The Bilateral Trade Structure between Laos and South Korea (1996-2014)

Outhai KEOCHAIYOM

School of Economics and Trade, Hunan University, Changsha 410079, China

Outhai2@hotmail.com

Abstract

Based on the international trade commodity classification and trade structure change index (TSCI), this paper analyses the import and export trade structure between Laos and South Korea since they established diplomatic ties in 1995. Results show: (1) the import trade structure between Laos and South Korea has entered stabilization period in 2010-2014 with TSCI stabilized within 2.0 after long adjustment period in 1996-2009. Current stable import trade structure is significant capital goods predominating structure with the proportion of capital goods: intermediate goods: consumer goods = 93:5:2; (2) the export trade structure between Laos and South Korea has kept being in adjustment period in 1996-2014 and has not entered the stabilization period yet. While according to the comparatively stable performance in recent three years, the future stable export trade structure between Laos and South Korea is predicted to be intermediate goods predominating structure with the proportion of intermediate goods: primary goods: consumer goods = 60: 36: 4; (3) Judging from the export trade performance under the financial crisis in 2008, developed countries like South Korea has stronger ability in dealing with financial crisis while the ability of least developed countries like Laos is much weaker; (4) The export trade structure between Laos and South Korea has gradually transferred from primary goods predomination to intermediate goods predomination, indicating that Laos' economic strength, technical level and terms of trade have been improved.

Keywords

Laos; South Korea; Trade Structure Change Index (TSCI); Import Trade Structure; Export Trade Structure .

1. Introduction

In 1975, after a long civil war ended the monarchy and declaration of established Lao People's Democratic Republic lead Laos to be governed under a socialist system and the state adopted a central planned economic system. Later, in 1986, the New Economic Mechanism (NEM) was introduced and as a result, both private and foreign investments were promoted as well as international trade.

Laos and the Republic of Korea have enjoyed growing bilateral relations and cooperation over the past two decades since they established diplomatic ties on October 25, 1995. Currently, Korea ranks as the fourth largest foreign investor in Laos after China, Vietnam and Thailand. Korean firms have invested in 291 projects in Laos amounting to US$785 million. The international trade value between Laos and South Korea increased approximately from $10 million in 1996 to $175 million in 2014. Especially, since 2006, Laos has joined a potential free trade area (FTA) such as ASEAN-Korea Free Trade Area (AKFTA), the bilateral trade volume between Laos and South Korea has an obvious high increasing rate compared with ten years before.

In order to explore the trade rule and characteristics of the bilateral trade between developed country like South Korea and least developed country like Laos, this paper firstly analyzes the general situation like trade volume and commodity composition of the bilateral trade between Laos and South Korea since they started international trade in 1995. Then, Trade Structure Change Index (TSCI) is

used to do detailed research on the bilateral trade structure change both in import trade structure and export trade structure between Laos and South Korea in 1996-2014. This research could not only complete current research about bilateral trade theoretically, but also benefit the trade between Laos and South Korea and even benefit the trade between most developed countries and least developed countries practically.

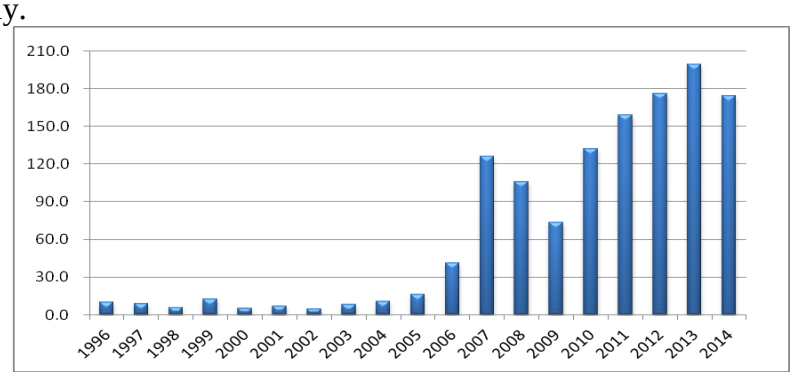

Figure. 1 Bilateral trade volume between Laos and South Korea in 1996-2014 (million dollars)
Source: UN COMTRADE.

2. Literature Review

Since research most closely related with bilateral trade structure is very rare, this paper has summarized relevant literatures on bilateral trade in three parts. The first part is the researches on the determinates of bilateral trade, many scholars have discussed the effects of general economic factors like GDP, exchange rate, income level, and cultural factors like common language, common religion and some special factors like state ownership and preferential trade agreements on bilateral trade. The second part is the researches on relevant theory tests, some scholars used bilateral trade data to test theories like Linder's hypothesis and "Anti-comparative Advantage" puzzle. The third part is much closer to bilateral trade structure, some scholars have analyzed bilateral trade relation and commodity structure, but most of them lacked detailed analysis on trade structure, especially lacked analysis on both import trade structure and export trade structure.

2.1 The determinates of bilateral trade

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 bilateral trade. They often used gravity model and panel data to do empirical analysis.

Abdulnasser Hatemi.J and Manuchehr Irandoust (2005) explored the long-run bilateral trade elasticity between Sweden and its six major trading partners in 1960-1999, showing that trade was highly sensitive to changes in income but less sensitive to real exchange rate fluctuations. The bilateral trade elasticity disclosed that the Marshall-Lerner condition was not satisfied (except for Germany) and real depreciation of the Swedish currency had less favorable impact on the trade balance. Marianne Baxter and Michael A. 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. Variables that were robust under certain methods and sample periods include exchange rate volatility, an index of sectoral similarity and currency union. M. Zakir Saadullah Khan and M. Ismail Hossain (2010) developed a model of bilateral trade balance that captures the effects of all factors influencing trade balance as suggested by elasticity, absorption, and monetary approaches and the popular gravity model with some extensions. Result showed significant effects of all the relative factors on the bilateral trade balance of Bangladesh in trading with her partners. 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 for the analyzed countries' trade relations. The

determinants of vertical component were the same, although for some variables smaller significance levels were found. Horizontal component determinants in general have the same sign, although relative income levels, employment shares and export costs were not found significant. Shaista Khan, Ihtisham ul Haq and Dilawar Khan (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.

Anne-Ce ´lia Disdier • Silvio H. T. Tai and Lionel Fontagne ´ • Thierry Mayer (2009) focused on bilateral trade in cultural goods and investigated its determinants. They used trade in cultural goods as a proxy for countries' cultural proximity and study if countries with proximate cultural tastes had more intense bilateral exchanges. 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. Christina Tay (2014) econometrically investigated trade in education using a nexus of international trade theories and the gravity model, using a panel data analysis for 21 exporting countries and 50 importing countries, covering 1050 observations using new UNESCO database. A number of determinants of international trade including wealth of exporter & importer, domestic capacity of exporter & importer, transport costs, common religion, common language and trade restrictiveness of the importer are empirically tested on bilateral trade flows in education. The studied explained with high significance the determinants of trade in education including wealth of exporter & importer, domestic capacity of exporter & importer, transport costs, common religion, common language and trade restrictiveness of the importer.

Moses H. Lubinga and Barnabas Kiiza and Jungho Baek concentrated on the impact of exchange rate on bilateral trade. Moses H. Lubinga and Barnabas Kiiza (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; prudential management of the real exchange rate was very crucial for trade promotion and macroeconomic stability. 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 Japan, showing that Korea's exports and imports were relatively sensitive to the bilateral exchange rate in the short-run, but less responsive in the long-run; income in the two countries had significant impacts on the bilateral trade flows in both the short-run and long-run; exchange rate uncertainty and Japanese FDI to Korea are found to have little impacts on Korea's trade with Japan in the short-run and long-run. Later, Jungho Baek (2014) used the same methods to examine the effect of exchange rate fluctuations on Korea's trade with the U.S, finding that Korea's major export industries were highly responsive to the bilateral exchange rate, volatility and third country effects in both the long-run and short-run, whereas Korea's imports were mostly insensitive to changes in those three factors. It was also found that income in both countries played an important role in influencing the bilateral trade flows in both the long- and short-run.

Christina Davis, Andreas Fuchs, Kristina Johnson, Akoété Ega Agbodji and some scholars analyzed determinates of bilateral trade from state ownership and preferential trade agreements aspects. Christina Davis, Andreas Fuchs, and Kristina Johnson (2014) examined the impact of the state ownership of firms on bilateral trade between China and India. Results supported the hypothesis that imports controlled by state-owned enterprises (SOEs) exhibited stronger responsiveness to political relations than imports controlled by private enterprises. A more nuanced picture emerges for exports; while India's exports through SOEs were more responsive to political tensions than its flows through private entities, the opposite is true for China. Akoété Ega Agbodji (2008) evaluated the impact of preferential trade agreements and the monetary union on bilateral trade between UEMOA member countries by dynamic gravity model. It showed that the real bilateral exchange rate, the distance and the volatility of the nominal exchange rate all had a negative impact on bilateral trade while membership in a common monetary zone, UEMOA and the implementation of economic reforms

aimed at economic integration had significant effects on bilateral trade within the zone, mainly in terms of diversion of imports and exports. Also, they pointed that the trade within ECOWAS turned out to be at a much lower level than that predicted and lower than trade within UEMOA.

2.2 Bilateral trade relevant theories tests

Some researches built models to test relevant bilateral trade theories like New Trade Theory, Linder's hypothesis and "Anti-comparative Advantage" puzzle by using data of bilateral trade flow.

Badi H. Baltagi , Peter Egger , Michael Pfaffermayr (2003) suggested a full interaction effects design to analyze bilateral trade flows, using an unbalanced panel of bilateral trade between the triad (EU15, USA and Japan) economies and their 57 most important trading partners over the period 1986–1997. Results found empirical support for the New Trade Theory and Linder's hypothesis, showing that the omission of one or more interaction effects can result in biased estimates and misleading inference. Huiwen Lai and Susan Chun Zhu (2004) presented a monopolistic competition model that incorporates asymmetric trade barriers and international differences in production costs. The model implied a highly non-linear bilateral trade equation. Estimation of this equation yields parameters for the elasticity of substitution and trade costs that are more reasonable than those found in previous studies. A simulation indicated that trade liberalization will shift trade from rich countries to poor countries and from within continental trading partners with preferential trade agreements to intercontinental trading partners. Mohsen Bahmani-Oskooee and Artatrana Ratha(2011) studied S-curve dynamics of trade between Sweden and her trading partners, finding that Sweden had a bilateral S-curve with 12 out of 17 cases examined for the 1980Q1–2005Q1 period. Jiandong Ju, Qing Liu, Hong Ma, Yingyi Qian, and Ziru Wei (2012) revealed an "Anti-comparative Advantage" puzzle in U.S.-China trade. U.S. exported less to China in sectors it had greater technological comparative advantage, and the more its technology exceeds China, the less it exported to China than to the rest of the world, while China's export to U.S was the opposite. The Eaton-Kortum model was applied to analyze the determinants of U.S-China trade structure empirically. Results showed that after controlling for production capacity, trade costs, etc, comparative advantage still played asymmetric roles in their bilateral trade and survived robustness checks.

2.3 Studies on bilateral trade relation

Studies about bilateral trade relation tend are much closer to the topic of bilateral trade structure. But only few of them concentrated on bilateral trade structure and none of them have made detailed analysis on trade structure both in import and export either.

Ka Zeng (2002) revisited the determinants and effectiveness of Section 301 of U.S. trade law and developed a modified two-level game model for understanding the conditions under which domestic interests and institutions support the use of aggressive negotiation tactics. It argued that a system-level variable, the structure of trade, systematically affects threat effectiveness by influencing both the level of unity among domestic interest groups and the degree of divided government in the sender of threats. Kotios Angelos and Petrakos George (2003) analyzed the economic structure and trade relation of Greece and Turkey in an effort to evaluate whether existing conditions can be a basis for expanding trade relation and further integration in the future. It revealed that two economies have a number of similarities but also important differences that in general encourage greater interaction. Although bilateral trade is role of geography will become more evident and the new institution arrangements embedded. Yanrui Wu and Zhangyue Zhou (2006) examined and compared bilateral trade between China and India to draw implications for trade and economic cooperation between two countries in the future. Especially, it investigated the major trends of and changes in the bilateral trade between the two countries, and explored issues associated with trade intensity, intra-industry trade and comparative advantages in the two countries. Lalith Shanaka de Silva (2008) outlined the main growth areas in Australia-Japan trade relations and analysed potential for the future growth within the proposed Japan-Australia free trade agreement (JAFTA) to investigate the current status of Australia-Japan trade relations, and analyze the impact of proposed Japan-Australia free trade agreement on future trade relations between Japan and Australia. Results showed that Japan and

Australia had established a strong base for their bilateral trade and services. The FTA would be a good opportunity to help Japan and Australian business community to reaffirm the significance of economic relationship between Australia and Japan. Thanh Hoan Phan and Ji Young Jeong (2013) analyzed the patterns and trends in the trade relations between Korean and Vietnam in the past twenty years. Various trade indices such as trade intensity, trade complementarities, intra-industry and revealed comparative advantages were used to describe the structure and composition in the Korea-Vietnam bilateral trade. Results showed that the trade pattern between Korea and Vietnam is predominantly inter-industry trade and complementary. The main findings also suggested that there existed significant potential for further growth of trade between two countries.

To conclude, literature review showing that research on bilateral trade determinates are comparatively complete both in factor choosing and model building, but there is a lack of depth and detailed research on bilateral trade structure especially the trade structure between developed country and least developed country. Therefore, this paper studies on the trade structure between developed country South Korea and least developed country Laos both in import trade structure and export trade structure by using data from 1996 to 2014, aiming at finding the fundamental trade pattern of Laos and South Korea and exploring their trade characteristics.

3. Methods of Bilateral Trade Structure Analysis

3.1 International trade commodity classification

According to Standard International Trade Classification (SITC), international trade commodities are classified into ten categories SITC0-SITC9 which could be further classified as primary goods, intermediate goods, capital goods, consumer goods.

This paper analyzed the trade structure of bilateral trade between Laos and South Korea according to SITC. And in order to reach more comprehensive conclusions, this paper classified the imported goods according to the degree of processing and use, including (i) primary goods, corresponding to SCITC0-SITC4, mainly refer to the resource products and agricultural raw materials, namely raw products, mainly including crude oil, coal, iron ore, grain, etc. The import of primary products (especially resources) can alleviate the pressure of energy and mineral resources shortage of importers; (ii) intermediate goods, corresponding to SITC5-SITC6, refer to products which are in the processing before becoming the final product and have to go through a series of production processes from primary product processing to the provision of the final consumption, including chemical products, yarn and other textile intermediate products. The import of intermediate goods can drive the export of processing trade and has a great positive effect on general trade exports and domestic consumption; (iii) capital goods, corresponding to SITC7, refer to machinery and equipment that enterprises use for production, including machinery equipment, electrical tools, etc. The import of capital goods can not only fill the gaps of similar goods of importers, but also promote domestic technology improvement and improve production efficiency; (iv) consumer goods, corresponding to SITC8, refer to the products needed to satisfy people's daily life, mainly refers to clothing, furniture, audio-visual equipment, etc. The import of consumer goods can create new market demand and promote the development of new industries. (v) other, corresponding to SITC9. To ensure data integrity, the data in this paper will not remove this kind and make special analysis either.

3.2 Trade Structure Change Index (TSCI)

Trade Structure Change Index (TSCI) can measure the change of products' internal structure in international trade, so that the change of trade structure can be generally estimated. For a country, the greater the change index of trade structure, the more dynamic the economy, because the stronger the economic growth, the higher requirement of the quantity and variety of various production factors, consumer goods and service products, which leads to insufficient domestic supply to a certain extent, and increase the change degree of trade structure, the greater the change index of trade structure. But for the bilateral trade, what trade structure reflects is the trade condition between two countries, which is different from the above ideas. The greater change index of trade structure indicates that bilateral

trade is in the phase of adjustment. Stable cooperation has not been established and is still in exploratory stage. Conversely, the two sides have formed a stable cooperative relationship. The supply and demand of various goods have formed a basically stable cooperation framework. As a result, this article will apply the change index of trade structure in the analysis of the trade structure of Laos and South Korea in accordance with the idea of bilateral trade analysis. Formula is as follows:

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

M_{it} and $M_{i(t-1)}$ indicate the rate of *i* goods' trade volume in total trade in *t* period and *t-1* period respectively. *N* refers to the quantity of goods types. *K* is simple correction coefficient. For the synchronous amplification of index values and easier intuitive comparison, *K* is set to be 100.

4. Import Trade Structure between Laos and South Korea

4.1 The import trade volume and commodity composition between Laos and South Korea

On the whole, the total import trade volume between Laos and South Korea maintains good growth momentum. Its volume was $8.11 million in 1996 and grew to be $ 156.05 million in 2014, which grew by 1824.11% in 18 years. Its growth is rapid with an average annual growth is 28.37%. In general, the period from 1996 to 2014 can be divided into two stages with 2005 as the cut-off point, namely the period before 2005 is the first stage of smooth fluctuation and the period after 2005 is the second stage of rapid growth. From 1996 to 2004, the total import between Laos and South Korea basically remained stable from only $8.11 million to $8.98 million. The average total import was $6.95 million with a growth of 10.75% in eight years. Its growth was basically stable with an average annual growth of 13.33%. However, from 2005 to 2014, the total import between Laos and South Korea grew rapidly to $156.05 million from $13.93 million. It was increased by 1020.23% in 9 years. Its growth was rapid with an average annual growth of 38.77%. It's worth noting that in the second stage of rapid growth, the total import between Laos and South Korea kept almost zero growth from 2007 to 2009 due to the impact of subprime crisis, which slows the growth rate of the whole stage, but the fact that the trade volume remained not plummeting under the impact of the international financial crisis was enough to show Laos was highly dependent on South Korea in import.

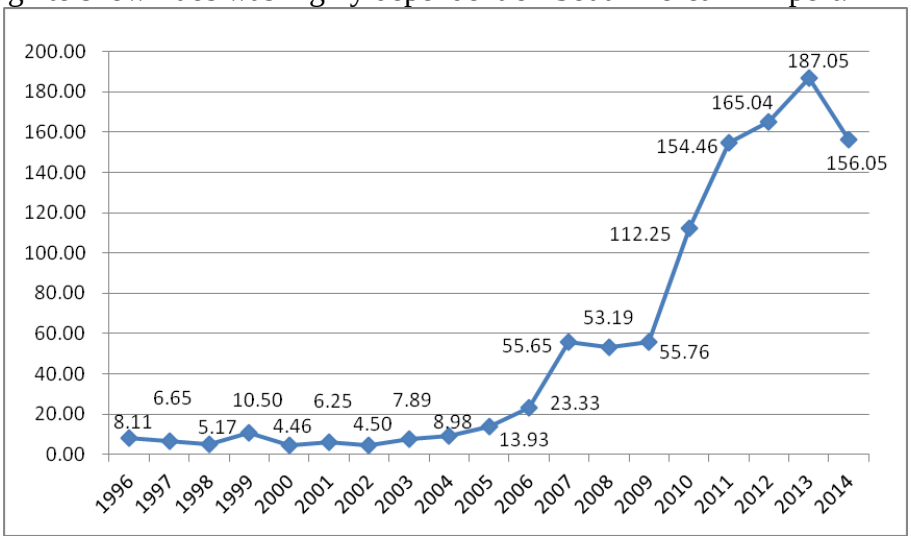

Fig. 2 Import trade volume between Laos and South Korea in 1996-2014 (million dollars)
Source: UN COMTRADE.

As for the import trade commodity composition, the imported commodities of Laos from South Korea are mainly concentrated in four categories of SITC5 - SITC8, which corresponds to intermediate goods, capital goods, consumer goods; while the import of primary goods SITC0 - SITC4 was almost zero. Among them, the import of SITC7 accounted for the biggest. Its average

proportion was as high as 69.8% from 1996 to 2014, and the proportion has a tendency to increase in recent years. Its largest proportion was 94.5% in 2013. Its lowest proportion was 26.6% in 1998, which showed that Laos' high dependence on the import of machinery and transport equipment (power generating machinery, internal combustion engines, construction and mining machinery, pumps and centrifuges, mechanical handling equipment etc.) occupied the absolute dominant position when depending on South Korean in import.

Table. 1 Import commodity composition between Laos and South Korea (1996-2014)

Year	SITC0	SITC1	SITC2	SITC3	SITC4	SITC5	SITC6	SITC7	SITC8
1996	1.6%	0.2%	0.0%	0.0%	0.0%	1.9%	48.5%	43.5%	4.3%
1997	0.5%	0.2%	0.1%	0.6%	0.0%	0.6%	52.3%	43.2%	2.6%
1998	0.1%	0.0%	0.0%	0.0%	0.0%	2.4%	55.3%	26.6%	15.6%
1999	0.0%	0.0%	0.0%	0.0%	0.0%	6.7%	27.0%	55.7%	10.7%
2000	0.0%	0.0%	0.0%	0.0%	0.0%	7.6%	32.1%	41.1%	19.3%
2001	0.0%	0.0%	0.2%	0.0%	0.0%	2.2%	25.5%	47.2%	24.9%
2002	0.0%	0.0%	0.2%	0.0%	0.0%	13.4%	20.2%	52.9%	13.2%
2003	0.0%	0.0%	0.5%	3.1%	0.0%	2.4%	13.0%	56.9%	24.0%
2004	0.0%	0.2%	0.0%	1.1%	0.0%	6.2%	11.1%	79.6%	1.8%
2005	0.1%	0.2%	0.0%	0.0%	0.0%	15.0%	9.7%	72.7%	2.2%
2006	0.0%	1.1%	0.0%	0.0%	0.0%	2.2%	5.2%	90.0%	1.5%
2007	0.0%	1.1%	0.1%	0.0%	0.0%	4.4%	11.1%	79.5%	3.8%
2008	0.1%	0.9%	0.2%	0.0%	0.0%	4.0%	10.6%	82.4%	1.7%
2009	0.0%	0.8%	0.3%	0.1%	0.0%	0.6%	5.1%	90.8%	2.2%
2010	0.1%	0.3%	0.4%	0.3%	0.0%	2.7%	3.3%	91.4%	1.5%
2011	0.0%	0.2%	0.2%	0.3%	0.0%	2.5%	2.0%	94.0%	0.7%
2012	0.1%	0.1%	0.2%	0.3%	0.0%	2.0%	2.3%	93.9%	1.2%
2013	0.3%	0.1%	0.1%	0.1%	0.0%	1.5%	2.1%	94.5%	1.3%
2014	1.1%	0.0%	0.0%	0.3%	0.0%	1.0%	5.4%	89.5%	2.6%

Source: UN COMTRADE.

4.2 Import trade structure change between Laos and South Korea

To accurately measure import TSCI between Laos and South Korea, the import TSCI between Laos and South Korea is calculated according to formula (1). On the whole, the import TSCI between Laos and South Korea is in a state of decline and volatility. Before 2010, the value and fluctuation range was larger. But since 2010, TSCI value was small and stable at lower levels. Thus, the import TSCI between Laos and South Korea can be divided into two phases accordingly, namely trade structure adjustment period (1996-1996) and the trade structure stabilization period (2010-2014).

During trade structure adjustment period in 1996-2009, import TSCI grew to the maximum value of 13.01 from the value of 1.43 from 1996 to 1997, and then fluctuated and reduced to a low point of 3.74. Later it grew to a new high of 10.15, and then dropped to 1.14 from 2007 to 2008, and rose to 3.36 from 2008 to 2009. It is thus clear that both the value and change degree of TSCI are greater. It indicates that from 1996 to 2009 the import trade between Laos and South Korea was in the adjustment stage of trade structure, and the imports of various goods was still in the exploratory and testing stage. The composition of various imported goods was not stable and a stable trade cooperation relation has not been formed.

During trade structure stabilization period in 2010-2014, import TSCI was basically stable within 2.0, and its mean was 0.88. TSCI three years before was more stable within 1.0, and the lowest value was only 0.25. Although the value slightly rebounded in 2014, compared to other years, the value was still in a lower level. It is thus clear that the import TSCI value and its variation between Laos and South Korea were small, which indicates that the import trade between Laos and South Korea was stable,

and has formed a relatively stable pattern for the import volume of various goods. Import trade entered the stable period of trade structure. The two sides established a stable trade cooperation relation.

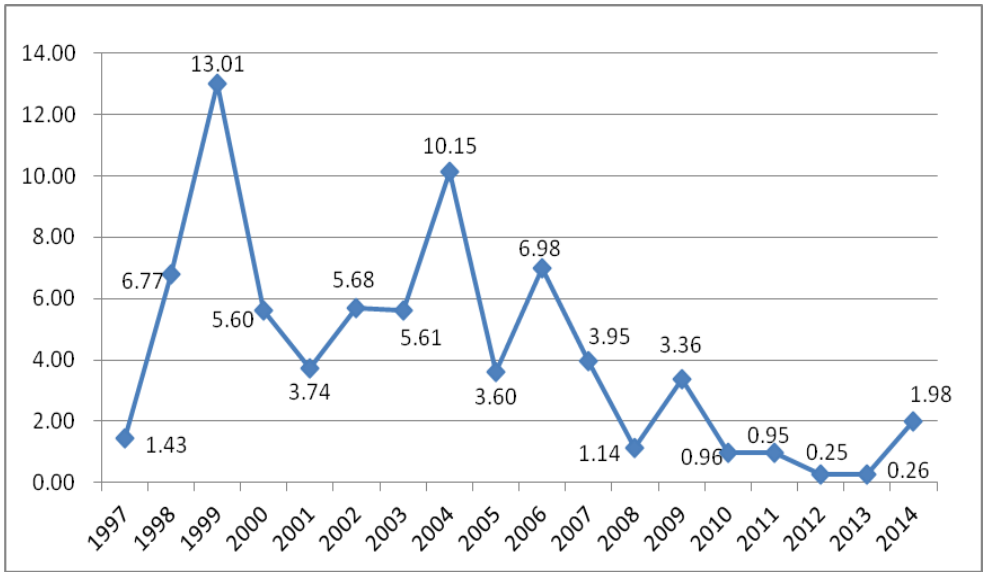

Figure. 3 Import TSCI between Laos and South Korea (1997-2014)

For the further analysis of the trade structure of import trade structure between Laos and South Korea in stabilization period, the dynamic change of the import rate of various products is specially analyzed.

During the adjustment period of import trade structure between Laos and South Korea in 1996-2009, the import rate of capital goods, intermediate goods, consumer goods fluctuated obviously, with three of them changing alternately. Sometimes intermediate goods dominated. Sometimes capital goods dominated. Sometimes the rate of intermediates proportion was much higher than consumer goods. Sometimes the rate of consumer goods surpassed intermediate goods, thus a stable proportion relationship was unable to form.

But during the stability period of import trade structure between Laos and South Korea in 2010-2014, the absolute predominance of capital goods imports dependence was basically determined. The imports rate of capital goods was basically stable at more than 90%. The average proportion was as high as 92.7%, accounting for the major part of total import volume between Laos and South Korea. Compared to 43.5% in 1996, the imports rate of capital goods increased significantly and dominated absolutely; while the import rate of intermediate goods and consumer goods decreased year by year, the average rates from 2010 to 2014 were 5.0% and 1.5% respectively.

It is showed that at present, the import trade structure between Laos and South Korea is a trade structure that highly depending on capital goods import with the proportion of capital goods: intermediate goods: consumer goods = 93:5:2. Combining with the practical situation of Laos, the analysis indicates that Laos had absolute inferiority in the capital goods trade of bilateral trade as a party with underdeveloped economy and backward technology. Laos' main products imported from South Korea are capital goods, intermediate goods and consumer goods. Compared with intermediates and consumer goods, the production, research and development and sales of capital goods need more capital and technology input. Laos not only lacks advanced technology to research and develop large-scale high-end machinery equipment, but also lacks a lot of capital investment to realize the production of the machinery equipment. Domestic technical level and capital stock cannot meet the domestic needs of capital goods, which leads to the trade structure of absolute predominance of capital goods imports between Laos and South Korea.

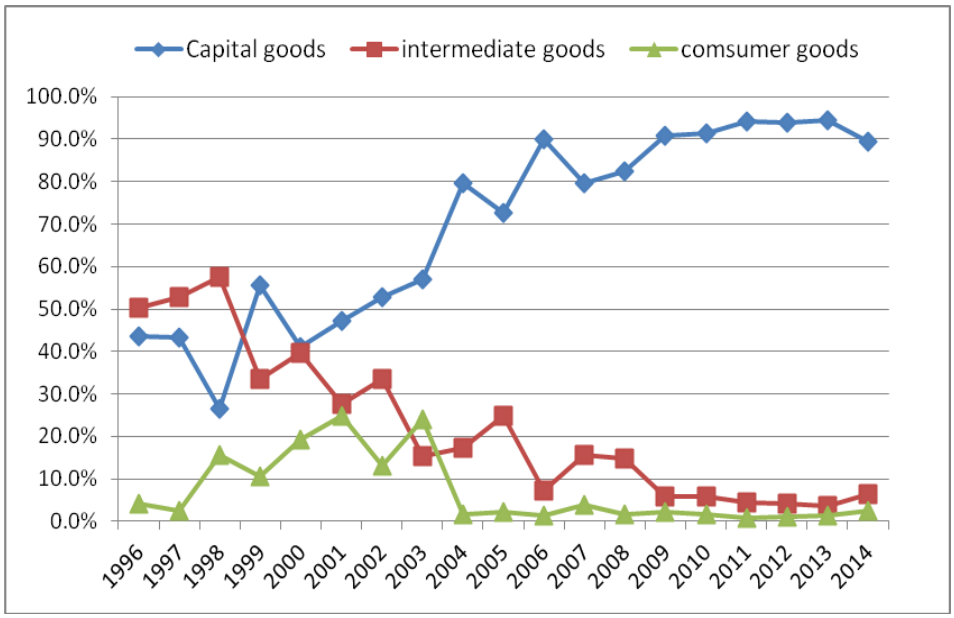

Figure. 4 Predominating goods change in import trade between Laos and South Korea (1996- 2014)

In conclusion, after the adjustment period from 1996 to 2009, the import trade between Laos and South Korea has entered the stabilization period at present (2010-2014). Import TSCI is stable within 2.0. Main imported goods are capital goods, intermediate goods and consumer goods, and capital goods assume absolute superiority. The import trade structure is significant capital goods predominating structure with the proportion of capital goods: intermediate goods: consumer goods = 93:5:2.

5. Export Trade Structure between Laos and South Korea

5.1 The export trade volume and commodity composition between Laos and South Korea

On the whole, Laos' total export volume to South Korea was smaller, but increased rapidly from $1.79 million in 1996 to $18.04 million in 2014 with an increase of 116.43% in 18 years. The average annual growth rate is 908.61%. In general, the change of the total export trade volume between Laos and South Korea can be divided into two phases like the change of the total import trade volume between Laos and South Korea, which also regarded the year 2005 as the cut-off point. But the difference is that the period before 2005 was the first phase of stationary fluctuation, while the period after 2005 was the second phase of acute fluctuation.

During the first phase of stationary fluctuation in 1996-2004, the total export volume between Laos and South Korea basically remained stable and slightly fluctuated within 2.0 million dollars. The average total exports volume was only $0.96 million.

But in the second phase of acute fluctuation in 2005-2014, the total export volume between Laos and South Korea from 2005 to 2014 rapidly increased to $70.34 million in 2007 from $ 2.11 million in 2005 with an increase of 3233.28%. The average annual growth was 518.86%. The growth rate is very shocking. However, it declined sharply to $4.33 million in 2011 from the maximum value of $70.34 million with a decrease of 93.85%.The average annual decrease was 25.85%, and then gradually recovered after 2011. The cause lies in the outbreak of the subprime crisis from 2007 to 2008 which caused a great impact on global trade, especially Laos has a weaker ability to resist economic crisis as a less developed country, and suffered more serious impact of subprime crisis. Thus it is not difficult to explain why Laos' total export volume to South Korea appeared a sharp fluctuation since 2007. In contrast, South Korea suffered less impact of subprime crisis as a developed country. Combining the analysis result of Figure 1, it can be seen that the total import volume between Laos and South Korea was flat from 2007 to 2008, and there was no sharp decline, which reflects that the export trade between Laos and South Korea has not been significantly

impacted by subprime crisis. This is because that as a developed country, South Korea was able to protect its export trade from economic crisis with its strength in mechanism, system, capital, technology, enterprise efficiency and other aspects, so that its strong ability to cope with the impact of international economy can be ensured.

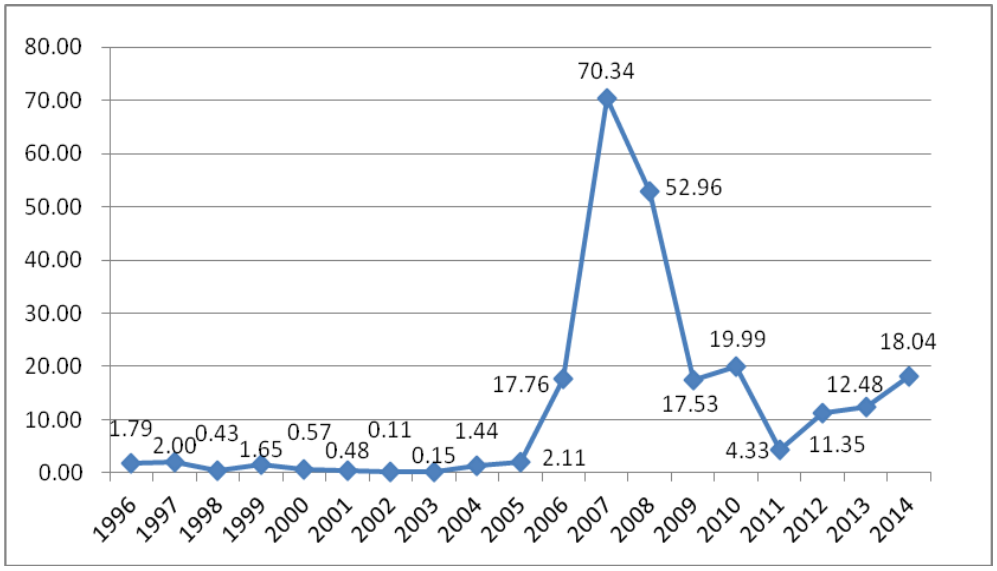

Figure.5 Export trade volume between Laos and South Korea (1996-2014) (million dollars)
Source: UN COMTRADE.

From the further goods composition of export trade between Laos and South Korea, the exported goods between Laos and South Korea are mainly concentrated in SITC2, SITC5, SITC6, SITC8, corresponding to the primary goods, intermediate goods and consumer goods, but the export volume of capital goods is almost zero. Compared with the import trade structure between Laos and South Korea, the difference is that the change of goods composition in export trade is bigger. SITC2 dominated at first. The proportions in 1998 and 1999 were as high as 100.0%. But later, SITC8, SITC6 and SITC5 dominated in succession. In 2014, SITC5 accounted for the biggest, but it was only 43.0% and had not established its absolute dominance yet, indicating that the current main export goods from Laos to South Korea are organic chemicals, other inorganic bases and metallic oxides, perfume materials, soaps, cleansing & polishing preparations, fertilizers manufactured.

Table.2 Export commodity composition between Laos and South Korea (1996-2014)

	SITC0	SITC1	SITC2	SITC3	SITC4	SITC5	SITC6	SITC7	SITC8
1996	0.0%	0.0%	97.4%	0.0%	0.0%	0.0%	1.7%	0.0%	0.9%
1997	0.0%	0.0%	99.2%	0.0%	0.0%	0.0%	0.0%	0.2%	0.6%
1998	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1999	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2000	0.0%	0.0%	91.9%	0.0%	0.0%	0.0%	0.0%	7.7%	0.4%
2001	0.0%	0.0%	38.4%	0.0%	0.0%	0.0%	0.0%	0.0%	61.6%
2002	1.2%	0.0%	63.9%	0.0%	0.0%	0.0%	0.0%	0.3%	34.6%
2003	1.6%	1.8%	57.3%	0.0%	0.0%	0.0%	0.1%	0.2%	39.0%
2004	0.0%	0.7%	3.5%	0.0%	0.0%	0.0%	17.6%	0.5%	77.7%
2005	0.0%	21.5%	4.4%	0.0%	0.0%	0.0%	0.2%	1.2%	72.8%
2006	0.0%	6.3%	3.3%	0.0%	0.0%	0.0%	80.2%	0.0%	10.2%
2007	0.0%	1.4%	2.6%	0.0%	0.0%	0.0%	95.7%	0.0%	0.3%
2008	1.4%	0.5%	40.1%	0.0%	0.0%	0.0%	56.7%	0.0%	1.2%

2009	0.1%	0.0%	92.7%	0.0%	0.0%	0.1%	5.5%	0.0%	1.6%
2010	0.3%	0.1%	97.0%	0.0%	0.0%	0.0%	0.5%	0.0%	2.1%
2011	8.4%	0.2%	75.4%	0.0%	0.0%	0.0%	3.2%	0.2%	12.6%
2012	4.1%	0.2%	35.2%	0.0%	0.0%	0.1%	55.4%	0.0%	4.9%
2013	2.7%	0.9%	35.6%	0.0%	0.0%	19.7%	33.5%	0.0%	7.4%
2014	1.0%	1.5%	34.3%	0.0%	0.0%	43.0%	15.6%	0.2%	4.5%

Source: UN COMTRADE.

5.2 Export trade structure change between Laos and South Korea

To accurately measure the change of the export trade between Laos and South Korea, the analysis of the export TSCI between Laos and South Korea is calculated specially.

On the whole, the value and fluctuation degree of export TSCI between Laos and South Korea are significantly higher than that of imports TSCI. The maximum, minimum and mean of export TSCI between Laos and South Korea are 32.49, 0.00 (since only SITC2 were exported in 1998 and 1999) and 11.33 respectively. The corresponding value of import TSCI between Laos and South Korea are 13.01, 0.25 and 4.19 respectively. It is thus clear that export TSCI is at a comparatively high level, which indicates that the export trade structure between Laos and South Korea has been in structural adjustment period, has not formed a stable trade structure, has not entered the stabilization export period, which is consistent with the conclusion above that the composition of various goods has not formed a stable ratio.

It is worth noting that although the export TSCI between Laos and South Korea is bigger, the change was very small in 2013 and 2014, almost remained the same with the value of 9.35 and 9.34 respectively, which indicates that the change of export trade structure between Laos and South Korea from 2012 to 2014 remained relatively stable. Although exports TSCI values still remained at a high level, the basically stable change heralds the export trade structure between Laos and South Korea may usher in a relatively stable cooperative relation, and export trade structure is expected to enter stable period.

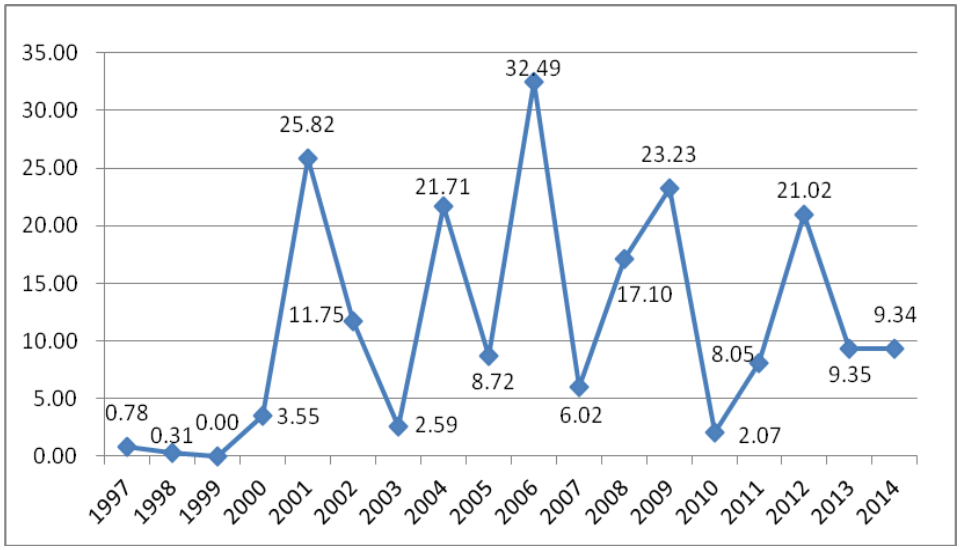

Figure. 6 Export TSCI between Laos and South Korea (1997-2014)

For the further study on the export trade structure between Laos and South Korea and the prediction of commodity composition in the stable period of the export trade structure between Laos and South Korea, the export volume rate of primary goods, intermediate goods and consumer goods in the export trade between Laos and South Korea is especially listed.

On the whole, the proportion of primary goods, intermediate goods and consumer goods exported to South Korean from Laos fluctuated greatly. From 1996 to 2000, the export of primary goods

dominated. From 2001 to 2011, the primary goods, intermediate goods and consumer products dominated alternately, and the change and alternation rate were very fast. From 2012 to 2014, intermediate goods dominated. It serves to show that the change in the structure of export trade commodity between Laos and South Korea in the adjustment stage of trade structure is big, and a stable proportion relationship has not yet been formed. Combining with the change of relatively stable export TSCI between Laos and South Korea in 2013 and 2014, it can be known that the export trade structure between Laos and South Korea dominated by intermediate goods has the possibility to become the future commodity composition at the stable period of export trade between Laos and South Korea in the future. The average radio of primary products, intermediates, consumer goods from 2012 to 2014 were 38.5%, 55.8% and 5.6% respectively. The average radio of primary products, intermediates, consumer goods in 2014 were 36.7%, 58.6% and 4.5% respectively. Only the ratio of intermediate goods is increasing. Thus it is predicated that the future export trade structure between Laos and South Korea may be predominated by intermediate goods with the proportion of intermediate goods: primary goods: consumer goods = 60: 36: 4.

In addition, the change of export radio also indicates the improvement in the economy and international trade conditions of Laos at the same time. The export radio of primary goods rapidly reduced to the minimum value of 4.1% in 2007 from 97.4% in 1996. Export trade's reduce the dependence on exports of primary products indicates that Laos' economy has improved significantly. Export trade no longer relied on low value-added export of raw materials like crude vegetable materials, plants, seeds, flowers used in perfumery, and the government consciously controlled the export of primary products. Besides, with the improvement of domestic technology, the intermediate goods with higher added value and technology dominated in the export trade in 2007, with export accounting for as high as 95.7%. However, due to the influence of the subprime crisis later, many domestic enterprises' capital chain was broken and battered, the export plummeted. The export of intermediate goods was cut to $30.05 million in 2008 from $67.29 million in 2007 with a decrease of 55.3%, and then dropped to $10.29 million in 2010; while primary goods suffered less from subprime crisis because of short industrial chain and less funding constraints. The export radio of primary goods grew rapidly under the dual effects that the export of intermediate goods plummeted and the export of primary goods didn't drop but rise. After 2011, the international economic basically recovered from the subprime crisis. The proportion of intermediate goods exports rose again, while the proportion of primary goods exports dropped. Finally, a relatively stable trade structure between Laos and South Korea was formed.

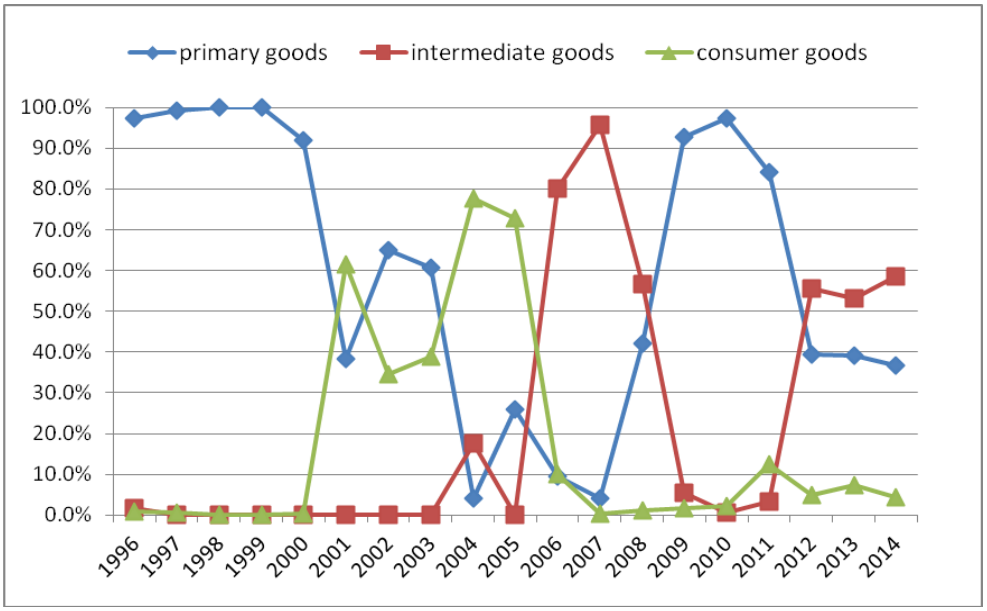

Figure. 7 Predominating goods change in export trade between Laos and South Korea (1996-2014)

In conclusion, the export trade structure between Laos and South Korea from 1996 to 2014 was in adjustment period, and has not yet entered the stabilization period of trade structure. The main export commodities were primary goods, intermediate goods and consumer goods. Three of them dominated alternately. But combining the prediction on the export TSCI between Laos and South Korea and the composition of export goods in recent years, the future export trade structure may be predominated by intermediate goods exports with the proportion of intermediate goods: primary goods: consumer goods = 60: 36: 4.

6. Conclusion

According to the Standard International Trade Classification (SITC), this paper further classified the goods in bilateral trade between Laos and South Korea into primary goods, intermediate goods, capital goods and consumer goods, and use Trade Structure Change Index (TSCI) to analyze the change of bilateral trade structure from 1996 to 2014 both in terms of import trade structure and export trade structure. Conclusions are as follows:

(1)From 1996 to 2014, import trade structure between Laos and South Korea has experienced the adjustment period of trade structure from 1996 to 2009, and has entered the stable period of trade structure from 2010 to 2014 currently. TSCI was stabilized within 2.0. The main imported goods include capital goods, intermediates and consumer goods. Among them, capital goods like power generating machinery, internal combustion engines, construction and mining machinery, pumps and centrifuges, mechanical handling equipment have absolute advantages. The trade structure is significant capital goods predominating structure with the proportion of capital goods: intermediate goods: consumer goods = 93:5:2.

(2) From 1996 to 2014, the export trade structure between Laos and South Korea has been in adjustment period, and has not entered the stable period of trade structure yet .The main export commodities are primary products, intermediates and consumer goods. Three of them dominated alternately. But combining the prediction on the export TSCI between Laos and South Korea and the composition of export goods in recent years, the future export trade structure may be intermediate goods predominating structure with the proportion of intermediate goods: primary goods: consumer goods = 60: 36: 4.

(3) Developed countries like South Korea has a stronger ability to cope with financial crisis; while least developed countries like Laos has weaker ability to cope with financial crisis. South Korea has the strength in mechanism, system, capital, technology, business efficiency to resist economic impact, and has a better ability to cope with international financial crisis. Its export trade suffered less impact of subprime crisis, which helps the total export between Laos and South Korea avoid sharp decline during the subprime crisis. But Laos has extremely weak ability to cope with financial crisis as less developed countries. Its export trade volume encountered the plight of sharp decline during the subprime crisis, namely the volume dropped to $40.33 million in 2011 from $70.34 million in 2007.

(4) The export trade structure between Laos and South Korea has changed into intermediate goods predomination from primary goods predomination, which indicates that Laos' economic strength, technical level and terms of trade have been improved. The export radio of primary goods between Laos and South Korea reduced to 36.7% in 2014 from 97.4% in 1996; while intermediate goods with relatively high technical content, long industrial chain and high added value gradually occupied the dominant position and became the main products in the export trade between Laos and South Korea. Its exports radio was 58.6% in 2014, which was higher than that of primary goods.

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