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THE OPENNESS AND ITS IMPACT TO INDONESIAN ECONOMY: A STRUCTURAL VAR APPROACH

Iskandar Simorangkir¹

A b s t r a c t

There have been long running disputes on the relationship between the degree of openness and economic performance. Based on cross-country analyses, a number of studies found that the relationship between openness and economic performance is quite mixed. Some studies discovered a positive relationship, while others found a negative or simply neutral relationship.

Unlike previous studies using cross-sectional data, this study uses structural vector auto-regression (SVAR) to explore the impact of trade openness and financial openness on the Indonesian economy. The findings shows that trade openness and financial openness have negative impacts on output. The results of trade openness are quite robust; since a lack of preparation to anticipate trade openness weakens the competitiveness of Indonesian products relative to foreign products and, finally, lower output. The findings of financial openness are also robust because greater financial openness leaves the Indonesian economy more vulnerable to capital reversal, which endangers economic performance.

Keywords: Openness, SVAR, forecast error variance decomposition, impulse response function.

JEL Classification: F41, F43

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I. INTRODUCTION

Since more than a century, the relation between openness and economic performance has been the topic of dispute among policy makers, politicians and academia. In view of comparative advantage theory of Hecksher-Ohlin, openness can be beneficial in improving economic performance of a country. Based on this theory, a country will export products having comparative advantage and import goods having no comparative advantage and this will lead to increase efficiency thus will support national economic growth. Besides, openness will enhance the capital inflow to a country and thus will accelerate capital accumulation and transfer technology which is considered the main components in strengthening the economic growth as defined by endogenous growth theory.

In the opinion of those who are against liberalization, protection is believed to be able to enhance economic performance of a country. According to them, the lack of readiness of a country will aggravate its economic situation, due to its incapability in competing with the goods and services provided by the developed countries. Krugman (1994) and Rodrik (1995) are economists with skeptical attitude towards the impact of openness to a country. The question regarding the benefit of openness to a country's economy has been raised again since the economic crisis occurred in South American countries in 1980s and 1990s as well as the one occurred in Asian countries in 1997/1998. Openness will cause a country to be more vulnerable towards shock coming from outside country as well as towards the incapability in competing with developed countries.

Like other countries, Indonesia has faced various problems in its economy especially in relation with the impact of openness. Trade openness through export import transactions has succeeded in supporting economic growth. The capital inflows through foreign direct investment had also enhanced the economic growth of Indonesia during the period of end of 1980s to 1996. During that period Indonesia's annual average growth reached 8 percent and this had made Indonesia as one of the developing countries with highest growth rate (Asian Tigers) and Indonesia had always been the case study of a country with a success in implementing liberalization.

Economic openness was the cause of the fall of Indonesian economy at the time of the crisis in 1997/1998 and the impact of this crisis still exists up to now. Economic crisis originated from foreign exchange crisis has disturbed the structure of Indonesian economy as shown in a deep economic contraction in 1998. This crisis has given impact not only to the economic aspect but to social aspect as well. Compared to the other Asian countries also touched by this crisis, such as South Korea and Thailand, who, after crisis, have reached above potential economic

growth of 8 percent, Indonesia still has to face a growth of 4 to 6 percent., which has led to an increase in poverty and unemployment.

Based on this background, this paper will analyze the impact of openness to the Indonesian economy. Following this introduction, section 2 will give a brief description on different theories concerning the impact of openness to the economy, which will be followed by section 3 that will give a general description of Indonesian economy especially those related to the impact of openness. Section 4 will give a description on the data and methodology of the research which will be followed by section 5 that will show the empirical results. The last section of paper will be conclusion.

II. THEORY

The benefit of openness to a country's economy has been discussed since more than a hundred years in the theory of international trade. As Pioneer, Adam Smith initiated theory of international trade with the famous book entitled the wealth of nations. The openness through international trade will support a country in being more focused in producing goods with comparative advantage and importing goods considered more expensive if produced locally. This will be more efficient to the country. In view of theory of comparative advantage, openness will give a positive impact on a country's economy.

After the Second World War, openness through international trade was not popular in developing countries. Having just released from colonization, openness in international trade would cause goods and services offered by developing countries failed in competing with those produced by developed countries. Developed countries produced goods and services efficiently by using advanced technologies, while developing countries produced goods and services more expensive due to limited technologies. During these periods, protectionist theories become dominant and for decades the majority of developing countries implemented industrialization policies based on a very limited degree of international openness (Edwards, 1993).

Protection against imported goods or frequently known as import substitution policy is meant to protect locally produced goods so that they will be able to compete with imported goods. The belief on the importance of protection was introduced by Presbich (1950) and Singer (1950) with two considerations: First, the steep fall of raw material and its derivatives during the inexistence of industrialization will create a wider gap between developed countries and developing countries. Secondly, for industrialization, developing countries will need temporary assistance such as protection from the goods produced by developed countries.

The opinion of protection or limiting openness was widely implemented during the period of 1950s, 1960s and 1970s in developing countries especially the South American countries. Politicians in those countries always considered that protection would accelerate the economic growth. However, academia doubted the inward oriented policy. In their opinion, protection would cause economic distortion due to misallocation of resources which caused inefficiency of the economy and finally could impede economic activities. Nevertheless, this theory was not popular in 1960s and 1970s.

Economic performance of the South American countries implementing the inward oriented policies showed a less satisfying development compared to the East Asian countries that had aggressively implemented outward oriented strategies. During the period of 1970s until the mid of 1990s, those East Asian countries or often mentioned as Asian Tigers consisting of South Korea, Taiwan, Hongkong, Singapore, Indonesia, Malaysia and Thailand, had had an impressive growth. The average economic growth in those Asian Tigers during the period of 1965 – 1980 reached 7.2% and during the period of 1980 – 1989 reached 7.9%, while the growth of South American countries only reached 6 % during the period of 1965-1980 and 1.6% during the period of 1980-1989 as shown in Table III.1.

Table III.1
GDP Growth and Exports in Latin America and East Asia: 1965 – 1989

	Annual Rate of Growth		Annual Rate of Growth	
	of Real GDP		of Export	
	1965-80	1980-89	1965-1980	1980-89
I. Selected Latin American Countries				
Argentina	3.5	-0.3	4.7	0.6
Brazil	8.8	3.0	9.3	5.6
Chile	1.9	2.7	7.9	4.9
Columbia	5.8	3.5	1.4	9.8
Mexico	6.5	0.7	7.6	3.7
Peru	3.9	0.4	1.6	0.4
Venezuela	3.7	1.0	-9.5	11.3
Latin America (Average)	6.0	1.6	-1.0	3.6
II. Selected East Asian Countries				
Hongkong	8.6	7.1	9.5	6.2
Indonesia	8.0	5.3	9.6	2.4
Korea	9.6	9.7	27.2	13.8
Malaysia	7.3	4.9	4.4	9.8
Singapore	10.1	6.1	4.7	8.1
Thailand	7.2	7.0	8.5	12.8
East Asia (Average)	7.2	7.9	10.0	10.0

Source: Edward (1993)

The above empirical data shows the performance of countries implementing international trade openness is far better than those believing otherwise. The four tigers of Asian countries, South Korea, Taiwan, Hongkong and Singapore, were primarily exporters of manufacturers, while the three Southeast Asian countries, Indonesia, Malaysia and Thailand, were still moving from their primary export bases towards greater reliance on manufactured exports. In additions, the average export growth of East Asian countries is 10 percent during the period of 1965-1980 and 1980 – 1989. South Korea had even reached an increase of 27.2 percent and 13.8 percent during those respective periods. This condition is different from the export development in Latin America with an average export growth of -1.0 percent during the period of 1965-1980 and 3.6 percent during the period of 1980 – 1989.

Several facts on those East Asian and Latin American developing countries support the opinion of economists concerning the advantage of openness to a country's economy. In line with these facts, trade reform started to be discussed and implemented widely in developing countries in 1980s. The policy makers of developing countries started to gradually decrease trade barriers by implementing trade liberalization.

Lack of Financing for investment had provoked developing countries to open capital account through liberalization of financial sector. Openness through financial liberalization will enhance capital inflow for investment and will lead to economic growth. Therefore, the positive impact of openness to the economic growth of a country can be done through international trade as well as capital inflow from one country to another. The openness on those aspects will be very beneficial to the acceleration of economic growth of a country.

The positive relationship between openness and economic growth can be explained by modern theory of growth, such as endogenous growth theory. This theory argues that saving and investment accompanied by productive physical capital stocks and human capital (total factor productivity) plays a key role in accelerating growth of a country. The higher the saving and investment, the greater the accumulation of capital goods; hence, raising production capacity of goods and services as well. With the same input, the level of production also multiplies through higher productivity. The rising productivity is achieved through improvement in technology and investment in human capital through accumulated knowledge, skills and individual training. The experiences of developed countries, such as Japan, show that saving-investment and productivity factor enables them to accelerate their GDP growth.

Through openness, investment originated from capital inflow will increase and this will certainly support the economic growth. Moreover, trade openness and capital movement will support a more efficient way in mastering of technology which will lead to increase of productivity and finally will accelerate the economic growth of a country.

Meanwhile, Roubini and Martin (1991) and Edwards (1992) pointed out that openness will increase absorption of technological knowledge from developed world which will finally accelerate the economic growth of a country (Edwards, 1992). According to Grossman and Helpman (1989) the other channel of openness to economic growth is the decrease of rent-seeking. Openness can decrease rent-seeking and therefore can be prevented from resources allocation and other activities that might impede economic growth. Finally, openness allows economy to take advantage of economies of scale associated learning by doing (Meier 1989; Quah and Rauch 1990).

Within the high optimism on the advantage of openness to the economic growth of a country, there still remain controversies regarding some aspects of trade policies or openness. Those controversies are related to whether trade liberalization packages have played important role in the performance of the outward oriented economics. Sachs (1987), for example, has questioned the premise that trade liberalization is necessary condition of successful outward oriented strategies. He has argued that the success of the East Asian countries was to a large extent due to an active role of government in promoting exports in an environment where imports had not been fully liberalized, and where macroeconomic equilibrium was fostered. The trade liberalization skeptics include Krugman (1994) and Rodrik (1995). They argued that the effect of openness on growth is, at best, very tenuous, and at worst, doubtful.

A number of empirical studies found out that the relationship between openness and economic growth were quite mixed. Some studies found a positive relationship between openness and GDP growth in developing countries, however there are many studies showed

Table III.2
Study Summary of the Openness Impact on Growth

Study	Number of Countries	Years Covered	Effect on Growth
Alesina, Grilli, and Milesi-Ferretti (1994)	20	1950-89	No effect
Grilli and Milesi-Ferretti (1995)	61	1966-89	No effect
Quinn (1997)	64	1975-89	Positive
Kraay (1998)	117	1985-97	No effect
Rodrik (1998)	95	1975-89	No effect
Klein and Olivei (2000)	92	1986-95	Positive
Chanda (2000)	116	1976-95	Positive
Arteta, Eichengreen, and Wyplosz (2001)	59	1973-92	Mixed
Bekaert, Harvey, and Lundblad (2001)	30	1981-97	Positive
Edwards (2001)	62	1980s	Positive

Source: WEO 2001

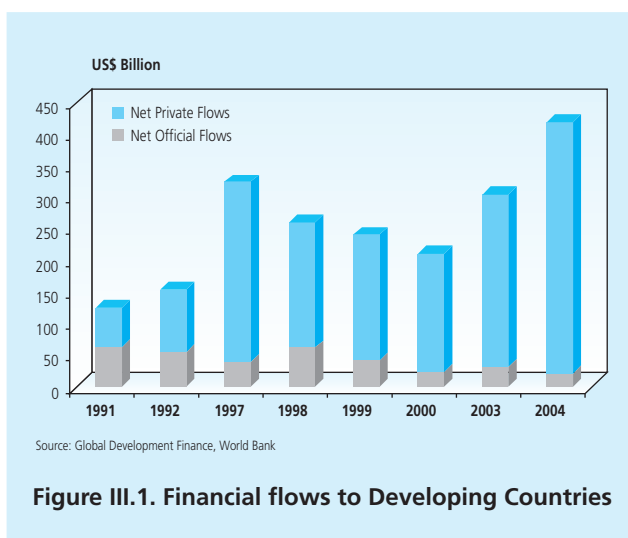
that openness did not accelerate economic growth. Studies were conducted by Roubini and Martin (1991) and Edwards (1993, 2001) using cross-sectional data the higher degree of openness lead to faster economic growth in developing countries. Similar studies conducted by Quinn (1997), and Bekaert, Harvey, and Lundblad (2001) had similar results. However, the studies conducted by Grilli and Milesi-Ferretti (1995), Quinn (1997), and Kraay (1998) showed that the openness did not have effect on economic growth (Table III.2).

According to Edwards (1998) the inexistence of positive relation due to methodology limitation, such as ratio between total export and import with GDP cannot be fully used to measure openness. For example, United States has a lower trade ratio with South Korea, but actually it has a more open international trade with this country. The measurement for developing countries, the ratio might be quite satisfying to be used. The measurement of indices or protection and trade orientation are far from satisfying due to the measurement which was based on arbitrary (see the detailed explanation on Edwards, 1993). Due to that limitation, there is doubtful to the positive relation between openness and the economic growth (Edwards, 1998). However with the stronger link theory between growth and openness, and improvement of measurement in openness, the result of the research concerning the relation between openness and economic growth are becoming more robust.

The research carried out by Weinhold and Rauch (1999) with the development of model of Quach and Rauch (1990) showed that in the less developed countries specialization is positively and significantly correlated with increased manufacturing productivity growth, even when variables, such as openness and investment are controlled for. Edwards (1998) has also carried out a research to see the relation of openness and productivity growth with modern growth theory. By using 98 countries, he found that more open countries experienced faster productivity growth. The conclusion of all that experience shows that openness will support the increase of productivity and finally will support also the growth of economy.

Empirical studies on the relationship between openness and growth were most conducted based on trade openness. But openness such as explained previously, is not limited to trade liberalization but also to financial liberalization. The focus of the studies is on trade liberalization due to its linked to trade in goods and services are essential factor to push economic growth and capital flows among countries were insignificantly during World War II until the 1970s, especially capital flow to developing countries grew more slowly. In this period, they consisted mainly of bank loan. With financial liberalization in the 1980s especially in the developing countries, financial products experienced rapid growth and capital movement to the country produced the highest return. With such development, in 1990s the capital flows to developing countries developed to become foreign direct investments and purchases of marketable securities

(portfolio investment). Based on World Bank data, the number of capital inflow to developing countries in 1991 reached US\$ 123.6 billion and it had reached the highest rate in 1997 amounting to US\$ 324 billion (Figure III.1).



Capital inflows in the form of foreign direct investment will give positive impact to the economy because it will increase capital stock hence it accelerates economic growth. On the other hand, capital inflow for short term investment such as portfolio investment could be dangerous to the economy of the country. A sudden capital reversal will lead to significant pressures of depreciation towards foreign exchange and subsequently will cause a financial and economic crisis to the country.

The experience of Latin American countries in economic crisis in 1980s and 1990s as well as the experience of foreign exchange and financial crisis of East Asian countries, such as Indonesia, Thailand and South Korea in 1997/1998 were due to capital reversal. Economic crisis due to foreign exchange as occurred in the East Asian countries has caused a considerable economic contraction, high inflation rate, as well as the increase of unemployment and poverty. From social point of view, the crisis has created social unrest and political instability especially in Indonesia. Development in the countries experiencing economic crisis showed that openness was not always beneficial to a country. The incapability of a country in controlling external shock will aggravate the economic condition of the country.

Several latest financial data showed that financial globalization was one of the factors that provoked financial instability of one country and could gradually give negative impact to the economic growth of the country. During the era of financial globalization, large number of

capital inflows had moved fast and followed the decision of market leader and often this action was taken without considering the economic fundamental of the country. A slight negative sentiment coming from the market leader was capable to cause a sudden capital reversal for a country. The first effect of the capital reversal was pressure on depreciation of foreign exchange towards rupiah as well as the crisis of balance of payment which had later interrupted the real economic activities due to the impact of output adjustment. Discussions on negative impact of capital reversal due to economic openness can read among others in Radelet and Sach (1998), Montes (1998), and Jackson (1999).

II.1. Trade and Financial Openness in Indonesia

The degree of openness or globalization could be seen from the international trade and services and the capital movement between countries. International trade and services can be seen from the current account while capital movement can be seen from the capital account in the balance of payment. Therefore openness can be seen from the trade policies and international financial policies, reflected from the foreign exchange and exchange rate policies. In order to explain the openness in details, we will discuss trade policies and foreign exchange and exchange rates policies in Indonesia.

II.1.1. Trade Policy

Until 1970s, the trade policy in Indonesia was filled with restrictions on international trade and even in early 1970s quantitative restriction was still implemented. Trade openness has significantly increased since the period of new order government. After taking over the government, the new order administration lowered tariff rate and abolished quantitative restrictions on both exports and imports for several goods, such as automobile tires, in October, 1971. Nominal protection for the textile goods and wearing apparel industry had been reduced by almost half to 70 percent in 1971. Collection rates on total imports declined steadily until 1972 because of successive reduction in tariff rates and the growth of duty-free imports by foreign and domestic investors: the overall collection rate was only 11 percent in 1972, half as high as in 1969.

After 1973, trade liberalization in Indonesia was faced with several challenges following the high demand to protect local production from imported products by implementing import-substitution policy. This policy also was conducted in order to increase employment. These policies weakened the case for continued import liberalization. The turning point in trade policy came in February 1974, when the government prohibited the import of finished sedan

cars to rescue an uncompetitive automobile assembly industry. This measure was the first significant breach of heretofore solid policy of liberalization. Over the next five year, imports quotas and bans extended to a few other industrial goods, including newsprint, textiles, and motorcycles.

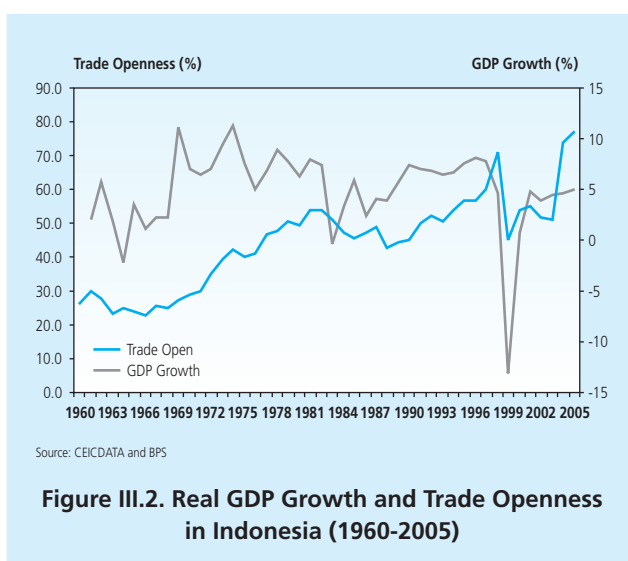
The government still imposed quantitative restrictions for major goods after 1980. Hundreds of products were added to list of imports subject to some form restrictions between 1980 and mid-1985. By 1984, 22 percent (1,154 items) of imports were subject to some form registration, regulation, quota, or license. As a result, by 1984 the level and the variability of effective protection had increased significantly over the levels seen in the early and middle 1970s. Study conducted by Pit in 1971 showed that the effective protection for all importable was 66 percent; a range of negative 13 percent (rice milling) to 701 percent (soap). Negative effective protection for virtually all exportables, averaging 11 percent, resulted in an average level of effective protection below the 66 percent average for importation.

According to estimates of government, import-substitution industry received an implicit subsidy on production of more than 200 percent on average, whereas industries that did some exporting were effectively taxed at an average rate of 1 percent. By 1985, import substitution had moved beyond consumer goods into intermediate goods, such as steel, polystyrene, and industrial chemical. High and uneven protection discriminated in favor of import-substitution industry and against exportation.

The fall of world oil prices and as the unexpected result of protection against import-substitution industries, as reflected in the high rate of unemployment and the economic growth which was lower than estimated, had led the government to implement trade liberalization since 1986. A trade liberalization package was introduced in October 1986 followed by a series of liberalizing measures. 544 goods were exempted form import license requirement, restrictions on certain export lifted. By the end of 1987, the proportion of goods covered by import licensing had fallen to 22 percent from 32 percent in mid-1976. Major trade liberalization also introduced in November 1988, January 1989 and May 1991 by eliminating trade restriction.

The indicator of openness in figure III.2 shows that the trend of trade openness in Indonesia increase. When trade openness² is still low which is marked by the high protection against import and export, the trade ratio towards GDP is also low. In 1960, the openness rate of Indonesia was only 25,9 percent, however since removing trade barriers in 1971 and 1972, the rate of openness also rose to 35.2 percent and 40 percent respectively.

2 Trade openness is calculated from total exports and imports divided by GDP.



II.1.2. Foreign Exchange and Exchange Rate Policies

Indonesia has started financial globalization or openness since 1967 and it can be distinguished into 4 phases according to the foreign exchange system implemented, such as:

a. Controlled Foreign Exchange System (before 1966)

Foreign exchange transactions are fully controlled and supervised by the government and central bank. Each foreign exchange transaction is subject to the approval of the government, including export revenues and exchange rates.

b. Restricted Foreign Exchange System (1966-1969)

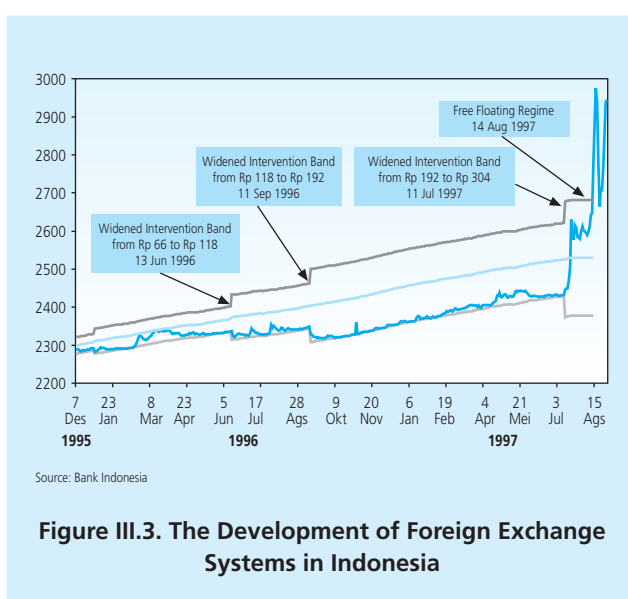
In 1967 foreign exchange system was liberalized step by step by allowing exporters to keep a certain percentage of their revenue and to use it for import purpose from foreign exchange compulsory surrender. Besides, branch office of foreign bank/joint venture bank and national bank were allowed to do foreign exchange transactions and at the same time laws on foreign investment were applied easing foreign investors in investing in Indonesia.

c. Semi Free Foreign Exchange System (1970-1981)

Foreign exchange transactions liberalization includes: a) no permit needed for foreign exchange transaction; b) the obligation of submitting the revenues of export compensated with facilities to buy foreign reserve; c) no obligation in submitting revenues of export in the field of services, but banks still had the obligations to sell its foreign reserve to the central bank.

d. Free Foreign Exchange System (since 1982)

There was almost no limitation for foreign exchange transaction, which includes: i) no obligations for exporters to submit the foreign reserve; ii) no obligations for the bank to sell the foreign reserve to the central bank; iii) no obligations for individuals to buy/sell foreign reserve; iv) no obligation to report foreign exchange transaction. Financial deregulation implemented in 1988 has also given a greater impact to the openness of international financial market towards domestic financial market. One of the provisions stipulated that foreign banks were allowed to open branch offices in several big cities in Indonesia.



In line with the foreign exchange system, the exchange rate can also reflect the openness of a country towards financial globalization, for instance fixed exchange rate system was generally followed by capital control. In the last 30 years, there are 3 exchange rate systems used in Indonesia, they are: 1) fixed exchange rate system (August 1971 – November 1978); 2) managed floating exchange rate system with widened intervention band (November 1978 – 13 August 1997) ; and 3) floating exchange rate system (14 August 1997 up to present) as shown in figure III.3.

One of the indicators used to know the rate of financial openness is ratio between the capital inflows with GDP. According to Figure III.4 the degree of financial openness³ in Indonesia

³ Financial openness is calculated from the total foreign direct investment and portfolio investemen inflow divided by GDP

has risen since 1990 or since the issuance of comprehensive financial deregulation package. In 1987, the ratio between capital inflows and GDP was only 0.6% from GDP, but 5 years later, in 1992, the ratio increased twice and became 1.2% from GDP and has risen to more than 4 times in 1995 to become 5.1 % (Figure III.4).



II.1.3. Openness and Economic Development in Indonesia

In the previous section I have explained about the degree of openness in Indonesia. In this chapter I will continue to explain the relationship between openness and economic development in Indonesia. As one of developing countries, Indonesia has experienced with the benefit of openness, however this openness has also been the cause of the continuing crisis of Indonesian economy. Since its independence in 1945 until 1966, Indonesian economy was still relatively close, both in view of international trade and finance. The war occurred until 1950 in the effort of sustaining its independence had destroyed Indonesian infrastructure. After 1950 the government had to face various complicated political problems that needed an important budget for the construction and the restoration of its infrastructure. The effort of overcoming the required budget from money printing had caused the hike of inflation rate with an average annual rate of 115.9 percent during the period of 1950 – 1966. Even in 1965 the annual inflation rate had reached 593.7 percent and 635.4 percent in 1966.

The various social and political problems faced by Indonesia were combined with high inflation rate and a less satisfactorily economic growth. The average economic growth during

the period of 1950 – 1966 was only 3.2 percent and even in 1958 there was an economic contraction of – 4.1 percent in 1958 and – 2.2 percent in 1963. In the early 1960s, export declined while imports increased. As a result, balance of payment deficits led to depletion of foreign reserves and accumulation of external debt.

The New Administration took over government in 1966 and launched an economic stabilization and rehabilitation program with major objectives of reducing inflation, providing adequate supply of basic needs, reconstructing infrastructure and increasing exports. As a result, Indonesia's GDP increased at average annual rate of 6.8 percent during the five year period since 1967. The inflation rate experienced a declined from 635.4 percent in 1966 to 112.2 percent in 1967 and to only 4.4 percent in 1971. Export increased by 64 percent from US\$ 714 million in 1966 to US\$1,173 million in 1971.

To accelerate economic growth and to alleviate poverty, government began with the launching of a series of five year development Plans starting from fiscal year 1969/1970. Despite to alleviate poverty through accelerating growth, the development plans also emphasized the structural diversification of the economy to reduce dependence on oil and natural gas. In the 1970s and early 1980s, the Indonesia economy was dependent on oil revenue. The oil boom apparently had an enormous influence in increasing Indonesian GDP. The recorded average GDP growth rate was 7.8 percent a year from 1970 until 1975 and 7.5 percent a year from 1976 to 1981. Inflation, on the other hand, increased in the early 1970s, with the highest recorded level 40.6 percent in 1974. However, after the implementation of several appropriate monetary policies and conservative fiscal policies, the inflation rate drastically declined to 6.3 percent in 1979. The average of inflation decreased also from the rate of 18.9 percent a year during 1970-1975 to 15.0 percent a year during 1976-1981.

Export experienced a sharp increase from US\$ 1,173 million in 1970 to US\$ 11,020 million in 1978 and US\$ 23,565 million in 1981. This sharp increase was influenced by increase in oil exports which pulled down the share of non-oil exports from 63 percent in 1970 to 33 percent in 1978 and to 18 percent in 1981. However, non-oil exports showed remarkable increase from US\$ 739 million in 1970 to US\$ 3,659 million in 1978 and US\$ 4,331 million in 1981.

The impact of the world recession and the drop in oil prices in the early 1980's was subsequently felt the Indonesian economy in 1982. The economy experienced contraction with growth rate dropped to -0.3 percent in 1982 and the balance of payments continued to experience deficits due to decrease in the international market price of oil. To cope with the problems, the government adopted a full deregulation policy. The Government changed its

policy toward increasing the role of the private sector in accelerating economic growth, in particular, increasing non-oil exports. To achieve this objective, it was felt that suitable climate should be created to promote initiative, competition and increase efficiency through deregulation and liberalization economy.

This deregulation was taken in a sequence, started deregulated the foreign exchange market in 1982, then, led by further fundamental deregulation in the monetary and banking sectors in 1983. Those deregulations were followed by deregulation in the financial, monetary and banking sectors in 1988 and capital market deregulation measures were taken in 1987, 1988 and 1990. As part of deregulation, banks were given more freedom in accepting deposits, including saving accounts in 1989. Deregulation also gave more openness to foreign bank to open their branches in the big cities in Indonesia.

A fundamental deregulation has succeeded in supporting the increase of domestic saving which created a high raise in the financial sources for investment. The economic growth had shown an important increase especially after the implementation of comprehensive deregulation package in 1988. Financial deregulation as well as economic openness to the outside world had enhanced financial sources for investment coming from local and foreign investors. The average rate of economic growth during the period of 1989 – 1996 reached 7.3 percent and it reached its highest point in 1995 with 8.2 percent. This raise had been accompanied by the increase of supplies which had impeded the hike in inflation rates. During that period the inflation rates stayed at 8.1 percent.

Openness had put Indonesian economy in a vulnerable situation towards capital movement. Capital inflows to Indonesia could be seen from foreign direct investment as well as portfolio investment including Securities such as Bank Indonesia's Certificate, Treasury note and stock. Portfolio investment was actually vulnerable to the balance of payment and foreign exchange rates. Investors were very interested to this type of investment since the launching of the deregulation package in financial sector and since the implementation of financial openness to the outside world since 1988.

Economic crisis happened in 1997/1998 was actually originated from capital reversal in the form of portfolio investment. The crisis triggered by the crisis of foreign exchange rates had rapidly changed into economic crisis, social crisis and cultural crisis as well as political crisis. The main cause of foreign exchange and monetary crisis was the speculation attack towards Thailand currency which then spurred on a contagion effect to the depreciation of rupiah exchange rate due to the fact that investors thought that Indonesian economy was the same as Thailand's. The weakness of rupiah exchange rate had caused foreign investor to withdraw their money so

far invested in the form of portfolio investment, such as commercial papers promissory notes, medium term notes as well as stocks and obligations. Panic attacked the market of foreign currencies due to the interest of local companies and banks to buy foreign exchange in order to pay or to protect their big foreign obligations from foreign exchange rate risk.

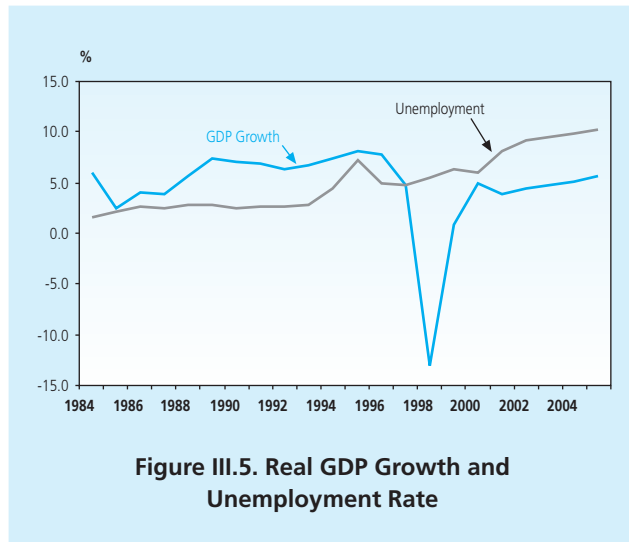
In its effort of facing the huge pressures towards the depreciation of rupiah exchange rates, the central bank of Indonesia did intervention in selling foreign exchange rate system since during that period Indonesia used a managed floating exchange rate system. Bank Indonesia had to widen this intervention band several times due to the high demand of foreign currencies. However due to the huge pressures towards the weakening of Rupiah exchange rates accompanied by the high decrease of foreign exchange reserves, finally the government had to change the exchange rate system from managed floating to flexible exchange rate system since August 14, 1997. The monetary crisis had provoked Indonesia to seek for financial assistance by participating in the program of IMF.

IMF policies in improving national banking soundness by closing unhealthy banks on November 1, 1997 had created bank runs in almost all national private banks. As stated in the theory of Diamond and Dybvig (1983) concerning bank runs, bank liquidation without any time deposit guarantee, such as deposit insurance and blanket guarantee will lead to bank runs due to lack of confidence of the customers. In order to avoid any destruction in the banking sector, the government provided blanket insurance to bank customers by paying all their withdrawals as well as other bank obligations which had certainly led to an exceeding of money supply. Depreciation of Rupiah exchange rate and the increase of money supply had created a hike on the inflation rate.

The problems then became more complicated since the monetary and banking crisis had led to economic and non economic problems. From the economic sector, the structured based on the conglomeration of big companies with increasing debts originated both from internal as well as external ones, had created private debt crisis due to huge depreciation of Rupiah exchange rates. In social sector, the hike of prices, supply shortage and termination of employment due to economic crisis had considerably created social unrest in several big cities of Indonesia. In political sector, government reforms occurred several times during the transition period of democracy which had certainly impeded in focusing at solving crisis problems.

Economic, social and political crisis had significantly disturbed Indonesian economy. Economic growth was faced by deep economic contraction of -13.1 percent in 1998 that had put Indonesia as the country with the worst impact of crisis compared to other Asian countries. Inflation rate showed a huge jump to 77.63 percent in 1998. In line with the gloomy economic

situation, the number of unemployment rose to 5.5 percent in 1998 compared to 4.7 percent in the previous year. Five years after crisis, the economic growth of Indonesia still has not reached its optimal capacity. The average annual growth rate of Indonesian economy during the period of 1999 – 2005 was only 4.2 percent with the lowest growth rate of 0.8 percent in 1999 and the highest rate of 5.6 percent in 2005. As real GDP grew below its potential during the last five years, the rate of unemployment has risen to 10.3 percent in 2005 (Figure III.5).



IV. METHODOLOGY

IV.1. Data

The data being used in this research is a secondary data with a period starting from 1980:1 until 2005:2 according to its availability and its entirety. The data being used include the Gross Domestic Product (GDP), the degree of openness (O), interest rate (R), consumer price index (cpi), exchange rate rupiah to US dollar (exc), and the number of labor force (emt), foreign direct investment, portfolio investment, export, and import. To measure openness, trade openness (OT) and financial openness (OF) will be used. Trade openness is calculated from total exports and imports divided by GDP, while financial openness is calculated from total foreign direct investment and portfolio investment inflow divided by GDP. Since the availability of data only comprise of yearly data that leads to a very small degree of freedom for the model, the frequency of the annual data is transformed into quarterly data using Cubic Spline method for GDP.

IV.2. Model

The model that can be used is the structural vector autoregression (SVAR) or the cointegrated SVAR as proposed by Pesaran and Shin (1997) and Pesaran, Shin, and Smith (1998). The next step is to create a model of an accounting innovation of impulse response function (IRF) and forecast error variance decomposition (FEVD) using structural vector autoregression (SVAR) in order to analyze the impact of openness to Indonesian economy.

A cointegrating VAR model is that the model incorporated a cointegration matrix into a VAR model results in, which, according to Pesaran and Pesaran (1997), can be represented as a general vector error-correction model (VECM) as follows :

$$\Delta x_t = a_{0x} + a_{1x}t - \Pi_x q_{t-1} + \sum_{i=1}^{p-1} \Gamma_{ix} \Delta q_{t-i} + \Psi_x w_t + u_t, t = 1, 2, \dots, n \quad (\text{III.1})$$

where $q_t = (x_t', z_t')$, x_t is a vector of jointly determined (endogenous) $I(1)$ variables, z_t is a vector of exogenous $I(1)$ variables, w_t is a vector of exogenous/deterministic $I(0)$ variables (excluding the intercepts and/or trends), u_t is a white noise vector of error terms, Γ_{ix} is a short run matrix of parameters, and Π_x is the long run multiplier matrix. The latter can be written as : $\Pi_x = \alpha_x \beta'$ where β contains the long run cointegration parameters. In this paper, z_t and w_t are absent, $x_t = (\text{gdp}_t, r_t, o_t, \text{exc}_t, \text{cpi}_t, \text{emp}_t)$, and the parameters of concern are the cointegration matrix. With the ordering of variables in x_t as follows $\text{gdp}_t, r_t, o_t, \text{exc}_t, \text{cpi}_t, \text{emp}_t$, β' can be written explicitly as follows :

$$\begin{pmatrix} \beta_{11} & \beta_{21} & 1 & 0 & : & 0 \\ \beta_{12} & 1 & 0 & 0 & : & \beta_{52} \end{pmatrix} \quad (\text{III.2})$$

where the augmented elements in the fifth column correspond to the linear trend (t). Taking in to account (2), (1) is estimated using the maximum likelihood method (see Pesaran and Pesaran (1997) for details). The resulting vector of residuals (or "innovations", say ε_t) is then used for the VAR analysis. This VAR system may be transformed into a "structural" VAR model (SVAR) as follows. Suppose the cointegrating VAR can be expressed as follows :

$$\Pi(L)x_t = \varepsilon_t \quad (\text{III.3})$$

where $\Pi(L) = I_n - \sum_{i=1}^k \Pi_i L^i$ and $\varepsilon_t \sim VWN(0, \Sigma)$

Suppose further that e_t is the error term of the structural model (i.e. an economically meaningful model) that corresponds to the cointegrating VAR model. The two models relate to each other through :

$$A(L)x_t = v_t = B e_t \quad (\text{III.4})$$

where $A(L) = A + \sum_{i=1}^k A_i L^i$, $\mu_t \sim VWN(0, \Omega)$, $e_t \sim VWN(0, I_n)$, and $\Omega = BB'$

The cointegrating VAR and SVAR parameters are related through :

$A\Pi_i = -A_i$ for $i = 1, 2, \dots, k$ and $A\Sigma A' = \Omega$ This leads to establishment of the following relationship :

$$\Sigma = A^{-1} B B' A^{-1'} \quad (\text{III.5})$$

Imposing restrictions on appropriate elements of the matrices in (2) permits the identification structural shocks. These are called contemporaneous restrictions (Amisano and Giannini, 1997). Though it is possible to impose over-identifying restrictions, since our concern with this SVAR are not for the elements of A and B but mainly on the subsequent IRF and FEVD analyses, we heuristically employ just identifying restrictions as follows.

$$\begin{bmatrix} 1 & 0 & 0 & 0 & 0 & 0 \\ a_{21} & 1 & 0 & 0 & 0 & 0 \\ a_{31} & a_{32} & 1 & 0 & 0 & 0 \\ a_{41} & a_{42} & a_{43} & 1 & 0 & 0 \\ a_{51} & a_{52} & a_{53} & a_{54} & 1 & 0 \\ a_{61} & a_{62} & a_{63} & a_{64} & a_{65} & 1 \end{bmatrix} \begin{bmatrix} \varepsilon^{gdp} \\ \varepsilon^R \\ \varepsilon^O \\ \varepsilon^{exc} \\ \varepsilon^{cpi} \\ \varepsilon^{emt} \end{bmatrix} = b_{ij} \begin{bmatrix} e^{gdp} \\ e^R \\ e^O \\ e^{exc} \\ e^{cpi} \\ e^{emt} \end{bmatrix} \quad (\text{III.6})$$

Where:

- a_{ij} : element from A
- ε^j : innovation (error) of variables used by j
- b_{ij} : element from B (in this case $i=j$ for $i, j = 1, \dots, 6$)
- e_j : structural shocks from variable j.

To analyze factors that affect openness on Indonesian economy, the impulse response function (IRF) and forecast error variance decomposition (FEVD) analysis are going to be conducted. Total variables being used in this research are GDP, degree of openness, interest rate (R), total work force (EMT), consumer price index (CPI), and exchange rate rupiah to US dollar (EXC). Since in the long-run CPI and exchange rate do not have effect to output, the model restricted the parameter of CPI and EXC to be zero.

Based on ordering results of each variable, it is organized into two models, which is trade openness model and financial openness model. Variables in small letters indicate that those variables have been transformed into logarithmic forms, except for interest rate and openness indicators.

V. RESULT AND ANALYSIS

V.1. The coefficients of the long-run cointegrating equation

The analysis starts with conducting stationary test to each variable by using Augmented Dickey Fuller (ADF) test (Verbeek, 2000). With the exception of interest rate, all variables used in this analysis have non-stationary tendencies I(1) (Attachment 1). Consequently, the structure of VAR is combined with Vector Error Correction (VECM) or SVAR cointegration in looking at long-term effect. Therefore, the next analysis for IRF and FEVD is based on that equation.

The first step in estimating SVAR is by testing the optimal order of VAR and cointegration rank. The results showed that the order of VAR is 3 or VAR(3). Furthermore, the result of cointegration test showed that there was 1 cointegration rank which meant that in SVAR model there was one cointegrating equation in the long-run. The model restricted the parameters of exchange rate and CPI to be 0, since there was no real effect of these variables to the output in the long-run. The parameter of labor force (emt) is restricted to be -1, since economic accelerates, the number of labor force decreases in the long run. Restricted long-run cointegrating equation is called trade openness equation with p-value 0.4279. The long-run equation for trade openness is as follows:

$$\text{gdp} = -0.14R - 0.05OT \quad (\text{III.7})$$

(0.018) (0.008)

the number in parenthesis is p-value for each parameter.

The results show that interest rate elasticity is negative and significant, -0.14. The negative coefficient means that in the long run as the interest rate increases, the economic growth decelerates; therefore the sign of parameter is in the expected direction and it is in line with the theory. However, the sign of the coefficient of trade openness is negative and significant, namely -0.05. The interesting result showed that the openness could endanger the economic growth of a country. Although there are critiques on methodology to measure openness, such as Edwards (1998), this result may still robust for Indonesian economy due to inadequate preparation of the country to openness which could be seen from the failure of Indonesian goods and services in competing with those produced by other countries.

Similar steps and restriction are conducted to estimate SVAR for financial openness. The results showed that the optimal order was 3, and the cointegration rank was 1. The restricted cointegrating equation was also called financial openness equation. The p-value of equation was relatively robust and significant, namely 0.0262. The long-run equation for financial openness was as follows:

$$\text{gdp} = -0.055R - 0.057OF \quad (\text{III.8})$$

$$(0.0127) \quad (0.0094)$$

the number in parenthesis is p-value for each parameter.

Like trade openness equation, the long-run financial openness equation showed that the sign of direction of interest rate coefficient was still negative and significant, namely -0.055. The similar result was found in the coefficient of financial openness. Although the coefficient was relatively small, however the sign of the direction was still negative and significant. The result implied that since domestic financial market in Indonesia was becoming more open there would be more risk that may endanger Indonesian economy. Since the model incorporated portfolio investment to measure financial openness, the result was realistic to Indonesian economy. Capital reversal from portfolio investment triggered huge depreciation of rupiah exchange rate, which then caused hyper inflation, and ballooning external debt⁴ in term of rupiah exchange rate. Those factors finally endangered economic growth.

V.2. Forecast error variance decomposition analysis

Since the purpose of the paper is to analyze the impact of openness to Indonesian economy, the main analysis of this paper will just focus on the analysis of shocks to openness variables on the variability of GDP, employment, inflation, and rupiah exchange rate. According to the orthogonalised FEVD results as shown in table III.3, and appendix III.4, shocks to trade openness are important in explaining fluctuations in GDP, employment, inflation, and exchange rate.

Fluctuations in the gross domestic product (GDP) in the very short-run and long-run are predominantly self explanatory. These shocks would explain up to 58 percent in the long run. The second largest shock that caused variability of gross domestic product was trade openness. Shocks to trade openness are able to explain approximately 29 percent of long run variability of the gross domestic product. Shocks to exchange rate and shocks to interest rate can be explained by just 6 percent and 4 percent of long run variability of the gross domestic product respectively. Shocks to inflation and shocks to labor force have trivial effects on the variability of the gross domestic product. The trivial effects of both consumer price index and labor force shocks may reflect either the possibility that these shocks are actually unable to explain GDP fluctuations, or that these variables are not good proxy for inflation and employment, or both.

4 Indonesian economy is characterized by huge external debt and the industries that have high dependency to imported input.

The variability of exchange rate in the short-run and long-run are associated mainly with its own self. The trade openness shocks have dominant effect in keeping fluctuations in the exchange rate. Shocks to trade openness can explain approximately 38 percent of long-run variability of exchange rate. Shocks to interest rate and consumer price index have small effect in provoking a long-run fluctuation in the exchange rate, while GDP and employment have trivial effect.

Table III.3
Trade Openness Variance Decomposition

Variance Decomposition of:	Period	LGDP	R	OT	LEXC	LCPI	LEMT
LGDP	1	100	0	0	0	0	0
	2	89.13915	0.125681	7.656387	2.165048	0.913731	5.77E-07
	5	68.75486	3.338833	21.79006	4.984646	0.445243	0.686352
	10	60.53328	3.918815	27.79061	6.304005	0.343535	1.10975
	15	58.87557	4.222794	29.32911	6.313865	0.445247	0.813418
	20	58.05234	4.229643	29.99894	6.402928	0.399998	0.916155
R	30	57.14194	4.351058	30.82253	6.475786	0.409104	0.799578
	1	0.969171	99.03083	0	0	0	0
	2	2.063623	72.98599	7.636848	3.984519	13.32893	8.88E-05
	5	5.470561	42.65912	19.34319	22.41984	10.06885	0.038446
	10	5.148787	42.0328	20.81674	22.79906	8.938771	0.263841
	15	4.553728	37.55038	26.96147	20.16298	10.04908	0.722363
EXC	20	4.200486	34.88017	29.34558	18.79047	12.0329	0.750386
	30	3.661608	31.18961	33.56498	16.64012	14.11192	0.831777
	1	2.361867	0.398958	23.94036	73.29881	0	0
	2	1.913719	3.929531	30.35425	62.24583	1.503911	0.05276
	5	1.523535	4.410526	36.74859	52.91455	4.006362	0.396441
	10	1.169557	3.867829	37.70815	50.5498	6.397754	0.30691
CPI	15	1.056306	3.681232	38.11233	49.69221	7.183974	0.273948
	20	0.989876	3.536421	38.34769	49.40173	7.480835	0.243446
	30	0.920768	3.429793	38.63113	48.90189	7.926146	0.190279
	1	2.112499	1.38519	6.088852	26.31832	64.09514	0
	2	3.706483	5.747416	14.65941	30.7642	45.11099	0.011499
	5	3.832179	12.87011	33.18317	33.30301	16.36771	0.44382
EMT	10	3.851909	13.94733	38.16998	33.24811	10.12359	0.65908
	15	3.830773	14.32256	39.0281	33.505	8.849145	0.464418
	20	3.839427	14.25963	39.22387	33.62934	8.525388	0.522338
	30	3.8348	14.38141	39.6245	33.76965	7.955344	0.434303
	1	0.109493	0.204852	1.215421	4.189655	1.625303	92.65528
	2	0.037523	0.826932	1.483313	2.749411	2.799216	92.10361
	5	0.020259	2.903353	1.672846	0.703945	6.874118	87.82548
	10	0.014783	4.250042	1.717801	0.517853	8.733767	84.76576
	15	0.016192	3.901674	1.65913	0.473672	8.380868	85.56846
	20	0.013265	4.100991	1.623792	0.364334	8.733967	85.16365
	30	0.011158	4.064703	1.608115	0.277599	8.743934	85.29449

Cholesky Ordering: LGDP R OT LEXC LCPI LEMT

Fluctuations in the consumer price index in the short run explained mainly by its own self, however in the long run its effect will decrease. In the long run, shocks to trade openness are predominantly able to explain 39 percent of consumer price index variability. These results are expected since the greater the degree of openness leads to change supply of goods, then it triggers the change in the price of goods. The shocks to exchange rate are also significantly able to explain 33 percent of fluctuations in the inflation, while the shocks of other variables have small and trivial effect.

The variability of labor force in the short-run and long-run are associated mainly with its own self, namely 85 percent in long run. The shocks to trade openness have very small to cause fluctuations in the labor force. Shocks to interest rate and shocks to inflation are just able to explain 6 percent and 8 percent of long-run fluctuation in the labor force.

Based on variance decomposition for financial model (table III.4), variability of each macroeconomics variable mostly can be explained by the fluctuation of financial openness. Fluctuations in output in the short run and long run are explained mainly by its own self, approximately 90 percent in the short run and 70 percent in the long run. Instead output own self, shocks to financial openness are predominantly able to explain 16 percent of output variability in the long run. Fluctuation in interest rate, rupiah exchange rate, and inflation are also significantly explained by financial openness. In the long run financial openness will be able to explain 24 percent of interest rate variability, 38 percent of rupiah exchange variability, and 35 percent of inflation variability. However, the fluctuation of financial openness is relatively small to change employment variability.

Table III.4
Financial Openness Variance Decomposition

Variance Decomposition of:	Period	LGDP	R	OF	LEXC	LCPI	LEMT
LGDP	1	100.0000	0.000000	0.000000	0.000000	0.000000	0.000000
	2	90.69095	0.075317	3.477025	4.604805	1.145645	0.006256
	5	77.83611	4.688831	11.35672	5.116329	0.564998	0.437004
	10	70.29557	6.627112	16.25115	5.814556	0.371245	0.640371
	15	70.18959	7.055152	16.59247	5.421685	0.261891	0.479214
	20	70.98741	6.788930	16.06373	5.374820	0.224685	0.560423
	30	71.45105	6.718453	15.88139	5.288157	0.166083	0.494873
R	1	2.023815	97.97618	0.000000	0.000000	0.000000	0.000000
	2	2.687487	79.98477	1.157284	7.994857	8.168476	0.007131
	5	6.024084	60.10363	10.63125	16.69003	6.483755	0.067263
	10	4.787561	64.54075	9.829894	15.59783	5.040198	0.203762

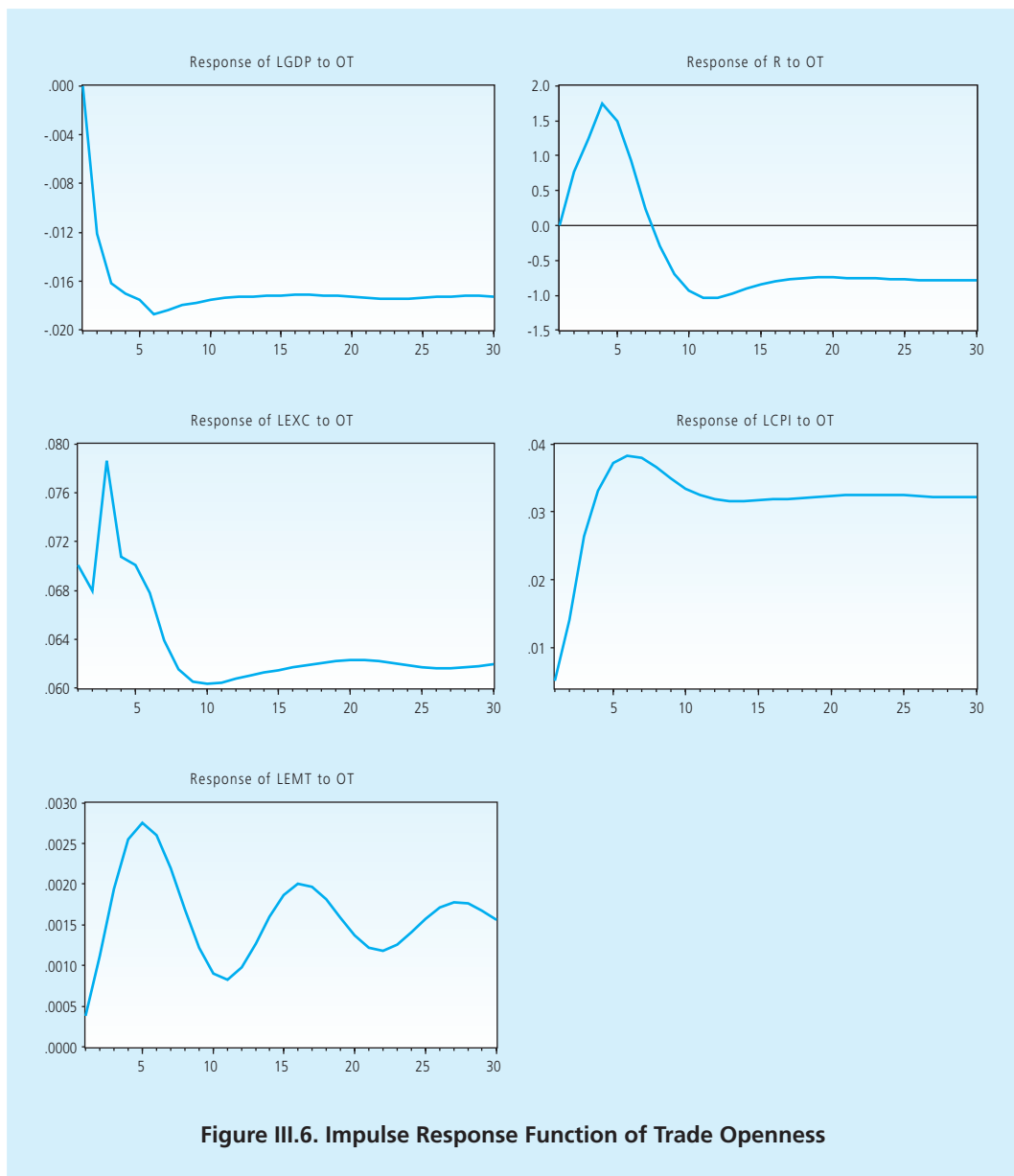
Table III.4
Financial Openness Variance Decomposition (continue)

Variance Decomposition of:	Period	LGDP	R	OF	LEXC	LCPI	LEMT
R	15	4.410863	57.23791	19.65841	13.64419	4.775451	0.273178
	20	3.933702	52.74125	24.39246	13.11731	5.237970	0.577308
	30	3.125710	51.83270	25.64836	13.18419	5.562858	0.646187
LEXC	1	3.035198	0.001578	31.51974	65.44349	0.000000	0.000000
	2	2.794692	5.642360	31.44907	59.40011	0.690835	0.022938
	5	2.984107	9.667359	33.39381	49.98918	3.636139	0.329404
	10	2.953780	10.84930	36.71570	43.93518	5.245320	0.300724
	15	3.018939	11.55739	38.13217	41.18382	5.860080	0.247591
	20	2.984563	11.66800	38.42179	40.58459	6.133459	0.207597
	21	2.975342	11.69734	38.47224	40.42699	6.224097	0.203991
	30	2.972858	11.84015	38.90593	39.63175	6.496176	0.153146
LCPI	1	2.728679	0.584271	9.409912	24.17293	63.10421	0.000000
	2	4.899419	4.103462	17.24114	28.20169	45.55250	0.001793
	5	6.346459	13.99371	30.70778	29.85724	18.80392	0.290894
	10	6.972812	17.38285	35.87180	26.56812	12.81692	0.387495
	15	6.870065	18.30520	36.42290	26.39263	11.71942	0.289782
	20	6.759464	18.03084	35.77163	27.05073	12.04099	0.346344
	30	6.693095	18.03734	35.58399	27.46139	11.93215	0.292028
	30	6.693095	18.03734	35.58399	27.46139	11.93215	0.292028
LEMT	1	0.210306	0.367841	1.387165	3.424471	1.835884	92.77433
	2	0.101980	1.117218	1.799642	1.712019	3.057500	92.21164
	5	0.033415	3.787049	2.875262	0.449618	8.361207	84.49345
	10	0.120244	5.967603	5.052392	2.357496	10.42625	76.07601
	15	0.129891	5.695530	4.695365	1.917413	10.09606	77.46574
	20	0.119926	5.166689	3.947283	2.451724	10.78448	77.52990
	30	0.091342	5.057836	3.739682	2.321750	10.76534	78.02405
	30	0.091342	5.057836	3.739682	2.321750	10.76534	78.02405

Cholesky Ordering: LGDP R OF2 LEXC LCPI LEMT

V.3. Impulse Response Function Analysis

Dynamic movements of each variable due to a one standard error shock trade openness are analyzed by using orthogonalised IRFs presented in figure III.6. According to the findings, shocks to trade openness will lead to lower economic growth. A one standard error shock to trade openness would decrease output by 0.01 percent in the very short run and by almost 0.02 percent in the long run. As mentioned in FEVD analysis, more openness leads to lower output due to lack of preparation for trade openness. Furthermore, shocks to trade openness will lead to an increase in interest rate in the short run, however in the long run it will lead to lower interest rate. Trade openness leads to an integration of Indonesian economy with world economy, which is turn lowering the interest rate.



The response of exchange rate due to shock to trade openness is positive. A one standard error shock to trade openness will lead to a depreciation of rupiah exchange rate. As the Indonesian economy is more open, there use of foreign reserve to cover current account deficit, can lead to the depreciation of rupiah exchange rate. In additions, shock to trade openness will lead to increase the inflation, while a one standard error shock to trade openness does not have any real effect to labor force.

The movement of each macroeconomic variable due to shocks to financial openness is various (Figure III.7). Output becomes to be lower due to a shock to financial openness. In additions to the result, a one standard error shock to financial openness will lead to an increase in interest rate in the very short run, however in the long run it will lead a decrease in the interest rate. This result may be robust since Indonesian financial market has become integrated to world financial market, domestic interest rate will decrease approaching to world interest rate, and while in the short run the market needs time to adjust to a high interest rate.

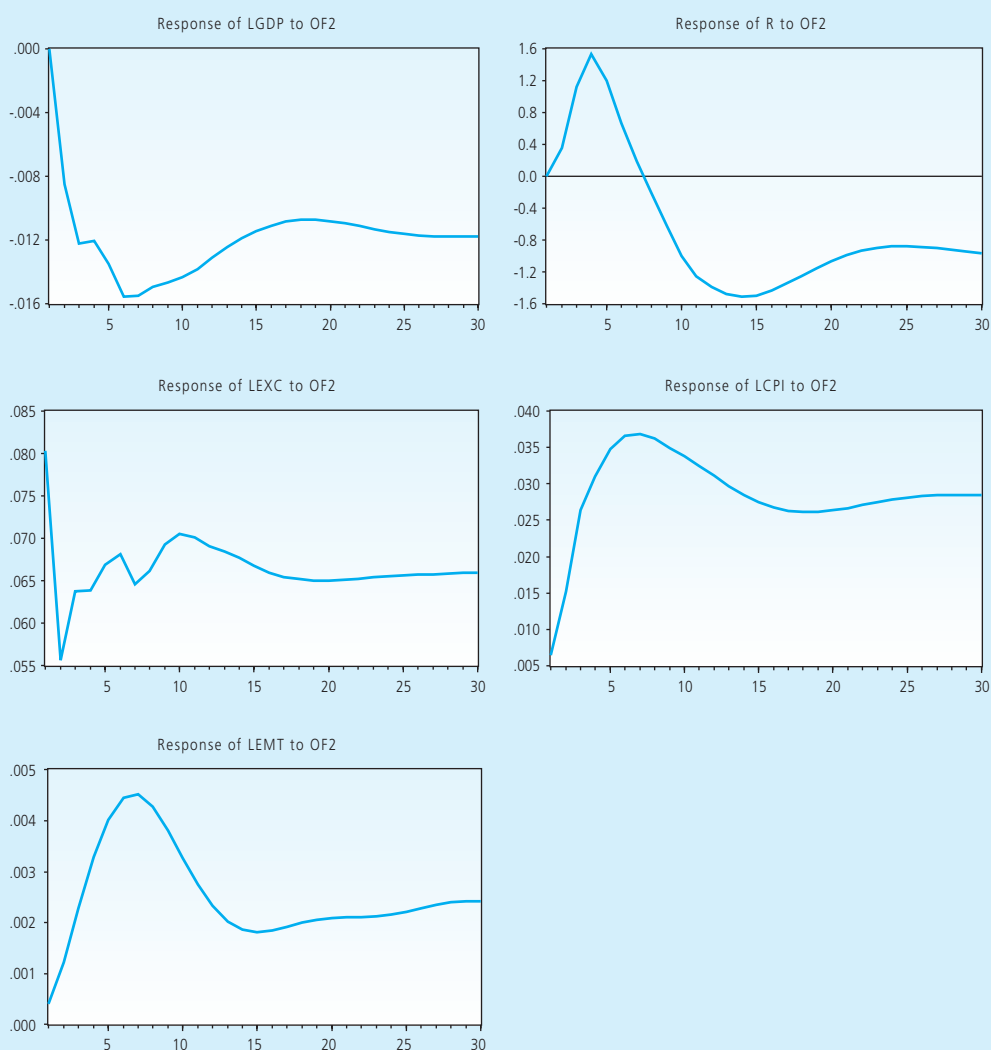


Figure III.7. Impulse Response Function of Financial Openness

The movement of exchange rate, inflation, and labor force due to the shock to financial openness is relatively various; shock to financial openness leads to the increase of exchange rate, inflation, and labor force.

VI. Conclusions

There are long disputes about the relationship between the degree of openness and economic performance. Based on cross country analysis, the findings of studies on the relationship between openness and economic performance are various. Some studies found a positive relationship between openness and economic performance, while the others found a negative impact on the relationship.

Instead of using cross-section data like previous studies, this study uses structural vector autoregression (SVAR) to explore the impact of openness to Indonesian economy. The findings show that trade openness and financial openness have a negative impact on output. The result of trade openness may be robust since lack of preparation to anticipate trade openness lead to the weakening of competitiveness of Indonesian product relative to foreign product and finally lower output. The result of financial openness also is robust since the more financial openness leads Indonesian economy to be more vulnerable to capital reversal, which then to lower output.

The findings of forecast error variance decomposition analysis for trade openness model show that fluctuations in the output, exchange rate, and inflation in the very short-run and long-run are significantly explained by trade openness. The long-run financial openness model finds that the fluctuations in the rupiah exchange rate, and inflation are significantly explained by financial openness but it is not significant in the long run, while the fluctuation in the labor force is significantly explained by financial openness in the long run but it is not in the very short run.

The variance decomposition analysis on financial openness found that variability of each macroeconomics variable was mostly able to explain the fluctuation of financial openness. Fluctuation in output, interest rate, rupiah exchange rate, and inflation are also significantly explained by financial openness.

The findings of impulse response analysis show that shocks to trade openness will lead to lower output in the short run and long run; however the effect in the long run is bigger than in the short run. Shocks to trade openness relatively have no effect to labor force, while rupiah exchange rate and inflation will be higher due to shocks to trade openness.

The movement of each macroeconomic variable due to a shock to financial openness is mixed. A shock to financial openness will lead to lower output, but on the contrary it will lead to increase employment. In additions, a shock to financial openness leads to an increase in interest rate in the very short run but it lower interest rate in the long run. The finding may be robust since the preparation to adopt financial integration lead to increase interest rate in the very short run; however in the long run domestic interest rate decline approaching to world interest rate.

Since findings show that openness leads to lower output, the Government should be well prepared before liberalizing international trade and domestic financial market in line with world financial market. Failure to prepare openness leads to lowering competitiveness of Indonesia's goods and services, and finally will jeopardize the output.

This paper uses ratio between trade total and GDP to measure trade openness and ratio between total of capital inflow and GDP to measure financial openness. These indicators may have weakening, thus further research using other measurement of openness could give better findings on the relationship between openness and economic performance.

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APPENDIX III.1: Unit Root Test**Augmented Dickey-Fuller Unit Root Test**

Variables	Level (P-Value)	First Difference (P-Value)
Gross Domestic Product (GDP)	0.9587	0.0140
Interest rate (R)	0.0034	0.0000
Trade Openness (OT)	0.3103	0.0000
Financial Openness (OF)	0.4259	0.0000
Exchange Rate (EXC)	0.9411	0.0001
Consumer Price Index (CPI)	0.9627	0.0006
Labor Force (EMT)	0.2176	0.0368

APPENDIX III.2: Cointegration Test**Trade Openness**

Date: 11/03/06 Time: 14:09

Sample (adjusted): 1981Q1 2005Q2

Included observations: 98 after adjustments

Trend assumption: Linear deterministic trend

Series: LGDP R OT LEXC LCPI LEMT

Lags interval (in first differences): 1 to 3

Unrestricted Cointegration Rank Test (Trace)				
Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.417854	132.1138	95.75366	0.0000
At most 1 *	0.328919	79.09243	69.81889	0.0076
At most 2	0.171223	40.00359	47.85613	0.2224
At most 3	0.096026	21.59884	29.79707	0.3214
At most 4	0.077019	11.70523	15.49471	0.1716
At most 5	0.038533	3.850906	3.841466	0.0597

Trace test indicates 1 cointegrating eqn(s) at the 0.05 level
 * denotes rejection of the hypothesis at the 0.05 level
 **MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)				
Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.417854	53.02137	40.07757	0.0010
At most 1 *	0.328919	39.08884	33.87687	0.0109
At most 2	0.171223	18.40475	27.58434	0.4618
At most 3	0.096026	9.893613	21.13162	0.7546
At most 4	0.077019	7.854320	14.26460	0.3937
At most 5	0.038533	3.850906	3.841466	0.0597

Max-eigenvalue test indicates 1 cointegrating eqn(s) at the 0.05 level
 * denotes rejection of the hypothesis at the 0.05 level
 **MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegrating Coefficients (normalized by $b^*S11^*b=l$):

Financial Openness

Date: 11/03/06 Time: 15:35

Sample (adjusted): 1981Q2 2005Q2

Included observations: 97 after adjustments

Trend assumption: Linear deterministic trend

Series: LGDP R OF2 LEXC LCPI LEMT

Lags interval (in first differences): 1 to 4

Unrestricted Cointegration Rank Test (Trace)				
Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.413398	126.4718	95.75366	0.0001
At most 1 *	0.310011	74.73115	69.81889	0.0192
At most 2	0.152543	38.73642	47.85613	0.2709
At most 3	0.114416	22.68145	29.79707	0.2620
At most 4	0.064675	10.89518	15.49471	0.2180
At most 5	0.044442	4.409641	3.841466	0.0557

Trace test indicates 1 cointegrating eqn(s) at the 0.05 level
 * denotes rejection of the hypothesis at the 0.05 level
 **MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)				
Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.413398	51.74060	40.07757	0.0016
At most 1 *	0.310011	35.99473	33.87687	0.0275
At most 2	0.152543	16.05496	27.58434	0.6611
At most 3	0.114416	11.78628	21.13162	0.5689
At most 4	0.064675	6.485538	14.26460	0.5517
At most 5	0.044442	4.409641	3.841466	0.0557

Max-eigenvalue test indicates 1 cointegrating eqn(s) at the 0.05 level
 * denotes rejection of the hypothesis at the 0.05 level
 **MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegrating Coefficients (normalized by $b' \cdot S_{11} \cdot b = I$):

APPENDIX III.3: Vector Error Correction Estimate**Trade Openness**

Vector Error Correction Estimates

Date: 11/03/06 Time: 15:53

Sample (adjusted): 1980Q4 2005Q2

Included observations: 99 after adjustments

Standard errors in () & t-statistics in []

Cointegration Restrictions:

B (1,1)=1, B(1,4)=0, B(1,5)=0, B(1,6)=-1

Convergence achieved after 56 iterations.

Restrictions identify all cointegrating vectors

LR test for binding restrictions (rank = 1):

Chi-square(3)

2.773125

Probability

0.427943

Cointegrating Eq:	CointEq1
LGDP	1.000000
R	-0.140732 (0.01804) [-7.80132]
OT	-0.047576 (0.00826) [-5.75962]
LEXC	0.000000
LCPI	0.000000
LEMT	-1.000000
C	11.67159

Financial Openness

Vector Error Correction Estimates

Date: 09/09/05 Time: 22:54

Sample (adjusted): 1980Q4 2005Q2

Included observations: 99 after adjustments

Standard errors in () & t-statistics in []

Cointegration Restrictions:

$B(1,1)=1$, $B(1,4)=0$, $B(1,5)=0$, $B(1,6)=-1$

Convergence achieved after 50 iterations.

Restrictions identify all cointegrating vectors

LR test for binding restrictions (rank = 1):

Chi-square(3)

9.249486

Probability

0.026151

Cointegrating Eq:	CointEq1
LGDP	1.000000
R	-0.054535 (0.01272) [-4.28681]
OF2	-0.057083 (0.00944) [-6.04446]
LEXC	0.000000
LCPI	0.000000
LEMT	-1.000000
C	7.894010

APPENDIX III.4: Variance Decomposition

Variance Decomposition of Trade Openness							
Variance Decomposition of:	Period	LGDP	R	OT	LEXC	LCPI	LEMT
LGDP	1	100	0	0	0	0	0
	2	89.13915	0.125681	7.656387	2.165048	0.913731	5.77E-07
	5	68.75486	3.338833	21.79006	4.984646	0.445243	0.686352
	10	60.53328	3.918815	27.79061	6.304005	0.343535	1.10975
	15	58.87557	4.222794	29.32911	6.313865	0.445247	0.813418
	20	58.05234	4.229643	29.99894	6.402928	0.399998	0.916155
	30	57.14194	4.351058	30.82253	6.475786	0.409104	0.799578
R	1	0.969171	99.03083	0	0	0	0
	2	2.063623	72.98599	7.636848	3.984519	13.32893	8.88E-05
	5	5.470561	42.65912	19.34319	22.41984	10.06885	0.038446
	10	5.148787	42.0328	20.81674	22.79906	8.938771	0.263841
	15	4.553728	37.55038	26.96147	20.16298	10.04908	0.722363
	20	4.200486	34.88017	29.34558	18.79047	12.0329	0.750386
	30	3.661608	31.18961	33.56498	16.64012	14.11192	0.831777
EXC	1	2.361867	0.398958	23.94036	73.29881	0	0
	2	1.913719	3.929531	30.35425	62.24583	1.503911	0.05276
	5	1.523535	4.410526	36.74859	52.91455	4.006362	0.396441
	10	1.169557	3.867829	37.70815	50.5498	6.397754	0.30691
	15	1.056306	3.681232	38.11233	49.69221	7.183974	0.273948
	20	0.989876	3.536421	38.34769	49.40173	7.480835	0.243446
	30	0.920768	3.429793	38.63113	48.90189	7.926146	0.190279
CPI	1	2.112499	1.38519	6.088852	26.31832	64.09514	0
	2	3.706483	5.747416	14.65941	30.7642	45.11099	0.011499
	5	3.832179	12.87011	33.18317	33.30301	16.36771	0.44382
	10	3.851909	13.94733	38.16998	33.24811	10.12359	0.65908
	15	3.830773	14.32256	39.0281	33.505	8.849145	0.464418
	20	3.839427	14.25963	39.22387	33.62934	8.525388	0.522338
	30	3.8348	14.38141	39.6245	33.76965	7.955344	0.434303
EMT	1	0.109493	0.204852	1.215421	4.189655	1.625303	92.65528
	2	0.037523	0.826932	1.483313	2.749411	2.799216	92.10361
	5	0.020259	2.903353	1.672846	0.703945	6.874118	87.82548
	10	0.014783	4.250042	1.717801	0.517853	8.733767	84.76576
	15	0.016192	3.901674	1.65913	0.473672	8.380868	85.56846
	20	0.013265	4.100991	1.623792	0.364334	8.733967	85.16365
	30	0.011158	4.064703	1.608115	0.277599	8.743934	85.29449

Cholesky Ordering: LGDP R OT LEXC LCPI LEMT

Variance Decomposition of Financial Openness							
Variance Decomposition of:	Period	LGDP	R	OF	LEXC	LCPI	LEMT
LGDP	1	100.0000	0.000000	0.000000	0.000000	0.000000	0.000000
	2	90.69095	0.075317	3.477025	4.604805	1.145645	0.006256
	5	77.83611	4.688831	11.35672	5.116329	0.564998	0.437004
	10	70.29557	6.627112	16.25115	5.814556	0.371245	0.640371
	15	70.18959	7.055152	16.59247	5.421685	0.261891	0.479214
	20	70.98741	6.788930	16.06373	5.374820	0.224685	0.560423
	30	71.45105	6.718453	15.88139	5.288157	0.166083	0.494873
	1	2.023815	97.97618	0.000000	0.000000	0.000000	0.000000
	2	2.687487	79.98477	1.157284	7.994857	8.168476	0.007131
	5	6.024084	60.10363	10.63125	16.69003	6.483755	0.067263
	10	4.787561	64.54075	9.829894	15.59783	5.040198	0.203762
	15	4.410863	57.23791	19.65841	13.64419	4.775451	0.273178
	20	3.933702	52.74125	24.39246	13.11731	5.237970	0.577308
	30	3.125710	51.83270	25.64836	13.18419	5.562858	0.646187
	1	3.035198	0.001578	31.51974	65.44349	0.000000	0.000000
LEXC	2	2.794692	5.642360	31.44907	59.40011	0.690835	0.022938
	5	2.984107	9.667359	33.39381	49.98918	3.636139	0.329404
	10	2.953780	10.84930	36.71570	43.93518	5.245320	0.300724
	15	3.018939	11.55739	38.13217	41.18382	5.860080	0.247591
	20	2.984563	11.66800	38.42179	40.58459	6.133459	0.207597
	21	2.975342	11.69734	38.47224	40.42699	6.224097	0.203991
	30	2.972858	11.84015	38.90593	39.63175	6.496176	0.153146
LCPI	1	2.728679	0.584271	9.409912	24.17293	63.10421	0.000000
	2	4.899419	4.103462	17.24114	28.20169	45.55250	0.001793
	5	6.346459	13.99371	30.70778	29.85724	18.80392	0.290894
	10	6.972812	17.38285	35.87180	26.56812	12.81692	0.387495
	15	6.870065	18.30520	36.42290	26.39263	11.71942	0.289782
	20	6.759464	18.03084	35.77163	27.05073	12.04099	0.346344
	30	6.693095	18.03734	35.58399	27.46139	11.93215	0.292028
LEMT	1	0.210306	0.367841	1.387165	3.424471	1.835884	92.77433
	2	0.101980	1.117218	1.799642	1.712019	3.057500	92.21164
	5	0.033415	3.787049	2.875262	0.449618	8.361207	84.49345
	10	0.120244	5.967603	5.052392	2.357496	10.42625	76.07601
	15	0.129891	5.695530	4.695365	1.917413	10.09606	77.46574
	20	0.119926	5.166689	3.947283	2.451724	10.78448	77.52990
	30	0.091342	5.057836	3.739682	2.321750	10.76534	78.02405

Cholesky Ordering : LGDP R OF2 LEXC LCPI LEMT