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**TRADE LIBERALIZATION, ECONOMIC GROWTH, AND
PRODUCTIVITY IN ASEAN COUNTRIES**

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**TRADE LIBERALIZATION, ECONOMIC GROWTH, AND
PRODUCTIVITY IN ASEAN COUNTRIES**

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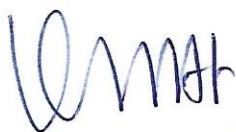
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TRADE LIBERALIZATION, ECONOMIC GROWTH, AND
PRODUCTIVITY IN ASEAN COUNTRIES

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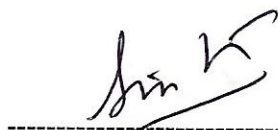
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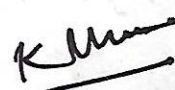


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CERTIFICATION

I hereby certify that the contents of this dissertation is wholly my own work unless otherwise referenced or acknowledged information from sources is referenced with original comments and ideas from the writer him/herself.

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Abstract

Many economic theories argue that trade liberalization spurs growth through several channels, and most East Asian countries reaped enormous benefits from the trade liberalization. However, an influential dissenting view exists which argues that the high growth in East Asia was supported by high saving and investment rate, without much productivity. While the controversy over the sources of growth still continues, the argument of Krugman implies that the high growth in East Asia is essentially a transitory phenomenon toward a steady state growth path because the marginal product of capital declines with more capital accumulation. However, Ventura finds that under the regime of free trade, a small open economy is not subject to the diminishing returns to capital and thus effectively operates as if it were employing a linear AK technology. In this sense, this dissertation analyzes the effects of trade liberalization on economic growth and productivity in ASEAN countries during the period 1975 to 2010 for ASEAN 5 and 1988 to 2010 for CLMV countries. Moreover, the effect on economic growth of structural transformation and the changing pattern of exports induced by trade liberalization is examined in this dissertation.

The regression results reveal that trade liberalization enhances growth in ASEAN 5 countries, and capital accumulation is the key determinant in ASEAN 5 to achieve high economic growth during the study period. Moreover, foreign direct investment remains the main driver of capital accumulation, and technology development in ASEAN 5 countries. In addition, trade liberalization affects the growth rate of productivity of capital only in Singapore while the coefficient of trade volume to GDP is significant at only 10% level in Malaysia and Thailand, it is rather weak to say that trade can overcome the diminishing returns to capital in the other ASEAN 5 countries. However, some evidences indicate that there is shift from labor-intensive manufacturing to capital-intensive and skill-intensive industries in Malaysia, Thailand, Indonesia and the Philippines. Consequently, the pattern of export also significantly changed in those countries.

Trade liberalization also fosters growth in CLMV countries. The economic growth in CLMV countries during the study period is largely influenced by the level of capital accumulation and natural- resource-based exports. In addition, FDI plays an important role in CLV countries. Fiscal and Monetary policy is strongly related with growth in CLMV countries, and a crowding out effect exists in most CLMV countries. The effect of structural transformation is weak in the manufacturing sector with growth. Moreover, it is difficult to conclude that trade liberalization affects the growth rate of productivity of capital in CLMV countries.

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Lists of Abbreviations

ADB	Asian Development Bank
AFPFL	Anti-Fascist Peoples' Freedom League
AFTA	Association of Southeast Asian Nations Free Trade Area
ASEAN	Association of Southeast Asian Nations
BOI	Board of Investment
CEPT	Common Effective Preferential Tariff
CES	Constant Elasticity of Substitution
CLMV	Cambodia, Lao PDR, Myanmar, Vietnam
DOM	Exports of Domestic Market-oriented Manufactures
EBA	Everything but Arms
EPZs	Export Processing Zones
EU	European Union
FDI	Foreign Direct Investment
FIMP	First Industrial Master Plan
FIL	Foreign Investment Law
FTA	Free Trade Area
GDP	Gross Domestic Products
GSP	Generalized System of Preferences
IMF	International Monetary Fund
LDC	Least Developed Country
MFA	Multi Fibre Agreement
MFN	Most Favor Nations
NEM	New Economic Mechanism
NICs	Newly Industrialized Countries
PPP	Processed Products
RCA	Revealed Comparative Advantage
SEEs	State Owned Economic Enterprises
SLORC	State Law and Order Restoration Council
SOEs	State Owned Enterprises
SPDC	State Peace and Development Council
SUBCON	International Subcontracting exports
UN	United Nations
UPP	Unprocessed Primary Products
WDI	World Development Indicators
WTO	World Trade Organization

CHAPTER I

Introduction

1.1 Rationale of the Study

International trade deals with economic relations among nations. Trade has been accompanied by economic development in both developing and developed countries. Moreover, international trade makes it possible for individuals to achieve higher living standards because of its gains from specialization, innovation and efficient production, and greater variety of goods.

Trade liberalization refers to the removal or reduction of restrictions or the free exchange of goods between nations. Trade liberalization through the reduction or elimination of trade barriers has become a popular economic policy of developed and developing countries today.

Most economists argue that there is a strong and positive link between trade liberalization and economic growth. The major objectives of trade liberalization are to achieve macroeconomic goals of the economies, especially, to achieve high economic growth for the countries. Trade promotes competition, improved resource reallocation, and lead to economies of scale in areas where the countries have comparative advantage. It generates pressures for increased efficiency, product improvement, and technical change, thus raising factor productivity and further lowering costs of production. Moreover, trade liberalization accelerates overall economic growth, which raises profits and promotes greater savings and investment and thus further growth.

Furthermore, trade liberalization represents an important channel for the transfer of technology and it would enable developing countries to achieve faster productivity growth. Trade liberalization reduces market power for the domestic producers due to foreign competition, and forces them to expand their output. Consequently, firms can produce with lower average cost, and this might result in the exploitation of the economies of scale. Trade liberalization may yield productivity improvements by reallocation of resources among domestic firms within the same industry. In addition, trade liberalization lowers domestic prices, potentially forcing high cost producers to exit the market. This would lead to reallocation of output from less efficient to more efficient producers.

Therefore, acknowledging the increasing importance of trade, many countries all over the world have become more integrated on a global and also regional scale for expanding and strengthening their trade, which is considered as an engine of economic growth, and most economies benefit from this process.

In this sense, the Association of Southeast Asian Nations (ASEAN) was founded in 1967 with the initial members of Indonesia, Malaysia, the Philippines, Singapore and Thailand. Brunei became a member of ASEAN in 1984. Vietnam joined ASEAN in 1995, Myanmar and Laos followed suit in 1997 and Cambodia was accepted as a member in 1999. Now, ASEAN has become the organization which represents all 10 Southeast Asian nations.

ASEAN's member economies vary widely in size, population and income. ASEAN has a total population of 590,844 thousand and a land area of 4,495 thousand sq.km. In 2010, Singapore had the highest per capita GDP of US\$ 44,862 followed by Brunei with US\$ 29,915, Malaysia with US\$ 8,555 and Indonesia with US\$ 3,027. Thailand and the Philippines had US\$ 4,743 and US\$ 2,129 respectively. Vietnam had per capita GDP with US\$ 1,225 and Cambodia had per capita GDP of about US\$ 785. Laos and Myanmar had US\$ 1,099 and US\$ 706 respectively¹.

GDP growth rates also differ across countries. According to the World Bank's World Development Report 2000/2001, between 1971 and 1980, the economies grew between 6 - 8% and in the period 1981-90, the growth rates of the countries, with the exception of the Philippines, rose impressively from 5.5 % (Indonesia) to 7.9 % (Thailand). During the period 1990-99, the region was growing at an average rate of more than 5.2 %. Meanwhile, Vietnam and Singapore scored the highest growth rates of 8.1 % and 8.0 % respectively whereas the slowest performing economy, the Philippines, achieved 3.2 %. Myanmar's GDP growth rate achieved 6.3 % during that period. Between 1998 and 2010, the fastest growing economies were Cambodia and Vietnam with average annual growth rate of 9.2 % and 7.6 % respectively, closely followed by Laos PDR with 6.8%².

Most of the ASEAN member countries have an outstanding achievement of economic and social progress over the past quarter of a century. It is interesting that most of the initial member countries adopted outward looking strategies. The average

¹ ASEAN Secretariat

² ASEAN Community in Figures 2010

annual rate of growth of ASEAN exports and imports from 2003 to 2010 were 14.2% and 17.45 % respectively.³

In general, in terms of development levels, the group can be divided into two groups: the original ASEAN-6, which enjoys a higher degree of development and the new member countries, which have a lesser degree of development. It should be noted that the older members are capitalist countries whereas the new members, CLMV have transformed their economies from centrally planned economies into market-oriented systems. The reform process started in Vietnam, Myanmar and Laos PDR in the late 1980s, and a little later in Cambodia. Myanmar has started a process of removing barrier to free trade and changing its economic system from a centrally planned economy into a market-oriented economy since late 1988.

In 1993, Cambodia became a constitutional monarchy, with a market economy and open society allowing the establishment of political parties and guaranteeing freedom of expression. Since then, the most significant changes in industrial policy have been an emphasis on privatization and openness towards private foreign investment. Between 1998 and 2010, the average annual growth rate was 9.2%, and Cambodia was the fastest growing economy among ASEAN countries during that period.

In Laos PDR, the reform program had started in 1986 with the introduction of the New Economic Mechanism under which restrictions on private enterprise were eased, prices and trade of goods and services liberalized, and a number of state-owned entities privatized. Greater market orientation and closer integration with regional and global markets has contributed to robust growth. During the period between 1990 and 2005, real GDP grew at an annual average rate of 6.2%.⁴

Likewise, Myanmar has started changing its economic system from a centrally planned economy into a market oriented economy together with the introduction of an open-door policy since late 1988. The process included the introduction of a series of structural reforms such as allowing the private sector to participate in export and import activities, reducing tariffs and providing several attractive incentives to foreign investors, all designed to open up and integrate the economy with the rest of the

³ ASEAN Trade Statistics Database

⁴ Country Strategy and Program, Lao People's Democratic Republic 2007-2011, Asian Development Bank 2006

world. With its accession to ASEAN and WTO⁵, these trade barriers and tariffs were substantially reduced further. The outcome of these reforms has been a tremendous improvement in the country's external trade situation and economic growth. Available figures indicate that the average annual growth rate of exports was reported to be 18% in 2008.⁶ Between 1998 and 2010, the average annual growth rate of Myanmar was 5.9%.

Vietnam started to liberalize international trade as a central component of economy-wide institutional reform called *Doi Moi* at the end of 1986. Between 1998 and 2010, Vietnam was one of the fastest growing economies among ASEAN with an average annual growth rate of 7.6 %.

These observations indicate that ASEAN new members have been following the "miracle" of the forerunners of East Asian economies that achieved greater economic growth and development through the promotion of international trade and foreign direct investment. Most Economists point out that the rapid growth in transitional economies is often supported by more capital accumulation and technological progress. For instance, the rapid growth experienced by the East Asian economies such as Hong Kong, Taiwan, Singapore, South Korea, China, Malaysia, and Thailand during the past decade. These countries have been transformed from technologically backward to modern and affluent economies. Each now has a significant collection of firms producing technologically complex products competing effectively. All of the Asian NICs have experienced rapid growth of their physical stocks. These cases of capital accumulation and technological progress have been heavily propelled and fueled by international trade.

These assertions have been sharply disputed by Krugman, who argued that the high growth rates in Asian countries depend largely on high saving rate and investment rather than higher productivity and sooner or later they will cease because of the diminishing returns to capital unless there is improvement in technological progress. On the other hand, Ventura argued that developing countries are free from diminishing returns to capital when their economies grow on the basis of international trade. Under the regime of free trade, a small economy is not subject to the diminishing returns to capital, and when capital accumulation is more rapid, a more

⁵ Myanmar has been a member of WTO since 1995, a member of GATT since 1948, and a member of ASEAN since 1997.

⁶ Statistical Year Book 2010.

rapid transformation of the industrial structure from labor-intensive industries to capital-intensive industries can be observed. Consequently, it will gradually shift its export from labor-intensive to capital-intensive goods.

In view of these observations, and trade liberalization policies pursued by ASEAN, there is a need for analyzing the possible effect of trade liberalization on economic growth and growth rate of productivity of capital in ASEAN.

1.2 Objectives of the Study

The objectives of this dissertation are:

- (1) to evaluate the effect on economic growth of structural transformation and the changing pattern of exports induced by the trade liberalization in ASEAN countries.
- (2) to examine whether trade liberalization has facilitated economic growth rate in ASEAN countries or not,
- (3) to test the possible effect of trade liberalization on the growth rate of productivity in ASEAN countries.

1.3 Method of Study

In order to achieve the objectives of the study, both descriptive and analytical methods are used in this dissertation. Econometric tools are used for quantitative study using secondary data from various sources. To find out the effect of trade liberalization on economic growth and productivity of capital in ASEAN, the AK model is used with time series analysis. In this model, the economies produce with a linear technology $Y=AK$ when capital is scarce factor, hence output growth is proportional to the growth rate in capital stock (K) and productivity of capital (A). To find out the productivity of capital (A) in ASEAN countries, simulation on technology level A (t) is calculated for each ASEAN country. Data has been based on available secondary data from World Development Indicators, UN Statistical Year Books (Various Issues), UN COMTRADE, International Trade Statistics, ASEAN Statistical Yearbook, ADB (Key Indicators of Developing Asian and Pacific Countries), Statistical Yearbooks for the Asia and the Pacific, ASEAN Community in Figures, and Statistical Year Book (Various issues).

1.4 Scope and Limitations of the Study

This dissertation examines the effect of trade liberalization on growth and productivity for ASEAN 5 from 1975 to 2010, and those for CLMV from 1988 to 2010. Because the levels of development are different within ASEAN region, ASEAN 5 and CLMV countries are separately analyzed in this dissertation. Since ASEAN 5 countries initiated outward oriented strategies around 1970s, the period from 1975 to 2010 was used for ASEAN 5 countries. On the other hand, because CLMV countries started changing their economies from centrally planned to market-oriented one in late 1980s, the period from 1988 to 2010 was used for CLMV countries. Brunei is excluded in this study because its economy does not depend much on trade. Even though production function of the country is basically based on three main factors of production (land, labor, and capital), the AK model only focuses on the productivity of capital especially on the growth rate of productivity of capital.

1.5 Organization of the Study

This dissertation consists of six chapters. Chapter one is the introduction. The next chapter provides literature review. The third chapter presents the overview on growth and export pattern of ASEAN 5 countries. The fourth chapter describes the overviews on growth and export pattern of CLMV countries. The fifth chapter reveals the econometric analysis on the effect of trade liberalization on economic growth and productivity in ASEAN countries. The sixth chapter provides findings, and suggestions.

CHAPTER II

Literature Review

2.1 Theoretical Review

Countries engage in international trade for two basic reasons, each of which contributes to their gains from trade. First, countries trade because they are different from each other. Second, countries trade to achieve economies of scale in production. Historically, trade has acted as an important engine of growth for countries at different stages of development, not only by contributing to a more efficient allocation of resources within countries, but also by transmitting growth from one part of the world to another. There are static and dynamic gains from trade between countries but there is nothing in the theory of trade, which says that the gains are equitably distributed. Not all countries necessarily share equally in the growth of trade or its benefits. This will depend on: the production and demand characteristics of the goods that a country produces and trades; the domestic economic policies pursued, and the trading regime it adopts.

These are essentially static gains that arise from the reallocation of resources from one sector to another as increased specialization, based on comparative advantage, takes place. Once the tariff barriers have been removed, and no further reallocation takes place, the static gains are exhausted. This is in contrast to the dynamic gains from trade which continually shift outwards the whole production possibility frontier of countries if trade is associated with more investment and faster productivity growth based on scale economies, learning by doing and the acquisition of new knowledge from abroad, particularly through foreign direct investment. It is the dynamic gains from trade that are focused on in modern trade theory (Helpman and Krugman, 1985) and in “new” growth theory (Grossman and Helpman, 1991), and which constitute a vital link in the causal chain between exports and growth.

During the seventeenth and eighteenth centuries, a group of merchants, bankers, government officials, and even philosophers wrote essays on international trade that advocated an economic philosophy known as mercantilism. The mercantilists maintained that government regulation of foreign trade was necessary in order for a country to have a so-called favorable balance of trade—exports greater than imports—and, therefore, an increase in the quantity of bullion, primarily gold

and silver, as other countries paid in precious metals for the home country's excess of exports over imports. With more gold, rulers could maintain larger and better armies and consolidate their power at home; improved armies and navies also made it possible for them to acquire more colonies. Moreover, more gold meant more money in circulation and greater business activity. In addition, by encouraging exports and restricting imports, the government would stimulate national output and employment. However, since all nations could not simultaneously have an export surplus and the amount of gold and silver was fixed at any particular point in time, one nation could gain only at the expense of other nations. These views are important for two reasons: the ideas of classical economists such as Adam Smith, David Ricardo can best be realized if they are regarded as reactions to the mercantilists' views on trade and on the role of the government; recently, it can be thought of as a resurgence of neomercantilism, as nations plagued by high levels of unemployment seek to restrict imports in an effort to stimulate domestic production and employment.

The merit of free trade was discovered and dissolved by Adam Smith (1776) in his book "The Wealth of Nations". Smith introduced the ideology of free trade not only from the viewpoint of absolute advantage but also from the viewpoint of his emphasis on the relation between trade and scale economies. According to Smith, international trade overcomes the narrowness of the home market and provides an outlet for the surplus product above domestic requirements, and this idea was referred to as the "vent for surplus" theory of international trade. Moreover, Smith pointed out that by widening the extent of the market, international trade also improves the division of labor and raises the general level of productivity within the country, and this idea was referred to as the "productivity" theory. Smith held that a key determinant of the wealth of nations was the productivity of labor and that labor productivity depended primarily upon the division of labor. As labor becomes more divided and specialized, he pointed out, its productivity increases dramatically. Smith held that differences in individual abilities, and hence productivity, were largely the effects of the division of labor. Part of Smith's argument for the advantages of foreign trade was broadly based on this dynamic notion of increasing returns. It was contended that since international trade was beneficial in raising productivity and stimulating economic growth, the State should go beyond a neutral and negative policy of removing barriers to trade and embark on a positive policy of encouraging international trade and economic development. In this sense, many colonial

governments went beyond the *laissez-faire* policy in their attempts to promote the export trade of the colonies⁷.

David Ricardo (1817) demonstrated how international trade can be beneficial to all trading partners. He was the founder of the comparative cost, classical free trade doctrine. He showed that if the relative unit cost of the two commodities differed between two countries, trade between them would take place, each country exporting the commodity that it could produce relatively more cheaply, and that this trade would be mutually beneficial. The Ricardian hypothesis can be interpreted as specifying that international differences in technology of a neutral type are the crucial factor in determining the structure of trade. The Ricardian model suggests not only that all countries gain from trade, but that every individual is made better off as a result of international trade, because trade does not affect distribution of income. However, in practice trade has substantial effects on the income distribution within each trading nation.

Like the simple Ricardian model, the specific factor model was developed by Paul Samuelson and Ronald Jones, which assumes an economy that produces two goods and that can allocate its labor supply between the two sectors. Unlike the Ricardian model, however, the specific factors model allows for the existence of factors of production besides labor. Labor is a mobile factor that can move between sectors, the other factors are assumed to be specific, which can be used only in the production of particular goods. Therefore, the specific model maintains that trade benefits the factor that is specific to the export sector of each country but hurts the factor specific to the import-competition sectors, with ambiguous effects on mobile factors.

The alternative view of the Swedish economists Eli Heckscher (1919), Bertil Ohlin (1933), and Paul Samuelson (1948) developed the theory that the differences in factor endowment that are the main causes of trade. This theory is often referred to as the Heckscher-Ohlin theory. Because the theory emphasizes the interplay between the proportions in which different factors of production are available in different countries and the proportions in which they are used in producing different goods, it is also referred to as the factor-proportions theory. Given the assumptions of two country, two factors, two products, factor immobility between two countries and

⁷ H. Myint, *The "Classical Theory" of International Trade and the Under-developed Countries*, Oxford University, Institute of Commonwealth Studies, p. 36.

perfect competition with no transportation cost, both nations use the same technology in production, both commodities are produced under constant returns to scale in both nations, the theory explains that a country that has a large supply of one resource relative to its supply of other resources is abundant in that resource. A country tends to produce relatively more of goods that use its abundant resources intensively. As a result, countries tend to export goods that are intensive in the factor with which they are abundantly supplied.

The Heckscher-Ohlin theory can be expressed in terms of two theorems: the Heckscher-Ohlin (H-O) theorem, which postulates that a country will export the commodity intensive in its relatively abundant and cheap factor; and the factor-price equalization (H-O-S) theorem, which postulates that international trade will bring about equalization of relative and absolute returns to homogeneous factors across nations. One of the oldest results in the modern theory of international trade is the Factor-price-equalization theorem establishing conditions under which foreign trade equalizes factor prices across countries, even in the absence of international factor movements. From the Heckscher-Ohlin trade theory, it can be expected that changing economic structure and, therefore, changing factor endowments would result in shifts in the structure of trade in the following manner: the product composition of exports would shift from a predominance of natural resource intensive exports to unskilled labor intensive exports, further to physical and human capital intensive exports, and then on to technology and knowledge-intensive exports⁸. Because changes in relative prices of goods have very strong effects on the relative earning of resources, and because trade changes relative prices, international trade has strong income distribution effects. The owners of a country's abundant factors gain from trade; however, the owners of scarce factors lose.

The H-O theory cannot provide a complete explanation of the pattern of trade: other forces are also important. Some differences in efficiency among countries are uneven among goods, and a country which was particularly efficient in producing a good would tend to export that good, even if the mixture of resource inputs required gave it no special advantage. Economies of scale are important in explaining the large volume of trade that occurs among countries with similar resources, and in explaining the finer details of the composition of trade. The pattern of trade is also affected by

⁸ Das. D. K., "Changing Comparative Advantage and the Changing Composition of Asian Exports, Blackwell Publishers Ltd, 2007, p.128.

many sorts of government policies, including restrictions on imports, and by transport costs and varying distances among countries. Nonetheless, The H-O theory provides a useful broad-brush explanation of some major features of the pattern of trade.

The H-O theory also explains North-South trade in manufactures, and in particular why developing countries export labor-intensive items to developed countries in exchange for imports of skill-intensive items. The resources whose varying supply among countries causes this variation in export composition are three broad ones: skill (or human capital acquired through education and training); land (meaning natural resources of all sorts); and labor (the number of people in the workforce).

By contrast with most other H-O models, capital (physical or financial) is omitted from this list of resources. The reason is that capital, though of vital importance as an input to production, is now highly mobile among countries, so that it cannot plausibly be regarded as a resource of which a large fixed endowment gives some countries a comparative advantage in the production and export of capital-intensive goods. If a country has a comparative advantage in a good because of the abundance of a resource such as copper ore or educated labor, then it can usually obtain the capital needed to develop this resource, either from domestic savings or from abroad. Moreover, because domestic capital markets are linked to international capital markets, the cost of capital is similar in most countries, so differences in capital intensity among sectors do not cause differences in comparative advantage among countries.

There is also a high degree of mobility among some of the world's most skilled workers. As with capital, the international mobility of highly-skilled workers means that their services can usually be obtained to develop the production of goods in which a country's resources give it a comparative advantage, reinforcing the H-O pattern of trade. The H-O theorem based on simplifying assumptions and relaxing the assumptions of constant economies of scale and perfect competition requires new complementary trade theories to explain the significant portion of international trade that the H-O theory leaves unexplained. International trade based on differences in technological changes over time among nations also calls for new trade theories.

The technological gap model developed by Posner (1961) explained that a firm exports a new product until imitators in other countries take away its market. The innovating firm will have introduced a new product or process. According to the

related product life cycle model developed by Vernon (1966) postulated that a product goes through five stages: the introduction of the product, expansion of production for export, standardization and beginning of production abroad through imitation, foreign imitators underselling the nation in the third markets, and foreigners underselling the innovating firms in their home market as well.

According to Das D. K.(2007), in keeping with the ladder principle, the NIEs were important exporters of labor-intensive products in the 1960s as the ASEAN economies were in the 1970s. The ladder analogy implies that Asian economies or country groups are rapidly climbing a product sophistication ladder, as their export structures and products are moving up the rungs of a ladder. The bottom rung stands for having comparative advantage in labor-intensive unsophisticated products, while the top rung stands for technology and knowledge-intensive products. This phenomenon is consistent with both a dynamic version of the Heckscher-Ohlin factor endowment model and product life cycle theory.

Porter (1990) developed the concept of competitive advantage, which determines the trading capabilities of nations. He pointed that competitive advantage emerges from pressure, challenge, and adversity, which are powerful motivations for change and innovation. He also added that protection, in its various forms, insulates domestic firms from the pressure of international competition. According to him, success and competitive advantages of industrial clusters are shaped by inter-economy variations in four components of the national business environment. These are: factor conditions which include created factor endowments such as human skills, knowledge, technology, infrastructure and natural factor endowments; demand conditions and qualitative considerations such as the sophistication and expectations of consumer; firm strategy, structure and rivalry; and related and supporting industries with both vertical and horizontal linkages. According to him, national differences in each of these elements promote the growth of particular industrial clusters over others, and thereby stimulate growth of particular lines of exports. Related industrial clusters exploit the advantages of their business environment and contribute to the success of the national economy. Moreover, Porter added some supportive factors. One is government which has a bearing on educational provision, research and development, infrastructural investment, and the promotion of competition. Porter posited that countries progress by upgrading their competitive position in the global economy, through the achievement of higher order advantages in existing export

industries and development of export capabilities in new, high-productivity, high value-added industries. Porter's refinement of the principle of comparative advantage includes the following three stages of export expansion: the factor-driven stage; the investment-driven stage; and the innovation-driven stage.

A number of theoretical models predict that international trade has long run effects on economic growth. The common feature of these models is the vital role of capital accumulation on the long run growth rate in contrast with the implications of the neoclassical growth model in which the rate of capital accumulation does not affect the growth rate of per capita output at the steady state. The former models incorporate important characteristics of developing countries that stop or mitigate the operation of diminishing returns to capital, which are the central characteristics of the neoclassical growth model. Therefore, according to the neoclassical growth theory, an increase in saving rates may increase investment, which will in turn raise the level of per capita income and growth rate. Because of diminishing returns to capital, the theory suggests that the marginal product of capital declines with more and more capital accumulation and this, in effect, means that international trade has only a short-run impact on the growth rate if there is no technological progress.

In the Harrod-Domar model, the economy produces with a linear technology $Y=AK$ when capital is a scarce factor, hence output growth is proportional to the growth rate in capital stock determined by the savings rate. The existence of a labor surplus provides a perfectly elastic supply of labor to capital-intensive industry. This implies that an increase in the savings rate will lead to permanently faster growth.

One of the foremost contemporary exponents of trade as an engine of growth was Arthur Lewis who based his theory on what appears to be from his researches a stable relationship between economic growth in developed countries and export growth in developing countries. In the Lewis model, two sectors, subsistence sector and capitalist sector, co-exist. This model applies to a capital scarce and labor abundant country in transition to its steady state when the average productivity of labor is less in the subsistence sector than in capitalist one and there is always an unlimited supply of labor to capitalist sector at a "subsistence wage". As in the Harrod-Domar model, capitalist sector does not face diminishing returns but grows at a constant rate until the subsistence sector and thus labor surplus disappears. This constant growth rate is affected by the saving rate and the relative productivity of capitalist sector compared to subsistence sector. In other words, a rise in the saving

rate will expand the capitalist sector and increase growth rate till the subsistence sector vanishes. Only at this point, the economy enters a mature phase with a "Solow-type steady state". Under the two sector model' framework, trade liberalization indirectly speeds up economic growth temporarily via its positive effects on the steady state and capital accumulation, which facilitates the process of structural transformation into the capital-intensive sector.

Grossman and Helpman (1991,b) describe different channels of how international trade affects economic growth. They assert that there are two ways by which international trade can foster knowledge spillover and hence growth in a small open economy. The first is through a direct effect on both exported and imported goods, and the other is through an indirect effect on market size. It is observed in this proposition that domestic firms could acquire technological information from imported goods so that local researchers have opportunities to learn new ideas from imported goods. Also, local firms could acquire useful suggestions from outside customers for improving their exported goods. On the other hand, international trade has indirect affect on the market size in that the bigger the market size, the more the opportunities to raise profit of local firms and hence increase the competition among foreign and domestic firms, which promote efficiency. In conclusion, they assert that openness will affect long-run growth through technological change. Open economies could absorb a worldwide stock of productivity-enhancing knowledge, which will spur growth through technology transmissions.

In addition, the new growth theory (Endogenous Growth Theory) developed by Romer (1986) and Lucas (1988) points out that long-run increase in output growth rates depend on the savings rate. In this case, human capital plays a crucial role to beat diminishing returns to capital, and capital exhibits either constant returns to scale or increasing returns to scale. When the technology is characterized by constant returns to capital, it can be described by $Y=AK$ (where A is technological progress and K is capital stock). This model is free from declining marginal product of capital, which is different from the neoclassical model. An increase in saving rate will sustain long-run growth rate of per capita income of an economy. Positive externalities among workers are important determinants for a long-run growth rate of an economy in this model. Under endogenous models, growth reflects the contribution to productivity from structural and governance reforms on the one hand, and the adoption of new technology on the other. Trade is seen as affecting long run growth

through its impact on technological change. It influences the rate of change in technological progress. Endogenous growth models, therefore, hold that trade provides access to imported products, which embody that new technology; additionally trade alters (mainly increases) the effective size of the market facing producers which raises returns to innovation; and affects a country's specialization in research-intensive technologies and production systems.

In common with the endogenous growth model, Ventura proposes a model in which higher saving rate supports higher growth rate in the long run. In this model, the production function technology of a country is given by a standard Constant Elasticity of Substitution (CES) production function. Under the regime of autarchy, the marginal product of capital declines. But he shows that the economy effectively functions as if it has the AK technology under the free international trade, thereby beating the law of diminishing returns to capital. Here, the simplest AK growth model is a straightforward extension of the Solow model. In the Solow model the production function reads $Y = AK^\alpha L^{1-\alpha}$. Assume that $\alpha=1$ and $A = \text{constant}$, then it can be written as: $Y=AK$ ($A=\text{const.}>0$). The mechanism behind the Ventura model is similar to that captured by the Rybczynski theorem, which illustrates that at constant commodity prices; an increase in the endowment of one factor will increase by a greater proportion the output of the commodity intensive in that factor and will reduce the output of the other commodity. He observes that as more and more capital are accumulated in the economy, the capital labor ratio for the whole economy increases, but the marginal product of capital does not decline because the industrial structure changes to more capital intensive ones. In this model, an increase in saving rate leads to a transformation of the structure of the economies from labor-intensive industry into capital-intensive ones. He observed that the export structure moves gradually from labor-intensive export to capital-intensive one.

2.2 Reviews on Empirical Studies

Most economic theories generally agree that trade liberalization has positive impact on economic growth. In addition, a number of empirical studies have investigated the relationship between trade liberalization and growth; some have identified a positive relationship between trade and growth, while others have failed to observe any significant relationship between trade and growth.

Many economists argue that liberalization in trade increases the growth rate of per capita income of economies. It does so by encouraging innovative and entrepreneurial activities, increasing trade and inflow of FDI and promoting innovation and efficiency, thereby leading to higher productivity, a more rapid growth and higher incomes. In their study, Edward (1998), Harrison (1995), Dollar and Kraay (2001), Cuadros, Orts and Alguacil (2001) have all observed that trade liberalization is associated with higher growth rate of economies.

Sebastian Edwards (1989) found that after taking into account the roles of all other factors including capital accumulation, growth in labor force and differences in levels of technology, countries with lower degrees of protectionism, on average, tend to grow at a much faster pace than countries with higher trade restrictions. The model predicts that protectionist measures in the form of tariffs or quotas could lead to reduced output and export growth and overall welfare. The direct implication of these conclusions is that unrestricted trade would tend to be associated with higher levels of growth.

Young (1992) used a paired case study of Hong Kong and Singapore to develop some insights into the growth process and evaluate the empirical validity of existing models of endogenous growth. He highlighted some of the significant differences between the two economies, focusing in particular on the initial quality of their labor forces and subsequent rates of factor accumulation and industrial transformation. The results of this paired case study indicate that Singapore will only be able to sustain further growth by reorienting its policies from factor accumulation toward the considerably more subtle issue of technological change.

Edward (1992), in a major study of trade orientation, distortions and growth in developing countries, develops a model which assumes that more open economies are more efficient at absorbing exogenously generated technology.

Lucas (1993) argued that for more than three decades, a few export-oriented small economies in East Asia have been growing at rates that are extremely high by historical standards. These countries' outstanding growth performance has been accompanied by a spectacular increase in their volume of manufacturing exports.

In addition, Trefler (1993) has shown that a weak form of the factor-price-equalization theorem that allows for factor-augmenting international productivity differences is empirically consistent with observed cross-country variation in factor

prices. Trefler's research suggests the empirical validity of a conditional version of the factor-price-equalization theorem.

Emphasizing the potential gains in knowledge from the flow of new products, Paul Romer (1994) argued that classical models studying the impacts of trade barriers on welfare, in fact, grossly underestimate the aggregate negative welfare effects of protectionist measures. Romer's position was that traditional analysis assumed that the set of goods in an economy was given and never changed. This assumption made the predicted efficiency loss from a tariff appear small. If this assumption is loosened to accommodate new goods which might flow into an economy through trade, the fraction of national income lost when a tariff is imposed becomes much larger, easily exceeding twice the tariff rate. This is because new goods entering the economy of a developing country increase the amount of goods or inputs that local producers can work with using their labor and capital, and hence increase efficiency. Romer added that these goods need not be tangible; they could include new engineering processes and innovations. To the extent that tariffs and trade restrictions keep out these new goods, the efficiencies and improvements in total factor productivity are not realized.

A regression analysis of variables explaining growth in a cross section of countries by Barro and Sala-i-Martin (1995) found the coefficient for tariff rates to be significantly negative. They concluded that market distortions in the form of protectionist tariffs could reduce the growth rate of output substantially.

Young (1995) shows that the East Asian miracles can be, in the traditional growth-accounting sense, as the sole result of factor accumulation and not of factor productivity growth. He further asserts that even if their savings rates are high, standard growth theory predicts that the growth rates of these countries should have returned to average. The results obtained by Young are based on the estimates of the Solow residual or total factor productivity obtained in the framework of growth accounting.

Harrison (1995) tests the link between openness and growth for developing countries. She argues that there is a positive relationship between increased exports and productivity growth; however, productivity growth is negatively correlated with imports. Since macroeconomic stability is also important for the country's economic performance, she includes government spending and inflation in the regression analysis. Although the choice of time period for the analysis is critical for the regression result, she finds that there is a positive link between openness and growth.

The result reveals that black market premium (which is one of the measures of trade openness) is negatively related to growth for cross-section data while three of them (i.e. an index of tariff and non-tariff barriers, black market premium and price distortion index) have a significant relation with growth for the average of five year sample and six of them (including the above three variables) are statistically significant when annual data are used.

Sachs and Warner (1995) demonstrate that their openness index significantly and positively affects the per capita GDP growth rate. Krueger (1997) states that trade policies play a crucial role in the economic development in the past and today. She asserts that in 1950s and 1960s the concept of import-substitution policy was wide spread, believed to be a vehicle for the economic development in the third world. Krueger describes that import-substitution proved to be inefficient in many countries and she says that the East Asian miracle resulted from trade policy that was opposite to the import substitution. Korea, Taiwan, Singapore, Hong Kong encouraged exporting strategies. Thus, the author argues that countries moved from a static (inward oriented) to dynamic (outward oriented) strategies of trade regimes.

Edwards (1998) explains that the cost of imitation and the initial stock of knowledge are the main determinants of the equilibrium rate of growth in the developing countries. If the cost of innovation is higher than the costs of imitation, the poor countries can be expected to grow faster than rich countries, and more open countries have greater chance to absorb advanced technology from the developed nations. He investigates the robustness of the relationship between openness and growth. He uses cross-section data for 93 countries, and nine indices of trade policy to test whether trade openness can affect growth and total factor productivity. After controlling for initial GDP per capita and the initial level of human capital, he finds that the total factor productivity growth (TFP) regression are significantly robust to six of the nine measures of openness, suggesting greater openness has been associated with faster productivity growth.

Dani Rodrik (1998) concluded that high levels of trade restrictions have been an important obstacle to export performance and growth. He contends that the reduction of these restrictions can be expected to result in significantly improved trade performance in the region. To examine the differences in regional policies and impacts, Rodrik also makes a cross comparison of trade policies in Sub-Saharan Africa with East Asia and Latin American countries using simple averages of tariff

rates and coverage ratios of non-tariff measures (on intermediate and capital goods). Rodrik believed that each country has to adopt its own trade policy and investment strategy. Rodrik comes with new principles that have to be considered by those engaged in theoretical and practical debate over trade policies: the economic development as the objective and the trade policy as a tool to achieve it; each country has the right to choose their development priorities and own institutions and should be protected from the external pressure.

Frankel and Romer (1999) use geographic characteristics to construct a measure of geographic component of countries' trade and employed it to obtain instrumental variables estimates of the effect of trade on income. They find that trade has only moderately positive correlation with growth. Moreover, economic growth of a country depends not only on the trade openness but also on the other policies such as monetary, fiscal and external policies.

Thirlwall (2000) suggests that regional trade agreements reduce growth and investment, but generalized trade liberalization in the form of unilateral tariff reductions (or the reduction of non-tariff barriers to trade) improves growth performance. Export growth relax the balance of payments constraint on demand by providing the foreign exchange to pay for the import content of higher levels of consumption, investment and government expenditure. Most developing countries are constrained in their growth performance by a shortage of foreign exchange and could therefore grow faster with more exports.

In an earlier study, Rodrik and Rodriguez (2000) questioned the empirical studies on trade and growth and contend that possible weakness may exist in the methodology which may lead researchers to make wrong conclusions. They cite the weakness in measurement of openness variable and improper econometric methods as some of the major problems that may lead a researcher to make wrong conclusion. In addition, they view that there are some omitted variables which may create some problems in the OLS estimation results due to their association with GDP growth. These variables include geographical characteristics, government consumption (proxy for fiscal policy) and inflation (proxy for monetary policy) that are believed to have some association with growth as a result of which their omission may affect the analysis of economic growth.

After controlling for changes in other policies, Dollar and Kraay (2001) find that there is a strong positive relationship between changes in trade volumes and

change in rate of growth. In addition, the empirical evidence suggests that trade openness fosters higher growth and reduction in poverty for poor countries.

According to Cuadros, Orts and Alguacil (2001), trade liberalization is one of the main determinants of economic growth in developing countries; as a result, developing countries stand to benefit more from trade with advanced countries by importing a variety of high quality capital and intermediate goods that are used in the production of final manufactured goods.

In their work, Dollar and Kraay (2001) who investigate into the experiences of post-1980s liberalizers discover a general pattern in a cross-country regression that favors the view that openness could stimulate Myanmar's growth rate. Also, Gwartney, Skipton, and Lawson (2000) assert that openness promotes innovation and efficiency, which will in turn lead to stimulation of a country's productivity.

Wacziarg (2001) examines the relationship between trade liberalization and growth in a panel analysis of 57 countries during the period 1970-1989. The result reveals that openness has a positive impact on economic growth, with more than half of the total effects coming from physical capital accumulation and the smaller effects coming from technological transmission and improvements in macroeconomic policy. In effect, he observes that accelerated accumulation of physical capital and human capital, technological transmissions and a sound macroeconomic policy are the main determinants of growth.

Takumi combines a multi-country; continuum – good Ricardian model of Eaton and Kortum (2002) with a multi country AK model of Acemoglu and Ventura to examine how trade liberalization affects countries' growth rate and extensive margins of trade overtime. He focuses mainly on three countries case, and obtains two main results: first, a permanent fall in any trade cost raises the balance growth rate; second, trade liberalization increases the liberalizing countries' long-run fraction of exported varieties to all destinations.

Jeffrey Nugent (2002) considers that countries that pursued trade liberalization had to choose from mainly two strategies. The first strategy was removing exchange rate distortions, non-tariffs barriers to imports reducing tariffs and harmonizing them among different categories of merchandise and services, abandoning import licensing, privatizing foreign trade, eliminating export tariffs. The second strategy had elements of partiality: high rates of protective tariffs and subsidies for exports and establishing Export Processing Zones.

In view of these observations, it appears that trade liberalization is an optimal policy choice for developing economies. However, the literature suggests that this is not a foregone conclusion. It has been argued that trade liberalization alone does not necessarily bring about the expected economic gains, but it has also to be supplemented by sound overall development strategy. Kneller (2002) observes that openness alone does not have effect on growth, but rather it exerts its impact in the presence of other complimentary policies such as fiscal policy. Therefore, for liberalization in trade to have a significant impact on growth, it has been suggested that trade policy reforms should be accompanied by the other policies reforms such as macroeconomic stabilization and legal reform.

Michael Funke and Ralf Ruhwedel (2005) investigate the impact of trade on growth in East European Transition Economies by applying Ventura model. They present the empirical evidence on the determinants of economic growth across East European transition economies with focus on the impact of trade openness. They point out that a key ingredient of the transition process is the structural change consisting in the real allocation of resources on the basis of market incentives. Moreover, they observe that product variety is a potentially useful concept in analyzing the structural changes that have actually occurred in Eastern European transition economies. Using contemporary econometric methods and data which provide a new dimension for testing the implications of alternative growth models, their empirical results suggest that no cause to question the role of export variety fostering economic growth of the East European transition economies. The result that export in capital-intensive industries and investment are spearheading the growth process is consistent with Ventura's model.

Shafaeddin (2011) argues that trade liberalization is necessary for industrialization if it is regarded as part and parcel of a package of dynamic and flexible trade and industrial policies, and is undertaken at the right time, gradually and selectively. He points out that trade policy should be an ingredient of a comprehensive set of industrial and development policies and measures to enhance the capabilities of firms for establishing industries, making them efficient and upgrading them. However, if trade liberalization is undertaken prematurely, rapidly and uniformly, it will lead to de-industrialization and unemployment and it will lock the country in specialization in production and export of primary commodities and, natural-resource-based products or labor-intensive assembly operation.

2.3 Concept of Trade Liberalization

Although the views expressed by various neoliberals and neoliberal institutions are not the same, the common elements of the trade liberalization hypothesis are: removal of import quotas, import licenses and other quantitative restrictions; subsequent reduction of the level and dispersion of import tariff rates; devaluation of the national currency in order to compensate for the removal of protection or remedy over-valuation of the exchange rate; removal of export taxes and subsidies, and privatization of ownership of productive firms. In this sense, emphasis was placed on: outward orientation and market orientation; uniformity of the nominal tariff structure; universality of the hypothesis. Outward orientation requires neutrality of incentives for production for both the domestic and international markets. Market orientation implies the lack of or minimum, government intervention in the economy and in the flow of trade. Uniformity of the nominal tariff structure would imply the need for comprehensive trade liberalization of various sectors and industries. The ultimate goal is zero tariff rates for all activities. Nevertheless, a low and universal tariff rate of 10% to 20% is exceptionally accepted for revenue purposes. Similarly, devaluation will provide uniform incentives for all tradable goods. Universality implies that the hypothesis is applicable to all developing countries for their level of development and industrial capacity, and to each country over time. The trade liberalization hypothesis based on the assumption that trade liberalization leads to static and dynamic efficiency gains through stimulating investment, export expansion, GDP growth as well as export and output diversification in favor of manufactured goods.

In considering the impacts of trade liberalization, it is important to consider the differences between large and small countries. With increased trade volumes, a large country may affect its international terms-of-trade by lowering world prices of its exports, and by raising world prices of its imports. Large countries have an incentive to use external tariffs to improve its terms-of-trade, reducing trade volumes to drive up the price of exports and to reduce the price of imports. In contrast, since a small country cannot influence international terms-of-trade, it faces world prices in its imports and exports.

Furthermore, international trade accompanies trade openness of the countries. Trade openness refers to trade relations with reduced or eliminated tariffs and non-

tariff trade barriers. Trade openness generally considered as trade liberalization is a vital condition for the creation of a favorable position on international market.⁹

Simple proxies for the openness of policy are frequently used even though a number of authors including Balassa and Corden have attempted to develop more sophisticated measures of rates of protection. A wide variety of measures have been used for trade openness. Following are the some measures of trade openness:¹⁰

- (1) Import trade intensity is measured as imports divided by country i 's nominal income GDP or M_i/GDP_i
- (2) Export trade intensity is measured as export divided by country i 's GDP or X_i/GDP_i
- (3) Trade intensity or degree of openness is measured as exports and imports divided by country i 's GDP or or $(X+M)_i/GDP_i$.
- (4) Adjusted trade intensity is suggested by Frankel (2000), which states that $1 - [(X+M)_i/2GDP_i] \times 100$.¹¹
- (5) Real trade intensity is used by Aleala and Ciecone (2004) where the denominator is purchasing power parity adjusted GDP o real GDP.¹²

In this dissertation, the share of exports and imports to GDP is used as a measure of trade openness, which is a proxy for trade liberalization.

2.4 Methodological Framework

The most basic proposition of growth theory is that in order to sustain a positive growth rate of output per capita in the long-run, there must be continual advances in technological knowledge in the form of new goods, new markets, or new processes. This proposition can be demonstrated using the neoclassical growth model developed by Ramsey (1928), and Solow (1956) and Swan (1956), which shows that if there were no technological progress, then the effects of diminishing returns would eventually cause economic growth to cease. The basic building block of the neoclassical model is an aggregate production function exhibiting constant returns in

⁹ Lacramuorara Domunte. (Undated), *Determinants and effects of economic openness*. Las: Alexandru Ioan Cuza Univeristy. pp.8-13.

¹⁰ Squalli. J & Wilson. K., (2006): A New Approach to Measuring Trade Openness, Dubai, UAE: *Economic and Policy Research Unit*. p. 22.

¹¹ Frankel, J.A. (2000): *Assessing the Efficiency Gain from Further Liberalization*, Conference in Efficiency, Equity, and Legitimacy, United States: Brookings Institute Press, p.35.

¹² Aleala. F & Ciecone. A. (2004): "The Impact of Trade Liberalization on Exports and Imports and the Balance of Payments of Developing Countries", *The Economic Journal*, p.114.

labor and reproducible capital. It is assumed that a constant labor supply normalized to equal unity. Thus, the aggregate production function can be written as a function of capital alone. Because it is assumed that population growth and technological change is constant, the only remaining force that can drive growth is capital accumulation. Therefore, a crucial prosperity of the aggregate production function is that there are diminishing returns to the accumulation of capital.

The mechanism linking trade and productivity is yet an open question in the theoretical framework. Endogenous growth theory, following the work of Romer (1986) and Lucas (1988), identify a number of factors that determine the growth rate of an economy. Among which increasing returns to scale, capital accumulation, innovations, openness to trade, research and development, and human capital formation are considered as the key factors in explaining the growth process in the economy. There is a class of model in which one of these determinants is assumed to grow automatically in propositional to capital; the growth of other determinant counteracts the effect of diminishing to capital, thus allowing output to grow in propositional to capital. These models is generally referred to as AK model because this results in a production function of the form $Y=AK$, with A constant.

Furthermore, the development of endogenous growth theory and its application to international trade by Grossman and Helpman (1991) have contributed considerably to clarifying the content of the widely-held belief that both trade and FDI increases the growth rate of per capita output by enhancing technology transfer from abroad, thereby, increasing the growth rates of productivity.

In addition, Ben-David (1993) and Slaughter (1997) have noted that the recent literature on income convergence has proceeded independently of an earlier international trade literature that discussed factor price equalization. For example, under the assumption of Heckscher-Ohlin theory and assumption that economies remain incompletely specialized, international trade in goods and the attendant equalization in goods prices is sufficient to ensure international equalization of factor prices. These standard points give simple a picture of how the analysis should be modified for open economies. Ventura (1997) has emphasized the implications of combining a factor price-equalization theorem with the Ramsey model, which is a neoclassical model of economic growth that explains the fundamental of consumption and capital accumulation in a dynamic equilibrium setting. It develops the standard Solow growth model by taking into account an endogenous determination of the level

of saving. Ventura points out that if some form of factor price equalization holds, interdependence becomes crucial to explaining the growth experience of different countries. The reason is that for trading economies, given factor price equalization, the law of diminishing returns applies only to world averages.

Ventura points out that under autarky, accumulating capital leads to a fall in its marginal product, as capital is used more intensively. In a small open economy, the marginal product of capital is determined by the world's capital stock because goods can be exported at prices given by world conditions. As a country accumulates capital, it can shift into more capital-intensive export sectors, and this means that in effect a small open economy can evade diminishing returns, even when its technology would not support sustained growth under autarky. Ventura uses this idea to explain the rapid growth of East Asia. In particular, it explains why East Asia has been able to grow through accumulating large amounts of capital without facing a large fall in marginal product of capital.

Ventura points out that when economies trade and some form of factor price equalization holds, investment will be equally productive across countries. Differences in growth rates are then due to differences in investment rates, not differences in rate of returns. As Ventura points out, investment rates may rise or fall with the stock of capital, and hence diminishing returns does not have to be associated with conditional convergence.

Moreover, Ventura shows that developing countries have a chance to overcome the diminishing returns to capital when their economies are opened up. This is made possible due to a shift from labor-intensive to capital-intensive industries as more and more capital is accumulated. In this regard, international trade plays a key role in sustaining the economic growth in this model under the standard assumption of constant elasticity of substitution and a given world prices. Therefore, the Ventura model offers the appropriate framework for analyzing the possible impact of trade liberalization on economic growth and productivity in ASEAN.

The Ventura model starts from the premise that international commodity trade plays a key role in the growth process of real economies. Essentially, the Ventura model is based on the combined effects of the Rybczynski theorem, which says that an increase in a country's capital stock leads to a more than proportional expansion in the capital-intensive industry and a contraction in the labor-intensive one, and factor price equalization theorem. This means that the model depends primarily on a

competitive economic environment for the world market as a whole. The model features a technology that exhibits diminishing returns; however, countries' ability to trade and eliminate price differentials implies that these diminishing returns are global (only affected by world averages) but not local (unaffected by a small country's action). The model also sheds light on the nature of the East Asian Miracle. Standard growth theory predicts that the rapid process of capital accumulation experienced by the East Asian countries should have led to the use of more capital-intensive techniques in the production of the same set of goods, and reduction in the marginal product of capital. Even if their saving rates were high, these countries seemed condemned to return to average growth rates. However, their ability to trade beat diminishing returns to capital. As the capital stock grows, resources are moved from labor-intensive to capital-intensive industries, raising the demand for capital and sustaining the value of its marginal products. International trade converts an excess production of capital-intensive goods into exports, instead of falling prices. The model shows that increases in the capital-labor ratio make labor scarce and capital abundant. However, the incipient excess demand for labor and excess supply of capital are not eliminated through price changes but through changes in the structure of production. Instead of using more capital-intensive techniques in each sector, the miracle economies absorb the extra capital by expanding capital-intensive sectors and contracting labor-intensive ones. This reallocation of economic activity raises the demand for capital and reduces the demand for labor. This is how a trading economy can absorb the higher capital-labor ratio at existing prices. In this model, economic growth leads to structural transformation and not capital deepening.

To illustrate further, assume the world economy contains I countries ($i = 1, \dots, I$), with each country producing one final good that can be used for consumption and investment, and it cannot be tradable. If two tradable intermediate goods (x_{1i} : labor intensive goods and x_{2i} : capital intensive goods) are used in the production of final good, and only two factors of production (i.e. labor (L) and capital (K)) are available, and the tradable intermediate goods are assumed to be free and costless, then, firms in all countries share the same intermediate prices. Moreover, international factor movements are not permitted in this model. In this case, technology exhibits a constant elasticity of substitution (CES) and this is common to all the countries. The production function is therefore given as below:

$$Y_i = (x_{1i}^{-\alpha} + x_{2i}^{-\alpha})^{\frac{1}{\alpha}} \quad -1 < \alpha, \alpha \neq 0 \quad \text{-----} \quad (1)$$

Where $x_{1i} = A_i L_i$ (A_i : productivity of labor)

$$x_{2i} = K_i$$

In an autarky economy, this production function is expected to exhibit diminishing returns to capital. Applying this model to the East Asian countries, it implies that if these economies are open up, each of them will be expected to export x_{1i} labor intensive goods in which they have comparative advantage and import x_{2i} capital intensive goods in which they have comparative disadvantage. Suppose P_1 is the price of x_{1i} and P_2 is the price of x_{2i} , then in a free trade environment, the relative price of the two intermediate goods is fixed by the world's supply and demand conditions for a small open economy, and hence their profit can be deduced from the expression below.

$$\Pi_i = Y_i - P_1 x_{1i} - P_2 x_{2i} \quad \text{-----} \quad (2)$$

Also the equilibrium in these economies can be obtained by maximizing equation (2) with regards to x_{1i} and x_{2i} , hence it can be written as below;

$$x_{1i} / x_{2i} = (P_2 / P_1)^{1/(1+\alpha)} = \mu \quad x_{1i} = \mu x_{2i} \quad \text{-----} \quad (3)$$

where " μ " is exogenously given for a country i since P_1/P_2 is determined in the world market.

In substituting (3) into the production function (1), it can be expressed below as the aggregate production function of Ventura model.

$$Y_i = (\mu^{-\alpha} + 1)^{-1/\alpha} x_{2i} = A K_i \quad \text{-----} \quad (4)$$

where $A = (\mu^{-\alpha} + 1)^{-1/\alpha}$ is a constant term.

This model can clearly be considered as a version of the AK model and thus the economy is not subject to diminishing returns to capital. In this regard, it is believed that as more capital is accumulated in the economy, the increased capital-labor ratio for the entire economy will further lead to an increased in output of capital intensive goods, and lead to a shift away from labor-intensive sectors to capital intensive sectors. This is what Ventura refers to as capital transformation. On the other hand, when an economy exhibits characteristics of a high saving rate relative to the rest of the world, the model suggests that trading pattern will be shifted from labor-intensive exported goods to capital-intensive exported goods. Given these

observations, it can be inferred that long-run higher economic growth in this model is wholly driven by trade openness since it does not only increase capital accumulation but also overcomes the problem of diminishing returns to capital inherent in other growth models.

CHAPTER III

Overview on Growth and Export Pattern of ASEAN 5 Countries

3.1 General Backgrounds of ASEAN 5 Countries

The term "Southeast Asia" was occasionally used by European, especially German writers, in the late 19th century¹³. Generally, Myanmar, Thailand, Laos, Cambodia, Vietnam, Malaysia, Brunei, Singapore and Indonesia, were considered as some kind of geographical unit. However, the Philippines was not included. There are similarities and diversities in ASEAN region. One unique characteristic of the region is the historical influence of India and China upon its cultures, especially in religion, art and politics; however, each country has its individual style. Another important characteristics is the linguistic unity cutting across the boundaries established by colonial powers.

With the exception of the Philippines, all ASEAN 5 countries have undergone significant structural change since the mid 1960s, as a result of rapid industrialization¹⁴. In Indonesia, Malaysia and Thailand, the change has been a shift away from agriculture and mining, towards the manufacturing industry. Within the manufacturing industry another important change occurred. Starting with import-substituting industrialization in the 1950s and 1960s, Malaysia, Thailand, and Indonesia shifted emphasis to export-oriented industrialization. By the late 1980s, Malaysia and Indonesia had begun to develop some heavy industry. In the case of Singapore, the change was from services connected with its entrepot trade toward labor-intensive export-oriented manufacturing from the mid 1960s to the mid 1970s. By then, Singapore had emerged as one of the newly industrialized countries of Asia. Singapore has moved towards the development of capital-intensive and skill-intensive manufacturing, as well as high value-added services. The high rates of economic growth in most ASEAN countries since the mid-1960s have been accompanied by high, and rising, savings ratios over time. By 2000, Singapore recorded a savings rate of about 50%, the highest in the world, and Malaysia savings rate was 47% in year 2000. In addition to high savings rates, ASEAN 5 countries also registered high

¹³ Mya Than, (2005), *Myanmar in ASEAN, Regional Cooperation Experiences*, Singapore: Institute of Southeast Asian Studies, p. 8.

¹⁴ Tan, G., (2003), *ASEAN economic development and cooperation*, Eastern University Press, p. 109.

investment ratios during 1980-95. In 1995, the investment ratio was highest in Thailand 42%, followed by Singapore 39%¹⁵.

Modern Singapore, founded as a trading post of the British East India Company in 1819, achieved its initial economic success as an entrepôt because of the island's location, harbor, and free port status. Although Singapore at first served only as a center for trade and transshipment, by the early twentieth century, primary goods, mainly rubber and tin from the neighboring Malay Peninsula, were being imported for processing. Singapore also became a regional center for the distribution of European manufactured goods. After World War I, when the British established a naval base on the island, Singapore became a key element of the British Commonwealth of Nations military defense east of India, thus adding the naval support industry to the island's economy. In the period immediately after World War II, Singapore faced enormous problems, including labor and social unrest, a decaying, war-ravaged infrastructure, inadequate housing and community facilities, a slow economic growth rate, low wages, and high unemployment made worse by a rapidly expanding population.

In 1965, Singapore's separated from Malaysia and established as an independent nation. Upon separation from Malaysia, Singapore lost its economic hinterland and failed its hopes for an enlarged domestic market to absorb the goods produced by a small but growing manufacturing sector. The period from 1965 to 1973 witnessed unprecedented economic growth for the island nation, during which the average annual growth of real GDP was 12.7%. Enough capital had been accumulated to permit the domestic production of goods that were more capital intensive. The government's economic response to separation from Malaysia and the withdrawal of British military forces included efforts to increase industrial growth and solve the domestic problems of unemployment, population growth, and housing.

The industrialization strategy during that period was a large share of Singaporean manufacturing being foreign owned and a high degree of export-led growth. Singapore's reliance on multinational corporations of the world to provide the necessary investment meant less dependence on the Southeast Asian region generally and neighboring countries particularly. During 1980s, Singapore enjoyed continuous high economic growth, largely outperforming the world economy. Its GDP growth

¹⁵ Wong, J.,(1979), *ASEAN Economics in Perspective: Comparative Study of Indonesia, Malaysia, The Philippines, Singapore & Thailand*, The Macmillan Press Ltd, p. 136.

rate was between 5 % and 15 % during that time. Singapore managed to maintain an inflation rate below world averages.

The manufacturing sector has played a decisive role in Malaysian economic success, contributing significantly to output, employment, and exports. While the export sector has been at the forefront in transforming the Malaysian economy, it has also made the country highly dependent on the external sector. The Malaysian economy has experienced rapid economic growth between 1970s and 1990s – averaging over 8.0% for 1970-80, 5.2 % for 1980-1990, and 8.7% for 1990-97¹⁶. The rapid economic growth has been accompanied by low inflation, reduced unemployment, falling poverty, reduction in income inequalities, and rising per capita income. Malaysian per capita income (current GNP per capita) rose from US\$ 380 in 1970 to US\$ 8,555 in 2010. From 1980 to 2010, the per capita income grew at an annual average rate of 6.8%¹⁷.

Indonesia is a very large country, and the quality of social infrastructure is very uneven because of the diversity and heterogeneity of the country. Many of the characteristics of economic backwardness identified by Boeke, such as over population, lack of capital and skills and other aspects of social stagnation, are still evident today.¹⁸ Most of the infrastructural facilities are located in the large urban centers, whereas in the rural areas, where most of the population lives, social infrastructure is relatively underdeveloped. After independence, industrialization was placed at the center of the development program in 1950s and 1960s; however, this program did not meet with success. The change over from Sukarno to Suharto following the 1965 coup was accompanied by a fundamental shift in the economic and political outlook. During the 1970s, the overall industrial progress in Indonesia still resembles the first phase of import substitution, which was prolonged by the existence of a vast domestic market and sustained by restrictive tariffs. Consequently, the industries are not competitive and remain inward-looking in nature.

Up till the late 1970s, the growth of the Indonesian economy was based primarily on its exports of crude oil. In 1980, crude oil and natural gas production accounted for 22% of GDP. Since the decline in the price of crude oil in the early

¹⁶ Amir Mahmood, *Trade Liberalisation and Malaysian Export Competitiveness: Prospects, Problems, and Policy Implications*, University of Newcastle, NSW, 2308, Australia, P. 13.

¹⁷ *ibid*

¹⁸ Wong, J., (1979), *ASEAN Economies in Perspective: Comparative Study of Indonesia, Malaysia, the Philippines, Singapore, & Thailand*, The Macmillan Press Ltd, P. 27.

1980s, the Indonesian government diversified its exports by promoting manufactured exports. A number of market-oriented economic reforms were undertaken in the early 1980s. These include the reduction of tariffs and quantitative controls on imports, a change from quantity controls to price as the main mechanism of resource allocation, the deregulation of the banking and financial sector, the reform of the customs and excise administration, the streamlining of government administration, the various financial incentives for exporters of manufactured goods. Since the early 1980s, the Indonesian economy has undergone considerable structural change. Until the middle of 1997, Indonesia appeared likely to attain even higher rates of economic growth than it enjoyed in recent past. Its large population size and low wages made it an attractive offshore production site for the Asian NICs. Indonesia had already been the recipient of large flows of foreign investment from Japan, South Korea, Singapore and Hong Kong, in such labor-intensive industries as textiles, clothing, footwear, and electronics.

Thailand is currently one of the world's fastest growing economies. Thailand is still predominantly an agrarian economy although industrial development has been at a rapid rate. In spite of significant industrialization efforts, the main source of economic growth in Thailand since the war has still been largely derived from increased primary exports. Prior to the emergence of modern industries there were two major types of manufacturing activities: rice and lumber milling, and the production of cottage and handicraft type products. It can be said that Thailand started its modern industrialization from a very low level. In fact, the modern industrialization process can be said to have started in 1954; however, during the 1950s Thailand industrialization process did not enjoy much success because of the lack of basic factors such as capital, technology, power, infrastructure and entrepreneurs. The next phase of industrialization process began in 1962. Therefore, it can be said that Thailand started the process of industrialization in the modern sense in 1960. Realizing of the inefficiency of the state-operated enterprises and lack of competitiveness, the government allowed more effective incentives to the participation of private sector on a non-discriminatory basis. Consequently, during the 1960s, the manufacturing sector in Thailand underwent rapid growth and structural change, and the change in the industrial structure was also noticeable.

The manufacturing sector in 1960 was concentrated heavily in food, beverages and tobacco, consumer non-durable goods; however, by the end of 1960s, the value-

added share of these categories declined markedly in favor of consumer durables, intermediate goods and even some investment goods. Thailand's manufacturing sector had achieved self-sustained growth by 1970. In the 1960s and 1970s relatively continuous expansion of agricultural exports and import-substitution-based growth in manufacturing led to a 7% to 8% annual growth¹⁹. Since 1972, Thailand had pursued an export-oriented industrialization. It deregulated the economy. Thailand has a large pool of low-cost labor to transfer from the agricultural to industrial sector. During 1985-95, Thailand experienced large inflows of foreign investment, which enable it to achieve very high rates of economic growth.

Like other Southeast Asian economies, the Philippines economy is both open and dualistic. The industrialization experience of the Philippines is in many ways unique, stemming partly from the fact that its history of industrial development. Since its independence, the performance of the Philippines economy is characterized by uninterrupted and relatively rapid growth. The pattern of the Philippines' industrialization started in 1946 was to restructure the Philippines economy from colonial agrarianism to a more differentiated pattern of manufactures, and ending with Marcos's government in 1975. The poor growth performance of the Philippines economy is a reflection of unfavorable external trading conditions, which were compounded by unfavorable internal economic and political conditions. Chronic shortages of power and communications facilities have also contributed to slow growth in the Philippines economy.

The growth of the Philippines economy is expected to be modest, and important policy reforms were implemented by the Ramos government under the guidance of an IMF stabilization programme. Under the Ramos government, further initiatives were made to encourage export-oriented industrialization. The climate for foreign investment became favorable; the Philippines could become a major recipient of large foreign inflows from the Asian NICs. With low wages and a relatively well-educated labor force, the Philippines could have a massive expansion of its existing labor-intensive industries. In the early 1990s, there were some hopeful signs that the Philippines' economy would achieve higher growth rates.

¹⁹ Akrasanee, N., (1991), Thailand's Export-Led Growth: Retrospect and Prospects, The Thailand Development Research Institute, p. 39.

3.2 Structural Transformation and Composition of Export in ASEAN 5 Countries

By the late 1970, most ASEAN 5 countries had begun to see the advantages of embarking on export-oriented industrialization, the impressive success with which Singapore has pursued this strategy since the mid-1960s provided a contrast to import-substituting industrialization as a strategy of development. At the same time, the decline in the price of oil in Malaysia and Indonesia since the early 1980s provided additional pressure to develop manufactured exports. By the early 1980s, most ASEAN 5 countries were encouraging the establishment of export-oriented manufacturing industries. Deregulation of the trade sector and the lowering of tariff and other barriers are the one of the most important policy changes to achieve export-oriented manufacturing industries.

With the exception of Singapore, most ASEAN 5 countries imposed high rates of tariff protection in the prior to 1980 in order to stimulate domestic manufacturing industry. By the mid to late 1980s, most ASEAN 5 countries had embarked on export-oriented industrialization policies. By 1985, average tariff levels were about 18% in Indonesia and 21% in the Philippines and to about 10% in Malaysia. Only Thailand had an average tariff level of 30%. By 2010, it had been reduced significantly to 4.8% in Indonesia, 6% in Malaysia, 5% in the Philippines, and 11.2% in Thailand. Singapore has always had low tariffs (its average tariff level was less than 1% in 1985 and 0% in 2010). This is reflected in the data for ASEAN 5 countries as shown in the following Table.

Table (3.1) ASEAN 5 Tariff Protection

Country	Average tariffs				Average tariff rates for Manufactured Products			
	1985	2000	2005	2010	1985	2000	2005	2010
Indonesia	18.0	8.4	6.0	4.8	17.6	8.0	6.0	5.0
Malaysia	10.8	9.3	7.0	6.0	27.9	n.a	8.0	6.0
The Philippines	21.4	7.6	5.0	5.3	28.0	7.7	5.0	5.1
Singapore	0.8	0.0	0.0	0.0	11.1	2.5	0.0	0.0
Thailand	31.7	16.6	11.0	11.2	28.7	12.3	10.0	10.5

Source: World Development Indicators.

As the above Table shows, the average tariffs in 1985 were highest in the Philippines and Thailand, but in the other ASEAN 5 countries also had considerable high tariff rate in the same period, except Singapore. The average tariff rates have been falling significantly in recent years in ASEAN 5 countries. These significant reductions in tariff rates and combined effect of favorable economic environment in most initial ASEAN countries resulted in higher economic growth rates during that period. The growth rates of ASEAN 5 from 1970-75 to 2010 is shown in the following Table.

Table (3.2) GDP Growth Rates in ASEAN 5

Year	1970-75	1975-1980	1980-85	1985-90	1990-95	1995-2000	2000-2005	2010
Indonesia	8.7	5.2	5.1	7.1	7.8	-1.0	4.6	5.5
Malaysia	7.8	3.5	4.6	9.2	9.5	3.5	4.3	5.8
Philippines	6.5	6.6	0.1	2.7	2.2	3.1	4.6	3.8
Singapore	12.8	4.1	5.7	8.1	9.1	6.0	2.7	6.9
Thailand	7.2	5.5	6.0	10.1	8.6	-0.9	.5.1	4.7

Source: Asian Development Bank, Asian Development Outlook 1993; World Bank, World Development Indicators.

The above Table illustrates that Singapore had the highest growth rates among ASEAN 5 countries owing to the reflection of its rapid industrialization and structural transformation from a trading to an industrial economy. The high rates of economic growth in most ASEAN 5 countries since the 1970s have been accompanied by high and rising savings ratios over time. Singapore recorded a savings rate of about 50% in year 2000. In addition to savings rate all the initial ASEAN countries have devoted large and increasing proportions of their GDP to fixed capital formation. As shown in the following Table, the average rate of capital formation for Indonesia, Singapore and Thailand has increased between 1975 and 1980. The share of gross domestic saving in GDP has also gone up in ASEAN 5 countries.

Table (3.3) Relative Share of Capital Formation in GDP and Saving Rates in GDP of ASEAN 5

	Gross Fixed Capital Formation (%)					Gross Domestic Saving (% of GDP)		
	1975	1980	1990	2000	2010	1975	2000	2010
Indonesia	13.6	22	28	25.0	31	-	26.0	31
Malaysia	15.9	30	33	26.0	20	26.0	47.0	42.0
The Philippines	18.4	27	23	22.0	19	19	24.0	15
Singapore	32.5	35	30	31.0	29	9.0	46.0.0	50.0
Thailand	24.1	28	40	23	24	14	31	32

Source: Wong, J., ASEAN Economics in Perspective: A Comparative Study of Indonesia, Malaysia, the Philippines, Singapore & Thailand; World Bank, World Development Indicators, 2012.

Table (3.4) Changes in Export Structure (% of Total Export)

Item	Primary Product					Textile and Clothing					Machinery				
	1975	1980	1990	2000	2010	1975	1980	1990	2000	2010	1975	1980	1990	2000	2010
Singapore	18.0	10.5	6.3	2.4	1.9	5.4	4.3	4.0	2.2	1.1	11.0	26.8	55.0	86.0	74.0
Malaysia	35.2	25.2	21.4	9.3	6.5	0.7	2.9	6.5	2.8	1.9	1.6	11.5	41.2	80.0	70.0
Indonesia	31.0	11.5	15.5	6.3	14.5	0.2	0.7	17.3	14.2	11.0	0.0	0.0	5.0	57.0	41.0
Thailand	66.9	60.0	26.5	13.6	12.9	7.5	10.0	15.1	n.a	n.a	0.1	5.9	28.0	75.0	75.0
Philippines	65.0	56.5	17.1	5.8	7.1	2.2	6.7	9.0	n.a	n.a	0.1	2.1	19.7	92.0	86.0

Source: Tan, G., ASEAN Economic Development and Cooperation; International Trade Statistics, 2012.

As the above Table shows, between 1975 and 2010, the share of primary product exports, textiles and clothing exports of the ASEAN 5 gradually declined as a percentage of total exports, while that of machinery rose significantly. The changes in the structure of exports reflect the changes in industrial structure of the ASEAN 5

countries. Since the mid 1960s, Singapore has moved from labor-intensive industries to capital and skill-intensive industries as well as to services. Indonesia and Malaysia have moved away from their heavy dependence on oil and gas production towards a more diversified manufacturing base. Thailand has also been through a process of diversifying its export base and expanding its labor-intensive industries. Since the mid-1980s, increasing diversification has led to the development of labor-intensive, export-oriented manufacturing industries on one hand, and capital-intensive, higher-technology industries on the other. The ASEAN 5 economies are by nature very trade oriented, with each having a relatively large external sector and a generally high trade output ratio. Apart from some favorable institutional precondition such as political stability, the major sources of ASEAN's high growth performance in recent years can be traced to two important interrelated factors: internally, a high rate of capital formation and externally, the export boom.

The following Table also shows the export composition of ASEAN 5 countries from 1975 to 2010.

Table (3.5) Export Composition of ASEAN 5

Country	Share of Manufactures in Total Exports %				Share of Skill-intensive goods in Manufactured exports %	
	1975	1980	1990	2010	1990	2010
Singapore	41.8	44.7	72.3	86.9	35.5	67.0
Malaysia	30.4	27.8	55.2	80.0	27.0	64.8
Indonesia	2.4	3.9	37.9	57.0	2.6	12.7
Thailand	19.6	34.9	63.4	76.0	19.1	41.5
The Philippines	16.3	23.5	40.9	92.0	14.5	31.6

Source: Das.D.K., "Changing Comparative Advantage and the Changing Composition of Asian Exports, Blackwell Publishers Ltd.; World Commodity Trade Statistics.

During the 1980s period, the exports of ASEAN 5 countries continued to expand. With the upgrading of the economies of Indonesia, Malaysia and Thailand, and all ASEAN countries moved up the ladder. This reflects the strong growth of Southeast Asian economies and the benefits they derived from the export-orientation

of their policy stance. This systematic movement of exports up the ladder and the process of upgrading add to the evidence of progressive movement in comparative advantage. Rapid growth in several Asian economies has brought about shifts in their comparative advantage. Evidence of structural shift in comparative advantage can be found in the following Tables.

Table (3.6) Revealed Comparative Advantage Index for the ASEAN 5

Country	Mineral Intensive		Agricultural Intensive		Technology Intensive		Labor Intensive		Human Capital Intensive		Capital Intensive	
	1980	2005	1980	2005	1980	2005	1980	2005	1980	2005	1980	2005
Singapore	0.94	1.13	1.30	0.53	0.81	1.49	1.43	0.99	0.65	0.68	0.87	1.20
Indonesia	2.52	2.63	1.46	2.27	0.01	0.14	0.11	1.47	0.01	0.32	0.02	0.22
Malaysia	1.16	0.89	3.14	1.58	0.15	0.75	1.08	1.45	0.11	0.82	0.32	0.97
Thailand	0.55	0.38	3.91	2.12	0.05	0.62	1.36	1.71	0.18	0.62	0.23	0.67
The Philippines	0.74	0.55	2.97	1.42	0.10	0.39	2.26	2.94	0.12	0.19	0.13	0.40

Source: Das.D.K., "Changing Comparative Advantage and the Changing Composition of Asian Exports, Blackwell Publishers Ltd.

Table (3.7) Revealed Comparative Advantage for Malaysia, Indonesia, and Thailand

	Malaysia			Indonesia			Thailand		
	1990-1994	1995-1999	2000-2005	1990-1994	1995-1999	2000-2005	1990-1994	1995-1999	2000-2005
SITC 752 Disk drives, printers and PCs	2.37	2.27	4.27	0.66	1.5	1.4	1.64	1.98	1.50
SITC 759 Printed circuit board	1.04	1.23	1.55	0.36	0.05	0.08	1.00	0.87	0.47
SITC 764 Telecommunication products	2.49	1.77	3.56	2.00	1.34	2.82	3.00	1.76	1.34
SITC 772 Electronic switch relay and circuit	0.96	1.63	2.03	0.47	0.56	0.69	1.54	1.75	0.92
SITC 776 Semiconductor	1.67	2.54	0.82	1.79	1.80	0.24	1.44	1.82	0.50

Source: Mahmood, A., "Trade Liberalization and Malaysia Export Competitiveness: Prospects, Problems, and Policy Implications," University of Newcastle, NSW, 2308, Australia.

Table (3.6) describes values indicating comparative advantage in minerals, agricultural, technology, labor, capital and human capital intensive activity. Indonesia and Malaysia maintained strong comparative advantage in mineral and agriculture intensive products during the 1980s. Thailand also had high index values for these

categories, but they declined in the late 1990s and early twenty first century. Table (3.7) shows Malaysia's export to the world generally has comparative advantage over Indonesia and Thailand, and the Table also reveals that Malaysia has higher export capacity to other countries.

The industrial performance of ASEAN 5 in the 1960s was remarkable with an overall 10.3% growth rate. This high industrial growth rates during this period have been averaged upward by the achievements of the high performers such as Singapore, Malaysia and Thailand. Towards the end of the 1960s and during the early 1970s, all ASEAN 5 countries were taking advantage of the favorable international climate for trade and capital movement. Between 1980 and 2010, the manufacturing growths have steadily raised in ASEAN 5 due to the policies to promote manufacturing production in these countries in particular interconnected policies to promote industrialization and exports, were a contributing factor.

Table (3.8) Growth of Manufacturing Production in ASEAN 5
(at Constant Prices)

Countries	Value added 1960 -70 (average)	Production					
		1960-1970 (average)	1975	1980	1990	2000	2010
Indonesia	5.9	2.8	9.0	15.0	12.0	6.0	26.0
Malaysia	10.4	13	15.6	12.3	14.0	18.0	31.5
The Philippines	4.6	5.9	3.0	1.5	3.0	6.0	11.0
Singapore	19.5	12.7	52.7	7.8	10.0	15.0	30.8
Thailand	10.9	6.6	16.0	12.1	16.0	6.0	18.4
ASEAN 5	10.3	n.a	n.a	n.a	n.a	n.a	n.a

Source: Wong, J., ASEAN Economics in Perspective: A Comparative Study of Indonesia, Malaysia, the Philippines, Singapore & Thailand; World Development Indicators, 2012.

3.2.1 Singapore

In recent years, Singapore has achieved a satisfactory record of economic growth together with relative price stability. Because Singapore is a small and very open economy, the growth of Singapore's exports of manufactured goods and services is expected to have a significant influence on its overall rate of economic growth.

Because of its favorable location, Singapore developed initially as an entrepot, serving as a center for the collection and distribution of goods to the neighboring countries. The industries at that time produced simple types of consumer manufactures and intermediate inputs. The goods produced were based on easy access to raw materials (processing of rubber and coconut and vegetable oils) or enjoyed natural protection because of high transport costs (beverages, clay products, and furniture).

The separation of Singapore from Malaysia in 1965 meant the loss of a well-protected market. Although import-competing activities were generally favored during that period, discrimination against exports was low and was finally eliminated after 1967, when imports were liberalized and additional export incentives were provided. Moreover, since the import substitution phase (1965-67) was short, interest groups did not develop; therefore, when Singapore later shifted to an export-oriented strategy, the transition was eased by the absence of well established interests. Singapore's export-oriented industrialization was remarkably successful, and with it came significant transformation of the economy. Unlike the other ASEAN 5 countries, textiles have never been a major export of Singapore. In 1975, textiles accounted for only 5.4% of Singapore's total exports. By 1982, textile exports accounted for 4% of total exports. Electronic components manufacture was an important export of Singapore in the 1960s and 1970s. In 1970, electronic components and appliances accounted for 6 % of Singapore's exports. This rose to 25% in 1980. Since the mid- 1960s, Singapore's exports have undergone a major change in composition. In the manufacturing sector, the major shift is from labor-intensive, low value-added exports to middle technology, high-value-added exports. Electronic exports provide an example of this shift. In the 1970s, much of Singapore's electronics exports were made up of components. However, rising wages over time made Singapore an increasingly uncompetitive location for the manufacture of these products. Singapore then began to attract firms which manufactured higher-technology and higher value-added electronic products.

By the late 1980s, Singapore had become a major world manufacturer and exporter of these products. Since then, Singapore had emerged as a mature export-oriented industrial economy. The continual rise in wages, rents and other business costs in Singapore has forced it to move further up the technology ladder into wafer fabrication, biotechnology, and other high-tech activities. Industrial development has

always been based on exploiting its comparative advantage in terms of labor supplies and its strategically important economic location for Singapore. Starting from 1960s, Singapore first began to attract labor-intensive, export-oriented industries, and over time, as wages began to rise, it has moved towards more capital-intensive, skill-intensive industries and into services sector. Industrialization in Singapore has been extremely successful not only in the regional context of Southeast Asia but also in the ranks of the developing world at large. The experience of Singapore provides a classical example of export-led growth. Since the turn toward export-oriented industrialization, not only the growth of exports but the growth of manufacturing output and value added in general has become tied to world conditions. The growth rates of output, value added and direct exports of the manufacturing sector are closely related.

Table (3.9) Compound Growth Rates of Singapore's Manufacturing Sector at Constant Prices

	1965-68	1968-74	1974-81	1981-90	1990-2000	2000-2008
Output	24.35	24.92	8.89	9.0	15.0	28.8
Value-added	19.02	23.65	8.88	18.8	22.1	26.8
Direct export	18.06	41.68	9.49	40.2	45.6	38.5

Source: Wong, C.M., "Trends and Patterns of Singapore's Trade in Manufactures", the National Bureau of Economic Research", 1987; Chongvilaivan, A., "Learning by Exporting an High-tech Capital Deepening in Singapore Manufacturing Industries, 1974- 2009".

During the import substitution phase (1965-68), the growth rate of direct export lagged behind those of manufacturing output and value added. In 1968-74 with the turn to export-oriented industrialization, the growth rate of direct export was almost twice those of value added and output. During this period there were significant increases in the degree of export orientation of most industries. The rapid growth of export-oriented industries since 1967 was accompanied by increasing participation by foreign enterprises. Although Singapore has relied mainly on private enterprise, the government has tried to influence resource allocation in various ways such as providing incentives to industries regarded as desirable for the country. The

following Table shows the structure of manufacturing in Singapore from 1975 to 2010. Table shows that manufacturing value added has increased sharply from US\$ 3.14 billion in 1975 to US\$ 43.63 billion in 2010. Growth of manufacturing sector and manufactures exports also have increased during that period.

Table (3.10) Structure of Manufacturing in Singapore

	1975	1990	2000	2010
Manufacturing value added (US\$ billions)	3.14	8.64	24.01	43.63
Food, beverages, and tobacco (% of total)	10.5	3.7	3.0	3.0
Textiles and clothing (% of total)	4.3	4.0	1.0	1.0
Machinery and transport equipment (% of total)	38.8	55.0	57.0	54.0
Chemicals (% of total)	20.5	13.0	14.0	21.0
Other Manufacturing (% of total)	25.9	24.3	25.0	21.0
Manufactures exports (% of merchandise exports)	47.0	72.0	86.0	73.0
Manufacturing, value added (annual % growth)	10	10	15	30

Source: World Development Indicators, 2012.

Table (3.11) shows the commodity composition of Singapore's exports from 1975 to 2010. Singapore exports several commodities; however, mineral fuel, machinery, mechanical appliances, and electrical equipment, transport equipment and petroleum products were major export items during that period. Crude materials like plastics and rubber are still important in entrepot trade; on the other hand, the shares of manufactures and mineral fuels have significantly increased. It can be said that Singapore's manufacturing sector have significantly grown during the period 1975 and 2010.

Food, beverages, crude materials, and animal and vegetable oils and fats made up about 60% of total trade, but their share declined to less than 20% in 1980. In the early 1960s, trade consisted mainly of transshipments of primary commodities such as rubber, tin, coconut and palm oil, and timber to industrial countries, and re-exports of manufactures from the rest of the world to neighboring countries (Appendix 1).

Table (3.11) Commodity Composition of Singapore's Exports
(US\$ million)

Commodity	1975	1985	1990	1995	2000	2005	2010
Food and live animals	2955	2388	2734	3554	916	1056	1078
Beverage and tobacco	318	217	1388	2274	1948	2053	2824
Crude material excl. fuel	2918	2781	2915	2405	1561	2257	2265
Mineral fuel, etc.	16385	14617	17295	13858	17614	46790	62475
Animal vegetable oil & fats	815	780	761	718	400	467	630
Chemicals	1508	1722	5970	9999	14191	35547	45205
Plastics and rubber	1198	3898	4747	6439	11061	12669	14436
Hides and skins	n.a	n.a	147238	327	343	592	310
Wood and wood products	n.a	n.a	980	590	395	343	310
Wood pulp products	n.a	n.a	1162	1767	1931	2803	3034
Textiles and textile articles	n.a	3897	4534	4273	4757	4386	4202
Footwear, headgear	n.a	162	170	214	269	294	330
Pearls, precious or semiprecious stones, metals	n.a	599	618	1872	1641	5524	4978
Machinery, mechanical appliances, and electrical equipment	n.a	40139	45491	107461	159889	2250153	241864
Instruments – measuring, musical	n.a	n.a	2161	4640	6801	11063	12107
Basic manufacture	3839	5918	6651	10614	n.a	n.a	n.a
Machines, transport equip	11546	38890	47733	110007	4041	8765	11614
Miscellaneous manuf. Goods	2832	7988	8500	12552	863	1382	1735
Unclassified goods	3751	n.a	1260	1532	n.a	n.a	n.a
Petroleum products	14288	15992	17156	13631	22613	56728	78883
Telecommunication product	2197	9085	11474	18367	14260	25955	24726
Clothing	980	1056	2867	2075	3150	2836	2680
Crude rubber	1743	1298	1405	949	360	500	514

Source: Asian Development Bank (Key Indicators for Asia and Pacific); Year Book of Statistics Singapore, 2010.

Many conditions operating in the Singapore model are unique to Singapore itself, particularly with respect to its special feature as an urban economy. Against natural disadvantages as lack of resources and the smallness of the domestic market, Singapore did possess several favorable preconditions which were not present in the other ASEAN countries on the day of their industrialization. As a trading post, Singapore had built up reasonably efficient facilities in communications and transport. In addition, there was no shortage of entrepreneurship and no lack of supply of hard-working labor, which have often constituted bottlenecks in the industrial progress of other Southeast Asian countries. Major credit for this development must be given to the effective implementation of soundly conceived government policies, which from the outset took full account of Singapore's strengths and weaknesses. Furthermore, the time was right for structural change in the economy.

Table (3.12) Structural Change of GDP in Singapore

	1975	1980	1985	1990	1995	2000	2005	2010
Agriculture	3.0	1.34	0.90	0.34	0.18	0.17	0.1	0.0
Industry	24	34.56	33.68	32.69	31.80	33.47	33.1	27.9
Services	74.1	64.1	65.42	66.97	68.02	66.38	66.8	72.1

Source: ADB (Key Indicators of Developing Asian and Pacific Countries), Tan, G., ASEAN Economic Development and Cooperation.

3.2.2 Malaysia

Since 1970s, Malaysia has shown remarkable economic performance as a result of its outward looking strategies. Malaysia like other first-generation tigers (Korea, Taiwan, Singapore and Hong Kong) has used exports as its engine of growth and development since the 1970. Malaysia's economic growth continued to improve after the economic crisis in 1997 within an environment of low inflation and unemployment. Malaysia made a shift from the largely import substitution prior to the 1970's to liberal outward oriented trade regime. The most prominent sector contributing to the export earnings was manufacturing which accounted for 79% of

the total export earning and nearly 29% of Malaysia's Gross Domestic Product (GDP)²⁰.

The promotion of the manufacturing sector in Malaysia accelerated after it was selected for deregulation and liberalization under the First Industrial Master Plan (FIMP: 1986-95). As in the first wave of FDI into Malaysia in the 1970s, the move to attract FDI under the FIMP was again complemented by favorable external circumstances. Malaysia's relatively attractive locational advantages enabled it to be a significant beneficiary of these outflows as in the case of the first wave of FDI into the country. Given the aggressive promotion of the manufacturing sector, that was the single largest recipient of this inflow with its share in total FDI increasing steadily from 44.4 % in 1985 to 57.7 % in 1993²¹. The pursuit of FDI in the manufacturing sector has transformed the Malaysian economy from primary production to the production of manufactured goods, although in labor-intensive manufacturing. This can be clearly seen in the increasing contribution of manufacturing in the Gross Domestic Product (GDP), and total exports of the country since achieving independence in 1957.

Table (3.13) Manufacturing's Share of GDP and Exports in Malaysia

	1975	1980	1985	1990	1995	2000	2005	2010
Manufacturing value added as % of GDP	17.4	19.6	19.1	27.0	33.1	32.0	31.1	26
Manufacturing exports as % of total exports	21.9	22.4	32.8	62.8	79.6	86.6	75.0	70

Source: Siew-Yean. T., "The Future of Industrialization in Malaysia under WTO", *Asia-Pacific Development Journal*, Vol. 11, No. 1, June 2007; World Development Indicators.

As can be seen from the Table, the share of manufacturing value added in GDP increased significantly from 17.4 % in 1975 to a peak of 33.1 % in 1995. The massive net outflow of short-term capital together with the initial tight monetary and fiscal policies that were implemented turned the financial crisis into an economic

²⁰ Chandran., V.G.R et al., "Malaysia's Export Market: Trends, Prospects and Challenges", Institute of Research, Development and Commercialization, MARA, University of Malaysia, p. 27.

²¹ Siew-Yean. T., (2007), "The Future of Industrialization in Malaysia under WTO", *Asia-Pacific Development Journal*, Vol. 11, No. 1, June.

crisis in 1998, causing the manufacturing sector to contract (in terms of value added at constant prices) by 13.4% for that year. Its contribution to GDP decreased to 32.0% in year 2000. It fell slightly to 31.1 % in 2005 due to the unfavorable external circumstances in that year and the downturn in the global electronics cycle. The sector's share in Malaysia's trade has also grown substantially due to the aggressive promotion of exports for this sector by stipulating export requirements for the relaxation of domestic equity conditions in its FDI policy. Hence, its share in total exports increased progressively from 21.9% in 1975, and it reached a peak of 86.6 % in year 2000.

The past two decades have seen substantially changing patterns of export share and export merchandise in Malaysia as it was initially an exporters of primary commodities toward a labor-intensive goods as well as technology or capital-intensive manufacturers to the world market. Malaysia is the only country in Southeast Asia to be endowed with a combination of favorable factors conducive to economic growth: a rich resource base, low population pressure, good supply of entrepreneurial skills, reasonably efficient bureaucracy as well as adequate infrastructural facilities. The Malaysian economy has experienced rapid economic growth during 1970s and 1990s: averaging over 8.0% for 1970-80, 5.2% for 1980-90, and 8.7% 1990-2000.²² After a brief period in the early 1980s, Malaysia tried to develop heavy industry under import protection, the government began to promote manufactured exports. The manufacturing sector has been a dominant force in the Malaysian growth experience, contributing significantly to output, employment, and exports. The structure of manufacturing has also experienced a major change during that period. The declining significance of low value-added manufactures, such as food, beverages, tobacco, textile, and clothing has been replaced by the strong performance of relatively high-value added manufactures, i.e., machinery, transport equipment and other manufactures. The structure of Malaysia's manufacturing sector is shown in the following Tables.

²² WDI 2001

Table (3.14) Structure of Manufacturing (% of Total)

Food, beverages, tobacco					Textile & clothing					Machinery and transport equipment				
1975	1980	1990	2000	2010	1975	1980	1990	2000	2010	1975	1980	1990	2000	2010
22.2	24	8	5	6	5.9	7	5	3	2	11.4	20	40	62	55

Source: Mahmood, A., Trade Liberalization and Malaysian Export Competitiveness: Prospects, Problems, and Policy Implications; International Trade Statistics.

The combined share of low value-added sectors (food and textiles) in manufacturing declined from 28% in 1975 to 8% in 2010 and the share of high value-added sectors rose from 11% in 1975 to 55% in 2010. The structural change in the Malaysian economy also turned the country from an exporter of primary commodities into an exporter of high value-added manufactured products.

Table (3.15) Changing Trade Structure

Merchandise Trade	Exports (% Total Export)			Imports (% Total Export)		
	1975	2006	Change	1975	2006	Change
Food	15	9	-6	12	5	-7
Agricultural raw materials	31	5	-26	2	1	-1
Fuels	25	8	-17	15	3	-12
Ores & Metals	10	1	-9	4	3	-1
Manufacturers	19	76	+57	67	85	+18

Source: Mahmood, A., Trade Liberalization and Malaysian Export Competitiveness: Prospects, Problems, and Policy Implications.

The manufacture exports have been the main force for the changing composition of the Malaysian merchandise exports. From 1975 to 2006, the share of manufactures in merchandise exports rose from 19% in 1975 to 76% in 2006. This period also witnessed a noticeable increase in manufacture imports, and a decrease in the importance of the primary goods exports. While exports from the manufacture sector led the charge, the role of the agriculture sector in merchandise exports declined from 46% in 1975 to only 14% in 2006. The robust export performance of manufacturing, combined with growth in manufacturing imports, confirms Malaysian

success in pursuing an outward-oriented industrialization strategy helped by trade liberalization and strategic industry policy. The structure of Malaysia's manufactured exports in 1997 is shown in the Appendix 2. About 66% of Malaysia's manufactured exports were made up of electrical appliances and components, and other manufactured goods, such as textiles, transport equipment, each accounted for less than 5% of total exports. The electronic components accounted for 45 % of total manufactured exports and rubber products accounted for only 2% of total manufactured exports in 1997.

Malaysia's principle export commodities have also changed between 1975 and 2010. The following Table shows the exports of principle commodities in Malaysia from 1975 to 2010.

Table (3.16) Exports by Principle Commodities (Million Ringgit)

Items	1975	1980	1985	1990	1995	2000	2005	2010
1. Petroleum, crude& Partly refined	4325	7694	8698	10639	6701	14245	29359	31967
2. Saw logs & Sawn timber	3005	4547	3908	7106	5682	5505	8310	7666
3. Palm Oil	2958	2742	3963	4411	10399	9959	19346	22117
4. Rubber	2388	2655	2872	3027	4038	2571	5598	8235
5. Tin	1282	1484	1648	1161	-	-	-	-
6. Thermionic, Valves, tubes, photocell etc.	-	-	-	11683	33197	71169	86705	93505
7. Part & accessories for office and data processing machines & automatic data processing equipment	-	-	-	-	11954	50450	31311	41875
8. Telecommunication equipments & accessories	-	-	-	-	9489	22766	26352	33621
9. Liquefied natural gas	-	-	-	2635	3069	11423	20790	23285
10. Articles of apparel and clothing accessories	-	-	-	3555	5682	8575	9016	10419
11. Sound Recorders and Reproducers including TV images	-	-	-	-	7001	9052	5646	5797

Source: ADB (Key Indicators of Developing Asian and Pacific Countries).

Malaysia major exports were petroleum, crude and partly refined products, saw logs and sawn timber, palm oil, rubber and tin in 1970s; however, major exports commodities were significantly changed between 1990 and 2010. During that period, thermionic, valves, tubes, photocells, etc, parts and accessories for office and data processing machines and automatic data processing equipment, telecommunication equipment, parts and accessories, petroleum, crude and partly refined, palm oil,

Liquefied natural gas, articles of apparel and clothing accessories, saw logs and sawn timber, sound recorders and reproducers, including TV images, and rubber have become major export items in Malaysia.

The Manufacturing sector has been a dominant force in the Malaysian growth experience, contributing significantly to output, employment, and exports. The manufacturing sector has been the fastest growing sector of the Malaysian economy, followed by industrial sector, which includes manufacturing plus mining, construction, electricity, water, and gas, and the services sector. After keeping a growth rate of around 9% during 1980-90, the manufacturing sector grew at an annual average rate of 13% during the period 1980 - 2010.

Table (3.17) Growth of Output in Malaysia

	1970-80 (Average)	1985	1990	1995	2000	2005	2010
Agriculture	3.8	3.3	-0.6	-1.9	6.1	2.6	4.3
Industry	7.2	9.8	11	10.9	13.6	3.6	0.8
Services	8.9	10.2	11.3	9.8	6.0	7.3	7.7

Source: ADB (Key Indicators of Developing Asian and Pacific Countries).

This unprecedented rapid economic growth has been accompanied by a marked structural transformation of the Malaysian economy. The agriculture sector's share in GDP declined from 28 % in 1975 to 10 % in 2010; the contribution of the industrial sector grew from 31% in 1975 to 44 % in 2010. During the above period the services sector grew in absolute terms, however, its contribution to the national economy remains steady (Table 3.18).

Table (3.18) Structural Change of GDP in Malaysia

(% of GDP)	1975	1985	1995	2000	2005	2010
Agriculture	28.0	19.3	13.0	8.3	8.2	10
Industry	31.3	35.5	43.2	46.8	48.7	44
Services	40.7	45.2	43.8	44.9	43.1	46

Source: World Development Indicators, Tan, G., ASEAN Economic Development and Cooperation.

Over the last 30 years, the Malaysian economy has been undergoing a steady transformation, away from agriculture, towards industry.

3.2.3 Thailand

Thailand is currently one of the world's fastest growing economies, and in the 1960s and 1970s relatively continuous expansion of agricultural exports and import-substitution-based growth in manufacturing led to a 7% to 8 % annual growth. In 1960, Thailand was overwhelmingly a raw material exporter, and primary products accounted for over 85 % of Thailand's exports in 1970. Thailand started the process of industrialization in the modern sense in 1960. Throughout the 1960s the industrial development strategy was import substitution. In the early 1960s, industrial production was concentrated on processed food, beverages and tobacco products, nondurable consumer goods and construction materials. The relative significance of these groups of industries declined at the end of the 1960s. Rising in significance were petroleum products, intermediate products chiefly for consumer goods and transport equipment. In 1970s, with more emphasis given to the development of manufactured exports, the strategy became more balanced between import substitution and export promotion. With the development in manufacturing output, the structure of manufactured imports and exports has also changed. In the early 1960s, the most important items in terms of share in total manufactured imports were intermediate products; consumer non durables, machinery and transport equipment. Manufactured products in this period were mostly directed to local consumers and exports from the manufacturing sector were modest. As Thailand is a resource-abundant country, exports from the resource-intensive countries had low import contents and the raw materials needed in the production process could be found domestically.

By the late 1960s, the trend had shifted from imports in intermediate products to machinery and transport equipment. The trend continued into the early 1970s, with further proportionate decline in nondurable consumer goods. In manufactured exports, the concentration was on very few items, namely, food preparations, and other primary commodity-based products. In the early 1970s, manufactured exports expanded to include textiles. Manufactured exports continued to grow impressively, with the proportion in total exports approaching 37 % in 1976²³. Appendix 3 summarizes the changes in industrial structure between 1960 and 1980.

²³ Akrasanee, N., (1991), "Thailand's Export-Led Growth: Retrospect and Prospects" The Thailand Development Research Institute, p. 24.

The commodities under the category of food and live animals were the largest group of exports throughout the period, accounting for about 50 % and above. This was followed by crude materials excluding fuels. All other exports were proportionally very small for the period 1960-1980. In the second half of the 1970s, a major change took place in the composition of exports. Although the group of food and live animals remained the largest, there were large increases in the proportion basic manufacturers and miscellaneous manufactured goods, indicating recent development of manufactured exports. These exports were mostly wood products, textiles, precious and semiprecious stones and clothing (Appendix 5).

Since 1986, improving commodity prices and 40% annual growth in manufactured exports have led to a 30 % annual growth in total exports and double-digit GDP growth²⁴. Possible causes of the manufactured goods export boom include domestic commercial policies, world demand growth, and increases in foreign investment.

Thailand has been becoming increasingly integrated with the world economy since 1970s; the ratio of exports to GDP, which stood at 17 % in 1970, had risen to 38% in 1988. Manufactured goods accounted for only 10 % of merchandise exports in 1971, and comprised 66 % of their value in 1991. At the same time the share of agricultural products has fallen from 63 % to 27 %²⁵. The rapid growth of manufactured exports reflects some fundamental changes in the underlying structure of that sector of the economy. The 1970s saw the first moves in the direction of some export promotion policies. The initial manufacturing exports over this period were raw-material-based, together with some labor-intensive products in the textiles and electronics sectors. Since 1972, Thailand had pursued an export-oriented industrialization strategy and the success of this strategy can be seen from the changes in its export structure. This is shown in the following Table.

²⁴Akrasane., N., (1991), "Thailand's Export-Led Growth: Retrospect and Prospects" The Thailand Development Research Institute, p. 35.

²⁵ *ibid.*

Table (3.19) Thailand's Principle Exports (% Total)

Year	1975	1980	1990	2000	2010
Rice	11.2	13.8	3.5	3.6	2.8
Rubber	14.2	8.1	3.1	3.2	1.4
Mize	9.2	5.8	0.8	0.3	0.2
Tapioca	7.9	10.5	2.3	1.2	0.9
Textiles	2.1	10.0	13.8	9.4	13.2
Integrated circuits	0.0	4.0	4.7	5.0	9.3
Other Manufacturers	34.8	27.5	61.8	68.0	80.0

Source: Tan., G., *ASEAN: Economic Development and Cooperation*, Eastern Universities Press; ADB (Key Indicators of Developing Asian and Pacific Countries).

Table (3.20) Exports by Principle Commodities in Thailand

1975-1990	1990-2010
1. Textile Products	1. Computer & Parts
2. Rice	2. Vehicle Parts & Accessories
3. Precious Stones	3. Electrical Appliances
4. Jewelry	4. Integrated Circuits & Parts
5. Shrimp, Fresh & Frozen	5. Plastic Products
6. Rubber	
7. Tapioca Products	

Source: ADB (Key Indicators of Developing Asian and Pacific Countries).

Thailand's major exports had also changed between 1975-1990 and 1990-2010. Between 1975 and 1990, Thailand's major exports were textiles products, rice, precious stones, jewelry, shrimp, fresh and frozen, rubber and tapioca products. However, Thailand's major exports have significantly changed between 1990s and 2010. Computer and parts, vehicle parts & accessories, electrical appliances, integrated circuits and parts, and plastic products have become major export items in Thailand during that period. In short, export structure in the early stages of the country's international trade 1960s was dominated by agricultural goods. Later in the 1970s to 1980s, the country's trade and export structures shifted from relying on resource-intensive products from the agricultural sector to manufactured goods which are intensive in both resource and labor. As Thailand's comparative advantage in

cheap labor gets eroded, its leading exports have changed to the more science-based and scale-intensive products such as electronic, electrical appliances.

Table (3.21) Thailand's Exports Growth Rates (Average)

Item	1975-80	1980-90	1990-00	2000-2010
Primary Products	69.7	7.3	3.8	9.3
Processed foods	46.6	20.5	34.4	12.8
TCFand Electronic	68.6	10.6	20.1	9.1
Miscellaneous manufacturers	30.4	8.6	47.0	19.8
Total exports	24.6	7.7	24.5	16.7

Source: Tan.,G., ASEAN: *Economic Development and Cooperation*, Eastern Universities Press; ASEAN Trade Statistics Database.

The above Table shows manufactured exports grew very rapidly during 1975-80; however, slowed down 1980- 90 because of the effects of the second oil crisis. Between 1990 and 2000, the growth rate of manufactured exports recovered; however, fallen again between 2000 and 2010. In 1990s, manufactured products account for more than 80% of Thailand's export values while agricultural products contribution has decreased to only around 10 %. Thailand's change in export structure has been strongly attributed to foreign investments particularly the expansion of FDI inflows to the country.

The early stages of Thai industrialization in the 1950s and 1960s were based on raw material processing and the production of simple consumer goods for the domestic market. In the early 1970s, the structure of industrial production became more evenly distributed among several groups of industries, consisting of processed food, beverages and tobacco intermediate products for consumer goods and for capital goods, and nondurable consumer goods. The initial growth of manufactured exports was facilitated in part by the slowdown in agricultural growth in the 1980s, which made labor and capital resources relatively easily available to the manufacturing sector. The following Table presents the Structure of Manufacturing in Thailand. Manufacturing value added in Thailand has drastically increased from US\$ 6.9 billion in 1975 to US\$ 113.47 billion in 2010. The share of manufactures exports to total exports has also become triple in 2010 that of 1975.

Table (3.22) Structure of Manufacturing in Thailand

	1975	1990	2000	2010
Manufacturing value added (\$ billions)	6.9	23.2	41.23	113.47
Food, beverages, and tobacco (% of total)	26	22	18	16
Textiles and clothing (% of total)	33	26	12	9
Machinery and transport equipment (% of total)	16	22	26	35
Chemicals (% of total)	2.1	3.6	6	6
Other Manufacturing (% of total)	23	27	38	34
Manufactures exports (% of merchandise exports)	25	63	75	75
Manufacturing, value added (annual % growth)	3	16	6	14

Source: World Development Indicators, 2012.

Table (3.23) Structural Change of GDP in Thailand

(% of GDP)	1975	1980	1985	1990	1995	2000	2005	2010
Agriculture	32	24.72	22.46	12.5	9.5	9.0	10.3	11.6
Industry	23	34.25	36.13	37.2	40.7	42.0	43.4	44.2
Services	45	41.03	41.41	50.3	49.7	49.0	46.3	44.2

Source: ADB (Key Indicators of Developing Asian and Pacific Countries), Tan, G., ASEAN Economic Development and Cooperation.

The share of agricultural sector in GDP was 32% in 1975, and it constituted only 11.6% of GDP in 2010. On the other hand, the industrial sector has grown from 23% of GDP in 1975 to 44.2% in 2010. Although economic growth has been fueled by a rapid structural shift towards industrial and service activities, agriculture has continued to make contribution to economic development.

3.2.4 Indonesia

Indonesia maintained high economic growth during the 1970s, largely because of the rapid expansion of oil production and a sharp increase in oil prices after 1973. However, after 1982, the Indonesian economy slowed down when oil prices started to fall. A further fall in oil prices in 1986 required the government to implement macroeconomic reforms, which enhanced export-oriented manufacturing and foreign direct investment (FDI). Such changes in economic policies contributed to an acceleration of economic growth that lasted until the onset of the economic crisis of 1997. During the decade from 1986, Indonesia's annual average growth in GDP exceeded 8%. This was driven by a rapid expansion of the manufacturing industry, which contributed to more than 30% of the total growth. This high economic growth, along with deregulation measures, stimulated business activities in the private sector. The following Table shows the structure of manufacturing in Indonesia from 1975 to 2010.

Table (3.24) Structure of Manufacturing in Indonesia

	1975	1990	2000	2010
Manufacturing value added (\$ billions)	10.1	23.6	45.8	175.4
Food, beverages, and tobacco (% of total)	22	24	18	26
Textiles and clothing (% of total)	36	26	17	12
Machinery and transport equipment (% of total)	12	17	20	18
Chemicals (% of total)	7	6	11	6
Other Manufacturing (% of total)	23	27	35	38
Manufactures exports (% of merchandise exports)	2	35	57	37
Manufacturing, value added (annual % growth)	23	12	6	4

Source: World Development Indicators, 2012.

The decline in the price of crude oil pushed the Indonesian government to diversify its exports by promoting manufactured exports. Indonesia embarked upon a strategy of export-oriented industrialization in the aftermath of the fall in oil prices in the mid-1980s. The government embarked upon a successful strategy to diversify the economic base away from oil, using both general export incentives and undertaking a substantive program of structural reform. The outcome was that the share of industrial exports in total exports increased from a negligible percent in the early 1980s to close to 65 % by 1997 including resource-based exports, such as plywood and palm oil.

Most of the manufacturing activities in Indonesia were dominated by non-durable consumer goods, particularly food products, which are aimed almost entirely at the domestic market. In recent years the mainstay of economic growth has shifted away from reliance on the traditional agricultural commodity exports to the development of such non-traditional activities as extractive industries, energy fuels, minerals and timber, which all tend to be very capital-intensive and highly dependent on imported capital as well as imported technology. Between 1983 and 1995, both the agricultural and mining sectors declined in relative importance, while the share of manufacturing and construction in GDP has risen gradually. At the same time, the share of manufactured exports in total exports rose to 70%, while that of crude oil and natural gas fell to 13%. Appendix 6 shows composition of Indonesia's manufactured exports in 1997. Indonesia saw rapid growth and declining poverty in the early 1990s. In the 1990s, Indonesia became an important exporter of textiles on account of its low wages. Between 1982 and 1989, Indonesian exports of clothing grew by 37.7% per annum, while exports of yarns and fabrics grew by 88.2% and 52.2% per annum respectively

As for manufactured exports, there was a lag in the response of export growth to the increased price competitiveness due to disruptions in export supply resulting from political turmoil and problems with trade financing.

Table (3.25) provides a more detailed picture of Indonesia's non-oil exports. The growth of export value and volume was substantial at around 20% per annum over the 1990–2000 periods. This growth was the result of an export-oriented drive that began in the middle and late 1980s, and was facilitated by a surge in export-oriented FDI in the early 1990s. In 2000-2005, both agricultural and industrial products experienced a decline in volume and value growth. The underlying factors appear to be a combination of price and volume declines.

Table (3.25) Growth of Indonesia's Non-oil Exports

	1970-1980		1980-1990		1990-2000		2000-2005	
	Value	Volume	Value	Volume	Value	Volume	Value	Volume
Agriculture	5.5	-5.7	7.5	9.0	17.4	77.4	-18.4	-2.6
- Coffee	12.4	-0.5	-14.5	-15.1	15.0	15.5	-20.8	-1.5
- Shrimp	6.8	-0.1	-0.8	7.2	-0.1	-7.8	-11.9	52.6
- Spices	0.5	-4.9	48.8	-3.5	18.3	47.8	34.6	-10.1
- Cocoa beans	24.1	23.2	12.2	-19.9	29.7	26.6	-22.7	20.3
- Fish	6.1	11.0	1.6	9.8	-6.3	0.0	12.7	7.2
- Seeds	-9.6	-13.5	2.5	-11.3	36.6	184.5	-42.9	-27.2
Industrial	9.3	7.0	-1.1	28.2	22.5	40.7	-3.6	-3.6
- Plywood	5.0	-1.7	-5.1	-5.0	-39.1	4.5	8.6	-15.3
- Sawn wood	33.4	20.8	-19.7	-21.3	-56.9	-40.7	80.4	111.5
- Other wood products	14.7	-2.8	42.4	26.3	44.3	45.8	-43.0	-29.8
- Garments	11.2	13.2	-19.6	-5.1	-10.0	-7.9	47.5	67.0
- Other Textile	13.3	35.5	23.0	32.8	29.6	56.0	-27.9	-15.0
- Processed rubbers	26.4	6.0	-10.7	0.3	-22.1	19.3	-20.1	-8.2
- Palm oil	29.2	8.6	75.2	73.0	-48.5	-48.8	49.5	123.0
- Electrical apparatus	22.2	19.1	-2.9	130.2	8.8	-61.6	13.5	47.7
- Processed food	29.2	4.2	-13.3	-0.1	-9.4	-22.6	26.8	56.7
- Chemicals	55.0	56.3	30.6	38.3	39.9	117.9	-2.2	1.4
- Fertilizer	-1.8	-6.2	15.1	65.6	-45.9	-25.0	10.7	30.9
- Paper and paper products	51.4	82.6	-1.8	-15.0	51.9	48.9	37.9	37.4
Mining	47.9	43.2	2.9	17.0	-13.0	-1.5	-2.9	79.2
- Copper ore	50.1	41.9	-14.3	-7.7	-12.7	17.4	-11.6	-3.4
- Coal	61.6	59.5	32.5	31.9	-9.3	14.5	-2.4	14.4
Total	21.6	20.3	8.7	20.7	-0.6	16.3	-4.9	38.6

Source: Aswicahyono. H., and M., Pangestu, "Indonesia's Recovery: Exports and Regaining Competitiveness" *The Developing Economies*, XXXVIII-4 (December 2007): 454-07.

Table (3.26) Commodity Composition of Indonesian Exports (US\$ million)

Commodity	1975	1985	1995	2000	2005	2010
Food and live animals	1383	2286	3583	498	762	1332
Beverage and tobacco	49	136	196	-	-	-
Crude material excl. fuel	1403	1725	5035	-	-	-
Mineral fuel, etc.	12757	11241	11508	6410	18129	22667
Animal vegetable oil & fats	414	423	1384	1784	2059	3090
Chemicals	210	596	1524	4951	6689	8269
Plastics and rubber	-	-	-	1575	2360	2985
Hides and skins	-	-	-	212	108	145
Wood and wood products	-	-	-	130	190	260
Wood pulp products	-	-	-	1398	1299	1690
Textiles and textile articles	-	-	-	2284	1606	1998
Footwear, headgear	-	-	-	94	76	105
Machinery, mechanical appliances, and electrical equipment	-	-	-	6194	11416	14174
Instruments—measuring, musical	-	-	-	525	522	686
Basic manufacture	1804	6102	10438	-	-	-
Machines, transport equip	98	351	3828	2932	3887	4958
Miscellaneous manuf. Goods	437	2690	7876	-	-	-
Unclassified goods	31	125	46	-	-	-

Source: Asian Development Bank, Key Indicators for Asia and Pacific.

Table (3.26) also indicates that mineral fuels, basic manufactures, crude materials, food and live animals were the major exports between 1975 and 1995. However, the shares of mineral fuels, Machinery, mechanical appliances, and electrical equipments in exports have become dominant between 2000 and 2010.

Table (3.27) Pattern of Structural Change in Indonesia

Sector	Sectoral composition of value added						Sectoral composition of exports					
	1975	1980	1990	2000	2005	2008	1975	1980	1990	2000	2005	2008
Primary	27.7	20.6	22.2	16.7	11.6	7.9	6.0	6.7	6.1	2.3	1.1	0.8
Oil, gas & mining	20.5	26.3	14.2	14.6	9.8	17.6	73.9	70.8	40.6	27.9	17.3	16.2
Petroleum refinery	0.6	0.3	5.0	3.2	2.0	5.5	1.0	6.8	23.7	14.4	7.5	13.3
Food, beverages, & tobacco	6.3	5.1	4.7	6.7	8.7	7.9	2.5	1.4	1.3	5.0	4.2	3.8
Wood products & furniture	0.2	0.6	1.2	2.2	1.7	1.7	0.0	0.8	4.8	10.3	8.8	6.1
Rubber & rubber products	0.7	0.8	0.7	0.8	0.8	1.1	2.9	2.6	3.7	3.1	2.9	1.8
Non-metallic mineral products	0.3	0.5	0.7	0.5	0.7	0.9	0.0	0.1	0.1	0.6	0.5	1.1
Garments & leather	0.5	0.5	0.4	1.0	1.5	2.2	0.0	0.2	1.6	6.8	9.8	8.0
Other manufacturing	0.0	0.1	0.1	0.1	0.1	0.2	0.0	0.0	0.0	0.2	0.6	0.6
Textiles	0.4	0.5	0.9	1.6	2.5	2.5	0.0	0.1	1.1	3.9	6.7	7.3
Paper, paper products	0.3	0.2	0.4	0.9	1.3	1.6	0.1	0.0	0.1	0.7	2.2	3.9
Industrial chemical	0.5	0.5	0.8	0.9	1.2	1.2	2.8	0.2	1.0	1.6	2.1	2.6
Iron & steel	0.0	0.2	0.5	0.6	0.9	0.5	0.0	0.0	0.1	0.5	0.5	0.5
Non-ferrous metals	0.1	0.1	0.4	0.6	0.7	0.5	0.7	1.4	2.9	3.7	4.3	2.9
Ship building & repairing	0.1	0.1	0.2	0.1	0.1	0.1	0.0	0.1	0.2	0.4	0.3	0.2
Other transport	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Motor vehicles	0.6	0.6	0.4	0.7	1.1	1.8	0.0	0.0	0.0	0.1	0.5	0.5
Aircraft	0.0	0.0	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.1	0.1	0.1
Metal products	0.2	0.3	0.4	0.4	0.5	0.7	0.0	0.0	0.0	0.3	0.7	1.0
Non-electrical machinery	0.2	0.5	0.4	0.9	0.8	0.9	0.1	0.1	0.1	0.1	1.5	4.1
Drugs & medicine	0.1	0.1	0.2	0.2	0.2	0.2	0.0	0.0	0.1	0.0	0.0	0.1
plastics	0.0	0.1	0.2	0.2	0.5	0.7	0.0	0.0	0.1	0.3	0.3	0.6
Electrical apparatus	0.0	0.1	0.1	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.3	1.2
Radio, TV & comm., equipment	0.1	0.3	0.3	0.4	0.9	1.9	0.1	0.2	0.4	0.5	3.8	7.9
Professional goods	0.0	0.1	0.0	0.1	0.3	0.2	0.0	0.0	0.1	0.3	0.9	0.8
Total manufacturing	10.8	11.2	13.1	19.0	24.5	27.0	9.4	7.3	17.9	38.5	51.1	55.1
Electricity gas, & water	0.3	0.3	0.4	0.6	0.6	0.5	0.0	0.0	0.0	0.0	0.0	0.0
Construction	5.0	5.0	6.6	5.8	6.7	4.0	0.0	0.0	0.0	0.0	0.0	0.0
Finance & insurance	2.4	2.0	2.6	3.8	4.1	4.1	0.0	0.2	2.3	3.0	3.3	1.3
Other services	32.6	34.4	36.0	36.2	40.6	33.4	9.7	8.1	9.3	14.0	19.7	13.3
Total	100	100	100	100	100	100	100	100	100	100	100	100

Source: Jacob, J., "Late Industrialization and Structural Change: The Indonesian Experience", Eindhoven Centre for Innovation Studies, The Netherlands
Working Paper 09.18

The above Table presents the sectoral shares of value added and exports, in constant 1983 prices, from 1975 to 2008 for 29 major sectors of the economy. Among the 29 sectors, 22 are in manufacturing, and are grouped into resource-intensive, labor-intensive, scale-intensive, differentiated, and science-based groups. Over the 25-year period, the combined share of primary and Oil, Gas & Mining (oil & gas) declined from nearly 50% to a quarter of the total value added. In exports, the oil & gas sector alone accounted for about three quarters of the total exports during the 1970s; the export-share of oil & gas, however, began to fall dramatically from the early 1980s onwards, reaching about 16% of the total exports by the year 2008. The share of the services sectors in the total value added of the economy remained stable, with the notable exception of the finance & insurance sector; its share increased rapidly following the banking reforms of the late 1980s. With the decline of the oil & gas sector, the contribution of manufacturing to total value added and exports began to rise, especially since the mid-eighties.

The resource-intensive industries have traditionally been the leading contributors to manufacturing value added. Although their contribution to the total value added of the economy increased marginally over time, their share in the total manufacturing value added declined from over 60% in the 1975 to about 40% in 2008. In this group, food, beverages & tobacco (food) has always accounted for most of the value added. Its share in the group fell substantially during the late 1980s, with significant increases in the share of wood products & furniture (wood products). The industrial policy during the New Order regime had placed emphasis on the development of scale-intensive industries. However, the contribution of these industries to the total value added of the economy increased only marginally between 1975 and 1980 from 2.1% to 3.6%, but registered a faster increase after the liberalization of the economy 5.6% in 1990 and 8.2% in 2008. In this group, while textiles, paper & printing (paper) and iron & steel were responsible for most of the early growth, motor vehicles made important contributions during the 1990s. During the latter period, the labor-intensive and science-based manufacturing groups have also become important contributors to the total value added of the economy. In these industry-groups, the main contributors to value added have been garments & leather and Radio, TV & Communication equipment (consumer electrical & electronics), respectively. This rapid increase in the share of manufacturing in the total value added of the economy is dwarfed only by its performance in exports, where it registered a

more than five-fold increase in its share from 9.4% in 1975 to 55.1% in 2008. The manufacturing export boom began in the 1980s, after facing a decline during the 1975-1980 periods. The early course in manufacturing exports in the 1980s stemmed mainly from the resource- and labor- intensive industries such as wood products and garments & leather, respectively, and, to a smaller extent, from scale-intensive industries like textiles. During the 1990s, while the export-share of these industries continued to remain high, consumer electrical & electronics and non-electrical machinery showed rapid increases in their shares, especially during the latter half of the 1990s. A major reason for the course in manufacturing exports has been the export-oriented investment from the four Asian NICs—South Korea, Taiwan, Hong Kong and Singapore—and Japan. Japan had been the single largest foreign investor during the inward-oriented phase of industrialization with most of the investment directed to the textile and garment industries. Part of this resulted from a relocation of industries from the NICs in the flying geese pattern and the strategy of the international buyers to separate production locations. In textiles and garments, unfulfilled market quotas under the Multi Fibre Agreement (MFA) have been a major reason for foreign investment and export growth.

While market-oriented reforms have been implemented since the early 1980s, there are still a number of industries in Indonesia which are highly protected. These high protections have served to confer monopoly rights to business conglomerates often owned by ethnic Chinese businessmen or the President's children. Thus Indonesia has made some important steps towards a market-oriented economy based on the exports of labor-intensive manufactured goods; there are a number of features of the Indonesian economy which cause concern. The following Table shows the structural change of GDP in Indonesia during the period 1975 to 2010.

Table (3.28) Structural Change of GDP in Indonesia

(% of GDP)	1975	1980	1985	1990	1995	2000	2005	2010
Agriculture	51	43.6	40.8	23.4	25.3	15.6	14.5	13.7
Industry	13	18.7	21.2	35.1	32.3	45.9	44.1	42.1
Services	36	37.7	38	41.5	42.4	38.5	41.4	44.2

Source: ADB (Key Indicators of Developing Asian and Pacific Countries), Tan, G., ASEAN Economic Development and Cooperation.

Since Indonesia is an important producer of a wide range of crops including rice, rubber, palm oil, copra, coffee, tea, cocoa, sugar and tobacco, until it was overtaken by manufacturing in 1991, agriculture was the largest sector of the Indonesian economy, and it accounted for 51% of GDP in 1975, and only contributed to GDP by 13.7% in 2010 whereas industrial sector accounted for only 13% in GDP in 1975 and this figure has increased sharply since the year 2000. Manufacturing has become the most promising sector of the economy. Manufacturing has been the fastest growing export sector, and its share of overall exports has risen rapidly.

3.2.5 The Philippines

The prime motivations behind the Philippines's industrialization drive are the desire to diversify the economy from an over-reliance on primary exports, to promote faster economic growth and to create more employment. Traditionally, manufacturing in the Philippines was concentrated in the processing of raw materials for exports such as cigars and sugar. As a result of the preoccupation with import substitution, the overall industrial policy had practically ignored export promotion. Thus two decades of industrialization efforts via the import-dependent import-substitution in the Philippines only resulted in a badly distorted industrial structure. In 1967, the Board of Investment (BOI) was set up to encourage foreign investment. This was complemented by the passing of the Export Incentive Act in 1970. By 1982, the highest tariff rates had been reduced from 70%-100% to 50%, and the average rate of effective tariff protection for manufactured goods fell from 43% to 28%. In consumer goods, the decline in the average rate of effective tariff protection was even greater, from 77% to 39%. However, political instability, high crime rates in the major cities, chronic power shortages, poor communications and transport systems, severe balance of payments difficulties and high inflation rates have all combined to prevent the Philippines economy from enjoying the large inflows of foreign investment and the high rates of economic growth that the other ASEAN 5 countries have experienced since the mid-1980s. The following Table shows the structure of manufacturing in the Philippines from 1975 to 2010. Table indicates that the share of manufactures export to total export has been steadily increased from 1975, and reached a peak of 92% in year 2000. Manufacturing value added also has increased from US\$ 8.34 billion in 1975 to US\$ 42.8 billion in 2010. Food processing, beverages, and tobacco dominate the sector, with 33% of value added in 1988 and 22% in 2010. The share of labor-

intensive industries did not rise in spite of liberalizing reforms in the 1980's. Almost all of the incremental expansion in the output share of labor-intensive industries since the 1980's is accounted for by electronics, which has been performing well.

Table (3.29) Structure of Manufacturing in the Philippines

	1975	1990	2000	2010
Manufacturing value added (\$ billions)	8.34	11.0	19.83	42.80
Food, beverages, and tobacco (% of total)	33	31	29	22
Textiles and clothing (% of total)	21	19	7	5
Machinery and transport equipment (% of total)	17	22	27	33
Chemicals (% of total)	10	4	9	6
Other Manufacturing (% of total)	19	24	28	33
Manufactures exports (% of merchandise exports)	21	38	92	86
Manufacturing, value added (annual % growth)	4	3	6	11

Source: World Development Indicators

Despite the notable performance of the Philippine products in the world market, a fundamental weakness in the export structure continued to persist until the 21st century. Approximately two-thirds of Philippine exports are concentrated to just three products, namely semiconductors, garments and electrical machinery and equipment.

The export structure of the Philippine manufacturing sector took a dramatic shift when it embarked on a progressive export promotion regime. With traditional export products like sugar, banana, coconut oil, and abaca dominating approximately 75-85% of total Philippine exports in the 1970s; it took a sizeable drop in export share to approximately 20% in the 1990s. The fall of the traditional exports in terms of export share coincided with the rapid rise of non-traditional export products like electronics, garments, handicrafts, and furniture and fixtures. The growth of the non-manufactured exports was definitely the most dynamic component of export growth since the 1980s. Table (3.30) presents the commodity composition of exports of the Philippines during 1975-2007.

Table (3.30) Commodity Composition of Exports in the Philippines

Items	1975	1980	1990	2000	2007
UPPP	87.6	55.0	39.8	21.3	12.5
PPP	7.5	11.2	10.8	18.7	23.8
SUBCON	0.2	23.0	37.2	43.1	44.2
DOM	4.6	10.5	11.6	16.9	19.5

Source: Hirata, A., "Promotion of Manufactured Exports in Developing Countries", the Institute of Developing Economics, XXVI-4, 2008.

In the above Table, commodity classification requires some explanation; UPPP stands for unprocessed primary products, which include farm, forestry, fishing, and mining products in crude form and PPP stands for processed primary products. The main component of this category is processed food but it also includes wood products and nonferrous metals. SUBCON represents international subcontracting exports and covers goods with exclusive specifications for foreign markets that are almost all exported, which consists of electric and electronic parts, clothing, footwear, precision instruments, and consignment basis commodities. DOM means exports of domestic market-oriented manufactures. Unlike SUBCON goods, DOM are basically the same for the domestic and the export market. As can be seen from the Table, the UPPP constituted a significant share of total exports in 1975, and it has sharply declined throughout the period whereas SUBCON has increased gradually. The following Table also shows the changing pattern of exports in the Philippines from 1980 to 2010.

Table (3.31) Pattern of Exports in the Philippines (US\$ million)

Commodity	1980	1990	1995	2000	2010
Food and live animals	1129	1075	1339	1283	1612
Beverage and tobacco	58	58	42	47	188
Crude material excl. fuel	868	551	531	425	566
Mineral fuel, etc.	33	181	263	442	706
Animal vegetable oil & fats	403	375	844	477	694
Chemicals	95	261	343	328	546
Basic manufacture	335	742	1116	1222	1505
Machines, transport equip	168	972	3869	14049	17016
Miscellaneous manuf. Goods	612	1375	2245	2656	2528
Unclassified goods	1320	2596	6855	17150	15892

Source: Asian Development Bank (Key Indicators for Asia and Pacific).

Although the liberalization reforms produced a more efficient manufacturing sector, the growth in manufacturing productivity has been unsatisfactory. The sector accounted for little more than 30% of GDP. It can be inferred that the country has a stronger comparative advantage in services production as compared to manufacturing.

Table (3.32) Structural Change of GDP in the Philippines

(% of GDP)	1975	1980	1985	1990	1995	2000	2005	2010
Agriculture	26	28.3	30.5	21.9	21.6	15.8	14.3	14.9
Industry	27	29.3	37.7	34.5	32.1	32.2	31.9	31.7
Services	47	42.4	31.8	43.6	46.3	52	53.8	53.4

Source: ADB (Key Indicators of Developing Asian and Pacific Countries), Tan, G., ASEAN Economic Development and Cooperation.

The above table describes that the share of agriculture in GDP accounts for 26% in 1975, and it gradually declined to 14.9% in 2010; on the other hand, the industry accounted for 27% in 1975 and it has become 31.7% in 2010.

Table (3.33) describes the results of the changes in industrialization strategy of the ASEAN 5 countries. The volume of manufactured exports grew at very high rates during the 1980-2010 periods. In Malaysia, manufactured exports (mainly electronic components and electrical appliances) grew at an annual average rate of 17.3% per annum between 1980 and 2010. In Thailand, machinery exports have

increased by 13.7% per annum. Nearly half of Singapore's manufactured exports are made up of machinery. This is a reflection of the gradual erosion in its comparative advantage in the manufacture of labor-intensive products.

Table (3.33) Industrial Performance in ASEAN 5, 2010

Item	Indonesia	Malaysia	The Philippines	Singapore	Thailand
Manufacturing Value-Added (US\$ billions)	175.4	62.1	42.8	43.63	113.47
Growth Rate (1980-2008)	6.2	7.7	1.6	6.8	7.9
% of GDP accounted for by industry	42.1	44.0	31.7	26.3	44.2
Manufactured exports (US\$ billions)	35.4	78.6	36.6	118.6	52.4
Growth Rate	14.7	17.3	28.0	12.1	13.7
% of exports accounted for by manufactured exports	37.0	80.0	86.0	73.0	75.0

Source: World Development Indicators.

Table (3.34) illustrates the changes in the structure of exports of ASEAN 5 countries from food and agricultural raw materials to machinery and other manufactured goods. The marked increase in the share of machinery and other manufactured goods in total exports in all ASEAN 5 countries is a reflection of the export-oriented industrialization policies they pursued in the 1980s. For all the ASEAN 5 countries except Singapore, manufactured exports are made up primarily of textiles, clothing and footwear and electronic components.

Table (3.34) Structure of Exports in ASEAN 5 (% Total Exports)

Country	Indonesia		Malaysia		The Philippines		Singapore		Thailand	
Year	1975	2010	1975	2010	1975	2010	1975	2010	1975	2010
Food	5.7	6.1	3.7	1.7	24.8	3.8	5.2	2.1	45.5	14.4
Crude materials	14.9	11.4	32.3	4.1	25.0	2.3	11.3	1.1	14.3	3.3
Fuel	74.3	28.3	24.5	9.6	0.7	1.9	28.9	7.4	0.1	3.9
Machinery and transport equipment	0.5	17.5	11.5	62.6	2.2	76.0	26.8	68.1	5.7	43.4
Other manufactured goods	3.1	25.9	15.7	11.4	19.7	13.3	14.5	11.5	28.5	21.3
Other	1.5	10.8	12.3	10.6	27.6	2.7	13.3	9.8	5.9	14.0

Source: World Commodity Trade Statistics.

The changes in the structure of exports reflect the changes in industrial structure of the ASEAN 5 countries. Since the mid 1960s, Singapore has moved from labor-intensive industries to capital and skill-intensive industries, as well as to services, as its wage rates began to rise. Indonesia and Malaysia have moved away from their heavy dependence on oil and gas production towards a more diversified manufacturing base. Since 1980s, both these countries have begun to develop labor-intensive manufactured exports. By then, increasing diversification has led to the development of labor-intensive, export-oriented manufacturing industries on one hand, and capital-intensive, higher-technology industries on the other. Since 2000, Indonesia and Malaysia have been beginning to develop more sophisticated, higher-technology industries. Thailand has also been through a process of diversifying its export base and expanding its labor-intensive industries. In Singapore, industrial development has always been based on exploiting its comparative advantage in terms of labor supplies and its strategically important economic location.

CHAPTER IV

Overview on Growth and Export Pattern of CLMV Countries

4.1 General Backgrounds of CLMV Countries

Since the second half of the 1980s, the new member countries have made significant initial progress in undertaking policy reforms toward market-oriented economies and unilaterally liberalized their trade and investment policies. Vietnam embarked on comprehensive economic reform (*doi moi*) in 1986 and the Lao PDR followed suit introducing the New Economic Mechanism (NEM). Myanmar began to reform its economic policies and started to take steps during the late 1980s to open its economy and increase the role of markets. The end of the Cold War led to a UN sponsored election in 1993 in Cambodia and it implemented a bold plan for reconstruction and rehabilitation. The accession to ASEAN by the new member countries can be seen as a logical step in accelerating their integration into the Southeast Asian and the global economy. With ASEAN accession, the member countries are required to participate fully in the ASEAN Free Trade Area (AFTA). Binding liberalization schedules with AFTA can be a useful tool for maintaining an outward-looking strategy given the temptation to slow reform efforts in the face of economic shocks. The export structure of the new members appears to be broadly complementary with higher income ASEAN members such as Singapore and Malaysia. However, the new members are likely to compete with ASEAN countries in certain commodities. For instance, Indonesia, Malaysia, Cambodia and Thailand are the leading exporters of rubber and the Lao PDR, Malaysia and Myanmar are major exporters in wood. Labor-intensive manufacturing commodities such as clothing remain important export categories for low-middle income ASEAN countries.

Between 1979 and 1989, industrial development in Cambodia was under strict central control under a system of central planning. In 1989, financial autonomy was granted to state-owned firms, and central planning was replaced by a system of indicative planning. State-owned firms were expected to become financially independent, and allowed to retain all their profits. By 1992, some 40% of all state-owned firms had been privatized. Most of Cambodia's industry is light industry, and the industrial sector accounts for about 20% of GDP. The most important sector in

Cambodian manufacturing industry is the clothing industry, whose output is exported, mainly to the EU.

The Lao PDR is a small, sparsely populated, landlocked country with a rich but vulnerable natural resource base. A large majority of the population relies on subsistence agriculture. The Lao PDR was proclaimed in 1975 after 20 years of political struggle and the Indochina conflict of 1962-1975. The government of Lao PDR has built the basic infrastructure, public services and institutions. Starting in 1979, a number of economic reforms in Lao PDR have resulted in a gradual decentralization of the industrial sector, and a greater degree of autonomy for its state-owned enterprises. In 1986, the government embarked on reforms in a shift from a centrally planned to a market-based economy, with the introduction of the New Economic Mechanism. Greater market orientation and closer integration with regional and global markets has contributed to robust growth. In 1988, most state-owned firms were operating as autonomous state enterprises, without subsidies from the state. Although further decentralization took place, this did not improve the performance of state-owned firms significantly. In 1989, a privatization program was initiated in Lao PDR, accelerating in 1991 and 1995. The industrial sector comprises food-processing industries, timber-related industries, as well as labor-intensive manufacturing industries. The industrial sector has grown rapidly since economic reforms were implemented in 1986. Most of Laos's industries are labor-intensive; with clothing as one of the fastest growing industries in recent years. The Lao PDR has significant potential for the development of hydropower, mining, eco- and cultural tourism, commercial agriculture. A growing share of the labor force is literate and numerate, private sector activity is rapidly increasing are the requirements of the preconditions for structural change and acceleration of economic growth.

The economy of Myanmar was seriously damaged by the Second World War and final years of colonial rule by Japan and Great Britain. The Second World War and the final years of colonial domination from 1826 to 1947 had a negative impact on economic indicators such as GDP, per capita GDP, and agricultural outputs. The history of Myanmar can be divided into four phases of economic development since gaining independence in 1948: the first phase covers the period that began with independence in 1948 and lasted until 1962; the second phase covers the period of socialist rule that lasted to 1988; and the third phase followed by a period of market oriented economy SLORC and SPDC regime, and the New Government took power

in 2010 election. The years following independence were marked, from an economic perspective, by a mixture of nationalism, socialism, and a market economic system. It may be said that as long as a democratic government was in power, the mixed economy functioned relatively well in Myanmar; however, the ruling AFPFL party split into two fractions, and ethnic minorities began to demand more autonomy. This finally resulted in the military takeover of the government in 1962. The Revolutionary Council dissolved not only the democratic form of government but also ended the phase of a growing market-based economy, replacing them with "The Burmese Way to Socialism". A major feature of this period was the policy of self-reliance, or the inward looking policy. Beginning with foreign companies including joint ventures, banks, businesses, industries, and all enterprises in foreign trade, domestic wholesale and even retail trade, as well as hospitals and schools were nationalized. The State-owned Economic Enterprises (SEEs) were encouraged to be more commercially engaged in order to improve their efficiency and productivity. There was a temporary improvement in the economic situation; however, this was not sustainable. There was another attempt to halt the economic decline in the mid 1980s. In 1988, the military took over power, and the State Law and Order Restoration Council SLORC made a series of bold decisions to open and liberalize the economy. The SLORC continued with the economic reforms in Myanmar, and adopted the market oriented economic policy. Myanmar has adopted the market oriented policy since 1988, with a series of reforms and a significant change in terms of overall policy framework in Myanmar.

Since one of the key indicators of economic performance is the rate of growth of GDP, Table (4.1) shows the growth rate of GDP in Myanmar from 1988 to 2010. A New Constitution was adopted in May 2008 and elections were held in November 2010 with bi-elections in April 2012. Parliament and governments have been formed at the national and regional/state levels. The new Constitution is more specific in providing for basic principles of democracy, rule of law and human rights, and separation of power between the executive, the legislature and the judiciary. The President has set out a reform agenda focusing on good governance and ensuring fundamental rights. A number of reforms have already been undertaken in the financial sector, in relaxing media censorship, release of detainees and reaching cease-fire agreements number of conflict areas. These reforms are seen as positive steps which have led to increasing engagement with the international community.

The government has expressed its interest to work with the international community to help advance the reform process.

Table (4.1) Growth Rate of GDP in Myanmar

Growth Rates (%)	1988	1990	1995	2000	2005	2010
GDP	6.5	2.8	6.9	13.7	13.6	10.4
Agriculture	n.a	1.8	4.8	11	12.1	4.7
Industry	1.7	5.5	4.8	21.3	19.9	18.6
Services	n.a	3.2	7.3	13.4	13.1	11.6

Source: ADB (Key Indicators of Developing Asian and Pacific Countries)

Since the government initiated a series of reform measure in various sectors, the growth rate of GDP has increased sharply during the period 1980 to 2010. These significant growths resulted from private sector development following the adoption of market oriented policy, the growth in exports, growth in the tourist industry, and strong growth in agricultural sector due to the introduction of the summer paddy program in rice production, introduction of foreign direct investment.

Vietnam can be divided into three geographical regions: the South; the Central; and the North. The Mekong delta in the South and the Red river delta in the North are separated by a thin central strip, and this clear distinction in geographical regions is also reflected in economic development. When Vietnam was colonized by France; the economy deliberately developed the regions differently. Vietnam economy was uniformly agrarian, subsistence and village-oriented. The Geneva Accords (1954) separated the country in two with a promise of democratic election to reunite the country. However, rather than peaceful reunification, partition was led to the Vietnam War, a civil war and a major part of the cold war. During this time, China and Soviet Union supported the North while the United States supported the South. After millions of Vietnamese deaths, the American was withdrawal from Vietnam in March 1973. The war ended in April 1975 and the reunified Vietnam suffered further internal repression and was isolated internally. The period after reunification from 1975 to 1985 was marked by economic stagnation; the Vietnamese made little progress in raising output and living standards beyond the levels of the 1960s. Development was hampered by the centrally planned economic model. The economy

also was seriously disrupted by Vietnam's occupation of Cambodia, which led most non-communist industrial countries to stop aid to Vietnam and diverted Vietnamese resources. Distortions in the Vietnamese economy resulted in the onset of an economic crisis by the mid-1980s with inflation running at 700% in 1986; Vietnam recognized the pressing need to reorient its economic policy. New developments in political, social, and economic spheres have been taking place in Vietnam since late 1980s. *Doi moi* (renovation) sets a new stage in the economic development of the country since its aim is to transform the failed command economy to a market-oriented one. During the *Doi moi* period, Vietnam promulgated its first liberal foreign investment law and introduced some structural changes. Major reforms undertaken during the decade 1986-96 included: de-collectivization of agriculture; land reform that created greater security of land tenure; a reorientation of investment away from heavy industry to agriculture; light industry and exports, price reforms; liberalization of foreign trade and foreign investment; interest rate liberalization; exchange rate unification; and progress towards establishment of a legal framework for the encouragement of private sector led growth. Vietnam economic reform process has been accompanied by numerous legal-political-social reforms. Vietnam became one of the fastest growing economies in the world averaging around 8% annual GDP growths from 1990-1997. Inflation rate, which stood at an annual rate of over 300% in 1987, fell steeply and in 1997, inflation was less than 4%. There was an increase in investment and domestic saving during that period. Agriculture production doubled, transforming Vietnam from a net food importer to the world's second largest exporter of rice. Economic reforms also resulted in dramatic increase in foreign trade and foreign direct investment inflows. The rapidity of Vietnam's recent industrial growth has been due to large inflows of foreign investment. Much of Vietnam rapid economic growth has been in manufacturing industries, although agriculture and mining have also made significant contributions.

4.2 Structural Transformation and Composition of Export in CLMV Countries

In the late 1980s, international trade and investment links from Vietnam, Lao PDR, Cambodia, and Myanmar with the rest of the world have grown very rapidly, making these countries open their economies by world standards. At the same time, financial linkages in the form of joint ventures and aid flows have also been

significant. Continued external integration in the form of binding international trade and investment agreements can help promote internal liberalization and the development of domestic private sectors through opening protected sectors to international competition. These have tended to be in the service industries dominated by State Owned Enterprises (SOEs). Opening these sectors to international competition has the two effects: lowering the costs of doing business for both domestic and foreign investors, and stepping up the investment of SOEs. By 1975, Vietnam, Myanmar and Lao PDR adopted central planning. However, with the impending collapse of the former USSR towards the latter part of the 1980s and the withdrawal of Vietnamese troops from Cambodia in 1989, all CLMV countries embarked on market-oriented reforms, with the implementation of Market-oriented economic system in Myanmar in 1988, *Doi Moi* in Vietnam in 1989, the *NEM* (New Economic Mechanism) in Lao PDR in 1990, and serious reforms and resumption of relations with international financial institutions in Cambodia in 1993. These reforms reflect the rapid changes in GDP growth rate during that period.

Table (4.2) GDP Growth Rates in CLMV Countries

Year	1988	1990	1995	2000	2005	2008	2010
Cambodia	n.a	7.6	6.5	8.4	13.6	10.1	5.9
Lao P.D.R	4.3	6.7	7.1	5.8	7.3	7.4	7.7
Myanmar	6.5	3.0	7.0	13.7	13.6	5.3	10.4
Vietnam	3.9	5.1	9.5	6.8	8.4	7.8	6.8

Source: Asian Statistical Year Book, Various Issues; World Development Indicators 2010, unstat.org.

It can be seen from the above Table, all CLMV countries have attained rapid growth since the early 1990s. The growth rate of Vietnam reached a peak of 9.5% in 1995, and 6.8% in 2010. In Cambodia, the growth rate steadily increased from about 6% to 13% between 1995 and 2010 and reached a peak of 13.6% in 2005. Myanmar GDP growth rate reached a peak of 13.7% in 2000. Lao's growth rate did not significantly change during 1990-2010.

The following Table shows the export and import growth rates and shares of GDP in CLMV countries.

Table (4.3) Export and Import Growth Rates and Shares in GDP in CLMV**Countries**

	Export growth rate					Export/GDP					Import/GDP				
	1990	1995	1998	2000	2010	1990	1995	1998	2000	2010	1990	1995	1998	2000	2010
Cambodia	74.0	37.8	8.8	38.7	17	22.6	31.0	26.3	50.0	66.0	34.2	42.6	38.0	53.8	66
Lao P.D.R	n.a	4.0	6.0	3.0	23.0	11.0	23.0	36.0	30.0	28.0	25.0	37.0	48.0	44.0	33.0
Myanmar	4.1	-6.7	n.a	42.3	16	5.9	7.6	n.a	12.7	4.0	10.9	15.4	n.a	15.1	2.0
Vietnam	13.0	34.4	1.9	24.0	16.0	36.0	26.3	34.5	45.6	74.0	45.0	39.3	42.4	57.0	88.0

Source: World Development Indicators 2010.

Table indicates that the impact of the initial liberalization and reforms of *Doi Moi* resulted in Vietnam in export growth of about 13 % in 1990 and around 34% prior to the Asian crisis. Rapid growth in rice production was responsible for the healthy export performance in the first half of the 1990s, when Vietnam turned from a net rice importer into the world's second largest rice exporter. The downturn in export growth in 1998 is probably attributable to an over-valued exchange rate and to the government's policy response of restricting imports as much as to the crisis in the region. The slowdown in 2000 and the downturn in 2010 are attributed mainly to falling prices of Vietnam's commodity exports (rice, coffee and petroleum) as well as the general slowdown in the world economy. Furthermore, as the Table shows, the ratios of exports and imports to GDP approach 70% to 88% in 2010, indicating that Vietnam's economy is indeed "open" to international trade by regional and world standards.

The trade regime in Lao PDR is much more restrictive than that of Vietnam's. Import and export licensing systems are still in place, and SOEs continue to dominate the export of timber and furniture. The restrictive regime, together with a narrow export base, accounts for the single-digit export growth rates for most of the years since 1995. The Table also indicates that exports and imports as percentages of GDP average about 30%. Unlike Vietnam and Lao PDR, Cambodia had relatively early access to the US market which together with access to the EU on the GSP basis provided ready markets for Cambodia's garment exports. Trade grew at a rapid pace prior to the Asian financial crisis, and export and import as proportion of GDP is well

over 50%. In the longer term, Cambodia's heavy dependence on garments export and its relative lack of competitive advantage in this respect pose serious challenges in a quota-free world as a result of the WTO Agreement on Clothing and Textiles. The ratio of export and import to GDP in Myanmar were negligible compare with other CLV countries.

For the first five years since *Doi Moi* (1989 to 1994), Vietnam's entry into international trade and investment had been done on a unilateral basis. The government wanted to boost economic growth and development through opening its economy to world markets and foreign direct investment and aid flows. However, towards the end of the 1990s, and increasingly in the new millennium, Vietnam's international integration is being carried out in the form of binding international agreements. Vietnam has been a member of AFTA since 1995 and of APEC since 1998. A trade and investment agreement has been implemented with the European Union, and the bilateral trade agreement with the US was ratified in December 2001, and is being implemented. The path is also cleared for Vietnam to join the WTO in 2007.

Myanmar has lived with a centrally-planned economy for more than a quarter of a century until its adoption of the market-oriented economic system in September 1988. Since then, the state started restructuring its State Economic Enterprises (SEEs) under different Ministries, lowering trade barriers and simplifying export and import procedures for active participation of private investors. Likewise, the foreign investors are being invited for the many projects needing heavy investment and high technology. Myanmar is not only founder member of General Agreement in Tariffs and Trade (GATT), but also the member of the first group of signatories for WTO. During the Uruguay Round, Myanmar had given the commitments for the market access in tourism under the Service Sector. After Myanmar became, a full-fledged member of ASEAN on 23 July 1997, Myanmar has played an active part in ASEAN's regional and international affairs including foreign trade. After Myanmar's subsequent entry into BIMST-EC, an economic group of South-East Asian countries and South Asian countries on 22 December 1997, Myanmar is striving hard to achieve economic co-operations among member countries. Being one of the first countries in GATT and WTO member country, Myanmar has been carrying out its economic activities in accordance with the norms and the system of WTO. Similarly, Lao PDR and Cambodia both committed themselves to trade liberalization under AFTA.

Cambodia joined the WTO in 2004 and Lao PDR became a member of WTO in January 2013. These binding international agreements set a time frame within which the three countries have to open up sectors of their economies to international competition, thus propelling the momentum of reforms as well as posing risks for non-compliance.

Table (4.4) CLMV Tariff Protection

Country	Average tariffs				Average tariff rates for Manufactured Products			
	1995	2000	2005	2010	1995	2000	2005	2010
Cambodia	n.a	17.0	14.0	12.0	n.a	17.0	14.0	12.0
Lao PDR	n.a	9.0	7.0	6.0	n.a	9.0	6.0	5.0
Myanmar	n.a	5.0	5.0	4.0	n.a	4.0	4.0	4.0
Vietnam	15.0	16.0	13.0	8.0	14.0	15.0	12.0	8.0

Source: World Development Indicators.

As the above Table shows, the average tariffs in 2000 were highest in the Cambodia and Vietnam. Moreover, the average tariff rates have been falling in recent years in CLMV countries.

4.2.1 Cambodia

Since the formation of the Royal Government in 1993, the reform of Cambodia's trade regime from a centrally controlled system into a relatively open system has been impressive. Key steps in this transition have included the unification of exchange rates, tariff reform, the abolition of many nontariff barriers, and the implementation of a liberal Law on Investment. In 1997, Cambodia experienced two crises: the political difficulties of July 1997 which resulted in suspension of Cambodia's ASEAN accession process, and the regional financial crisis. Following the formation of a government after the 1998 election, Cambodia's accession to ASEAN in April 1999 was widely viewed as recognition of political stability by ASEAN, and as a signal of Cambodia's commitment towards further trade and investment liberalization. Further integration with the Southeast Asian and global economies seems likely to be a key to sustainable development in Cambodia. Despite the political events in July 1997 and the Asian financial crisis, Cambodia managed to achieve a 33 % increase in its exports in 1997. This remarkable development owed

greatly to the United States granting Most Favored Nation (MFN) status to Cambodia on September 25, 1996. Since then, Cambodia's merchandise exports to the United States have increased rapidly, from US\$ 4.2 million in 1996, to US\$102.9 million in 1997 and US\$134.3 million in 1998. While the United States represented only 4% in Cambodia's total exports in 1996, its share increased to 21 % in 1998²⁶. The substantial increase in Cambodia's exports to the United States after receiving MFN status is attributed to the large difference between the MFN and non-MFN tariff rates in the United States. The general tariff schedule that the United States applies to the few countries not receiving the MFN tariff involves generally much higher tariff rates. These rates are for the most part the original statutory rates that were applied to all U.S. imports under the Tariff Act of 1930. After the trade liberalization of the various GATT Rounds beginning in 1947, the United States retained the general rates primarily against Communist countries. Table (4.5) compares estimates of the MFN and non-MFN tariff rates. The simple-average MFN duty rate of 1997 U.S. Tariff Schedule is 4.9 % as against 35 % for the non-MFN rate.

Cambodia attained rapid growth performance in the East Asian region for the past decade. The success of this openness can be seen in increasing trade flows and, in particular, in achievements in the garment sector which is currently worth over US\$ 1 billion in annual export revenue. However, Cambodia's exports are largely dominated by one sector and, with this sector having a significant component of imported inputs, there is much need, and great potential, to diversify the export base. The garment industry accounted for around 17% of GDP in 2008. Despite some diversification in exports and markets over time, garments continue to dominate. Even though many of the natural resources have already been largely exploited (timber, fishery), some even exhausted (certain gems), the potential from other sectors, especially agriculture and tourism, can be enhanced. Table (4.6) describes that the slowdown is apparent in the growth of merchandise exports due to the reflection of a steep decline in garment exports. Therefore, increasing efforts are needed to diversify Cambodia's export base. Priorities identified in the National Export Strategy include fisheries and organic agriculture, in addition to the garment, silk and tourism industries. Other priority

²⁶ Fukase, E. and Martin, W.(2001), "Free Trade Area Membership as a Stepping Stone to Development" World Bank Discussion Paper, p 338.

products identified on the basis of market accessibility and potential for human development include rice, cassava, rubber, cashew nuts, soybean, corn and beer, in addition to fruits and vegetables and wood products.

Table (4.5) US MFN vs Non-MFN Rates 1997

HS	Description	MFN Rates %	Non-MFN Rates%
1. 1-5	Animal and animal products	4.2	11.8
2. 6-14	Vegetable products	3.8	15.9
3. 15	Animal and vegetable oil	4.7	14.3
4. 16-24	Processed foods, drink & tobacco	9.6	37.3
5. 25-27	Oil and mineral products	0.5	7.0
6. 28-38	Chemical products	4.0	27.6
7. 39-40	Plastic & rubber products	4.0	36.2
8. 41-43	Skin & furs and their products	3.6	24.8
9. 44-46	Wood	1.9	22.0
10 47-49	Wood products & paper	1.3	22.8
11.1 50-63	Textiles	10.0	51.4
11.2 61-63	Apparel	12.6	69.2
12. 64-67	Shoes, hats, umbrellas, etc	9.8	44.6
13. 68-70	Stone, ceramic & glass products	4.5	42.6
14. 71	Jewelry & precious metal products	3.0	27.5
15. 72-83	Base metals and their products	3.5	29.8
16. 84-85	Electrical and Mechanical machines	2.5	33.6
17. 86-89	Transport equipment	3.8	25.2
18. 90-92	Photographic, precision instruments	4.1	50.2
19. 93	Arms & munitions	2.6	45.8
20. 94-96	Furniture & Assorted products	3.7	49.4
21. 97-98	Object d Art	0.0	0.0
	Total	4.9	35.0

Source: Fukase, E. and Martin, W. "Free Trade Area Membership as a Stepping Stone to Development" World Bank Discussion Paper No. 421, 2001.

Table (4.6) Export Growth in Cambodia

	1980- 85	1985- 1990	1990- 1995	1995- 2000	2000- 2005	2005- 2008
Growth of merchandise exports	5.1	27.4	8.3	26.0	4.2	2.6
Growth of services exports	19.2	14.5	-10.8	38.8	27.3	-4.8
Share of export to GDP	52.0	60.5	59.7	72.8	74.9	82.3
Per capita export (US\$)	156.5	192.3	197.9	260.2	289.9	395.3

Source: Cambodia: Case Study for the MDG Gap Task Force Report, Overseas Development Institute, London SE 17 JD, UK.

Table (4.7) Major Exports for Cambodia, 2008

HS chapter	Description	Exports to World (US\$ mn)	Share of Total Exports
	Total in HS Chapters 1-97	4354	100.0
61	Articles of apparel and clothing accessories, knitted or crocheted	2829	65.0
49	Printed books, newspapers, pictures and other products of the printing industry; manuscripts, typescripts and plans	903	20.7
62	Articles of apparel and clothing accessories, not knitted or crocheted	179	4.1
25	Salt; sulphur; earths and stone; plastering materials, lime and cement	118	2.7
64	Footwear, gaiters and like; parts of such articles	88	2.0
87	Vehicles other than railway or tramway rolling-stock, and parts and accessories thereof	64	1.5

Source: Cambodia: Case Study for the MDG Gap Task Force Report, Overseas Development Institute, London SE 17 JD, UK.

The prevalence of multiple currencies in circulation has important implications for assessing competitiveness and the trade balance. The high dollarization of the economy means that Cambodia's export competitiveness depends

on movements in the US dollar on international markets. The impact of the domestic political confusion and the regional crisis of 1997 were to a large extent cushioned by the effects of dollarization, causing a less than expected negative impact to the economy. In parts of the country bordering Thailand and Vietnam, the values of the Thai baht and Vietnamese dong are important.

In Cambodia, two features stand out in the process of reform since the 1980s. First, a phase that had been largely achieved by 1994 comprised the process of dismantling the central planning system. All quantitative restrictions on trade had been removed, although a number of import tariffs were introduced in their place. Second, during the late 1990s there was a more deliberate phase of taking positive steps towards creating a highly liberal trade regime. Accession to ASEAN in 1999 meant that Cambodia joined the Asian Free Trade Area (AFTA) and committed itself to progressive tariff reductions over the following decade. Appendix 7 describes the structure of Cambodia's CEPT Lists.

As a least-developed country (LDC), Cambodia exports to the EU market under the Everything but Arms (EBA) initiative, which means a simple average tariff of zero is applicable on all goods except arms. In the US market, a simple average tariff rate of 1.9% on 96% of tariff lines is applicable, which rise to 2.3% on agricultural goods and 8.5% for textiles and clothing. The following Table presents the flow of trade between 1988 and 2010. The lifting of quantitative restrictions on trade at the end of 1994 had a positive impact on the trade flow.

Table (4.8) Merchandise Trade of Exports in Cambodia (% Total)

Item	1988	1990	1995	2000	2005	2010
Domestic exports	24.9	53.5	31.4	91.6	92.8	93.7
Log	20.1	29.1	13.1	3.4	2.5	1.2
Sawn timber	19.7	16.6	8.6	3.8	2.0	0.9
Fish products	0.3	0.5	0.2	3.1	2.8	3.4
Rubber	4.1	5.2	4.8	4.3	3.4	3.5
GSP exports	n.a	0.4	3.2	75.5	74.9	79.4
Agricultural products	1.0	1.0	1.2	2.6	5.3	2.9
Re-exports	29.9	46.5	68.6	8.4	7.2	6.3
Total exports	100.0	100.0	100.0	100.0	100.0	100.0

Source: Beresford, et.al "The Macroeconomics of Poverty Reduction in Cambodia, March, 2004. International Trade Statistics.

Table (4.9) Merchandise Trade in Cambodia (US\$ Million)

Item	1990	1992	1994	1996	1998	2000	2002	2004	2006	2008
Domestic exports	262	268.2	295.2	534.3	693.7	883.9	1277.9	1415.5	1655.9	n.a
Log	142.3	111.6	525	128.1	90.8	65	46.8	37.6	21.7	n.a
Sawn timber	81.3	73.1	95.9	95.6	91.1	73.4	53.7	30.4	15.9	n.a
Fish products	2.4	1.9	3.1	2.9	37.6	42.0	43.8	42.3	60.2	72
Rubber	25.6	41.2	31.9	22.8	41.3	48.8	60.0	52.4	62.7	133
GSP exports	2	27.5	101.8	278.5	392.4	564.3	1012.0	1141.5	1403.4	1210
Agricultural products	5	10	7.6	2.5	24.3	71.9	36.7	81.2	50.9	94
Re-exports	227.7	586.1	348.4	327.3	121.8	132.1	117.8	109.2	110.9	129
Total exports	489.8	854.3	643.6	861.6	815.5	1016.0	1395.6	1524.7	1766.8	n.a

Source: Beresford., et.al., "The Macroeconomics of Poverty Reduction in Cambodia, March, 2004; Cambodia: Case Study for the MDG Gap Task Force Report, Overseas Development Institute, London SE 17 JD, UK.

The above Table shows the merchandise trade in Cambodia from 1990 to 2008. Table shows that the structure of exports has shifted markedly during the period of 1990 and 2008. There has been a large rise in the share of domestic exports, as opposed to re-exports. The high proportion of re-exports in the past largely reflected Cambodia's role in the illegal trade between Thailand and Vietnam, but this has declined, probably as a result of Vietnam's own increasing openness and expanding domestic output of the principal goods involved (such as beer, cigarettes and motorbikes). In the early 1990s timber represented a significant share of overall exports, over 40%, with the next largest share being rubber at only 5%. Since the mid-1990s, there has been significant growth in the garment sector, reflected in the GSP (Generalized System of Preferences) category in the Table. Indeed, the export share of garments more than doubled in the space of just three years after 1997, while the value of textile and garment exports almost doubled in just one year, 1999-2000. Since then the total has been over US\$ 1 billion. In 1999 GSP exports comprised largely apparel 74% and a small component 5% of footwear. The main markets for apparel were the US 76% and the EU 23%, while the main buyers of footwear were the EU 60% and Japan 35%. Between 1999 and 2001, garment exports to the US increased by 50%, while exports to the EU tripled over the same period. The decline

in wood-based exports is a result of legal constraints imposed by the government to address illegal logging activities.

Most of Cambodia's industrial establishments are in the form of small and medium – sized enterprises (SMEs). Industrial activities concentrated in the processing of agricultural commodities, mostly rice, fish, wood, and rubber. Cambodia has experienced rapid manufacturing growth with a double digit growth in some year between 2000 and 2008. The following Table illustrates the growth of manufacturing sector in Cambodia.

Table (4.10) Growth of Manufacturing Sector in Cambodia

	1988	1990	2000	2010
Manufacturing value added (\$ billions)	0.21	0.31	0.59	1.65
Manufacturing, value added (annual % growth)	9	11	30	30
Manufacturing, value added (% of GDP)	n.a	9	17	16
Manufactures exports (% of merchandise exports)	n.a	n.a	96	96

Source: World Development Indicators.

In Cambodia, most of the growth since 1999 has been accounted for by industry, in fact by the extremely rapid expansion of the export-oriented garment industry. Aside from the rapid expansion of apparel sector, construction, transport, and communication and tourism-related sector of hotels and restaurants has boosted rapidly. These four sectors have increased their share of GDP during the study period. A key strategy of the industrial policy is to expand the economic interaction between agriculture and industry by promoting agro-industry into an essential core of Cambodia industry in order to improve the industrial structure so that it will not rely much on textile. Manufacturing in Cambodia in the past was carried out mostly on a small scale, where food processing, brick making, and timber processing were the main activities. Following the implementation of favorable policies for trade development foreign direct investment, the Cambodia' industry has grown rapidly. Cambodia went through a structural change since an adaption of market-oriented economy.

Table (4.11) Structural Change of GDP in Cambodia

(% of GDP)	1988	1990	1995	2000	2005	2010
Agriculture	54.3	56.5	49.6	37.9	32.4	31.9
Industry	21.9	11.3	14.8	23	26.4	26.8
Services	23.8	32.2	35.5	39.1	41.2	41.3

Source: ADB (Key Indicators of Developing Asian and Pacific Countries).

The above Table shows the changing structure of Cambodia from 1988 to 2010. The agricultural sector accounts for GDP by 54.3% in 1988, and it has gradually decreased to 31.9% in 2010. The share of industrial sector in GDP has not significantly changed during the period under consideration while services accounts for GDP by 23.8% in 1988 and it has become nearly double in 2010.

4.2.2 Lao PDR

The experiences of many developed and developing countries have shown that trade can be an engine of growth that leads to poverty reduction, which is a target of the development process in many countries. In this regard, many developing countries have expressed their intention to pursue trade liberalization by increasing their integration into the world economy including Lao PDR. Since 1986, the Lao PDR has opened its doors to participation in the global system by introducing the New Economic Mechanism (NEM), thus switching from a command model of economic management to one that is market oriented. By taking into account the limited resources of the country, the Government of the Lao PDR has decided to gradually integrate its economy into the world economy. The goal was also set for the Lao PDR to lift out from its status as a least-developed country by 2020; therefore, the government has introduced a number of strategies and policies in order to develop the economy, alleviate poverty, and enhance industrialization of the country.

Trade liberalization has been one of the pillars of the economic reforms in Lao PDR; under the NEM, the state monopoly on trade in most goods has been eliminated, tariff rates have been lowered and quantitative restrictions and specific licensing requirements have been reduced. A further step in the country's economic reform after the adoption of NEM was to integrate and liberalize trade with the region. The experience in acceding to ASEAN as well as the ASEAN Free Trade Area (AFTA)

has led the Lao PDR to recognize that significant benefits are to be gained from membership of the World Trade Organization (WTO). The fundamental challenge of Lao PDR is to sustain its recent growth rates of 6-7 % and improve social and development outcomes. Participation in AFTA is a logical way to accelerate its transition to a more market-oriented economic system. Binding its liberalization schedule with AFTA may be a way to provide the policy credibility needed to promote further integration into the Southeast Asian and world economies. Lao PDR has been integrating gradually into the world economy since 1989. Trade reforms accelerated after the country joined ASEAN and AFTA in 1998 and started to implement the AFTA Common Effective Preferential Tariff (CEPT). Under AFTA Lao expects to reduce its tariff on imports from ASEAN countries to 0-20 % by 2005 and 0-5 % by 2008 on 95 percent of its tariff lines. Appendix 8 shows the structure of the Lao PDR's Phase in Lists.

Since the adoption of the New Economic Mechanism (NEM), the Lao PDR has liberalized substantially its trade and investment regime and strengthened its economic ties with neighboring countries. However, the Lao PDR's economic difficulties were exacerbated by the regional financial crisis which started in Thailand in 1997. Given the close links between the Lao PDR and Thailand, the devaluation of the Thai baht put considerable downward pressure on the kip.

In order to facilitate the country's industrialization, the government emphasizes the importance of infrastructure development. In addition, a number of tax exemptions and other incentives have been introduced in order to attract more FDI. Moreover, a policy on development of Special Economic Zones (SEZs) has also been introduced for developing the infrastructure and improving the business environment. Furthermore, trade has also been identified as a significant sector for development under the country's industrialization. The following Table shows the structure of Manufacturing in Lao PDR from 1988 to 2010. Table indicates that the structure of manufacturing in Lao PDR have not changed significantly during the period under consideration.

Table (4.12) Growth of Manufacturing Sector in Lao PDR

	1988	1990	2000	2010
Manufacturing value added (\$ billions)	0.06	0.09	0.29	0.52
Manufacturing, value added (annual % growth)	-6	16	7	11
Manufacturing, value added (% of GDP)	9	10	17	18

Source: World Development Indicators.

The government introduced its national export strategy in 2005. The main objective is to utilize the export sector as a means for backward linkage sector development within the country. The strategy selected sectors that are significant for domestic backward linkage, including garments, organic agriculture, silk, medicinal plants and herbs, and tourism. Foreign trade is the important source of foreign currency and the engine for domestic economy diversification, while FDI is most important for inflow of investment capital, technology, and know-how.

Although trade in Lao PDR has been liberalized in recent years, import restrictions still apply for a limited number of goods, such as fuel, construction materials (cement, steel), and some sensitive agricultural products. The collapse in export earnings during the 1997 Asian crisis resulting from a sharp drop in Lao PDR's exports to Thailand, its major export destination, led to a crisis of confidence in the value of the domestic currency, the kip. During 1995-2000, exports grew at only 2 percent per year. The growth in exports was driven mainly by garments, electricity, mining and coffee whereas the imports by machineries and equipment and raw materials for the garment industry. Garments exports have rapidly increased by nearly 80 %, to US\$80 million. Exports of agricultural products grew only at around 3% or about US\$26 million. Lao PDR export markets remained concentrated in a few countries: ASEAN (Thailand, Vietnam), China, Japan, Australia, Korea and the EU. In the early 1990s, Lao experienced high export growth rates of around 21 % per year; since the Asian crisis in 1997; however, Lao exports (and imports) have been decreasing. Even though the Government is seeking ways to diversify the Lao PDR economy, 80 % of official Lao PDR exports remain concentrated on two items going to two major destinations: electricity for Thailand and textiles for the European Union; outside electricity, nearly 80 % of Lao's exports to Thailand consist of wood

products. Duty free and quota free access of garment exports to the EU has been crucial to the development of the garment industry.

Lao PDR does not export a large number of products. Most of its exports are concentrated in wood, garments, and agriculture and raw materials. Table (4.13) presents the composition of the Lao PDR's exports by 22 HS sections. Overall, the Lao PDR's main exports are wood and wood products 45%, apparel 33.3%, and vegetable products 11.7%. 78.1% of Laos's exports to ASEAN are wood followed by vegetable products 9.3%. In particular, the importance of the garment industry in exports to the EU is striking. In contrast, exports of garments to ASEAN are minimal, with only 0.1 % of the total Lao PDR's exports of garments.

Since the Lao PDR's domestic market is small and the purchasing power of its population is low, it is clear that the opportunities associated with inward-looking strategies are limited. The promotion of export-oriented industries was one of the pillars of the 1996-2000 Socio-Economic Development Plans (State Planning Committee, 1996). Accession to AFTA offers increased market access partly from ASEAN partners' tariff cuts against the Lao PDR's exports, and partly by helping to meet the Rules of Origin requirements for GSP status in some industrialized countries, and particularly the European Union.

Table (4.13) illustrates the Lao PDR exports in year 2000. Hydro-electric power has contributed significantly to export growth in the early 1990s. The total value of exports has grown steadily from US\$321 million in 1988 to an estimated US\$393 million in 2010. The largest export has been wood products, primarily in raw form, and timber. The second major factor contributing to exports is the export of electricity, which increased from US\$ 30 million in 1988 to US\$112 million in 2010. Table (4.14) presents the composition of merchandise exports in Lao PDR from 1988 to 2010.

Table (4.13) Lao PDR's Exports in 2000

Description	Export Total (US\$ 1,000)	Share %
Animal and animal products	162	0.1
Vegetable products	29894	11.7
Animal and vegetable oil	4	0.0
Processed foods, drink & tobaco	1013	0.4
Oil and mineral products	3709	1.4
Chemical products	4058	1.6
Plastic & rubber products	291	0.1
Skin & furs and their products	1657	0.6
Wood	115153	45.0
Wood products & paper	150	0.1
Textiles	346	0.1
Apparel	85258	33.3
Shoes, hats, umbrellas, etc	577	0.2
Stone, ceramic & glass products	25	0.0
Jewelry & precious metal products	48	0.0
Base metals and their products	11121	4.3
Electrical and Mechanical machines	595	0.2
Transport equipment	114	0.0
Photographic, precision instruments	56	0.0
Arms & munitions	291	0.1
Furniture & Assorted products	1580	0.6
Object d Art	6	0.0

Source: Fukase, E. and Martin, W. "Free Trade Area Membership as a Stepping Stone to Development" World Bank Discussion Paper No. 421, 2001.

Table (4.14) Composition of Merchandise Exports in Lao PDR (US\$ million)

Item	1988	1990	1995	2000	2010
Wood Products	125	90	112	106	120
Logs	34	17	11	-	69
Timber	79	67	87	-	41
Other	12	6	14	-	10
Coffee	25	19	48	15	15
Agriculture and Forest Products	18	18	8	8	13
Manufactures	28	15	10	28	11
Garments	64	91	70	72	77
Motorcycles	13	17	18	38	41
Electricity	30	21	66	91	112
Car Reexports	0	0	0	0	0
Gold Reexports	15	42	0	0	0
Fuel Purchases by Foreign Carriers	0	1	0	1	1
Others	4	4	4	4	4
Total Merchandise Exports (FOB)	321	317	337	363	393

Source: Lao People's Democratic Republic (2009): Country Economic Review.

The recent development of the garment industry revealed the positive roles of foreign direct investment in the development of the Lao PDR's labor-intensive industries. Because of the absence of MFN access to the US market, the Lao PDR's ability to export to this market is limited. The performance of the garment industry is heavily dependent on market access in the EU, where it has not only MFN treatment, but preferential access under the Generalized System of Preferences (GSP). However, GSP privileges for the EU market were effectively lost at the end of 1995 because the Lao PDR was unable to meet the rules of origin requirements at a national level.

Promoting the private sector is a pre-requisite for Lao PDR to be able to take advantage of trade opportunities. However, doing business in Lao is very difficult and costly. This puts domestic producers at a disadvantage both in terms of competing with imports as well as being competitive to export. With Lao's garment exports

accounting for about one third of its total exports, Lao PDR needs to re-assess its export competitiveness position. It also needs to better exploit exports as an engine for growth.

Table (4.15) Structural Change of GDP in Lao PDR

(% of GDP)	1988	1990	1995	2000	2005	2010
Agriculture	66	61.2	55	48.5	36.7	30.3
Industry	12.4	14.5	19	19.1	23.5	27.7
Services	21.6	24.3	26	32.4	39.8	42.0

Source: ADB (Key Indicators of Developing Asian and Pacific Countries)

The above table shows the sectoral share of GDP in Lao from 1988 to 2010. Agriculture is the largest share of GDP during the period 1988 to 2000. In 1988, agriculture contributed 66% of GDP whereas industry sector accounted for only 12.4%. However, agriculture share has significantly declined since 2000 while the service sector has increased dramatically.

4.2.3 Myanmar

Myanmar's transition toward a market economy began with a series of open-door policies. Soon after the military took power in 1988, the State Law and Order Restoration Council (SLORC), later re-constituted as the State Peace and Development Council (SPDC), allowed private sector businesses to engage in external trade and to retain export earnings, and started to legitimize and formalize border trade with neighboring countries. In November 1988, foreign investment was permitted by the enactment of a Foreign Investment Law (FIL). Myanmar opened its doors to the rest of the world in the midst of a period of globalization and regionalization, and consequently, the open-door policy drastically changed Myanmar's external sector. Myanmar's foreign trade rapidly increased during the 1990s and up to 2005 and foreign direct investment flowed into the country. As the volume of trade grew, Myanmar expanded its trade relations with neighboring countries, having become integrated into the regional markets. The commodity composition of both exports and imports also changed throughout the transitional

period. Table below shows the changes in pattern of exports in Myanmar from 1988 to 2010.

Table (4.16) The Commodity Composition of Exports in Myanmar
(Kyats in Million)

Commodity	1987/88	1990/91	1994/95	2000/01	2005/06	2009/2010
Agricultural products	452	942	2478	2312	2536	7188
Rice and rice products	254	172	1166	208	214	1391
Pulses	131	515	799	1658	1876	5063
Oil cakes	21	11	12	-	-	-
Raw rubber	31	3	122	76	205	406
Raw cotton	2	-	-	11	-	-
Timber	745	999	1061	803	2750	2691
Teak	684	740	953	651	1723	1172
Hardwood	61	259	108	152	1027	1519
Base metal & ores	117	72	61	324	646	183
Precious minerals	77	86	105	363	1359	5169
Animal products	-	-	5	37	21	36
Marine products	-	-	617	934	1147	1505
Garment	-	-	343	3785	1586	1544
Natural gas	-	-	-	1110	6235	15854

Source: Review of the Financial, Economic and Social Conditions (various issues),
Statistical Year Books (various issues).

As can be seen from the Table, the exports of agricultural products increased from 1987/88 to 2009/2010. However, the relative importance of exports has changed in year 2000 due to the decline in rice exports as well to the increase in pulses and garment exports. Myanmar's external sector has improved since 2000 largely because of the emergence of new export commodities, namely garments and natural gas. Therefore, during the 1990s, Myanmar's exports consisted mainly of primary commodities primarily cash crops such as beans and pulses and sesame, and marine products such as fish and prawns occupied the large share of total export. After the late 1990s, however, the export structure apparently changed. Garment exports surged, followed by an expansion in natural gas exports. Myanmar garment industry

exhibited strong growth throughout the 1990s. The share of garment exports of Myanmar's total exports increased from 2.5% in 1990 to 39.5% in 2000, with clothing as the country's leading export of manufactured goods.²⁷ The following Table shows the Myanmar Garment export from 1997 to 2007.

Table (4.17) Myanmar Garment Export

Year	Myanmar garment export to all countries (US\$ million)
1997	189.8
1998	257.2
1999	369.1
2000	745.5
2001	829
2002	668.5
2003	661.8
2004	547.4
2005	312.4
2006	280.0
2007	282.2

Source: Von Hauff, M., *Economic and Social Development in Burma/Myanmar: The Relevance of Reforms*, 2nd edition, 2009.

Throughout the 1990s and up to 2007, the adoption of an open-door policy substantially increased the volume of Myanmar's external trade. Foreign direct investments in Myanmar significantly contributed to the exploration and development of new gas fields. As trade volume grew, Myanmar strengthened its trade relations with neighboring countries such as China, Thailand and India. Although the development of external trade and foreign investment inflows exerted a considerable impact on the Myanmar economy, the external sector has not yet begun to function as a vigorous engine for broad-based and sustainable development. Trade volume per capita can be another indicator for measuring the openness of an economy.

²⁷ Von Hauff, M., (2009), *Economic and Social Development in Burma/Myanmar: The Relevance of Reforms*, 2nd edition, p. 29 .

Myanmar's trade volume per capita steadily increased from US\$ 25 in 1985 to US\$ 35 in 1990, US\$ 85 in 1995, US\$ 92 in 2000 and US\$ 106 in 2003. Myanmar's trade volume per capita is still lower than those of the other new ASEAN members, including Cambodia, Laos and Vietnam, all of which launched their drive toward a market economy at almost the same time as Myanmar. Cambodia's trade volume per capita was US\$ 345 in 2003; Lao PDR's was US\$ 140 and Vietnam's was US\$ 561 in the same year.

Myanmar's external trade sector dramatically improved towards the end of the twentieth century and in the early twenty-first century. Garment exports enjoyed a boom from 1998 to 2001 in response to strong demand from the American and European markets. Since the early 1990s, two large gas fields named Yadana and Yetagun in the Gulf of Martaban have been developed by companies led by Total and Texaco respectively and from 1998 onwards, gas from these fields was exported to Thailand by pipeline. In 2005, gas exports amounted to US\$1497.4 million, a sum equivalent to more than 40% of total exports. Myanmar has strengthened its trade relations with neighboring countries, in particular China and Thailand. As for the structure of exports, although some cash crops increased significantly in relative importance as export commodities, the expansion of manufactured exports was limited.

Major reforms in the manufacturing sector comprised the introduction of number of laws to regulate the systematic development of industries, restitution of small and medium-sized establishments, more private sector participation through relaxation of restrictions on private investment, and promotion of cottage industries. Private sector participation in the manufacturing sector has become vibrant, and high growth rates have been posted during the first half of the 1990s. Domestic market-oriented non-resource-based industries consisted of cement, electrical and machinery components, and chemical fertilizers, and construction materials industry. The production of plastic bags, basins, containers, PVC pipes, transformer, dynamos, concrete pipes, and ceiling boards reflect growing domestic demand for these products. Export-oriented resource-based Small and Medium Industry has engaged in the export of frozen shrimp, wood-based products, rattan, and cane. These firms have been engaging with private foreign investment and joint-venture enterprises. Export-oriented non-resource-based industries are concentrated mainly in the textile and garment industry. Most of them are labor-intensive private or joint-venture

enterprises. The following table shows the growth of the manufacturing sector from 1988 to 2010.

Table (4.18) Growth of the Manufacturing Sector

Year	Industrial Value added (million kyats)	% of GDP	% Change in manufacturing sector
1988	4094.3	8.7	-
1989	4555.0	9.3	11.3
1990	4560.3	9.1	1.2
1991	4376.4	8.8	-4.0
1992	4850.0	8.9	10.8
1993	5305.9	9.1	9.4
1994	5756.9	9.2	8.5
1995	6191.6	9.3	7.6
1996	6476.4	9.1	4.6
1997	6800.5	9.1	5.0
1998	7222.1	9.2	6.2
1999	8271.9	9.4	14.5
2000	10170.8	8	22.9
2001	n.a	n.a	-
2002	n.a	n.a	-
2003	350020.8	10	24.7
2004	436428.7	12	21.9
2005	532178.5	13	26.1
2006	1919888.8	14	21.1
2007	2326026.0	15	18.3
2008	2750743.3	17	19.0
2009	3273243.0	18	20.1
2010	3937125.9	20	-

Source: Statistical Yearbook, various issues.

The above Table indicates that the share of manufacturing in GDP has steadily increased from 9% in 1988 to 20% in 2010. The growth rate of manufacturing sector has fluctuated between -4% and 26% during the study period.

Structural change of GDP in Myanmar during the period from 1988 to 2010 is shown in the following Table. The agricultural sector contributes nearly 50% of GDP during the period 1988 to 1995. Industry sector grew slightly during the period 2000 to 2010, and services sector seem to be stagnant throughout the period under consideration.

Table (4.19) Structural Change of GDP in Myanmar

	1988	1990	1995	2000	2005	2010
Agriculture	48.2	48.5	49.68	42.8	46.7	40.3
Industry	13.1	13.1	12.4	17.6	17.5	22.7
Services	38.7	38.4	37.8	39.6	35.8	37.0

Source: Myat Thein, *Economic Development of Myanmar*; ADB

(Key Indicators of Developing Asian and Pacific Countries)

4.2.4 Vietnam

After some initially successful experiments and following the promotion of reforms in many socialist countries, the Sixth Congress of the Vietnamese economy to an open market-oriented economy and globally integrated model. The *Doi Moi* process helped Vietnam rapidly escape hunger and poverty and lay the initial foundation for an industrialized economy, as well as maintaining a high growth rate and a relatively equal society. From 1986 to 1991, the most significant shift to a market economy took place. The government administered a series of market-oriented shock treatments to the economy such as liberalizing the price of consumer goods, eliminating the state subsidy for goods, formulating and implementing the policy of the positive effective interest rate, floating the exchange rate, and selling off state-owned enterprises. In 1987, the inter-provincial trade barriers were abolished. Therefore, liberalization of international trade became part of the transition process in Vietnam. Vietnam has come a long way in liberalizing trade and in reducing import protection. Most of Vietnam's import protection has been provided by non-tariff most restriction until 1998. The import tariffs are particularly high for processed food and processed agricultural products as also consumer goods like garments, footwear, ceramic products, leather and cosmetics. Intermediate goods and raw materials are taxed at zero or relatively low rates. Appendix 9 shows a summary of Vietnam's tariff protection.

Table in Appendix 9 of the first two columns show the nominal rate of protection (NRP) whereas the second two show the effective rate of protection (ERP). The simple average tariff rate is 15.6 percent and the trade-weighted average is 19.0 percent. There is a general tendency for Vietnam's tariff structure to be relatively low for capital goods and raw materials, and higher for finished goods. This pattern of protection increases the returns to value-adding factors in the final goods industries.

Even quite moderate tariffs on final goods can lead to sharp increases in the returns to value added in a particular sector if intermediate inputs are a large share of total costs. Imports of most basic industrial raw materials are relatively free of import restrictions since Vietnam does not yet have significant upstream steel or plastics industries. For many goods which are not produced in Vietnam, the tariff rates are virtually zero. This confers a great advantage on domestic users of these products. An indication of the total impact of protection can be obtained using the Effective Rate of Protection (ERP). The ERP differs from the NRP by taking into account the trade barriers that are imposed on the intermediate inputs used in the production of goods. Protection granted to final goods increases returns to value adding factors in a sector. By contrast, taxes on intermediate inputs reduce the returns to value adding factors. Protection has different implications for import substituting and export oriented activities. Higher protection on outputs raises the domestic prices for import competing goods and increases the returns involved in producing them. Exporting activities have to face world prices for their sales and so do not benefit from protection on their output. They can only be harmed by protection to other sectors. The ERP measures provided in this section capture the direct adverse impacts of protection on these firms. There is an additional adverse impact that arises from the increases in the prices of nontraded goods-the real exchange rate appreciation effect of protection. Recently, Vietnam is committed to reducing and rationalizing import tariffs further, in line with its commitments under the AFTA and WTO. Apart from opening up export markets, trade liberalization contributes to creating a market economy by allowing competitive forces coming from abroad. One of the most important successes of Vietnam's *Doi Moi* policy has been a rapid 22 % annual average growth in the country's export since 1985. This export growth has been a key driving force for rapid economic growth, job creation and exceptional reduction in poverty. Prospects for continuing rapid export growth are bright, given, its natural resources, its dedicated and educated labor force, and the government's strong commitment to exports, growth and poverty-reduction. In 1989 the export regime was changed in that exporters were allowed to select any export-import company for their business activities. After a number of years being a net importer of food, Vietnam exported around US\$ 290 million of rice in 1989 and has since then remained one of the leading rice exporters in the world. Therefore, Vietnam's exports and imports have grown rapidly in recent years, and the product composition of trade has shifted.

Total export turnover of Vietnam has been witnessing rapid growth and the structure of exports is also becoming more diversified. Vietnam's pattern of exports commodities was changed. The structure of exports during the *Doi Moi* period is given in the following Table.

Table (4.20) Vietnam's Exports by Group of Commodities

Year	Agricultural products	Forest products	Marine products	Heavy industrial products and minerals	Light industrial products and Handicraft
1986	38.9	8.1	8.8	9.0	34.8
1987	37.8	6.6	11.5	5.8	38.0
1988	31.8	4.9	12.4	5.9	44.9
1989	31.0	3.9	7.1	20.8	37.0
1990	23.7	3.1	6.2	34.0	32.8
Average	32.8	5.3	9.2	15.1	37.5

Source: Myan Than and Tan., J. *Vietnam's Dilemmas and Options: The Challenge of Economic Transition in the 1990s*, ASEAN Economic Research Unit, Institute of Southeast Asian Studies.

The average share of primary products such as agricultural products (rice, rubber, coffee etc.,) forestry products (round wood, floor board, etc.,), and mineral products (shrimps, fish, etc.,) were 32.8 %, 5.3 %, and 9.2 % respectively, while export commodities which include heavy industrial and mining products accounted for 15.1 % during that period. As far as Vietnam's exports during the *Doi Moi* period is concerned, it had increased mainly because of the expansion of trade with industrialized countries and the Third World especially countries from Asia. However, the basic structure of exports did not change substantially.

Until 1992, Vietnam's export expansion was dominated by crude petroleum exports, but it share declined in 2001 to only 20%; this was initially due to a rapid expansion in Vietnam's agricultural exports, especially rice, coffee, rubber, cashew and so on, which grew very rapidly in both volume and value. Table (4.21) presents Vietnam export commodity percent of total export. Rice product constituted the leading share of total exports in Vietnam until 1990, and then from 1991, marine

products constituted a large percentage of exports and from 1995 textile products became the major exports item in Vietnam. In 2010, Vietnam's main export commodities were in sequence textile, marine, and rice. However, frozen shrimp exports overtake the rice exports in 2001, 2003, and 2004. Textile products increased and led the export due to rapid growth of the industrial sector.

Mineral fuels, food and live animals constitute the largest share of total exports in Vietnam, and followed by miscellaneous manufactured goods. Machine exports have also increased during 1990-2006 mainly because of the improvement in the industrial sector of Vietnam (Appendix 10).

Manufactured exports were initially concentrated in resource-based products, especially fish, semi-processed rubber, furniture and processed foods. Table (4.21) shows the shifting composition of manufactured exports from 1988 to 2010. From the mid 1990s, standard labor-intensive goods such as garments and footwear, started to overtake resource-based products. Within resource-based manufactures, exports of processed food, especially fish, have grown faster than other items. High technology capital-intensive products have begun to gain some ground in the 1990s, and it remains relatively small as a share of total manufactured exports.

Table (4.21) Commodity Composition of Total Export (% Total)

Year	Textile product	Marine product	Rice	Coffee	Wood and Wood Product	Rubber	Coal	Frozen Shrimp
1988	9.8	8.9	9.2	2.9	-	2.1	1.2	6.1
1989	10.5	7.8	10.7	3.1	-	1.9	1.8	5.9
1990	10.1	9.9	12.7	3.8	-	2.7	1.4	6.3
1991	6.4	13.4	12.2	3.5	-	2.4	2.3	8.5
1992	7.87	11.9	11.6	3.6	-	2.4	2.4	7.2
1993	8.0	114.3	12.2	3.7	-	2.5	1.7	7.5
1994	11.7	13.6	10.5	8.1	-	3.3	1.7	7.3
1995	15.6	11.4	9.7	10.9	2.1	3.5	1.6	5.3
1996	15.8	9.6	11.8	5.8	2.2	3.5	1.6	4.5
1997	16.4	8.5	9.5	5.4	2.0	2.1	1.2	4.0
1998	15.5	9.2	10.9	6.3	1.3	1.4	1.1	4.6
1999	15.1	8.4	8.9	5.1	2.1	1.3	0.8	3.6
2000	13.1	10.2	4.6	3.5	2.1	1.1	0.6	4.4
2001	13.1	12.1	4.2	2.6	2.3	1.1	0.8	5.6
2002	16.4	11.2	4.3	1.9	2.8	1.6	0.9	4.3
2003	17.9	10.9	3.6	2.5	3.0	1.9	0.9	4.7
2004	16.7	9.0	3.6	2.5	4.2	2.3	1.4	4.1
2005	14.7	8.4	4.3	2.3	4.8	2.5	2.1	3.9
2006	14.7	8.4	3.2	3.1	4.9	3.2	2.3	-
2007	16.0	7.7	3.1	3.9	5.0	2.9	2.1	-
2008	16.3	7.3	3.8	3.6	4.5	2.4	2.0	-
2009	17.4	7.9	3.2	3.8	4.7	2.8	2.6	-
2010	17.2	8.5	4.1	4.7	3.8	3.1	2.3	-

Source: Asian Development Bank, Key Indicators for Asia and Pacific.

Table (4.22) Shifting Composition of Manufactured Exports

• ခြေစုံစုံ
• အမျိုးမျိုး၊ ပုံစံ၊ ရေ၊ တက္ကသိုလ်

Items	(%) Share			Growth Rate		
	1988	1995	2009	1985-95	1995-2005	2005-2010
1. Resource-based Manufactures	74	44	17.6	21	23	5
2. Labor-intensive low technology plus medium technology components assembly	21.7	51.9	77	34.3	25.8	20
3. High technology capital-intensive differentiated products	3.9	4.1	5.4	40	32.8	22.4

Source: Martin, K., "Vietnam: Deepening Reforms for Rapid Export Growth", Central Institute of Economic Management. UN Comtrade.

In Vietnam, the industry sector has been growing rapidly in recent years. The manufacturing sector has been a major source of growth in output and employment. Manufacturing output rose with diversified growth in production for both domestic and export markets. With the objective of turning Vietnam into an industrial country by 2020, Vietnam's industrialization and modernization policy appears to be emphasizing the creation of a diversified industrial structure. To reach that target, much attention has been paid to develop the industrial base through a combination of export orientation and import substitution. As a part of this strategy, Vietnam appears to be targeting a set of capital-intensive and so-called "strategic" industries and to be using trade and investment policies as instruments to promote these industries. Table below shows the growth of manufacturing in Vietnam from 1988 to 2010. Manufacturing value added has increased steadily from US\$ 0.79 billion in 1988 to US\$ 20.94 billion in 2010. The share of manufacture exports to total exports also has increased from 27% in 1990 to 62% in 2010.

Table (4.23) Growth of Manufacturing in Vietnam

	1988	1990	2000	2010
Manufacturing value added (\$ billions)	5.6	4.6	5.79	20.94
Manufacturing, value added (annual % growth)	7	6	12	8
Manufacturing, value added (% of GDP)	18	12	19	20
Manufacture exports (% of merchandise exports)	n.a	27	43	62

Source: World Development Indicators.

The share of manufactures started to increase from the mid-1990 and by the turn of the century, manufactured goods accounted for two-thirds of total merchandise exports in 2010.

Table (4.24) Structural Change of GDP in Vietnam

	1988	1990	1995	2000	2005	2010
Agriculture	46.3	38.7	27.2	24.5	21	22.2
Industry	28.3	22.7	28.8	36.7	41	39.8
Services	25.4	38.6	44.1	38.7	38	37.9

Source: ADB (Key Indicators of Developing Asian and Pacific Countries)

As can be seen from the Table, the agricultural sector constitutes the largest share of GDP in Vietnam followed by the service sector and the industry sector in 1988. However, the share of the agricultural sector in GDP had declined gradually and the share of the industry and service sector in GDP had increased between 1988 and 2010.

The CLMV countries have much smaller industrial sectors than the initial ASEAN 5 countries. However, in recent years, industry has been growing rapidly in these countries, primarily because of the abandonment of central planning and the implementation of market-oriented reforms.

Table (4.25) Industrial Performance in CLMV countries

Item	Cambodia		Laos		Myanmar		Vietnam	
	1988	2010	1988	2010	1988	2010	1988	2010
Manufacturing Value-Added (US\$ billions)	0.2	0.6	0.06	0.52	2.7	2.9	5.6	20.94
Growth Rate	8.2	18	-6	11.0	3.4	7.36	7.0	8.0
% of GDP accounted for by industry	20.0	26.8	23.0	31.8	13.1	22.7	37.0	41.0
Manufactured exports (US\$ billions)	n.a	n.a	16.7	19.8	0.1	n.a	1.1	3.2
Growth Rate	n.a	n.a	12.2	22	14.7	n.a	n.a	25
% of exports accounted for by manufactured exports	n.a	n.a	n.a	n.a	12.0	21.0	n.a	62

Source: Tan., G., ASEAN: *Economic Development and Cooperation*, Eastern Universities Press; ADB (Key Indicators of Developing Asian and Pacific Countries)

Table (4.25) shows that the size of the manufacturing sector varies from US\$ 0.2 billion in Cambodia to US\$ 5.6 billion in Vietnam in 1988, and these data steadily rose to US\$ 0.6 billion in Cambodia and US\$ 20.9 billion in Vietnam. The industrial sector in CLMV countries accounted for between 13.1% in Myanmar and 37% in Vietnam in 1988. It has been gradually raised to 22.7% in Myanmar and 41% in Vietnam in 2010. Between 1979 and 1989, industrial development in Cambodia was under strict central control under a system of central planning. Most of Cambodia's industry is light industry; the industrial sector accounted for about 26% of GDP. The most important sector in the Cambodian manufacturing industry is the clothing industry, whose output is exported mainly to the E.U. A number of economic reforms in Lao PDR have resulted in gradual decentralization of the industrial sector and a greater degree of autonomy for its state-owned enterprises. Industry accounts for only 23% of Laos's GDP and it rose to 31.8% in 2010. The industrial sector comprises food-processing industries, timber-related industries as well as labor-intensive manufacturing industries. The industrial sector has grown rapidly from 12.2% in 1988 to 22% in 2010. Myanmar's industrial sector accounts for 13.1% in 1988 and 22.7%

in 2010. Much of industry is based on the processing of agricultural products. In the mid 1990s, the Myanmar government moved to give private-sector firms better access to credit, and foreign direct investment was encouraged and trade was liberalized, allowing firms to retain their foreign exchange earnings. Therefore, Myanmar's industrial sector has experienced strong growth, about 7% in 2010. Prior to 1986, Vietnam's industrial sector was mainly large-scale, heavy industrial firms producing capital goods. Since the late 1980s, a number of economic reforms were implemented in the industrial sector. While much of Vietnam's industrial output is concentrated in heavy industry, large inflows of foreign investment from Japan and the Asian NICs have resulted in the growth of labor-intensive manufacturing industries for exports. Manufactured goods make up 62% of total exports in 2010.

CHAPTER V

Econometric Analysis on the Effect of Trade Liberalization on Economic Growth and Productivity in ASEAN Countries

5.1 Model Specifications

The liberalization of trade has led to massive expansion in the growth of world trade relative to world output. Consequently, East Asian countries have reaped enormous benefits from this process, and achieved a rapid growth in past decades. Some economists widely-held belief that both trade and FDI increases the growth rate of per capita output by enhancing technology transfer from abroad, thereby, increasing the growth rates of productivity.

Krugman (1994), however, argues that the high growth in East Asia was supported by high saving rates and investment without much productivity. These arguments imply that the high growth in East Asia is essentially a transitory phenomenon toward a steady state growth path because the marginal product of capital declines with more capital accumulation. In addition, he asserts that the productivity growth of a number of miracle counties in East Asia was very small and therefore the high growth would end sooner or later by running into the curse of diminishing returns to capital. His argument is based on the Solow growth model, which states that the rate of technological progress and the rate of population growth are the two key determinants that could influence the steady state growth path.

However, Ventura develops a model in which a small country with the standard neoclassical aggregate technology with diminishing returns to capital effectively transforms its technology into the linear AK technology through international trade, thereby beating law of diminishing returns to capital. The key is the transformation of the industrial structure of the economy. When capital accumulation is more rapid it will result in a more rapid transformation of the industrial structure from labor-intensive industries to capital-intensive industries. Consequently, the economy accumulates more capital, the capital labor ratio increase for the economy as a whole, which will induce an increase in output of capital-intensive goods. Accordingly, the economy can absorb the higher capital-labor ratio resulting from capital accumulation by shifting away from labor-intensive sectors to

capital-intensive sector, and its exports from labor-intensive to capital-intensive goods.

In this sense, this study employs the AK model as provided in Ventura to evaluate the effects of international trade on economic growth and productivity of capital during the study period. In addition, this model analyzes the effect on economic growth of structural transformation and changing pattern of exports induced by the trade openness.

5.1.1 Main Estimation Equations

Equations 5-10 below represent the main equations estimated in this study. In this model, regressions consist of two main parts: one for measuring effects of trade openness and the matching between resources allocation and world market on income per capita and the other on technology parameter. Firstly, the trade-growth model is alternatively tested with the following major determinants: the change in trade volume (export plus import divided by GDP) or dummy D_{TL} provides a proxy for trade liberalization, the gross capital formation related to GDP provides a proxy for the level of capital accumulation, the share of manufacturing value added in GDP provides a proxy for the industrial structure, manufacturing exports relative to total exports as a proxy for the pattern of exports (since the share of manufacturing exports almost equates one minus natural resource-based exports, the coefficient for MANEXPO can be used as a reference for the impact of natural resource-based exports on growth), government consumption share out of GDP as a proxy for fiscal policy, and inflation as a proxy for monetary policy. The main equations to be estimated for the first issue are therefore specified as below;

$$DGDP = \beta_1 + \beta_2 DTRADE + \beta_3 INV + \beta_4 MANUFACT + \beta_5 MANEXPO \quad \text{-----} \quad (5)$$

$$\text{where; } \beta_2 > 0 \quad \text{and} \quad \beta_3 > 0 \quad \beta_4 > 0 \quad \beta_5 > 0$$

$$DGDP = \beta_1 + \beta_2 D_{TL} + \beta_3 INV + \beta_4 MANUFACT + \beta_5 MANEXPO \quad \text{-----} \quad (6)$$

$$\text{where; } \beta_2 > 0 \quad \beta_3 > 0 \quad \beta_4 > 0 \quad \beta_5 > 0$$

Further analyses will clarify whether capital accumulation effects are overwhelmed by domestic source or the inflows foreign direct investment.

Accordingly, variable INV is decomposed into FDI and DOMESTICINV as specified in equation (7).

$$DGDP = \beta_1 + \beta_2 DTRADE + \beta_3 FDI + \beta_4 DOMESTICINV + \beta_5 MANUFACT + \beta_6 MANEXPO \quad \text{---- (7)}$$

$$\text{where; } \beta_2 > 0 \quad \beta_3 > 0 \quad \beta_4 > 0 \quad \beta_5 > 0 \quad \beta_6 > 0$$

The following equation (8) and (9) will examine the importance of key macroeconomic variables in explaining growth by adding either GOVTEXP or INFLATION.

$$DGDP = \beta_1 + \beta_2 DTRADE + \beta_3 INV + \beta_4 MANEXPO + \beta_5 GOVT EXP \quad \text{---- (8)}$$

$$\text{where; } \beta_2 > 0 \text{ and } \beta_3 > 0 \quad \beta_4 > 0 \quad \beta_5 > 0$$

$$DGDP = \beta_1 + \beta_2 DTRADE + \beta_3 INV + \beta_4 MANEXPO + \beta_5 INFLATION \quad \text{---- (9)}$$

$$\text{where; } \beta_2 > 0 \quad \beta_3 > 0 \quad \beta_4 > 0 \quad \beta_5 < 0$$

Secondly, estimation for the growth rate of marginal product of capital as the dependent variable capture the possible connection between the trade-output ratio and other trade-related growth determinants and productivity growth in the economy.

$$DA = \beta_1 + \beta_2 TRADE + \beta_3 FDI + \beta_4 DOMESTICINV + \beta_5 MANEXPO \quad \text{---- (10)}$$

$$\text{where; } \beta_2 > 0 \quad \beta_3 > 0 \quad \beta_4 > 0 \quad \beta_5 > 0$$

where,

DGDP = growth rate of real per capita GDP

DTRADE = the share of trade volume to GDP (Ratio of trade volume to GDP as one of the measure for degree of trade openness)

D_{TL} = a dummy variable proxies for the introduction of an open door policy, which takes zero for the years 1988, 1989, 1990 and one for the remaining years.

DA = Growth rate of productivity of capital calculated based on equation (12) in Chapter (5)

INFLATION = inflation

GOVTEXP = the share of government expenditure to GDP

FDI = the share of foreign direct investment to GDP

INV = gross domestic investment relative to GDP

MANEXPO = the share of manufacturing export in total export

MANUFACT = manufacturing value added relative to GDP

Since data for trade volume to GDP and marginal product of capital $A(t)$ are time series and likely to follow the random walk, the Augmented Dickey-Fuller test is applied to check the existence of non-stationary problem. Both TRADE and $A(t)$ exhibits a unit root order of 1 at any conventional significance level. Consequently, the TRADE series are transformed into the first difference denoted DTRADE (i.e. the change in the ratio of trade volume to GDP) while growth rate of productivity denoted as DA are used in the regression.

5.1.2 The Key Hypothesis

Since trade openness, foreign direct investment, and the level of capital accumulation, manufacture exports, and the manufacturing sector's value added/stimulate the growth rate of income per capita, the relationship between the growth rate of income per capita and openness, foreign direct investment, the level of capital accumulation, government expenditure, manufacture exports, and the manufacturing sector's output are expected to be positive. Similar results can be expected in the productivity regression. Because high inflation hampers the growth rate of per capita GDP, the relationship between the growth rate of per capita GDP and inflation are expected to be negative.

As for econometrics, most economists point out that omitted variables and endogeneity as two problems that render OLS estimation results less reliable. Since geographical characteristics and macroeconomic factors such as fiscal and monetary policies, political stability, and legal regulations are said to be highly correlated with trade openness, the trade volume as a share of GDP in explaining cross-country differences in growth may simply serve as a proxy for these growth-conducive variables. It is plausible that the patterns of trade mainly reflect geographical structure and conditions of each country. Therefore, the omission of such factors may results in inaccurate partial effects of trade openness on economic growth.

5.2 Computed Variables

The aggregate production function of ASEAN during the transitional period is best described by the model developed by Ventura where output is assumed to take the simplified form of an AK model.

$$Y=AK$$

Y here denotes GDP, while K denotes capital stock. The marginal product of capital is represented by A. It should be noted that the productivity of capital A(t) in a small open economy is largely dependent on the ability to efficiently allocate capital resources among the competing demands of the domestic market and the supply and demand conditions of the world market. The linear production technology implied for in this model makes it possible for the marginal product of capital not to be subjected to diminishing returns to capital.

Since K(t) is not available in this study, it cannot be observed A(t) directly; however, A(t) can be estimated by using the values of {Y(t)} and {I(t)}. By transforming the aggregate production function to a growth form, it can be obtained in the following equation;

$$dY/Y = dA/A + A(I/Y) \text{ ----- (11)}$$

where I = dK. In discrete time, equation (1) is written as

$$Y(t+1)/Y(t) = A(t+1)/A(t) + A(t)I(t)/Y(t)$$

Then it can be written the A(t) process as:

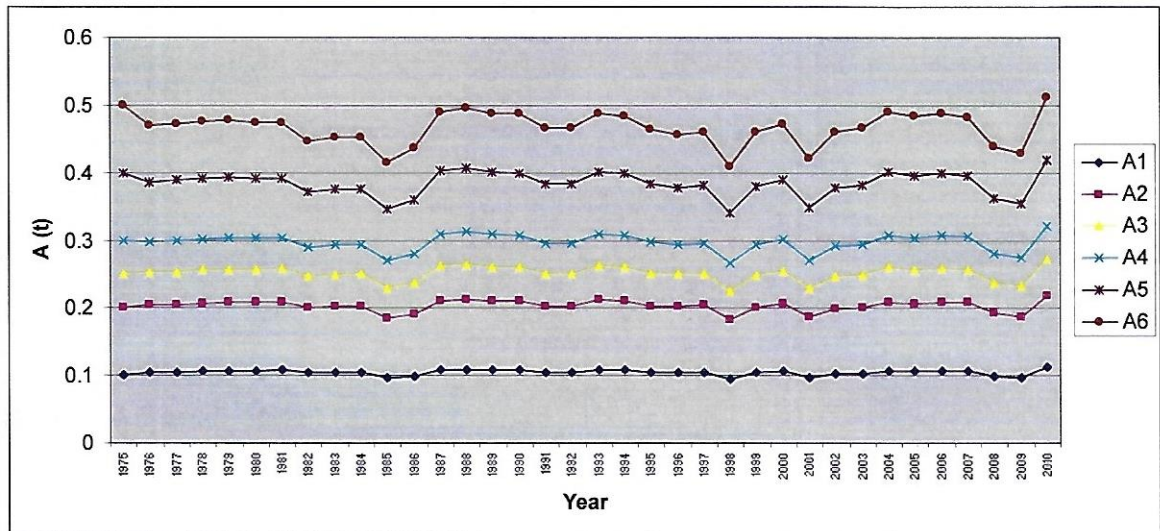
$$A(t+1) = [Y(t+1)/Y(t) - A(t)I(t)/Y(t)]A(t) \text{ ----- (12)}$$

Since the initial value A_t is unknown, it can be conducted by a trial-and-error by giving different values to A in initial years for ASEAN 5 countries and CLMV countries.

Tables in Appendix (11) to (15) and Figures 5.1 to 5.10 show the A (t) series and the growth rate of productivity of capital for ASEAN 5 (Singapore, Malaysia, Indonesia, Thailand, and the Philippines). The A(t) series have either increasing or declining in ASEAN 5 countries during the period under consideration; however, the growth rate of productivity of capital has increased gradually in A1, A2, and A3 series whereas the trends keep either increasing or decreasing when initial A series is bigger than 0.3 and equal or small than 0.5. Moreover, even though A4, A5, A6 series have an increasing trends in some years, the growth rates were slower than A1, A2, and A3 series. Among them A2 has an increasing trend which is reversed around the ASEAN

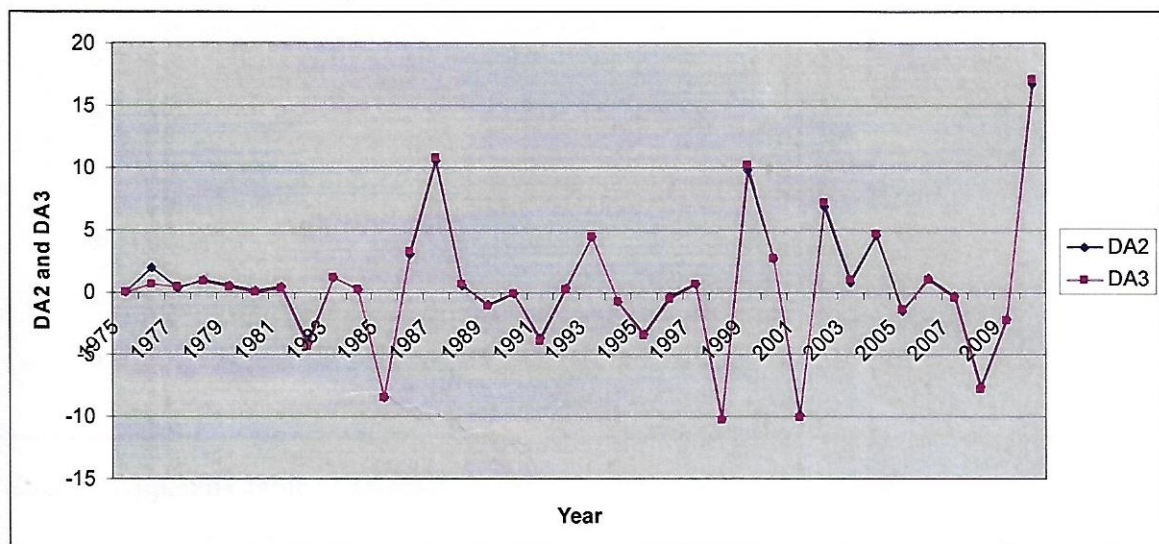
currency crisis and economic downturn 2008, and then it has increased again. Thus, the $A(t)$ series with initial value of 0.2 and 0.25 describe the historical $A(t)$ process of the ASEAN 5 countries.

Figure 5.1 Productivity of Capital $A(t)$ with different value of A in 1975 in Singapore



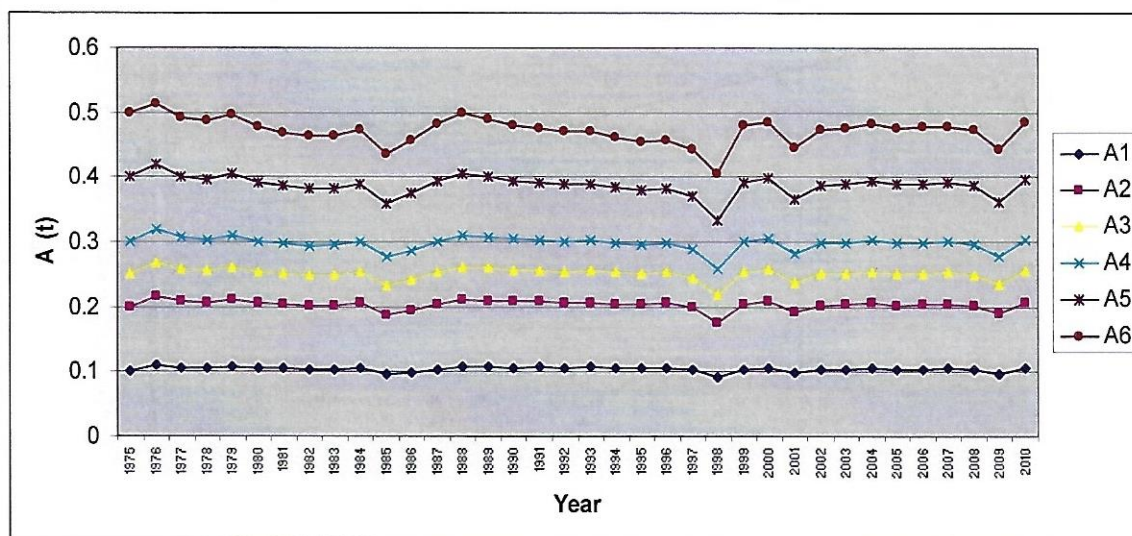
Source: Appendix table (11)

Figure 5.2 The growth rate of productivity of capital for the A_2 and A_3 processes:
 DA_2 and DA_3 in Singapore



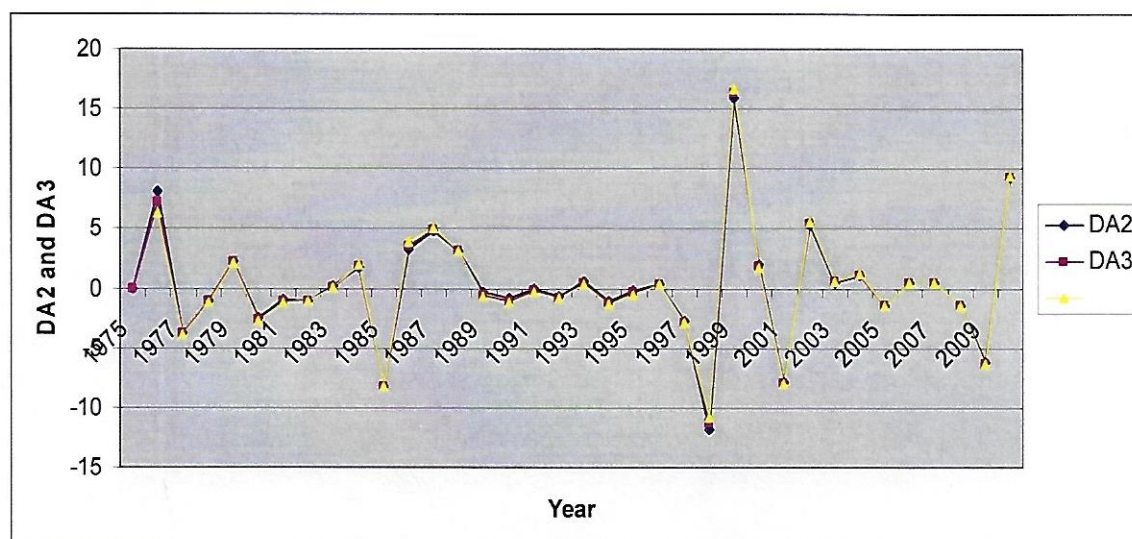
Source: Appendix table (11)

Figure 5.3 Productivity of Capital $A(t)$ with different value of A in 1975 in Malaysia



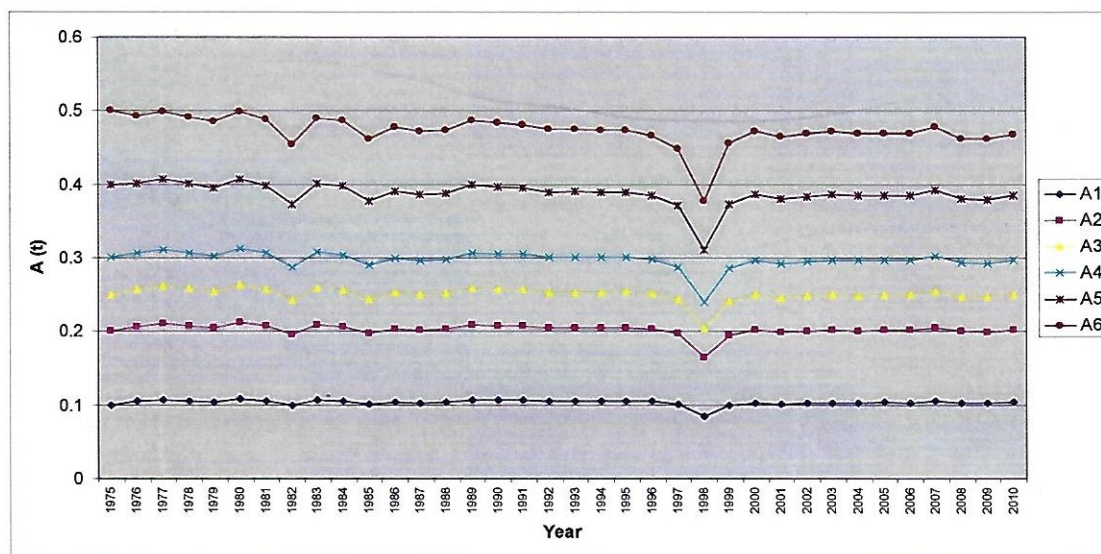
Source: Appendix table (12)

Figure 5.4 The growth rate of productivity of Capital for the A_2 and A_3 processes:
 DA_2 and DA_3 in Malaysia



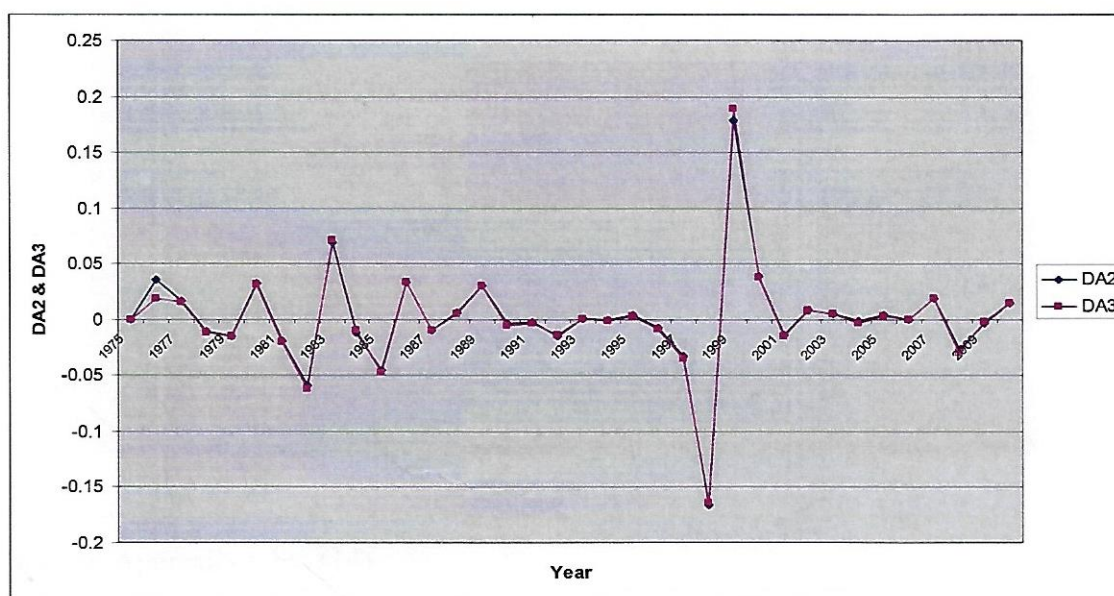
Source: Appendix table (12)

Figure 5.5 Productivity of Capital $A(t)$ with different value of A in 1975 in Indonesia



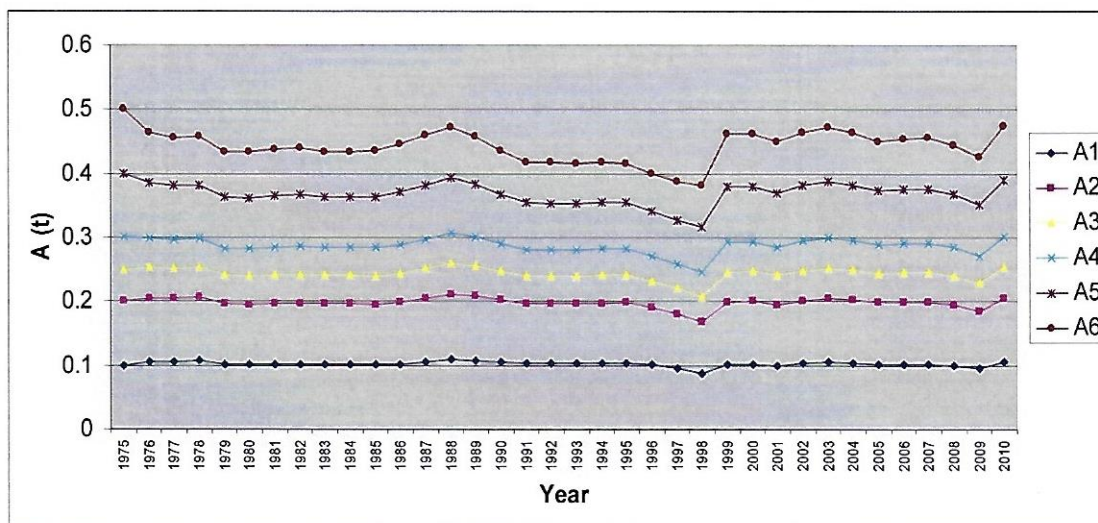
Source: Appendix table (13)

Figure 5.6 The growth rate of productivity of Capital for the A2 and A3 processes: DA2 and DA3 in Indonesia



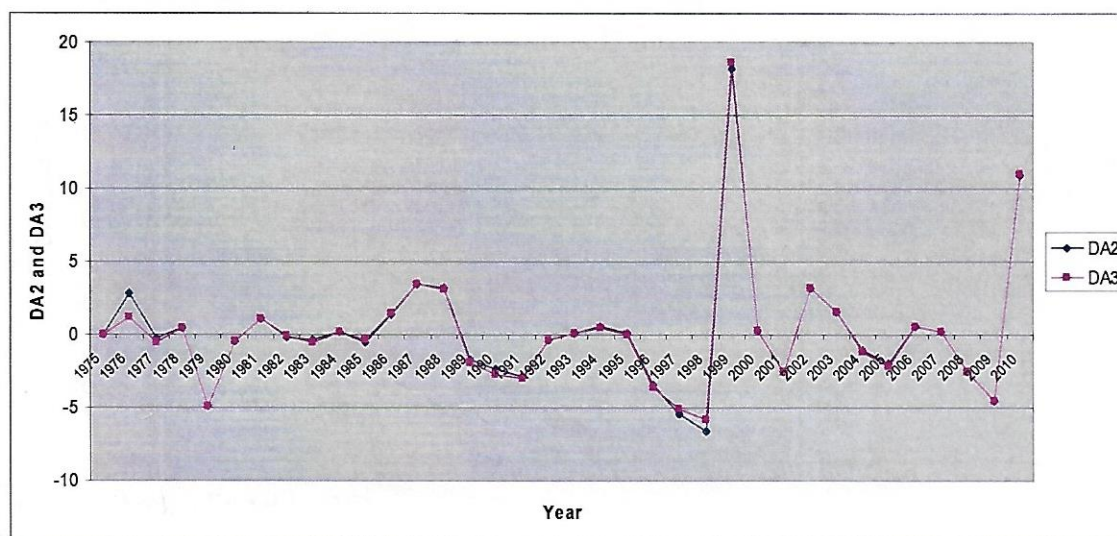
Source: Appendix table (13)

Figure 5.7 Productivity of Capital $A(t)$ with different value of A in 1975 in Thailand



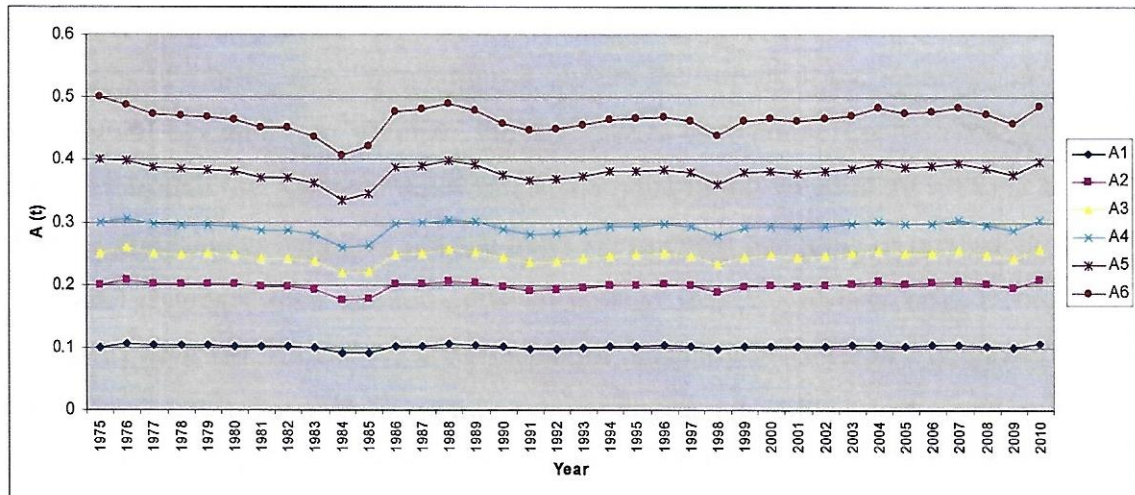
Source: Appendix table (14)

Figure 5.8 The growth rate of Capital for the A_2 and A_3 processes: DA_2 and DA_3 in Thailand



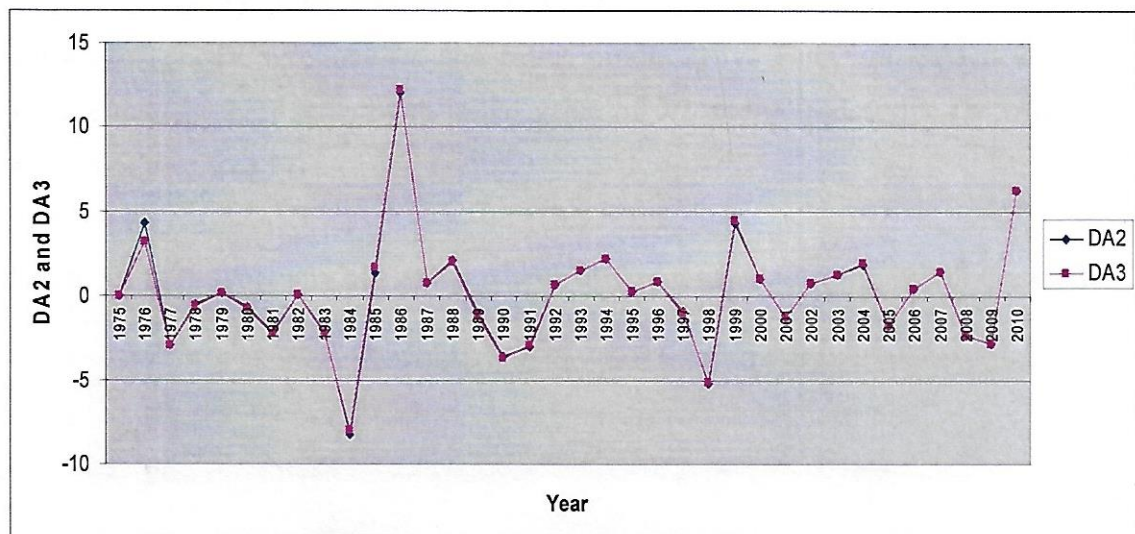
Source: Appendix table (14)

Figure 5.9 Productivity of Capital $A(t)$ with different value of A in 1975 in the Philippines



Appendix table (15)

Figure 5.10 The growth rate of productivity of Capital for the A_2 and A_3 processes: DA_2 and DA_3 in the Philippines



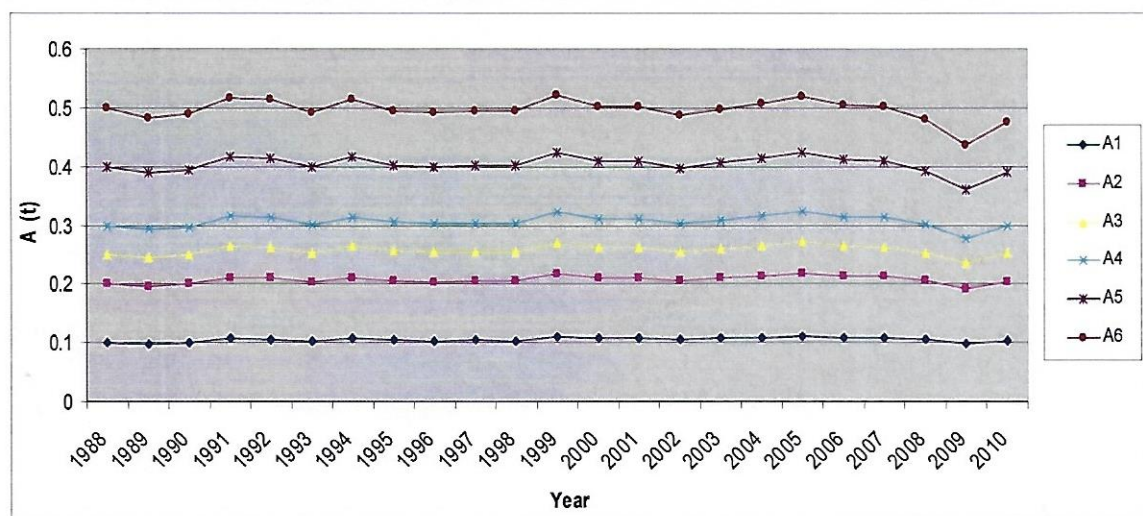
Source: Appendix table (15)

Tables in Appendix (16) to (19) and Figures 5.11 to 5.18 show the $A(t)$ series and the growth rate of productivity of capital with different value of $A(t)$ for CLMV countries (Cambodia, Laos, Myanmar, and Vietnam) by giving different values to A in initial years of 1988 for Cambodia, Laos, Myanmar, and Vietnam. The $A(t)$ series have either increasing or declining in Cambodia, Laos PDR, and Vietnam during the period under consideration; however, the growth rate of the of productivity of capital

A2 has an increasing trend except 1997, 1998 in Cambodia. In Myanmar, the $A(t)$ series have been increasing for four and decreasing for two, but at various rates. With the exception of series A2 and A3 the remaining four series are either increasing or decreasing at a faster rate, which did not capture the impact of the Asian crisis on the economy of Myanmar. In Vietnam, the $A(t)$ series have an increasing trend which is reversed around the Asian currency crisis when the initial value of $A(1988)$ is bigger than 0.1 and smaller than 0.3. Yet, the trend keeps either declining or increasing when $A(1988)$ is bigger than 0.3 and equal or smaller than 0.5 respectively. In order to consider this effect, A2 and A3 are selected for the analysis for CLMV countries since their increments are at a declining rate, which suggest a possible effect of the recovery of most Asia economies from the financial crisis in 1997.

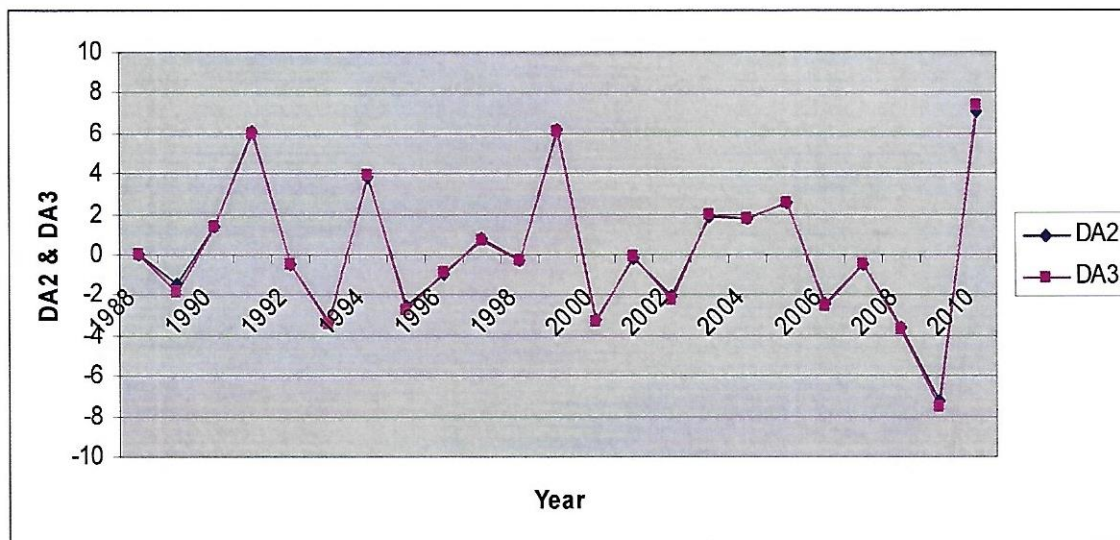
The international economic environment and the institutional changes have had a significant impact on the marginal product of capital in CLMV after their integration into the world market. Though CLMV joined the ASEAN in the late 1990s it is expected not to gain a lot of trade benefits from the ASEAN countries prior to that. The recovery process of the Asia crisis is bound to have significant negative impact on CLMV's economies and hence productivity. Thus, subsequent analyses assume that the $A(t)$ series with initial value of 0.2 and 0.25 describe the historical $A(t)$ process of CLMV.

Figure 5.11 Productivity of Capital A with different value of A in 1988 in Cambodia



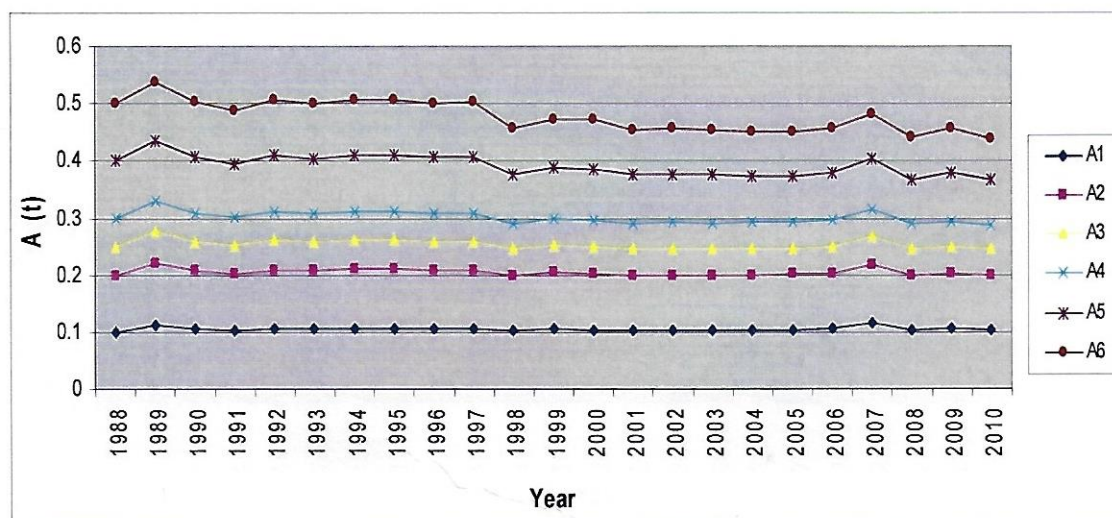
Source: Appendix table (16)

Figure 5.12 The growth rate of productivity of Capital for the A_2 and A_3 processes:
 DA_2 and DA_3 in Cambodia



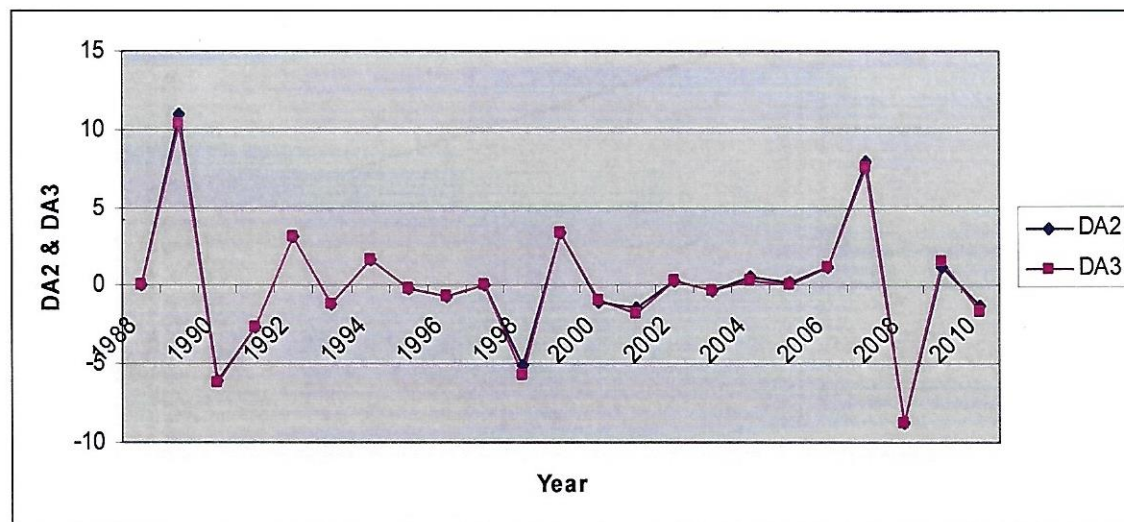
Source: Appendix table (16)

Figure 5.13 Productivity of Capital $A(t)$ with different value of A in 1988 in Lao PDR



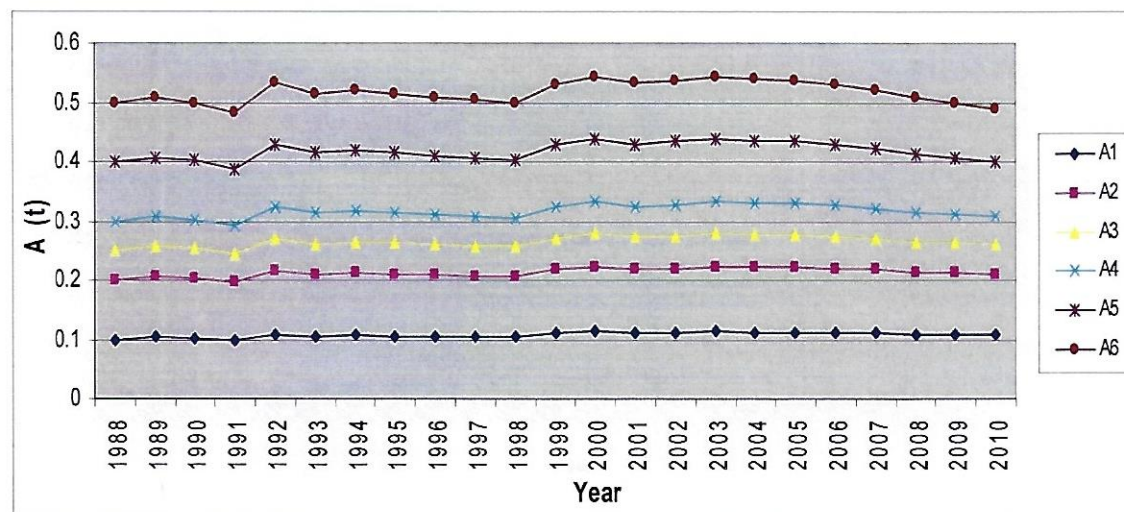
Source: Appendix table (17)

Figure 5.14 The growth rate of productivity of Capital for the A_2 and A_3 processes:
 DA_2 and DA_3 in Laos PDR



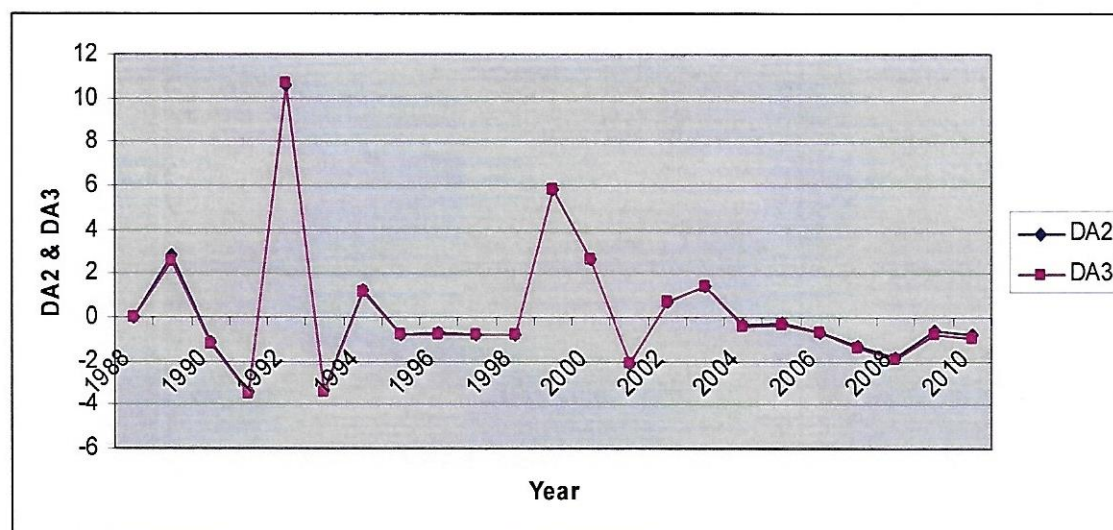
Source: Appendix table (17)

Figure 5.15 Productivity of Capital $A(t)$ with different value of A in 1988 in Myanmar



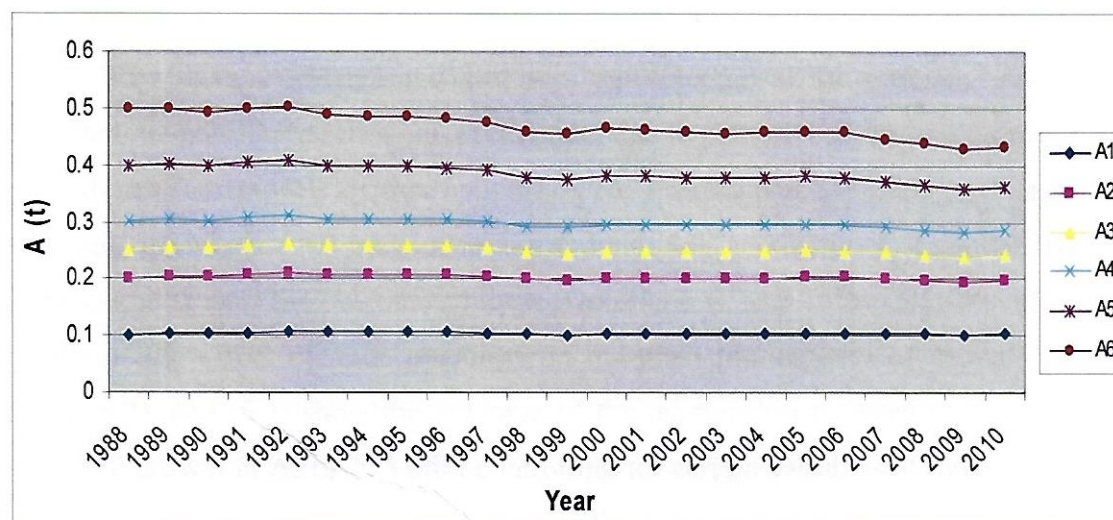
Source: Appendix table (18)

Figure 5.16 The growth rate of productivity of capital for the A_2 and A_3 processes:
 DA_2 and DA_3 in Myanmar



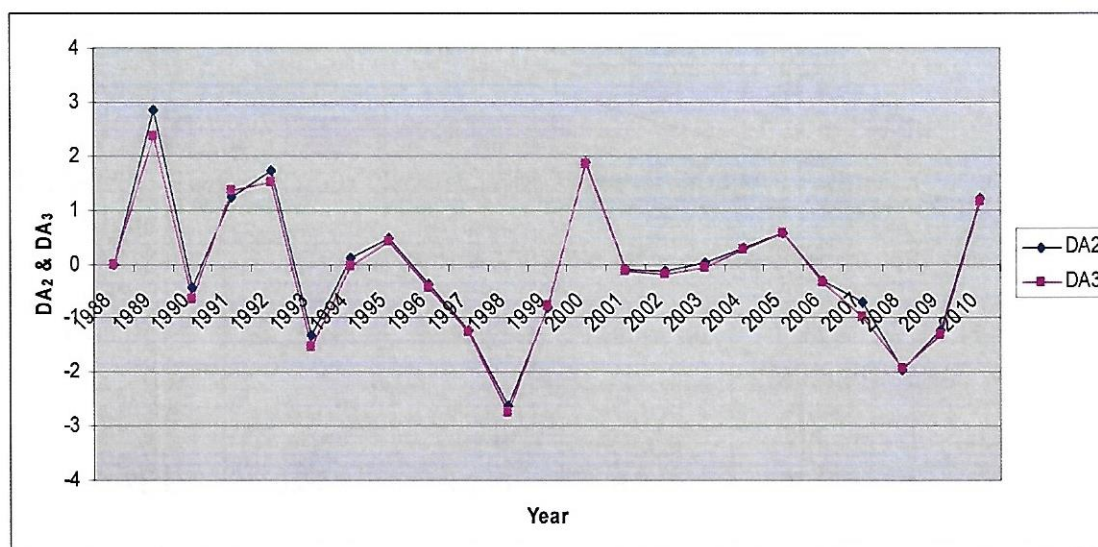
Source: Appendix table (18)

Figure 5.17 Productivity of Capital $A(t)$ with different value of A in 1988 in Vietnam



Source: Appendix table (19)

Figure 5.18 The growth rate of productivity of capital for the A_2 and A_3 processes:
 DA_2 and DA_3 in Vietnam



Source: Appendix table (19)

5.3 The Results of Growth with Trade Related Variables in ASEAN 5 Countries

This section presents and discusses the outcome of the estimated equations specified in previous section to investigate the hypothesis of trade-led-growth in ASEAN 5. Two aspects of this hypothesis are investigated; (i) trade openness and economic growth and (ii) trade openness and marginal productivity of capital. Tables (5.1) to (5.4) report the outcome of these two relations, and Table (5.5) describes the results of the effect of trade openness on marginal productivity of capital. Tables (5.1), (5.2), and (5.3) show the outcome of the relationship between trade openness and GDP growth in ASEAN 5 after controlling for certain variables of interest for this dissertation. In these tables, four main equations are presented, each controlling for some policy variables or variables of structural transformation of an economy in turn. For instance, the first equation shows the relationship between trade openness and economic growth after controlling for three main variables (i.e the level of capital accumulation for the whole economy (INV), manufacturing sector value added relative to GDP (MANUFACT) and the share of manufactured export in total export (MANEXPO). The second equation of the analysis controls for foreign direct investment (FDI), the domestic investment (DOMESTICINV), the manufacturing

sector's value added relative to GDP (MANUFACT), and the share of manufactured export in total export (MANEXPO) respectively. The third equation and the forth equation show the relationship between trade and economic growth after controlling for macroeconomic stability (proxies by annual inflation rate), and government expenditure (GOVTEXP).

Table (5.1) Regression on Growth with Trade-Related Variables

Included observations: 35	Dependent Variable : Per capita GDP growth rate				
Country	Singapore	Malaysia	Indonesia	The Philippines	Thailand
C	-18.776 (-1.807)***	-14.751 (-1.911)***	-8.692 (-1.842)***	-4.488 (-0.307)	-7.644 (-1.679)***
DTRADE	0.624 (2.916)**	0.215 (2.633)**	0.256 (1.435)***	0.127 (0.353)	0.524 (2.712)**
INV	0.558 (2.593)**	0.223 (2.366)**	0.518 (3.630)*	0.338 (2.520)**	0.418 (4.242)*
MANUFACT	1.405 (5.455)*	0.917 (1.850)***	0.488 (1.580)***	0.208 (0.363)	0.349 (0.924)
MANEXPO	0.458 (2.488)**	0.251 (1.837)***	0.218 (0.343)	0.123 (0.336)	0.322 (2.256)**
R - squared	0.56	0.522	0.455	0.59	0.564
Adjusted R-squared	0.50	0.46	0.39	0.54	0.51

Coefficient/ t-stats in parenthesis

* 1% significance level ** 5% significance level *** 10% significance level

From the above equation, the hypothesis of no significant relationship between trade openness and GDP growth is rejected for Singapore, Malaysia, Indonesia, and Thailand. In fact the result suggests that at 5% level of significance, trade openness is positively associated with GDP growth, such that, as openness increases by 1% point, the GDP growth rate increases by 0.62% point for Singapore. At 5% level of significant, trade openness is positively associated with GDP growth, trade openness increases by 1% point, and the GDP growth rate increases by 0.21% point for Malaysia. In Indonesia, at 10% significant level, trade openness increases by 1% point, the GDP growth rate increases by 0.25% point. In Thailand, at 5% level of significance, 1% point increases in trade openness is associated with the 0.52% point increases in GDP growth rate. These results appear consistent with the prior expectation that trade is positively associated with GDP growth rate, and other controlled variables also appear to be consistent with the prior expectation. However,

even though the regression result for the Philippines appears to be consistent with the expected outcome, no significant relationship appears between the two variables.

Table (5.2) Regression on Growth with the Decomposition of Gross Domestic Investment

Included observations: 35	Dependent Variable : Per capita GDP growth rate				
Country	Singapore	Malaysia	Indonesia	The Philippines	Thailand
C	5.524 (0.433)	0.390 (0.070)	-9.169 (-1.730)***	-5.174 (-0.408)	6.446 (3.982)*
DTRADE	0.328 (2.787)**	0.339 (1.723)***	0.255 (1.711)***	0.132 (1.575)***	0.432 (1.603)***
FDI	0.486 (2.599)**	0.205 (2.382)**	0.485 (2.893)**	1.310 (2.693)**	1.613 (2.875)**
DOMESTICINV	0.224 (2.618)**	0.975 (2.841)**	0.518 (1.435)***	0.332 (1.684)***	0.470 (3.294)*
MANUFACT	0.877 (2.368)**	0.157 (1.352)***	0.428 (1.651)***	0.181 (0.367)	0.117 (1.667)***
R - squared	0.501	0.485	0.552	0.466	0.551
Adjusted R-squared	0.44	0.42	0.49	0.40	0.49

Coefficient/ t-stats in parenthesis

* 1% significance level ** 5% significance level *** 10% significance level

Table (5.3) Regression on Growth with the Decomposition of Gross Domestic Investment

Included observations: 35	Dependent Variable : Per capita GDP growth rate				
Country	Singapore	Malaysia	Indonesia	The Philippines	Thailand
C	3.180 (4.163)*	-0.787 (-0.185)	-7.592 (-1.364)***	-9.638 (-2.597)	8.403 (4.787)*
DTRADE	0.331 (2.199)**	0.218 (1.499)***	0.221 (1.625)***	0.115 (0.073)	0.450 (1.937)***
FDI	0.401 (2.778)**	0.258 (2.382)**	0.487 (2.963)**	1.342 (2.761)**	1.886 (3.017)*
DOMESTICIN V	1.445 (2.223)**	1.067 (2.483)**	0.442 (1.535)***	0.347 (1.657)***	0.443 (2.829)**
MANEXPO	1.135 (3.045)*	0.157 (1.352)***	0.428 (0.274)	0.275 (0.475)	0.068 (2.032)**
R - squared	0.59	0.51	0.52	0.469	0.49
Adjusted R-squared	0.54	0.45	0.46	0.40	0.42

Coefficient/ t-stats in parenthesis

* 1% significance level ** 5% significance level *** 10% significance level

The above two Tables show the regression on growth with the decomposition of Gross Domestic investment for ASEAN 5 countries. These parts are separated from the influences of foreign direct investment and purely domestic investment. The result shows that positive significance of gross domestic investment is dominated by FDI inflow even though domestic capital formation accounts for a larger proportion in total GDP. In Singapore, The inward FDI still generates substantial benefits for it would improve growth rate by 0.40% point when FDI increases by 1% point after controlling for domestic investment and manufacture export relative to total export and increases 0.48% points when FDI increases by 1% point after controlling for domestic investment and manufacture sector output relative to GDP at 5% level of significance. In Malaysia, at 5% significant level, when FDI increases by 1% point GDP growth rate increases by 0.21% point after controlling for domestic investment and the share of manufacture value added to GDP, and when FDI increases by 1% point, then growth rate increases by 0.26% point after controlling for domestic investment and manufacture export relatives to total export. In the Philippines, at 5% level of significance, when FDI increases by 1%point, growth rate increases by 1.31% point after controlling for domestic investment and manufacture value added relative to GDP and when FDI increases by 1% point, growth rate increases by 1.34% point after controlling for domestic investment and manufacture export out of total export. In Thailand, at 5% level of significance, if FDI increases by 1% point, GDP growth rate increases by 1.61%% point after controlling for domestic investment and manufacture sector output relative to GDP and at 1% level of significance, if FDI increases by 1% point, then, growth rate increases by 1.87% point. In Indonesia, at 5% level of significance, FDI increases by 1% point, GDP growth increases by 0.48% points after controlling for domestic investment and manufacture value added relative to GDP and the share manufacture export to total exports. Generally, cross-country studies on the influence of FDI on host country find no consistent correlation between the stock or inflow of FDI as a share of GDP and the rate of growth but show that FDI in combination with some other factor or factors is positively related with growth. It is widely observed that the contributions from foreign invested enterprises to developing countries are not only capital but also more advanced technology and better management practices that augment production efficiency.

Table (5.4) Test for Omitted Variables

Included observations: 35	Dependent Variable : Per capita GDP growth rate							
Country	C	DTRADE	INV	MANEXPO	GOVTEXP	INFLATION	R-squared	Adjusted R-squared
Singapore	23.251 (2.396)**	0.543 (2.937)**	0.707 (1.598)***	0.625 (2.469)**	0.869 (4.320)*	-	0.48	0.41
	18.856 (1.516)***	0.432 (1.654)***	0.645 (0.311)	0.536 (0.555)	-	-0.457 (-1.287)***	0.44	0.37
Malaysia	-3.358 (-0.450)	0.228 (0.695)	0.234 (2.355)**	0.273 (0.985)	0.028 (0.058)	-	0.57	0.52
	-2.476 (-0.612)	0.214 (1.105)***	0.187 (2.066)**	0.219 (0.272)	-	-0.369 (-2.716)**	0.60	0.55
Indonesia	-14.752 (-1.793)***	0.116 (0.253)	0.385 (2.992)**	0.118 (0.325)	0.772 (1.324)***	-	0.47	0.40
	1.349 (0.313)	0.114 (0.222)	0.214 (1.871)***	0.113 (0.337)	-	-0.164 (-4.011)*	0.49	0.42
The Philippines	-9.483 (-2.501)**	0.116 (1.528)***	0.343 (2.172)**	0.037 (0.564)	0.25 (-0.046)	-	0.53	0.47
	-3.337 (-1.192)***	0.110 (0.201)	0.275 (2.991)**	0.088 (0.206)	-	-0.282 (-5.932)*	0.56	0.50
Thailand	-3.060 (-0.947)	0.418 (0.815)	0.459 (4.963)*	0.405 (3.310)*	0.482 (-2.431)**	-	0.55	0.49
	-3.070 (-0.937)	0.414 (1.643)***	0.438 (4.772)*	0.495 (3.063)*	-	-0.348 (-2.261)**	0.48	0.41

Coefficient/ t-stats in parenthesis

* 1% significance level ** 5% significance level *** 10% significance level

Table (5.4) analyzes the possibility of omitted variables based on equation (8) and (9). Two policy variables, the ratio of government consumption to GDP and inflation rate (as a proxy for stability of monetary policy), are tested. The results revealed that both coefficients have expected signs which are negative for inflation rate and positive for government expenditure relative to GDP. Inflation rate (measured by the annual growth rate of consumer price index) increases by 1% point, the annual GDP growth rate declines by 0.45% point for Singapore, 0.37% point for Malaysia, 0.16% point for Indonesia, 0.28% point for the Philippines, and 0.35% point for Thailand. Government expenditure share of GDP is observed to be positively associated with GDP growth at 1% level of significance for Singapore, 10% level for the Philippines, and 5% level for Thailand. In this case, an increase in the share of government expenditure relative to GDP by 1% point is associated with an increase in GDP growth rate by 0.87% point for Singapore, 0.03% point for Malaysia, 0.77% point for Indonesia, 0.25% point for the Philippines, and 0.48% point for Thailand. This is consistent with *a priori* expectation, to the extent that

increase government expenditure leads to an increased in GDP growth rate. However, there is no statistically significant is found in Malaysia and the Philippines.

5.4 The Result of Growth Rate of Productivity of Capital with Trade Related Variables in ASEAN 5 Countries

Table 5.5 below shows the outcome of the regression of marginal productivity of capital (DA_2) on trade openness, while controlling for some key variables; foreign direct investment (FDI), domestic investment (DOMESTICINV), and manufacturing export share of total export (MANEXPO).

Table (5.5) Regression on Productivity Growth

Included observations: 35	Dependent Variable : DA_2				
Country	Singapore	Malaysia	Indonesia	The Philippines	Thailand
C	9.390 (8.506)*	8.272 (5.234)*	5.932 (3.996)*	6.554 (4.329)*	6.057 (7.515)*
DTRADE	0.349 (2.316)**	0.335 (1.398)***	0.248 (0.819)	0.398 (0.968)	0.246 (1.446)***
FDI	0.966 (4.506)*	0.365 (2.992)**	0.278 (2.368)**	0.559 (2.138)**	0.315 (4.514)*
DOMESTICINV	1.621 (2.326)**	0.259 (2.368)**	0.223 (1.919)***	0.432 (1.624)***	0.303 (4.218)*
MANEXPO	0.394 (5.972)*	0.443 (3.458)*	0.348 (2.598)**	0.437 (0.296)	0.66 (1.341)***
R - squared	0.81	0.53	0.45	0.41	0.54
Adjusted R-squared	0.79	0.47	0.38	0.33	0.48

Coefficient/ t-stats in parenthesis

* 1% significance level ** 5% significance level *** 10% significance level

The above Table analyzes whether trade-related factors and other growth-conducive elements have possible correlation with growth rate of productivity of capital in ASEAN 5 as specified in equation (10) with DA_2 corresponding to the A_2 series in the previous section. The regression result in Table (5.5) reports similar sign of the coefficients in the previous trade-growth regression. Trade volume as a share of GDP, the FDI-GDP ratio, domestic investment, and manufactured export relatives to total export all seem to enhance the marginal product of capital for Singapore, Malaysia, and Thailand. At 5% significant level, trade openness increases by 1% point, the marginal productivity of capital increases by 0.35% point for Singapore.

Trade openness generates substantial benefits for it would improve the growth rate of productivity of capital by 0.25% point if the volume of trade ratio to GDP goes up by 1% point for Thailand at 10% significant level. In Malaysia, at 10%% level of significance, the marginal productivity of capital increases 0.34% point if trade ratio goes up by 1% point. However, even though the regression result for the Indonesia and the Philippines appear to be consistent with the expected outcome, no significant relationship is found between the two variables.

5.5 The Results of Growth with Trade Related Variables in CLMV Countries

The rapid economic growth in CLMV as described in the previous chapters following the openness to international trade over the past decades is observably associated with the expansion of natural resource-based exports for the first few years and booming labor-intensive manufacturing exports in successive years for the Cambodia and Vietnam, and booming oil and gas sector in Myanmar. The observation signals three possible channels through which the effects of trade on growth for developing countries in transition like CLMV countries are expected to spread.

First, CLMV countries are resource-based economies with a comparative advantage in natural resource products and labor-intensive goods. As the Heckscher-Ohlin model predicts, the country exports the merchandise whose inputs are mainly natural resources or labor and imports capital-intensive goods. The fact that it can sell to the world at higher prices while buying at lower prices than domestic prices allows the integrated country to benefit a great deal from international trade. In addition, a more open economy is endowed with greater chance to expand its market which further increases capital accumulation. The enlargement of the capital stock is a key determinant for faster growth not only in the short run but also in the long run as forecast by the AK model.

The second effect of international trade is channeled through the industrial transformation suggested by Ventura with the economy shifting away from the labor-intensive traditional sector into the capital-intensive manufacturing sector along with capital accumulation. Trade is pivotal in making the structural shift in small open economy viable and the restructuring enables it to beat the diminishing returns to capital in order to maintain high growth for a long period of time as in the cases of the East Asian countries. Generally, the country will concentrate on exporting capital-intensive goods and importing labor-intensive goods in the future.

Third, trade serves as a key channel for technological development for it provides greater opportunities to absorb world technology. The more an economy integrates into the world market, the higher the steady state stock of knowledge. Technology progress not only speeds up the convergence process to the steady state equilibrium but also helps sustain a high growth rate permanently.

Table (5.6) Regression on Growth with Trade-Related Variables

Included observations: 21	Dependent Variable : Per capita GDP growth rate							
Country	C	DTRADE	D _{TL}	INV	MANUFACT	MANEXPO	R-squared	Adjusted R-squared
Cambodia	-0.030 (-0.09)	0.258 (3.990)*	-	0.364 (1.639)***	- 0.213 (-0.355)	0.351 (0.454)	0.63	0.54
	2.925 (0.869)	-	0.366 (2.328)**	0.633 (2.430)**	-0.533 (-0.260)	0.256 (0.122)	0.52	0.40
Lao P.D.R	2.397 (1.637)***	0.222 (0.840)		0.272 (1.339)***	-0.101 (-1.418)***	0.245 (0.079)	0.57	0.46
	6.838 (3.483)*	-	0.397 (2.898)**	0.198 (1.390)***	-0.092 (-0.815)	0.266 (0.233)	0.56	0.45
Myanmar	5.545 (1.301)***	0.212 (3.030)*	-	0.881 (2.158)**	-0.467 (-0.045)	0.088 (0.795)	0.67	0.59
	7.802 (2.103)**	-	0.714 (2.885)**	1.308 (3.452)*	0.811 (1.438)***	0.183 (0.467)	0.55	0.44
Vietnam	13.489 (1.532)***	0.241 (1.719)*	-	0.655 (3.183)*	-0.671 (-0.388)	0.645 (0.290)	0.52	0.40
	16.832 (3.175)*	-	1.205 (1.333)***	0.511 (2.454)**	-0.660 (-0.326)	2.729 (0.522)	0.48	0.35

Coefficient/ t-stats in parenthesis

* 1% significance level ** 5% significance level *** 10% significance level

The estimation of the effects of trade openness on growth by the OLS method is presented in the above Table. The result of positive coefficients estimated for trade-GDP ratio and dummy D_{TL} as measures of openness is in support of the views that international trade accelerates growth. However, the significance is sensitive to regression specifications depending on whether variables of structural transformation proxies by the manufacturing sector share over GDP and pattern of exports measured by the share of manufacturing goods in total exports are included in the regression equations or not. Estimates in the above Table show a strong significant connection between the two trade variables and growth for Myanmar, Vietnam and Cambodia. Here, a 1% point increase in the trade-GDP ratio or D_{TL} would augment per capita

incomes by 0.26 % point and 0.36% point for Cambodia, 0.24% point and 1.20% point for Vietnam, 0.21 % point and 0.71% point for Myanmar respectively. The figures imply that a onetime policy change in explaining the variability of growth rate may play a more important role than trade volume to GDP during the study period. For Myanmar, there is a positive relationship between two trade variables and growth rate as a prior expectation. In these regressions, if trade volume to GDP rises 1% point, growth rate would go up by 0.21% point at 1% significant level, and if D_{TL} rises by 1% point, the growth rate would increase by 0.71% point at 5% significance level. However, no significant relationship is observed between trade openness and growth for Laos P.D.R even though it appears to be a prior expectation. Regression results also reveal the critical contribution of capital accumulation to growth rate as predicted by the AK model. Since gross domestic investment flows consist of purely domestic investment and foreign direct investment, the sources of such positive effects come from either higher saving rate or increased foreign direct investment or both.

However, structural transformation appears to have unexpectedly negative correlation with growth for CLMV countries although the result is not robust. Only for Myanmar, there is a positive correlation between growth and MANUFACT after controlling for D_{TL} , INV and MANEXPO at 10% level of significance. Moreover, in the case of pattern of export, the results found that there is a consistence with *a prior* expectation for CLMV countries even though the results are not statistically significant. Therefore, it can be inferred that natural resource-based exports are positively associated with the growth rate of CLMV countries.

The reasons are more likely to be attributable to the overwhelmingly adverse effect of a transitional shift from the command economy to the market economy over the impetus from a more open policy. Before reforms, most of the CLMV countries carried out industrialization and modernization policy which focused on heavy industry or capital-intensive manufacturing sectors together with a trade policy concentrating on traditional markets. However, almost all investment for the industrialization and modernization process under the command economies were poured into inefficient state-owned enterprises, which account for the largest proportion of the economies, resulting in great amount of idle machines or obsolete capital stock. In addition, when the open-door policy took real effects around late 1980s, predictions from the Heckscher-Ohlin theorem dominated. Manufacturing exports in which CLMV have comparative disadvantage also declined quickly while

natural resource-based exports in which the CLMV have comparative advantage kept rising steadily in subsequent years. Weak management skills and lack of innovations in business in the context of a rapidly changing international environment remain inherent problems of state-owned companies that are not easy to overcome overnight. Consequently, negative impacts of inefficiency seem to persist for a number of years.

Table (5.7) Regression on Growth with the Decomposition of Gross Domestic Investment

Included observations: 21	Dependent Variable : Per capita GDP growth rate							
Country	C	DTRADE	FDI	DOMESTIC -INV	MANUFACT	MANEXPO	R-squared	Adjusted R-squared
Cambodia	1.535 (0.434)	0.264 (4.476)*	0.507 (1.980)***	0.312 (1.423)***	0.132 (0.850)	-	0.66	0.58
	-0.160 (-0.049)	0.274 (4.983)*	0.437 (1.898)***	0.178 (1.740)***	-	0.084 (0.746)	0.65	0.57
Lao P.D.R	1.525 (1.663)***	0.030 (1.465)***	0.169 (1.580)***	0.085 (1.527)***	-0.061 (-0.776)	-	0.56	0.45
	0.887 (0.844)	0.012 (0.469)	0.222 (2.073)**	0.117 (2.766)**	-	0.022 (0.507)	0.54	0.43
Myanmar	5.413 (1.730)***	0.238 (3.688)*	-0.854 (-1.976)***	0.667 (1.596)***	0.307 (1.310)***	-	0.67	0.59
	-0.137 (-0.030)	0.274 (4.811)*	-0.439 (-1.586)***	0.179 (0.866)	-	0.284 (2.230)**	0.64	0.55
Vietnam	1.174 (0.105)	0.55 (2.606)**	0.335 (2.771)**	0.247 (1.323)***	0.620 (0.175)	-	0.45	0.32
	11.007 (1.688)***	0.041 (1.718)***	0.361 (3.073)*	0.320 (3.198)*	-	-1.579 (-1.228)***	0.52	0.40

Coefficient/ t-stats in parenthesis

* 1% significance level ** 5% significance level *** 10% significance level

The above Table separates the influences of foreign direct investment and purely domestic investment from gross domestic investment. Here, both FDI-GDP and purely domestic investment appear to be consistent with prior expectation in CLV countries, and it seems that FDI contributes significant effect on the growth rates of the CLV economies. However, an increase in foreign direct investment by 1% point is associated with a decline in GDP growth rate by 0.85% point in Myanmar. This effect of FDI is puzzling in the light of contrary *a priori* expectation that FDI enhances economic growth by adding both capital and new technology.

The possible explanation of this puzzle is that most of the FDI inflows go to the oil and gas, and the hotel and tourism sub-sectors of the economy in Myanmar. It

is estimated that nearly 50% and at least 10% of all FDI inflows go into the oil and gas, and the hotel and tourism sub-sectors respectively, during the period under review. Unfortunately, these sectors do not absorb much labor; hence the mechanism for transfer of technology through the spill-over effect is not effective. The net effect of this is that the impact of FDI is not as large as those of other manufacturing industries even though the oil and gas sectors of economy earn a lot of foreign exchange. This makes the path taken by most ASEAN countries towards industrialization not observable in case of Myanmar due to the failure of FDI to contribute to growth significantly. Additionally, earning large foreign exchange from natural resource base sector (oil and gas) makes it difficult for a small economy like Myanmar to achieve industrialization. In addition, the share of FDI to GDP in Myanmar's economy appears too small, and therefore if about 50% is directed to the oil and gas and the hotel and tourism sub-sectors, then it is hard to expect FDI to spur growth in Myanmar's case.²⁸

Table (5.8) Test for Omitted Variables

Included observations: 21	Dependent Variable : Per capita GDP growth rate							
Country	C	DTRADE	INV	MANEXPO	GOVT	INFLATION	R - squared	Adjusted R-squared
Cambodia	10.795 (1.376)***	0.156 (1.561)***	0.338 (1.836)***	0.069 (0.632)	-0.727 (-1.787)***	-	0.66	0.58
	3.455 (1.048)*	0.305 (6.713)*	0.282 (1.986)***	-0.036 (-0.385)	-	-0.140 (-2.891)**	0.73	0.66
Lao P.D.R	2.428 (1.758)***	0.013 (0.512)	0.099 (2.073)**	0.023 (0.542)	-0.114 (-0.939)	-	0.54	0.43
	0.799 (0.716)	0.022 (0.645)	0.107 (1.976)***	0.024 (0.510)	-	-0.034 (-0.405)	0.52	0.40
Myanmar	10.752 (1.334)***	0.348 (1.410)***	0.3000 (1.390)***	0.073 (0.047)	-0.754 (-1.776)***	-	0.65	0.56
	3.315 (0.919)	0.305 (6.445)*	0.270 (1.489)***	-0.036 (-0.367)	-	-0.140 (-2.802)**	0.72	0.65
Vietnam	9.559 (1.419)***	0.037 1.696***	0.329 (3.611)*	0.696 (1.350)***	0.271 (0.806)	-	0.68	0.60
	10.767 (1.419)***	0.055 (2.294)**	0.465 (3.562)*	1.199 (1.609)***	-	-0.037 (-1.355)***	0.57	0.46

Coefficient/ t-stats in parenthesis

* 1% significance level ** 5% significance level *** 10% significance level

The above Table shows the possibility of omitted variables based on the regression of equation (8) and (9). Two policy variables, the ratio of government

²⁸ Similar idea has been expressed by Wacziarg (2001).

consumption to GDP and inflation rate are tested. The hypothesis of no significant relationship between trade openness and GDP growth is rejected. In fact the result suggests that at 1% level of significance, trade openness is positively associated with GDP growth, such that if trade openness increases by 1% point, the GDP growth rate increases by 0.30% point for Myanmar. In Vietnam, at 5% significance level, if trade openness increases by 1% point, the GDP growth rate increases by 0.05% point. These results appear consistent with the prior expectation that trade is positively associated with GDP growth rate, and other controlled variables also appear to be consistent with the prior expectation. However, even though the regression result for the Laos P.D.R appears to be consistent with the expected outcome, no significant relationship is found between the two variables. Government expenditure share of GDP is observed to be negatively associated with GDP growth for CLMV countries. The possible explanation is that increased government expenditure leads to an increase in real interest rates and exchange rate appreciation; hence the crowding out effect causes a decline in GDP growth. There is a positive relationship between share government expenditure to GDP and growth rate in Vietnam even though the result is not robust. When the effect of macroeconomic stability and government expenditure are controlled in the equations, no significant relationship is observed between trade openness and growth for Laos.

5.6 The Result of Growth Rate of Productivity of Capital with Trade Related Variables in CLMV Countries

The regression result in Table (5.9) tests whether trade-related factors and other growth-conducive elements have possible correlation with the marginal productivity of capital in CLMV countries or not. The results report similar signs of the coefficients as in the previous trade-growth regression while the share of manufacturing exports to total merchandise exports (MANEXPO) is negatively associated with productivity growth rates for all CLMV countries. At 10% significance level, trade openness is positively correlated with marginal productivity of capital for Cambodia and Vietnam. In Laos and Myanmar, the estimation appears to have expect outcome for all variables, but not statistically significant. Therefore, the growth mechanism described by Ventura does not appear to have started in CLMV yet. However, some positive signs exist which indicates that industrialization process has started on the basis of the comparative advantage of CLMV. CLMV have

been under command economies for the greater part of its economic history until the recent economic and trade reforms. As a result of this, the industrial transformation specified in Ventura will take a while to materialize and the manufacturing sector, particularly light manufacturing sector based on capital-intensive technology will only begin gaining its comparative advantage after it has fully adjusted to this structural transformation

Table (5.9) Regression on Productivity Growth

Included observations: 21	Dependent Variable : DA ₂			
Country	Cambodia	Lao P.D.R	Myanmar	Vietnam
C	0.03 (3.30)*	0.005 (3.68)*	0.382 (5.629)	0.04 (3.87)*
DTRADE	0.05 (1.59)***	0.003 (0.76)	0.6195 (0.321)	0.35 (1.46)***
FDI	0.09 (1.38)***	0.04 (4.98)*	-0.429 (-2.375)**	0.13 (2.58)**
DOMESTICINV	0.30 (2.64)**	0.006 (3.22)*	0.521 (0.283)	0.43 (1.88)***
MANEXPO	-0.24 (-6.35)*	-0.056 (-2.74)**	-0.296 (-0.180)	-0.24 (-6.35)*
R - squared	0.59	0.53	0.47	0.48
Adjusted R-squared	0.49	0.41	0.34	0.35

Coefficient/ t-stats in parenthesis

* 1% significance level ** 5% significance level

***10% significance level

CHAPTER VI

Conclusion

6.1 Findings

This dissertation evaluates the effects of open-door policy on the economic growth as well as on the growth rate of productivity in ASEAN countries. In addition, it also analyzes the effect on the pattern of exports induced by the trade liberalization in ASEAN countries. The AK model is applied for the study in order to estimate the growth and productivity process of ASEAN. It is based on the theoretical insight of Ventura, which shows that a small open economy is not subject to the diminishing returns to capital under the regime of free trade, even when its technology itself is given by the standard CES production function.

The result of the analysis in chapter five suggests that among the ASEAN 5 countries, it appeared to have a prior expectation that trade openness is positively and significantly associated with GDP growth rate in Singapore, Malaysia, Thailand, and Indonesia. No significant relationship is found between trade openness and growth in the Philippines. Moreover, foreign direct investment, the share of manufacturing sector's value added in GDP, and manufacturing exports share of total exports are all positively and significantly associated with GDP growth rate for Singapore, Malaysia, and Thailand.

In addition, the positive effect of capital accumulation on growth is dominated by FDI inflows rather than purely domestic investment in Thailand, Indonesia, and the Philippines whereas domestic investment plays a significant role in Singapore and Malaysia. Therefore, economic growth has been increasingly supported by high saving and investment rates (the product term $A^*(I/Y)$). It can be inferred that the importance of high investment rates are key determinants of economic growth in ASEAN 5 countries. Furthermore, since the coefficient of gross domestic investment relative to GDP is significant for the ASEAN 5 countries, it can be said that the economic growth in ASEAN 5 countries during the study period is largely influenced by the level of capital accumulation in the whole economy.

The effects of fiscal policy, monetary policy and open-door policy are strongly and significantly associated with growth rate for Singapore, Thailand, and Indonesia whereas the effects of open-door policy and monetary policy is more importantly correlated with GDP growth rate in Malaysia and the Philippines.

The result from the analysis of the relationship between trade openness and marginal productivity of capital is positively and statistically significant only for Singapore, Malaysia and Thailand. Meanwhile there is no significant relationship between trade and marginal productivity of capital is found in Indonesia and the Philippines.

There is some positive evidence that trade openness enhances growth for CLMV countries. As expected, both trade-GDP ratio as a measure of trade openness and the implementation of the open-door policy dummied by D_{TL} are found to promote economic growth for CLMV countries. In Vietnam, the positive effect of capital accumulation on growth is dominated by FDI inflows rather than purely domestic investment although it accounts for a relatively smaller proportion in GDP.

On the other hand, foreign direct investment is negatively and significantly associated with GDP growth rate for Myanmar. The evidence shows that the share of government expenditure to GDP and foreign direct investment are negatively associated with growth. When the effect of macroeconomic stability and government expenditure are controlled in the estimation, it found that the share of government expenditure to GDP is observed to be negatively associated with growth for CLM countries due to the crowding out effect of economies.

The manufacturing sector's value added relative to GDP is observed to have a negative correlation with growth while the manufacturing export share of total exports is significantly and negatively correlated with productivity. This implies that the evidence for manufacturing-led-growth is very weak in the case of CLMV. This is because the expected positive gains from a growing manufacturing sector are overshadowed by the adjustment process of the exports sector and the changing structure of the economy to the world market. In effect, the evidence of the existence of the growth mechanism explored by Ventura seems to be rather weak for CLMV countries and one possibility could be that CLMV countries are at the early stage of economic development and that it is not yet free from the effect of diminishing returns to capital.

It is observed that with the exception of the Philippines, all ASEAN 5 countries have undergone significant structural change since the 1970s, as a result of liberalization in trade with rapid industrialization. In Indonesia, Malaysia, and Thailand, the change has been a shift away from agriculture and mining, towards the manufacturing industry. In Singapore, the change was from services connected with

its entrepot trade toward labor-intensive export-oriented manufacturing from the mid 1960s to the 1970s, and Singapore has then moved towards the development of capital-intensive and skill-intensive manufacturing as well as high value-added services. In addition, the product composition of exports of ASEAN 5 countries has shifted from predominantly natural resource-intensive to unskilled labor-intensive export further to physical and human capital intensive exports and then to technology and knowledge intensive exports.

It is also observed that the structure of exports has not changed in CLMV countries during the study period. After adopting the open-door policy in CLMV countries, the major export items have moved from agricultural products to labor-intensive industries in Cambodia and Vietnam. The success of openness can be seen in increasing trade flows, in particular, in achievements in the garment sector in Cambodia. However, Cambodia's exports are largely dominated by one sector. In Vietnam, the share of manufactures began to increase from the mid-1990s and manufactured exports were initially concentrated in resource-based products and labor-intensive goods such as garments and footwear. As for the structure of export in Myanmar, although some cash crops increased significantly in relative importance as export commodities, the expansion of manufactured exports was limited. After 1990s, the Myanmar export structure has moved to garment and natural gas even though the exports of agricultural products have remained dominant. In Lao PDR, most of its exports are concentrated in agricultural products and labor-intensive products.

To sum up, trade liberalization enhances growth in ASEAN 5 countries, and the capital accumulation is the key determinant in ASEAN 5 to achieve high economic growth during the study period. Moreover, foreign direct investment remains the main driver of capital accumulation, and technology development in ASEAN 5 countries as well as fiscal and monetary policies also plays a role in ASEAN 5 countries. In addition, trade liberalization affects the growth rate of productivity in capital only in Singapore while the coefficient of trade volume to GDP is significant at only 10% level in Malaysia and Thailand, it is rather weak to say that trade can overcome the diminishing returns to capital in the other ASEAN 5 countries. However, some evidences indicate that there is shift from labor-intensive manufacturing to capital-intensive and skill-intensive industries in Malaysia, Thailand, Indonesia and the Philippines. Consequently, the pattern of export also significantly changed in those countries.

Trade liberalization also fosters growth in CLMV countries. The economic growth in CLMV countries during the study period is largely influenced by the level of capital accumulation and natural- resource-based exports. In addition, FDI plays an important role in CLV countries. Monetary policy is strongly related with growth in CLMV countries, and a crowding out effect exists in most CLMV countries. The effect of structural transformation is weak in the manufacturing sector with growth. Moreover, it is difficult to conclude that trade liberalization affects the growth rate of productivity of capital in CLMV countries. Therefore, it can be inferred that the growth mechanism described by Ventura does not appear to have come into play in CLMV countries yet.

6.2 Suggestions

With respect to the major findings of the above study, the following suggestions are provided for consideration:

1. Integration and participation in the regional production network is significant for the all ASEAN economies especially for CLMV countries. The ASEAN 5 economies have witnessed a remarkable period of economic growth, accompanied by a profound structural change with the manufacturing sector leading the change in bringing about the noticeable transformation. Moreover, it can be said that ASEAN's export specialization patterns, reflected by changes in revealed comparative advantage, have been a manifest of its ability to restructure its manufacturing sector in order to participate in markets with rising world demand. Therefore, ASEAN can sustain or enhance its share in the world's manufacturing trade depends on the capacity of its manufacturing sector to adjust to changing composition of world trade and compete on the basis of both prices as well as non-price factors.
2. The faster growth experienced by ASEAN countries is caused largely by the rapid increase in physical capital accumulation, and their capital accumulation relies largely on foreign investment so that domestic entrepreneurs have a little chance to learn and replace foreign investment in the future. Therefore, the proactive policies can strengthen domestic entrepreneurs' capabilities, by also involving foreign firms in financing training and skill formation that the countries need. Government's intervention should focus on strengthening and

expanding the range of firms' capabilities to produce more efficiently and engage in modern industrial activities. Therefore, the development of domestic capabilities that are needed for the countries to develop independently even when their economies are integrated into the world economy.

3. The positive impacts of trade liberalization on the growth rate and the marginal productivity of capital are mainly driven by remove trade barriers, and also encourage businesses in all sectors, particularly private firms to engage in export-import activities. Therefore, the governments should provide export credit facilities to support exporters not only in expanding their operations in existing markets but also in penetrating new markets. Therefore, governments should adopt the new policies that provide strong incentives for investors to explore their potentials and organize the businesses in such a way as to better exploit the benefits of international trade. As a result, the economies can increase the marginal product of capital by restructuring to better fit the external demand and supply conditions.
4. Moreover, exports tend to serve as an impetus for productivity improvement in developing countries like the CLMV countries. Because all the exported items have to meet certain international standards or criteria, such requirements force domestic investors in these countries to upgrade production lines, introduce new technology and better management skills so as to make their products competitive abroad. Therefore, efforts should be made to upgrade quality of export in order to compete in the world market.
5. In the productivity estimation of CLMV countries, the manufacturing export relative to total exports is found to be negatively correlated with the productivity growth rate. It can be inferred that natural resource-based exports have a positive effect on marginal product of capital. The critical role of natural resource-based products as a stimulus for productivity enhancement in CLMV countries comes from the prospect for exporting these commodities in which the countries have comparative advantage. Then, efforts should be made for the expansion of those natural resource-based industries which reflect the development of new technology.
6. The results also revealed that trade openness affects GDP growth in the presence of sound macroeconomic policy in both ASEAN 5 and CLMV countries. It is therefore suggested that, in addition to the open-door policy

adopted by the governments, sound macroeconomic policies should be given much attention in order to enhance and consolidate the gains from trade liberalization. In addition, the result found that the share of government expenditure to GDP is negatively associated with growth in most CLMV countries. It can be inferred that crowd- out effects exist in those countries as high government expenditure hamper the economic performance of the countries. However, since their economies are undertaking the process of industrialization, these countries are still needed huge amount of government spending for soft and hard infrastructure in order to promote trade and economic performance. Therefore, government expenditure should be used in an efficient and effective ways, and right kind of government spending should be used in right place is important in these countries. Furthermore, fiscal policy should be reorientation in order to avoid crowd- out effect in CLMV countries.

7. Also it is quite clear from the study that the manufacturing sector is not impacting on the economy of CLMV as expected, due to the adverse effect of the adjustment process of the structural transformation from a restrictive trade regime to an open economy. It will take some time before this transformation will begin to bear positively on growth. In the light of this finding, effort should be made to deepen the reforms which are on-going, and also provide more incentives to attract more investors to the manufacturing sector. To be able to follow the East Asian Miracle, CLMV has to improve on its comparative advantage in the capital intensive sector by shifting resources towards the expansion of the capital intensive sector, increase the manufacturing export and the manufacturing sector share of GDP.
8. Another important finding for Myanmar is that foreign direct investment is negatively associated with GDP growth rate and growth rate of productivity of capital. The possible explanation is that most of the foreign direct investment inflows go into the oil and gas sector and hotel and tourism sector. Unfortunately, these sectors do not have chance to learn advanced technology from foreign firms. As a result, the spillover effect from foreign direct investment is too small for Myanmar. Therefore, to reduce this adverse effect on growth and productivity of capital, more attractive incentives should provide in manufacturing sector in order to capture more of the spillover

benefits created by the operation of foreign firms. Moreover, local content requirements should consider in foreign investment firms for facilitating the learning by doing process for Myanmar.

9. In this dissertation, the relationship between trade and growth as well as the relationship between trade and growth rate of productivity of capital are not strongly correlated with each others. In reality, the rapid growth of the ASEAN economies depends on several factors such as the political stability, investment in human and physical infrastructure, sound macroeconomic management, strategic industry policy, deregulation and privatization of the domestic economy, and these have all provided a favorable environment for the rapid growth of the economies. Therefore, the researchers should conduct further study on the impact of trade liberalization on growth and productivity by adding with the other variables that determine economic growth and productivity which are not included in this study.

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APPENDICES

**Appendix (1) Commodity Composition of Singapore's Exports for Selected
Years (US\$ million)**

Commodity	1960	1965	1970	1975	1980
Food and live animals	150.78	142.35	178.21	383.24	938.66
Beverages and tobacco	23.01	15.11	23.38	17.25	73.46
Crude materials except fuels	509.08	267.68	468.55	716.81	2200.11
Crude rubber	467.73	221.14	383.29	556.64	1539.69
Wood, lumber, cork	n.a	n.a	36.21	64.80	273.43
Mineral fuels	128.09	140.83	360.07	1808.73	4882.18
Petroleum, crude and partly refined	4.10	0.00	n.a	21.87	n.a
Petroleum products	123.88	140.37	358.60	1768.53	4809.40
Animal and veg.oil and fats	16.42	19.59	45.80	103.45	512.07
Palm oil	n.a	11.70	28.32	73.18	304.17
Chemicals	28.18	36.45	42.36	200.49	1374.84
Chem, elements and compounds	6.37	5.92	6.03	30.40	132.09
Medicinal products	n.a	5.95	7.23	73.31	151.13
Plastic materials	n.a	2.34	4.38	54.94	103.72
Basic manufactures	102.74	116.56	138.24	457.94	1601.58
Wood and cork amnuf.	n.a	3.31	18.32	84.61	256.69
Paper, board, and manuf.	n.a	6.22	7.24	18.75	60.85
Textile yarn, fabrics, etc.	46.18	45.89	53.71	130.20	366.65
Nonmetallic mineral manuf.	7.43	13.55	14.43	38.55	133.98
Iron and steel	13.11	16.70	12.79	86.82	212.33
Nonferrous metals	2.87	4.83	3.76	16.89	316.62
Metal manuf.	14.11	18.48	20.77	66.74	204.48
Machinery and transport equip	76.63	102.88	170.15	1220.00	5105.49
Machinery other than elec.	34.28	35.17	61.93	375.01	1157.67
Office mach.	0	n.a	13.25	87.55	153.53
Metalworking mach.	0	n.a	n.a	n.a	n.a
Textile and leather mach.	0	n.a	n.a	n.a	n.a
Mach. For special industries	0	9.79	19.65	96.38	295.13
Mach. And appliances	0	n.a	15.96	113.22	485.02
Elec. Mach. , apparatus, appliances	10.73	16.69	62.10	620.36	3120.61
Elec. Power mach, and switchgear	0	2.38	5.29	54.14	286.29
Equip. for distributing elec.	0	n.a	n.a	n.a	n.a
Telecommunications apparatus	0	3.91	11.69	168.82	1259.15
Domestic elec. Equip	0	n.a	1.94	14.68	113.45
Other elec. Mach, and apparatus	0	n.a	42.29	374.80	1428.65

Transport equip.	31.07	50.21	46.12	224.64	827.21
Road motor vehicles	26.42	46.93	39.52	80.44	211.24
Aircraft	0	n.a	0.85	10.70	158.48
Ships and boats	0	n.a	51.13	130.21	435.20
Misc. manufactures	32.46	49.33	80.69	371.07	1283.10
Clothing	8.44	16.47	30.94	117.07	426.26
Instruments, watches, clocks	n.a	6.19	10.12	124.52	257.88
Unclassified	68.44	90.54	46.10	98.09	1403.99
All commodities	1332.05	981.34	1553.55	5377.08	19375.48

Source: Wong, C.M., "Trends and Patterns of Singapore's Trade in Manufactures", the National Bureau of Economic Research", 1987.

Appendix (2) Malaysia's Manufactured Exports in 1997

(% Total Manufactured Exports)

Item	%Total Manufactured Export
Electronic components	45.2
Electrical machinery and appliances	21.3
Chemical and chemical products	4.6
Textiles, clothing and footwear	4.2
Wood products	3.6
Metal products	3.2
Transport equipment	2.7
Rubber products	2.2
Other manufactures	13.0

Source: Wong, J., ASEAN ECONOMIES IN PERSPECTIVE: A Comparative Study of Indonesia, Malaysia, the Philippines, Singapore & Thailand.

Appendix (3) Sources of Growth of Industrial Output
(Percentage contribution to the increase)

Industry	1960-65			1970-75			1975-80		
	Domestic Demand	Import Substitution	Exports	Domestic Demand	Import Substitution	Exports	Domestic Demand	Import Substitution	Exports
Processed food	68.5	-10.6	42.1	107.3	0.54	-7.8	89.3	0.6	10.0
Beverages and Tobacco	125.8	-25.9	0.1	73.6	26.4	-0.1	87.9	0.1	11.9
Construction Materials	112.0	-12.6	0.6	69.5	19.6	10.9	89.5	0.3	10.2
Intermediate Products I	33.3	39.1	27.6	65.8	23.7	10.5	96.3	-2.1	5.8
Intermediate Products II	98.4	-8.7	10.3	33.6	50.6	15.9	85.7	-9.5	23.8
Consumer nondurables	124.4	-32.6	8.2	51.8	35.6	12.6	80.8	14.9	4.3
Consumer durables	81.9	14.0	4.1	31.7	66.7	1.6	30.8	64.9	1.8
Machinery	68.1	31.7	0.2	48.3	49.0	2.7	42.5	46.3	2.9
Transport equipment	151.4	-51.9	0.5	24.7	75.2	0.1	10.7	7.7	0.4

Source: Akrasanee, N., "Thailand's Export-Led Growth: Retrospect and Prospects" The Thailand Development Research Institute.

Appendix (4) Sources of Growth of Industrial Output
(Percentage contribution to the increase)

Industry	1960-65			1970-75			1975-80		
	Domestic Demand	Import Substitution	Exports	Domestic Demand	Import Substitution	Exports	Domestic Demand	Import Substitution	Exports
Processed food	68.5	-10.6	42.1	107.3	0.54	-7.8	89.3	0.6	10.0
Beverages and Tobacco	125.8	-25.9	0.1	73.6	26.4	-0.1	87.9	0.1	11.9
Construction Materials	112.0	-12.6	0.6	69.5	19.6	10.9	89.5	0.3	10.2
Intermediate Products I	33.3	39.1	27.6	65.8	23.7	10.5	96.3	-2.1	5.8
Intermediate Products II	98.4	-8.7	10.3	33.6	50.6	15.9	85.7	-9.5	23.8
Consumer nondurables	124.4	-32.6	8.2	51.8	35.6	12.6	80.8	14.9	4.3
Consumer durables	81.9	14.0	4.1	31.7	66.7	1.6	30.8	64.9	1.8
Machinery	68.1	31.7	0.2	48.3	49.0	2.7	42.5	46.3	2.9
Transport equipment	151.4	-51.9	0.5	24.7	75.2	0.1	10.7	7.7	0.4

Source: Akrasanee, N., "Thailand's Export-Led Growth: Retrospect and Prospects" The Thailand Development Research Institute.

Appendix (5) Commodity Composition of Thailand's Total Exports by Broad Commodity Groups (%)

Industry	Commodity Composition			
	1960	1965	1970	1980
0. Food and live animals	56.97	53.46	49.47	57.96
1. Beverages and tobacco	1.48	0.42	1.44	1.25
2. Crude materials excluding fuels, etc.	39.02	42.71	38.58	21.47
3. Mineral fuels, etc	-	-	0.59	0.11
4. Animal and vegetable oils and fats	0.12	0.12	0.10	0.05
5. Chemicals	0.15	0.11	0.22	0.44
6. Basic Manufacturers	1.39	1.69	4.73	10.55
7. Machinery and transport equipment	-	0.04	0.15	2.25
8. Miscellaneous manufactured goods	0.36	0.45	0.66	3.97
9. Goods not classified	0.51	1.00	4.06	1.96
(0 to 4) Primary	97.59	96.71	90.18	80.79
(5 to 8) Manufactures	2.41	2.29	5.76	17.25
(0 to 9) Total	100.0	100.0	100.0	100.0

Source: Akrasanee, N., "Thailand's Export-Led Growth: Retrospect and Prospects" The Thailand Development Research Institute.

Appendix (6) Indonesia's Manufactured Exports 1997

Item	% Total
Wood products	21.1
Clothing	15.2
Textile	12.2
Footwear	9.3
Telecom equipment	7.4
Miscellaneous manufacturers	5.5
Total	70.7

Source: Tan., G., ASEAN: *Economic Development and Cooperation*, Eastern Universities Press.

Appendix (7) The Structure of Cambodia's CEPT Lists

HS	Description	Inclusion List (IL)			Temporary Exclusion List (TEL)			Sensitive List (SL)			General Exception List (GEL)		
		Statutory tariff %	Imports Collected tariff %	Exports Value (mil Riels)	Statutory tariff %	Imports Collected tariff %	Exports Value (mil Riels)	Statutory tariff %	Imports Collected tariff %	Exports Value (mil Riels)	Statutory tariff %	Imports Collected tariff %	Exports Value (mil Riels)
1. 1-5	Animal and animal products	28.0	27.9	567	11.4	10.9	2428	5.9	3.0	2662	4.0	0.9	0
2. 6-14	Vegetable products	12.3	0.5	847	7.3	2.2	1362	7.1	7.1	17	14.4	0.2	0
3. 15	Animal and vegetable oil	7.7	7.7	0	7.0	6.5	35	n.a	n.a	0	n.a	n.a	0
4. 16-24	Processed foods, drink & tobacco	35.0	0.3	0	14.5	13.4	125532	n.a	n.a	0	16.1	16.1	157
5. 25-27	Oil and mineral products	7.0	2.5	0	13.2	7.3	0	n.a	n.a	0	26.0	23.2	1
6. 28-38	Chemical products	4.2	1.7	95	9.4	7.6	535	n.a	n.a	0	7.0	6.9	0
7.1 39-40	Plastic & rubber products	8.1	3.2	23	12.1	5.6	27	n.a	n.a	0	n.a	n.a	0
7.2	Rubber	7.1	1.7	74516	7.0	0.6	9587	n.a	n.a	0	n.a	n.a	0
8. 41-43	Skin & furs and their products	13.2	6.9	6	31.4	0.1	8	n.a	n.a	0	n.a	n.a	0
9. 44-46	Wood	34.9	0.8	47293	28.4	23.7	9736	n.a	n.a	0	n.a	n.a	0
10 47-49	Wood products & paper	6.3	3.0	0	7.0	2.4	57	n.a	n.a	0	n.a	n.a	0
11.1 50-63	Textiles	19.6	1.1	3	26.6	0.3	4609	n.a	n.a	0	n.a	n.a	0
11.2 61-63	Apparel	7.6	0.7	24	26.3	2.5	9137	n.a	n.a	0	n.a	n.a	0

12. 64-67	Shoes, hats, umbrellas, etc	35.0	31.0	0	9.8	6.6	12	n.a	n.a	0	n.a	n.a	0
13. 68-70	Stone, ceramic & glass products	14.3	12.8	0	7.2	6.6	44	n.a	n.a	0	n.a	n.a	0
14. 71	Jewelry & precious metal products	n.a	n.a	0	n.a	n.a	0	n.a	n.a	0	n.a	n.a	0
15. 72-83	Base metals and their products	9.4	4.3	108	10.3	2.1	296	n.a	n.a	0	n.a	n.a	0
16. 84-85	Electrical and Mechanical machines	15.6	1.9	4234	14.6	4.4	3607	n.a	n.a	0	n.a	n.a	0
17. 86-89	Transport equipment	19.1	1.3	502	18.2	13.1	502	n.a	n.a	0	n.a	n.a	0
18. 90-92	Photographic, precision instruments	5.4	2.0	69	15.0	9.7	524	n.a	n.a	0	n.a	n.a	0
19. 93	Arms & munitions	n.a	n.a	0	n.a	n.a	0	n.a	n.a	0	7.3	7.3	0
20. 94-96	Furniture & Assorted products	23.0	9.7	5	12.3	8.0	293	n.a	n.a	0	50	50	48
21. 97-98	Object d Art	n.a	n.a	0	n.a	n.a	10	n.a	n.a	0	n.a	n.a	0
	Total	11.7	2.4	128292	15.8	5.9	168341	7.0	6.9	2679	25.7	23.0	206
	% Share			42.7			56.1			0.9			0.1

Source: Fukase, E. and Martin, W., "Free Trade Area Membership as a Stepping Stone to Development" World Bank Discussion Paper N0.421.

Appendix (8) The Structure of the Lao PDR's Phase-in-lists

HS	Description	Inclusion List (IL)			Temporary Exclusion List (TEL)			Sensitive List (SL)			General Exception List (GEL)		
		Import (\$1000)	Export (\$1000)	Weighted Average %	Import (\$1000)	Export (\$1000)	Weighted Average %	Import (\$1000)	Export (\$1000)	Weighted Average %	Import (\$1000)	Export (\$1000)	Weighted Average %
1. 1-5	Animal and animal products	0.0	0.0	n.a	6021.8	49.0	6.5	575.6	31.5	10.1	0.0	7.2	n.a
2. 6-14	Vegetable products	1.5	0.0	5.0	2864.3	7381.2	8.1	6370.3	56.5	10.2	0.0	0.0	n.a
3. 15	Animal and vegetable oil	0.0	0.0	n.a	1469.9	3.5	10.1	0.0	0.0	n.a	0.0	0.0	n.a
4. 16-24	Processed foods, drink & tobacco	20.9	0.0	5.0	31234.9	0.8	18.8	0.0	967.3	n.a	29918.5	0.0	39.8
5. 25-27	Oil and mineral products	0.0	0.0	n.a	57078.6	2503.4	5.0	0.0	0.0	n.a	0.0	0.0	n.a
6. 28-38	Chemical products	192.6	0.0	5.0	23477.0	3988.0	11.1	0.0	0.0	n.a	11.5	0.0	10.0
7. 39-40	Plastic & rubber products	2173.2	0.0	5.0	12817.7	15.3	13.5	0.0	0.0	n.a	0.0	0.0	n.a
8. 41-43	Skin & furs and their products	0.0	0.0	n.a	199.3	1176.3	13.5	0.0	0.0	n.a	0.0	0.0	n.a
9. 44-46	Wood	0.0	0.0	n.a	607.8	55633.8	31.1	1.9	6658.1	10.0	0.0	0.0	n.a
10 47-49	Wood products & paper	0.0	0.0	n.a	4611.0	92.7	9.0	0.0	0.0	n.a	0.0	0.0	
11.1 50-63	Textiles	23.4	0.0	5.0	34312.6	176.5	9.5	0.0	0.0	n.a	0.0	0.0	n.a
11.2 61-63	Apparel	0.0	0.0	n.a	5271.6	100.8	10.1	0.0	0.0	n.a	1.7	3.7	10.0
12. 64-67	Shoes, hats, umbrellas, etc	0.0	0.0	n.a	4079.5	8.6	10.1	0.0	0.0	n.a	0.0	0.0	n.a

13. 68-70	Stone, ceramic & glass products	309.7	0.0	5.0	16014.5	1.8	5.1	0.0	0.0	n.a	0.0	0.0	n.a
14. 71	Jewelry & precious metal products	0.0	0.0	n.a	1460.5	1.6	5.0	0.0	0.0	n.a	0.0	0.0	n.a
15. 72-83	Base metals and their products	1452.8	37.6	5.0	28218.9	582.7	6.1	0.0	0.0	n.a	0.0	0.0	n.a
16. 84-85	Electrical and Mechanical machines	10877.3	15.5	5.0	40336.8	48.6	9.8	0.0	0.0	n.a	935.0	0.2	7.4
17. 86-89	Transport equipment	1425.3	0.0	5.0	51514.2	69.7	33.8	0.0	0.0	n.a	8145.7	21.2	30.2
18. 90-92	Photographic, precision instruments	1798.6	0.2	5.0	918.0	1.0	9.1	0.0	0.0	n.a	0.0	0.0	n.a
19. 93	Arms & munitions	0.0	0.0	n.a	0.0	0.0	0.0	0.0	0.0	n.a	0.0	0.0	n.a
20. 94-96	Furniture & Assorted products	8.0	0.0	5.0	4599.9	159.5	13.8	0.0	0.0	n.a	19.3	0.0	30.0
21. 97-98	Object d Art	0.0	0.0	n.a	10.6	0.6	5.0	0.0	0.0	n.a	0.0	0.0	n.a
	Total	18283.3	53.2	5.0	327119.4	71995.3	13.3	6947.8	7713.4	10.2	39031.6	32.3	37.0
	% Share	4.7	0.07		83.6	90.2		1.8	9.7		10.0	0.04	

Source: Fukase, E. and Martin, W., "Free Trade Area Membership as a Stepping Stone to Development" World Bank Discussion Paper No. 421.

Appendix (9) The Structure of Vietnam's Protection

Description	Nominal Protection of Import Tariff		Effective Rate of Protection (ERP)	
	Simple Average %	Weighted Average %	ERP for Import-substitution %	ERP for Export Production %
1. Paddy rice	5.0	5.0	4.2	-3.8
2. Wheat	3.0	3.0	3.0	0.0
3. Cereal grains	5.9	2.6	4.6	-10.0
4. Vegetables, fruits, nuts	24.3	27.2	41.6	-8.1
5. Oil seeds	8.6	6.5	4.4	-7.1
6. Sugar cane, sugar beet	10.0	10.0	9.7	-3.8
7. Plant-based fibers	3.9	4.2	1.3	-6.0
8. Crops	13.2	6.2	4.5	-5.8
9. Bovine cattle, sheep, goats, horses	4.5	4.8	0.9	-7.1
10. Animal products	5.0	3.7	-1.5	-7.4
11. Wool, silk-worm cocoons	3.0	1.3	-2.2	-4.2
12. Forestry	4.0	1.2	-20.5	-22.9
13. Fishing	16.9	18.9	66.6	-45.7
14. Coal	3.8	3.4	-14.4	-22.2
15. Oil	4.5	1.0	-13.9	-15.9
16. Gas	14.1	15.5	24.5	-13.3
17. Minerals	2.3	1.1	-21.4	-27.0
18. Bovine cattle, sheep, goat meat	12.2	10.3	12.2	-3.5
19. Meat Products	18.1	27.3	43.3	-5.4
20. Vegetable oils and fats	13.1	12.3	1.4	-98.5
21. Dairy Products	16.7	14.5	16.3	-5.7
22. Processed rice	7.5	7.5	8.0	-22.5
23. Sugar	30.0	30.0	n.a	n.a
24. Food products	28.6	20.1	59.6	-48.3

25. Beverage and tobacco products	52.1	50.2	n.a	n.a
26. Textiles	29.4	30.0	115.0	-138.0
27. Wearing apparel	49.2	49.4	229.8	-231.9
28. Leather Products	18.8	13.5	-15.1	-67.1
29. Wood Products	18.7	11.9	15.2	-19.3
30. Paper products, publishing	20.0	19.4	88.1	-88.5
31. Petroleum, coal products	9.6	44.0	n.a	n.a
32. Chemical, rubber, plastic	8.8	6.4	-0.1	-40.3
33. Mineral products	20.7	23.8	69.6	-52.3
34. Ferrous metals	5.3	6.0	3.7	-25.3
35. Metals	5.8	10.4	21.9	-103.8
36. Metal products	18.5	16.6	34.5	-33.9
37. Motor vehicles and parts	22.6	18.6	186.4	-200.7
38. Transport equipment	13.2	28.3	56.6	-32.9
39. Electronic equipment	9.7	10.7	13.8	-18.4
40. Machinery and equipment	7.4	8.1	-0.6	-29.3
41. Manufactures	24.7	227.	64.3	-45.1

Source: Fukase, E. and Martin, W. "Free Trade Area Membership as a Stepping Stone to Development" World Bank Discussion Paper No. 421, 2001.

Appendix (10) Export Percent of Vietnam by Section

Year	Food and live animals	Beverage and tobacco	Crude materials excluding fuel	Mineral fuels, etc	Chemicals	Basic manufactur- ers	Machines, transport equipments	Miscellane- ous manufactu- red goods
1990	34.4	0.7	13.6	20.8	0.7	4.5	0.0	23.9
1991	36.8	0.1	15.2	30.2	0.4	3.9	0.3	13.0
1992	37.3	0.2	12.7	33.6	0.4	3.6	0.3	11.7
1993	37.4	0.2	7.8	32.9	0.5	5.4	0.7	15.0
1994	38.7	0.1	7.9	24.7	0.3	5.6	2.4	19.9
1995	37.9	0.1	6.8	22.2	0.6	6.4	1.6	24.1
1996	33.4	0.1	6.9	21.7	0.9	5.3	5.7	25.5
1997	29.3	0.4	4.1	18.0	1.2	6.1	8.2	32.4
1998	33.2	0.1	3.0	16.5	1.0	4.7	8.6	32.1
1999	928.5	0.1	2.6	20.6	1.3	7.5	8.5	30.8
2000	26.1	0.1	2.7	26.4	1.1	6.3	8.8	28.0
2001	27.0	0.3	2.7	23.1	1.5	6.6	9.3	29.3
2002	24.6	0.4	3.1	21.4	1.6	6.7	8.0	34.1
2003	22.0	0.8	3.1	20.6	1.7	6.7	8.9	36.0
2004	19.9	0.7	3.1	23.5	1.6	7.1	9.7	34.2
2005	19.6	0.5	3.8	25.8	1.7	6.7	9.7	32.3
2006	18.9	0.4	4.6	24.4	2.0	7.3	10.5	31.8

Source: Asian Development Bank, Key Indicators for Asia and Pacific 2008.

Appendix (11) Simulation on Technology level - A (t) in Singapore

Year	A1	A2	A3	A4	A5	A6
1975	0.1	0.2	0.25	0.3	0.4	0.5
1976	0.104689	0.203956	0.251556	0.297801	0.386223	0.469223
1977	0.104893	0.204645	0.252594	0.299257	0.388729	0.473061
1978	0.105978	0.20656	0.254828	0.301746	0.391536	0.475929
1979	0.106608	0.207637	0.25606	0.303088	0.39296	0.477252
1980	0.106996	0.20789	0.256049	0.302683	0.391373	0.473962
1981	0.107554	0.208765	0.256992	0.303633	0.392157	0.474339
1982	0.103621	0.200114	0.245687	0.289478	0.371714	0.44682
1983	0.104927	0.20257	0.248661	0.292931	0.376009	0.451805
1984	0.105157	0.202976	0.249135	0.293459	0.376605	0.452415
1985	0.096106	0.185724	0.2281	0.268854	0.345495	0.415649
1986	0.098477	0.191335	0.235656	0.278572	0.360189	0.436186
1987	0.108245	0.211436	0.261136	0.309573	0.402656	0.490685
1988	0.108698	0.212646	0.262838	0.311843	0.40629	0.495986
1989	0.10773	0.210465	0.259959	0.308204	0.400947	0.488694
1990	0.107593	0.21016	0.259558	0.307699	0.400212	0.487698
1991	0.103816	0.202292	0.249529	0.29543	0.383228	0.465687
1992	0.10425	0.202938	0.250195	0.296063	0.383625	0.465625
1993	0.108723	0.211932	0.26147	0.309629	0.401812	0.488482
1994	0.10784	0.210209	0.259343	0.307109	0.398538	0.484498
1995	0.104432	0.20317	0.250405	0.296216	0.383568	0.465228
1996	0.10447	0.202401	0.248914	0.293792	0.378643	0.456955
1997	0.10523	0.203811	0.250608	0.295743	0.381026	0.459661
1998	0.094694	0.182991	0.22474	0.264891	0.340394	0.409499
1999	0.103347	0.200961	0.247618	0.292842	0.37899	0.459405
2000	0.106157	0.20648	0.254454	0.300969	0.389625	0.472447
2001	0.095878	0.185951	0.228812	0.270221	0.348686	0.421346
2002	0.101771	0.198605	0.24517	0.290501	0.377461	0.459485
2003	0.102355	0.200224	0.247475	0.293605	0.382499	0.466907
2004	0.106975	0.209428	0.258959	0.307359	0.400767	0.489653
2005	0.10527	0.206313	0.255249	0.303129	0.39572	0.484084
2006	0.106475	0.208494	0.257833	0.306058	0.399165	0.487816
2007	0.106324	0.207748	0.256622	0.304271	0.395893	0.482615
2008	0.098747	0.192012	0.23659	0.279797	0.362101	0.438924
2009	0.096549	0.187734	0.231316	0.273558	0.354018	0.429115
2010	0.11201	0.219097	0.270795	0.321262	0.418505	0.510824

Source: Calculation based on productivity equation (12)

Appendix (12) Simulation on Technology level - A (t) in Malaysia

Year	A1	A2	A3	A4	A5	A6
1975	0.1	0.2	0.25	0.3	0.4	0.5
1976	0.109829	0.216188	0.268067	0.319079	0.4185	0.514452
1977	0.105908	0.208127	0.257853	0.306657	0.401497	0.492648
1978	0.104784	0.20583	0.254951	0.303136	0.396704	0.486533
1979	0.107313	0.210556	0.26065	0.309726	0.404826	0.495854
1980	0.105081	0.205437	0.253842	0.301066	0.39197	0.478148
1981	0.104333	0.203448	0.251048	0.297344	0.386022	0.469483
1982	0.103315	0.201313	0.248317	0.293992	0.381353	0.463395
1983	0.103512	0.201615	0.248639	0.29431	0.381596	0.463473
1984	0.105178	0.205188	0.253256	0.300031	0.389706	0.474213
1985	0.09656	0.188391	0.232534	0.275494	0.357868	0.435512
1986	0.099194	0.19457	0.240827	0.286129	0.37387	0.457793
1987	0.103659	0.203857	0.252658	0.300593	0.393866	0.483678
1988	0.106965	0.210261	0.260535	0.309891	0.405852	0.498146
1989	0.106965	0.2095	0.259106	0.307604	0.401278	0.490522
1990	0.106427	0.20769	0.256385	0.303788	0.394722	0.480491
1991	0.106661	0.207553	0.255836	0.302676	0.39203	0.475615
1992	0.105945	0.206009	0.253836	0.300193	0.388496	0.470919
1993	0.106743	0.207183	0.255039	0.301319	0.389152	0.470681
1994	0.105861	0.20502	0.252086	0.297476	0.383231	0.462283
1995	0.106081	0.204666	0.251147	0.295755	0.379347	0.455444
1996	0.106315	0.205257	0.251962	0.296823	0.381015	0.457833
1997	0.103572	0.199644	0.244867	0.288214	0.369284	0.442853
1998	0.090332	0.176045	0.217171	0.257141	0.333619	0.405479
1999	0.104104	0.204143	0.252637	0.300115	0.39202	0.47986
2000	0.106511	0.208324	0.25747	0.305441	0.397862	0.485585
2001	0.09823	0.191883	0.236994	0.28096	0.365461	0.445386
2002	0.103207	0.202048	0.24983	0.296521	0.386627	0.472365
2003	0.103666	0.203086	0.251204	0.29826	0.389189	0.475872
2004	0.104725	0.205333	0.254092	0.301823	0.394196	0.482452
2005	0.103281	0.202458	0.250508	0.297532	0.388503	0.475371
2006	0.103764	0.20336	0.251595	0.298787	0.390046	0.477135
2007	0.104339	0.204397	0.25282	0.300172	0.391666	0.478878
2008	0.102742	0.201351	0.249107	0.295829	0.386175	0.472389
2009	0.09638	0.188794	0.233513	0.27724	0.361719	0.442231
2010	0.105162	0.206261	0.255287	0.303296	0.396268	0.485176

Source: Calculation based on productivity equation (12)

Appendix (13) Simulation on Technology level - A (t) in Indonesia

Year	A1	A2	A3	A4	A5	A6
1975	0.1	0.2	0.25	0.3	0.4	0.5
1976	0.105223	0.207132	0.256844	0.305727	0.401009	0.492977
1977	0.107	0.210468	0.260877	0.310403	0.406805	0.499674
1978	0.105962	0.208155	0.257838	0.30658	0.401236	0.492125
1979	0.104399	0.205095	0.254054	0.302087	0.395377	0.484963
1980	0.107874	0.211741	0.262171	0.311601	0.407454	0.4993
1981	0.10587	0.207613	0.256937	0.305229	0.39872	0.488084
1982	0.09996	0.195359	0.241349	0.286199	0.372479	0.454198
1983	0.106598	0.20884	0.258328	0.306728	0.40026	0.489438
1984	0.105062	0.206297	0.25548	0.303706	0.397289	0.487046
1985	0.100461	0.196919	0.243646	0.289373	0.377824	0.462271
1986	0.103811	0.203492	0.251784	0.299044	0.390467	0.47776
1987	0.10285	0.201548	0.249341	0.296095	0.386491	0.472735
1988	0.103591	0.202806	0.250772	0.297644	0.388105	0.474189
1989	0.106779	0.208947	0.258302	0.306505	0.399451	0.487787
1990	0.106547	0.208184	0.257161	0.304911	0.396727	0.483634
1991	0.106383	0.207677	0.256416	0.303882	0.394998	0.481024
1992	0.104762	0.204608	0.252687	0.299537	0.389549	0.474645
1993	0.10481	0.204734	0.252863	0.299771	0.389921	0.475185
1994	0.104955	0.204742	0.252696	0.299359	0.388807	0.473086
1995	0.105498	0.20555	0.253535	0.300158	0.389321	0.473039
1996	0.104926	0.20407	0.251473	0.29743	0.385007	0.4668
1997	0.101701	0.197406	0.243009	0.287113	0.370824	0.448538
1998	0.084561	0.164498	0.202732	0.239811	0.310499	0.376562
1999	0.098872	0.193908	0.239986	0.285105	0.372466	0.45599
2000	0.102832	0.201488	0.249251	0.295969	0.386273	0.472401
2001	0.101498	0.198705	0.2457	0.291622	0.380247	0.464582
2002	0.10235	0.200401	0.247815	0.294154	0.383607	0.468762
2003	0.102717	0.201306	0.249053	0.295768	0.386103	0.47231
2004	0.102778	0.201049	0.248494	0.294813	0.384071	0.468822
2005	0.103329	0.20193	0.249457	0.295802	0.384947	0.469363
2006	0.103202	0.201806	0.249384	0.295812	0.38522	0.47003
2007	0.105088	0.205497	0.253947	0.301227	0.392278	0.47865
2008	0.102451	0.199913	0.246774	0.292387	0.379872	0.462369
2009	0.102112	0.199296	0.24604	0.291552	0.378881	0.461282
2010	0.103586	0.202133	0.249517	0.295641	0.384111	0.467542

Source: Calculation based on productivity equation (12)

Appendix (14) Simulation on Technology level - A (t) in Thailand

Year	A1	A2	A3	A4	A5	A6
1975	0.1	0.2	0.25	0.3	0.4	0.5
1976	0.106085	0.205589	0.252873	0.298512	0.384853	0.464614
1977	0.106186	0.204948	0.251545	0.296285	0.380198	0.456686
1978	0.106703	0.205936	0.252751	0.297698	0.381989	0.458809
1979	0.101626	0.195879	0.240241	0.282759	0.362265	0.434397
1980	0.101139	0.194987	0.239176	0.281542	0.360807	0.432779
1981	0.10224	0.197148	0.241852	0.284723	0.364964	0.437873
1982	0.101889	0.196851	0.241735	0.284887	0.365995	0.440178
1983	0.101826	0.196137	0.240473	0.282931	0.362209	0.433972
1984	0.10199	0.196456	0.240867	0.283397	0.362813	0.434705
1985	0.101187	0.195453	0.239991	0.282798	0.363222	0.436726
1986	0.102277	0.198042	0.243482	0.287294	0.370032	0.446258
1987	0.105998	0.204953	0.251789	0.296865	0.381735	0.459563
1988	0.109498	0.211414	0.25953	0.30575	0.392505	0.471679
1989	0.108056	0.207838	0.254626	0.299346	0.382579	0.457538
1990	0.106315	0.202975	0.247684	0.289979	0.367328	0.435021
1991	0.103579	0.197142	0.240168	0.28069	0.354223	0.417741
1992	0.103134	0.196384	0.239302	0.279749	0.35323	0.416827
1993	0.103262	0.196546	0.239446	0.279852	0.35318	0.416531
1994	0.103889	0.197583	0.240606	0.281081	0.354383	0.417489
1995	0.104046	0.197709	0.240647	0.280989	0.353885	0.416399
1996	0.100654	0.190815	0.23196	0.270482	0.339654	0.398333
1997	0.094401	0.180349	0.220152	0.257841	0.32688	0.387464
1998	0.08686	0.16846	0.207288	0.244801	0.315881	0.381702
1999	0.102011	0.199149	0.24589	0.291413	0.378804	0.461321
2000	0.102296	0.199686	0.24654	0.292167	0.379742	0.462409
2001	0.099738	0.194619	0.240238	0.284643	0.369808	0.450116
2002	0.10286	0.200806	0.247937	0.293838	0.381956	0.465159
2003	0.10457	0.204	0.251788	0.29829	0.387441	0.471451
2004	0.103609	0.201749	0.248768	0.29442	0.381621	0.463352
2005	0.101715	0.19765	0.243449	0.287804	0.372179	0.450774
2006	0.102237	0.198761	0.244881	0.289573	0.374673	0.454061
2007	0.102284	0.199047	0.245359	0.29029	0.376012	0.456214
2008	0.099759	0.194069	0.23918	0.282928	0.366337	0.444296
2009	0.095138	0.185211	0.228349	0.270221	0.350165	0.425046
2010	0.105235	0.205333	0.253455	0.300293	0.390117	0.474804

Source: Calculation based on productivity equation (12)

Appendix (15) Simulation on Technology level - A (t) in The Philippines

Year	A1	A2	A3	A4	A5	A6
1975	0.1	0.2	0.25	0.3	0.4	0.5
1976	0.106554	0.208605	0.257942	0.306153	0.399199	0.487742
1977	0.103411	0.202441	0.250312	0.297088	0.387353	0.473236
1978	0.102932	0.201384	0.248931	0.295357	0.384849	0.469862
1979	0.103276	0.201824	0.249324	0.295642	0.384733	0.469094
1980	0.102695	0.200484	0.247538	0.293365	0.38134	0.464408
1981	0.100763	0.196207	0.241933	0.28633	0.371133	0.450616
1982	0.100921	0.196446	0.242184	0.286574	0.371306	0.450641
1983	0.099002	0.19226	0.236735	0.279774	0.361542	0.437567
1984	0.090465	0.176506	0.217869	0.258125	0.335321	0.408093
1985	0.091059	0.178849	0.221518	0.26337	0.344622	0.422606
1986	0.101821	0.20045	0.248568	0.295888	0.388134	0.477189
1987	0.102677	0.202083	0.25056	0.298219	0.391085	0.48068
1988	0.10497	0.206376	0.255742	0.304217	0.398494	0.489206
1989	0.104165	0.204248	0.252759	0.300249	0.392169	0.480008
1990	0.100759	0.196964	0.243358	0.288613	0.375708	0.458247
1991	0.097456	0.19098	0.236268	0.280573	0.366234	0.447963
1992	0.098253	0.192338	0.237816	0.282253	0.368	0.449578
1993	0.099897	0.195357	0.241422	0.286378	0.372961	0.455106
1994	0.102103	0.199637	0.24669	0.292602	0.380997	0.464824
1995	0.102394	0.200218	0.247416	0.293472	0.382156	0.466271
1996	0.103428	0.202019	0.249502	0.295775	0.384694	0.468778
1997	0.102623	0.20012	0.246947	0.292492	0.379739	0.461861
1998	0.097134	0.189688	0.234248	0.277664	0.36106	0.439877
1999	0.100992	0.197803	0.244642	0.290435	0.378886	0.463157
2000	0.10218	0.199898	0.247083	0.293153	0.381945	0.466275
2001	0.100786	0.197355	0.244058	0.289707	0.377842	0.461761
2002	0.101552	0.198915	0.246026	0.292091	0.381078	0.465876
2003	0.102843	0.20143	0.249128	0.295762	0.385838	0.471659
2004	0.10466	0.205247	0.254012	0.301759	0.394196	0.48256
2005	0.102788	0.201595	0.249506	0.296422	0.387269	0.474135
2006	0.10325	0.202514	0.250652	0.297793	0.389085	0.476392
2007	0.104649	0.205365	0.254247	0.302145	0.394992	0.483904
2008	0.102205	0.200512	0.248205	0.294924	0.385439	0.472057
2009	0.099256	0.194727	0.241043	0.286413	0.374314	0.45843
2010	0.105539	0.206891	0.255997	0.304056	0.397035	0.485826

Source: Calculation based on productivity equation (12)

Appendix (16) Simulation on Technology level - A (t) in Cambodia

Year	A1	A2	A3	A4	A5	A6
1988	0.1	0.2	0.25	0.3	0.4	0.5
1989	0.099115	0.196978	0.24544	0.293589	0.388947	0.483053
1990	0.100499	0.199674	0.248765	0.297526	0.394054	0.489259
1991	0.106733	0.211758	0.26363	0.315075	0.416684	0.516585
1992	0.106203	0.210753	0.262409	0.31365	0.414894	0.514485
1993	0.102997	0.203805	0.253387	0.302423	0.398852	0.493091
1994	0.106733	0.211582	0.263299	0.314546	0.415626	0.514821
1995	0.104525	0.206256	0.256073	0.305193	0.401336	0.494685
1996	0.103364	0.204256	0.253775	0.302676	0.398624	0.4921
1997	0.104256	0.205784	0.255525	0.304583	0.400655	0.493999
1998	0.103786	0.205125	0.254878	0.304018	0.400465	0.494465
1999	0.110414	0.217835	0.270424	0.322264	0.423701	0.522146
2000	0.107069	0.21074	0.261302	0.311014	0.40789	0.501369
2001	0.106644	0.210279	0.260969	0.310906	0.408524	0.503133
2002	0.10478	0.205961	0.255202	0.303543	0.397527	0.487913
2003	0.106727	0.209895	0.260145	0.309505	0.405557	0.49805
2004	0.108551	0.213522	0.264665	0.314913	0.412724	0.506956
2005	0.111361	0.218945	0.271321	0.322752	0.422781	0.519033
2006	0.108782	0.213584	0.264493	0.314407	0.411252	0.504117
2007	0.108217	0.212457	0.263087	0.312722	0.409011	0.501324
2008	0.104539	0.204759	0.253249	0.300659	0.39224	0.4795
2009	0.097523	0.189918	0.234193	0.277185	0.359325	0.436337
2010	0.103813	0.20331	0.25144	0.298491	0.389355	0.475902

Source: Calculation based on productivity equation (12)

Appendix (17) Simulation on Technology level - A (t) in Laos PDR

Year	A1	A2	A3	A4	A5	A6
1988	0.1	0.2	0.25	0.3	0.4	0.5
1989	0.112203	0.221993	0.275983	0.329369	0.434332	0.53688
1990	0.105463	0.208439	0.258995	0.308928	0.406929	0.502443
1991	0.102738	0.202963	0.252132	0.300673	0.39587	0.488552
1992	0.105822	0.209278	0.260118	0.310366	0.409088	0.505443
1993	0.104669	0.206929	0.257156	0.306781	0.404224	0.499259
1994	0.106481	0.210441	0.261476	0.311881	0.4108	0.507198
1995	0.10621	0.209932	0.26086	0.311166	0.409912	0.50617
1996	0.105592	0.208592	0.25912	0.309	0.406815	0.502038
1997	0.105629	0.208689	0.259256	0.309181	0.407104	0.502458
1998	0.101491	0.197976	0.24434	0.289453	0.375924	0.457388
1999	0.104771	0.204529	0.252528	0.299273	0.389003	0.473718
2000	0.103518	0.202452	0.2502	0.296802	0.386568	0.47175
2001	0.102763	0.199566	0.245733	0.29041	0.375294	0.454219
2002	0.102997	0.200154	0.246543	0.291471	0.376948	0.456585
2003	0.102768	0.19953	0.245659	0.290287	0.375038	0.453782
2004	0.10358	0.20049	0.246444	0.290731	0.374303	0.451206
2005	0.103822	0.20075	0.246627	0.290781	0.373917	0.450158
2006	0.104896	0.202965	0.24944	0.294208	0.378623	0.456212
2007	0.113873	0.219024	0.268327	0.31545	0.403154	0.482134
2008	0.103847	0.199819	0.244851	0.287915	0.368136	0.440481
2009	0.104263	0.202051	0.248517	0.293365	0.378204	0.456569
2010	0.103729	0.199424	0.244258	0.287083	0.366708	0.438297

Source: Calculation based on productivity equation (12)

Appendix (18) Simulation on Technology level – A (t) in Myanmar

Year	A1	A2	A3	A4	A5	A6
1988	0.1	0.2	0.25	0.3	0.4	0.5
1989	0.103249	0.205605	0.256448	0.307068	0.407638	0.507315
1990	0.102221	0.203251	0.253319	0.303089	0.401735	0.49919
1991	0.098727	0.196209	0.244483	0.292446	0.387439	0.481186
1992	0.10909	0.217036	0.270581	0.32384	0.429501	0.534019
1993	0.105443	0.209694	0.261372	0.312752	0.414617	0.51529
1994	0.106793	0.212215	0.264413	0.316268	0.41895	0.520261
1995	0.106127	0.210612	0.262238	0.313454	0.414654	0.514212
1996	0.105496	0.209098	0.260189	0.310806	0.41062	0.508541
1997	0.104686	0.207441	0.258094	0.308265	0.407158	0.504119
1998	0.103941	0.205857	0.256056	0.305748	0.403614	0.499455
1999	0.109932	0.217839	0.271033	0.32372	0.427575	0.529405
2000	0.112756	0.223531	0.278176	0.332326	0.439141	0.543976
2001	0.110373	0.218803	0.27229	0.325291	0.429837	0.53244
2002	0.111105	0.220371	0.274313	0.327795	0.43338	0.537125
2003	0.112804	0.223527	0.278109	0.33217	0.438732	0.543214
2004	0.11245	0.22267	0.276944	0.330661	0.436423	0.539955
2005	0.112296	0.222047	0.275968	0.329253	0.433913	0.536027
2006	0.111674	0.220544	0.273927	0.32661	0.429872	0.53033
2007	0.110398	0.217611	0.270023	0.321638	0.422479	0.520134
2008	0.10852	0.213584	0.264819	0.31519	0.413339	0.508031
2009	0.108288	0.212297	0.262698	0.312028	0.407479	0.498652
2010	0.107864	0.210622	0.260087	0.308276	0.400824	0.488267

Source: Calculation based on productivity equation (12)

Appendix (19) Simulation on Technology level - A (t) in Vietnam

Year	A1	A2	A3	A4	A5	A6
1988	0.1	0.2	0.25	0.3	0.4	0.5
1989	0.10376	0.205663	0.255919	0.305711	0.403902	0.500237
1990	0.103737	0.204745	0.254227	0.303026	0.398578	0.491402
1991	0.104804	0.207293	0.25767	0.307468	0.405328	0.500874
1992	0.107036	0.210851	0.26155	0.311445	0.408818	0.502971
1993	0.106047	0.208044	0.257523	0.305989	0.399884	0.489728
1994	0.106484	0.20826	0.257381	0.305325	0.397682	0.48533
1995	0.107074	0.209215	0.258435	0.306422	0.398697	0.486038
1996	0.106768	0.208393	0.257276	0.304874	0.396211	0.482404
1997	0.105532	0.205825	0.254006	0.300878	0.390692	0.475267
1998	0.10298	0.200392	0.247009	0.292235	0.378509	0.459215
1999	0.102073	0.198748	0.245061	0.290024	0.375902	0.45638
2000	0.104003	0.202437	0.249564	0.2953	0.382593	0.464315
2001	0.10401	0.202251	0.249208	0.294722	0.381424	0.462357
2002	0.10404	0.201998	0.248697	0.293876	0.379673	0.459388
2003	0.104171	0.202003	0.248542	0.293496	0.378648	0.457462
2004	0.104542	0.202589	0.249176	0.29414	0.379195	0.457756
2005	0.105155	0.203736	0.250561	0.295743	0.381176	0.460036
2006	0.104891	0.203107	0.249711	0.294647	0.379511	0.4577
2007	0.104636	0.201629	0.24726	0.290981	0.372691	0.446759
2008	0.102579	0.197693	0.242452	0.285344	0.36553	0.438252
2009	0.10147	0.195236	0.239229	0.281296	0.35965	0.4303
2010	0.102783	0.197564	0.241954	0.284343	0.363121	0.433896

Source: Calculation based on productivity equation (12)