

Original Research Article

**International Trade Structure Change and
determinants in Laos, 2000-2014**

Abstract

This paper uses Trade Structure Change Index (TSCI) to analyze the trade structure change of Laos in 2000-2014 and then use panel data analysis and stepwise regression method to discuss the determinants. Low import TSCI indicates inadequate economic vitality and slow economic growth in Laos, insufficient capital goods import could possibly be the cause; Large export TSCI indicates unsteady export trade structure and comparatively weak product competitiveness, major export products of Laos are still primary products with low value-added; The determinants of import trade structure of Laos are GDP, FDI and the economic structure similarity with other countries, but the effect of AFTA is insignificant; The determinants of export trade structure of Laos are GDP and AFTA, but the explanatory power remains uncertain due to Laos' serious trade deficit problem.

Keywords: Laos; Trade Structure Change Index (TSCI); Import Trade Structure; Export Trade Structure; Determinants

JEL Classification: F10, F19, F50

I. Introduction

In 1986, Laos began a transition process to change from a centrally planned to a market-oriented economy (or the New Economic Mechanism). The transition promotes the trade liberalization as well as the foreign direct investment and international trade in Laos. When Laos joined ASEAN in 1997, trade development and liberalization has reached a remarkable point of the small landlocked communist state like Laos. Subsequently, after Laos has participated in the ASEAN Free Trade Area (AFTA), under AFTA tariffs and non-tariff barriers are to be progressively reduced and eliminated, and these could be assured for the foreign producers, investors and entrepreneurs to start running businesses in Laos.

Currently, the total international trade volume of Laos has increased from 52.25 million dollars in 1986 to 11752.14 million dollars in 2014, with import trade volume increasing from 48.67 million dollars to 7157.46 million dollars and export trade volume increasing from 3.58 million dollars to 4594.67 million dollars. Obviously, there is great improvement in Laos international trade, whereas there is serious trade deficit problem and main export goods are primary products with low value-added like agricultural products. The international trade structure of Laos needs to be improved. Thus, this paper uses Trade Structure Change Index (TSCI) to analyze the international trade structure of Laos and further discussed its determinants to provide suggestions and empirical support for Laos trade structure improvement.

II. Literature Review

A large amount of researches have discussed the impact of some general determinates like GDP, exchange rate, domestic capacity, income level, factor endowments, trading costs, distance and cultural similarities on international trade.

Kouparitsas (2006) undertook an exhaustive search for robust determinants of international trade, pointing out that robust variables include a measure of the scale of factor endowments, fixed exchange rates, the level of development and current account restrictions. Anne et al (2009) focused on cultural goods and investigated its determinants. Results showed a positive and significant influence of cultural flows on overall trade, suggesting that regulations fostering domestic cultural creation might have impacts going beyond what is generally expected. Valerija Botrić (2013) analyzed intra-industry trade determinants between Western Balkan countries and old European Union Member State. It revealed that relative income level, distance, relative factor endowments and relative trading costs are significant factors. Shaista et al(2013) investigated Pakistan's bilateral trade flows with major trading partners through gravity model by using panel data for the time period 1990-2010 with a frequency of two years. Results revealed that GDP and GDP per capita positively affect trade volume while distance and dummy variable for cultural similarities showed a negative relationship towards trade volume. Moses H. et al (2013) pointed out that real exchange rate volatility had a negative and significant effect on the level of Uganda's bilateral trade flows; real exchange rate volatility had a positive and significant effect on the volatility of bilateral trade flows. Jungho Baek (2013) examined the short-run and long-run effects of exchange rate changes on trade flows in the context of disaggregating industry data of bilateral trade between Korea and

67 Japan, showing that Korea's exports and imports were relatively sensitive to the
68 bilateral exchange rate in the short-run, but less responsive in the long-run; income in
69 the two countries had significant impacts on the bilateral trade flows in both the
70 short-run and long-run; exchange rate uncertainty and Japanese FDI to Korea are
71 found to have little impacts on Korea's trade with Japan in the short-run and long-run.
72 Later, Jung-ho Baek (2014) used the same methods to examine the effect of exchange
73 rate fluctuations on Korea's trade with the U.S, finding that Korea's major export
74 industries were highly responsive to the bilateral exchange rate, volatility and third
75 country effects in both the long-run and short-run, whereas Korea's imports were
76 mostly insensitive to changes in those three factors. Christina Tay (2014)
77 econometrically investigated trade in education using a nexus of international trade
78 theories and the gravity model, covering 1050 observations using new UNESCO
79 database. Results showed the determinants of trade in education including wealth of
80 exporter & importer, domestic capacity of exporter & importer, transport costs,
81 common religion, common language and trade restrictiveness of the importer.

82 Christina Davis, Andreas Fuchs, Kristina Johnson, Akoété Ega Agbodji and some
83 scholars analyzed determinates of international trade from state ownership and
84 preferential trade agreements aspects. Christina Davis, Andreas Fuchs, and Kristina
85 Johnson (2014) examined the impact of the state ownership of firms on bilateral trade
86 between China and India. Results supported the hypothesis that imports controlled by
87 state-owned enterprises (SOEs) exhibited stronger responsiveness to political relations
88 than imports controlled by private enterprises.. Akoété Ega Agbodji (2008) evaluated
89 the impact of preferential trade agreements and the monetary union on international
90 trade between UEMOA member countries by dynamic gravity model. It showed that
91 the real bilateral exchange rate, the distance and the volatility of the nominal
92 exchange rate all had a negative impact on international trade while membership in a
93 common monetary zone, UEMOA and the implementation of economic reforms
94 aimed at economic integration had significant effects on bilateral trade within the
95 zone, mainly in terms of diversion of imports and exports. Also, they pointed that the
96 trade within ECOWAS turned out to be at a much lower level than that predicted and
97 lower than trade within UEMOA.

98 However, most research were about the determinants of international trade flow,
99 few was about international trade structure. There is a lack of depth and detailed
100 research on international trade structure and its determinants especially the trade

101 structure of least developed country. Therefore, this paper studies on the international
102 trade structure of Laos both in import trade structure and export trade structure by
103 using data from 2000 to 2014. Further, the determinants of import trade structure and
104 export trade structure are discussed through panel data analysis.

105 **III. International trade structure change of Laos**

106 **1. Trade Structure Change Index (TSCI)**

107 Trade Structure Change Index (TSCI)^① can measure the change of products'
108 internal structure in international trade. For a country, the greater the import trade
109 structure change index, the more dynamic the economy, because the stronger the
110 economic growth, the higher requirement of the quantity and variety of various
111 production factors, consumer goods and service products, which leads to insufficient
112 domestic supply to a certain extent, and increase the change degree of trade structure.
113 As for export trade structure change index, it reveals the change of trade pattern based
114 on comparative advantages. Great export trade structure change index shows unstable
115 comparative advantages in international trade and may reveal that the product
116 competitiveness haven't formed or haven't adjusted to stable pattern yet. The formula
117 of TSCI is as follow:

$$118 \quad TSCI = \sqrt{\frac{1}{N} \sum_{i=1}^N (M_{it} - M_{i(t-1)})^2} \quad (1)$$

119 M_{it} and $M_{i(t-1)}$ indicate the rate of i goods' trade volume in total trade in t
120 period and $t-1$ period respectively. N refers to the quantity of goods types with regard
121 to Standard International Trade Classification (SITC).

122 According to Standard International Trade Classification (SITC), international
123 trade commodities are classified into ten categories SITC0-SITC9 which could be
124 further classified as primary goods, intermediate goods, capital goods, consumer
125 goods. (i) primary goods, corresponding to SCITC0-SITC4, mainly refer to the
126 resource products and agricultural raw materials, namely raw products, mainly
127 including crude oil, coal, iron ore, grain, etc. The import of primary products
128 (especially resources) can alleviate the pressure of energy and mineral resources
129 shortage of importers; (ii) intermediate goods, corresponding to SITC5-SITC6, refer
130 to products which are in the processing before becoming the final product and have to

^① Trade Structure Change Index (TSCI) was first defined in his Chinese artical "Pei Changhong (2013). Import Structure and Economic Growth: Rule and Enlightenment. *Economic research*, 7, 4-19".

131 go through a series of production processes from primary product processing to the
 132 provision of the final consumption, including chemical products, yarn and other
 133 textile intermediate products. The import of intermediate goods can drive the export
 134 of processing trade and has a great positive effect on general trade exports and
 135 domestic consumption; (iii) capital goods, corresponding to SITC7, refer to
 136 machinery and equipment that enterprises use for production, including machinery
 137 equipment, electrical tools, etc. The import of capital goods can not only fill the gaps
 138 of similar goods of importers, but also promote domestic technology improvement
 139 and improve production efficiency; (iv) consumer goods, corresponding to SITC8,
 140 refer to the products needed to satisfy people's daily life, mainly refers to clothing,
 141 furniture, audio-visual equipment, etc. The import of consumer goods can create new
 142 market demand and promote the development of new industries. (v) other,
 143 corresponding to SITC9. To ensure data integrity, SITC9 is kept but without special
 144 analysis.

145 **2. Import trade structure change of Laos**

146 As is shown in figure1, the import trade structure change index of Laos remains
 147 at low level of 0.006-0.025 and keeps stable during 2000-2014 on the whole. The
 148 maximum, minimum and mean of import TSCI in Laos is 0.025, 0.006, 0.014
 149 respectively. During 2000-2014, the import TSCI of Laos declined from 0.025 in 2000
 150 to 0.014 in 2001 and further decreased to the minimum value of 0.006 in 2007
 151 gradually, then, it rose to 0.017 in 2009 and kept stable until 2013 and decreased to
 152 0.10 in 2014. Obviously, the import TSCI of Laos fluctuates within a narrow range
 153 and remains at low level of below 0.025.

154 With reference to Pei Changhong (2013), import TSCI could be an indicator of
 155 economic development. The stronger the economic growth, the higher requirement of
 156 the quantity and variety of various production factors, consumer goods and service
 157 products, which leads to insufficient domestic supply to a certain extent, and increase
 158 the change degree of trade structure. In this case, lower import TSCI of Laos shows
 159 inadequate economic vitality and slow economic growth domestically. Government
 160 should make endeavor to encourage domestic investment, enlarge domestic demand
 161 and boost economy.

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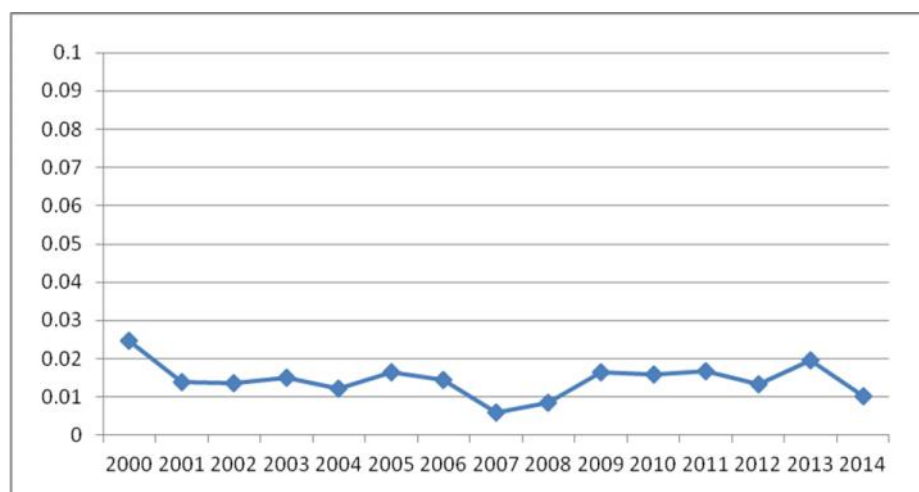


Figure.1 Import trade structure change index of Laos, 2000-2014

For further analysis of import trade structure in Laos, product composition is shown in figure 2. Among the four categories, primary goods, intermediate goods and capital goods have higher proportions than consumer goods apparently. The average proportion of primary goods, intermediate goods, capital goods and consumer goods in 2000-2014 is 31.02%, 27.61%, 35.15% and 4.95% respectively.

As for the relation between import product composition and economic growth, the import of capital goods is an important driver to boost economy since capital goods is the most essential factor that could help implement the effect of other factors of production. The ever-rising import of capital goods has become an important phenomena globally and makes the effect of capital goods import on economic growth become much more significant. While the proportion of capital goods in Laos hasn't always been the largest even it increased from 35.66% in 2000 to 43.98% in 2014. Insufficient import of capital goods could be a reason of slow economic growth domestically. At the same time, the demand of primary goods import becomes weaker with its proportion decreasing from 28.40% in 2000 to 27.49% in 2014. This could be a result of economic development in modern society, requirement on the quality and diversity of products becomes more important and makes the demand of primary goods decreased comparatively.

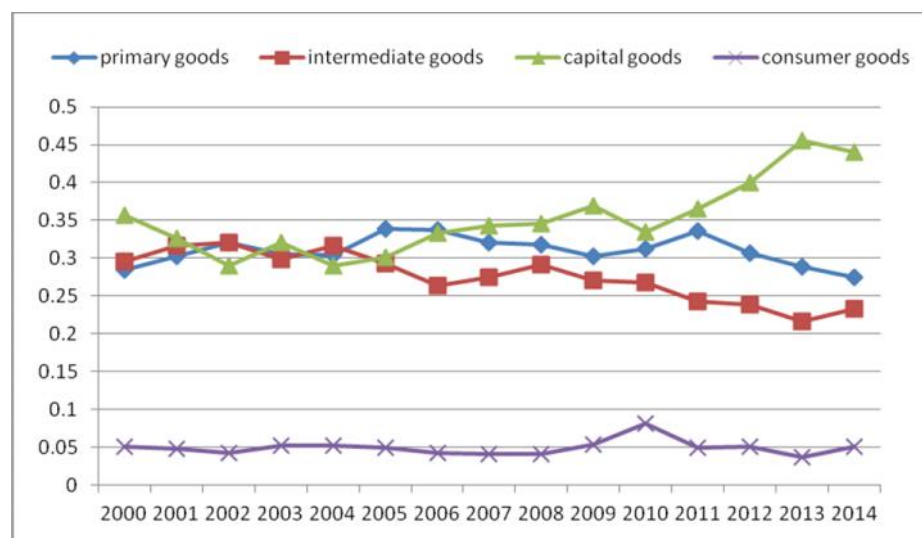


Figure.2 Import product composition in Laos, 2000- 2014

3. Export trade structure change of Laos

As is shown in figure3, the export trade structure change index of Laos fluctuates significantly during 2000-2014. The maximum, minimum and mean of export TSCI in Laos is 0.095, 0.008, 0.037 respectively. During 2000-2014, the export TSCI of Laos sharply declined from 0.095 in 2000 to 0.038 in 2001 and further rose to a high level of 0.082 again in 2006, later it decreased to 0.037 in 2014 gradually after a rise in 2009. Obviously, export TSCI of Laos has changed greatly and stays at high level mostly, especially compared with import TSCI.

Export TSCI could reflect product competitiveness to some extent. With superior product competitiveness which could be high technology, unique resources, high quality, special design or perfect service, one country would not be easily effected by international trade market since their products are special and hard to be substituted. In this case, comparatively stable demand of each product and general export trade structure could be formed and results in lower export TSCI. While the export TSCI of Laos changes a lot and remains at high level, showing unsteady export trade structure and comparatively weak product competitiveness. The most significant product competitiveness of Laos could be cheap labor and primary materials, contributing to high proportion of primary goods export as figure 4 shows.

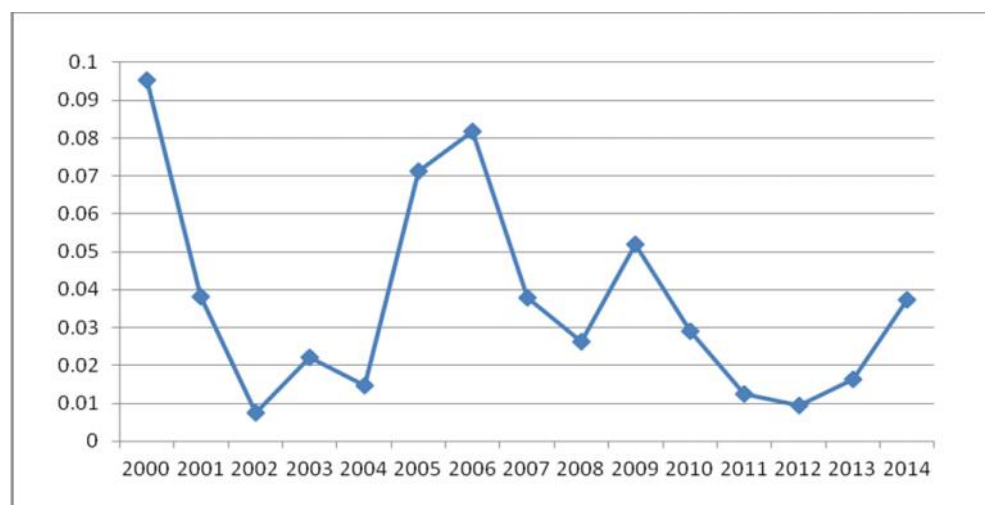


Figure.3 Export trade structure change index of Laos, 2000-2014

As is shown in figure 4. Among the four categories, primary goods, intermediate goods and consumer goods have higher proportions than capital goods apparently. The average proportion of primary goods, intermediate goods, capital goods and consumer goods in 2000-2014 is 51.51%, 20.27%, 3.92% and 23.41% respectively.

Generally, there are plenty of agricultural primary products like crude vegetable materials, plants and seeds in Laos and underdeveloped economy as well as lagged technology makes Laos fail to produce competitive products with high value-added. As a result, the proportion of primary goods remains much higher than other goods. Before 2007, major export products are low value-added products like wood, mining and agriculture products and makes the proportion of primary goods remain as high as 40%-50%. But at the same time, the proportion of intermediate goods kept going up and even higher than primary goods in 2007 and 2008, whereas its rising proportion decreased and the proportion of primary goods ranked first again in 2008 when subprime mortgage crisis broke out. This is because that the crisis made many domestic enterprises' capital chain broken and its negative impact on intermediate goods with longer supply chain and larger fund demand was much larger than primary goods. In this case, the proportion of intermediate goods decreased and that of primary goods increased after 2008. Until 2014, the proportion of primary goods reached the maximum of 72.14%.

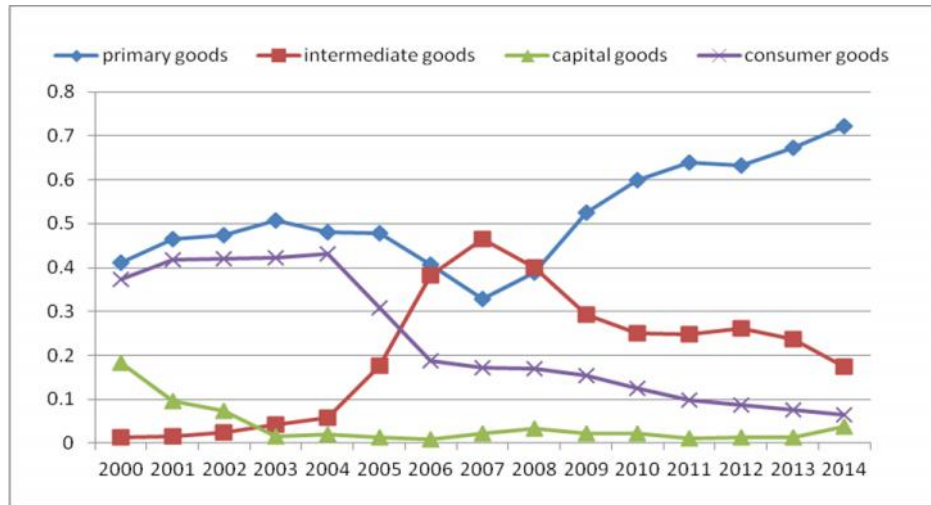


Figure.4 Export product composition in Laos, 2000- 2014

IV. The determinants of international trade structure change in Laos

1. Methodology and data

We use panel data analysis and stepwise regression method to analyze the determinants of trade structure change in Laos by Stata.11 software. Dependent variable is Trade Structure Change Index (TSCI) described above and nine independent variables are selected. It is a consensus that general factors like GDP, GDP per capita and FDI have significant effect on international trade. Besides, another factors like trade volume (import and export), AFTA and industrial structure similarity can be special factors that affecting international trade structure change in Laos.

The econometric model for this paper are:

$$\ln TSCI_{IM} = \alpha_0 + \alpha_1 \ln GDP_{lit} + \alpha_2 \ln GDP_{it} + \alpha_3 \ln GDPP_{lit} + \alpha_4 \ln GDPP_{it} + \alpha_5 \ln FDI_{it} + \alpha_6 ESS_{lit} + \alpha_7 D_{lit} + \alpha_8 \ln SEA_{it} + \alpha_9 \ln TRADE_{lit} + \mu_{lit} \quad (2)$$

$$\ln TSCI_{EX} = \alpha_0 + \alpha_1 \ln GDP_{lit} + \alpha_2 \ln GDP_{it} + \alpha_3 \ln GDPP_{lit} + \alpha_4 \ln GDPP_{it} + \alpha_5 \ln FDI_{it} + \alpha_6 ESS_{lit} + \alpha_7 D_{lit} + \alpha_8 \ln SEA_{it} + \alpha_9 \ln TRADE_{lit} + \mu_{lit} \quad (3)$$

Where $TSCI_{IM}$ is TSCI of import, $TSCI_{EX}$ is TSCI of export, l is Laos, t is time period (year), i is trade partner countries, μ_{lit} is error terms.

(1) GDP_{lt} , GDP_{it} , $GDPPER_{lt}$, $GDPPER_{it}$ is the GDP of Laos, GDP of country i , GDP per capita of Laos, GDP per capita of country i in year t respectively. These variables are general economic factors that reflect the economic power, market scales

297 and potential purchasing power of trading countries.

298 (2) FDI_{it} denotes the FDI inflow into Laos in year t . The relationship between
299 FDI and trade isn't a new topic for discussion among international trade researches,
300 Mundell (1975) proved that FDI was able to substitute import and import would
301 decrease if FDI increased. Later, Krugman (1991) pointed out that FDI and trade have
302 a substituted relationship.

303 (3) ESS_{lit} denotes the economic structure similarity between Laos and country i
304 in the year t . According to the United Nations Industrial Development Organization
305 (UNIDO) in 1979, the formula of ESS_{lit} is:

$$306 \quad ESS_{lit} = \frac{\sum_{m=1}^k x_{lmt} x_{imt}}{\sqrt{\sum_{m=1}^k x_{lmt}^2 \sum_{m=1}^k x_{imt}^2}} \quad (0 \leq ESS_{lit} \leq 1) \quad (4)$$

307 Where S_{li} refers to the economic structure similarity between Laos and country i ,
308 x_{lm} refers to the proportion of GDP sector composition m in Laos, x_{im} represents the
309 proportion of GDP sector composition m in i country. The value of S_{li} is between 0
310 and 1. If $S_{li} = 0$, it means that the economic structure similarity in Laos and i country
311 is totally different, if $S_{li} = 1$, it means that the economic structure similarity in Laos
312 and i country is totally the same.

313 (4)AFTA. The impact of AFTA on international trade in Laos has been
314 demonstrated by Outhai (2015). Two variables are selected to measure the impact of
315 AFTA. The first one is dummy variable D_{lit} which is a binary variable that is given 1
316 when country i has established AFTA membership with Laos or otherwise given 0.
317 The other variable is SEA_{it} that denotes the size of economy of AFTA in the year t .
318 Neo-classical trade theory predicts that large countries tend to be net exporters in
319 scale-intensive industries (Helpman and Krugman, 1985; Krugman and Venables,
320 1995). Large economy size of AFTA reflects plenty memberships, wide variety of
321 commodity, strong purchasing power, large market demand and supply which could
322 certainly benefit each membership within the free trade zone. The calculation of this
323 variable is to sum all real GDP of all membership and the other AFTA trade dialogue
324 partner countries in the year t , excluding Laos.

325 (5)TRADE_{lit}. TRADE_{lit} refers to the trade volume between Laos and country i .
326 Trade volume could reflect the trade status between two countries. In regression
327 model, TRADE_{lit} is the import trade volume and export trade volume when the

328 dependent variable is import trade structure change index and export trade structure
329 change index respectively.

330 27 countries that has established international trade relationship with Laos are
331 selected, that is, Australia, Belgium, Cambodia, Canada, China, Denmark, France,
332 Germany, Hong Kong SAR, China, India, Indonesia, Italy, Japan, Korea, Rep.,
333 Malaysia, Netherlands, New Zealand, Norway, Philippines, Russian Federation,
334 Singapore, Switzerland, Taiwan, Thailand, United Kingdom, United States, Vietnam.
335 All data comes from COMTRADE and World Bank database.

336

337 2. Results of regression for import trade structure change

338 Table1 Results of import trade structure change

Variable	(1)	(2)	(3)	(4)	(5)
$GDPP_{lit}$	0.014 (0.10)				
D_{lit}	0.001 (0.05)	0.001 (0.07)			
SEA_{it}	0.003 (0.20)	0.004 (0.21)	0.004 (0.21)		
$TRADE_{lit}$	-0.004 (-0.95)	-0.004 (-0.95)	-0.004 (-0.96)	-0.004 (-0.95)	
GDP_{lit}	0.046 (0.36)	0.059 * (1.88)	0.059 * (1.93)	0.060 * (1.96)	0.061 ** (2.02)
GDP_{lt}	3.725** (2.02)	3.713 ** (2.03)	3.726 ** (2.04)	3.646 ** (2.05)	3.583 ** (2.01)
$GDPP_{lt}$	-4.693** (-2.07)	-4.679 ** (-2.07)	-4.695 ** (-2.09)	-4.588 ** (-2.1)	-4.519 ** (-2.07)
FDI_{lt}	0.013* (1.72)	0.013* (1.72)	0.013* (1.72)	0.014 ** (2.04)	0.014 ** (1.99)
ESS_{lit}	0.299* (1.84)	0.300* (1.86)	0.301 * (1.86)	0.286 * (1.96)	0.277 * (1.91)

339 Note: ***, ** and * indicates significant at 1 %, 5% and 10 % respectively, none
340 means insignificant. Values in “()” are t-value.

341 The effects of $GDPP_{lit}$, GDP_{lt} on import trade structure of Laos are significant and

positive, especially the GDP of Laos. It is because that larger GDP of Laos reflects larger domestic demand and brings higher requirement on the variety, quantity and quality of products. This could result in insufficient and diversified domestic supply to a certain extent and import trade products should be changed constantly to meet insufficient domestic needs. In this case, the larger the GDP is, the larger import trade structure change would be. However, the coefficient of $GDPP_{it}$ is negative and that of $GDPP_{lit}$ is insignificant. Both are inconsistent with expectations and theoretical analysis. It maybe caused by huge regional difference in Laos. There are still several minorities living in mountains and staying away from modern society which weakens the explanatory power of GDP per capita and makes its effect on import trade structure change unreasonable and incorrect.

As for the effect of FDI on import trade structure, the coefficient is significant and positive. It is due to the reason that larger amount of FDI inflow means increasing products produced domestically both in quantity and category. It could increase domestic needs of diversified complementary products and intermediate products which would result in insufficient domestic supply and affect import structure. In this case, the larger the FDI is, the larger the import trade structure change would be.

Also, the coefficient of ESS_{lit} is significant and positive. Similar industrial structure may result in large trade structure change due to the reason that countries have similar product structure could easily find substitute products in their own country once their trading products were influenced by international trading market. They are not dependent on each other in international trade greatly and could change their trading structure comparatively easier than that with lower economic structure similarity.

Additionally, the effects of D_{lit} and SEA_{it} that reflect AFTA are both insignificant. However, according to Outhai (2015), AFTA has significant effect on both import trade volume and export trade volume of Laos. The difference may discover that the impact of AFTA on international trade of Laos needs to be intensified since its effect still stays at the primary stage that only increase or decrease the trade volume of Laos. The insignificant effect reveals that the effect of AFTA has not developed to a higher stage that could change the trade pattern of Laos deeply. Joining AFTA certainly plays a critical role in international trade of Laos, whereas, Laos still has a long way to go to make AFTA benefit its international trade competitiveness and improve trade structure.

To conclude, the determinants of import trade structure of Laos are GDP, FDI and the economic structure similarity with other countries.

3. Results of regression for export trade structure change

Table2 Results of export trade structure change

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)
$GDPP_{lit}$	0.056 (0.33)						
FDI_{lt}	-0.003 (-0.27)	-0.003 (-0.27)					
$GDPP_{lt}$	2.446 (0.86)	2.503 (0.89)	2.098 (0.88)				
GDP_{lt}	-2.014 (-0.88)	-2.065 (-0.90)	-1.733 (-0.90)	-0.038 (-0.73)			
$TRADE_{lit}$	-0.004 (-1.10)	-0.004 (-1.12)	-0.004 (-1.13)	-0.004 (-1.08)	-0.005 (-1.20)		
ESS_{lit}	0.200 (0.96)	0.205 (0.99)	0.208 (1.00)	0.276 (1.44)	0.194 (1.25)	0.227 (1.49)	
GDP_{lit}	-0.124 (-0.76)	-0.073* (-1.76)	-0.072* (-1.74)	-0.068* (-1.65)	-0.074* (-1.84)	-0.093** (-2.54)	-0.073** (-2.14)
D_{lit}	-0.035 (-1.35)	-0.033 (-1.31)	-0.033 (-1.31)	-0.036 (-1.45)	-0.035 (-1.39)	-0.044* (-1.86)	-0.045* (-1.91)
SEA_{it}	0.020 (-0.91)	0.020 (0.92)	0.017 (0.90)	0.028* (1.85)	0.019* (2.24)	0.019** (2.26)	0.021*** (2.62)

As is shown in table2, none of nine variables is always significant, while after stepwise regression, there are three variables significant finally. This could be the result of Laos' serious trade deficit problem and small export trade volume. Panel data analysis requires large and stable source data, but compared with large and stable data of import, that of export in Laos is insufficient. Source data shows, the export trade volume of Laos accounts for only 50% of export trade volume approximately during 2000-2014 and missing data of export is also more than import. Although we have filled missing data and modified some outliers, the insufficient source data problem still exists and it indeed stays consistent with Laos actual export trade status. According to the data obtained from the Ministry of Industry and Commerce of Laos,

in the past decade, the major export products of Laos are wood, mining and agriculture products. But in recent years, government reduced or quit the export quotas of wood and mining, this possibly leads to decreasing export trade volume when compared with import. In this case, smaller and unsteady database weakened the explanatory power of export model and the result is somehow not as good as import model.

To conclude, the determinants of export trade structure of Laos are GDP and AFTA, but the explanatory power remains uncertain.

V. Conclusion

According to Standard International Trade Classification (SITC), we further classified the goods into primary goods, intermediate goods, capital goods and consumer goods, and use Trade Structure Change Index (TSCI) to analyze the trade structure change of Laos in 2000-2014. Then, panel data analysis and stepwise regression method are used to discuss the determinants of trade structure change of Laos both in import and export. Conclusions are as follows:

(1) The import TSCI of Laos fluctuates within a narrow range and remains at low level of 0.006-0.025 during 2000-2014, showing inadequate economic vitality and slow economic growth domestically. Government should make endeavor to encourage domestic investment, enlarge domestic demand and boost economy; Among the four categories, primary goods, intermediate goods and capital goods have higher proportions than consumer goods apparently and their average proportion in 2000-2014 is 31.02%, 27.61%, 35.15% and 4.95% respectively; The ever-rising import of capital goods has become an important phenomena globally since capital goods import is an important driver to boost economy, but the proportion of capital goods in Laos hasn't always been the largest, it could possibly explain slow economic growth domestically.

(2) The export TSCI of Laos has changed greatly and stays at high level mostly during 2000-2014, showing unsteady export trade structure and comparatively weak product competitiveness; Among the four categories, primary goods, intermediate goods and consumer goods have higher proportions than capital goods apparently and their average proportion in 2000-2014 is 51.51%, 20.27%, 3.92% and 23.41% respectively; The major export products of Laos are still low value-added products like agriculture products and makes the proportion of primary goods as high as 72.14% in 2014. Governments should make endeavor to promote technical progress

424 and improve products competitiveness.

425 (3)The determinants of import trade structure of Laos are GDP, FDI and the
426 economic structure similarity with other countries, but the effect of AFTA still stays
427 at the primary stage that only increase or decrease the trade volume and has not
428 developed to a higher stage that could change the trade pattern of Laos deeply.
429 Governments should grasp this opportunity and make AFTA benefit its international
430 trade competitiveness and improve trade structure.

431 (4) The determinants of export trade structure of Laos are GDP and AFTA, but
432 the explanatory power remains uncertain. None of nine variables is always significant
433 and there are only three variables significant after stepwise regression. This is because
434 imperfect export database. Laos has serious trade deficit problem and very small
435 export trade volume which makes the data of export not as perfect as import.
436 Although we have filled missing data and modified some outliers, the smaller and
437 unsteady database weakened the explanatory power of export model.

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