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Usable Data for Economic Policymaking and Research?

The Case of Lao PDR's Trade Statistics

by

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Executive Summary

This report assesses the quality of Lao PDR's trade statistics by comparing Lao PDR's export/import data with its trade partners' import/export data (mirror data). While the mirror technique is constrained by the fact that partners' data also can have some problems, it is a useful method to obtain a snapshot of the quality of trade data.

First of all, it should be recognized that publicly available Lao PDR statistics compiled by the Ministry of Industry and Commerce (MIC) is not consistent with the Harmonized System (HS) classification. It is advisable that Lao PDR should release the HS classification-based trade data compiled by the Ministry of Finance.

The overall quality of Lao PDR's export data is relatively good compared with its import data. Most differences between Lao PDR's and trade partners' trade statistics can be explained by mineral-related and wood-related products. While the exports of minerals and wood-related products are supposed to be effectively managed by the Lao government, there is a possibility that some of those products are exported to neighboring countries outside the control of the Lao government.

There is a large concern about the quality of Lao PDR's import data. The total of Lao PDR's imports from major trading partners is less than half of the total of those partners' exports to Lao PDR. Lao PDR's imports of fuel and gas, vehicle and parts, and construction materials such as steel from Thailand and its imports of vehicle and parts and machinery products from China do not seem to be correctly reflected in Lao PDR's statistics.

This unsatisfactory quality of import statistics has important policy implications. First, there is a large loss in tariff revenue. If the import value recorded by the Lao Government becomes comparable to its trade partners' value of exports to the country, Lao PDR's tariff revenue will be more than doubled. It should also be recognized that Lao PDR's trade balance "appears" good when calculated using MIC statistics, while the trade balance seems to be worse based on calculations using the trade partners' statistics and balance of payment statistics compiled by the Lao Central Bank.

Accurate data collection by the border agencies and compilation of quality trade statistics are essential for effective policy making as well as for revenue collection. Just like all other developing countries, Lao PDR also needs to examine and improve the quality of trade statistics to have better trade policies and economic policies, in general.

1. Introduction

Countries should pay attention to the quality of macroeconomic statistics to have an accurate basis for policy making. Trade statistics is one of the core statistics that countries need for effective policy planning and implementation on various fronts. In drawing up trade policies, including Free Trade Agreement (FTA) negotiations and implementations, quantitative-based analyses are necessary to come up with negotiating positions and to assess the impacts of an FTA. Accurate trade statistics is also necessary for effective economic surveillance conducted at the domestic, regional and global level. Most international databases publish Lao PDR's trade data based on estimates using partners' statistics and the majority of research on the Lao economy usually uses such data.[1] Lastly, from the government's point of view, accurate data collection by border agencies (e.g. the customs office) is critical for revenue collection.

Such a need for improving the quality of trade statistics is especially urgent for developing countries deeply involved in regional economic integration schemes, such as Lao PDR.[2] The country is a member of various FTAs such as the ASEAN Free Trade Agreement (AFTA), the ASEAN-China Free Trade Agreement (ACFTA) and the ASEAN-Japan Economic Partnership Agreement (AJEPA). The full-fledged international economic surveillance under the Chiang Mai Initiative Multilateralization (CMIM)[3] will also start soon. Despite the level of development and resource constraints, it is critical for countries like Lao PDR to assess and improve the quality of trade statistics.

This paper conducts a quality assessment of Lao PDR's trade statistics through the mirror technique, identifies traded commodities that are plagued with huge statistical discrepancies, and draws out the implications of discrepancies for tariff revenues and the trade balance. A "mirror" technique is one useful way to examine the quality of trade statistics. It is a method to assess the quality of a reporting country's trade statistics by comparing its import/export data with its trade partners' export/import data (mirror data). While this technique has weaknesses as pointed out in other literature (Yeats, 1995; Hummels and Lugovskyv 2006), so long as researchers recognize them, using the mirror technique enables us to examine the quality of trade statistics as well as the theories behind the technique.

In a mirror trade analysis, a partner country that has reliable data reporting and compilation should be chosen. A more qualified partner in the analysis, then, is a developed country, which is expected to have more advanced systems, among others, that cater to data reporting and compilation. Nevertheless, it should be noted that no country produces perfect trade statistics. Therefore, we should also be aware of the possibility that the discrepancy in trade statistics between a reporting county and its partner may result from problems with the data on the partner's side.

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[1] Anderson et al. (2009) describes the problems of using trade statistics compiled by Lao authorities. For the extent of "informal" cross-border trade, see UNDP (2006, 25).

[2] Among the ASEAN members, Lao PDR and Myanmar are those whose available data in international database like the International Trade Center (ITC) are mirror data only (see available data at ITC's Trade Map at http://www.trademap.org/stDataAvailability.aspx). Lao PDR's mirror trade statistics can also be obtained from the Direction of Trade Statistics (DOTS). The United Nations ComTrade Database does not compile mirror statistics, therefore, those of Lao PDR's trade partners' data can be compiled to set-up Lao PDR's mirror data.

[3] The CMIM came into effect in March 2010 (UNESCAP, 2010).

The structure of the paper is as follows. Section 2 gives a brief overview of Lao PDR's available trade statistics and discusses the main issues of those available statistics; Section 3 presents the methodology for assessing trade data quality; Section 4 assesses the quality of Lao PDR's export and import data; and Section 5 illustrates the policy implications of unsatisfactory trade statistics.

2. Issues of Lao PDR's Trade Statistics

Before starting a detailed analysis of the quality of trade statistics using the mirror technique, it is useful to identify major limitations of Lao PDR's trade statistics. Quality assessment is largely constrained by the availability of data. Below are the major issues of Lao PDR's trade statistics compiled by The Ministry of Industry and Commerce (MIC).

2.1 Responsible Authorities

MIC compiles the official trade statistics of Lao PDR. The trade statistics are available on the MIC website.[4] While the Cooperation and Investment Division was responsible for compiling the statistics until the 2005/6 fiscal year[5], the Department of Import/Export became the responsible office with regard to trade statistics after 2006/7. As we will see later in detail, the change in the responsible division within the MIC led to the change in commodity classification methodology. In fact, there was a difference in terms of commodity classification before and after 2006/7. Furthermore, trade statistics compiled by MIC (both under the Cooperation and Investment Division and the Department of Import Export) have not been based on the harmonized system (HS) classification widely used internationally.

Partly because of this problem, recently, the Ministry of Finance (the Tax Department) started to produce its own trade data that are consistent with the HS classification. As a result, it is said that the data produced by the two ministries are sometimes inconsistent. However, the data produced by the Ministry of Finance are raw and unpublished. Thus, the only available trade statistics compiled by the Lao PDR authorities are those compiled by MIC, whose classification is different from international standards.

2.2 Commodity Classification

Commodity classification in Lao PDR's trade statistics has several inherent inconsistencies. First, the commodity classification for both export and import is not identical across time. In particular, classification used before and after 2006/7 are significantly different. In 2006/7, Lao PDR started to report commodities in broader categories broken down into subcategories. Even after 2006/7, some commodity groups (such as Diamond) appear only in some years, not all years. And it is unclear whether the abolition of a certain classification (e.g. Diamond) in a certain year means that there was no trade in such a commodity group in that year or that the item was classified somewhere else. Second, the major categories and sub-categories under exports and

[4] http://www.moic.gov.la/statistic.asp
[5] The Lao fiscal year runs from October to September. For details, see Section 2.3.

imports also differ significantly (Table 1; for the summary of the latest trade data compiled by MIC, see Appendix 1).

The major differences between Lao PDR's data and those of its trade partners, which makes a comparison between the two difficult, are the following. First, Lao PDR's trade statistics are not recorded in HS classification while that of partners are recorded in HS codes. Lao PDR uses its own Roman-numerical classification. Therefore, for the purpose of comparing Lao PDR's export/import to/from major partners (Thailand, Viet Nam, China, United States, Switzerland) and the latter's import/export from/to Lao PDR at the 2-digit level, we find the commodity group in Lao PDR's classification under which a certain commodity group in HS classification is possibly covered (see Table 2). Second, Lao PDR's trade statistics (import side data) have categories depending on the purposes of trade (e.g. trade for projects and investment purposes), irrespective of actual products imported under this mode. As a result of this, the same sub-categories appear under different large categories. For example, "fuel and gas" appear both under "products under government administration" (I-1) and under "products imported for the projects and investment" (IV-4).

Table 1: Commodity Classification of Lao PDR's Export and Import

EXPORT		
I		**Wood and Wood Products**
	I-1	Finished Wood Products
	I-2	Haft-finished wood products
	I-3	Logs
	I-4	Wood Products
II		**Agricultural Products + Live Animals**
	II-1	Agriculture
	II-2	Live feeding animals
III		**Electricity**
IV		**Industry-handicrafts**
	IV-1	Industry
	IV-2	Handicraft
V		**Forestry Products**
VI		**Minerals**
VII		**Diamond**
VIII		**Wasted Items**
IX		**Other Products**
	***	**Border Trade**
Total		

IMPORT			
I		**Products under Government Administrative**	
	I-1	Fuel and Gas	■
	I-2	Vehicle and Its parts	●
	I-3	Electricity	
	I-4	Raw Materials imported for Garment	
	I-5	Diamond	
II		**General products**	
	II-1	Food staffs	
	II-2	Office stationary	
	II-3	Construction materials	▲
	II-4	Electrical equipments and appliances	+
	II-5	Medicines	
	II-6	Clothing and dairy products	
	II-7	Products for agricultural purpose	○
	II-8	Products imported for industry production purpose	♦
	II-9	All kinds of vehicle spare parts	●
	II-10	Luxury products	
	II-11	Other products	
III		**Border trade**	
IV		**Products imported for the Projects and Investment**	
	IV-1	Construction materials	▲
	IV-2	Products supply to industry sectors	♦
	IV-3	products supply to agricultural sectors	○
	IV-4	Fuel and Gas	■
	IV-5	Vehicle and Its parts	●
	IV-6	Electrical appliances	+
	IV-7	Consuming products	
	IV-8	Others	
V		**Products imported for the International Organizations**	
VI		**Sample products**	
VII		**Duty free products**	
III		**Temporary imported products**	
IX		**Products under Grant Assistant**	
Total			

Source: Lao Ministry of Industry and Commerce (mainly based on 2008/9 data)

Table 2: Reference Tables of Major Commodities in HS and Lao PDR's Classification

EXPORT	
HS 1996 (2-digit)	**Lao PDR's Side**
HS 01 (Live animals)	Possibly under II (Agriculture Products + Live Feed Animals)
HS 09 (Coffee, tea, malt and spices)	
HS 25 (Salt. Sulphur; earths and stone; plastering materials, lime and cement)	Possibly under VI (Minerals)
HS 26 (Ores, slag and ash)	
HS 27 (Mineral fuels, mineral oils and products of their distillation; bituminous substances; mineral waxes)	
HS 74 (Copper and articles thereof)	
HS 44 (Wood and articles f wood; wood charcoal)	Possibly under I (Wood and Wood Products)
HS 61 (Articles of apparel and clothing accessories, knitted or crocheted)	Possibly under IV (Industry and Handicrafts)
HS 62 (Articles of apparel and clothing accessories, not knitted or crocheted)	
HS 97 (Works of art, collectors' pieces and antiques)	

IMPORT	
HS 1996 (2-digit)	**Lao PDR's Side**
HS 27 (Mineral fuels, mineral oils and products of their distillation; bituminous substances; mineral waxes)	Possibly under I-1 + IV-4 (Fuel and gas)
HS 87 (Vehicles other than railway or tramway, rolling-stock, and parts and accessories thereof)	Possibly under I-2 + II-9 + IV-5 (Vehicles and parts)
HS 61 (Articles of apparel and clothing accessories, knitted or crocheted)	Possibly under I-4 (Raw materials for garments)
HS 62 (Articles of apparel and clothing accessories, not knitted or crocheted)	
HS 72 (Iron and steel)	Possibly under II-3 + IV-1 (Construction materials)
HS 73 (Articles of iron or steel)	
HS 84 (Nuclear reactors, boilers, machinery, mechanical appliances; parts thereof)	Possibly under II-8 + IV-2 (Products for industry)
HS 85 (Electrical machinery and equipment and parts thereof; sound recorders and reproducers, television image, and sound recorders and reproducers, and parts and accessories of such articles)	

Source: Authors' compilation

2.3 Annual and Monthly Data

Lao PDR's trade statistics are recorded in the official fiscal year defined as from October to September of each year. Lao PDR is not exceptional to have a fiscal year starting from a month other than January. However, most countries with a fiscal year starting from the middle of a calendar year produce both annual data based on their own fiscal year as well as calendar-based annual data covering from January to December of each year.

Another critical issue regarding the publication of Lao PDR's trade statistics is that monthly data are not publicly available. Basically the only available data are the annual data, while some quarterly data are included in the excel file containing the annual data. Therefore, detailed time series analysis and examination of recent trends is impossible, using Lao PDR's statistics. Furthermore, with the current publication format of Lao PDR's data, it is impossible to produce a calendar year-based annual amount by summing up monthly data. As a result, comparing Lao PDR's trade statistics with its partners' statistics is not straightforward. Researchers need to compute trade partners' annual data identical to Lao PDR's fiscal year coverage, using monthly or quarterly data.

Finally, the time lag between the end of each fiscal year until the release of statistics is generally long and the timing of publication or release of statistics is unpredictable. The trade statistics are sometimes released within 3-4 months after the end of a fiscal year (for example, the 2007/8 data was released in December 2008 and the 2005/6 data in January 2007), but it sometimes takes more than one year. The 2006/7 data, covering October 2006 to September 2007, was released in September 2008 and the 2008/9 data, covering October 2008 to September 2009, was released in June 2010. Users of Lao PDR's trade statistics need to visit the MIC website often

to check whether the data is already available or not. Predictability of the release schedule for important statistics such as trade data is essential.

2.4 Publication and Reporting Issues

The Lao PDR's export and import data compiled by MIC are published only in Lao PDR's language. While until 2005/6, some English data were available on the website, all information relating to trade statistics by MIC after 2006/7 data are available only in Laotian. Therefore, a translation had to be done for non-Laotian users.

The trade statistics compiled by Lao PDR is not covered in major trade database compiled by international organizations. The Direction of Trade Statistics (DOTS) compiled by the International Monetary Fund (IMF) does not include a page on Lao PDR. The Trade Database by International Trade Center (ITC) uses mirror data; ITC's available trade data for Lao PDR are mirror statistics (or estimates from that of partners' trade data). The UN ComTrade has no data on Lao PDR's export and import. It has partners' export and import to/from Lao PDR, though. While it seems that Lao PDR submits trade data to the ASEAN Secretariat, such data are governed by confidentiality and only aggregated data is obtainable on the ASEAN website.[6]

3. Methodology to Assess the Quality of Trade Statistics

Mirror analysis (comparison between Country A's imports/exports and Country B's exports/imports) is a useful way to assess the quality of statistics if one recognizes the limits of this kind of analysis. There are various factors that can cause discrepancies between the two sides, in addition to misclassification issues. Sometimes, discrepancies can be attributed to justifiable factors such as CIF-FOB difference. Moreover, even if discrepancies seems to stem from misclassifications, it is not easy to conclude which side of the mirror is responsible for the misclassifications. Thus, we need to "assume" that the quality of trade partners' trade statistics is relatively better than the test country's statistics.

3.1 Causes of Discrepancies in Bilateral Trade Statistics

A reporting country's exports/imports do not usually match exactly with the partner country's imports/exports.[7] The general view is that import data are more reliable than export data because governments are more serious about recording imported goods for tariff revenue collection, taxes, trade agreements, or other regulatory controls (Ferrantino and Wang, 2008). At the same time, it should be noted that there is, in general, an incentive for under-reporting the value of imported goods to avoid paying tariffs. In this research, therefore, we assess not only Lao PDR's export data in comparison with its trade partners' import data but also its import data in comparison with its trade partners' export data.

Major factors for discrepancies are summarized in Table 3. While there are various factors to explain the discrepancy between the import side and export side data, the size of discrepancies

[6] http://www.aseansec.org/18137.htm
[7] For the details, see Yeats, 1995; Hummels and Lugovskyv 2006

caused by most factors is unpredictable. It is difficult to conclude which side (export or import side) tends to report higher trade values, except in the case of the cost insurance freight/free on board (CIF/FOB) factor, where the import side will tend to report higher values than the export side. In fact, IMF estimates mirror data considering the 1.10 CIF/FOB factor only.[8] While other factors such as coverage and illegal trade are recognized as possible sources of discrepancies, they are unmeasurable and unpredictable, except for false declarations associated with duty drawback. Traders may declare large values of exports (called overinvoicing) in order to enjoy "inflated" duty drawback.[9] As for coverage, there is no record of returned goods while underground trade is unmeasurable, unless all other factors are ruled out. Further, countries with different trading systems, general or special, will have different coverage of recorded transactions because the former covers all transactions in the free trade zone while the latter does not include such transactions.[10] When the distance and time lag between export and import becomes long, the CIF/FOB factor contributes to pushing up the import price (because transport costs becomes higher), while the difference in timing factor contributes to pushing down the import price when there is a growing trend in trade.

[8] To estimate mirror export, the partner country's import is divided by 1.1. The detailed estimation procedure is discussed in the IMF Direction of Trade Statistics website at http://www2.imfstatistics.org/DOT/DOTEstim.htm

[9] Using mirror trade data, Mahmood and Azhar (2001) hypothesized the presence of overinvoicing of exports in Pakistan due to the duty drawback incentive scheme. The study found that there is a strong presence of overinvoicing across trading partners and products.

[10] The general trade system is in use when the statistical territory of a country coincides with its economic territory. The special trade system (strict definition) is in use when the statistical territory comprises only the free circulation area, that is, the part within which goods "may be disposed of without customs restriction". The special trade system (relaxed definition) is in use when (a) goods that enter a country for or leave it after inward processing and (b) goods that enter or leave an industrial free zone are also recorded and included in international merchandise trade statistics, according to the *International Merchandise Trade Statistics Concepts and Definitions*, United Nations, series M, n° 52, revision 2. See Eurostat (2009).

Table 3: Sources of Discrepancies in Bilateral Trade Data

Elements		Technical Description	Trend of Discrepancy
Misclassification	Coding misclassification	Same goods are recorded under different codes by the two customs offices.	Unpredictable
	Direction misclassification	Two sides of the customs office regard the destination/origin of goods differently. Those tend to happen when trade is indirect (e.g. re-export, transshipment).	Unpredictable
Difference in Rules to Define Direction		Two sides of the customs office regard the destination/origin of goods differently because of differences in the definition of direction.	Unpredictable
Difference in Cost Reporting	CIF-FOB difference	Traders' reported data have different costs definition. Imports are reported on CIF basis while exports are reported on FOB basis.	Import > Export On average 10% difference; difference becomes larger when distance is long)
	Currency Conversion	Traders use different exchange rates.	Unpredictable
Differences in timing		Time lag between export and import. Particularly obvious in disaggregated data.	Upredictable
False Declaration by Traders	False declaration of the value	False value for tax evasion, tariff evasion, and circumvention of a quota or tariff-rate quota. Duty drawback scheme; transfer pricing.	Overall unpredictable Duty drawback: Import < Export
	False declaration on origin	False declaration on origin in order to take advantage of programs providing duty reductions.	Unpredictable
Coverage	Returned goods	When goods are rejected by the importing country, they are not recorded as imports but it is likely that the exporting country records those goods as exports.	Import < Export
	Illegal and unrecorded trade	Underground trade or smuggled items are not taken into account.	Unpredictable
	Difference in trade systems (General/Special trade system)	The General Trade System is broader than the Special Trade System because the former includes all transactions in the free trade zone while the latter, in a strict sense, doesn't include such transactions.	Country that uses General Trade System reports larger imports and exports

Source: Ferrantino and Wang (2008), International Trade Center, UNCTAD/WTO (2005).

3.2 Methodology of Mirror Analysis

First, we will compare Lao PDR's trade statistics (export/import) with it trade partners' statistics (import/export) at the aggregate level. Even aggregated level analysis provides a rough picture of the quality of Lao PDR's statistics. The import/export ratio is used to assess the size of the discrepancy associated with direction misclassification at the aggregate level. The ratio is defined as:

Import/Export Ratio (aggregate level) = Aggregate import side data/Aggregate export side data

When comparing import and export side data, usually there is 10% difference between the two, accounting for the CIF/FOB factor. However, it should be noted that the 10% adjustment with regard to the CIF-FOB difference adopted by the IMF may not be suitable in the case of Lao PDR. Given that Lao PDR is a landlocked country, transportation (freight) would cost more than 10%. Thus, an import/export ratio exceeding 1.1 is not automatically considered problematic. Therefore, the focus of this study is on countries with which Lao PDR's import/export ratios are extremely higher or lower than 1.1.

Second, we will compare the trade statistics of the two sides at the commodity group level. Lao PDR's (sub-) category level export/import to/from its trade partners and its major trade partners' HS 2 digit import/export from/to Lao PDR will be compared. Just like the case of the aggregate level analysis, commodity groups with large discrepancies between the two sides will be examined. In the case of Lao PDR's exports, we compare the top 5 categories at the Roman

numeral level of Lao PDR's exports to partners with partners' top 5 major imports from Lao PDR at the 2-digit level HS codes. In the case of imports, we compare the top 5 sub-categories at the Arabic numeral level of Lao PDR's imports from partners with partners' top 5 major exports to Lao PDR at the 2-digit level HS code.

Lao PDR's imports of similar sub-categories, which can be found under different large categories (Roman-numerical level), are consolidated to capture the entire sector and become comparable with those of partners' commodity group classification based on HS codes (see Table 1). The following contain combinations of similar sub-categories found under different large categories: (1) "fuel and gas": I-1 and IV-4; (2) "vehicles and parts": I-2, II-9, and IV-5; (3) "construction materials": II-3 and IV-1; (4) "products for industry": II-8 and IV-2; (5) "electrical products": II-4 and IV-6; (6) "products for agriculture": II-7 and IV-3.

With such a comparison of Lao PDR's major exports/imports against those partners' major imports/exports from/to Lao PDR, we observe the approximate match between Lao PDR's exports/imports to/from partners and partners' imports/exports from/to Lao PDR. Relying on the quality of partners' data, we determine if Lao PDR properly records major exports/imports to/from its partners. Further, we determine the major commodities that cause the large discrepancies between Lao PDR's exports/imports to/from partners and partners' imports/exports to Lao PDR. We focus on major exports/imports since they are of importance for trade and other domestic policymaking.

It is, however, recognized, that the comparison at the commodity level has some limitations in the sense that Lao PDR and its partners have different commodity classifications and that Lao PDR reports data according to its fiscal year (October – September) while partners' data are reported by calendar year (January – December). Nevertheless, comparing the fiscal year-based trade statistics of Lao PDR (e.g. 2007/8 data: from October 2007 to September 2008) and calendar year-based trade partners' trade statistics a year later (e.g. 2008: from January 2008 to December 2008) could provide a rough estimate of the quality of the Lao PDR statistics because both cover the same nine months (from January 2008 to September 2008).

3.3 Data

In this paper, for the data from the Lao PDR's side, we use the trade statistics released by the MIC although its commodity classifications ("the Lao Roman-numerical classification") are largely different from international standards (HS classification) and they are compiled according to Lao PDR's fiscal year[11]. This is because these are the only publicly available trade statistics compiled by Lao PDR authorities. The statistics are obtainable at the ministry's website.

In the aggregate level comparison (Lao's total export/import against top 20 partners' import/export), we first need to compute trade partners' 12 month data covering October to September in order to make the partners' statistics comparable with Lao PDR's trade statistics since Lao PDR's aggregate annual data is based on its fiscal year starting from October to September. For the partners' side, we use monthly data from the Direction of Trade Statistics

[11] The year format, 2005/6, 2006/7, 2007/8 and 2008/9 is used to refer to Lao PDR's fiscal year (October-September). The year format 2005, 2006, 2007, 2008, 2009, is used to refer to the calendar year (January-December).

(DOTS), which are summed based on Lao's fiscal year, 2008/9 (October 2008 – September 2009).[12]

For the per country comparison (Lao's total export/import against each partner country's import/export), partners' statistics are also drawn from DOTS's monthly data, which are summed based on Lao's fiscal year 2007/8 (October 2007 – September 2008). While 2008/9 data are already published by MIC, we will use Lao PDR's 2007/8 data and the trade partners' 2008 data in order to maintain the consistency with the 2 digit level analysis (partners' 2009 data is not available at ComTrade[13]).

At the commodity level comparison between Lao PDR's statistics and its partners, we use Lao PDR's commodity groups data (the Lao Roman-numerical classification) in fiscal year 2007/8 (Oct 2007 - September 2008) and its partners' HS classification based on the 2-digit commodity groups data for the calendar year 2008 (January – December 2008) gathered from UN ComTrade. The UN ComTrade is the only database that contains commodity-level import/export data that do not use mirror statistics or partners' statistics whenever a country does not report trade data (unlike DOTS which uses mirror statistics). However, the available data in UN ComTrade is limited to calendar year-based annual series. Lao's data in fiscal year 2007/8 and partners' 2008 data is used for the comparison, because some countries included in the study have data only until 2008 in UN ComTrade.

4. Quality Assessment of Lao PDR's Trade Statistics

4.1. Examination of Lao PDR's Export Statistics

At the total level, we compare the sum of Lao PDR's exports to top 20 partners[14] against the sum of the top 20 partners' imports from Lao PDR (Table 4). Lao PDR's export data appear to be generally good. Import/export ratios slightly deviated above 1.1.

Table 4: Lao PDR's Total Exports (million $)

	Partners' Side Statistics (Top 20 Partners' Imports) A	Lao PDR's Side Statistics (Lao PDR's Exports) B	Discrepancy (A-B)	Import/Export Ratio (A/B)
2005/6	911	810	101	1.12
2006/7	985	800	185	1.23
2007/8	1,354	1,157	197	1.17
2008/9	1,220	1,051	169	1.16

Source: Lao PDR's Ministry of Industry and Commerce, DOTS online database

Table 5 shows the overview of Lao PDR's exports to major partners. The import/export ratios of Lao PDR's exports to top three partners, Thailand, Viet Nam and China, are significantly higher than 1.1. This means that Lao PDR's reported export values appear significantly smaller than those partners' import values. On the other hand, the import/export ratios of the Republic of Korea, Switzerland, and Australia are significantly lower than 1.1, which means that Lao PDR's

[12] United Nations Commodity Trade Statistics Database (UN ComTrade) is a trade database widely used internationally, but it includes only annual data on a calendar-year basis.

[13] ComTrade already included 2009 data for China and Thailand, but not for Viet Nam.

[14] Top 20 export partners are selected based on the average of Lao PDR's exports to partners and partners' imports from Lao PDR in 2008/9 data. The same set of countries is used in years other than 2008/9.

export values appear significantly bigger than those partners' import values. The United States is one of the few countries whose import/export ratio is close to 1.1.

Table 5: Trade of Lao PDR To Partners (2007/8, million $)

	Partners' Side Statistics (Partners' Imports) A	Lao PDR's Side Statistics (Lao PDR's Exports) B	Average Data (A+B)/2	Discrepancy (A-B)	Import/Export Ratio (A/B)
Thailand	650	383	516	267	1.70
Vietnam	281	148	214	133	1.90
China	150	43	96	107	3.50
South Korea	62	82	72	-20	0.76
Switzerland	2	135	68	-133	0.01
Australia	1	134	67	-133	0.01
Singapore	1.3	99	50	-97	0.01
Germany	48	52	50	-4	0.92
Malaysia	15.7	61	38	-46	0.26
United States	39	34	36	4	1.12
France	26	36	31	-10	0.72
Japan	16	11	14	6	1.52
Belgium	20	6	13	14	3.46
Italy	11	13	12	-2	0.87
Poland	10	3	6	7	3.08
Spain	5	7	6	-1	0.81
Canada	6	5	5	1	1.10
Denmark	3	6	5	-2	0.58
Sweden	2.2	3	3	-1	0.71
Norway	2	3	2	21	0.59

Source: Lao PDR's Ministry of Industry and Commerce, DOTS online database

Next, we will compare Lao PDR's export data with selected partners' import data. We will select the top three partners' import data – Thailand, Viet Nam, and China – to which Lao PDR's exports are large and import/export ratios are significantly different from 1.1. We will also compare Lao PDR's exports against Switzerland's imports in which the import/export ratio is significantly lower than 1.1; and against the United States' imports in which the import/export ratio seems acceptable. The top 5 traded items of each side will be compared.

The amount of Lao PDR's electricity exports to Thailand is almost the same as Thailand's electricity imports from Lao PDR. If electricity is excluded, Lao PDR's exports to Thailand become much smaller than Thailand's imports from Lao PDR. This implies that large portions of Lao PDR exports to Thailand are not properly recorded by the Lao PDR authorities. First, the largest commodity exported by Lao PDR to Thailand is "all kinds of minerals" ($207 million), which falls short of Thailand's said imports from Lao PDR (HS 74 and HS 27), amounting to $470 million (Table 5). In this commodity group alone, the discrepancy is already $263 million. Second, another large source of discrepancy is "agriculture products and live feed animals" ($31 million), which is not included in Thailand's top 5 imports from Lao PDR. The fourth source of the large discrepancy, amounting to $35 million, is "wood and wood products" ($28 million), which is smaller than its counterpart in Thailand's statistics, HS 44 ($63 million).

Table 6: Mirror Data of Trade from Lao PDR to Thailand

Thailand's Major Imports from Lao PDR (Thailand side data, 2008)				Lao PDR's Major Exports to Thailand (Lao PDR side data, 2007/8)		
HS	Name	Value ($ million)	Share to Total (%)	Name	Value ($ million)	Share to Total (%)
74	Copper and articles thereof	351	57	Minerals (VI)	207	54
27	Mineral fuels, mineral oils and products of their distillation; bituminous substances; mineral waxes	119	19	Electricity (III)	97	25
2716	Electrical energy	111	18			
44	Wood and articles of wood; wood charcoal	63	10	Agriculture products + Live Feed Animals (II)	31	8
87	Vehicles other than railway or tramway rolling-stock, and parts and accessories thereof	15	2	Wood and Wood Products (I)	28	7
85	Electrical machinery and equipment and parts thereof; sound recorders and reproducers, television image and sound recorders and reproducers, and parts and accessories of such articles	14	2	Industry and Handicrafts (IV)	16	4
Total of Thailand's Imports from Lao PDR		614	100	Total of Lao PDR's Export to Thailand	383	100

Source: Lao PDR's Ministry of Industry and Commerce, UN ComTrade

Comparing Lao PDR's major exports to Viet Nam against Viet Nam's major imports from Lao PDR, it is observed that the source of discrepancy mainly stems from the difference between HS 44 from Viet Nam's side and a similar commodity group from Lao PDR's side – "wood and wood products" (Table 7). Based on Viet Nam's statistics, it imports a large amount of HS 44 from Lao PDR ($132 million), while Lao PDR reports a significantly smaller export value of "wood and wood products" to Viet Nam ($24 million). The discrepancy in this commodity group amounting to $108 million, actually, almost resolves the discrepancy between Viet Nam's total imports from Lao PDR and Lao PDR's total exports to Viet Nam. The data of the two sides in traded commodities other than wood-related items match to a certain degree. For example, HS 74 and HS 25 (in total $113 million) from Viet Nam's side and all kinds of minerals from Lao PDR's side ($103 million); and HS 01 and 09 from Viet Nam's side ($13 million) and "agriculture products and live feed animals" from Lao PDR's side ($15 million), which includes live animals, coffee and tea. Although Lao PDR's trade in "agriculture and live feed animals" appear relatively bigger than Viet Nam's side in terms of HS 01 and 09, it is understood since Lao PDR's side still includes other agriculture products such as fruits.

Table 7: Major Imports of Viet Nam and Major Exports of Lao PDR

Viet Nam's Major Imports from Lao PDR (Viet Nam's side data, 2008)				Lao PDR's Major Exports to Viet Nam (Lao PDR's side data, 2007/8)		
HS	Name	Value ($ million)	Share to Total (%)	Name	Value ($ million)	Share to Total (%)
44	Wood and articles of wood; wood charcoal	132	47	Minerals (VI)	103	70
74	Copper and articles thereof	103	37	Wood and Wood Products (I)	24	16
25	Salt; sulphur; earths and stone; plastering materials, lime and cement	10	3	Agriculture products + Live Feed Animals (II)	15	10
09	Coffee, tea, mate and spices	7	3	Industry and Handicrafts (IV)	4	3
01	Live animals	6	2	Other Products (IX)	1	0.4
Total of Viet Nam's Imports from Lao PDR		279	100	Total of Lao PDR's Exports to Viet Nam	148	100

Source: Lao PDR's Ministry of Industry and Commerce, UN ComTrade
Note: agriculture products and live feed animals includes coffee, tea and spices

Comparing Lao PDR's major exports to China against China's major imports from Lao PDR, it is observed that the major source of discrepancy is between HS 44 from China's side and a similar commodity group from Lao PDR's side – "wood and wood products" (Table 8). China's

statistics show that it imports from Lao PDR $44 million worth of HS 44, while Lao PDR reports only $4 million of such products. Another source of significant discrepancy is between HS 26 and HS 74 ($55 million in total) from China's side and "all kinds of minerals" ($32 million) from Lao PDR's side.

Table 8: Major Imports of China's and Major Exports of Lao PDR, 2008

China's Major Imports from Lao PDR (China's side data, 2008)				Lao PDR's Major Exports to China (Lao PDR's side data, 2007/8)		
HS	Name	Value ($ million)	Share to Total (%)	Name	Value ($ million)	Share to Total (%)
44	Wood and articles of wood; wood charcoal	44	33	Minerals (VI)	32	74
26	Ores, slag and ash	36	26	Wood and Wood Products (I)	4	10
74	Copper and articles thereof	19	14	Agriculture products + Feed Animals (II)	4	8
40	Rubber and articles thereof	13	9	Industry and Handicrafts (IV)	2	5
10	Cereals	6	4	Forestry Products (V)	1	1
Total of China's Imports from Lao PDR		134	100	Total of Lao PDR's Exports to China	43	100

Source: Lao PDR's Ministry of Industry and Commerce, UN ComTrade
Note: agriculture products and feed animals include rubber and food items

Comparing Lao PDR's major exports to Switzerland against Switzerland's major imports from Lao PDR, it is observed that Lao PDR's reported export values are significantly larger than the imports reported on Switzerland's side (Table 9). Switzerland has no import data of the major commodities that Lao PDR reports as major exports to Switzerland, that is, "all kinds of minerals" ($107 million), followed by "diamonds" ($28 million).

Table 9: Major Imports of Switzerland and Major Exports of Lao PDR, 2008

Switzerland's Major Imports from Lao PDR (Switzerland's side data, 2008)				Lao PDR's Major Exports to Switzerland (Lao PDR's side data, 2007/8)		
HS	Name	Value ($ million)	Share to Total (%)	Name	Value ($ million)	Share to Total (%)
62	Articles of apparel and clothing accessories, not knitted or crocheted	1.16	90.34	Minerals (VI)	107	79
09	Coffee, tea, malt and spices	0.04	3.38	Diamonds (VII)	28	21
61	Articles of apparel and clothing accessories, knitted or crocheted	0.03	2.17	Industry and Handicrafts (IV)	0.23	0.17
10	Cereals	0.01	1.08	Agriculture products + Feed Animals (II)	0.01	0.01
97	Works of art, collectors' pieces and antiques	0.01	0.96	Nothing follows		
Total of Switzerland's Imports from Lao PDR		1.3	100	Total of Lao PDR's Exports to Switzerland	135	100

Source: Lao PDR's Ministry of Industry and Commerce, UN ComTrade

Comparing Lao PDR's major exports to the United States against the United States' major imports from Lao PDR, it is observed that the traded commodities reported by the 2 sides are somewhat similar and the match of trade values is fairly good (Table 10). United States statistics indicate that the United States imports a large amount of garment-related products (HS 61 and HS 62) from Lao PDR amounting to a total of $31 million. This matches with Lao PDR's data that indicate $32 million worth of exports to the United States of "industry and handicraft", which covers garments. The rest of the products traded are somewhat similar as well.

Table 10: Major Imports of the United States and Major Exports of Lao PDR

United States' Major Imports from Lao PDR (United States' side data, 2008)				Lao PDR's Major Exports to the United States (Lao PDR's side data, 2007/8)		
HS	Name	Value ($million)	Share to Total (%)	Name	Value ($million)	Share to Total (%)
61	Articles of apparel and clothing accessories, knitted or crocheted	25	57	Industry and Handicrafts (IV)	32	94
28	Inorganic chemicals; organic or inorganic compounds of precious metals, of rare-earth metals, of radioactive elements or of isotopes	7	17	Agriculture products + Feed Animals (II)	2	5
62	Articles of apparel and clothing accessories, not knitted or crocheted	6	15	Wood and Wood Products (I)	0.048	0.14
09	Coffee, tea, malt and spices	4	9	Nothing follows		
44	Wood and articles of wood; wood charcoal	1	1			
Total of United States' Imports from Lao PDR		44	100	Total of Lao PDR's Exports to the United States	34	100

Source: Lao PDR's Ministry of Industry and Commerce, UNComTrade

In summary, we can say that the discrepancy between Lao PDR's statistics (export) and its trade partners' statistics (import) can be explained by a few commodity groups – "all kinds of minerals" and "wood and wood products". First, mineral imports (HS 27 and 74) of Thailand from Lao PDR amount to $470 million while Lao PDR reports only $207 million worth of exports of "all kinds of minerals" to Thailand, generating a discrepancy of $263 million. Similarly China's mineral imports (HS 26 and 74) from Lao PDR amount to $55 million while Lao PDR reports only $32 million worth of exports of "all kinds of minerals" to China, creating a discrepancy of $23 million. Second, Viet Nam's statistics indicate wood imports from Lao PDR amounting to $132 million while Lao PDR reports only $24 million worth of exports of "wood and wood products" to Viet Nam, generating a discrepancy of $108 million. Similarly, China's wood imports from Lao PDR is $44 million while Lao PDR reports only $4 million "wood and wood products" exports to China, creating a discrepancy of $40 million. Thailand's wood imports from Lao PDR amount to $63 million while Lao PDR reports only $28 million worth of exports to Thailand, creating a $35 million discrepancy.

4.2. Examination of Lao PDR's Import Statistics

At the total level, we compare the sum of Lao PDR's imports from top 20 partners[15] against the sum of top 20 partners' exports to Lao (Table 11). Import/export ratios deviate significantly below 1.1, (negative discrepancy). Lao PDR's import data call for improvements as the import/export ratios indicate that imports are significantly smaller than world's (partners') exports. It should be noted that the quality of Lao PDR's import data seems to be much worse than its export data. This is a serious problem given that the import data is closely related to tariff revenue. Furthermore, the trend is worsening.

[15] Top 20 import partners are selected based on the average of Lao PDR's import from partners and partners' exports to Lao PDR in 2008/9 data. The same set of countries is used in years other than 2008/9.

Table 11: Lao PDR's Total Imports ($ million)

	Lao PDR's Side Statistics (Lao PDR's Imports) A	Partners' Side Statistics (Top 20 Partners' Exports) B	Discrepancy (A-B)	Import/Export Ratio (A/B)
2005/6	921	1,409	-488	0.65
2006/7	901	1,673	-773	0.54
2007/8	1,349	2,451	-1,102	0.55
2008/9	1,062	2,365	-1,303	0.45

Source: Lao PDR's Ministry of Industry and Commerce, DOTS online database

Table 11 shows the overview of Lao PDR's imports from major partners. Lao PDR's imports from major partners have import/export ratios that are significantly lower than 1.1, except for Switzerland and Pakistan whose trade with Lao is small. This indicates that Lao PDR's imports are significantly smaller than partners' exports. Given that the overall import/export ratio in 2007/8 is 0.55, all countries have a downward bias. Looking at the top three import partners, then, the import/export ratio of Viet Nam appears relatively large. On the other hand, China's import/export ratio is small even after considering the downward bias. Next, we analyze Lao PDR's top 3 import partners – Thailand, China and Viet Nam from which Lao PDR's imports are large and the import/export ratios are significantly different from 1.1. The top traded items of each side will be compared.

Table 12: Trade of Lao PDR FROM Partners (2007/8, $ million)

	Lao PDR's Side Statistics (Lao PDR's Imports) A	Partners' Side Statistics (Top 20 Partners' Exports) B	Average Data (A+B)/2	Discrepancy (A-B)	Import/Export Ratio (A/B)
Thailand	984	1735	1360	-751	0.57
China	96	279	187	-183	0.34
Vietnam	109	146	127	-37	0.74
South Korea	38	57	47	-19	0.66
Japan	30	60	45	-31	0.49
Singapore	11	31	21	-20	0.36
Hong Kong, China,	15	22	19	-7	0.70
Germany	7	30	18	-23	0.23
France	12	16	14	-4	0.75
Belgium	11	13	12	-2	0.84
America	5	14	10	-8	0.40
Australia	5	14	9	-9	0.35
Malaysia	9	9	9	0	1.01
India	3	7	5	-4	0.44
Switzerland	6	3	4	3	1.96
Russia	3	5	4	-3	0.50
Indonesia	3	4	3	-1	0.65
Denmark	2	3	3	-1	0.63
Italy	1	3	2	-2	0.37
Pakistan	1	0	0	1	10.53

Source: Lao PDR's Ministry of Industry and Commerce, DOTS online database

Comparing Lao PDR's major imports from Thailand against Thailand's major exports to Lao PDR, it is observed that while major traded products reported by the 2 sides are somewhat similar, except for "raw materials for garments" on Lao PDR's side, Lao PDR's import values are significantly smaller than Thailand's export values (Table 13). We can say that Lao PDR's side values are significantly smaller because import values are supposedly larger than export values, in particular, if we consider the fact that Lao PDR is a landlocked country where the CIF/FOB gap usually becomes large. The major source of discrepancy is between HS 27 from Thailand's side and a similar commodity group from Lao PDR's side – "fuel and gas". Thailand's statistics show that it has a huge export of HS 27 to Lao PDR ($479 million) while Lao PDR reports a significantly smaller import of such products from Thailand ($297), resulting in a discrepancy of

$182 million. The second largest source of discrepancy, amounting to $109 million, is between HS 87 ($238 million) from Thailand's side and "vehicles and parts" ($129 million) from Lao PDR's side. The third largest source of discrepancy amounting to $81 million is between HS 72 and HS 73 from Thailand's side ($157) and "construction materials" from Lao PDR's side ($76), which may include iron and steel.

Table 13: Major Exports of Thailand and Major Imports of Lao PDR

Thailand's Major Exports to Lao PDR (Thailand's side data, 2008)				Lao PDR's Major Imports from Thailand (Lao PDR's side data, 2008/2009)		
HS Code	Name	Value ($ million)	Share to Total (%)	Name	Value ($ million)	Share to Total (%)
27	Mineral fuels, mineral oils and products of their distillation; bituminous substances; mineral waxes	479	27	Fuel and Gas (I-1 and IV-4)	297	30
87	Vehicles other than railway or tramway rolling-stock, and parts and accessories thereof	238	14	Vehicle and Parts (I-2 + II-9 + IV-5)	129	13
84	Nuclear reactors, boilers, machinery and mechanical appliances; parts thereof	154	9	Raw Materials for Imported Garments (I-4)	96	10
72	Iron and steel	84	5	Products for Industry (II-8 and IV-2)	84	9
73	Articles of iron or steel	73	4	Construction Materials (II-3 and IV-1)	76	8
Total of Thailand's Exports to Lao PDR		1,755	100	Total of Lao PDR's Imports from Thailand	984	100

Source: Lao PDR's Ministry of Industry and Commerce, UN ComTrade

Comparing Lao PDR's major imports from China against China's major exports to Lao PDR, it is observed that while the major traded commodities reported by both sides are somewhat similar, except for HS 73 from China's side, Lao PDR's side import values are significantly smaller than China's side data (Table 14). The largest source of discrepancy is between HS 85 and HS 84 from China's side and similar commodity groups from Lao PDR's side – "products for industry". According to the Chinese statistics, it seems that China exports a large amount of HS 85 and HS 84 ($136 million in total) to Lao PDR. On the other hand, their equivalent commodity group in Lao PDR's statistics, which seems to be "products for industry", is much smaller, amounting to $17 million only. This creates a large discrepancy amounting to $119 million. Also, while it seems that a large amount of HS 87 ($37 million) are exported by China, Lao PDR's side only reported $5 million worth of imports of equivalent products – "vehicles and parts", creating a discrepancy of $32 million.

Table 14: Major Exports of China and Major Imports of Lao PDR, 2008

China's Major Exports to Lao PDR (China's side data, 2008)				Lao PDR's Major Imports from China (Lao PDR's side data, 2008/2009)		
HS Code	Name	Value ($ million)	Share to Total (%)	Name	Value ($ million)	Share to Total (%)
85	Electrical machinery and equipment and parts thereof; sound recorders and reproducers, television image and sound recorders and reproducers, and parts and accessories of such articles	69	26	Construction Materials (II-3 and IV-1)	17.1	17.8
84	Nuclear reactors, boilers, machinery and mechanical appliances; parts thereof	67	25	Products for Industry (II-8 and IV-2)	17	17.7
87	Vehicles other than railway or tramway rolling-stock, and parts and accessories thereof	37	14	Raw Materials for Imported Garments (I-4)	12	13
73	Articles of iron or steel	22	8	Products for Agriculture (II-7 + IV-3)	7	7
88	Aircraft, spacecraft, and parts thereof	15	6	Vehicles and Parts (I-2 + II-9 + IV-5)I	5	5
Total of China's Exports to Lao PDR		268		Total of Lao PDR's Imports from China	96	100

Source: Lao PDR's Ministry of Industry and Commerce, UN ComTrade

Comparing Lao PDR's major imports from Viet Nam against Viet Nam's major exports to Lao PDR, it is observed that the traded commodity groups reported by the 2 sides are somewhat similar and the discrepancies in terms of trade value are not that bad relative to those in Thailand and China (Table 15). The relatively good pair of commodity groups that match in terms of value are HS 85 and 84 from Viet Nam's side (total of $20 million) and "products for industry" and "electrical products" from Lao PDR's side (total of $23 million). HS 87 from Viet Nam's side ($5 million) and "vehicles and parts" from Lao PDR's side ($11 million) also appear to be a good pair. The discrepancies seem to be acceptable as well for the pairs, HS 27 from Viet Nam's side ($47 million) and "fuel and gas" from Lao PDR's side ($20 million); and HS 72 from Viet Nam's side ($28 million) and "construction materials" from Lao PDR's side ($20 million).

Table 15: Major Exports of Viet Nam and Major Imports of Lao PDR, 2008

Viet Nam's Major Exports to Lao PDR (Viet Nam's side data, 2008)				Lao PDR's Major Imports from Viet Nam (Lao PDR's side data, 2007/8)		
HS Code	Name	Value ($ million)	Share to Total (%)	Name	Value ($ million)	Share to Total (%)
27	Mineral fuels, mineral oils and products of their distillation; bituminous substances; mineral waxes	47	29	Construction Materials Construction Materials (II-3 and IV-1)	20.3	18.7
72	Iron and steel	28	17	Fuel and Gas (I-1 and IV-4)	19.7	18.2
85	Electrical machinery and equipment and parts thereof; sound recorders and reproducers, television image and sound recorders and reproducers, and parts and accessories of such articles	12	8	Products for Industry (II-8 and IV-2)	14	13
84	Nuclear reactors, boilers, machinery and mechanical appliances; parts thereof	8	5	Vehicle and Parts (I-2 + II-9 + IV-5)	11	10
87	Vehicles other than railway or tramway rolling-stock, and parts and accessories thereof	5	3	Electrical Products (II-4 and IV-6)	9	8
Total of Viet Nam's Exports to Lao PDR		160	100	Total of Lao PDR's Imports from Viet Nam	109	100

Source: Lao PDR's Ministry of Industry and Commerce, UN ComTrade

In summary, the discrepancy between Lao PDR's statistics and its trade partners' statistics can be explained by the four commodity groups – "fuel and gas", "vehicles and parts", "construction materials", and "products for industry". First, Lao PDR's import values are significantly smaller than Thailand's export values in "fuel and gas". Thailand's exports of HS 27 to Lao PDR amount to $479 million while Lao PDR only reports $297 million worth of "fuel and gas" imports from Thailand, creating a discrepancy of $182 million. Second, Lao PDR's import values are significantly smaller than Thailand's export values in "vehicles and parts". Thailand reports $238 million worth of HS 87 exports to Lao PDR while Lao PDR only reports $129 million worth of "vehicles and parts" imports from Thailand, creating a discrepancy of $109 million. Similarly, China reports $37 million worth of HS 87 exports to Lao PDR while Lao PDR's imports from China of "vehicles and parts" amount to only $5 million, creating a considerable discrepancy of $32 million. Third, Lao PDR's import values are much smaller than Thailand's export values in "construction materials". Thailand's exports to Lao PDR in terms of HS 72 and 73 amount to $157 million while Lao China's imports from Thailand of "construction materials" amount to $76 million only, creating a discrepancy of $81 million. Finally, Lao PDR's import values are much smaller than China's export values in "products for industry". China's exports to Lao PDR of HS 84 and 85 amount to $136 million while Lao PDR's imports from China of "products for industry" amount to $17 million only, creating a discrepancy of $119 million.

5. Implications of the Unsatisfactory Quality of Trade Statistics

The comparison of Lao PDR's trade statistics with that of its major partners' reveals that there are huge discrepancies between the two. One important observation is that Lao PDR's import values are much smaller than partners' export values, which should not be the case given that the import side values are ideally larger than the export side values due to the CIF/FOB factor, that is, insurance and transport costs are included in the import data.

In this section, we will discuss two policy implications associated with the unsatisfactory quality of trade statistics. The first implication is on tariff revenue. Given that the quality of import data is worse than the quality of export data and that tariff revenue is important for Lao PDR, we give more emphasis on the policy implications of unsatisfactory import data. Second, implications on trade im(balance) analysis will be argued. If the quality of trade statistics has a problem, conducting macro economic analysis, especially trade balance analysis based on such statistics is misleading.

5.1. Implications on Tariff Revenue

This section discusses the effect on revenues of the discrepancy between Lao PDR's imports of specific commodity groups from Thailand and China. Lao PDR's import values are significantly smaller than the export values of Thailand and China in those specific commodity groups. It can be said that such discrepancies can be detrimental to the government's tariff revenue collection efforts. It is widely considered that import duty is important. In the case of Lao PDR, tariff revenue has been important and becoming more and more important as it has been integrating more within the region and the rest of the world.[16]

[16] Based on 2001/2002 data of Lao PDR's revenue shares, import duties account for 11% of tax revenues. For the detail, see Tongzon and Khan (2005).

The tariff revenue loss of a specific commodity group is calculated by multiplying the Lao PDR's average preferential tariff of that commodity group by the absolute value of the discrepancy between Lao PDR's import and partner's export in that commodity. First, Lao PDR's average preferential tariff of a specific commodity group is calculated by averaging the tariff of all 8-digit items that belong to the major 6-digit groups that account for an at least 50% share of the entire export value of the 2 digit group concerned. For example, in the case of Thailand's HS 27 exports to Lao PDR, HS 271019, HS 271011 and HS 271600 are the major 6 digit items in the group (98%). We use the average of all 8-digit tariffs under those three groups (e.g. HS 27101911, HS 27101912, etc) as the average tariff of the HS27 group. For the data on tariffs at 8-digit level, we used the International Trade Center's Market Access Map database. Second, the absolute value of the discrepancy between Lao PDR's import and partner's export of a specific commodity group is the difference between the HS based Thailand's export to Lao PDR (e.g. HS 27: Mineral fuels, oils, distillation products, etc) and the counterpart products in Lao PDR's import from Thailand (e.g. "fuel and gas").

We look at the revenue implications of the discrepancies between Lao PDR's import data and Thailand's export data in HS 27, HS 87, and HS 72 plus 73. HS 27 ("fuel and gas" in Lao PDR's data), the major group exported by Thailand to Lao PDR, where the discrepancy is large, amounting to $182 million and the average preferential tariff of Lao PDR to Thailand is 5%, the resulting revenue loss amounts to $9.1 million (Table 16). For HS 87 ("vehicles and parts" in Lao PDR's data), where there's a relatively smaller discrepancy of $109 million and a high average preferential tariff of 28%, the resulting tariff revenue losses amount to $30.3 million. In the case of HS 72 plus HS 73 ("construction materials" in Lao PDR's data), where there's a relatively smaller discrepancy of $81 million and a low average preferential tariff of 1.3%, the resulting tariff revenue loss amounts to $1.1 million only. In summary, it is observed that items with high tariffs such as those under "vehicles and parts" contribute more to revenue losses. The discrepancy in "vehicles and parts" is not that large but because the average tariff is high, the resulting revenue loss becomes very large.

Table 16: Estimated Tariff Revenue Losses on Lao PDR's Import from Thailand

	Lao PDR side import data ($ million) A	Thailand side export data ($ million) B	Difference between the two ($ million) A - B	Average preferential tariff (%) C	Estimated revenue loss ($ million) ((B-A)*C)/100
HS 27 in Thailand's statistics and its counterpart commodities in Lao PDR's statistics	297	479	-182	5	9.1
HS 87 in Thailand statistics and its counterpart commodities in Lao PDR's statistics	129	238	-109	27.8	30.3
HS 72 and 73 in Thailand's statistics and its counterpart commodities in Lao PDR's statistics	76	157	-81	1.3	1.1

We also look at the revenue implications of the discrepancies between Lao PDR's import data and China's export data in HS 84 plus 85 ("products for industry" in Lao PDR's data) and HS 87 ("vehicles and parts" in Lao PDR's data). For HS 84 plus HS 85, where the discrepancy is $119 million and the average preferential tariff of Lao PDR to China is 10%, the resulting revenue loss is $11.9 million (Table 17). In HS 87, where the discrepancy is only $37 million but the average preferential tariff of Lao PDR to China is 25.6%, the resulting revenue loss is already $8.2 million, which is about 70% of the revenue loss in HS 84 plus 85, where the discrepancy is much higher than in HS 87. It, therefore, follows that items with high tariffs contribute more to revenue losses.

Table 17: Estimated Tariff Revenue Losses on Lao PDR's Import from China

	Lao PDR side import data ($ million) A	China side export data ($ million) B	Difference between the two ($ million) A - B	Average preferential tariff (%) C	Estimated revenue loss ($ million) (B-A)*C/100
HS 84 and 85 in China's statistics and its counterpart commodities in Lao PDR's statistics	17	136	-119	10	11.9
HS 87 in Thailand statistics and its counterpart commodities in Lao PDR's statistics	5	37	-32	25.6	8.2

5.2. Implications on Trade Balance Analysis

This section discusses the implications of Lao PDR's unsatisfactory trade data quality to trade balance analysis. If the Lao PDR Government uses the trade statistics released by the MIC to analyze its trade balance, the country appears to have small and improving trade deficits at the aggregate level (Table 18). However, the "actual" trade balance could be worse than the situation based on the MIC statistics analysis. In fact, if we rely on partners' statistics from DOTS, Lao PDR appears to have large and steadily worsening trade deficits.

Comparing MIC trade statistics with the Balance of Payments Statistics (BOPS) compiled by the Bank of the Lao PDR submitted to IMF is also useful to have a rough estimate of the quality of MIC statistics especially from the perspective of the aggregated trade balance. Interestingly, BOPS shows a larger trade deficit than the MIC statistics do. While, BOPS shows a trend of declining deficits (unlike the trade balance based on trade partners' statistics), the data of BOPS and trade partners' trade statistics have a considerable match as far as the year of 2004/5 and 2005/6 are concerned. Those imply that Lao PDR's MIC has to improve on the compilation of export and import data and become more consistent with the data based on BOPS and its trade partners, given that BOPS and its trade partners' data match considerably more than BOPS and MIC data. The inconsistent picture of trade balance across statistics compiled by various governmental agencies in Lao PDR may make economic monitoring difficult.

Table 18: Lao PDR's Trade Balance ($ million)

	Based on MIC's Data			Based on Partners' Data from DOTS			Based on BOPS compiled by the Bank of the Lao PDR		
Year	Lao PDR's Side Statistics (Lao PDR's Exports)	Lao PDR's Side Statistics (Lao PDR's Imports)	Trade Balance	Lao PDR's Exports based on Partners' Side Imports	Lao PDR's Imports based on Partners' Side Exports	Trade Balance	Exports (Credit)	Imports (Debit)	Trade Balance
2004/5				437	1,042	-605	475	854	-379
2005/6	810	921	-111	911	1,409	-498	810	1045	-235
2006/7	800	901	-101	985	1,673	-688	922	1067	-145
2007/8	1,157	1,349	-192	1,354	2,451	-1,097			
2008/9	1,051	1,062	-11	1,220	2,365	-1,145			

Source: Lao PDR's Ministry of Industry and Commerce, DOTS online database, BOPS

The conclusion is the same as that at the aggregate level when the trade balance with partners in 2007/8 using MIC's data is compared with the trade balance based on partners' data from DOTS. The trade deficits worsens when we use the partners' data from DOTS. Using MIC data, Lao has deficits with Thailand, China, South Korea and Hong Kong, China. These deficits far outweigh the surpluses with Viet Nam, Germany, Australia, France, etc. (Table 19). Using the partners' data, Lao PDR has larger deficits and with more countries – Thailand, China, Switzerland, Australia, Japan, France, Belgium, Italy, Hong Kong, China, Indonesia and Malaysia.

These far different results can mislead trade policymaking as Lao PDR integrates with ASEAN and the rest of the world.

Table 19: Lao PDR's Trade Balance with Partners ($ million), 2007/8

	Based on MIC's Data			Based on Partners' Data from DOTS		
	Lao PDR's Side Statistics (Lao PDR's Exports)	Lao PDR's Side Statistics (Lao PDR's Imports)	Trade Balance	Lao PDR's Exports based on Partners' Side Imports	Lao PDR's Imports based on Partners' Side Exports	Trade Balance
Thailand	383	984	-601	650	1,735	-1,086
Vietnam	148	109	39	281	146	135
China	43	96	-53	150	279	-128
South Korea	82	38	44	62	57	5
Switzerland	135	6	129	2	3	-1
Australia	134	5	129	1	14	-13
Singapore	99	11	88	1	31	-30
Germany	52	7	45	48	30	18
Malaysia	61	9	52	16	9	7
America	34	5	29	39	14	25
France	36	12	24	26	16	10
Japan	11	30	-19	16	60	-44
Belgium	6	11	-5	20	13	7
Italy	13	1	12	11	3	8
Denmark	6	2	4	3	3	0.3
Indonesia	0.4	3	-2	1	4	-3
Cambodia	0.2	0.2	0.03	1	0.4	1
Hong Kong, China	0.2	15	-15	0.1	22	-22

Source: Lao PDR's Ministry of Industry and Commerce, DOTS online database

6. Summary and Policy Considerations

This study conducted a quality assessment of Lao PDR's trade statistics by comparing Lao PDR's export/import with its trade partners' import/export. It must be recognized, however, that this comparison has some limitations. The fact that Lao PDR's trade partners' data may also have some problems should be noted. In addition, there are limitations brought about by the comparability of the data used in the study—Lao PDR's data from MIC are not recorded based on HS classification and they are reported only by fiscal year defined as October to September. Also, the comparison is limited to only a few years due to the limited availability of Lao PDR's data. While the status of Lao PDR's trade statistics is unique, some problems of Lao PDR's trade statistics, especially the quality of import data are common to other Southeast Asian countries as well as developing countries in general.

First of all, it should be recognized that Lao PDR does not publish trade statistics based on HS classifications. Publicly available trade statistics of Lao PDR compiled by the Ministry of Industry and Commerce (MIC) adopt their own commodity classification method different from the HS Code, and only annual data based on the Lao fiscal year (October to September) is released. Because of this, comparisons with trade partners' statistics are difficult. Therefore, it is advisable that Lao PDR should release the HS classification-based trade data compiled by the Ministry of Finance.

It can be said that the overall quality of Lao PDR's export data is relatively good compared with its import data. Most differences between the two can be explained by mineral-related and wood-related products. Lao PDR's reported exports of minerals to Thailand and China are much

smaller than the two countries' reported imports of minerals from Lao PDR. Likewise, Lao PDR's reported exports of wood-related products to Viet Nam and China are much smaller than the two countries' reported imports of the same products from Lao PDR. Thus, while the exports of minerals and wood-related products are supposed to be effectively managed by the Lao Government, there is a possibility that a large amount of those products are exported to neighboring countries outside the control of the Lao Government.

There is a large concern on the quality of Lao PDR's import data. The total of Lao PDR's imports from major trading partners is less than half of the total of trade partners' exports to Lao PDR. In October 2008 to September 2009, while the total of Lao PDR's import from its top 20 trading partners was $1,062 million, the total of those 20 countries' exports to Lao PDR was $2,365 million. Although it seems that Lao PDR imports a large amount of fuel and gas, vehicle and parts, and construction materials such as steel from Thailand according to Thai statistics, Lao PDR's import values compiled by MIC report much smaller values on imports of those products from Thailand. Likewise, while Lao PDR's imports of vehicle and parts and machinery products from China are large according to Chinese statistics, Lao PDR's import values report much smaller values on imports of those products from China.

The unsatisfactory quality of import statistics has important policy implications. First, there is a large loss in tariff revenue. If the import value recorded by the Lao Government becomes of similar level to its trade partners' export to the country, Lao PDR's import values will be more than doubled, which means that Lao PDR's tariff revenue will more than double. It should also be recognized that Lao PDR's trade balance "appears" good when calculated using MIC statistics, while the trade balance seems to be worse based on calculations using trade partners' statistics and balance of payment statistics compiled by the Lao Central Bank.

Given the results of comparing Lao PDR's exports and imports at the commodity level, in particular, it is important that the Lao authorities re-examine trade statistics of commodities with large discrepancies when compared with the trade statistics of partners. On the export side, "minerals" and "wood and wood products" are plagued with large discrepancies. On the import side, the study identified large discrepancies in commodity groups, "fuel and gas", "vehicles and parts" and "construction materials."

Improving the data collection and compilation of those commodities is important since they are significant to Lao PDR's trade. One potential way to improve the data collection and compilation of these commodities is by engaging in technical assistance from international organizations specialized in Customs such as the World Customs Organization (WCO) for the recording of goods in HS classification. Lao PDR can also consider the quality dimensions set out in the IMF's Data Quality Assessment Framework (DQAF), which identifies quality-related features of governance of statistical systems, statistical processes, and statistical products. The quality dimensions include assurance of integrity, methodological soundness, accuracy and reliability, serviceability, and accessibility (DQAF, 2006). International financial institutions specialized in economic monitoring such as the Asian Development Bank (ADB) can also assist for the development of data reporting systems.

While Lao PDR is not a member, the principles set out in the European Statistics Code of Practice adopted in 2005 may be useful for Lao PDR to improve its trade statistics. The principles include professional independence, mandate for data collection, adequacy of resources, quality commitment, statistical confidentiality, impartiality and objectivity, sound methodology,

appropriate statistical procedures, non-excessive burden on respondents, cost effectiveness, relevance, accuracy and reliability, timeliness and punctuality, coherence and comparability, and accessibility and clarity.

Accurate data collection by the border agencies and compilation of quality trade statistics are essential for effective policy making as well as for revenue collection. The situation where policy makers and researchers need to use trade partners' statistics in analyzing the trade situation of Lao PDR and in drawing up Lao PDR's trade policies should be avoided. Just like all other developing countries, Lao PDR also needs to examine and improve the quality of trade statistics to design better trade policies and economic policies in general.

Appendix 1

Lao PDR's Total Export by Commodity Classification (2008/9)

No.		Product Items	Total	Share of Major Categories (%)	Share of Sub-categories (%)
I		**Wood and Wood Products**	**46,016,358**	**4.1**	
	I-1	Finished Wood Products	15,226,291		1.4
	I-2	Haft-finished wood products	22,329,965		2.0
	I-3	Logs	2,935,406		0.3
	I-4	Wood Products	5,524,696		0.5
II		**Agricultural Products + Live Animals**	**87,080,657**	**7.7**	
	II-1	Agriculture	84,562,383		7.5
	II-2	Live feeding animals	2,518,276		0.2
III		**Electricity**	**274,592,635**	**24.4**	
IV		**Industry-handicrafts**	**167,632,344**	**14.9**	
	IV-1	Industry	167,155,369		14.9
	IV-2	Handicraft	476,975		0.04
V		**Forestry Products**	**3,908,964**	**0.3**	
VI		**Minerals**	**523,610,734**	**46.6**	
VII		**Diamond**	**15,823,811**	**1.4**	
VIII		**Wasted Items**	**280,706**	**0.02**	
IX		**Other Products**	**4,304,686**	**0.4**	
	***	**Border Trade**	**1,151,642**	**0.1**	
Total			**1,124,402,537**		

Lao PDR's Total Import by Commodity Classification (2008/9)

No.		Product Items	Total	Share of major Categories (%)	Share of Sub-Categories (%)
I		**Products under Government Administrative**	**389,331,434**	**36.5**	
	I-1	Fuel and Gas	159,409,888		15.0
	I-2	Vehicle and Its parts	146,675,748		13.8
	I-3	Electricity	30,548,461		2.9
	I-4	Raw Materials imported for Garment	43,423,012		4.1
	I-5	Diamond	9,274,325		0.9
II		**General products**	**229,106,229**	**21.5**	
	II-1	Food staffs	17,006,690		1.6
	II-2	Office stationary	2,561,620		0.2
	II-3	Construction materials	29,178,429		2.7
	II-4	Electrical equipments and appliances	14,786,837		1.4
	II-5	Medicines	2,942,141		0.3
	II-6	Clothing and dairy products	19,608,405		1.8
	II-7	Products for agricultural purpose	16,250,457		1.5
	II-8	Products imported for industry production purpose	92,563,084		8.7
	II-9	All kinds of vehicle spare parts	24,220,354		2.3
	II-10	Luxury products	8,863,134		0.8
	II-11	Other products	1,125,080		0.1
III		**Border trade**	**1,772,262**	**0.2**	
IV		**Products imported for the Projects and Investment**	**420,445,832**	**39.4**	
	IV-1	Construction materials	91,871,430		8.6
	IV-2	Products supply to industry sectors	88,637,897		8.3
	IV-3	products supply to agricultural sectors	19,803,091		1.9
	IV-4	Fuel and Gas	17,029,790		1.6
	IV-5	Vehicle and Its parts	50,798,440		4.8
	IV-6	Electrical appliances	66,591,124		6.2
	IV-7	Consuming products	4,997,672		0.5
	IV-8	Others	80,716,388		7.6
V		**Products imported for the International Organizations**	**9,852,155**	**0.9**	
VI		**Sample products**	**37,065**	**0.003**	
VII		**Duty free products**			
III		**Temporary imported products**	**11,991,277**	**1.1**	
IX		**Products under Grant Assistant**	**6,463,296**	**0.6**	
Total			**1,065,806,476**		

Appendix 2

Preferential and General Tariff Rates Applied by Lao PDR on Imports of HS 27, 87, 72, and 73 from Thailand, 2007

2-digit HS Code	6-digit Major Items	Commodity Name	Preferential Tariff (PT), %		General Tariff (GT), %	
			Per Item	Average	Per Item	Average
27	271019	Petroleum oils and oils obtained from bituminous minerals, other than crude; preparations not elsewhere specified or included, containing by weight 70 % or more of petroleum oils or of oils obtained from bituminous minerals, these oils being the basic constituents of the preparations; waste oils – Other: waste oils	5	5	11.4	11.5
	271011	Petroleum oils and oils obtained from bituminous minerals, other than crude; preparations not elsewhere specified or included, containing by weight 70 % or more of petroleum oils or of oils obtained from bituminous minerals, these oils being the basic constituents of the preparations; waste oils – Light oils and preparations	5		18.21	
	271600	Electrical energy (optional heading)	No PT		5	
87	870333	Motor cars and other motor vehicles principally designed for the transport of persons (other than those of heading 87.02), including station wagons and racing cars – Of a cylinder capacity exceeding 2,500 cc	No PT	27.8	40	28.8
	870332	Motor cars and other motor vehicles principally designed for the transport of persons (other than those of heading 87.02), including station wagons and racing cars – Of a cylinder capacity exceeding 1,500 cc but not exceeding 2,500 cc	No PT		40	
	870110	Pedestrian controlled tractors	1		5	
	870421	Motor vehicles for the transport of goods -- g.v.w. not exceeding 5 tonnes	No PT		30	
72	721590	Other bars and rods of iron or non-alloy steel – other	1	1.3	5	5
	721430	Other bars and rods of iron or non-alloy steel, not further worked than forged, hot-rolled, hot-drawn or hot-extruded, but including those twisted after rolling – other, of free-cutting steel	1		5	
	721420	Other bars and rods of iron or non-alloy steel, not further worked than forged, hot-rolled, hot-drawn or hot-extruded, but including those twisted after rolling – Containing indentations, ribs, grooves or other deformations produced during the rolling process or twisted after rolling	1		5	
	721041	Flat-rolled products of iron or non-alloy steel, of a width of 600 mm or more, clad, plated or coated – Corrugated	1		5	
73	730890	Structures (excluding prefabricated buildings of heading 94.06) and parts of structures (for example, bridges and bridge-sections, lock-gates, towers, lattice masts, roofs, roofing frame-works, doors and windows and their frames and thresholds for doors, shutters, balustrades, pillars and columns), of iron or steel; plates, rods, angles, shapes, sections, tubes and the like, prepared for use in structures, of iron or steel – other	2		5	
	732599	Other cast articles of iron or steel – other	1		5	
	730810	Structures (excluding prefabricated buildings of heading 94.06) and parts of structures (for example, bridges and bridge-sections, lock-gates, towers, lattice masts, roofs, roofing frame-works, doors and windows and their frames and thresholds for doors, shutters, balustrades, pillars and columns), of iron or steel; plates, rods, angles, shapes, sections, tubes and the like, prepared for use in structures, of iron or steel –Bridges and bridge-sections	2		5	
	731700	Nails, tacks, drawing pins, corrugated nails, staples (other than those of heading 83.05) and similar articles, of iron or steel, whether or not with heads of other material, but excluding such articles with heads of copper	1		5	

Source: Tariff data are 2007 tariffs from International Trade Center, Market Access Map; 6-digit major items are based on Thailand's data of exports to Lao PDR in UN ComTrade

Note: When PT is not indicated, GT is applied.

Appendix 2

Preferential and General Tariff Rates Applied by Lao PDR on Imports of HS 84, 85 and 87 from China, 2007

2-digit HS Code	6-digit Major Items	Commodity Name	Preferential Tariff (PT), %		General Tariff (GT), %	
			Per Item	Average	Per Item	Average
84	841090	Hydraulic turbines, water wheels, and regulators thereof -- Parts, including regulators	No PT	10.0	5	10.7
	840890	Compression-ignition internal combustion piston engines (diesel or semi-diesel engines) – other engines	No PT		10	
	840732	Spark-ignition reciprocating or rotary internal combustion piston engine – Of a cylinder capacity exceeding 50 cc but not exceeding 250 cc	25		30	
	847141	Automatic data processing machines and units thereof; magnetic or optical readers, machines for transcribing data onto data media in coded form and machines for processing such data, not elsewhere specified or included -- Comprising in the same housing at least a central processing unit and an input and output unit, whether or not combined	No PT		5	
85	851780	Electrical apparatus for line telephony or line telegraphy, including line telephone sets with cordless handsets and telecommunication apparatus for carrier-current line systems or for digital line systems; videophones – other apparatus	No PT		10	
	851750	Electrical apparatus for line telephony or line telegraphy, including line telephone sets with cordless handsets and telecommunication apparatus for carrier-current line systems or for digital line systems; videophones – Other apparatus, for carrier-current line systems or for digital line systems	No PT		10	
	850423	Electrical transformers, static converters (for example, rectifiers) and inductors -- Having a power handling capacity exceeding 10,000 kVA	No PT		5	
87	870422	Motor vehicles for the transport of goods -- g.v.w. exceeding 5 tonnes but not exceeding 20 tonnes	15	25.6	20	30
	871120	Motorcycles (including mopeds) and cycles fitted with an auxiliary motor, with or without side-cars; side-cars -- With reciprocating internal combustion piston engine of a cylinder capacity exceeding 50 cc but not exceeding 250 cc	36.2		40	

Source: Tariff data are 2007 tariffs from International Trade Center, Market Access Map; 6-digit major items are based on China's data of exports to Lao PDR in UN ComTrade

Note: When PT is not indicated, GT is applied.

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