	62%	88%	75%		69%
(DEU)	(-8%)	(-5%)	(-6%)	(12%)	(-2%)	(-11%)	(2%)	(-16%)		(8%)
United States	225%	111%	83%	77%	92%	58%	71%	64%	69%	
(USA)	(-22%)	(-18%)	(-27%)	(17%)	(4%)	(-3%)	(9%)	(-2%)	(8%)	
Average	174%	147%	79%	72%	79%	130%	99%	82%	103%	94%
(AVG)	(-24%)	(-7%)	(-13%)	(-1%)	(-8%)	(-9%)	(-4%)	(-25%)	(-4%)	(-10%)

Source: Laos' Trade Cost Dataset

On a more positive note, Lao PDR – Thailand trade costs (NT-CTC) are significantly lower than Cambodia – Thailand and Viet Nam – Thailand trade costs (NT-CTC). At the same time, Lao PDR trade costs (NT-CTC) with the United States (USA) are more than double those of Cambodia and Viet Nam and remain prohibitively high with out-of-the-subregion emerging markets such as India.

Progress made since 2000

As shown in Table 1, the country made relatively more progress in reducing trade costs than many other countries between 2000 and 2010, cutting costs by nearly 25%.

Table 2 shows how Lao PDR bilateral trade costs (NT-CTC) have evolved since the beginning of the new century with a variety of other countries. Lao PDR has seen its trade costs reduced most with Republic of Korea between 2000 and 2010, with these costs cut nearly in half during the period. Much progress was also made with China and Thailand (2 of its neighboring countries), as well as with the United States of America – and also Portugal, although trade costs between that country and Lao PDR (at 365%) remain at least 50% higher than between Lao PDR and the larger European economies. The trade cost reduction of 14% achieved between Lao PDR and India is also noteworthy, particularly given that the two countries belong to two distinct Asian subregions.

Lao PDR trade costs with Germany and Italy are found to have fallen between 2000 and 2010, while those with France and Spain – and to a lesser extent UK - increased. Looking at ASEAN partners, trade costs of Lao PDR with Indonesia and Philippines seem to have reached a peak during the 2004-2007 period; and have fallen since then. This is not the case with Cambodia, however, with Lao PDR – Cambodia trade costs increasing between 2004-2007 and 2008-2010 period.

Lao PDR made least progress in reducing trades costs with some of the Eastern and Northern European countries (e.g., Norway, Czech Republic) between 2000 and 2010. Trade costs with those countries are not only very high in absolute terms, but have also increased significantly, often by more than 40%. These findings may deserve further investigation.

Table 2. Reduction in Lao PDR trade costs (NT-CTC)

| NT-CTC between **Lao PDR** and:	2000-2003	2004-2007	2008-2010	% change
Republic of Korea	298%	198%	151%	-49%
Portugal	566%	371%	365%	-36%
Thailand	64%	61%	48%	-25%
China	174%	157%	130%	-25%
United States	290%	269%	225%	-22%
Japan	239%	231%	204%	-15%
India	327%	333%	281%	-14%
Austria	416%	368%	371%	-11%
Brazil	538%	434%	485%	-10%
Italy	267%	281%	241%	-10%
Germany	215%	192%	197%	-8%
Denmark	267%	278%	254%	-5%
Peru	456%	618%	437%	-4%
Malaysia	258%	193%	249%	-4%
Argentina	569%	444%	563%	-1%
United Kingdom	229%	223%	232%	2%
Russian Federation	310%	281%	317%	2%
Australia	251%	202%	265%	5%
Philippines	455%	499%	490%	8%
South Africa	329%	320%	355%	8%
Spain	311%	348%	338%	9%
Cambodia	229%	218%	250%	9%
France	179%	193%	197%	10%
Slovenia	390%	529%	432%	11%
Switzerland	273%	256%	302%	11%
Indonesia	303%	366%	342%	13%
Turkey	328%	409%	383%	17%
Sweden	248%	249%	307%	24%
Chile	365%		455%	25%
Netherlands	187%	211%	237%	27%
Norway	260%	297%	368%	41%
Hungary	332%	551%	486%	46%
Czech Republic	330%	380%	528%	60%
Finland	298%	311%	478%	60%
Slovak Republic	398%	494%	767%	93%

Source: Lao PDR Trade Cost Database [modified from ESCAP Trade Cost Database]

IV. Reducing Comprehensive Trade Costs: Other Indicators of Lao PDR Performance and Implications

NT-CTC is a highly aggregated measure of trade costs – and trade facilitation performance. Beyond recommending the development of a holistic trade facilitation programme and focusing trade facilitation efforts on countries with which Lao PDR has particularly high bilateral trade costs (NT-CTC), specific policy implications cannot be derived from simply looking at overall comprehensive trade costs.

Comprehensive trade costs can be conceived as made of a tariff trade costs component, a natural trade costs component, and a non-tariff policy-related component (see Figure 2). In Asia and the Pacific, the tariff trade cost component typically accounts only for a small share of total trade costs as extensive trade liberalization has taken place in most economies in the region, including through bilateral and regional agreements (e.g., ASEAN Trade in Goods Agreement for Lao PDR). The natural trade cost component relates to the cost associated with differences in language, culture, geographical distance, and landlockedness, all of which add to costs but cannot be easily affected through policy. Natural trade costs are often significant, particularly for landlocked countries.

Figure 2. Contribution of Various Policy-Related Factors on Changes in Trade Costs
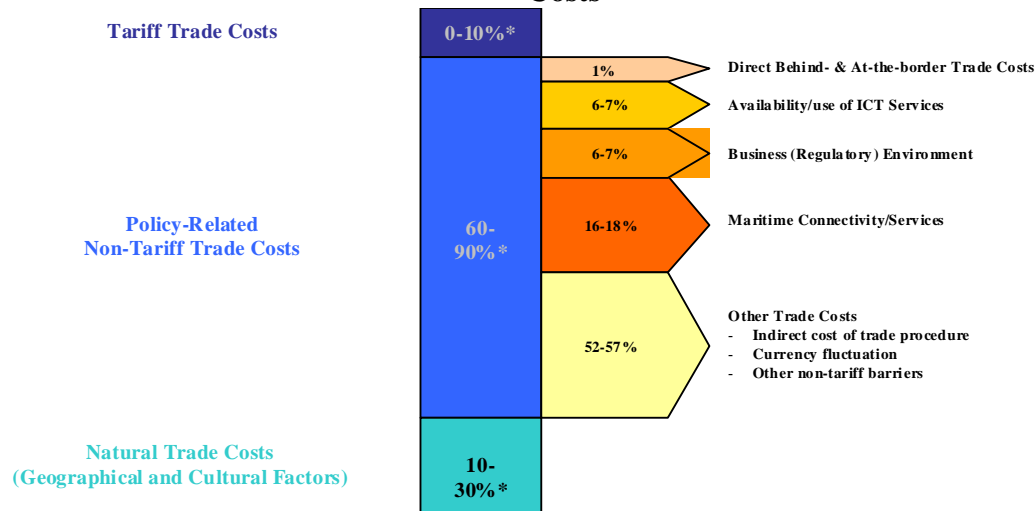
*illustrative based on casual observation of the data only. Natural trade costs for landlocked countries may be outside the range shown for natural trade costs.
Source: Duval and Utoktham (2011)

The third trade cost component, and typically the largest (representing over 60% of comprehensive trade costs on average in Asia and the Pacific), is of most interest as it can be reduced through policy action (see Figure 2). The regional analysis conducted at ESCAP indeed finds that, on average, the following policy factors/areas are most

important in reducing trade costs, in this order: a) maritime connectivity/services and related logistics performance; b) the domestic business (regulatory) environment; c) the availability and use of information and communication technology (ICT) services; and d) direct behind- and at-the-border trade costs. The analysis also suggests that over half of the comprehensive trade costs variations across countries are affected by other factors although the importance of these other factors cannot be separated out. The performance of Lao PDR in relation to each of the above areas is discussed below.

a) Maritime Connectivity/Services

As more than 80% of goods traded are transported by sea, maritime services and seaport infrastructure and connectivity play a crucial role in determining the cost of international trade. As Lao PDR is a landlocked country and has no seaport, it depends on the port infrastructure of neighboring countries, in particular Thailand but also Viet Nam - and even possibly China, as well as Myanmar in the future.[8] Based on the *Liner Shipping Connectivity Index (LSCI),* which provides a comprehensive view of the maritime services and infrastructure available,[9] China has the highest port connectivity in the world, well ahead of countries such as Japan and North America (see Figure 3). Thailand, the country through which most of Lao PDR imports and exports transit, also has adequate Liner Shipping Connectivity.[10]

In the context of Lao PDR, the key issue is therefore one of effective transit arrangements with neighboring countries, complemented by the availability of logistics services that can efficiently move goods from Lao PDR to the seaport in Thailand and Viet Nam. However, the *Logistics Performance Index (LPI)* scores of Lao PDR in all five areas covered by the LPI[11] remain very low, in particular in terms of ease of arranging international shipments and timeliness of delivery of these shipments (see Figure 4). This suggests much need for policies aimed at logistics service sector development in Lao PDR.

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[8] Air freight services play an increasingly important role in international trade. However, as 80% of goods traded still take place using sea vessels, the LSCI index is thought to adequately capture the international logistics services efficiency dimension of trade costs.
[9] The LSCI is composed of the following five quantitative indicators: (a) number of ships providing services to and from a country, (b) combined TEU (20-foot equivalent unit: standard size container) carrying capacity of these ships, (c) number of services provided, (d) number of liner companies providing these services, and (e) maximum vessel size available in a country.
[10] Viet Nam has made huge progress in port connectivity in the past 3 years according to the LSCI, whereas Cambodia still has very poor liner shipping connectivity.
[11] The LPI is an overall measure of logistics quality and performance, which is composed of (a) customs: efficiency of clearance process; (b) infrastructure: quality of trade- and transport-related infrastructure (ports, railroads, roads, information technology); (c) international shipments: ease of arranging competitively priced shipments; (d) logistics competence: competence and quality of logistics services (transport operators, customs brokers); (e) tracking and tracing: ability to track and trace consignments and; (f) timeliness: frequency with which shipments reach the consignee within the scheduled or expected delivery time. Each indicator is represented by a score from 1 (lowest quality) to 5 (highest quality). For more details, please visit http://lpisurvey.worldbank.org/ .

Figure 3. Liner Shipping Connectivity Index (LSCI), 2011

Index (maximum value in 2004 = 100)
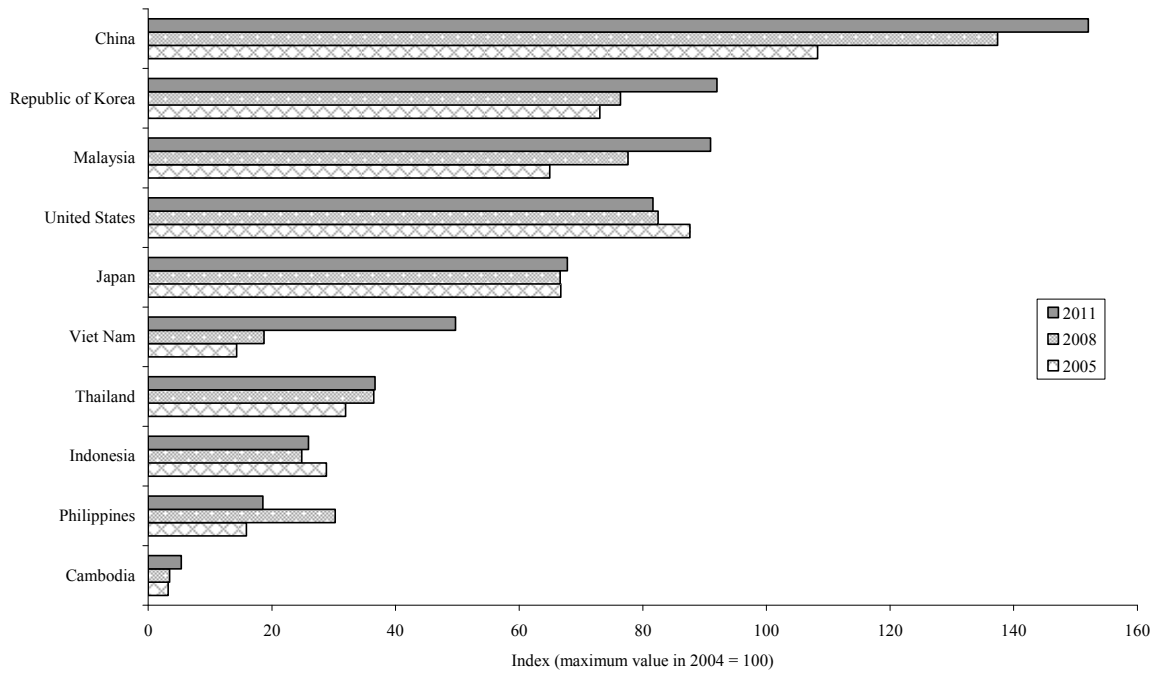
Source: ESCAP, based on UNCTAD LSCI, World Development Indicators, World Bank

Figure 4. Logistics Performance Index (LPI), 2011
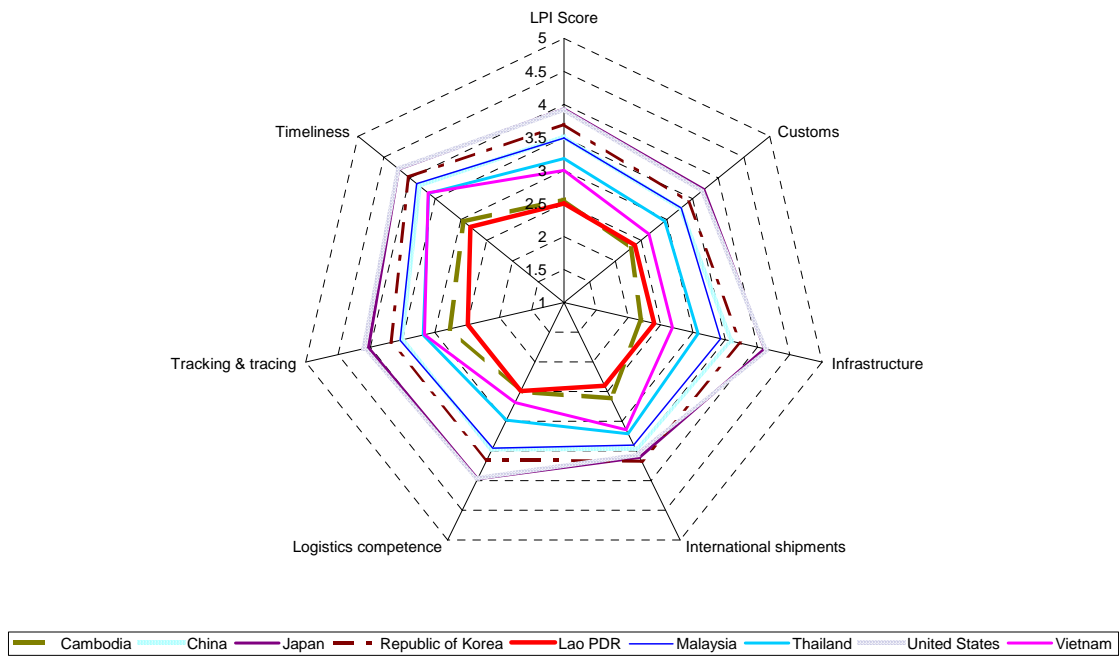
Source: Connecting to Compete 2012: Trade Logistics in the Global Economy, the World Bank

b) Business (Regulatory) Environment

While logistics efficiency plays an important role in trade facilitation, an increasing number of studies have shown that the quality and transparency of the business environment in importing and exporting countries significantly affect trade flows.[12] An inefficient domestic regulatory environment can indeed be expected to increase international trade costs given those international transactions almost systematically involve additional and often more complex interactions with regulators and service providers, as compared to domestic transactions. In this context, Figure 5 shows the Ease of Doing Business (EDB) ranking of Lao PDR and other selected economies. While Thailand is found to have a performance and an EDB rank on par with that of Malaysia and Japan, Lao PDR – along with Cambodia – ranks in the bottom tier of the World ranking, indicating a very poorly conducive business regulatory environment.

In an effort to distinguish essential dimensions of the business environment thought to affect overall trade costs, we also show country rankings for three underlying indicators of the EDB covering key areas of business regulations - credit, investment, and rule of law.[13] In terms of investor protection, Lao PDR and Viet Nam rank significantly lower than others in South-East Asia. In terms of getting credit, Lao PDR Indonesia and Philippines perform poorly. In terms of contract enforcement, which arguably is an indicator for general rule of law, Lao PDR performs poorly but better than Indonesia and Cambodia. Overall, much improvement in the domestic business environment is likely to be needed for Lao PDR to make progress in reducing its comprehensive trade costs.

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[12] See Duval and Utoktham (2010) for a review.
[13] These three indicators also have the particularity of being least correlated with each other, among all other underlying indicators of the EDB, making it feasible to include all of them as explanatory variable of trade costs in the empirical analysis that follows. The choice and nature of these indicators are discussed in details in Duval and Utoktham (2010).

Figure 5. Ease of Doing Business (EDB), Investor Protection, Credit Information and Contract Enforcement: 2011 Ranking
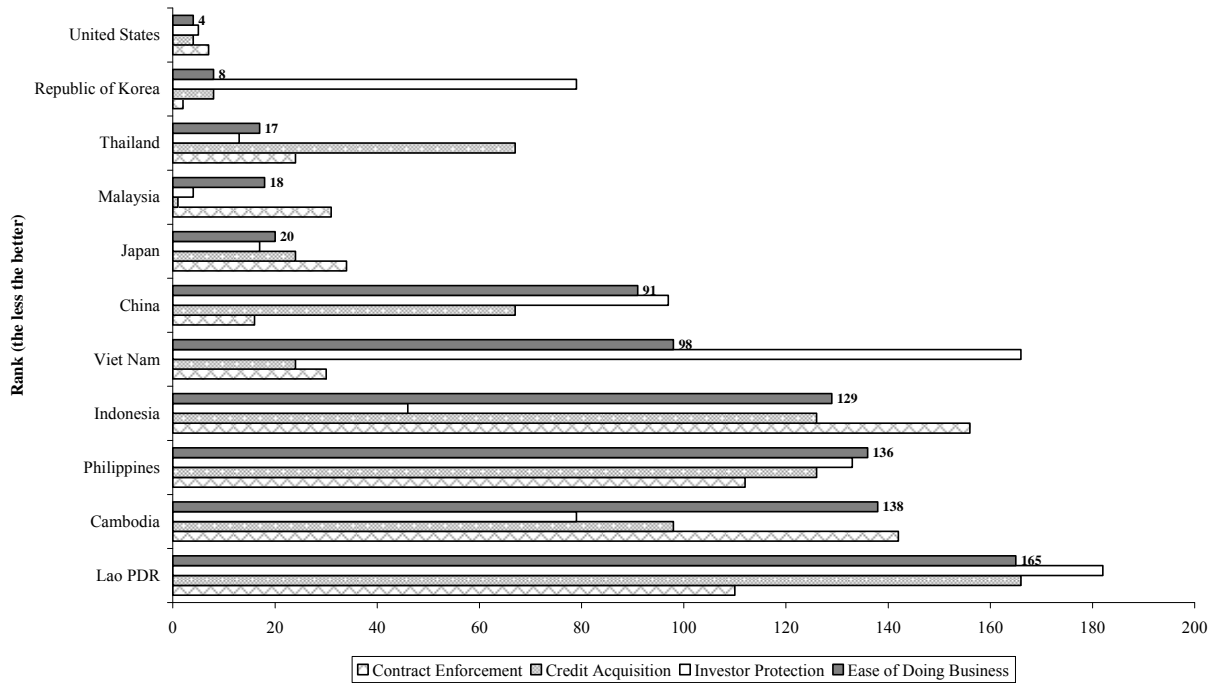

Source: ESCAP, based on data from the Doing Business Report 2012, World Bank

c) Availability/Use of ICT Services

Availability and affordability of information and communication technology (ICT) services (see Figure 6) can be expected to facilitate trade and the overall cost of trade, particularly since ICT use can greatly facilitate and reduce the cost of exchanging the often complex and sizeable volume of information, data and documents associated with an international trade transaction.

While Viet Nam, Philippines and Thailand are found to have achieved similar level of ICT usage, with approximately a quarter of the population using the Internet, ICT usage in Lao PDR remains low. Policy measures aimed at encouraging and facilitating access to ICT services are most likely needed to reduce trade costs in Lao PDR – as well as to ensure access and use of the future national electronic single window facility by the trading community at large.

Figure 6. Information and Communication Technology Usage in India and Mekong Countries (Internet users per 100 people; 2005 and 2010)
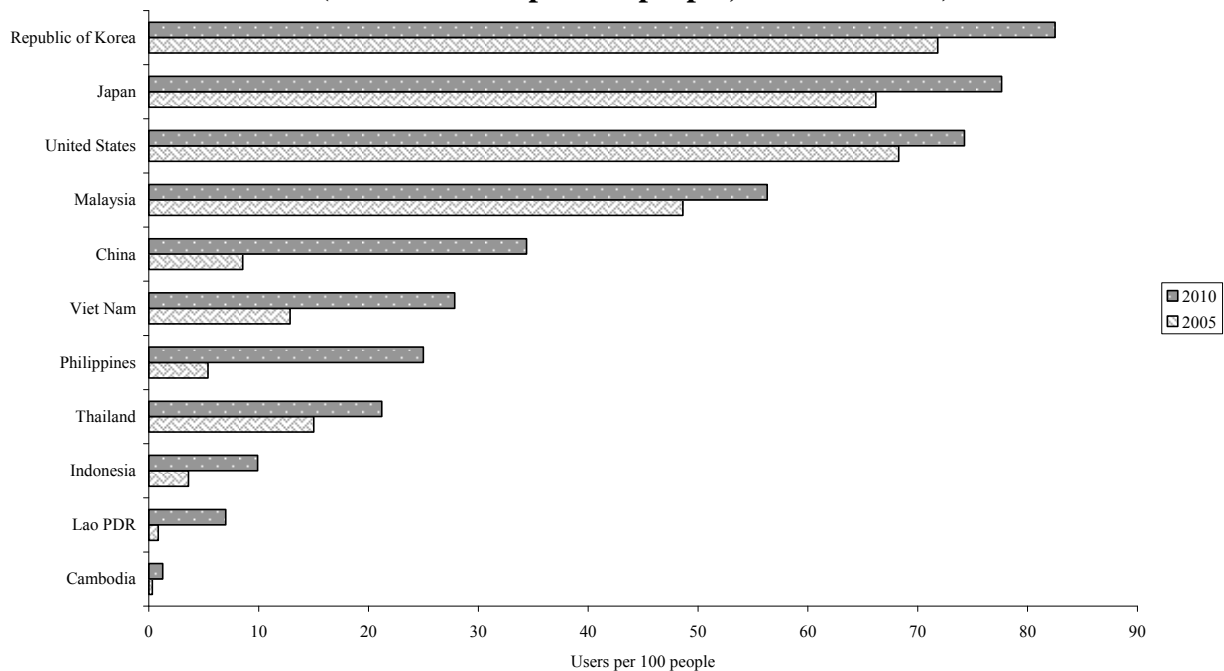
Source: Authors based on World Development Indicators (DataBank), World Bank

d) Direct Behind- and at-the-Border Trade Costs

Direct behind- and at-the-border trade costs for international traded goods are one of the significant determinants of international trade costs, although it is found to explain only about 1% of the variations in trade costs across Asia-Pacific countries. Data from *Trading Across Border* indicators reported in the annual Doing Business Reports include estimates of import and export cost, where export cost are defined roughly as the direct cost involved in completing all regulatory and logistics procedures necessary to prepare documentation and physically move a 20-foot container of goods from a factory near the capital city to the deck of a ship at the nearest seaport.

Lao PDR faces the highest export and import cost of all countries in Table 3, with costs two to three times higher than those in other ASEAN countries. This situation is partly explained by the fact that the goods have to transit through another country's territory before reaching the nearest seaport. Policies aimed at streamlining document preparation for trade and transit, as well as reducing the cost of transportation and handling of goods from Lao PDR to the main sea ports would be key in reducing direct costs, but would also likely reduce the – possibly much higher - indirect costs associated with the cumbersome regulatory and logistics procedures in place (see next section).

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Table 3. Ease of Doing Business: Trading across Border

Economy	Cost to export (US$ per container)		Cost to import (US$ per container)	
	2008	**2011**	**2008**	**2011**
Cambodia	732	732	872	872
Lao PDR	1860	1880	2040	2035
Vietnam	533	580	606	670
Indonesia	644	644	660	660
Malaysia	450	450	450	435
Philippines	771	630	819	730
Thailand	625	625	795	750
China	460	500	545	545
Japan	859	880	957	970
Republic of Korea	767	680	747	695
United States	990	1050	1245	1315

Source: Ease of Doing Business Report 2009 and 2012[14], World Bank.

e) Other Trade Costs

As mentioned above, while taking measures and implementing policies to address the above 4 issues would be important, effectively facilitating trade and reducing trade costs involve tackling other less obvious and indirect trade costs, such as opportunity costs associated with the time it takes to complete trade documentation or to engage in other regulatory – or business to business – procedures. In fact, these costs (embedded in the measure of comprehensive trade costs) can be so high that they can discourage businesses to actually engage in trade altogether.

The World Bank Doing Business Report provides some cross-country data on import and export time, as well as the number of documents for import and export. These indicators suggest that import and export time fell by slightly over 10% in Lao PDR since 2008, while the number of regulatory documents remained unchanged. Overall, Lao PDR appears to have a lot of room to streamline import and export processes, as it still takes more documents and at least twice the amount of time to import and export from or to Lao PDR than it does in most of its neighboring countries. More detailed analysis is required, however, to obtain a more accurate picture of the time and cost of import and export in that country and to identify bottlenecks.

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[14] Ease of Doing Business Report 2009 and 2012 contains data collected in 2008 and 2011, respectively.

Table 4. Time to Export and Import Goods

Economy	Time to export (days)		Time to import (days)		Documents to export (number)		Documents to import (number)	
	2008	2011	2008	2011	2008	2011	2008	2011
Cambodia	22	22	29	26	10	9	11	10
Lao PDR	50	44	50	46	9	9	10	10
Vietnam	24	22	23	21	6	6	8	8
Indonesia	18	17	27	27	4	4	7	7
Malaysia	17	17	14	14	6	6	7	7
Philippines	16	15	16	14	7	7	8	8
Thailand	14	14	13	13	5	5	5	5
China	21	21	24	24	8	8	6	5
Japan	10	10	11	11	3	3	5	5
Republic of Korea	8	7	8	7	4	3	6	3
United States	6	6	5	5	4	4	5	5

Source: Ease of Doing Business Report 2009 and 2012[15], World Bank.

Overall, the regional analysis conducted by ESCAP strongly suggested that improving access to efficient maritime and logistics services as well as to ICT facilities were essential to making progress. For landlocked Lao PDR, close cooperation with transit neighbors will remain essential in improving access to maritime services and bringing its trade costs to more competitive levels. Policies aimed at liberalizing logistics and information technology services and increasing competition among service providers should be readily considered, with a view to maximizing efficiency at any given level of hard infrastructure development. Establishment of public-private partnerships to accelerate the development of the national information technology and the transport and logistics infrastructure may also be actively pursued. Improvement in the overall domestic business environment, including to facilitate access to credit and to enhance investor protection, is expected to be important in cutting trade costs.

V. Conclusion and Way Forward

This report explored the trade facilitation performance of Lao PDR with its trading partners, using a modified measure of bilateral comprehensive trade costs, complemented by a review of a selection of other more specific trade facilitation-related indicators.

The trade costs between Lao PDR and its trading partners remain very high- On average, more than double than those of Thailand and Viet Nam and about 20% more than those of Cambodia. However, the fact that Lao PDR substantially reduced its trade costs with some of its main trade partners between 2000 and 2010 - including China, Japan and Republic of Korea, Thailand, but also the United States of America - is encouraging.

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[15] Ease of Doing Business Report 2009 and 2012 contains data collected in 2008 and 2011, respectively.

Inland connectivity to nearest foreign sea ports is one of the keys to reducing trade costs of Lao PDR with the world. This involves not only addressing pending infrastructure issues, but ensuring that traders in Lao PDR have access to competitive logistics and transport services; and that procedures involved in obtaining relevant trade documents and in moving goods in transit –within Lao territory as well as its transit neighboring countries' territory – are further streamlined. More generally, development of modern and affordable ICT services and improving the overall domestic business environment may be considered, as these could ultimately be more effective in reducing comprehensive trade costs than implementing soft measures solely targeted at speeding up movement of goods between factory and the port (or vice-versa).

It is worth noting that, in many countries, the above policy recommendations cannot be implemented directly – or solely – by the Ministry in charge of trade (or trade facilitation), as the issues are often under the purview of another agency or ministry. Identifying which agencies or ministries are in charge and engaging them appropriately – possibly through the National Trade and Transport Facilitation Committee or similar institutional structure – will then be key to reducing comprehensive trade costs.

As a way forward, it is recommended that Lao PDR conducts business process analyses (BPA) of import and export procedures - at the product level and starting with a small number of key strategic products – on a regular basis. The UNNExT BPA Guide may be used to conduct such analyses (see Annex 2 for examples of BPA outputs). Once baseline BPA studies are available, updating them on an annual basis would be recommended as a way to document and verify if concrete progress is being made in facilitating trade.

Bibliography

Anderson, J. E., and, van Wincoop, E. (2004), *"Trade Costs"*, NBER Working Paper No. 10480.

Chen, N., and Novy, D. (2009), "*International Trade Integration: A Disaggregated Approach"*, CEP Discussion Paper No. 908, January 2009, Center for Economic Performance, London School of Economic and Political Science.

Duval, Yann, and Utoktham, C. (2010), *"Intraregional Trade Cost in Asia: A Primer"*, Trade and Investment Division, ESCAP Staff Working Paper 01/10.

Duval, Yann, and Utoktham, C. (2011), *"Updated and New Sectoral Trade Cost Estimates in Asia and the Pacific"*, Trade and Investment Division, ESCAP Staff Working Paper, No. 05/2011

United Nations Economic and Social Commission for Asia and the Pacific (2011), *"Trade Facilitation in Asia and the Pacific: An Analysis of Import and Export Processes"*, Studies in Trade and Investment 71, Bangkok: UN ESCAP

United Nations Economic and Social Commission for Asia and the Pacific (2012), *"Growing Together: Economic Integration for an Inclusive and Sustainable Asia-Pacific Century"*, Bangkok: UN ESCAP

Annex I: Explanatory Note for Users

This explanatory note may be used in conjunction with the Lao PDR Trade Cost Dataset provided in a separated Microsoft Excel file. The purpose of this note is to a) facilitate the use of the database by both trade facilitation and logistics researchers and practitioners and; b) present the detailed information on data methodology. The note is divided into 2 parts, which are I.) Comprehensive trade cost: definition and basic data interpretation and transformation and; II.) Underlying methodology and data sources for trade cost calculation

I. Comprehensive Trade Cost: Definition and Basic Data Interpretation and Transformation

Definition

There have been many attempts to develop trade costs measures. Much effort has focused on direct measurement of various trade cost components, such as international transport costs (using actual shipping costs of a standard container to various destinations or more aggregate CIF/FOB trade data), or costs of moving goods from the factory to the deck of a ship at the nearest sea port (including, e.g., cost of preparing trade documentation, customs clearance, goods transport and handling to the port). However, these approaches do not provide a comprehensive measure of international trade costs - and combining the different measures and indicators into a comprehensive measure is hardly feasible.

The bilateral measure of trade costs featured in this database is truly comprehensive in the sense that it includes *all costs involved in trading goods internationally with another partner (i.e. bilaterally) relative to those involved in trading goods domestically (i.e., intranationally)*. It captures trade costs in its wider sense, including not only international transport costs and tariffs but also other trade cost components discussed in Anderson and van Wincoop (2004), such as direct and indirect costs associated with differences in languages, currencies as well as cumbersome import or export procedures.

Following Chen and Novy (2009), bilateral comprehensive trade cost (CTC) is defined as follows:

$$\tau_{ijt} \equiv \left(\frac{t_{ijt}t_{jit}}{t_{iit}t_{jjt}} \right)^{\frac{1}{2}} = \left(\frac{x_{iit}x_{jjt}}{x_{ijt}x_{jit}} \right)^{\frac{1}{2(\sigma-1)}} \qquad ; \text{at time } t \qquad \textbf{(1)}[16]$$

where τ_{ij} denotes geometric average trade costs between country i and country j
t_{ij} denotes international trade costs from country i to country j
        t_{ji} denotes international trade costs from country j to country i
        t_{ii} denotes intranational trade costs of country i
        t_{jj} denotes intranational trade costs of country j
        x_{ij} denotes international trade flows from country i to country j
        x_{ji} denotes international trade flows from country j to country i
x_{ii} denotes intranational trade of country i
x_{jj} denotes intranational trade of country j
           σ denotes elasticity of substitution between goods which is set at 8

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[16] Trade costs may be expressed in tariff-equivalent form, defined as $TET_{ijt} = \tau_{ijt} - 1$. For simplicity, the study drops time t subscript.

Bilateral CTC, as defined above, is a measure of costs associated with both importing and exporting goods between two countries i and j.[17] Raw values of τ_{ij} can be used as a trade cost indicator, e.g., to find out which are the lowest trade cost partners of a given country.

Interpretation of Comprehensive Trade Costs ("ctc") in the Database

Example on interpretation of ctc is illustrated in Table 1. From the database, ctc for Lao PDR–Thailand's in 2009 is 1.6539. This suggests that the cost of trading goods between Lao PDR and Thailand is around 1.65 times higher on average than the cost of either country trading those goods domestically. ctc for Lao PDR–Japan in 2009 is 3.1099. This then shows that, on average, it is significantly cheaper for Lao PDR to trade with Thailand than with Japan.

Figure 7. Screen Shot 1: CTC of Lao PDR–Thailand in 2009

Figure 8. Screen Shot 2: CTC of Lao PDR–Japan in 2009

Interpretation of bilateral tariff costs (ga_tariff_ijji) and comprehensive trade costs excluding tariff (NT-CTC: ntctc_sa)

Trade cost indicator could also be derived in terms of comprehensive cost excluding tariff (NT-CTC or ntctc_sa in the database), which is used for analysis on trade facilitation performance. Following Anderson and van Wincoop (2004), NT-CTC encompasses *all additional costs other than tariff costs involved in*

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[17] Unlike in Anderson and van Wincoop (2004), the derivation does not assume symmetric trade costs for both directions.

trading goods bilaterally rather than domestically. Bilateral tariff data that is used to calculate NT-CTC are from the UNCTAD TRAINS database. The calculation involves a) bilateral tariff costs and b) NT-CTC are as follows.

a)   Calculation of bilateral tariff costs (ga_tariff_ijji)
Since comprehensive trade cost is bi-directional in nature (i.e., include trade costs to and from a pair of countries), the bilateral tariff costs indicator included in the database is also bi-directional and is a measure (geometric average) of the tariffs imposed by the two partner countries on each others imports.

The bilateral tariff cost indicator is referred to as "ga_tariff_ijji" in the database and defined as follows:

$$ga\_tariff\_ijji = \sqrt{(1 + tariff_{ij})(1 + tariff_{ji})} \qquad (2)$$

where   ga_tariff_ijji   geometric average of $tariff_{ij}$ and $tariff_{ji}$
$tariff_{ij}$ simple average effective import tariff imposed by country *i* on country *j*
$tariff_{ji}$ simple average effective import tariff imposed by country *j* on country *i*.

EXAMPLE: Import tariff in 2009 of Lao PDR on Thailand's traded goods is 9.45%, while import tariff of Thailand on Lao PDR's traded goods is 14.56%. Thus, the value of "ga_tariff_ijji" of Lao PDR–Thailand is $\sqrt{(1 + 0.0945)(1 + 0.1456)}$ = 1.119758.[18] Expressed in ad valorem equivalent form, the geometric average of tariffs imposed by Thailand and China on each other is (1.119758-1) = 11.98%.

b)   Calculation of Comprehensive Trade Costs Excluding Tariff Indicator (NT-CTC)
Following Anderson and van Wincoop (2004), ntctc_sa, which encompasses *all additional costs other than tariff costs involved in trading goods bilaterally rather than domestically,* are also calculated as

$$ntctc\_sa = \frac{ctc}{ga\_tariff\_ijji} \qquad (3)$$

EXAMPLE: Trade cost indicator value ("ctc") for traded goods between Lao PDR–Thailand in 2009 is 1.6539 (ad valorem equivalent: 65.39%). In turn, the bilateral tariff costs ("ga_tariff_ijji") is 1.119758 (ad valorem equivalent: 11.98%). As a result the *ntctc_sa* is 1.6539/1.119758 = 1.4770. The ad-valorem equivalent ctc is (1.4770-1) = 47.70%.

As trade facilitation related costs are generally understood to exclude tariff, use of NT-CTC when the focus is specifically on trade facilitation and logistics matters is most appropriate. It is worth emphasizing that this is an average tariff-equivalent for all traded goods, some of which may not be traded (or very little) in practice due to prohibitively high trade costs.

Data Transformation to Ad-Valorem Equivalent Comprehensive Trade Cost

In addition, the bilateral CTC measure, which is derived from a theory-consistent gravity model, is possible to derive "ad valorem equivalent" simply by subtracting one (1) to the indicator values. Example is illustrated in Figure 7. Lao PDR–Thailand's ctc in 2009 is (1.65-1)*100 = 65%. In words, the data suggests that, on average, trading goods between Lao PDR and Thailand involves, on average for all tradable goods, additional costs (excluding tariff) amounting to approximately 65% of the value of goods - as compared to when the two countries trade these goods within their borders. Using the same approach, the cost of trading goods between Lao PDR and Japan in 2009 is found to be (3.11-1)*100 = 211% (Figure 8), suggesting that traded goods between Lao PDR and Japan are subject to an ad valorem (tariff) equivalent trade cost of 225% more ((211-65)/65) compared to traded goods between Lao PDR and Thailand.

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[18] $tariff_{ij}$ and $tariff_{ji}$ is available upon request.

All other trade cost values (variable: ga_tariff_ijji and ntctc_sa) can be turned into tariff-equivalent (ad-valorem) trade costs using this approach ((variable-1)*100).

Technical note: When running a log-linear regression with trade cost data, since the data should be greater than 1 to ensure that log value is not zero or negative, it is best to use "ctc" in its original trade cost indicator form.

IMPORTANT NOTE: the <u>absolute</u> value of the trade cost indicators, including in ad valorem form, can vary greatly depending on underlying assumptions regarding the value of the elasticity of substitution σ.[19] Therefore, "ctc" related data should preferably be used for comparative exercises (e.g. Lao PDR–Thailand versus Lao PDR–Japan) or to analyze changes in trade costs over time or for technical analysis (such as in an econometric model of trade or trade cost). Stand-alone interpretation of single pair data (e.g., ctc of Lao PDR–Thailand is 65%) and comparisons of the absolute values of ad valorem trade cost estimates from different databases or sources should be avoided.

II. Underlying Methodology and Data Sources for Trade Cost Calculation

The database covers 54 countries and features aggregate bilateral costs of trade in goods from 1995 to 2010. The list of countries is shown in Table 5.

Table 5. Database current country coverage

East Asia (3)	South-east Asia (7)	Europe (24)		Latin America (4)
China	Cambodia	Austria	Moldova	Argentina
Japan	**Indonesia**	**Bulgaria**	**Netherlands**	**Brazil**
Korea (Rep. of)	Lao, PDR	Cyprus	Norway	Chile
Central Asia (2)	Malaysia	Czech Republic	Poland	Peru
Azerbaijan	Philippines	Denmark	Portugal	**Africa (7)**
Russian Federation	Thailand	Germany	Slovak Republic	Egypt
North America (2)	Vietnam	Estonia	Slovenia	Malta
Canada		Finland	Spain	Morocco
United States of America	**South Asia (3)**	France	Sweden	Senegal
Pacific (2)	Bangladesh	Greece	Switzerland	South Africa
Australia	India	Hungary	Turkey	Togo
New Zealand	Pakistan	Italy	United Kingdom	Tunisia

Based on the general definition of bilateral comprehensive trade costs provided earlier, the basic data needed includes

- A. Bilateral international trade flows & total exports of each country
- B. Gross output of each country
- C. Exchange rate
- D. Elasticity of substitution
- E. Miscellaneous Issue for Bilateral Tariff

Details of how this data was obtained or approximated – when not directly available – are provided below.

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[19] Based on a review of the literature, elasticity of substitution is set to 8 in the database. See Staff Working Paper 5/2011 for details.

A. Bilateral international trade flows & total exports of each country

Bilateral exports as well as total exports are downloaded from IMF – Direction of Trade Statistics (IMF–DOTS) on **May 2012**. All the data is in US Dollar.

B. Gross output of each country

Gross output (GO) and value added (VA) is obtained from National Accounts Official Country Data (UN Database), available at: http://data.un.org (downloaded in May 2012) and World Development Indicator DataBank (WDI DataBank), available at http://data.worldbank.org (downloaded in May 2012) respectively. The data from WDI DataBank is in US Dollar already so no further conversion is needed; however, the UN database is in local currency so the study uses DEC conversion factor from World Development Indicator DataBank to convert data into US Dollar.[20]

The most updated data (which is labeled under the combination of Systems of National Accounts (SNA) and series codes[21]) are retrieved. The following ISIC rev. 3 sectors are downloaded to construct aggregated traded good sector[22]: A+B (Agriculture, hunting and forestry; Fishing); C (Mining and quarrying); D (Manufacturing); E (Electricity and water supply) and; F (Construction). Since GO is not available for most developing economies, however, missing GO data is approximated based on VA data – available for most countries. Table 6 shows the list of 118 countries whose gross output is available for further estimation.

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[20] This is also reconciled to the methodology when the World Bank converts external data in local currency to US Dollar.
[21] Introduction part of National Accounts Statistics: Main Aggregates and Detailed Tables provide more details on SNA and series code.
[22] Total sector in the data source includes service sector, which is not included in trade flows.

Table 6. GO Database current country coverage

East Asia, South-east Asia & Pacific (9)	Europe & Central Asia (39)				North America (3)
Cook Islands	Albania	Denmark	Kazakhstan	Portugal	The Bermudas
Hong Kong, China	Armenia	Estonia	Kyrgyz Republic	Romania	Canada
Japan	Austria	Finland	Latvia	Russian Federation	United States of America
Korea (Rep. of)	Azerbaijan	France	Lithuania	Slovak Republic	**South Asia (4)**
Macao, China	Belgium	Faeroe Islands	Luxembourg	Slovenia	Bangladesh
Mongolia	Bulgaria	Germany	Macedonia	Spain	Bhutan
New Caledonia	Bosnia and Herzegovina	Greece	Moldova	Sweden	India
New Zealand	Belarus	Hungary	Netherlands	Switzerland	Sri Lanka
Philippines	Croatia	Iceland	Norway	Ukraine	
	Cyprus	Italy	Poland	United Kingdom	
	Czech Republic				

Latin America & Caribbean (26)		Middle East & North Africa (17)		Sub-Saharan Africa (20)	
Argentina	Guatemala	Algeria	Malta	Benin	Mauritius
Aruba	Honduras	Bahrain	Occupied Palestinian Territory	Botswana	Mozambique
Bahamas, The	Jamaica	Egypt	Oman	Burkina Faso	Namibia
Belize	Mexico	Iran	Qatar	Burundi	Niger
Bolivia	Netherlands Antilles	Israel	Syrian Arab Republic	Cameroon	Nigeria
Brazil	Nicaragua	Jordan	Tunisia	Côte d'Ivoire	Senegal
Chile	Panama	Kuwait	United Arab Emirates	Ghana	Seychelles
Colombia	Paraguay	Lebanon	Yemen	Kenya	Sierra Leone
Costa Rica	Peru	Morocco		Lesotho	South Africa
Cuba	St. Vincent and the Grenadines			Mauritania	Sudan
Dominican Republic	Trinidad and Tobago				
Ecuador	Uruguay				
El Salvador	Venezuela				

The method involves OLS estimation of a simple ad-hoc gross output model using a cross-sectional dataset of countries for which both GO and VA data is available, specified as follows:

$$\ln(GO_{ikt}) = \beta_1 \ln(VA_{ikt}) + \beta_2 yr\_dum + \beta_3 inc\_dum \qquad \textbf{(2)}$$

where GO_{ikt} is gross output of country i, sector k at time t
VA_{ikt} is gross value added of country i, sector k at time t
yr_dum   is year dummy
inc_dum   is income group dummy

The estimated equation is then used to estimate GO_{ikt}^{hat} in countries for which GO data it is not available.

The model applies logarithm of gross output (current US Dollar) is estimated as the function of logarithm of value-added (current US Dollar), year fixed effect (1995-2010; 1995 is omitted), and income group (high income, low income, lower middle income and upper middle income; high income is omitted).

Income group is based on the definition of 2010 GNI per capita from WDI DataBank where low income is defined at $1,005 or less; lower middle income is $1,006-$3,975; upper middle income is $3,976-$12,275 and; high income is $12,276 and more. However, the modification the study has made is that GNI per capita is also downloaded and corresponding income group is assigned for each year. So, the income group may change when GNI per capita has moved to a different income bracket.

C. Exchange Rate: DEC Conversion Factor

Since gross output and gross value added data from the UN Database are typically available in local currency term, we use DEC conversion factor from WDI DataBank to convert to USD for the period 1995-2010. GO and VA data in the latest currency of each country is used; however, the data in previous currency is used if data in the latest currency is not available. Previous legal tender is converted to latest currency by using metadata note from DEC conversion factor and International Financial Statistics (IFS): Country Notes.[23]

D. Elasticity of Substitution

We follow Anderson and Van Wincoop (2004), who propose to set elasticity of substitution to 8 for aggregate level analysis.

## E. Miscellaneous Issue for Bilateral Tariff

Bilateral simple average tariffs are downloaded from TRAINS using the **World Integrated Trade Solution (WITS)** on **January 2012** with year adjustment option of "replace NA with a year that has data: choose from earlier years only". Treatments are applied to the downloaded tariff data in the case of European Union (EU)'s Tariff Data; when trade year and tariff year do not match; and when tariff data is missing.[24]

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[23] As DEC conversion factor is the World Bank's data adjustment of official exchange rate of IFS (from International Monetary Fund), the country note from IFS is useful when more details on exchange rate data is needed. For more information, pleae see: http://data.worldbank.org/about/faq/specific-data-series

[24] For details, see Duval and Uthoktham (2011), Annex 3. Available at: http://www.unescap.org/tid/publication/swp511.pdf

Annex II: Examples of Business Process Analysis Outputs

Figure 9. Unified Modeling Language (UML) Case Diagram of the Export of fabric from India to Bangladesh
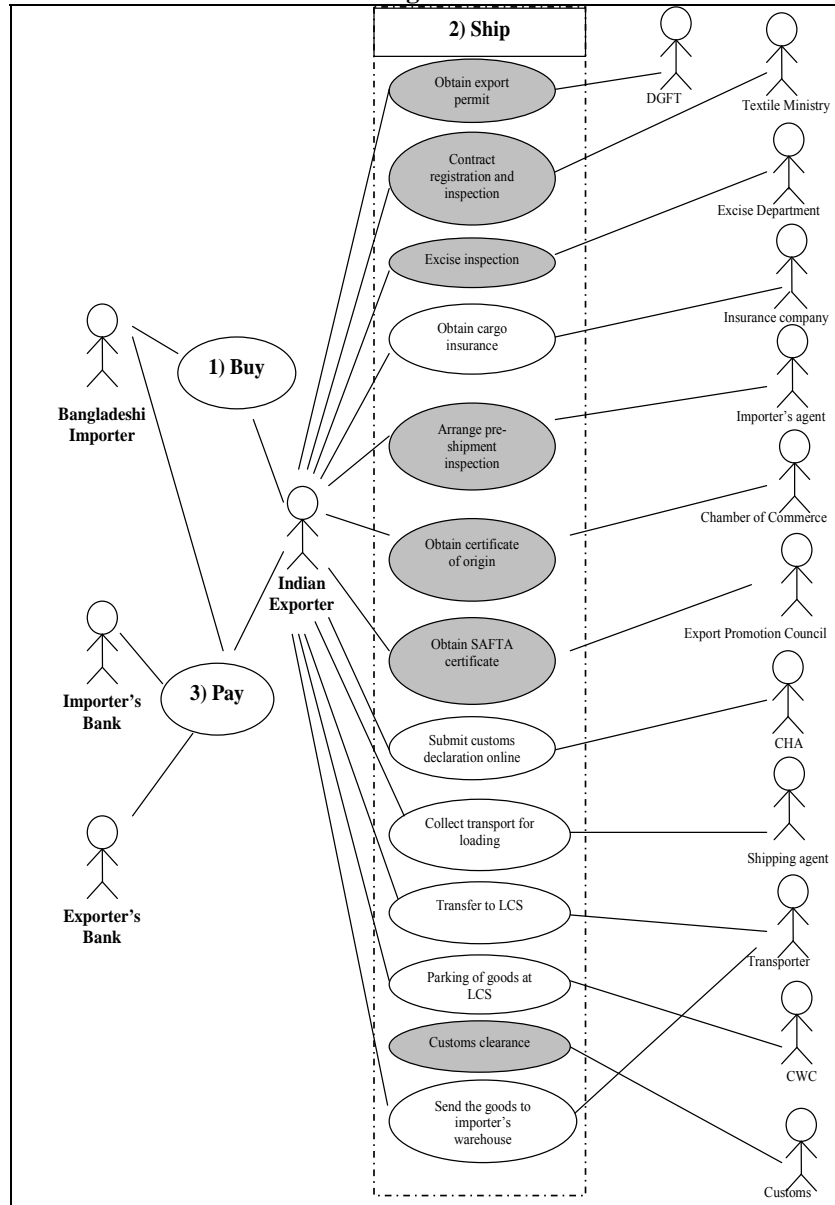
Source: Trade Facilitation in Asia and the Pacific: An Analysis of Import and Export Processes, Studies in Trade and Investment 71, ESCAP

Figure 10. Time Procedure Chart of Trade in electronic devices from China to Thailand
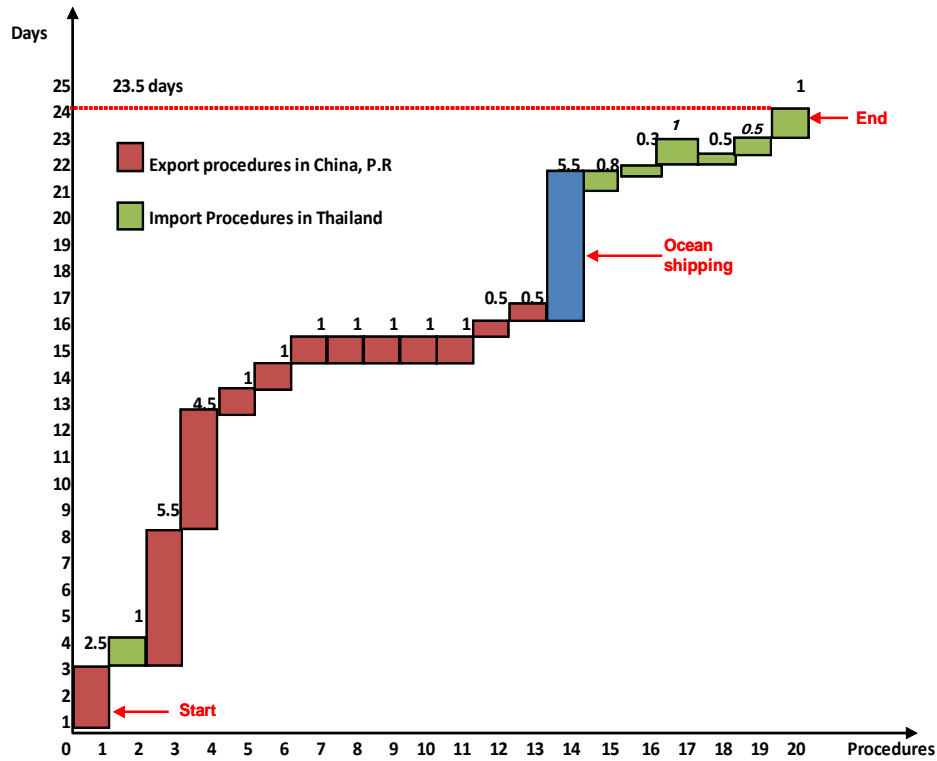
Sr. No	Process	Days	Sr. No.	Process	Days
1	Buy	2.50	12	Obtain cargo insurance	0.50
2	Obtain permission for raw materials release	1.00	13	Prepare documents for payment	0.50
3	Obtain export permit	5.50	14	Ocean shipping	5.50
4	Arrange transport	4.50	15	Request for vessel berthing	0.75
5	Arrange inspection	1.00	16	Unload goods from vessel	0.25
6	Prepare customs declaration	1.00	17	Declare goods to Customs	1.00
7	Collect empty containers from yard	1.00	18	Arrange goods for inspection	0.50
8	Stuff a container	1.00	19	Inspect and release goods	0.50
9	Transfer to port of departure	1.00	20	Pay	1.00
10	Clear goods through customs	1.00		Total	23.50
11	Handle containers and stow on vessel	1.00			

Source: Trade Facilitation in Asia and the Pacific: An Analysis of Import and Export Processes, Studies in Trade and Investment 71, ESCAP