

The Impact of Foreign Trade on Economic Growth in Laos

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ABSTRACT

This paper analyzes Laos's trade policy before and after economic reform using an ADF test, co-integration analysis, Granger causality test, and an error correction model to analyze foreign trade and economic growth. The empirical results show that, in the long term, Laos's total trade, exports and imports are positively related to its GDP. Laos's exports have a greater impact on its GDP than imports. In the short term, Laos's total trade volume has a relatively large impact on GDP. The impact of exports to GDP is positive and more significant, while the impact of Laos's imports on GDP is negative.

Keywords: *foreign trade, economic growth, commodity structure, bilateral trade*

1. INTRODUCTION

The gradual acceleration of economic globalization, progress in science and technology, increased productivity, and international division of labor continue to deepen the rapid growth of economies. Foreign trade is also having an increasingly important impact on economic growth. Therefore, academia has always been interested in the relationship between foreign trade and economic growth. Following reforms and the opening up of Laos in 1986, Laos's trade and investment policies have changed, gradually transforming its economy from a central planned economy to a market economy. At that time, the party and government issued many policies to develop the economy, including training in agricultural skills, which have promoted the steady growth of the economy. The aim of agricultural training is to change agricultural production from subsistence farming to commodity production; which has also led to the development of the processing industry (Phimphanthavong, 2014).

According to Lao Statistics Bureau, during the five years from 2008 to 2013, the growth rate of the GDP in Laos has been steady at around 8%. At the same time, the living standards of Laotian people have been improved to a certain extent, and Laos's foreign trade has also increased significantly. In 2012, Laos completed exports worth US\$3.546 billion and imports worth US\$3.65 billion. In 2013, Laos exported US\$3.533 billion, with imports amounting to US\$4.196 billion; at that time, the country's GDP was US\$101.9 billion, with the per capita GDP US\$1534. However, in absolute terms, the World Bank still listed Laos among the middle- and lower-income countries (Lao Statistics Bureau and World Bank).

2. MATERIALS AND METHODS

2.1. Literature review

Most foreign scholars have recognized that foreign trade has a positive effect on economic growth. Western scholars have focused on the analysis of the impact of foreign trade on the economic growth of all countries from the perspectives of classical economics and neo-classical economics and explored the influence of foreign trade and economic growth with historical data and regression analysis.

In one such study, Eravwoke and Kester Erhieyovwe (2013) adopted the regression analysis method, including an error correction model (ECM) and co-integration analysis to study the economy of Nigeria. Their empirical analysis concluded that export is very important for international trade. On this basis, they suggested that the Nigerian government should effectively promote Nigeria's economic growth by exporting more goods and services.

In addition, some scholars have introduced the index of trade openness to analyze the impact of foreign trade on economic growth. For example, Clarence JunKiang Tan (2012) used panel data for 112 countries to analyze the relationship between trade openness and economic growth. The results show that trade openness has a strong positive relationship with economic growth, and based on the preliminary analysis of the panel data, on the relationship between foreign trade and economic growth. Further time-series data were examined, using Singapore as an example; it was found that the international trade indeed promoted economic growth. However, the factors affecting the economic growth include education expenditure, technological progress and other factors. Zahoor Hussain Javed et al. (2012) studied the impact of foreign trade on Pakistan's economic growth from the perspectives of terms of trade, trade

openness, and investment / GDP, then used time-series data from 1973 to 2010 for analysis. Their empirical results showed that all explanatory variables related to foreign trade have a positive and significant impact on economic growth, though the degree of trade openness has the greatest effect.

Other researchers are exploring the interactive relationship between foreign trade and economic growth from specific product examples. For example, Ugwuegbe S. Ugochukwu and Uruakpa Peter Chinyere (2013) discussed the impact of oil exports and non-oil exports on economic growth and used the Granger causality test to analyze the causal relationship between variables. The study found that oil and non-oil exports have a great impact on the economic growth of Nigeria. The authors suggested that the government should promote the development of the oil sector, promote the export of oil and non-oil products, and further promote economic growth. However, some scholars hold the opposite view, that foreign trade hinders economic development. For instance, Bhagwati (1987) argued that the international exchange of inequality leads developing countries to be disadvantaged in the international division of labor, which will lead to the gradual deterioration of the trade conditions in developing countries and impede the economic growth of developing countries. At the same time, some scholars believe that the relationship between foreign trade and economic growth is not clear. For example, one development economist, Nurkse (1953) believed that foreign trade in the 20th century might not be able to drive the economic growth and foreign trade could not be significantly improved.

The views of Chinese scholars are essentially consistent with those of foreign scholars, but the research object is China or some province in China, and the methods of research are different. In one example, Wang Yurong (2010) used the foreign trade and macroeconomic data from China's reform methods to analyze the short-term and long-term contributions of foreign trade to China's economic growth. In light of the regression results, the author suggested that the country should increase the proportion of net export in order to offset the lack of domestic demand in the short term and maintain the stability of short-term economic growth.

Other scholars have conducted research following up on this result, with the main differences in their theoretical and empirical methods. For instance, Wang Haohan (2005) analyzed the perspective of the production and distribution of trade interests using theoretical and empirical analyses. That study concluded that changes in foreign trade often play a key role in economic growth and emphasized the internal mechanism of foreign trade's impact on economic growth. Chen Yan (2007) examined the impact of international trade and the growth of the world economy and discovered, based on the theory of international trade and economic growth in Marxist economics and western economics through various aspects such as history, theory

and empirical data, that international trade reflects and promotes economic growth. Qian Shujing (2011) examined the subject through the lens of East Asian development and determined that in the current stage of economic development, foreign trade will affect long-term economic growth by affecting capital stock, labor force and technological progress. Yang Shunfei (2006) introduced a new method of calculating trade openness and used it to discuss the relationship between trade and openness. The empirical results of the study found that trade promoted China's economic growth and suggested that China's current level of openness to foreign trade is not high and it should continue to expand foreign trade. Li Zhaoyang (2010) built an expansion model of economic growth based on trade variables and used data from 1991–2008 to study the impact of foreign trade on economic growth. The study found that, in the long-term, foreign trade plays a positive role in promoting economic growth, mainly by promoting capital accumulation, technological progress, and institutional changes.

2.2. Theoretical analysis

2.2.1. History of foreign trade

Since the implementation of Laos's economic reforms in 1986, its government has issued a series of strategies relating to the economic development of the country, set up a macroeconomic regulation and control decision system, and emulated the development direction of the industrialized countries. It has established a reasonable economic development model and structure and promoted the development of social economy and culture. The policies and plans of government have been funneled into concrete and feasible initiatives, focusing on the implementation of projects such as commodity production, service industry and poverty alleviation, maintaining social stability, and protecting ecological security and environmental quality (Phimphanthavong, 2012).

The government has mainly based its reform of the foreign trade system based on the principle of governmental separation, integration of industry and trade, foreign trade agency, and the integration of import and export. It has partially opened the right of trade and operation, and trading companies operate according to the principle of independent reform. It has also adopted policies relaxing foreign exchange controls, implementing export tax rebates, and giving full play to market mechanisms, so as to create a favorable and effective external environment for foreign trade enterprises to operate independently. Both import and export have generally maintained sustained growth since the implementation of economic reform (Figure 1).

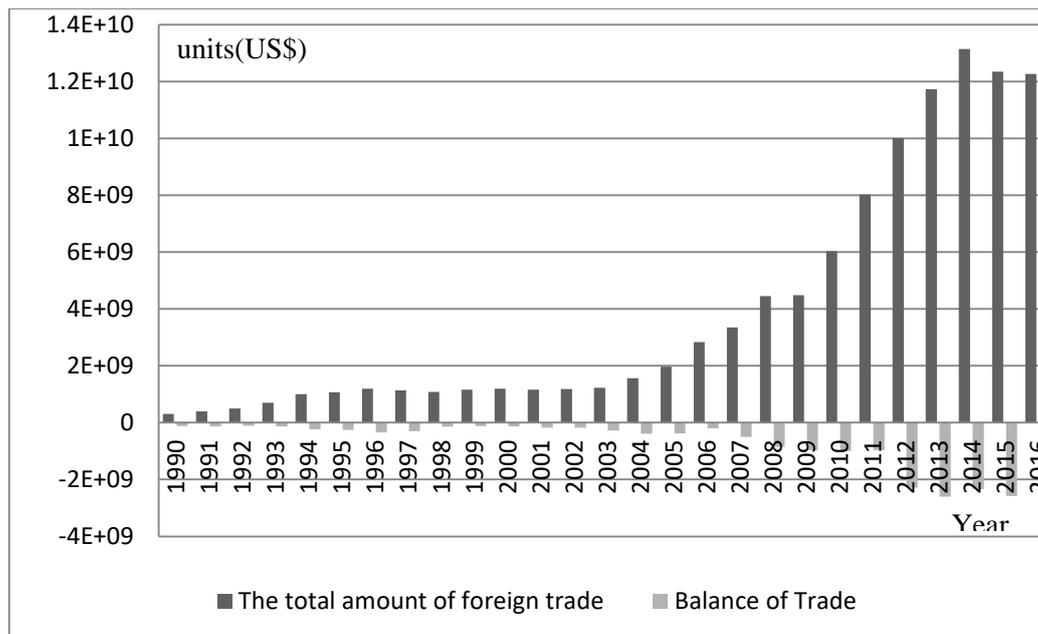


Figure 1. Total foreign trade and foreign trade balance of Laos, 1990–2016.

Source: World Bank.

Due to the weak industrial foundation and shortage of funds in Laos, coupled with the influence of the world economic environment, the growth rate of foreign trade

slowed for some previous years (as shown in Table 1), but has maintained relatively stable growth for the past two years.

Table 1. Laos’s foreign trade growth rate, 1990–2016

Year	Import growth rate (%)	Export growth rate (%)	Total growth rate of imports & exports (%)
1990	0.00	24.33	6.20
1991	-8.11	22.74	1.10
1992	58.82	37.27	51.01
1993	60.00	81.75	67.16
1994	30.56	24.69	28.45
1995	4.40	3.49	4.08
1996	17.12	3.79	12.51
1997	2.38	11.21	5.20
1998	-21.70	2.92	-13.40
1999	-5.07	-15.89	-9.40
2000	2.00	6.28	3.59
2001	-4.67	-3.27	-4.14
2002	-12.41	-5.92	-9.91
2003	3.40	11.60	6.70
2004	54.23	8.31	34.91
2005	23.75	52.22	33.36
2006	20.13	59.48	35.29
2007	0.69	4.61	2.47
2008	31.52	18.34	25.41
2009	4.13	-3.59	0.75
2010	41.02	65.90	51.44

2011	17.59	6.16	12.35
2012	26.10	22.48	24.53
2013	-1.16	-0.30	-0.79
2014	9.28	17.05	12.61
2015	9.27	4.49	34.48
2016	-10.18	21.05	1.11

Source: World Bank.

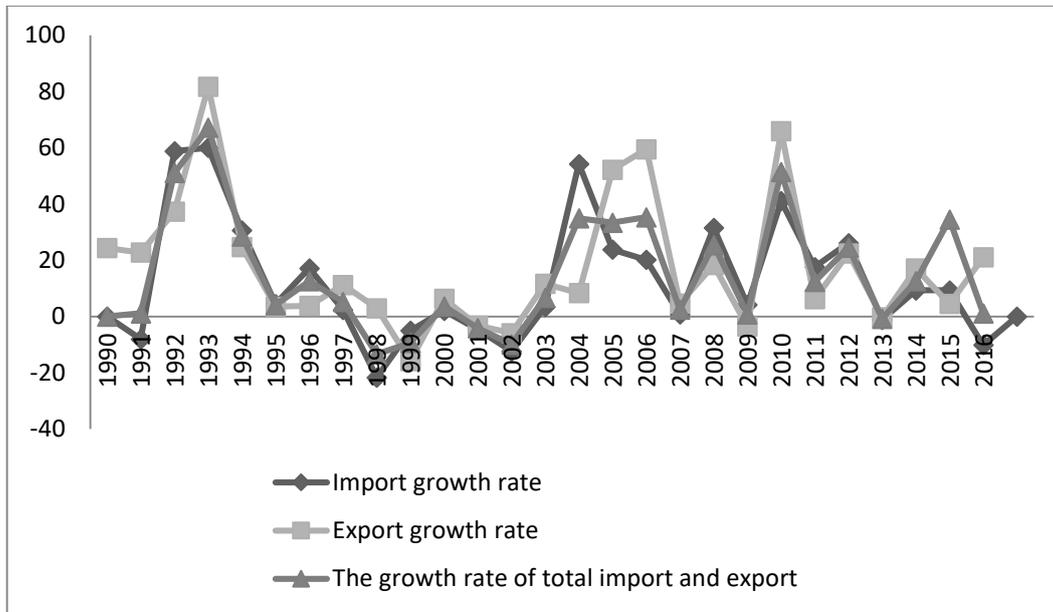


Figure 2. Growth of Foreign Trade in Laos, 1990–2016.

Source: World Bank.

2.2.2. Trade policy before economic reform

Before implementation of economic reform, the foreign trade mechanism of Laos was dominated by a state monopoly on protected trade under a planned economic system. This system was highly centralized and under governmental management.

Laos's government sought to promote economic growth by implementing a trade policy open to outside world. However, as the disadvantages of the traditional mechanism became more and more obvious, it has seriously hampered the foreign trade and economic growth of Laos. A combination of an economic blockade of western countries and a lack of domestic resources has compelled Laos to concentrate its limited resources to carry out unified product (Chow, 2004). For instance, the traditional trade protection mechanism has affected the establishment of an independent national economic system, effectively avoiding the influence of the instability of the international market and helping to control the level of national trade.

To fully open its economy to the outside world, Laos must continue to actively reform its traditional foreign trade system. Firstly, Laos should learn from and implement

foreign advanced technology and experience, make full use of foreign capital and technology, improve the efficiency of foreign investment, and reduce restrictions on import trade. Secondly, it should encourage more foreign investment in import and export trade by encouraging exports. Structural reform of foreign trade will not only play a decisive role in determining the scale and level of foreign trade, but also have an important impact on domestic economic growth (Tisdell, 2009).

2.2.3. Foreign trade policy after economic reform

Laos began to reform its economic system in 1986. Economic reform, as a strategic core of national development, has involved gradual implementation of the new economic policies to stabilize the order of foreign trade and the country's economic development.

Laos's foreign trade policy has developed from a strictly closed and planned economic system to a commercialized market economy, which has gradually changed the country's foreign trade policy and determined the guiding ideology of its foreign economic trade. Consequently, the blueprint for the development of foreign trade strategy has

been clarified. Under the guidance of new policy ideas, the government has made full use of domestic and foreign resources, emphasizing the development of the export processing industry, adjusting its structure, strengthening the relationship with trading partners, encouraging and vigorously developing exports, and reducing the foreign trade deficit (Stirbat, Record, and Nghardsaysone, 2011).

At the beginning of Laos's economic reform and development, the main direction and content of reform involved opening up the right to operate foreign trade, simplifying the system of economic regulations, and implementing an export contract responsibility system. In recent years, reform has focused on relaxation of foreign exchange control, export tax exemptions, and further encouragement of foreign investment, specifically by: (1) implementing the export oriented strategy, encouraging the export industry, changing the passive position of Laos in foreign trade, limiting the domestic sales of foreign investment enterprises, establishing export tax incentives, and establishing an export production system; (2) enforcing strict traditional import restrictions, such as tariffs and import licenses; (3) absorbing foreign direct investment, introducing advanced technology from abroad, and learning from the experiences of other countries.

In addition, the government of Laos has issued a series of policies intended to further the development of products in which Laos has a comparative advantage, increasing the international competitiveness of labor-intensive products, and reducing the import tax rates for production and processing of machinery, equipment and technology imports.

Compared with the policies in place before economic reform, the foreign trade of Laos has made great progress, for instance, total trade grew at 6.2% in 1990 to 34.48% in 2015, (World Bank, 2015). So, these changes in foreign trade policy are indeed in line with the strategy of furthering economic development. However, the import and export commodity tax, such as the import commodity tax, which is divided into a Special Economic Zone agreement and the most-favored nation treatment should be reviewed. The former implements a tax based on a common agreement between two countries. Commodity tax rates are imposed, while the latter are implemented at normal tax rates. The import duties on most imported goods in Laos are below 20%, but the import tax on vegetables, luxury goods ranges up to 30–40%. From this, it can be seen that the policies seek to protect domestic goods and restrict the import of some necessities.

The Laotian government initially imposed export taxes on timber, products of mining, and electricity. In 1994, Laos adopted a tax exemption policy for products of mining, timber and other natural resources. In 1995, Laos was implemented a duty-free policy that encompassed agricultural products including poultry and meat products. Due to the export tax exemption policy, exports have increased to some extent, but some types of commodities are still taxed.

2.3. Data analysis

2.3.1. Empirical analysis of the impact of foreign trade on economic growth in Laos

Its economic reform was designed to transform Laos from a central planned economy into a market-dominated economy. According to historical data regarding the economic development of Laos over the past 30 years, the Laotian government has actively cultivated relationships with other countries and actively integrated itself into the regional and global economies.

The economic integration of Laos has benefited from foreign direct investment (FDI), foreign trade (including border trade, regional cooperation, etc.). In addition to promoting the economic growth of Laos, it has created more job opportunities and increased the mean national income. According to World Bank data for 1990, the GDP of Laos was US\$866 million. In 2014, it reached US\$11.95 billion, with an average growth rate of 11%, and has maintained relatively stable growth during the past 25 years. Since 2010, the GDP growth rate has exceeded 8%, indicating that the economic policy is robust.

2.3.2. Data selection

In order to study the impact of Laos's foreign trade on its economic growth, this paper used empirical analysis to measure the relationship between the foreign trade and economic growth. Firstly, representative indicators were selected to measure Laos' foreign trade conditions and macroeconomic indices, and then the relationship between the Laos's foreign trade and economic growth was verified by building and testing models. The explanatory variable in this article is the economic growth of Laos, recorded as GDP and measured by the annual GDP of Laos. The explanatory variables are Laos's annual export volume, annual import volume and its total annual trade volume, recorded as EX, IM, and TRADE, respectively. The GDP data were drawn from World Bank data and EX, IM, and TRADE data from the UNCTAD database for the study period 1990–2014.

2.4 Results

2.4.1 Establishing the model

In order to make construction of the model more reasonable and avoid the problem of hetero-scedasticity, this article took the natural logarithm of each of the variables selected, represented (respectively) as LnGDP, LnEX, LnIM and LnTRADE.

Table 2. The between-variable correlation coefficients

	LnGDP	LnEX	LnIM	LnTRADE
LnGDP	1.000000	0.971677	0.966259	0.971469
LnEX	0.971677	1.000000	0.989254	0.996406
LnIM	0.966259	0.989254	1.000000	0.998061
LnTRADE	0.971469	0.996406	0.998061	1.000000

Table 2 shows the correlation coefficients between the variables. Specifically, LnGDP is highly correlated with LnEX, LnIM and LnTRADE. This preliminarily proved that there is a certain correlation between the four variables, but does not necessarily indicate that there is a direct causal relationship between them. It is necessary to conduct more detailed analysis of the relationship between variables using an augmented Dickey–Fuller test(ADF test), co-integration test, and Granger causality test.

2.4.2 ADF test

The important premise of establishing time series model is to ensure the stability of the variable. Therefore, this paper used the ADF test method implemented using Eviews software to test the variables of each time series, avoiding the direct analysis of non-stationary time-series data and thus avoiding the phenomenon of "false regression".

Table 3. The stationary tests results of each variable and their first-order differences.

Variable	Form of inspection (c,n,q)	ADF statistics	1% Significance Level	5% Significance Level	10% Significance Level	Whether Smooth
LnGDP	(c,n,0)	0.7863	-3.7379	-2.9919	-2.6355	Non-stationary
Δ LnGDP	(c,n,1)	-3.2758**	-3.7529	-2.9981	-2.6388	Stationary
LnEX	(c,n,0)	-0.8569	-3.7379	-2.9919	-2.6355	Non-stationary
Δ LnEX	(c,n,1)	-3.7111**	-3.7529	-2.9981	-2.6388	Stationary
LnIM	(c,n,0)	-0.5778	-3.7379	-2.9919	-2.6355	Non-stationary
Δ LnIM	(c,n,1)	-3.5175**	-3.7529	-2.9981	-2.6388	Stationary
LnTRADE	(c,n,0)	-0.6188	-3.7379	-2.9919	-2.6355	Non-stationary
Δ LnTRADE	(c,n,1)	-3.2718**	-3.7529	-2.9981	-2.6388	Stationary

Note: In the form of the test (c,n,q), c, n, and q represent the constant terms contained in the unit root test equation, time trend and lag order, respectively, and n indicates that it does not contain a time trend, Δ represents the first-order difference, and the choice of K follows the minimum AIC principle. *, **, *** represent significance levels of 10%, 5% and 1%, respectively.

As can be seen from the ADF statistics and significance level in Table 3, the ADF values of each level of variables are greater than 5% significance level. Therefore, the time series selected in this paper is non-stationary. However, the first-order difference of the time series are stationary, which conforms to I(1), meaning all variables are first-order single integer sequence.

2.4.3 Johansen co-integration test

Before conducting the Johansen co-integration test, the Akaike Information Criterion (AIC) and Schwartz's (SC) criteria were used to determine the maximum lag order, k, of the VAR model. When increasing the K value, the values of AIC and SC are minimal at the same time.

Table 4. VAR model lag period (k) selection table.

Lag	LogL	LR	FPE	AIC	SC	HQ
0	92.58463	NA	2.55e-09	-8.436632	-8.237675	-8.393453
1	148.5016	85.20684*	5.91e-11	-12.23825	-11.24347	-12.02236
2	168.1874	22.49803	5.07e-11	-12.58928	-10.79867	-12.20067
3	193.8220	19.53115	3.69e-11	-13.50686	-10.92042	-12.94554
4	258.4944	24.63707	1.95e-12*	-18.14232*	-14.76006*	-17.40828*

Note: * indicates the lag order selected according to the index.

As shown in Table 4, when the lag period is 4, the AIC and SC values are at their smallest; thus, we can determine that the VAR model has an optimal lag period of 4. At the same time, the optimal lag order of the unconstrained VAR model of co-integration test is 3. Johanson's test is a continuous process, and its null hypothesis is that there is no co-integration relationship, followed by at most one co-integration relationship, and up to $N-1$ co-integration relationships; a total of N tests are required (Li zina and pan wenqing, 2010).

H_0 : There are 0 co-integration relations;

H_1 : There are M co-integration relations; Test trace statistics:

$$LR_M = -n \sum_{i=M-1}^N \log(1 - \lambda_i)$$

In the formula, M is the number of co-integration vectors

and N is the sample size, λ_i : Denotes the order of size of the i observations

Table 5. Co-integration test results of GDP and TRADE in Laos

Co-integration relationship	Characteristic value	Likelihood ratio test value	5% Significance Level	P value**
None*	0.689600	25.60346	15.49471	0.0011
At most 1	0.104417	2.205601	3.841466	0.1375

Note: The likelihood ratio test value is the co-integration result of 5% level, * indicates that the original hypothesis was rejected at the level of 5%; ** is the p value of Mackinnon-Haug-Michelis(1999).

Table 6. Co-integration test results of GDP and exports (EX) and imports (IM) in Laos

Co-integration relationship	Characteristic value	Likelihood ratio test value	5% Significance Level	P value**
None *	0.746379	41.53719	29.79707	0.0014
At most 1	0.450505	12.72700	15.49471	0.1252
At most 2	0.007265	0.153125	3.841466	0.6956

Note: The likelihood ratio test value is the co-integration result of 5% level,* indicates that the original hypothesis was rejected at the level of 5%, ** is the p value of Mackinnon-Haug-Michelis(1999).

The results of the co-integration test show that the test value of the first row likelihood ratio is greater than the 5% significance level, indicating that the original hypothesis was rejected at 95% confidence level (there was no assumption of a co-integration relationship), and that there was a co-integration relationship between variables. That is to say, there is a long-term equilibrium relationship

between Laos's GDP, total export volume, total import volume, total import and export volume, and that this kind of co-integration relationship is unique.

2.4.4. Grainger causality test

Table 7. Laos's GDP and exports:Granger causality test of imports, exports and imports

Null Hypothesis:	Obs	F-Statistic	Prob.
LnTRADE does not Granger Cause LnGDP	23	10.5220	0.0009
LnGDP does not Granger Cause LnTRADE	23	0.19413	0.8253
LnEX does not Granger Cause LnGDP	23	7.21677	0.0050
LnGDP does not Granger Cause LnEX	23	0.23956	0.7894
LnIM does not Granger Cause LnGDP	23	11.2117	0.0007
LnGDP does not Granger Cause LnIM	23	0.54313	0.5902

Note: Granger causality test was conducted using Eviews 7.

Table 7 indicates that LnTRADE is not the null hypothesis of the Granger causality of LnGDP—the null hypothesis was rejected; LnEX and LnIM are not the null hypothesis

of Granger causality of LnGDP, LnGDP is not the null hypothesis of Granger causality of LnTRADE, LnEX, and LnIM were accepted. There is a unidirectional relationship

between the four variables, indicating that total import, total export, and total trade all affect the GDP of Laos.

$$\text{LnGDP}_t = \alpha_0 + \alpha_1 \text{LnTRADE}_t + \mu_t; \quad (1)$$

$$\text{LnGDP}_t = \beta_0 + \beta_1 \text{LnEX}_t + \beta_2 \text{LnIM}_t + \mu_t \quad (2)$$

The regression results for equations (1) and (2) are:

$$\text{LnGDP}_t = 1.5939 + 0.8803 \text{LnTRADE}_t; \quad (3)$$

$$\text{LnGDP}_t = 2.6324 + 0.6031 \text{LnEX}_t + 0.2279 \text{LnIM}_t \quad (4)$$

2.4.5 Long-term analysis

Laos's GDP and total trade, and the relationship between GDP and the long-term model of exports and imports are as follows:

Table 8. The result of the regression model between the GDP of Laos and total trade

Model 4-3	Non-standardized coefficients		t	Sig.
	B	Standard error		
(constant)	1.593857	0.323133	4.932505	0.0001
LnTRADE	0.880293	0.044811	19.64439	0.0000

Table 9. The result of the regression model between the GDP of Laos with imports and exports

Model 4-4	Non-standardized coefficients		t	Sig.
	B	Standard error		
(constant)	2.632442	0.556274	4.732278	0.0001
LnEX	0.603078	0.278143	2.168231	0.0412
LnIM	0.227924	0.330658	2.689305	0.0378

The R² values were 0.9438 and 0.9453, respectively, indicating the fit of the two models (4-3 and 4-4) was good. The results show that the test results of each coefficient are significance at the 5% level. This indicates that, in the long run, the total amount of Laos's trade, Laos's exports and Laos's imports are positively related to Laos's GDP. The total trade volume of Laos has the greatest impact; when the total volume trade of Laos increases by 1%, the GDP of Laos will (on average) increase by 0.8803%. The impact coefficients of exports and imports on GDP indicate that in the long term, Laos's exports will have a greater impact on its GDP than its imports.

2.4.6 Short-term analysis

In order to examine the dynamic relationship between GDP and trade volume in Laos, it was necessary to use an error correction model for analysis. In this paper, the error correction term obtained in the previous section is regarded as an explanatory variable, based on the construction principle of error correction model, and a short-term model is established using other explanatory variables that reflect short-term fluctuations, namely:

$$D(\text{LnGDP}) = 0.0712 - 0.0529 \text{ECM} + 0.2410 D(\text{LnGDP}(-1)) + 0.0659 D(\text{LnTRADE}(-1))$$

$$D(\text{LnGDP}) = 0.0583 - 0.1177 \text{ECM} + 0.3682 D(\text{LnGDP}(-1)) + 0.0599 D(\text{LnEX}(-1)) - 0.0118 D(\text{LnIM}(-1))$$

Using the estimated error correction model, the short-term changes of GDP and trade volume in Laos can be analyzed. The short-term volatility of GDP in Laos can be divided into two parts: one is the effect of short-term explanatory variables, with the other due to the deviation of the competitiveness of previous period from the effects of a long-term equilibrium relationship (ECM). The coefficient of the error correction model is negative, indicating that it is in line with the reverse correction mechanism. In order to maintain a long-term equilibrium relationship between GDP and explanatory variables in Laos, the non-equilibrium error of lags will play the role of a stabilizing mechanism. The adjustment of GDP and trade volume and GDP and export volume in Laos were adjusted by 0.0529 and 0.1177, respectively; the non-equilibrium state of the import model was adjusted to the equilibrium state and pulled back to the long-term equilibrium state. At the same time, the differential terms' coefficients of the explanatory variables in the error correction model reflect the short-term fluctuation effects of the corresponding explanatory variables on the explanatory variables.

It can be found that, in the short term, the total import and export trade of Laos has a relatively large impact on the GDP: When short-term trade increases by 1%, GDP will increase by 0.0659%. In contrast, the impact of Laos's short-term exports on GDP is positive and more significant, with an impact coefficient of 0.0599. In the short term, the impact of Laos's imports on GDP is negative. It can be understood that short-term, Laos's import of consumer goods has squeezed the market of domestic companies to a certain extent, hitting domestic products and local

companies in Laos, and the market of domestic enterprises has been squeezed. Laos's domestic products and local enterprises have been impacted and causing adverse effects on the economic development of Laos. The actual data also show that Laos's external trade deficit is serious; it has been in deficit for the years 1990–2014, reaching a deficit of US\$784 million in 2012.

3. CONCLUSIONS

This study took Laos as its research object and examined the relationship between Laos's trade and economic growth through the lens of its foreign trade development history and trade policies both before and after economic reform. The adjustment of foreign trade policies following economic reform, as well as joining ASEAN, have had an important impact on the adjustment of Laos's economic structure and level of economic development. This study used time series data to conduct regression tests on relevant data as part of its analytical approach.

Since Laos opened up to foreign trade and investment in 1986, the government's policies have been outward-looking. A co-integration analysis and Granger causality tests were used to empirically analyze the theoretical relationship between foreign trade and economic growth, as well as the current situation of foreign trade development in Laos. These tests revealed that, in the long run, the total trade volume in Laos, export and import volume, are all positively related to the GDP of Laos. The total trade volume in Laos has greatest impact; in the long -term, exports have a greater impact on GDP than imports.

In the short-term, an error correction model is needed for analysis. It can be seen that (in the short term) the total import and export trade volume of Laos have a relatively large impact on the GDP. In the short term, the effect of exports on GDP is positive and significant, while the effect of imports is negative.

It can be understood that short-term, imports compete with domestic products. This causes adverse effects on local economic development, especially because consumer goods make up more than 30% of imports. While people could be encouraged to use more domestic products, Laos's commodity structure is weak in the short-term; thus, the price of basic consumer goods depends on the international market. This trade imbalance is not only detrimental to the short-term survival and development of local enterprise, but also affects their long-term competitiveness.

It is suggested that Laos increase its openness to foreign trade the same as China, and seek to attract further foreign direct investment (FDI) and take part in outward foreign investment (OFDI). In particular, to increase the scale of direct investment in the industry, Laos should ban the export of raw materials and promote the processing of products, attract foreign investment in industry and strengthen domestic production. The government should further promote product processing, agricultural products processing, and promote the export of fresh agricultural

products. Policies of this type should help to reduce imports, which will not only increase the industrialization of Laos, but also increase the employment rate and income of the Laotian people, increasing the growth of GDP.

Laos needs to improve measures of trade standards, such as Sanitary and Phytosanitary Measures (SPS Measures) and Technical Barriers to Trade Agreement (TBT Agreement), to protect domestic trade, its citizens, and increase biological safety. Encouraging Laotian people to use more local currency, improve the technology used by the labor force, and provide more training to producers, the government of Laos should create an annual conference on economic and trade research to improve and reform its economic and trade development.

Laos should consider adopting a "One Belt One Road" strategy and open economic cooperation, as China has, in order to accelerate its economic development, reducing poverty and transition from an undeveloped country to a developing country.

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