

Mekong Institute

Research Working Paper Series 2014



The Impact of Trade Cost and Trade Facilitation on Export of Lao PDR

Syvanh PHON ASA



PAPER NO. 5 / 2014

Mekong Institute
Research Working Paper Series 2014

The Impact of Trade Cost and Trade Facilitation on Export of Lao PDR

Syvanh PHON ASA

December, 2014

Syvanh PHON ASA – was granted a scholarship to pursue master's degree in International Economics Studies at the National University of Laos, Lao PDR. He has conducted several research projects such as Economic Value of Land Use Change in Case of Maize, Udomxay Province in 2011 and Impact of Trade Cost and Facilitation on Export of Lao PDR in 2012.

This publication of Working Paper Series is part of the Mekong Institute – New Zealand Ambassador’s Scholarship (MINZAS) program. The project and the papers published under this series are part of a capacity-building program to enhance the research skills of young researchers in the GMS countries.

The findings, interpretations, and conclusions expressed in this report are entirely those of the authors and do not necessarily reflect the views of Mekong Institute or its donors/sponsors. Mekong Institute does not guarantee the accuracy of the data included in this publication and accepts no responsibility for any consequences of their use.

For more information, please contact the Communications and Knowledge Management Department of Mekong Institute, Khon Kaen, Thailand.

Telephone: +66 43 202411-2

Fax: + 66 43 343131

Email: library@mekonginstitute.org

Technical Editors: Dr. Bounlert VANNALATH, Lecturer, Faculty of Economics and Business Management, National University of Laos, Lao PDR
Dr. Buasawan SIMMALA, Communications and Knowledge Management Manager, Mekong Institute

Language Editor: Dr. Vilailuk Tiranutti

MINZAS Program Coordinator: Mr. Seang Sopheak, Project Coordinator, Mekong Institute

Photograph: www.laotradeportal.gov.la

Comments on this paper should be sent to the author

Syvanh PHON ASA: National University of Laos (NUoL), Dongdok Campus, Xaythany District, Vientiane Capital, Lao PDR. Tel: + 856-20-22024777 Email: s.phonasa@nuol.edu.la
or

Communications and Knowledge Management Department, Mekong Institute

Table of Contents

List of Abbreviations	iv
List of Figures	v
List of Tables	vi
Acknowledgements	vii
Abstract	viii
1. Introduction	1
1.1. Research Objective	3
1.2. Problem Statement	3
1.3. Scope and Limitation	3
2. Review of the Conceptual Framework	3
2.1. Theoretical Framework	4
2.2. Review of Related Literatures	9
3. Research Methodology	11
3.1. Empirical Model and Data Collection	11
3.2. Expected Research Outcome and Policy Relevance	13
4. Empirical Results of the Study	14
4.1. The Overview of Trade Development in the Lao PDR	14
4.2. Trade Costs and Trade Facility in Laos	17
4.3. Determinants of Lao Export to Major Trading Partners	19
5. Conclusion and Recommendations	23
5.1. Conclusion	23
5.2. Recommendations	25
References	26
Appendix	28
About MINZAS	29
The Mekong Institute	30

List of Abbreviations

ADB	:	Asia Development Bank
AFTA	:	ASEAN Free Trade Area
APTA	:	Asia-Pacific Trade Agreement
ASEAN	:	The Association of South East Asian Nations
BTAs	:	Bilateral Trade Agreements
CEPT	:	Common Effective Preferential Tariff
EU	:	European Union
FTAs	:	Free Trade Agreements
IMF	:	International Monetary Fund
NEM	:	New Economic Mechanism
SITC	:	Standard for International Trade Classification

List of Figures

Figure 1:	Trade Cost in Export Flows from Laos to its Trading Partners	4
Figure 2:	The Overall Lao's Trade during 2000-2012	14
Figure 3:	Major Trading Partners of Lao PDR	16
Figure 4:	Documentation Process and Duration of Export	22

List of Tables

Table 1:	Major Export Products of Lao PDR during 2005-2012	15
Table 2:	Indicators of Doing Business in Laos	18
Table 3:	Border Trade of Laos Compared to Some ASEAN Countries	19
Table 4:	Determinants of Lao Export to Major Trading Partners	20

Acknowledgements

First of all, I would like to express my gratitude and respect to the entire lecturer at the Department of Economics, Faculty of Economics and Business Management of the National University of Laos (NUoL), of who all have provided me with valuable advice and skills throughout the entire master's course.

Especially, I would like to express my special gratefulness to both of my supervisors Dr. Bounlert VANNALATH and Dr. Buasawan SIMMALA for their assistance, concrete advice and comments while I was carrying out this research. This work was completed successfully, because they gave me great support and encouragement.

Furthermore, I also would like to express my sincere thanks towards the Mekong Institute (MI), which provided me with a grant and great opportunities, particularly in regard to a month-long training program. Its training program was very meaningful and important to me, because MI offered me a good opportunity to obtain new skills and information that I can apply to my present and future research. Without this support, I would not have been able to complete this study.

Finally, I would like to express my deep thanks to all members of my family, especially my parents and siblings whose understanding and support were always there for me through the long tough educational journey at the NUoL.

Abstract

International trade is the main driving force behind economic development of many countries. It is a significant source of foreign currency and national income, which can be used to support a country's economic growth. Many developing economies have implemented trade liberalization by participating in various Free Trade Agreements (FTAs) in order to improve market access and increase export performance.

This research aims to analyze the progress of trade liberalization and looks at various types of trade costs encountered by Lao exporters. It will also identify the determinants of Lao exports in its relationship with major trading partners, which emerge as a consequence of already implemented FTAs. In this process the panel Gravity model will be used. For this purpose, 20 major Lao's trading partners have been selected in the period of 2005-2012.

The findings suggest that trade liberalization has played a crucial role in stimulating exports of Laos to major trading partners, as indicated by the tremendous increase in the country's export, from \$US330 million in the year 2000 to \$US 2,269 million in 2012. Major export goods include mineral products; garment and agricultural products, all of which combined accounted for 74.31% of the total exports in 2012. Major trading partners of Lao PDR are Thailand, Australia and Vietnam. These three countries account for two-thirds of Lao's total export. The result of the Gravity model suggests that trading partners' income, geographical distance and common border should be considered to be significant factors affecting a country's exports. While the FTAs implementation turns out to have either ambiguous impacts, or negative effects on exports, the lack of export diversification and the low capacity of domestic producers might be significant factors causing less preferential tariff utilization.

1. Introduction

The experiences of many developed and developing countries demonstrated in the past that trade can be an engine for growth that can lead to poverty reduction, which is a priority for development progress of many countries. Hence, many developing countries, including Lao People's Democratic Republic (Lao PDR), have expressed their intention to pursue trade liberalization by increasing their integration into the world economy. Lao PDR has opened its doors by participating in the global economy and introducing the New Economic Mechanism (NEM) in 1986, under which the transformation from a centrally planned economy to a market mechanism is the initial step of economic reform in Laos.

The economic growth of Lao PDR was accelerating after the country became an ASEAN member in 1997, which was followed by the implementation of the ASEAN Free Trade Area (AFTA) in 1998. Under the AFTA Common Effective Preferential Tariff (CEPT) scheme, Laos is eligible to export to ASEAN markets with relatively low import tariffs ranging from 0 to 5%, and it is expected that all tariff barriers in ASEAN will be completely eliminated by 2015. Currently, Laos has extended its trade relations to more than 50 countries, and it has concluded Bilateral Trade Agreements (BTAs) with 15 countries¹. These agreements provide a great opportunity for market access of Lao's exports with low import tariffs (MoIC, 2013).

Furthermore, Laos can export to ASEAN's Dialogue Partners with low import tariffs as a consequence of Free Trade Agreements (FTAs), namely the ASEAN-China FTA in 2005, the ASEAN-South Korea FTA in 2007, the ASEAN-Japan Framework Agreement for Comprehensive Economic Partnership in 2009, and the ASEAN-Australia-New Zealand FTA in 2010. In addition, under the Asia-Pacific Trade Agreement (APTA) Laos is eligible to export some products to China, South Korea, India, Sri Lanka and Bangladesh with low preferential tariffs. An increase in both bilateral and multilateral trade agreements might be a significant factor for the rapid export growth from \$US 324.88 million in the year 2000 to \$US 1.69 billion in 2011. Major Lao's trading partners are Thailand, Vietnam and Australia. These three countries accounted for 70 % of Laos's total export in 2011.²

¹ They are Argentina, Belarus, Bulgaria, Cambodia, China, Indonesia, India, South Korea, Kuwait, Malaysia, Mongolia, Myanmar, the Philippines, Russia, Thailand, Turkey, America and Vietnam.

² The author's calculation base on the Ministry of Industry and Commerce (MoIC) database, 2012.

However, transaction costs of trade are often found to be important determinants of the volume of trade. Most studies show that economic integration³ can reduce costs of transportation in particular and of other infrastructure services in general. The common objective of economic integration is to reduce direct and indirect trade barriers. Strong evidence shows that tariff barriers are now low in most countries, on average less than 5% for developed countries, and on average between 10% to 20% for developing countries, with a few exceptions (Anderson and Van Wincoop, 2004). While the world has witnessed a drastic fall in tariffs over the last two decades, a lot of barriers still remain and do have a negative impact on trade, which can be distinguished in ‘soft’ and ‘hard’ barriers. ‘Soft’ barriers are dealt with through trade and business facilitation measures. The ‘hard’ set of trade barriers, which are often encountered as physical or infrastructure barriers, are addressed through transport facilitation measures.

Improving trade facilitation is vital to supporting the exports of Laos, and it has become a significant factor stimulating the country’s exports. According to a World Bank’s survey, export supported by the Lao Government policies on trade facilitation has improved slightly. This is shown in the results of ‘the Ease of Doing Businesses Index’ where Lao raised six places in the rank, from 165th in the Year 2012 to 159th in 2014. In addition, numbers of documents and time needed to export were reduced from 12 documents and 55 days in 2006 to 10 documents and 23 days in 2014. However, the transaction costs in order to export have increased from \$US 1,420 per container in 2006 to \$US 1,950 per container in 2014 (World Bank, 2014). Thus, the question remains: whether the improvement of trade facilitation can reduce various types of trade costs and stimulates the country’s export. This important question still needs to be addressed.

This research expects to provide a deeper understanding of the causes and effects of various transaction costs of trade between Laos and its trading partners. The findings from this study will contribute to some policy implications, which can be applied to improve the country’s international trade policy.

³ Economic integration refers to at least two countries have agreement to reduce import tariff and non-tariff barriers in order to promote trade among countries members.

1.1. Research Objective

This paper provides an overview of trade costs and determinants of exports in Laos. The specific objectives of this paper are:

1. to analyze the progress of trade liberalization and various types of trade costs encountered by Lao exporters
2. to estimate the determinants of exports of major trading partners as a consequence of FTAs and various trade transaction costs.

1.2. Problem Statement

There are several types of trade transaction costs encountered by Lao's exporters, which include the documentation process for exports, high transport costs, exchange rate volatility, and import tariffs. Therefore, it is important to know:

- What is the statistical significance of exporting costs encountered by major Laos's exporters?
- Does trade liberalization, by participating in various FTAs and improving trade facilitation, stimulate Lao's exports?

1.3. Scope and Limitation

This research focuses on estimating trade costs which relate to the bilateral exports between Laos and its 20 major trading partners, namely Thailand, Vietnam, Singapore, China, Japan, South Korea, Australia, New Zealand, the United States, Canada, France, Germany, Italy, Denmark, Switzerland, the Netherlands, Spain, the United Kingdom, Sweden, and Belgium. This study expects to capture the effects of various types of trade costs. The panel data analysis will be applied for the period of 2006-2012.

2. Review of the Conceptual Framework

Trade costs are directly inferred from observable bilateral and international (domestic) trade data, showing how much more expensive bilateral trade is relative to intra-national trade. In order to understand the concept of comprehensive trade costs, an example of the flow of exports from Laos to its trading partners is provided in Fig. 1.

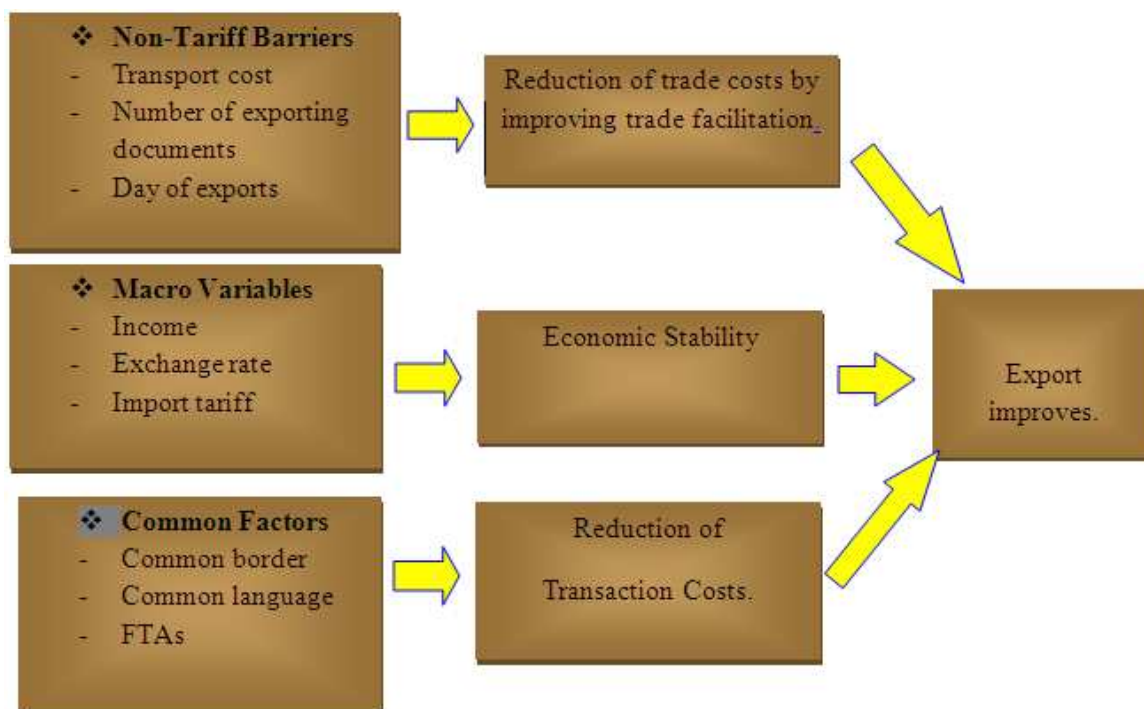


Figure 1: Trade Cost in Export Flows from Laos to its Trading Partners

2.1. Theoretical Framework

This section will review some trade theories and previous empirical studies in order to highlight various types of trade transaction costs encountered by exporters.

2.1.1. Definition of Trade Facilitation

There are several organizations and researchers to the definition of the principal trade facilities such as:

“Trade Facilitation plays an important role in the economic development, as it enhances countries’ competitiveness, allowing them to trade goods and services on time and with low transaction costs” (World Bank, 2003). Many developing countries may not be able to take advantage of those opportunities unless they can make investments to develop their trading capacities such as in ports and roads improvements, improved efficiency in customs administration

Meanwhile, Wilson (2003) highlighted that *“Trade costs associated with transportation charges, documentation requirements and delay in clearance at a national border are as*

important as traditional border measures such as tariffs and quantitative restrictions". In addition, Woo and Wilson (2000) explained more on *"trade facilitation referred to a reduction of the logistics of moving goods through ports or the documentation requirements at a customs post at the border"*. More recently, the definition has broadened to include the environment in which trade transactions take place, where domestic policies and institutional structures play an important role.

In general, trade facilitate is reduction in redundancy costs and transaction trade and makes seller ensure processes and activities conducted with efficiency, transparency and predictability in the basis of a tradition which has been recognized by the international.

2.1.2. Tariffs

Tariffs, which are taxes on imports into a country or region, belong to the oldest forms of government intervention in economic activities. They are implemented for two clear economic purposes. First, they provide revenue for the government. Second, they improve economic returns to firms and suppliers of resources to domestic industry that face competition from foreign imports. Tariffs are widely used to protect domestic producers' incomes from foreign competition. This protection comes at an economic cost to domestic consumers who pay higher prices for import-competing goods and to the economy as a whole through the inefficient allocation of resources to the import-competing domestic industry.

Three measures of tariff barriers are used:

1. Bilateral tariffs represent the simple average tariff rate country *i* applies on imports from country *j*.
2. Import resistance represents a country's average import tariff. We calculated this as the average across all trading partners.
3. Export resistance represents the average tariff faced by a country's exports. We calculated it as the weighted average import tariff that trading partners of country *j* (the exporter) impose on imports from *j*. Weights are given by country *i*'s share in country *j*'s total exports. (Baier, 2001).

2.1.3. Non-Tariff Barriers

Non-Tariff Barriers (NTBs) refer to restrictions that result from prohibitions, conditions, or specific market requirements that make importation or exportation of products difficult and/or costly. NTBs also include unjustified and/or improper application of Non-Tariff Measures (NTMs) such as Sanitary and Phyto-Sanitary (SPS) measures and other Technical Barriers to Trade (TBT). NTBs arise from different measures taken by governments and authorities in the form of government laws, regulations, policies, conditions, restrictions or specific requirements, and private sector business practices, or prohibitions that protect the domestic industries from foreign competition (World Bank, 2004).

Non-Tariff Barriers to trade can arise from:

- Import bans and general or product-specific quotas
- Complex/discriminatory Rules of Origin
- Quality conditions imposed by the importing country on the exporting countries
- Unjustified Sanitary and Phyto-Sanitary conditions
- Unreasonable/unjustified packaging, labeling, product standards\
- Complex regulatory environment
- Additional trade documents (Certificate of Origin and Certificate of Authenticity)
- Occupational safety and health regulations
- Employment law
- Import licenses, export subsidies, and product classification
- Multiplicity and Controls of foreign exchange market
- Inadequate infrastructure
- Corrupt and/or lengthy customs procedures

2.1.4. Absolute Advantage

Absolute advantage is the simplest measure of economic performance. It is the ability to produce a good at a lower cost, in terms of real resources, than does another country. Absolute Advantage is neither necessary nor sufficient for a country to export a good. In other words, a country has an absolute advantage economically over another, in a particular good, when it can produce that good more cheaply or it can produce more of the good than can another country, with the same amount of resources. In fact, absolute advantage appears when multiple products are being considered. For example, if Country “A” has an economic

advantage over Country “B” at producing Product “X”, and Country “A” has an economic advantage against Country “B” at producing Product “Y”, so “A” has an absolute advantage against “B” with respect to products X and Y.

In fact, a country has an absolute advantage over its trading partners if it is able to produce more of a good with the same amount of resources or the same amount of a good with fewer resources. For example, Zambia has an absolute advantage over many countries in the production of copper because of the existence of reserves of copper ore or bauxite. So in terms of the production of goods, there are obvious gains from specialization and trade, if Zambia produces copper and exports it to those countries that specialize in the production of other goods or services. In other words, some countries have an absolute advantage in the production of many goods relative to their trading partners. Some have an absolute disadvantage. They are inefficient in producing all types of goods. The theory of comparative costs argues that it is better for a country that is inefficient at producing a good or service to specialize in the production of the good it is least inefficient at, compared with the production of other goods (Liu, 2009).

2.1.5. Comparative Advantage

Comparative advantage is a theory based upon a set of assumptions, which is an abstraction from the complexities of the real world. This theory explains why the two countries (regions) can be beneficial from trade, even though one of them may be able to produce every item more cheaply than the other. As a result, the party with a comparative advantage can produce a particular good or service by giving up less value in other goods or services that he could otherwise produce with his labor and resources than the other parties would have to give up in producing that same good or service.

Comparative advantage measures efficiency in terms of relative magnitudes. Since countries have limited resources and level of technology they tend to produce goods or services in which they have a comparative advantage. Comparative advantage implies an opportunity cost associated with the production of one good compared to another. However, the theory has some limitations because it is based on assumptions. For example, a firm’s costs are based not only on factor costs, such as wages and materials, but also on the volume of production. Another limitation is that it ignores product and program differentiation;

specifically, the ability to compete in national or international markets is only determined by its cost position. The actual product, program differentiation and the effectiveness of the company are more important to offer a competitive offering (Paul R. Krugman, 2003).

In conclusion, comparative advantage always determines the direction of trade, but both competitive and absolute advantage affect resource allocation, trade patterns and trade volumes. Absolute advantage in the sense of a uniform fall in home costs tends to raise home output in all sectors but also leads both countries to specialize less in accordance with comparative advantage.

2.1.6. Strategy of Trade Facilitation Development from 2011-2015

The Lao PDR Trade Facilitation Strategy from 2011 to 2015 was validated by the government of Lao PDR. The purpose of the strategy is to improve the environment for doing business in Lao PDR. It may also link the country to regional and international integration by making trade procedures shorter, easier, more transparent, faster, more convenient, and systematic and meet international standards. Furthermore, a facilitation strategy also contributes to the National Socio Economic Development for the country, especially in regard to the improvement of the livelihood for the people. There are 6 strategies in the Trade Facilitation, which include:

1. Enhancement of trade facilitation among concerned line ministries
2. Improvement of trade and customs procedures to be more simplified, transparent, streamlined, and harmonized.
3. Implementation of obligations under bilateral, sub-regional, regional, and international frameworks.
4. Improvement of trade operations and compliance to regulations.
5. Provision of equipment and facilities in streamlined management of trade and customs procedures.
6. Establishment of a National Trade Facilitation Secretariat. In order to implement this strategy, it is necessary to establish a detailed action plan to assign responsibility to the concerned agencies (MoIC, 2012)

2.2. Review of Related Literatures

Trade costs have become a topic of attention in the international trade context during the 2000s. Many studies have estimated trade costs and analyzed the impacts of such costs on the trade, both among countries and regions. Wongpit (2013) explains that the trade facilitation factor has had an impact on manufacturing exports in Thailand and has become more important in the country's manufacturing trade cost. The results of this study are robust and exhibit consistency with previous studies that have found that improvement of trade facilitation enhances exports of manufacturing goods by Thailand.

Ramos et al. (2011) applied disaggregate trade (SITC: Standard for International Trade Classification) at the 1-digit level to compare the effects between tariff and non-tariff barriers on trade flows in the context of the gravity model, by selecting thirteen exporting countries, which are developed and developing economies, in the year 2000. The main results indicate that trade barriers related to the number of days and documents and technological innovation had a stronger negative effect on trade than tariff barriers, both at the aggregate and disaggregate levels. In addition, differentiated and capital-intensive goods tended to have more benefits from an improvement of trade facilitation compared to homogenous goods.

De (2006b) provided evidence that transaction costs are statistically significant and important in explaining variations in trade in Asia. De found that port efficiency and infrastructure quality are two important determinants of trade costs. The higher the transaction costs, the lower are the volume of trade. The finding shows a negative relationship between transaction costs and imports in the context of 15 Asian economies for the year 2004. This relationship clearly points to the fact that trade transaction costs do influence trade.

The infrastructure variables have explanatory power in predicting the trade volume. Limao and Venables (2001) emphasized the dependence of trade costs on infrastructure where by infrastructure is measured as an average of the density of the road network, the paved road network, the rail network and the number of telephone main lines per person. A deterioration of infrastructure from the median to the 75% of destinations raises transport costs by 12%. The median landlocked country has transport costs which are 55% higher than the median coastal economy. A country's comparative advantage also depends upon the quality of

infrastructure. Yeaple and Golub (2002) found that differences in the quality of public infrastructure between countries can explain differences in total factor productivity.

Anderson and van Wincoop (2004) found that the tax equivalent of representative trade costs for rich countries is 170%. This includes all transport, border-related and local distribution costs from a foreign producer to the final user in the domestic country. Trade costs are greatly linked to economic policy. Direct policy instruments (tariffs, the tariff equivalents of quotas and trade barriers associated with the exchange rate system) are less important than other policies (transport infrastructure investment, law enforcement and related property rights institutions, informational institutions, regulation, language).

Menon and Warr (2008) examine the impacts of road improvement in Lao People's Democratic Republic (Lao PDR), a poor, land-locked country. Lao PDR has a rugged, mountainous terrain and generally low quality roads. The poorest people often reside far from urban centers and belong to the most disadvantaged parts of society caused by the high transport costs that come as a result of bad road-infrastructure. Over the past two decades Lao PDR has made substantial progress in removing legal and administrative obstacles to market-based development and in opening up to trade with the outside world, but these reforms in soft infrastructure may be of limited value for producers facing very high transport costs arising from inadequate market access due to physical infrastructure constraints. Inadequate or substandard roads remain a stubborn obstacle to realizing the potential benefits from international trade for rural residents.

John S. Wilson, Catherine L. Mannand/Tsunehiro/Otsuki (2003) analyzes the relationship between trade facilitation, trade flows, and GDP per capita in the Asia-Pacific region for the goods-producing sector. These are constructed country - specific data for: port efficiency, customs environment, regulatory environment, and e-business usage. The relationship between these indicators and trade flows is estimated using a gravity model. The results also suggest that improvements in customs and greater e-business applications significantly expands trade, but to a lesser degree than the effect of ports or regulations. Then the model estimates the benefits of specific trade facilitation efforts by quantifying differential improvements by members of the Asia Pacific Economic Cooperation (APEC) in these four areas. Based on a scenario in which below average APEC members improve capacity half-way to meet all members, we find that intra-APEC trade could increase by \$254billion. This

represents approximately a 21% increase in intra-APEC trade flows; about half of that increase coming from improved port efficiencies in the region. Using Dollar and Kraay's estimation of the effect of trade on per capita GDP, these improvements in trade facilitation suggest an increase on APEC average per capita GDP of 4.3%.

APEC (1999) also uses a CGE analysis. The “shock” reduction in trade costs from trade facilitation efforts differs by members of the group: “1 percent of import prices ... for the industrial countries and the newly industrializing countries of Korea, Chinese Taipei and Singapore, and 2% for the other developing countries”. The Report estimates that APEC merchandise exports would increase by 3.3% from the trade facilitation effort to reduce costs. In comparison, the long - run increase in merchandise trade from completing Uruguay Round commitments is estimated in this model to lead to APEC merchandise export growth by 7.9%.

Hausmann, Hwang and Rodrik's (2007) measure the income earned from exports. The analysis then turns to the impact of trade facilitation on export competitiveness. It shows that trade facilitation, captured by the four indicators created by Portugal, Perez and Wilson (2010), and significantly bolsters a key source of competitiveness, total-factor productivity. This is being achieved through a transaction effect, but the production effect in which trade facilitation reallocates resources to more productive sectors, proxies by the impact on the income level of exports, is less sensitive. While the quality and quantity of physical infrastructure is robust across specifications, the results suggest that trade facilitation measures are best adopted as part of a holistic trade policy aimed at creating an environment conducive to the diversification of African exports to ensure long run export competitiveness.

3. Research Methodology

3.1. Empirical Model and Data Collection

Various approaches have been applied in order to measure the effect of trade costs and capital flows. The gravity model is considered to be one of the most successful methods, which can be utilized to analyze the patterns of international trade including commodity shipping, labor migration and foreign direct investment. The model was first introduced by Tinbergen in 1962. The basic concept of the gravity model is supposed to measure the bilateral trade flows

between two countries based on economic sizes (GDP) and geographical distance. The formula can be written as:

$$F_{ij} = C \frac{Y_i Y_j}{D_{ij}} \quad (1)$$

Where, F_{ij} is trade flow from countries i to j , or it can represent total trade volume, Y_i and Y_j refer to the relevant economic sizes of countries i and j , and D_{ij} is the distance between countries i and j . In order to capture various kinds of trade phenomena, previous studies (Dell' Ariccia, 1998; Elliot and Ikemoto, 2004; Kien and Hashimoto, 2005; Hapsari and Mamgunsong, 2006; and Tumbarelo, 2007) included various types of trade costs and some common characteristics such as a shared border, a common language, a joint currency, and a preferential trade agreement.

In order to capture the international trade flows between Laos and its major trading partners, this study followed Liu (2009), Baier and Bergstand (2001), and Wongpit (2013). In so doing the natural logarithm of equation 1, combines the common factors and includes various types of trade costs. Thus, the gravity equation can be written as:

$$\begin{aligned} \log EX_{ijt} = & \beta_0 + \beta_1 \log Y_{it} + \beta_2 \log Y_{jt} + \beta_3 \log D_{ij} + \beta_4 \log E_{ijt} \\ & + \beta_5 \log T_{jt} + \beta_6 \log doc_{ijt} + \beta_7 D_{FTA_{ijt}} + \beta_8 D_border_{ij} + e_t \end{aligned}$$

The subscript i and j refer to exporting and importing countries and t refers to time. EX_{ijt} is the real bilateral export value of country i to country j at time t . Y_{it} and Y_{jt} are the real gross domestic product of countries i and j at time t , respectively; D_{ij} is the average distance between capital cities of countries i and j ; E_{ijt} is the real bilateral exchange rate between countries i and j at time t ; T_{jt} is an average MFN import tariff based on the WTO commitment; Doc_{ijt} is a summation of a number of documents required in export procedures of Laos at time t ; $D_{FTA_{ijt}}$ is the binary variable, which is equal to 1 if two countries are involved in a bilateral free trade agreement or regional free trade agreement at time t and 0

otherwise; $D_{border_{ij}}$ is the binary variable, which is equal to 1 if two countries share a common border and 0 otherwise; $D_{lang_{ij}}$ is the binary variable, which is equal to 1 if two countries have a common language and 0 otherwise; $D_{crisis_{it}}$ is a dummy variable, which is equal to 1 when the country i faced Asian financial crisis during 1997-1999, and 0 otherwise, and e_i is the error term.

This research utilizes various data sources: bilateral export data are derived from the Direction of Trade database and the Ministry of Industrial and Commerce (MoIC), whereas the data related to the distance between two countries are taken from the website: www.timeanddate.com, gross domestic product for both exporting and importing countries and exchange rate data were gained from the UNCTAD statistics online database, MFN import tariff data come from the Integrated Database (IDB) Notifications, WTO. The data concerning the number of documents required for export procedures were obtained from the World Bank's "Doing business survey", FTAs from MoIC, the UNESCAP Free Trade Agreement database and the Asia Regional Integration Center, ADB database.

3.2. Expected Research Outcome and Policy Relevance

This research sets out to identify major issues linked to trade costs between Laos and its trading partners, and it will provide recommendations to further enhance the trade policy implications to ensure the effective contribution of international trades. Moreover, this research aims to provide a deep understanding of various types of trade-related costs, which is considered to be important for policy makers in ensuring that the country will benefit from improving trade facilities. In addition, this research is supposed to be a significant source for the government in improving the country's trade policy during the process of preparation for the ASEAN Economic Community in 2015. Finally, the authors hope that the outputs from this research will address the country's international trade priorities, which can contribute to the objectives of the Seventh Five-Year National Socio-Economic Development Plan (2011-2015).

4. Empirical Results of the Study

4.1. The Overview of Trade Development in the Lao PDR

The Lao PDR has gradually been integrated into the global economy since 1986. The economic reform process has greatly accelerated after the country joined the Association of Southeast Asian Nations (ASEAN) in July 1997 and implemented the ASEAN Free Trade Area (AFTA) in 1998 based on the agreement of the Common Effective Preferential Tariff (CEPT). As a consequence, Laos's export has rapidly increased from \$US330 million in 2000 to \$US 2,269 million in 2012. At the same time, imports have tremendously increased as well from \$ US\$ 535 million in 2000 to \$US 2,467 million in 2012. The monetary value of imports surpasses the exports by far causing a chronic trade deficit, which on average accounted for \$US 242.34 million during the period of 2001-2012.

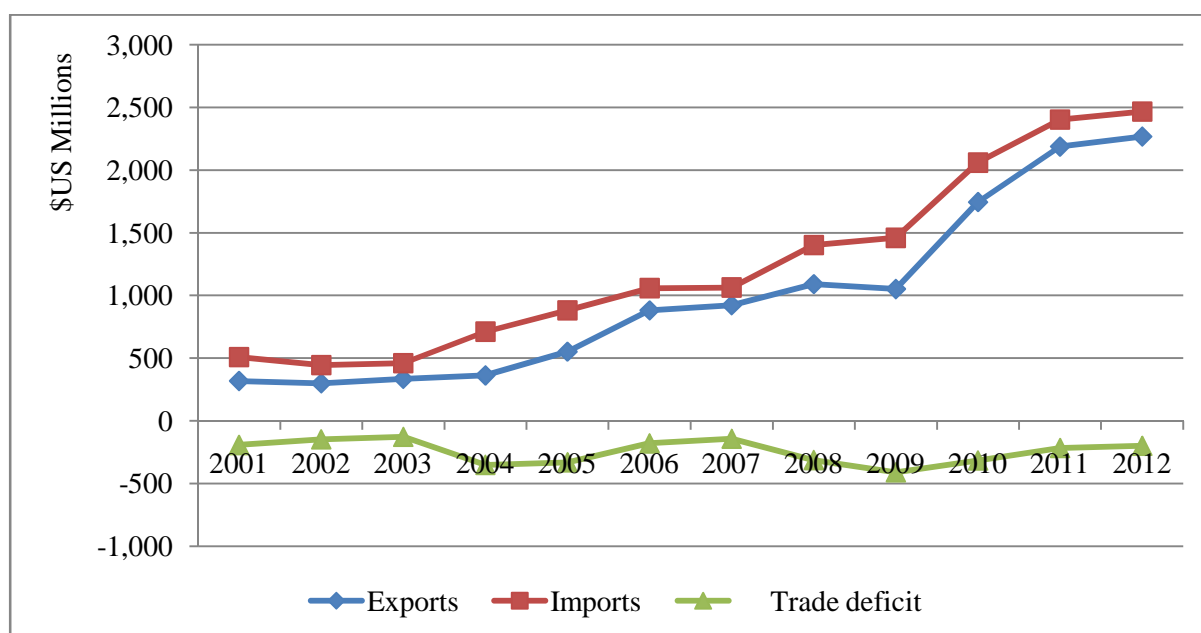


Figure 2: The Overall Lao's Trade during 2000-2012

Source: Ministry of Industry and Commerce (MoIC), 2013

Focusing on export product categories, we found that exports of mineral products have strongly increased from \$US 11.37 million in 2005 to \$US 1,187 million in 2012, which accounted for 55.10% of the total exports of the country. A recent investment liberalization allows foreign investors to invest in mining projects leading to in total approved 111 FDI-

projects (\$US 2.81 billion) during the period of 2005-2010, which ranks this sector only second to the hydropower projects (MPI, 2012). At the same time, the share of garment exports tended to decline from 24.82% in 2005 to 10.87% in 2012. Partially this was caused by the financial crisis and recession in some European countries reducing the demand for garment products from Laos. (See Table 1)

The export of electricity showed a rapid increase from \$US 97.36 million in 2005 to \$US 289 million in the year 2010. In the years after 2010 it's the export value of electricity declined again down to \$US 171 million, which accounted for 7.93% share in the total exports of Lao PDR. In the previous two years, Laos was confronted with various natural disasters which included droughts and tropical storms (Haima and Nock-Ten in 2011). This could be considered a significant factor causing the capacity of electricity production and export to be reduced significantly. However, exports of agricultural and livestock products and industrial products have a high potential for growth, as is made evident by a 20-fold export increase for products of these two sectors during the period from 2005-2012, reaching a height of \$US 178.90 million and \$US 160.90 million in 2012, which accounted for 8.34% and 7.46% of total export, respectively.

Table 1: Major Export Products of Lao PDR during 2005-2012

No	Categories(\$ millions)	2005	2006	2007	2008	2009	2010	2011	2012
1	Wood products	67.05	96.60	72.50	59.31	46.01	37.15	51.32	72.04
	% to total export	19.01	11.00	7.82	4.53	4.09	2.07	2.59	3.34
2	Mineral products	11.37	393	243	41.90	523.60	1,049	1,079	1,187
	% to total export	3.22	44.8	26.3	3.22	46.56	58.60	54.60	55.10
3	Agricultural and livestock products	8.86	29	42.80	44	70.66	98.80	68.50	178.90
	% to total export	2.51	3.034	4.62	3.36	6.28	5.52	3.46	8.34
4	Coffee	10.91	9.71	25	15.4	13.89	19.9	67.2	66.26
	% to total export	3.09	1.13	2.69	1.17	1.23	1.11	3.39	3.07
5	Handicraft products	12.49	1.12	3.7	0.39	0.47	0.39	0.94	0.38
	% to total export	3.54	0.12	0.39	0.02	0.04	0.02	0.04	0.01
6	Garment products	87.11	126	123	255	141.7	167	142	234.2
	% to total export	24.82	14.42	13.3	19.5	12.64	9.33	7.18	10.87
7	electricity	97.36	101	92	97.1	274.6	289	178	171.00
	% to total export	27.61	11.52	9.94	7.42	24.42	16.25	9.00	7.93

No	Categories(\$ millions)	2005	2006	2007	2008	2009	2010	2011	2012
8	Industrial products	7.16	17.9	9.41	26.12	26.12	114	120	160.9
	% to total export	2.03	2.00	1.00	1.99	2.32	6.37	6.07	7.46

Source: MoIC, 2012

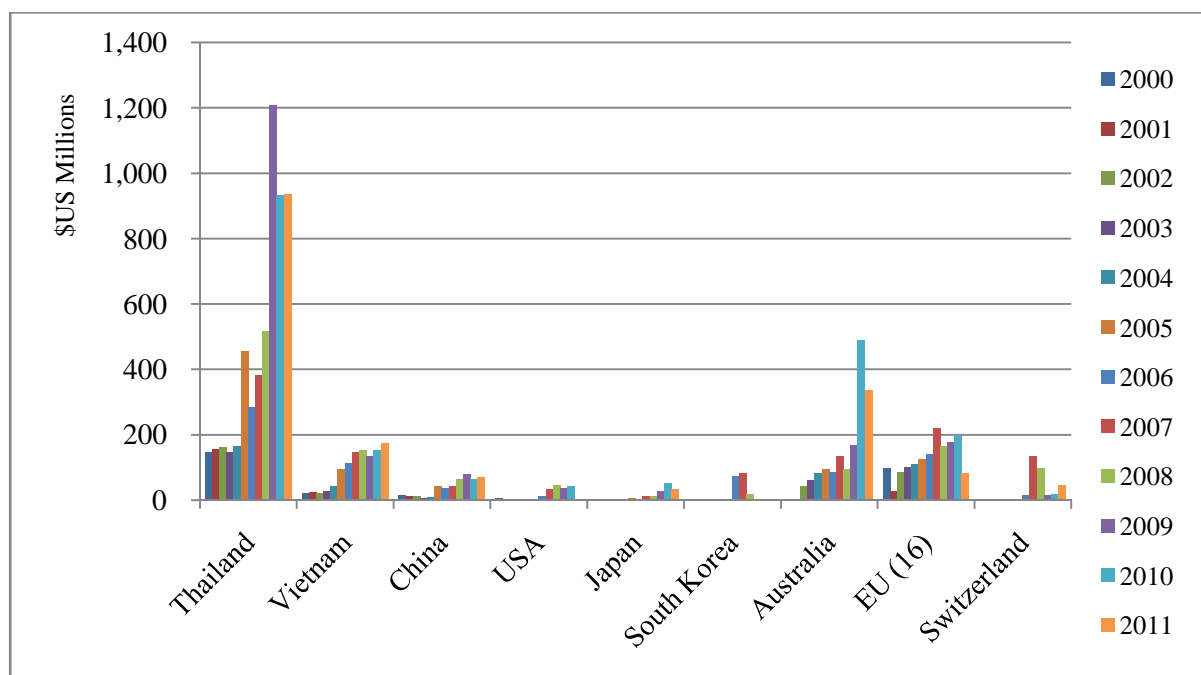


Figure 3: Major Trading Partners of Lao PDR

Source: MoIC, 2012

Note: EU(16) consist of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Holland, Iceland, Italy, Norway, Poland, Portugal, Spain, Sweden and United Kingdom.

Based on Fig. 3, the most important trading partner of Laos is Thailand, and, the total value of Lao exports to Thailand has increased from \$US 146.43 million in 2000 to \$US 936.75 million in 2011, which accounted for 44.43% of total exports during the period 2000-2011. This increase has been facilitated by the shared long border between the both countries and a similar cultural and traditional faith. Laos' exports to Australia have reached a peak of \$US 489.31 million in 2010, which was more than half of the total Laos' exports to the EU (16) making Australia the second most important trading partner of Laos. Vietnam and China were ranked fourth and fifth in the list of the country's most important trading partners. The total exports to those two countries amounted to \$US 174.90 million and \$US 70.63 million,

which accounted for a share of 8.53% and 3.45% of Laos' total exports in the year 2011. Besides that, the United States of America, Japan and South Korea with their high purchasing power will be potential markets for Lao exports in future, but currently only, account for 2% of total exports.

4.2. Trade Costs and Trade Facility in Laos

Lao PDR has implemented several projects in order to improve trade facility and reduction transaction costs, and stimulate the country's export. The Prime Minister's order No. 24/2004 announced a reduction of bureaucratic and time-consuming technical certifications and facilitation of import and export procedures in order to make the movements of goods across the country easier. The order further addressed the implementation of single-window services at border checkpoints, which includes customs, commerce and other technical regulatory authorities.⁴ This is a significant progress of trade reforms in Laos in order to remove trade barriers and support trade growth rapidly.

Currently, the government has succeeded in establishing and approving some legislation with regard to international trade, such as (a) improving custom law No 05/NP, dated on May 20, 2005, to ensure compliance with WTO regulations; (b) the Prime Minister Decree No 228/PM, dated on April 11, 2010, concerning the rule of origins for exports and imports of goods; (c) the Prime Minister Decree No 180/PM, dated on July 7, 2010, in regard to procedures of importing goods; (d) a structural reform reducing government units on international borders from 15⁵ to 3 units, namely customs, immigration and quarantine (CIQ). Some government projects have initially executed in order to support trade and custom facilitation, in particular the establishment of the automated Systems for Customs Data (ASYCUDA), the creation of a trade and information center through an electronic system and the development of logistic parts (MoIC, 2011) fall into this category. These projects will be vital factors to improve trade facilitation in Laos and reduce transaction costs, as made evident by the "Ease of Doing Business Index", in which Laos has risen by 6 ranks among the overall 189 countries between 2012 and 2014. In addition, most indicators related

⁴ Traders' manual for least developed countries, Lao PDR, the United Nations, 2005.

⁵ The 15 government units are Immigration, Custom, Commerce, Food and Drug, Quarantine, Fiscal, Public Health, Insurance, Narcotic Control, Post, Tourism, Forestry, Tax, International Relation, and Communication and Transport.

to government services have shown improvements, which is demonstrated by in better international rankings in the year 2014 compared to 2012. For example: Starting a Business (up 8 ranks), Getting Credit (up 6 ranks), Paying Taxes (up 3 ranks), Trading Across Borders (up 1 rank) and Enforcing Contracts (up 9 ranks).

There are on the other hand, some indicators where Lao PDR performed in 2014 worse compared to 2 years ago, especially in the category “Dealing with Construction Permits” Lao PDR went down by 16 ranks, in “Getting Electricity” a drop by 9 ranks is noticeable, and in “Registering Property”, “Protecting Investors” and “Resolving Insolvency” Lao PDR lost 5, 3, and 4 ranks, respectively (see table 2). Therefore, Laos needs to continue improving some trade and investment laws in order to further enhance the trade facilitation and promotion of the country’s exports.

Table 2: Indicators of Doing Business in Laos

Indicators	Doing business result (rank)			Change
	2014	2013	2012	2014 to 2012
Ease of Doing Business Index	159	163	165	-6
Starting a Business	85	81	93	-8
Dealing with Construction Permits	96	87	80	+16
Getting Electricity	140	138	131	+9
Registering Property	76	74	71	+5
Getting Credit	159	167	165	-6
Protecting Investors	187	184	184	+3
Paying Taxes	119	126	122	-3
Trading Across Borders	161	160	162	-1
Enforcing Contracts	104	114	113	-9
Resolving Insolvency	189	185	185	+4

Source: World Bank, 2014

Focusing on cross-border trade, we could identify some bureaucratic barriers related to trade, which have slowly improved, as made evident by the reduction of the number of necessary documents for exports and imports from 12 and 15 documents in 2005 to 10 documents in 2013. Furthermore, time consumption for export and import procedures has been shortened by 29 and 39 days during the period of 2005-2013. However, transaction costs for transportation are still considered to be a serious issue for most entrepreneurs, a fact confirmed by the quick rise of transportation costs for exports and imports from \$US 1,420

per container and \$US 1,690 per container in 2005 to \$US 2,140 per container and \$US 2,125 per container in 2013. Laos is a landlocked country and weak infrastructural development is considered to be an important obstacle causing transportation costs to increase.

Table 3: Border Trade of Laos Compared to Some ASEAN Countries

Border Trade	Laos		Cambodia	China	Indonesia	Thailand	Vietnam
	2005	2013					
Document to Export (Numbers)	12	10	9	8	4	5	6
Time to Export (Days)	55	26	22	21	17	14	21
Cost to Export (\$US per container)	1,420	2,140	755	580	644	585	610
Document to Import (Numbers)	15	10	10	5	7	5	8
Time to Import (Days)	65	26	26	24	23	13	21
Cost to Import (\$US per container)	1,690	2,125	900	615	660	750	600

Source: World Bank, 2013

Despite Lao PDR making good progress in trade liberalization in terms of documentation and time needed for export and import procedures, there are still serious shortfalls. . In comparison with neighbouring countries, we found that the number of documents for exports to Laos still amounted to 10 documents, whereas Cambodia (1 document), China (2 documents), Thailand (5 documents) and Vietnam (4 documents) required far less bureaucratic documentations in 2013. In addition, on average the transportation costs for exports were relatively high with \$US 2,140 per container compared to Cambodia with \$US 755 per container, China with \$US 580 per container, Thailand with \$US 585 per container and Vietnam with \$US 610 per container in 2013. High transportation costs are considered to be a significant issue making major Lao's exporters less competitive compared to other countries in the region.

4.3. Determinants of Lao Export to Major Trading Partners

This section will analyze the main results of the Gravity model in order to identify the factors that have influenced Lao exports to its major trading partners. In order to ensure the

consistency of the empirical results, at first the statistical description will be introduced (see Appendix 1). Then, the results of the Gravity Model will be discussed.

Moreover, the correlation matrix of the bilateral export is applied whose findings suggest that time to export (dex) has a high correlation with real income in Laos. The estimated coefficient is 0.93. Therefore, the time to export variable will be omitted from the model (for more detail see Appendix 1). The main independent variables will be divided into 3 groups: (1) trade costs, which might relate to the distance between two countries, real bilateral exchange rate, import tariff and number of export documents; (2) macro variables including the real income of Laos and her major trading partners; and (3) FTAs and common factor, which refer to the effectiveness of Free Trade Agreements and the common border variable. For more detail see below:

Table 4: Determinants of Lao Export to Major Trading Partners

Meaning of Variables	Variables	Export	t-statistic
Constant	c	-3.728	-0.33
Trade costs			
Distance	d	-0.821	-2.070**
Real bilateral exchange rate	e	0.183	0.14
Trade partners' import tax	t	-0.096	-0.29
Number of documentation for Export	doc	1.462	0.48
Macro-Variables			
Real income of Laos	y	1.165	0.65
Real income of Trading Partners	yf	0.907	5.900***
FTAs and Common Factors			
Dummy variable for Free Trade Agreement	d_fta	-0.697	-3.160***
Dummy variable for common border	d_border	1.701	4.130***
Sample size		160	
F(9, 150)		14.93	
R ²		0.44	
Root MSE		0.79832	

Note: ***and** refer to significance at 99%and 95%, respectively.

Based on the Table 4, trading partners' income (Y_j) has a strong positive effect on real export, the elasticity of real partners' income to the real export is 0.90. The finding is consistent with the fact that Laos is highly dependent on external markets in order to stimulate the growth of her exports; these markets have a high purchasing power, in particular this is true for developed countries and China. In contrast, domestic income (Y) turns out to have positive effects on real exports, but is statistically insignificant. Most domestic producers are classified as small and medium enterprises (SMEs), which account for 90% of the total number of enterprises in Lao PDR. Those SMEs still lack production capacity and face a shortage of capital for producing goods for exports. Major exporting firms highly depend on foreign capital sources in order to support their export performance and improve technical production. This might be one of the reasons why the above mentioned last result appears to be insignificant.

Among the types of trade-related transaction costs, only geographical distance (D) exerts has a significant negative effect on exports. The finding suggests that a 1% point rise in the distance between Laos and her trading partners tends to have a negative effect on export on average of 0.82%, this result is consistent with Wongpit (2013) and Shepherd and Wilson (2008) who found that a great distance between exporter and their trading partners tended to have a negative effect on exports, which ranged between 0.40%-1.33%. In addition, the transportation costs have increased fast from US\$ 1,420 per container in 2005 to US\$ 2,140 per container in 2013, a significant increase causing a decline in Lao PDR exports to major trading partners.

A depreciation of real exchange rate (e) turns out to have a positive effect on exports, but it does not show any significance. An appreciation of domestic currency from 10,655 Kip/1 \$US in 2005 to 8,007 Kip/ 1 \$US in 2011 might be an important factor letting the domestic production costs increase as described. That consequently led to export reduction. In addition, intervention to the exchange market of the Bank of Lao PDR (BOL) aiming to maintain a stability of exchange-rate movements might be an important factor in order to reduce unintended impacts of exchange-rate changes on export numbers.

The import tariff (t) reveals to have a negative effect on exports, but it is statistically insignificant. This might be caused by the fact that many important trading partners of Lao PDR have made relatively slow progress in reducing their import tariffs under the WTO commitment, especially this is true for import tariff reductions in Thailand, Australia and European countries with tariff declines of less than 1% during the period 2005-2012. A small import tariff reduction like that might not have any significant effect on exports of Laos.

In addition, a small reduction of the number of export documents does not have any significant effect on exports as well. The time to export has shown a great reduction from 55 days in 2006 to 26 days in 2013, but the number of required documents has slowly declined from 12 in 2006 to 10 in 2008 and stayed in the years that followed at that level until 2013 (see Fig. 4). That slow progress of trade facilitation in terms of export documentation might be a significant factor, but in the end the result turned out to be insignificant.

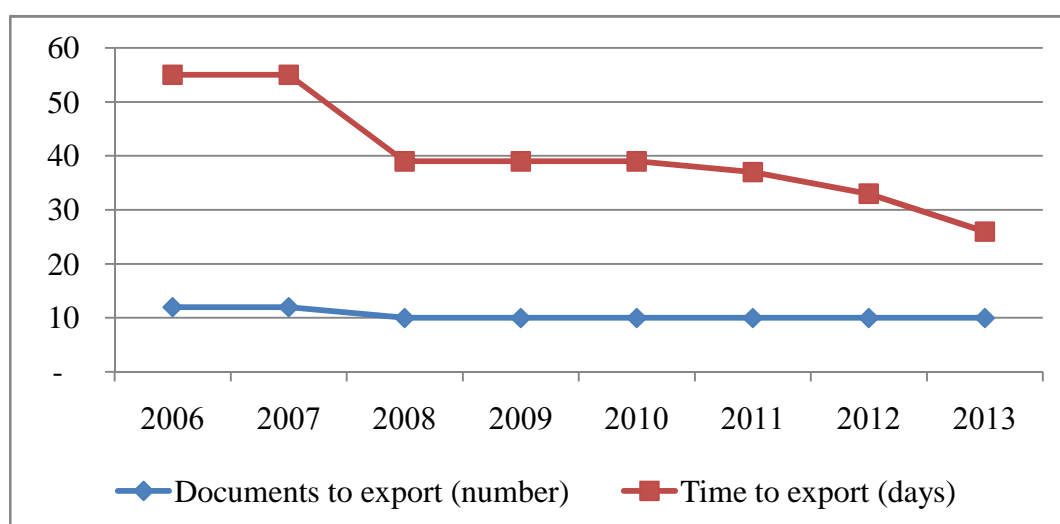


Figure 4: Documentation Process and Duration of Export

Source: World Bank, 2014

Our findings suggest that Free Trade Areas between the Lao PDR and her trade partners (d_fta) turned out to have a negative effect and are statistically of high significance at a calculated value of 1%. Although Lao PDR has already participated in many FTAs including the Normal Trade relationship with the USA in 2005, ASEAN-China FTA in 2005, ASEAN-Korea FTA in 2007, ASEAN-Japan CEP in 2009, and ASEAN-Australia and New Zealand in 2010, the capacity of applying the preferential tariff of several FTAs is relatively low, the

main reasons are: (1) a lack of export product diversification and the quality of exported products is relatively low; (2) a lack of quality of raw material in order to comply with international standards; (3) a high cost and complicated procedure to apply for the certificate of origin; and (4) the information of preferential tariff is not yet being well known to Lao exporters, especially in the case of SMEs. These problems could be significant factors causing the Free Trade Agreements to have negative effects on Lao exports.

Finally, the common border (*d_border*) has a positive effect on export and is statistically significant at a calculated value of 1%. The findings are consistent with the fact that Laos has a lot of trade with neighboring countries, in particular with Thailand, China and Vietnam. Those three countries account for nearly 70% of the total exports of Lao PDR. Moreover, Lao PDR shares similar cultural values with neighboring countries, and this fact might help to increase foreign trade between Lao and neighboring countries.

5. Conclusion and Recommendations

5.1. Conclusion

Laos has implemented various rounds of economic reforms hoping to improve export performance. The country has seen huge economic progress after joining ASEAN in 1997 and the implementation of AFTA in 1998. In addition, Laos has advanced her trade relations to more than 50 countries, and Bilateral Trade Agreements (BTAs) were negotiated and signed with 15 countries. These agreements provide a great opportunity to improve market access and export performance of Lao exporters. In addition, trade costs are often cited as the important determinants of the volume of trade previous studies showed that such kind of integration could reduce trade costs by increasing trade volumes among members.

This research looked at four types of trade costs, which include transportation costs, exchange rate movements, import tariffs and the number of documents needed to exports. Additionally, the research included several FTAs, in which Laos is being involved in order to estimate whether these factors have influenced Lao exports. The panel Gravity model has been applied, which included 20 major countries of Lao PDR's most important trading partners over a period of 2005-2013.

The export of Laos has increased rapidly from \$US330 million in 2000 to \$US 2,269 million in 2012. Major export goods were mineral products, which accounted for 55.10% of the total exports; it was followed by garment products, agricultural and livestock products and electricity, which covered 10.87%, 8.34% and 7.46%, respectively in 2012. Major important trading partners of Laos were Thailand, Australia and Vietnam, which accounted for 70.55% of the total Lao exports. The United States of America, Japan, South Korea and China are potential huge markets for Lao exports, because these countries have a broad consumer base with a large purchasing power.

The government has made great efforts to improve trade facilitation. A legislation responding to the existing international trade regime was established. This process included a structural reform of government units on international borders reducing those government entities from 15 to 3 fundamental units, and the establishment of the ASYCUDA. These projects are considered to have made a significant progress in order to improve trade facilitation in Laos, as made evident by the Ease of Doing Business Index where Laos has improved by up to 6 ranks among the overall rated 189 countries between 2012 and 2014. In addition, the number of documents and time needed for undergoing the export procedures has greatly improved by being reduced from 12 documents in 55 days in the year 2005 to 10 documents and 26 days in 2013. However, the transportation costs have increased continuously, and this became a serious concern for the majority of Lao exporters.

The empirical results of the Gravity model suggested that the trading partners' income and distance need to be considered as being significant factors which have effects on the exports of Lao PDR. The findings can be interpreted in a way that a 1% point of increase in partners' income would stimulate Lao export growth on average by 0.90%. On the other hand, a greater distance between Laos and her trading partners would generate higher transportation costs, and dampened export. In addition, we also found that Laos tended to trade more with neighboring countries due to geographical proximity and cultural similarity. It was also found that the FTAs between Laos and major trading partners revealed to have adverse effects on Lao's exports, because there is a lack of export diversification and quality of raw materials to comply with international standards and requirements, and the capacity of local producers is still relatively low. These points are the main issues which make it difficult for most Lao

exporters to benefit from preferential tariff utilization as much as they could under other circumstances.

5.2. Recommendations

In order to improve trade facilitation and maintain the country's export growth smoothly, some policies implications are given:

1. Transportation costs are an important risk-factor for exports; therefore, the government should trade more with neighboring countries, especially with Thailand and China in order to reduce transportation costs.
2. An increase in partners' income is a vital factor to improve Lao's exports, so the Lao government should continue to expand trade relationships with a wide range of countries in order to improve market access and diversification of trading partners.

Although FTAs have shown adverse effects on Lao's exports in the past, the government should continue to organize regular technical trainings in promoting preferential utilization for entrepreneurs. Those trainings should be followed up by regular evaluation programs in order to ensure the effectiveness of FTAs utilization.

References

- Anderson, J. E., & Wincoop, E. V. (2004). Trade Costs. *Journal of Economic Literature* , 691-751.
- Baier, S. L., & Berstrand, J. H. (2001). The Growth of World Trade: Tariffs, Transport Costs, and Income Similarity. *Journal of International Economics* , 1-27.
- Dell' Ariccia, G. (1998). Exchange Rate Fluctuations and Trade Flows: Evidence from the European Union. *Working Paper* (107), 1-27.
- De, P. (2006b). Trade, Infrastructure and Transaction Costs: the Imperatives for Asian Economic Cooperation. *Journal of Economic Integration*, 708-735.
- Elliot, R. J. R. & Ikemoto, K. (2004). AFTA and the Asian Crisis: Help or Hindrance to ASEAN Intra-Regional Trade. *Asian Economic Journal*, 1-23.
- Endoh, M. (1999) Trade creation and trade diversion in the EEC, the LAFTA and the CMEA: 1960-1994. *Applied Economics* (1) , 207-216.
- Hapsari, I. M and Mangunsong, C. (2006). Determinants of AFTA Members' Trade Flows and Potential for Trade Diversion. ARTNeT Working Paper (21), 1-29.
- Hausmann, R., J. Hwang & D. Rodrik (2007) 'What you export matters,' *Journal of Economic Growth*, 1-25.
- John S. Wilson, Catherine L. Mann % Tsunehiro, O. (2003) analyzes the relationship between trade facilitation, trade flows, and GDP per capita in the Asia- Pacific region for the goods sector. World Bank Policy Research Working Paper (2988), 1-43
- Kien, T. & Hashimoto, Y. (2005). Economic Analysis of ASEAN Free Trade Area: By A Country Panel data. Graduate School of Economics and Osaka School of International Public Policy, Discussion Paper in Economics and Business (12), 1-23.

- Liu, X. (2009). GATT/WTO Promotes Trade Strongly: Sample Selection and Model Specification. *Review of International Economics*, (3), 428-446.
- Limao, N. & Venables, A. J. (2001). Infrastructure, Geographical Disadvantage, Transport cost and Trade. *World Bank Economic Review*,(15), 451-79.
- Paul R. Krugman (2003). *International Economics: Theory and Policy*, sixth edition, 1-783.
- Ramos, L. R. Zarzoso, I. M. & Burguet, C.S. (2009). Estimate the Effect of Trade Costs on Sectoral Trade Using “Good Old” OLS. *Economic Paper* (38), 1-25.
- Tinbergen, J. (1962). *Shaping the World Economy Textbook: Suggestions for an International Economic Policy*, New York. Twentieth Century Fund, 40-293.
- Wongpit, P. (2013). Trade Costs and Impacts of Trade Facilitation on Manufacturing Exports by Thailand. The ARTNeT Working Paper. 127, 1-34.
- Yeaple, S. & Gobub, S. S. (2002). International Productivity Differences, Infrastructure and Comparative Advantage, Mimeo, University of Pennsylvania, 1-33.

Appendix 1

Table 1A: Statistic description of the empirical model

Variable	Obs	Mean	Std. Dev.	Min	Max
Ex (\$US)	160	566,577.10	1,414,736.00	26.80	10,000,000.00
Y (Mil US\$)	160	3,614.64	630.80	2,716.80	4,649.30
Y_f (Mil US\$)	160	1,866,685	2,867,997.00	52,917.30	13,600,000.00
D (Km)	160	7,310.29	3,735.80	481.90	13,686.20
E(kip/\$US)	160	8303.34	1496.41	5577.02	12137.85
T (%)	160	5.69	4.34	0.00	19.28
d_fta	160	0.33	0.47	0	1
d_border	160	0.15	0.35	0	1
Doc (numbers)	160	10.75	0.97	10	12

Table 1B: The correlation Matrix of dependent and independent variables

	ex	y	yf	d	e	t	doc	dex	d_fta	d_border
ex	1									
y	-0.010	1								
yf	0.216	0.034	1							
d	-0.350	0.000	0.478	1						
e	0.095	-0.859	-0.213	-0.254	1					
t	0.449	-0.040	0.112	-0.448	0.199	1				
doc	0.021	-0.842	-0.027	0.000	0.785	0.036	1			
dex	0.001	-0.936	-0.034	0.000	0.801	0.034	0.739	1		
d_fta	0.198	0.177	-0.088	-0.639	0.015	0.221	-0.134	-	1	
d_borde	0.516	0.000	-0.261	-0.814	0.251	0.591	0.000	0.000	0.597	1
r								0.149		

About MINZAS

MINZAS program is a partnership program of Mekong Institute and New Zealand Embassy in Bangkok. The objective of this program is to enhance research capacity of young GMS researchers by providing a structured learning and field research application program for 36 master's degree students from provincial universities in Cambodia, Lao PDR, Myanmar and Thailand.

Through a comprehensive supports – trainings, roundtable meeting, constructive advices from MI advisors including financial supports – which are to be and have been provided to scholarship grantees, students' research skills and conduction of research deem to be developed. The completed research works will be published in 'MI Working Paper Series' and disseminated to related agents among the GMS.

The MINZAS Program is designed for 3 cycles; each cycle lasts for one year with 4 phases:

- Phase One: Training on Research Methodology
- Phase Two: Implementation of Sub-regional Research in Respective Countries
- Phase Three: Research Roundtable Meeting
- Phase Four: Publication and Dissemination of Students' Works in 'MI Working Paper Series'

The research cycle involves:

- One month training course on GMS Cooperation and ASEAN Integration, research development and methodology. The students will produce their research designs and action plans as training outputs;
- Technical assistance and advisory support to MINZAS scholars by experienced mentors and academicians in the course of the research process;
- The scholars will present their research papers in a round table meeting attended by subject experts and their peers;
- Scholars will revise their research papers and improve as necessary, based on experts and peer review during the roundtable meeting;
- Publication of reports as MI working paper series.

The Mekong Institute (MI) is an intergovernmental organization with a residential learning facility located on the campus of Khon Kaen University in the northeastern Thailand. It serves the countries of the Greater Mekong Subregion (GMS), namely, Cambodia, Lao P.D.R., Myanmar, Thailand, Vietnam, Yunnan Province and Guangxi Zhuang Autonomous Region of PR. China.

MI is the only GMS-based development learning institute, chartered by the six GMS Governments, offering standard and on-demand capacity development programs focusing on regional cooperation and integration issues.

MI's learning programs services caters to the capacity building needs of current and future GMS leaders and policy makers on issues around rural development, trade and investment facilitation, human migration, with good governance and regional cooperation as cross cutting themes.

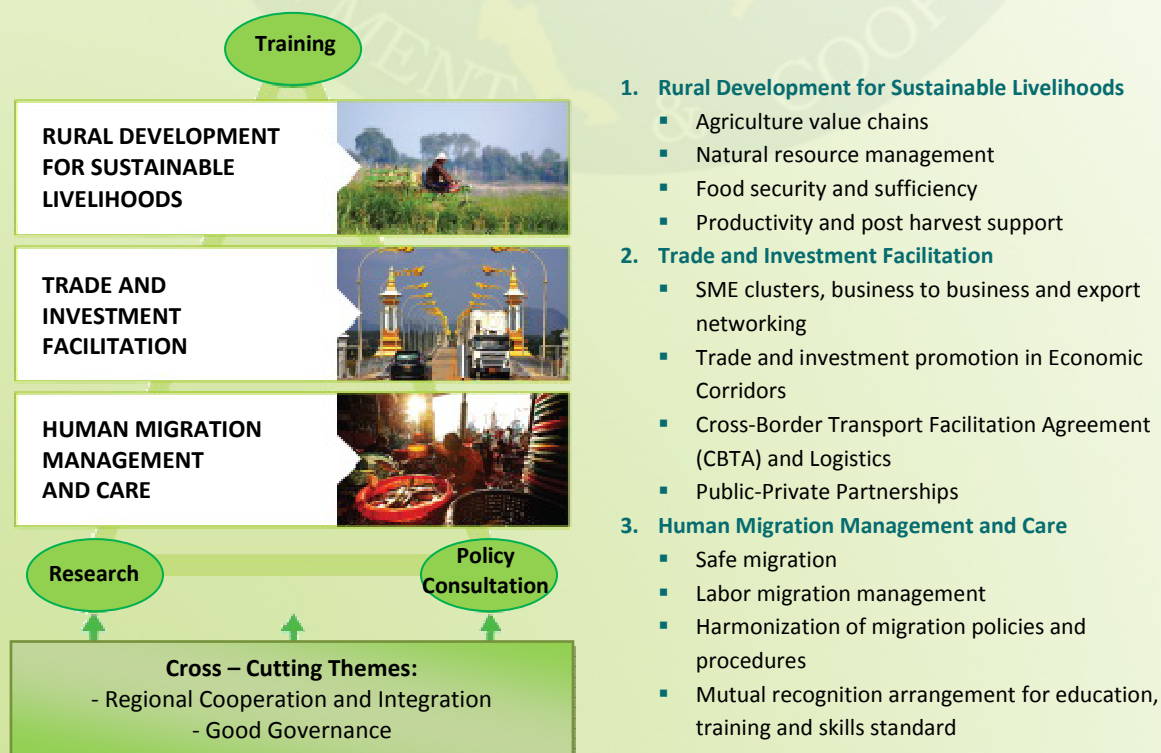
Vision

Capable and committed human resources working together for a more integrated, prosperous, and harmonious GMS.

Mission

Capacity development for regional cooperation and integration.

MI Program Thematic Areas



For more information, visit
www.mekonginstitute.org



Mekong Institute

Research Working Paper Series 2014



NEW ZEALAND
FOREIGN AFFAIRS & TRADE
Aid Programme

This publication of Working Paper Series is part of the Mekong Institute – New Zealand Ambassador’s Scholarship (MINZAS) program. A collaboration project between New Zealand Embassy in Bangkok and Mekong Institute aims to bring forth the research development within the Greater Mekong Subregion (GMS) through educational provision that will be given to 36 master’s degree students from Cambodia, Lao PDR, Myanmar and Thailand (2012 - 2014).