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Integration, Trade Pattern and Intra-Industry Trade in ASEAN

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Abstract

This thesis examines the impact that AFTA has had on intra-industry trade in different commodity groups and the ASEAN member countries during the years 1993-2002. The frequently used Grubel-Lloyd index is employed to estimate the degree of intra-industry trade in this cross-country study, and dynamic effects from integration are evaluated by studies of growth rates in trade and intra-industry trade. Hypotheses are obtained from factors expected to increase the degree of intra-industry trade. The factors are: economies of scale and product differentiation, higher per capita income and similarity in per capita income, larger economic size and similarity in economic size and open trade policy, while intra-industry trade measures economic integration within ASEAN in comparison to intra-industry trade with the World. The trade data generally supports the hypotheses, but the intra-industry trade flows indicate that the positive impact from integration within ASEAN is found to be only marginal.

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List of abbreviations

AFAS	ASEAN framework agreement on services
AFTA	ASEAN free trade area
AIA	ASEAN investment area
APEC	Asia-pacific economic cooperation
ASEAN	Association of southeast Asian nations
ASEAN-6	Brunei, Indonesia, Malaysia, the Philippines, Singapore and Thailand
CEPT	Common effective preferential tariff
EU	European union
FDI	Foreign direct investment
FTA	Free trade area
GATT	General Agreement on tariffs and trade
GDP	Gross domestic product
GNI	Gross national income
H.S	Harmonized commodity description and coding system
IIT	Intra-industry trade
ISIC	International standard of industrial classification
MNC	Multi national corporation
OECD	Organisation for economic co-operation and development
PTA	Preferential treatment agreement

Keywords: ASEAN, AFTA, free trade area, integration, intra-industry trade, trade

1 Introduction

In January 1992 the participants of the Association of Southeast Asian Nations (ASEAN) took one step further towards deeper economic integration with the signing of the first agreement of the ASEAN Free Trade Area (AFTA). The economic free trade area was to be established within fifteen years and involved extensive trade liberalization. The recent decades the ASEAN countries underwent major transitions, both political and economical. Still, the signing of the AFTA agreement generated a fair amount of debate since the instability in the region often has limited economic interaction in the past.

The ultimate objective of AFTA was to increase ASEAN's economic independence from the world market through open regionalism and to create competitive production for the world market.¹ More specifically, desirable effects from the agreement were to break domestic market segmentation, sustain technology transfer and develop new products, which would contribute to the industrial process. Moreover, the process of increased regional integration constituted a new opportunity to expand the initial trade levels between the member countries.

The opportunities that AFTA can give the member countries are reasons for studying their trade and specialization. According to theory on regional integration and intra-industry trade, the elimination of intra-regional tariffs and non-tariff barriers will lead to a more efficient economic structure within the region through greater competition and specialization. And with the larger size of the market, investors will enjoy economies of scale in production. More specifically, the intra-industry trade, i.e. the trade of essentially similar products, is expected to increase in the more dynamic commodity groups. Therefore, the analysis of intra-industry trade in respect to commodities is of great interest. Moreover, in the light of trade liberalization, economic effects of regional integration are often analyzed at the level of the

¹Yue, Chia Siow (1998) p.218

integration area as a whole, where the overall net gain or loss from integration is studied. However it is also interesting to study the impact on integration that comes from asymmetry in geographic size and economic structure between the member countries.

The aim of this thesis is to examine the impact the establishment of AFTA has had on the ASEAN member countries in terms of specialization in intra-industry trade and to assess the causes that can explain such pattern of trade. In order to do this it is necessary to examine changes in trade patterns, both aggregate and country wise within ASEAN and with the rest of the World. The intra-industry trade will be reviewed and analyzed in four categories of commodities and three sub-groups of countries. In accordance with other studies of ASEAN we only include eight member countries. Due to lack of available data, we exclude two members of ASEAN, Laos and Vietnam.² The study relies on trade data from the period 1993 to 2002. The objectives of ASEAN are in the economic as well as in the political area; however, the focus of this thesis is solely on commodity trade among the member countries.

The thesis is organised as follows. In chapter 2, a historical background to the regional development with the signing of the ASEAN and AFTA is briefly presented. In particular the development of trade policy within the ASEAN is highlighted. The theoretical framework concerning free trade areas, the effects of trade liberalization and the specialization of intra-industry trade are discussed in chapter 3. In chapter 4, trade patterns within ASEAN, as well as trade flows between ASEAN and World, are analyzed in order to assess the effects of trade liberalization on ASEAN trade volumes. This is done in order to first, see if the theoretical predictions of integration are in accordance with our observations of trade flows and second, to distinguish trends in the ASEAN countries' and commodities' total trade patterns. In chapter 5 the specialization of intra-industry trade is analyzed in intra-ASEAN trade as well as in comparison to ASEAN trade with the World. Chapter 6 ends the thesis with some concluding remarks on the results of the analysis.

² Trade statistics for Laos and Vietnam are not available from the same database as the other ones. We choose not to use statistics gathered from different databases. GNI per capita of Laos and Vietnam is however classified in the low-income range by the World Bank.

2 Background

In this chapter a historical background of ASEAN is presented and the development of trade agreements within ASEAN is reviewed. Furthermore, the differences among the ASEAN member countries are discussed.

2.1 ASEAN background

The formation of the Association of Southeast Asian Nations (ASEAN) came to start the process of increasing the integration in Southeast Asia. In 1967 ASEAN was established with the signing of the Bangkok Declaration by five countries: Indonesia, Malaysia, the Philippines, Singapore and Thailand.³ This was the beginning of what later evolved into deeper regional co-operation, for example through ASEAN Free Trade Area (AFTA) and Asia-Pacific Economic Cooperation (APEC).

At times there have been and still are political tensions between the countries in ASEAN, and the reasons for this are both historically determined and consequences of present political systems. Due to a colonial past for several of the member states, historical bonds have tied the ASEAN countries' trade patterns to countries outside Asia and not necessarily to each other. ASEAN was formed at a time of regional insecurity with several countries in the region on the verge of open war with each other. For example, the period of confrontation between Indonesia and Malaysia took place at the same time as the United States and Great Britain started to show a lack of engagement for the conflict.⁴ But the major threat of regional security was the spread of Communism in several ASEAN countries. The strong nest of revolutionary Maoism in the People's Republic of China openly supported some insurgency

³ Tan, Gerald (1996) p. 8

⁴ Dosch, Jörn & Mols, Manfred (1998) p. 170

actions in Malaysia, Singapore, Thailand and the Philippines. Also, Japan's rapid growth and increasing resources revived the underlying fears of being dominated. In addition, conflicts were also a part of the domestic politics, for example Thailand experienced its political situation being affected by a trend of coup d'état. All of these were factors on which the creation of ASEAN was realized.

In this context, the aims of ASEAN were to create a good environment in order to "accelerate the economic growth, social progress and cultural development in the region".⁵ This was supposed to be done through regional peace, collaboration on matters of common interest and in trade related areas and assistance in educational spheres. The purpose of the ASEAN governments committing to regional integration in the early phase of the establishment was political rather than economical. In reality, the focus on economic collaboration came much later.

From the beginning the idea behind the establishment of ASEAN was to strengthen the regional bonds. This meant that all countries in the region were welcomed to join the association. However, it was not until 1984 that the sixth country, Brunei, joined in. As a consequence of the political situation in the region, the Communist governments did not want to co-operate with what was seen as the West-oriented initial participants. It took another eleven years before the seventh country, Vietnam, was ready to join the association in 1995. Shortly after this, in 1997, Laos entered ASEAN, Myanmar in 1997 and Cambodia in 1999.

⁵ASEAN Secretariat (1998) p.2

Table 2.1: Country characteristics, Year 2003

Country	Area Square km	Population Million	GDP Million US\$	GDP Per Capita US\$**	Openness Exp/GDP***
<i>Low-income countries</i>					
Cambodia	181,0	13,0	4215	324	0,45
Laos	236,8	5,4	1743*	323	-
Myanmar	676,6	51,1	9605	188	0,26
Vietnam	331,7	78,7	39021	496	-
<i>Middle-income countries</i>					
Indonesia	1919,3	208,7	208625	1000	0,27
Malaysia	329,8	23,8	103737	4359	0,90
Philippines	300,0	77,9	79270	1018	0,44
Thailand	513,2	61,3	143303	2338	0,46
<i>High-income countries</i>					
Brunei	5,8	0,4	4715	11788	0,57
Singapore	0,7	4,1	91355	22282	1,37

Source: Compiled from statistics provided by ASEAN Secretariat (06-05-2004) >Member countries unless specified otherwise.

* Collected from statistics year 2000 provided by UNDP (24-11-2004) >Lao PDR.

** Calculated from statistics provided by ASEAN Secretariat.

*** Calculated from statistics provided by ASEAN Secretariat with export year 2002 and GDP year 2003.

Today, ASEAN is made up by ten different countries, with different cultures, economies and principles. Altogether there are approximately 500 millions of people living in the region with an estimated GDP of 740 US dollar.⁶ However, the distribution of wealth and income between the countries is uneven and is divided from very rich (Singapore) to very poor (Laos, Cambodia, Myanmar), see Table 2.1. Moreover, the high openness of Singapore at 1,37 shows that the country works as an entrepôt, while Myanmar and Indonesia are much more introvert. This suggests that what and how much ASEAN can contribute to each and every country may most likely be different from country to country.

⁶ ASEAN Secretariat (18-04-2004)

2.2 Preferential trading arrangements

The first programme of action to implement regional economic co-operation was signed at the Bali Summit in 1976. The year after, the Preferential Trading Arrangements (PTA) was signed. With the objective of encouraging closer regional co-operation through an expansion of intra-regional trade, the PTA was implemented through cutting trade restrictions, in this case mainly tariffs. However, the agreement was built on voluntarism and the implementation was full of loopholes, which meant that it was inefficient. As it was the individual country's choice which products to cut tariffs on, the tariff reductions turned out to be non-productive. The tariffs reductions included reductions on different types of one kind of item or the classic example of snow ploughs or nuclear reactors. The effects of these preferential tariff cuts were small and it was difficult to estimate any significant increase in intra-ASEAN trade; the estimated intra-ASEAN import increased only by 2-5% at the most.⁷ The rise of competitive regionalism in North America and Europe and the opening up of China lead to concerns amongst the ASEAN countries regarding the efficiency of the regional market. There was a need for a more inflexible agreement to reduce tariffs in order to increase intra-regional trade.

2.3 ASEAN free trade area

In 1992 Thailand's suggestion of a free trade area was realized and the result of the proposal was AFTA. The model for AFTA was the EU Single Market, where the opening up and the lowering of tariffs had led to further integration of the region with gains being both static and dynamic.⁸ The aims of AFTA were to further the industrial development in the region, to attract foreign direct investment (FDI) and to stimulate the intra-regional trade.⁹ This clearly indicates that the intra-ASEAN trade needed to be liberalised if the participating countries were to achieve a well-functioning and stable free trade area.

At the outset in 1992, the ASEAN governments agreed that the abolishment of most of the trade restrictions was to be realized by 2008 for the initially participating countries Brunei,

⁷ Tan, Gerald (1996) p. 141

⁸ Brühlhart, Marius & Elliot, Robert (1998) p. 242

⁹ Yue, Chia Siow (1998) p. 218

Indonesia, Malaysia, the Philippines, Singapore and Thailand (ASEAN-6). The most extensive way to get rid of explicit trade restrictions was through tariff cuts. In reality the agreement was very much an extended version of what was later decided at the Uruguay round in 1994 and in 1995 the AFTA agreement was revised and the implementation was accelerated.¹⁰ As a consequence of this, the ASEAN countries had to harmonise their policies and systems in foreign trade. Notable is that the differences among the member states in terms of trade policies were tremendous before the signing in 1992, with Singapore being the leading advocate for openness and liberalization.¹¹ The middle-income countries all differed from each other; Malaysia and Thailand had the most outward-looking trade policies, while Indonesia and the Philippines started their outward-looking strategy somewhat later on and experienced troubles implementing it because of the complexity of the trade policies. However, both Indonesia and the Philippines began to adopt a more open trade regime in the past years. The later members have for different reasons not participated in the World trade, for example Vietnam, being a communist state, and Myanmar, a military state, where foreign trade policies were planned at governmental levels.¹²

However, the co-operational motivation in the world around changed drastically in the period of the creation of AFTA with changes in the political scenery in the world and in the region. What had been brave and daring at the time, was not so bold anymore. Therefore, in order to keep up with the pace of liberalization in the world, the time limit for the deadline of liberalising trade in ASEAN was comprised and the lists of goods included were extended. AFTA comprised three component programmes: The Common Effective Preferential Tariff (CEPT) scheme which governs liberalization of traded goods, the ASEAN Framework Agreement on Services (AFAS) which governs liberalization of traded service, and the ASEAN Investment Area (AIA) scheme which governs investment liberalization. The CEPT is the major component within AFTA and was to be finished off first. In turn the CEPT was to be made through two different paths, the Fast Track and the Normal Track. The Normal Track was the most general one and had to be finished off first. At the time of creation the schedule was set to achieve zero or beneath 5% tariffs for all goods on the Inclusion list by the year of 2008, but this was changed in 1995 to be finished off as early as in 2003. The CEPT scheme also included abolishment of non-tariff barriers by year 2003.

¹⁰ Yue, Chia Siow (1998) p. 219

¹¹ Yue, Chia Siow (1998) p. 215

¹² For more detailed information on the Uruguay round's impact on the ASEAN members' trade policies see Ljungkvist, Tina (1998)

Vietnam, Laos, Myanmar and Cambodia, that were the countries entering the agreement during the already ongoing process of liberalization, were given other deadlines for reducing their tariffs. They are expected to have completed the initial phase of the liberalization by 2006 (Vietnam), 2008 (Laos and Myanmar) and 2010 (Cambodia). However, the six first participating countries have almost fully removed or reduced their tariffs to below 5% for all products in the Inclusion list. In the beginning of 2002, only 3.8% of all traded goods on the Inclusion list had tariffs above 5%, and the goods were traded with an average tariff of 3.8%.¹³

There are of course exceptions from CEPT, both temporary and in general. When a tariff reduction is likely to cause a sudden import surge and thereby great instability in a certain country, temporary exceptions are authorized in order to give the country time to adjust its economic structure to a free trade area. Some commodities are placed on the Highly Sensitive List and the General Exception list “for reasons of national security, protection of human, animal or plant life and health, and of artistic, historic and archaeological value”.¹⁴

¹³ ASEAN Secretariat (18-04-2004)

¹⁴ ASEAN Secretariat (18-04-2004)

3 Theoretical framework

This chapter contains relevant theory on economic integration. Furthermore, the concepts of inter-industry and intra-industry trade are discussed, with focus on factors determining the extent of intra-industry trade. Finally integration among developing countries is reviewed and asymmetry issues are discussed.

3.1 Theory behind free trade areas

Economic integration, defined as the institutional combination of different national economies into larger economic blocs or communities, requires gradual abolition of trade barriers between the economies. Economic integration appears in numerous ways in the world today. These forms of integration consist of policies that have adopted different degrees of harmonization or co-ordination. The most common ones are customs unions, free trade areas, common markets, monetary unions and economic and monetary unions.¹⁵ Today, the free trade area is the most frequent form of integration in the world. Theory of economic integration may be used for free trade areas and is exclusively trade focused. It has three fundamental characteristics:¹⁶

- The elimination of tariffs among the member countries.
- The allowance for each member country to establish its own external tariff.¹⁷
- The application of rules of origin within the free trade area.

¹⁵ Robson, Peter, (1998a) p. 2-3

¹⁶ Robson, Peter, (1998a) p.17

¹⁷ However, according to WTO, when the tariff is set an increase is not allowed and the intention is that it will be lowered with time.

The third characteristic is an instrument intended to distinguish products that are mainly produced within the free trade area and hence, should be excluded from the tariff lines.¹⁸ The idea is to limit the redirection of imports through the country with the lowest tariff and thereby avoiding external countries to take advantage of the differences in member countries external tariffs.

The main idea behind the establishment of a free trade area is to enhance trade through the reduction in trade costs and the improvement in resource allocation between countries through the removal of distortions that is associated with tariffs. This is considered to have positive effects on citizens' welfare, by for example lower prices and better quality for end consumers due to increased competition. However, the increase in welfare does not necessarily have to be uniform, which will be treated later in this chapter.

3.2 Effects of economic integration

Integration can be recognized in two ways. First, in a static sense, economic integration can be viewed as positive or negative integration. In negative integration, trade barriers between member countries are gradually abolished, while positive integration implies active member participation with the intention of establishing common institutions and policies. Secondly, in a dynamic sense, integration can be viewed as a process that contributes to faster innovation, economies of scale, and more rapid growth.¹⁹ Theory assumes that *ceteris paribus* holds.

3.2.1 Static welfare effects from trade liberalization

The reduction of trade barriers within the integration area gives rise to several effects on resource allocation. The traditional Vinerian theory is generally analyzed in terms of trade creation and trade diversion, of which the former is the desirable effect.²⁰ Trade creation takes place when imports increase and, to meet a greater domestic demand, replace domestic

¹⁸ In ASEAN the rules of origin are set to 40 per cent ASEAN cumulative content, Yue, Chia Siow (1998) p. 226

¹⁹ Robson, Peter, (1998a) p. 37-39

²⁰ Viner, Jacob (1998) p. 170

production that prior to integration was produced at a relatively high cost. This process consists of a consumption effect and a production effect. The former effect occurs as a result of resources being shifted from a high cost country to a low cost member country, which make imports cheaper and the country can consume more with the same amount of income, i.e. an increase in welfare. When the prices are pressed down due to cheaper imports, the production effect takes place, which increases the competition among domestic producers, and hence the producers must decrease production costs or start to produce something else or somewhere else. This is often seen as a negative outcome for the domestic country and often explains the occurrence of protectionism. However, in a positive sense, one can see the move of production to a country that produces the commodity cheaper, and the industrial structure in the own country is exposed to competitive adjustment pressure, which leads to an improved resource allocation. Trade diversion in contrast arises when the import from a low cost non-member country prior to integration is altered in favour of a relatively high cost member country. Since the non-member country faces tariffs on their exports to the free trade area, it will be cheaper to import the commodity from the privileged member country despite the cheaper production of the non-member country.

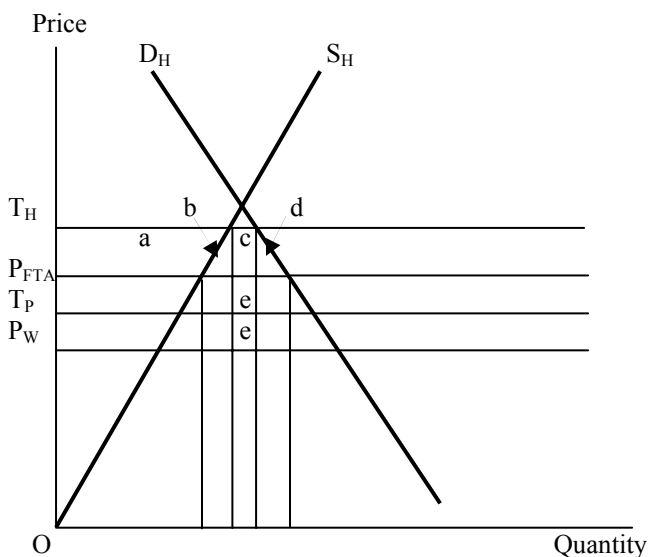
Most free trade areas exhibit both trade creation and trade diversion to some extent. In both of the scenarios the most efficient producer within the free trade area is favoured since the reduction in tariff barriers creates a comparative advantage over non-member country producers. For this country, the exports are expected to increase and give an increased welfare. However, the welfare effects for the less efficient member country will depend on whether the non-member country produces more efficient than the member countries before the creation of the free trade area or not. In the case of a more efficient non-member country, the overall welfare will decrease due to welfare losses in the less efficient member country as well as in the non-member country.

The effects are illustrated in a simple partial equilibrium analysis in Figure 3.1.²¹ Two countries with different non-prohibitive tariffs, Home (H) and Partner (P), create a free trade area. Home's demand curve is denoted D_H and the supply curve S_H and they give the price T_H . The price in country P is T_P and after the time of integration the equilibrium price becomes P_{FTA} . The world price is denoted P_W . When investigating the overall welfare gains

²¹ The International Economics Study Center (03-01-2005) *Trade diversion and Trade creation*

of a free trade area for country H, a comparison of trade creation (b+d) and trade diversion (e) should be made so that if trade creation outweighs trade diversion there is a net gain from the integration. Area a is allocated from producers to consumers and area c consists of former tariff revenues allocated from the state to consumers. Welfare gains in terms of resource allocation can, however, be analyzed from the point of view of country P, the integration area or of the world as a whole. Thus, it is not necessarily the case that all member countries gain from integration. A trade creation integration area can be trade diverting for a single country. In the same way, the individual member of a trade diverting area can obtain large benefits.

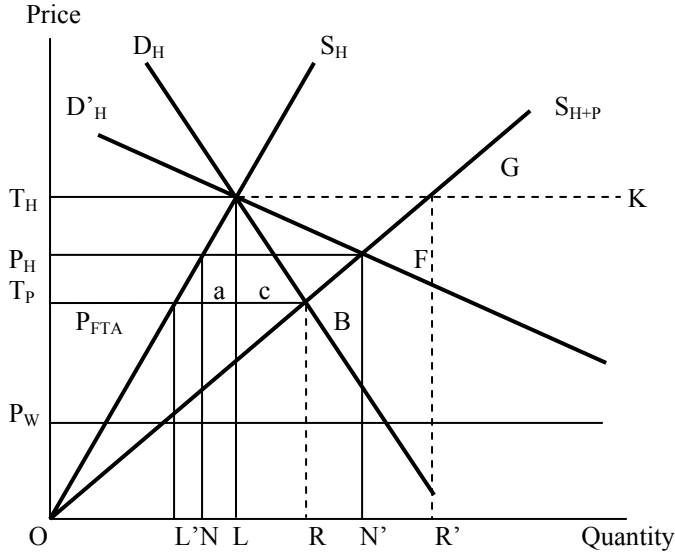
Figure 3.1: Trade creation and trade diversion



A more extensive illustration including two alternative scenarios of the formal effects of a free trade area is displayed in Figure 3.2.²² The model is based on the same two countries Home (H) and Partner (P), which both domestically produce an identical commodity. However, the product faces different customs tariffs in the two countries; a higher, prohibitive duty, $P_W T_H$, is entailed in country H while country P has a lower, non-prohibitive duty, $P_W T_P$, which implies a higher price for the commodity in Home. Now, assume that these two countries form a free trade area where only the products produced within the area receive the benefit of duty-free transportation across the borders, i.e. rules of origin are applied.

²² See for example Robson, Peter (1998a)

Figure 3.2: Effects of a free trade area



Source: Robson, Peter (1998a) p.29

In the figure, country H's demand curve, D_H , and supply curve, S_H , show that the country produces and consumes the whole production of the commodity, i.e. no imports take place. Country H obtains the equilibrium price T_H and the quantity L . Country P's supply curve is horizontally added to the supply curve of country H and together they compose the supply curve S_{H+P} . The world supply price is denoted P_W . When the free trade area is created, the effects on the supply curve turns out as follows: as long as the area remains a net importer, the price of the commodity can never fall below $P_W + P_W T_P$ and nor can the area exceed the price $P_W + P_W T_H$ since imports from the rest of the world have a lower price than commodities produced within the area. Hence, the effective supply curve of the commodity for country H would be $T_P B F G K$. The quantity country P will be ready to supply depends on the price in country H. We will analyze two situations.

First, assume the relatively inelastic demand curve D_H . The price in country H would be T_P with country H producing the quantity OL' and country P producing and exporting $L'R$ for country H to consume. In this situation, triangle a would correspond to trade creation while triangle c would represent the consumption effect caused by the establishment of the free

trade area. Secondly, assume the comparably elastic demand curve D'_H instead of D_H . This would imply a higher price of the commodity in country H, hence the price P_H would be closer to the upper limit T_H and the quantity domestically produced would be ON , continued with country P's production NN' . Hence, trade creation, denoted by the triangle above a , restricted by P_H and D'_H , would be much smaller than in the previous case and so would the consumption effect above c . For all prices above T_P in country H, country P would supply country H with commodities even if it meant that country P itself would have to import the commodity from the rest of the world. This pattern of indirect trade diversion is present since there, because of the discriminating tariffs, are gains for country P in exporting its own production to country H and import cheaper commodities from the rest of the world.

3.3 Specialization in trade

Liberalization of trade creates changes in trade flows and specialization. Depending on the characteristics, the trade is classified as either inter-industry trade or intra-industry trade.

3.3.1 Inter-industry trade

Inter-industry trade can be understood as exchanging one type of good, produced in one industry for another type of good, produced in another industry, for example exchanging rice for cars. Evidently some countries have better opportunities to produce rice while others have endowments suitable for the production of cars; this is essentially the base for the theory of comparative advantage.

The basic Ricardian model lies as ground for the more sophisticated Heckscher-Ohlin model.²³ These theories focus on the supply side of the model and are based on theories of comparative advantage. Comparative advantages arise since countries have relatively different endowments of factors of production, for example capital and labour. According to the Ricardian model, countries will specialize in production of the good that has the lowest

²³ Kaempfer, William H. & Markusen, James R. & Maskus, Keith E. & Melvin, James R. (1995) chapter 6 & chapter 7

opportunity cost, caused by different production methods and different labour productivity. This means that the production of a good will take place in the country where it is relatively cheap to produce and hence, it does not have to be the absolute cheapest way of production.

The Heckscher-Ohlin model expands the theory and explains how trade emerges when factor productivity is equal across the world. The specialization of production will depend on a country's relative factor endowments and thereby relative price of factors of production. A labour-rich country will produce the labour-intensive product, and this specialization will continue until the incentive to trade is taken away, i.e. factor prices are equalized. Theories based on comparative advantage declare that the greater the difference in factor endowments between two countries are, the greater the trade. In this sense, the effects of economic integration are purely discussed from a static point of view.

3.3.2 Intra-industry trade

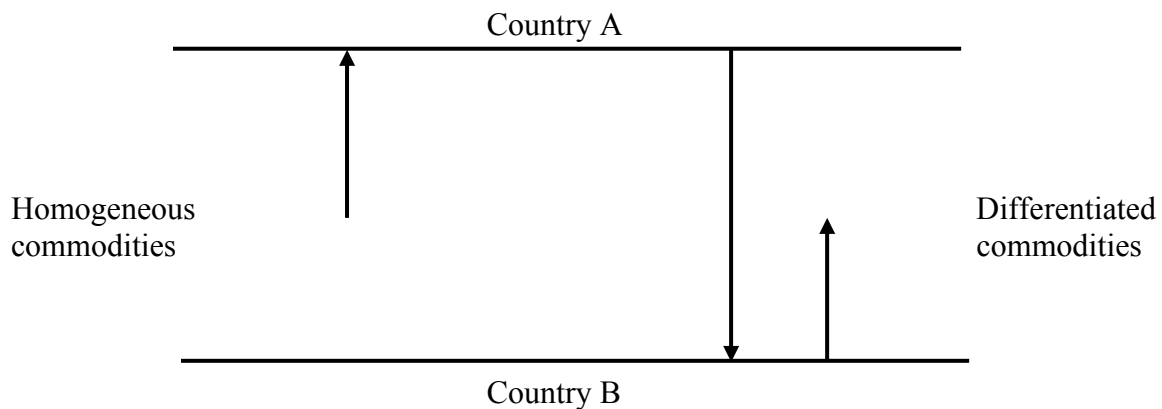
The characterization of intra-industry trade is simultaneous import and export of essentially the same kind of good. The most frequent intra-industry trade takes place in the developed part of the world, between countries that have a similar economical and social structure.²⁴ What lies behind the behaviour of importing and exporting the same kind of good are numerous things, but in the end it is the assumption of the consumer's love for variety that creates the demand for still another variety of the same kind of good.²⁵ There are several gains from intra-industry trade. Prices are pressed down by increased competition in trade and as the market grows there are expected gains from increasing returns to scale, which lowers the average production cost. The supply of more varieties through imports satisfies the consumers that get a higher utility and to a lower price. Furthermore, according to theory, intra-industry trade creates less distortion than inter-industry trade in an economy in the process of integration. The logic behind this is that one expects more flexibility within industries than between industries, hence smaller adjustment costs are exhibited in industries with a large share of intra-industry trade.

²⁴ Helpman, Elhanan & Krugman, Paul R. (1999) p. 173

²⁵ For a more extensive description on different types of preferences, see Helpman, Elhanan & Krugman, Paul R. (1999) chapter 6.

The basic models of intra-industry trade refer to factors such as the existence of economies of scale and the production of differentiated goods.²⁶ Assuming that the world consists of several small nations, producers can specialize in one variety each and because of economies of scale attain some monopoly power. The assumption of a market structure of monopolistic competition makes producers of differentiated commodities perceive that they neither can affect the price level when they enter the market, nor the variety choice, whereas the homogeneous commodities are assumed to be produced in markets characterized by perfect competition. As a consequence, the producers of differentiated commodities set their price to maximize profits and they all end up producing a different variety of the product. Since consumers have a love for varieties and all varieties will be consumed, intra-industry trade will take place when there are no trade restrictions.

Figure 3.3: Inter- and intra-industry trade



Source: Helpman, Elhanan & Krugman, Paul R. (1999) p.168

²⁶ See for example Krugman, Paul. R & Obstfeld, Maurice (2003) p. 138

As seen in Figure 3.3, inter-industry trade takes place in homogeneous commodities since only country B is exporting these commodities. There is also inter-industry trade in differentiated commodities. However, both country A and country B are exporters and importers of differentiated commodities and hence, both inter- and intra-industry trade can take place in this model.

Theory of intra-industry trade, i.e. simultaneous exchange of essentially similar commodities, offers hypotheses on both country-specific factors and industry-specific factors. The empirical assessment is undertaken to evaluate the relationship between the extent of intra-industry trade and industry-specific factors as well as country-specific factors. The hypotheses are presented below.

*1) Intra-industry trade is expected to be higher in industries with higher degree of economies of scale and product differentiation.*²⁷ To meet consumer's demand for greater variety, the producers take advantage of economies of scale in production and are able to specialize in production of a specific variety, which is then traded for other differentiated commodities. Hence, more differentiated products that are produced with economies of scale will increase the level of intra-industry trade.

*2) The degree of intra-industry trade is expected to be higher in trade between economies with high per capita income and between economies with greater similarities in per capita income.*²⁸ Differentiated commodities are assumed to be more capital-intensive in production than homogeneous commodities. An increase in income per capita and thus also in capital endowments yields an increase in the production of differentiated commodities and as a consequence also intra-industry trade. Furthermore, similar economies are expected to have similar factor endowments, which will increase horizontal intra-industry trade of differentiated commodities.

*3) The degree of intra-industry trade is expected to be higher in trade between larger economies and the more similar the economies are in size.*²⁹ Producers in larger economies have a bigger market for products produced with increasing returns to scale. Thus, more differentiated products will be exported which will increase the extent of intra-industry trade.

²⁷ Helpman, Elhanan & Krugman, Paul R. (1999) p. 168

²⁸ Hine, Robert C. & Greenaway, David & Milner, Chris (1999) p. 83

²⁹ Helpman, Elhanan & Krugman, Paul R. (1999) p. 205

Furthermore, countries of similar size have the potential to export and import differentiated commodities produced with economies of scale. With different sizes of the economies, a larger economy can take advantage of economies of scale and export large amounts of a commodity and a smaller country would be forced to only import differentiated commodities since they cannot benefit from economies of scale in their production.

4) *Open economies are expected to have higher degree of intra-industry trade than closed economies.*³⁰ This is especially important for smaller economies since larger economies may exhibit economies of scale even in autarky. However, if a small economy is closed, subsistence production accounts for a large share of total production and the development is hindered. Hence, openness contributes to development of the economy and higher shares of production in capital-intensive commodities.

5) *The intra-industry trade is expected to grow faster within the integration area than with the World.* Because of the abolishment of trade barriers trade creation will increase trade flows. Additionally, since producers are able to take advantage of economies of scale and produce more differentiated products within the integration area, the overall trade volume is expected to increase more in the integration area than in trade with the World. Since intra-industry trade takes place within these products, an increase in trade flows within the integration area will enhance even higher growth in intra-industry trade.

3.4 Integration among developing countries

The effects of a regional arrangement are likely to differ whether the integration consists of developing countries or already developed countries. First, part of a strategy for economic development for developing countries, as opposed to developed countries, is the promotion of industrialisation.³¹ In this respect, the expansion of intra-regional trade may be viewed as positive to the member countries although trade diversion is prevailing. More specifically, developing countries may in fact be enthusiastic to tolerate higher costs by importing from a

³⁰ Helpman, Elhanan & Krugman, Paul R. (1999) p. 19

³¹ Langhammer, Rolf J. & Hiemenz, Ulrich (1998) p. 419

more expensive member country if non-economical benefits and potential future development outweighs the costs.

Enhanced negotiation power against developed countries is often an additional purpose for integration since the bargaining power of the developing country, economically as well as politically, becomes greater than the power it had before the integration.³² Moreover, the establishment of strong institutions is fastened by the integration process in the developing countries, which makes the countries trustworthy to potential investors and stabilises the market. It also helps to respond to market failures that arise from integration. Economic cooperation requires not only the implementation of trade policies, but also the provision of a favourable environment for trade liberalization and investments, such as new infrastructure, transport and communication.³³

Another crucial issue is the distribution of benefits among member countries. It is sometimes argued that some form of protection is needed in the manufacturing sectors, for them to be commercially feasible, until the integration area reaches a certain level of economic development. If such protection, i.e. the trade diverting costs, is unevenly spread over the regional market, conflicts of interest are likely to arise. Benefits from such sectors will be unevenly distributed as well.³⁴ Since agglomeration effects tend to occur at the industry-level in developing countries, a polarisation is likely to appear where industries will be spread disproportionately among the countries if the distribution of industry is left to market forces. This will favour the most developed areas and hence emphasize the comparative advantage and generate divergence rather than convergence.³⁵ Thus, with a non-functioning redistribution system, asymmetries in development increase the likelihood of unequal distribution of benefits and costs.³⁶ During a period of economic growth, each and every member country is more likely to benefit from integration and hence, the process of integration will be smoother and asymmetric differences will not be as obvious.³⁷ On the contrary, in economic difficulties the benefits will be higher valued since they are relatively scarce, and hence it is more important with even distribution.

³² de la Torre, Augusto & Kelly R., Margaret (1992) p. 25

³³ Robson, Peter (1998b) p. 401

³⁴ Robson, Peter (1998a) p. 270

³⁵ Venables, Anthony J. (1999) p. 17

³⁶ de la Torre, Augusto & Kelly R., Margaret (1992) p. 36

³⁷ Jovanovic, Miroslav N. (1998) p.357

4 ASEAN trade patterns

This chapter examines the intra-ASEAN trade performance in comparison to ASEAN trade with the World from 1993 to 2002. Furthermore it seeks to investigate which member countries and commodities explain this pattern of trade, and continue to explain reasons behind the trade structure and potential changes of it.

4.1 ASEAN trade liberalization

There are several economic effects from which countries wish to benefit when creating a free trade area. The process of regional integration will enhance various market mechanisms that are expected to increase the overall welfare in the integration area.³⁸ However, due to the large differences in economic development between the ASEAN member countries, the welfare gains will not necessarily be uniform. Concerns over distributional gains from integration become especially apparent when economic difficulties hit several member countries. This is interesting since the period examined shows strikingly different patterns of trade. The first sub-period extends from 1993 to 1997, during which the expansion in trade volume made significant progress. The second period started in 1997 when several member countries began to experience financial difficulties that were clearly reflected in lower trade volumes.

³⁸ See chapter 3 for theoretical aspects of the effects from integration.

4.2 Data and classification

The trade data used in this analysis is based on data reported by the national statistical office in the ASEAN member countries to the ASEAN Secretariat.³⁹ The countries' import and export data is broken down into traded commodities with ASEAN and the World. The data extends over the period 1993 to 2002, and is divided into two sub periods: 1993-1997 and 1998-2002. The breaking point, year 1997, is chosen out of consideration for the Asian crisis, where several of the ASEAN economies were struck hard, which in turn had effects on trade data.

Both import and export data are classified and published according to the Harmonized Commodity Description and Coding System (H.S). In the H.S, commodities are classified by what they are made of and not according to their stage of fabrication, their use, or origin. The basic system uses a six-digit number to identify commodities. Our trade data is calculated at a two-digit level of H.S, divided into 98 chapters and then aggregated and presented in 21 sections. All trade flows are measured on a value basis, in thousands of US Dollars. Aggregation of trade data is an issue of importance. The choice of a particular level of aggregation of all classification systems may lead to a distorted value of trade calculations. A higher level of aggregation is likely to give a higher level of specialization in intra-industry trade. Thus, it would be preferable to carry out the analysis for quite narrowly defined commodity groups. Since our calculations are done at a two-digit level, our estimates will probably be too high because of the aggregation problem that arises from the fact that the classified groups consist of heterogeneous products. This implies that non-perfect substitutes can be counted as intra-industry trade. The H.S classification also causes some asymmetry among the chapters since some are more disaggregated than others. For example, Computer/Machinery (chapter 84) and Electrical Equipment (chapter 85) are wide concepts, while Wool (chapter 51) and Cotton (chapter 52) are more narrowly defined. To overcome the possible incorrectness of H.S at the two-digit level, we have disaggregated our data into country-specific data, which gives cross-sectional comparisons. Furthermore, the calculated

³⁹ Because of the late entrance in ASEAN, Cambodia and Myanmar have reported trade data only since year 2000 and 1999 respectively. We suspect that the Brunei trade data for year 1993 is incorrect since the Brunei trade flows with ASEAN and with World are exactly the same. Hence, we have excluded year 1993 in all Brunei calculations and have received an average for the time span 1994-1997 instead. All calculations for Brunei including the data for year 1993 can be found in Appendix V.

values themselves are not of great interest in respect to the purpose of this thesis. However, they show changes that turn into patterns of trade, which is of our interest to investigate.

4.2.1 Country and Commodity Bias

A categorization of industrial bias is constructed in order to compare the industrial structures of countries.⁴⁰ The intention is to see if industry-specific characteristics of countries in relation to their share of total trade show signs of any particular trend, for example if a country's increase in intra-industry trade is mainly resource-based. The categories have originally been distinguished based on primary factors in production of each commodity group. The categorization is based on theory and studies with the most important factor for competitiveness on the world market as determinant. The commodities are resource-based, labour-intensive, scale-intensive and differentiated. This categorization is not absolute since for example differentiated commodities and scale-intensive commodities tend to overlap. The science based commodity group has been ruled out and chapters in it are instead placed in other suitable commodity groups. Another limitation is that the classifications are originally made out of data from Organisation for Economic Co-operation and Development (OECD) countries and not the whole world. However, it is a widely applied method and gives a fair indication of specialization patterns. Further, the original categorization is based on ISIC classification but is here applied to H.S. It is important to be aware of the difficulties in the categorization of commodities. For example Metals, with the exception of iron and steel, are classified as scale-intensive commodities in the H.S but placed in the Resource-based commodity group in the International Standard of Industrial Classification (ISIC) system.⁴¹ However, the classification systems are fairly similar and the harmonisation program between ISIC and H.S has declared to be successful.⁴²

⁴⁰ OECD (1993) p. 84

⁴¹ The production of Metals can be considered either as scale-intensive with lower average cost the larger production, or as resource-based where the input is a necessity for production.

⁴² Papageorgiou, Haralambos & Vardaki, Maria & Petrakos, Michalis & Theodorou, Eirini & Pentaris, Fragkiskos (2001) p. 349.

The World Bank has set a number of GNI per capita-values as limits and divided the countries of the world into groups depending on the country's income.⁴³ The groups Low-income economies (\$765 or less), Lower-middle-income economies (\$766 - \$3,035), Upper-middle-income economies (\$3,036 - \$9,385) and High-income economies (\$9,386 or more) are applied in the division of the ASEAN-countries and when analyzing the trade flows. All countries placed in the Middle-income group belong to the Lower-middle-income economies' group, while except Malaysia that belongs to the Upper-middle-income economy-group. Nevertheless, since only eight ASEAN-members have presented trade data in the ASEAN database, and in order to be able to display trade patterns more clearly, all the middle-income economies are fit into the same group. Low-income economies and Middle-income economies are usually entitled developing economies.

4.3 ASEAN trade patterns

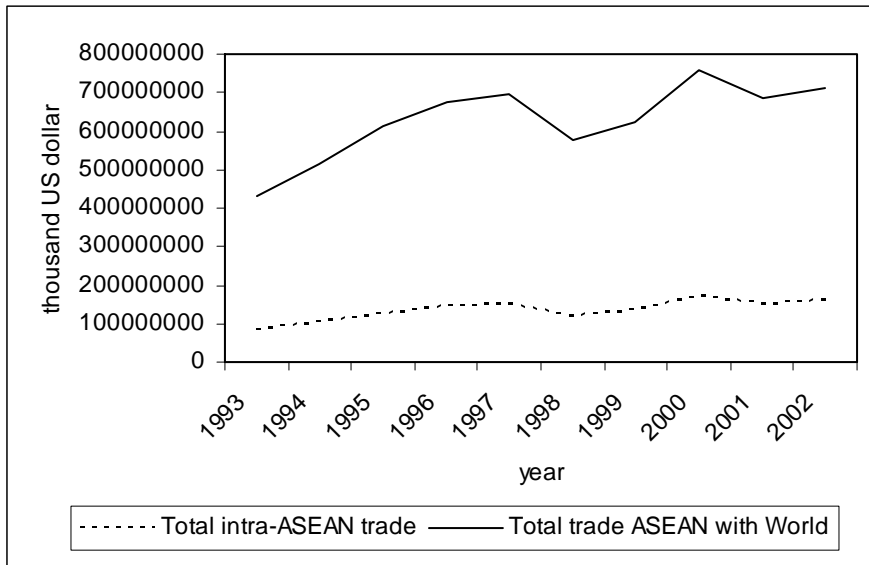
Since the implementation of AFTA in 1993, trade within ASEAN has increased. Intra-ASEAN trade volume has expanded from 82 000 million US dollars in 1993 to 159 000 million US dollars in 2002, which corresponds to an increase of 92 per cent.⁴⁴ Figure 4.1 shows that, during the period from 1993 to 2002, the intra-ASEAN trade volume increased relatively more than trade volume between ASEAN and the World. The ASEAN trade with the World has grown, from 430 000 million US dollars to 712 000 million US dollars between 1993 and 2002. This constitutes an approximate increase of 65 per cent.

The curves in Figure 4.1 are clearly correlated and follow each other very well. This is especially notable in the late 1990's when several Asian economies were struck by severe economical crisis. During this period of time all trade remarkably went down to levels well below previous volumes. Even though several Asian economies were hit hard by the severe crisis in 1997, the trade flows recovered fairly quickly and in a period of two and a half years the trade flows had gone up till volumes that were displayed before the crisis.

⁴³ Formerly the division of low-, middle- and high-income countries has been made in comparison of GDP but has recently changed to comparison of GNI. The observations in this thesis are made in GDP; however, the grouping of the ASEAN countries is still applicable.

⁴⁴ See Appendix II

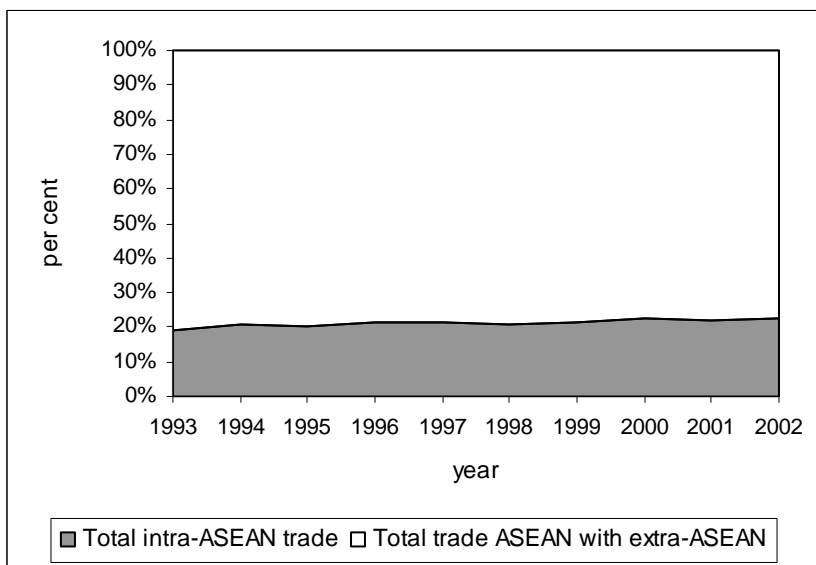
Figure 4.1: Total trade ASEAN



Source: Compiled from statistics provided by ASEAN Secretariat.

The share of intra-ASEAN trade of total trade has only a slightly upward slope with an increase of 3 per cent units from 1993 to 2002, as seen in Figure 4.2. This indicates that the Asian crisis struck the trade within ASEAN and the ASEAN trade with the World evenly harsh, since the decrease in intra-ASEAN share of ASEAN total trade was only marginal. Moreover, despite the rapid increase in trade flows within ASEAN, the share of intra-ASEAN trade in total trade has not yet reached an average share of 25 per cent.

Figure 4.2: Share of total trade - ASEAN and World



Source: Compiled from statistics provided by ASEAN Secretariat

The analysis of the development of ASEAN's trade performance becomes more interesting when considering the growth rates in trade flows, since they give an indication of where the economies are heading. As seen in Table 4.5, the growth rate of intra-ASEAN trade differs largely before and after the economical crisis in 1997. In the first time period, the average growth rate in intra-ASEAN trade was considerably high at 15,0 per cent. In the second period starting in 1997, the growth rate drastically sank to an average of 1,1 per cent. When comparing Table 4.5 and Table 4.6, it is evident that the growth rates in ASEAN's trade with World follows a similar pattern as intra-ASEAN trade. Up till 1997, the growth rate in intra-ASEAN trade was higher than in ASEAN trade with the World, and during the second time period the growth rate declines within ASEAN as well as with World and the difference is only marginal.

The overall increase in ASEAN trade volume can be explained by several factors. One of them may be the overall expansion of trade due to a general liberalization of trade and internationalization in the World after the signing of the Uruguay round in 1994. However, the intra-ASEAN trade increased more than the ASEAN trade with the World during the first time period, which indicates that the ASEAN member countries had increased their level of integration relative to the internationalisation of the World. One contributing factor to the extraordinary trade performance experienced by the ASEAN countries up till 1997 is the large Japanese foreign direct investments in this area, which started in the mid 1980s.⁴⁵ The strong Japanese Yen made assets elsewhere extremely cheap for Japanese investors. The obvious approach for Japanese companies was to buy productive assets overseas, in many cases in the ASEAN countries. This led to a reorientation in ASEAN towards outward-looking and export-oriented development strategies. At first, some of this investment was in textiles, but most of the capital entering the region from Japan was invested in the production of electrical components, machinery and appliances (chapter 84-85). To a lesser extent but still of importance for the industrial development in ASEAN was the appreciated Taiwanese Dollar and the Korean Won, which enabled the foreign direct investment from these countries to ASEAN to be placed in similar industries as the Japanese. The lower production costs and labour surplus in ASEAN enabled the industry to diversify and expand.

⁴⁵ Minns, John (2001) p.32

The impressive record of trade levels and development sustained by ASEAN in the first period came, after some years of negative trade balance, to a sudden halt in 1997, when the financial crisis struck several of the ASEAN countries, starting in Thailand. The pegging of national currencies to the US Dollar in Indonesia, Malaysia and Thailand and the liberalization of capital markets in the early 1990s contributed to a speculative trend, causing not only a financial crisis but also macroeconomic instability. A crisis in the financial sector triggered a chain reaction that involved a dramatic fall in exchange rates, a collapse in the real estate market, a dramatic fall in stock market values and a fiscal crisis for the government sector.⁴⁶ The export promoting countries, especially in the manufacturing sector proved to be vulnerable to financial chocks. However, the devaluations of the currencies increased the demand for the ASEAN commodities again, and surpluses in the trade balance were achieved through the increased exports.

In sum, the development of the intra-ASEAN trade was positive in the first time period with a growth rate in trade flow exceeding the ASEAN growth rate in trade with the World. The sustained growth in the first time period in ASEAN was generally characterized by a pattern of development in which the key role was played by growth in manufacturing industries, stimulated by sustainable inflows of foreign direct investment. The general trade performance within ASEAN in the second time period was just as poor as the ASEAN trade with the World. Neither the expansion of trade nor the Asian crisis would have taken place without the deregulation of the financial markets in the ASEAN countries. This is obvious since the boom in trade in several of the ASEAN members was driven by foreign capital, and the fixed exchange rate contributed strongly to the inflow that was mainly invested in the manufacturing sector.

4.3.1 Trade pattern by commodity

In order to further analyze the trade development in ASEAN, the analysis is made in terms of commodity groups. First, it is worth pointing out that the intra-ASEAN export is higher than the intra-ASEAN import presented in Table 4.3. At a first glance, this may seem odd, but frequent occurrence of smuggling in this area is likely to be an explaining variable for this.

⁴⁶ Gunnarsson, Christer (2002) p. 13

Having said this, the first time period in intra-ASEAN trade is characterized by the development of the Differentiated commodity group. Table 4.2 reveals that the largest share of intra-ASEAN trade in total trade is present in the Differentiated commodity group and the second largest in the Resource-based commodity group. The smallest share, that also experiences a negative trend, is found in the Labour-intensive commodity group, i.e. the trade of the ASEAN countries in this commodity group mostly takes place with the World.

The empirical results in Table 4.5 show that that the Differentiated commodity group is dominating the intra-ASEAN trade during the years examined, accounting for approximately 55-60 per cent of all trade, making it substantially larger than the other commodity groups. The same pattern can be seen in ASEAN trade with World, see Table 4.6. In particular before the Asian crisis hit the member countries the development in the Differentiated commodity group with an annual growth rate of 19,4 per cent in intra-ASEAN trade and 16,5 per cent in ASEAN trade with World, contributed to the impressive growth rate experienced by ASEAN. The positive development up till 1997 may be explained by the high inflow of foreign direct investment made before 1997, which mostly was put in the production of electrical components, machinery and appliances (chapter 84-85) in the ASEAN countries. This contributed to a higher capital-labour ratio and thus allowed the manufacturing industry to develop.⁴⁷ Notable is that despite the great expansion of the manufacturing sector within ASEAN, ASEAN was a net-importer of differentiated commodities, indicating that the demand for differentiated commodities continued to increase as per capita income rose. The pegging of many ASEAN currencies to the US Dollar made imports beneficial for the ASEAN traders.

The second largest commodity group in intra-ASEAN trade is either the Resource-based commodity group, having shares of intra-ASEAN trade of approximately 20 per cent, or the Scale-intensive commodity group of 15-20 per cent. Last of all is the Labour-intensive commodity group, which represents about 5 per cent of total intra-ASEAN trade. In the first time period the growth rates in these commodity groups are lower than the average growth rate, but still show competitive developments according to international standards. Scale-intensive commodities had an average growth rate in intra-ASEAN trade of 12,4 per cent and the growth rates of labour-intensive and resource-based commodities were estimated to 9,0

⁴⁷ Minns, John (2001) p.32

and 8,6 per cent respectively. Thus, the first time period is characterized by progress and development in all commodity groups. As seen in Table 4.4, the ASEAN trade with World follows a similar specialization in trade, with the differences that the Labour-intensive commodity group is somewhat more important in comparison to the other commodity groups in trade with World and that the trade in the Scale-intensive commodity group is more based on ASEAN imports in trade with World than in intra-area trade.

After the crisis had struck the region, the very large decrease in estimated growth rate in ASEAN trade is constituted by consequently low or even negative growth rates in all commodity groups, see Table 4.5. The consequences from the crisis are clearly visible and for a couple of years the growth rate in ASEAN was negative even in the well performing Differentiated commodity group. Despite the negative development, the intra-ASEAN trade exhibits generally higher growth rates than ASEAN trade with World, both before the crisis and after in this commodity group. Interestingly, ASEAN is a net-importer of scale-intensive commodities, which indicates that the ASEAN countries have an excess demand for scale-intensive commodities that they do not supply within the integration area. Considering the excess demand within ASEAN, this advocates for potential gains from production of scale-intensive commodities, which is supported by the growth rate in the same commodity group; the Scale-intensive commodity group managed the crisis the best with an intra-ASEAN growth rate of 2,4 per cent after 1997. The same conclusion can be drawn from Table 4.4, where the exports in the Scale-intensive commodity group increased as a share of total trade while the imports decreased in trade with World. However, this can also be an indication of quality improvement of the commodities within the sector up to a standard attracting the rest of the world. Furthermore, the devaluation of several of the Asian currencies at the time of the Asian crisis contributed to cheaper commodities produced in ASEAN for the rest of the World. Hence, in the second time period ASEAN increased their export of differentiated commodities, which made ASEAN a net-exporter of total trade.

Interestingly, despite the declines in overall growth rates, the shares of intra-ASEAN trade among the commodity groups only show minor changes from the first time period to the second. This implies that no significant changes in industrial structure took place in ASEAN as a whole. Instead, the positions established at the time of the creation of AFTA have been sustained.

To conclude, the Differentiated commodity group stands out as the most important for the intra-ASEAN trade as well as ASEAN trade with the World. The Asian crisis had severe impact on all commodity groups, though a slightly more positive development can be seen in the Scale-intensive commodity group.

Table 4.1: Trade volume, country-specific (Million US Dollars)

Country	1993-1997		1998-2002	
	ASEAN	World	ASEAN	World
<i>Low-income countries</i>				
Cambodia	-	-	826	3117
Myanmar	-	-	1 866	3 909
<i>Middle-income countries</i>				
Indonesia	11 122	83 654	15 346	84 044
Malaysia	30 904	129 162	36 968	159 410
Philippines	5 341	42 368	9 872	64 977
Thailand	17 939	113 114	20 829	117 962
<i>High-income countries</i>				
Brunei	1 827	4 403	1 172	3 926
Singapore	54 240	213 662	60 488	237 788
ASEAN	121 373	586 363	146 663	671 103

Source: Calculated from trade data provided by ASEAN Secretariat

Table 4.2: Share ASEAN trade of Total trade, country and industry-specific⁴⁸

	Resource-based commodities		Labour-intensive commodities		Scale-intensive commodities		Differentiated commodities		Total	
	1993-1997	1998-2002	1993-1997	1998-2002	1993-1997	1998-2002	1993-1997	1998-2002	1993-1997	1998-2002
<i>Low-income countries</i>										
Cambodia	-	85,7%	-	11,3%	-	30,4%	-	43,0%	-	26,9%
Myanmar	-	57,5%	-	26,4%	-	49,9%	-	38,1%	-	47,7%
<i>Middle-income countries</i>										
Indonesia	13,1%	16,3%	11,4%	10,7%	14,3%	20,6%	13,0%	26,3%	13,1%	18,2%
Malaysia	30,3%	28,2%	20,6%	17,2%	18,3%	24,5%	24,5%	22,3%	23,9%	23,3%
Philippines	13,4%	15,9%	4,0%	4,4%	13,5%	18,8%	13,6%	15,7%	12,2%	15,2%
Thailand	22,3%	20,0%	6,5%	7,8%	10,7%	17,0%	20,4%	20,9%	15,7%	17,8%
<i>High-income countries</i>										
Brunei	33,2%	21,8%	44,6%	44,1%	44,4%	49,7%	33,8%	35,0%	36,7%	30,0%
Singapore	27,1%	25,7%	29,8%	26,6%	22,5%	20,8%	25,2%	26,4%	25,3%	25,4%
ASEAN	22,3%	22,3%	14,5%	13,5%	16,9%	20,9%	22,8%	23,2%	20,6%	21,8%

Source: Calculated from trade data provided by ASEAN Secretariat

⁴⁸ The share is calculated as follows: Country j's share = country j's intra-ASEAN trade/ country j's total trade with the World.

Table 4.3: Export and Import as shares of total trade with ASEAN, country- and industry-specific⁴⁹

	Resource-based commodities				Labour-intensive commodities				Scale-intensive commodities				Differentiated commodities				Total			
	1993- 1997		1998-2002		1993- 1997		1998-2002		1993- 1997		1998-2002		1993- 1997		1998-2002		1993- 1997		1998-2002	
	Exp	Imp	Exp	Imp	Exp	Imp	Exp	Imp	Exp	Imp	Exp	Imp	Exp	Imp	Exp	Imp	Exp	Imp	Exp	Imp
<i>Low- income countries</i>																				
Cambodia	-	-	2,0%	41,0%	-	-	2,1%	23,4%	-	-	5,0%	18,4%	-	-	0,6%	7,5%	-	-	9,7%	90,3%
Myanmar	-	-	32,9%	22,0%	-	-	1,2%	9,4%	-	-	2,1%	22,1%	-	-	1,4%	8,9%	-	-	37,5%	62,5%
<i>Middle-income countries</i>																				
Indonesia	19,7%	17,3%	16,4%	17,9%	12,4%	0,9%	8,4%	1,0%	16,3%	11,5%	16,3%	12,9%	13,7%	8,3%	21,5%	5,7%	62,0%	38,0%	62,5%	37,5%
Malaysia	13,5%	7,3%	11,2%	7,2%	2,8%	3,0%	2,4%	1,4%	8,9%	7,4%	10,0%	8,1%	34,7%	22,4%	36,4%	23,2%	59,9%	40,1%	60,1%	39,9%
Philippines	3,6%	16,6%	2,8%	11,5%	1,8%	2,6%	0,7%	1,8%	6,5%	15,8%	4,5%	11,6%	29,3%	23,8%	43,3%	23,8%	41,1%	58,9%	51,3%	48,7%
Thailand	10,7%	15,0%	12,3%	8,7%	5,0%	1,7%	4,6%	1,8%	10,7%	8,4%	13,8%	10,7%	29,6%	18,9%	27,4%	20,6%	56,0%	44,0%	58,1%	41,9%
<i>High-income countries</i>																				
Brunei	21,9%	36,3%	31,4%	14,4%	0,3%	6,2%	5,8%	8,5%	2,0%	23,0%	7,6%	23,3%	0,8%	9,5%	1,2%	7,8%	25,0%	75,0%	46,0%	54,0%
Singapore	7,8%	6,9%	6,8%	5,9%	3,4%	3,4%	1,8%	2,9%	11,2%	4,7%	9,1%	4,4%	32,1%	30,5%	35,1%	33,9%	54,6%	45,4%	52,8%	47,2%
ASEAN	10,8%	9,9%	9,9%	8,6%	4,2%	2,8%	3,0%	2,3%	10,7%	7,3%	10,3%	8,0%	30,1%	24,1%	32,7%	25,2%	55,8%	44,2%	56,0%	44,0%

Source: Calculated from trade data provided by ASEAN Secretariat

Table 4.4: Export and Import as shares of total trade with World, country- and industry-specific⁵⁰

	Resource-based commodities				Labour-intensive commodities				Scale-intensive commodities				Differentiated commodities				Total			
	1993- 1997		1998-2002		1993- 1997		1998-2002		1993- 1997		1998-2002		1993- 1997		1998-2002		1993- 1997		1998-2002	
	Exp	Imp	Exp	Imp	Exp	Imp	Exp	Imp	Exp	Imp	Exp	Imp	Exp	Imp	Exp	Imp	Exp	Imp	Exp	Imp
<i>Low- income countries</i>																				
Cambodia	-	-	1,3%	12,0%	-	-	38,6%	21,6%	-	-	10,9%	10,5%	-	-	0,3%	4,8%	-	-	51,1%	48,9%
Myanmar	-	-	29,9%	14,0%	-	-	9,8%	9,8%	-	-	1,6%	21,7%	-	-	1,0%	12,3%	-	-	42,2%	57,8%
<i>Middle-income countries</i>																				
Indonesia	28,2%	8,6%	28,3%	10,4%	12,0%	3,7%	13,3%	2,9%	8,1%	17,6%	12,1%	13,7%	5,8%	15,9%	11,4%	8,0%	54,1%	45,9%	65,0%	35,0%
Malaysia	12,0%	4,4%	10,5%	4,7%	3,6%	3,1%	3,2%	1,9%	7,0%	14,3%	6,9%	10,2%	27,1%	28,6%	34,7%	27,9%	49,6%	50,4%	55,3%	44,7%
Philippines	7,1%	11,7%	4,1%	9,5%	9,1%	4,5%	5,8%	2,6%	3,6%	16,9%	3,2%	9,7%	21,2%	25,8%	39,1%	25,8%	41,1%	58,9%	52,3%	47,7%
Thailand	10,3%	7,8%	10,5%	8,2%	11,7%	4,9%	10,4%	4,3%	7,9%	20,2%	10,5%	15,1%	15,3%	21,9%	21,3%	19,7%	45,3%	54,7%	52,8%	47,2%
<i>High-income countries</i>																				
Brunei	44,6%	17,1%	57,1%	6,7%	0,9%	4,6%	4,3%	5,1%	1,2%	20,0%	2,5%	16,2%	0,6%	10,9%	0,6%	7,6%	47,3%	52,7%	64,5%	35,5%
Singapore	6,0%	7,8%	5,0%	7,5%	2,4%	3,4%	2,0%	2,5%	6,9%	11,1%	7,5%	9,0%	33,0%	29,4%	36,7%	29,7%	48,3%	51,7%	51,3%	48,7%
ASEAN	11,7%	7,5%	10,5%	7,5%	6,3%	3,7%	5,7%	2,8%	7,0%	15,0%	8,0%	11,1%	23,3%	25,5%	30,2%	24,2%	48,3%	51,7%	54,3%	45,7%

Source: Calculated from trade data provided by ASEAN Secretariat

⁴⁹ The percentages of total trade in each time period are calculated as follows: $Share_{exp} = exp_{j,i} / (exp_j + imp_j)$ and $Share_{imp} = imp_{j,i} / (exp_j + imp_j)$ where j denotes the country and i denotes the commodity group.

⁵⁰ Ibid.

Table 4.5: Annual growth rate in trade flows ASEAN-ASEAN, country and industry-specific

	Resource-based commodities		Labour-intensive commodities		Scale-intensive commodities		Differentiated commodities		Total	
	1993-1997	1997-2002	1993-1997	1997-2002	1993-1997	1997-2002	1993-1997	1997-2002	1993-1997	1997-2002
<i>Low-income countries</i>										
Cambodia	-	7,5%	-	10,5%	-	-0,1%	-	-7,2%	-	4,9%
Myanmar	-	41,7%	-	20,3%	-	-5,4%	-	-12,0%	-	21,2%
<i>Middle-income countries</i>										
Indonesia	18,8%	3,7%	-2,8%	-8,8%	13,2%	6,6%	26,7%	3,1%	15,6%	3,4%
Malaysia	8,5%	-6,2%	13,1%	-12,7%	16,0%	1,9%	15,5%	3,4%	13,8%	0,7%
Philippines	14,9%	6,6%	15,2%	-2,1%	20,6%	1,9%	38,7%	7,0%	28,3%	5,7%
Thailand	12,9%	-3,5%	13,6%	-0,2%	12,8%	7,8%	18,3%	-0,2%	15,4%	0,8%
<i>High-income countries</i>										
Brunei	6,7%	-6,7%	8,4%	6,3%	-13,9%	2,4%	6,2%	-7,5%	0,5%	-2,8%
Singapore	1,5%	1,4%	10,4%	-7,5%	9,5%	-3,1%	19,8%	0,2%	14,4%	-0,5%
ASEAN	8,6%	0,7%	9,0%	-6,1%	12,4%	2,4%	19,4%	1,6%	15,0%	1,1%

Source: Calculated from trade data provided by ASEAN Secretariat

Table 4.6: Annual growth rate in trade flows ASEAN-World, country and industry-specific

	Resource-based commodities		Labour-intensive commodities		Scale-intensive commodities		Differentiated commodities		Total	
	1993-1997	1997-2002	1993-1997	1997-2002	1993-1997	1997-2002	1993-1997	1997-2002	1993-1997	1997-2002
<i>Low-income countries</i>										
Cambodia	-	2,0%	-	16,1%	-	14,3%	-	-4,3%	-	12,8%
Myanmar	-	34,6%	-	24,0%	-	-2,3%	-	-1,5%	-	18,5%
<i>Middle-income countries</i>										
Indonesia	6,6%	1,9%	-0,2%	1,5%	10,2%	0,2%	17,4%	-8,8%	8,9%	-1,0%
Malaysia	9,4%	0,8%	8,1%	-3,8%	12,6%	-1,9%	15,5%	4,3%	13,3%	2,2%
Philippines	9,6%	-0,8%	4,8%	-3,1%	12,0%	-3,7%	29,5%	5,4%	18,7%	2,3%
Thailand	8,7%	0,9%	3,4%	-0,4%	6,5%	2,0%	13,4%	1,6%	9,0%	1,3%
<i>High-income countries</i>										
Brunei	10,7%	-4,5%	10,5%	7,4%	1,0%	-1,2%	0,3%	-8,3%	7,1%	-3,2%
Singapore	5,9%	-1,0%	7,7%	-5,6%	9,9%	-2,3%	15,7%	-1,6%	12,7%	-1,8%
ASEAN	8,0%	0,9%	4,5%	-0,7%	10,0%	-0,7%	16,5%	0,8%	12,1%	0,4%

Source: Calculated from trade data provided by ASEAN Secretariat

4.3.2 Trade pattern by country

The ASEAN countries showed remarkable progress up till 1997 in terms of growth in trade volumes, see Table 4.5. Considering growth rates, it becomes obvious that Singapore, by and large, goes with the ASEAN pattern. The highest growth rate in trade flows is found in the Differentiated commodity group: 19,8 per cent annually before 1997 in trade with ASEAN, which is somewhat above the ASEAN average in this commodity group. Moreover, Table 4.2 shows that Singapore's average share of intra-ASEAN trade in total trade is relatively high. From the first time period to the second, Singapore stays at a rather constant level at approximately 25 per cent. The Singapore trade pattern supports the predictions of developed countries, which to a greater extent is expected to have a trade that relies on differentiated products. Hence, the Differentiated commodity group stands for the absolute largest share of trade among the commodity groups accounting for more than 60 per cent of Singapore's total trade with ASEAN and with World, see Table 4.3 and Table 4.4. This is somewhat higher than the ASEAN average and is mainly due to trade in Computer/Machinery and Electrical Equipment (chapter 84 and 85), and accordingly the other commodity groups must be of a somewhat smaller importance to Singapore than to ASEAN as a whole.⁵¹

The increase in trade flows may partly be explained by the lowering of tariffs in combination with Singapore working as an entrepôt; imports from the World are manufactured and hence, value added, and re-exported to other ASEAN countries. But it could also be the other way around, where another ASEAN country exports commodities to Singapore, which then re-exports those commodities. Still, the large percentage of trade that takes place in the Differentiated commodity group indicates a higher industrial development than the ASEAN average. Concerns may be raised over the possibility for Singapore to gain more from the establishment of ASEAN, since it enjoys a more advanced industrial production than the other member countries and can now take advantage of a greater market, giving it a "competitive advantage" in scale-intensive and differentiated commodities.

Also the middle-income countries show a certain level of development in their industrial structure. The middle-income countries together account for approximately 60 per cent of all ASEAN trade, which make this group of great importance to the total ASEAN trade flows.

⁵¹ ASEAN Secretariat (09-11-2004) *Statistics*

When studying Table 4.5 it is obvious that the development of the middle-income countries has been positive. Since these countries are fairly large ASEAN economies with high growth rates during the first time period, they have affected the ASEAN trade performance positively. Within the middle-income country group, Malaysia exhibits the largest trade flows, followed by Thailand, Indonesia and the Philippines, see Table 4.1. As with the case of Singapore, all middle-income countries heavily rely on differentiated commodities, especially, Electrical Equipment (chapter 85) but also Computer/Machinery (chapter 84). In the first time period, the middle-income countries' pattern of trade follows the overall ASEAN trade pattern fairly well, or vice versa.

The openness to foreign investments in Malaysia lead to a rapid increase in foreign capital in the late 1980s, which was mostly placed in the manufacturing sector and hence lead to the expansion of trade in differentiated commodities.⁵² In Thailand, similar foreign direct investment took place as they did in Malaysia. The pegging of the Thai Bath to the US Dollar was one factor that contributed to the rapid growth before the crisis, since it caused a significant depreciation of the currency against the Japanese Yen, stimulating capital inflows and enhancing the export competitiveness of Thai-owned firms.⁵³ In the early 1990s, the steady decline in the price of oil affected Indonesia, since oil was a major source of export income. This led the country to liberalize its foreign policy, which helped to speed up the inflow of foreign direct investment. Although foreign capital never became dominant in such labour-intensive manufacturing industries as textiles, clothing and footwear, these and others began to take off, with the result that the trade in manufactured commodities increased excessively. The Philippines attracted some foreign capital too, despite its bouts of political instability. However, the Indonesian trade in first and foremost the Resource-based commodity group but also the Scale-intensive commodity groups were of more importance than for the other middle-income countries'. This was mainly due to the trade in Lubricants/Fuel/Oils (chapter 27) in the Resource-based commodity group, but no single commodity in the scale-intensive sector can be distinguished.⁵⁴

Both Singapore and the middle-income countries were affected negatively by the Asian crisis. However, considering the Singapore growth rates in trade flows in total, i.e. with the World,

⁵² Minns, John (2001) p. 32-33

⁵³ Gunnarsson, Christer (2002) p. 13

⁵⁴ ASEAN Secretariat (09-11-2004) *Statistics*

the above average growth rate before 1997 and the below average, negative growth rate after 1997, indicate that the economy was hit harder by the crisis than the ASEAN average. Moreover, in the second time period, despite the low growth rates, the middle-income countries actually contributed to the positive ASEAN growth rate. This is especially noticeable when considering that these countries strongly contributed to make the scale-intensive sector the best performing sector during the second period, which raised the average for ASEAN as a whole.

The in general, above average growth rates in the second time period indicate that the middle-income country group was the engine pushing the development of trade patterns within ASEAN. Noteworthy is that in spite of the unchanged industrial structure in ASEAN as a whole, the middle-income countries adjusted towards a more dynamic industrial structure; the positive growth rates in especially the Differentiated and Scale-intensive commodity groups are apparent. This is furthermore supported by the severe negative growth rates in the Labour-intensive commodity group after 1997 and by the structural changes within the Resource-based commodity group, where the poorer middle-income countries, Indonesia and the Philippines, continued to develop the sector whereas the richer countries, Malaysia and Thailand, left that type of trade indicating economies in transition.

The high-income country, Brunei, shows remarkably different levels of trade compared to Singapore and the middle-income countries. The Singapore trade level is almost 80 times than that of Brunei, see Table 4.1. However, Table 4.2 shows that Brunei has rather high, above average shares of intra-ASEAN trade in total trade, even though decreasing from 36,7 per cent to 30,0 from the first time period to the second.⁵⁵ The different economical structure of Brunei can be distinguished when considering that their trade mainly takes place in the Resource-based commodity group, which at times consists of more than 55 per cent of the Brunei trade, both with ASEAN and with World, see Table 4.3 and Table 4.4. Evidently, Brunei is a net exporter of resource-based commodities, and it becomes clear that the Brunei economy relies on its gas and oil reserves; exports in Lubricants/Fuel/Oils (chapter 27) are dominating the commodity groups and the economy.⁵⁶ Interestingly, the Brunei imports of scale-intensive commodities accounts for as much as 20 per cent of Brunei's total trade. The

⁵⁵ The decrease is even larger when including the values from 1993, from 49,3 per cent to 30,0 per cent. See Appendix V for estimates.

⁵⁶ ASEAN Secretariat (09-11-2004) *Statistics*

trade flows vary a lot between the years, but most of the trade in the Scale-intensive commodity group is due to imports of Articles of Iron and Steel (chapter 73), Cars, Trucks, Autos (chapter 87), Aircraft, Spacecraft (chapter 88) and Ships, Boats (chapter 89). The other two commodity groups are smaller but also here Brunei works as a net importer. Considering this, it seems like the Brunei revenues from exports end up in non-productive activities instead of in profitable investments and diversification of the industry. A positive development for the population rather than for the sultan is seen in the increased trade of Apparel, Knitted (chapter 61) in the Labour-intensive commodity group. Once again, this indicates that the Brunei economy, despite a high per capita income, is underdeveloped. Furthermore, as a consequence of its irrelevance as a destination for foreign direct investment, Brunei was largely shielded from the Asian crisis.⁵⁷ Nevertheless, the fall in world oil prices in 1997 dragged the economy down, which can be seen in the declining growth rates of intra-ASEAN trade and of ASEAN trade with the World.

Not surprisingly, Table 4.1 reveals that the low-income countries, Cambodia and Myanmar, present fairly low trade volumes in comparison to the other ASEAN members both with ASEAN as well as with the World. These economies are not participating extensively in the international trade system and it is not surprising that the trade of these countries relies on their neighbouring countries in ASEAN to a greater extent than the other member countries. Thus, in Table 4.2, Cambodia and Myanmar show fairly high shares of intra-ASEAN trade in comparison to total trade, 26,9 per cent, and 47,7 per cent respectively. This implies that ASEAN has become an important market for the two low-income countries, proving that these economies could not afford to be excluded from the free trade area. Furthermore, in trade with ASEAN, imports is significantly larger than exports, see Table 4.3. In Cambodia the imports account for as much as 90,3 per cent, with most imports coming from the Resource-based commodity group. Also Myanmar mainly trades in resource-based commodities, exporting mainly Edible vegetables (chapter 7), Lubricants/Fuel/Oil (chapter 27) and Wood (chapter 44) and importing Lubricants/Fuel/Oil (chapter 27).⁵⁸ Notable is that some demand for imported scale-intensive commodities exists in these countries. More specifically, the largest imports for both countries in the Scale-intensive commodity group are found in Cars, Trucks and Auto (chapter 87). Noteworthy is that in trade with World, the Labour-intensive commodity group plays a much more important role for Cambodia, than in

⁵⁷ Gunn, Geoffrey C. (2001) p.81

⁵⁸ ASEAN Secretariat (09-11-2004) *Statistics*

trade with ASEAN; it accounts for approximately 60 per cent of all Cambodian trade and the export accounts for two thirds of this which basically depends on the textile sector. The lack of trade in the dynamic and capital-intensive industries in these countries aligns with the presumption that poor economies neither have the ability to produce these kinds of goods, nor the capacity to create a demand for them. Instead, most of the trade in Cambodia and Myanmar takes place in homogeneous commodities i.e. the resource-based and labour-intensive commodities.

When considering the growth rates it becomes clear that Cambodia exhibits higher growth rate in trade with World than with ASEAN, which is mainly due to an increase in exports of the Labour-intensive commodity Apparel, knitted (chapter 61).⁵⁹ In contrast, Myanmar exhibits a growth rate as high as 21,2 per cent in trade with ASEAN and 18,5 per cent in trade with World. This is mainly is due to a positive development particularly in the Resource-based and Labour-intensive commodity groups. However, one should bear in mind that Myanmar applies a policy of economic isolation and the military has used high levels of repression and forced labour. The level of military control has meant that Myanmar has not developed the same kind of export-oriented manufacturing sector as other ASEAN countries.⁶⁰ Moreover, the trade data for these countries begins after the Asian crisis. However, it is questionable whether the crisis would have affected the outcome to any greater extent, since these economies are underdeveloped and hence less sensitive to radical changes in the international macro-economic structure.

To summarize, the total of intra-ASEAN trade is very much dependent on the Singapore trade in especially the Differentiated commodity group. However, the importance of the middle-income countries is growing and also here the progress in the Differentiated commodity group is apparent. Not surprisingly, the low-income countries stand for the lowest trade volumes. However, the importance of intra-ASEAN imports for both Cambodia and Myanmar is significant. The Brunei trade pattern clearly distinguishes the country from the other ASEAN member states. Especially notable is the negative growth rate before the Asian crisis in the Scale-intensive commodity group, which is clearly dynamic and developing in all other member countries.

⁵⁹ ASEAN Secretariat (09-11-2004) *Statistics*

⁶⁰ Neher, Clark D. (2001) p. 167

4.4 Conclusions

The empirical study in this chapter shows that the progress in integration in terms of trade volume since the establishment of AFTA is fairly modest among the ASEAN member countries. Even though all member countries have benefited from large increases in trade volumes and trade within ASEAN has had higher growth rate than the ASEAN trade with World up to the Asian crisis in 1997, the drastic decline in growth rates in trade flows both in intra-ASEAN trade and trade with World showed that AFTA probably not has had the sustainable, positive effects desired. The remarkable growth rates before 1997, that indicates a positive development in intra-ASEAN trade, would rather be explained by a general internationalization of the world in combination with a boost in the ASEAN economies due to inflows of foreign capital that was invested in manufacturing industries. The Asian crisis was expected to enhance changes of trade patterns since benefit and cost analyzes become more important in troublesome times and hence, should contribute to a more efficient trade structure. Even though no remarkable effects from integration can be seen in the overall growth rate but for a general cut back in both intra-ASEAN trade and ASEAN trade with World, some changes of patterns within ASEAN can indicate positive effects from integration. After 1997, the Labour-intensive commodity group shows negative growth rates in trade within ASEAN, while mainly the Scale-intensive, but also the Differentiated commodity groups, have the highest growth rates. In trade with World, the Labour-intensive commodity group manages better while the Scale-intensive commodity group performs worse. This can indicate that particularly the middle-income countries developed in order to benefit from economies of scale within the free trade area, while the rest of the World still prefer cheap production of textiles in the Labour-intensive commodity group.

The chapter also illustrates the difficulties of integration between countries with different levels of development and different levels of trade flows. Singapore and the middle-income countries dominate the ASEAN economy and the newer members of the integration area are more or less dependent on these economies. Singapore and the middle-income countries show fairly similar trade patterns, while Brunei distinguishes itself from other fairly rich economies with the heavy dependency on the domestic oil reserves. Mainly the middle-income countries have driven the development of ASEAN thanks to heavy investments in the Differentiated

commodity group. Also scale-intensive and resource-based commodities play important roles, of which the former is especially noticeable after the crisis in 1997. This is somewhat more detectable in intra-ASEAN trade flows than in ASEAN trade with World and supports the trend towards specialization in production with economies of scale, experienced by the middle-income countries. The increased trade flows could also inherit from Singapore becoming a more important entrepôt, both for flows into the ASEAN area and out of the area. Because of the low cumulative content in the rules of origin, this phenomenon is quite likely to appear, and would mean that the actual intra-ASEAN trade in the free trade area have not increased as much as the trade flows exhibited in the data, especially in products to which one easily can add up to the critical cumulative value.

Altogether, this indicates that the motivation in ASEAN to strengthen economical as well as political bonds might have played a role for increased cooperation and commitments in trade, which has given opportunities for greater network building across borders and ability to further increase trade volume. The development in the ASEAN countries continue to challenge the notion that the World economy can be divided simply between rich exporters of differentiated commodities and poor exporters of homogeneous commodities and contributes to an equalized distribution of wealth in the World. Still, the difference between trade patterns in intra-ASEAN trade and ASEAN trade with World is only minor and as a consequence we conclude that the implementation of AFTA has had limited effects on trade flows. We continue to investigate whether intra-industry trade flows are affected by the increased regional integration.

5 Intra-industry trade and specialization

In this chapter the impact of the creation of AFTA on intra-industry trade between ASEAN and its member countries will be analyzed. The chapter begins with some methodological considerations concerning the measurement of intra-industry trade. The hypotheses derived from factors expected to affect the degree of intra-industry trade and specialization are examined and evaluated.⁶¹ The results of the empirical analysis will then be presented and concluded.

5.1 Intra-industry trade measure

The Grubel and Lloyd (GL) method is used when calculating intra-industry trade.⁶² The GL method indexes intra-industry trade with ASEAN and the rest of the world as counterparts. The formula used when indexing by the GL method describes country j 's total trade of commodity i as inter-industry trade plus intra-industry trade. A shift gives that intra-industry trade equals total trade minus inter-industry trade. Dividing by total trade present the intra-industry trade share of total trade and this is the index used when comparing the level of intra-industry trade between sectors or between countries. By simply summarizing the member countries' intra-industry trade and dividing by total trade within ASEAN and with World respectively, the GL values for ASEAN are received. When there is only inter-industry trade, i.e. no intra-industry trade takes place, the GL index will be computed to zero, and opposite, when there is only intra-industry trade taking place, i.e. no inter-industry trade takes place, the index will be one since total export equals total imports.

⁶¹ See chapter 3 for a more comprehensive description of the effects of intra-industry trade.

⁶² Grubel, Herbert & Lloyd, Peter J. (1975)

$$\text{IIT}_{ij} = \frac{(X_{ij} + M_{ij}) - |X_{ij} - M_{ij}|}{(X_{ij} + M_{ij})} \quad 5.1$$

The expression $(X_{ij} + M_{ij}) - |X_{ij} - M_{ij}|$ is equivalent to $2\min(X_{ij}, M_{ij})$ since intra-industry trade refers to an exchange of identical or differentiated commodities at the same time.⁶³

$$\text{GL}_{ij} = \frac{2\min(X_{ij}, M_{ij})}{(X_{ij} + M_{ij})} \quad 5.2$$

5.2 Extent of intra-industry trade

The results concerning the levels of intra-industry trade are presented in Table 5.1. They show that intra-industry trade stands for the absolute largest share of intra-ASEAN trade flows. These estimates would most probably be significantly lower if the data examined was more disaggregated. Furthermore, the Labour-intensive commodity group is much more disaggregated than the Differentiated commodity group at the two-digit level in the Harmonized System, which makes the implication and analysis of patterns of intra-industry trade more difficult. As a consequence of the more aggregated data in the Differentiated commodity group, the intra-industry trade is expected to be overestimated in chapters 84 and 85, Computer/Machinery and Electrical, since non-similar commodities will be counted as similar commodities. However, this should not affect the comparison between ASEAN and World to any greater extent since the same asymmetry is present in both estimates. Moreover, the GL index tends to overestimate intra-industry trade where frontier trade is prominent, since frontier trade is caused by geographical factors rather than factors creating intra-industry trade. However, with this in mind, structural differences and development of intra-industry trade can still be viewed when analyzing the results. The growth rates in intra-industry trade in intra-ASEAN trade are presented in Table 5.3 and are very high, 17,4 per cent, until 1997 when they decline drastically to 1,2 per cent. The crisis clearly has affected not only trade flows as seen in chapter four, but also intra-industry trade. Moreover, the

⁶³ Petersson, Lennart (2002) p. 242

growth rates of intra-industry trade are slightly higher than the growth rates in total intra-ASEAN trade.

5.2.1 Intra-industry trade in commodity groups

1) Intra-industry trade is expected to be higher in industries with higher degree of economies of scale and product differentiation. Hence, the GL values for the ASEAN trade are expected to be higher in the Scale-intensive and the Differentiated commodity groups, than in the Resource-based and the Labour-intensive commodity groups.

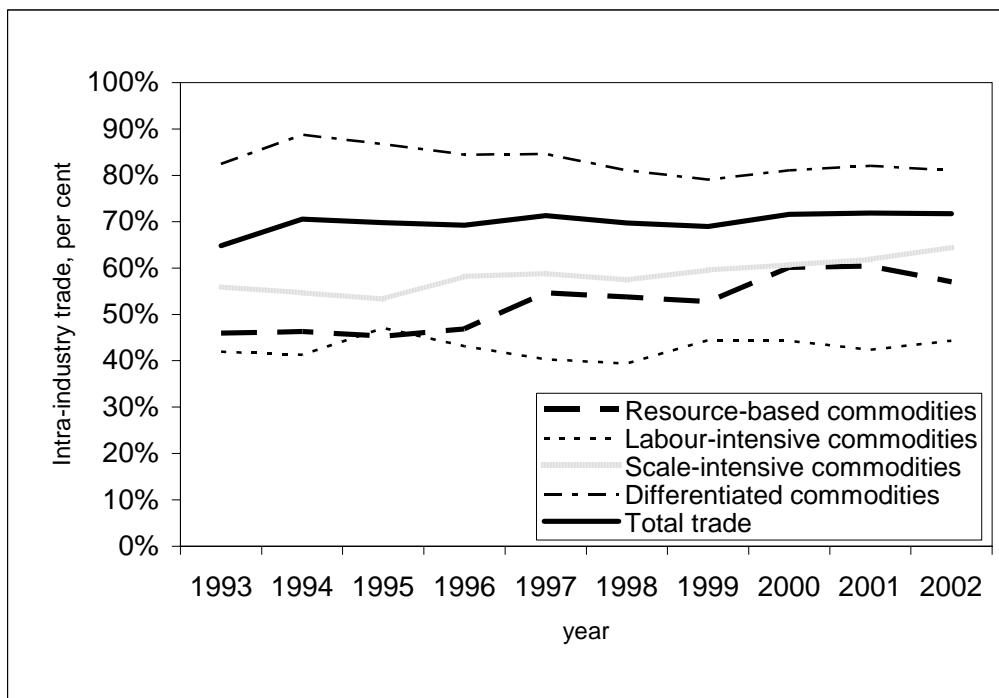
As seen in Table 5.1, the GL index reveals differences between the four commodity groups. Up till 1997, differentiated commodities exhibit the highest growth rate in intra-industry trade, 20,1 per cent, and add up to the ASEAN annual growth of 17,4 per cent. Hence the significant amounts of foreign direct investment in the manufacturing sector led to increased trade in differentiated commodities, and thus intra-industry trade increased, which is shown in Table 5.3. The Differentiated commodity group clearly has the highest share of intra-industry trade with a GL value above 80 per cent in the first time period. This is according to the expectations, since the extent of product differentiation, and hence intra-industry trade, is larger in manufactured, heterogeneous commodities than in resource-based and labour-intensive commodities that are of more homogeneous nature. Moreover, as seen in Table 5.1, the Differentiated commodity group accounts for about 65 per cent of all intra-industry trade in ASEAN. Notable is that since the Differentiated commodity group constitutes a large share of the intra-ASEAN trade seen in chapter four, the importance of intra-industry trade is large. A closer analysis of the section in each commodity group reveals the interesting finding that only one section, Machinery and Electrical appliances, completely dominates the Differentiated commodity group.⁶⁴ This section alone stands for more than 60 per cent of total intra-industry trade within ASEAN for all years but one during the examined time period.

Between the other three commodity groups smaller differences in GL indexes are revealed, with values well below differentiated commodities' and the GL average. For the Scale-intensive commodity group the values are 56 and 61 per cent, the Resource-based commodity

⁶⁴ See Appendix IV

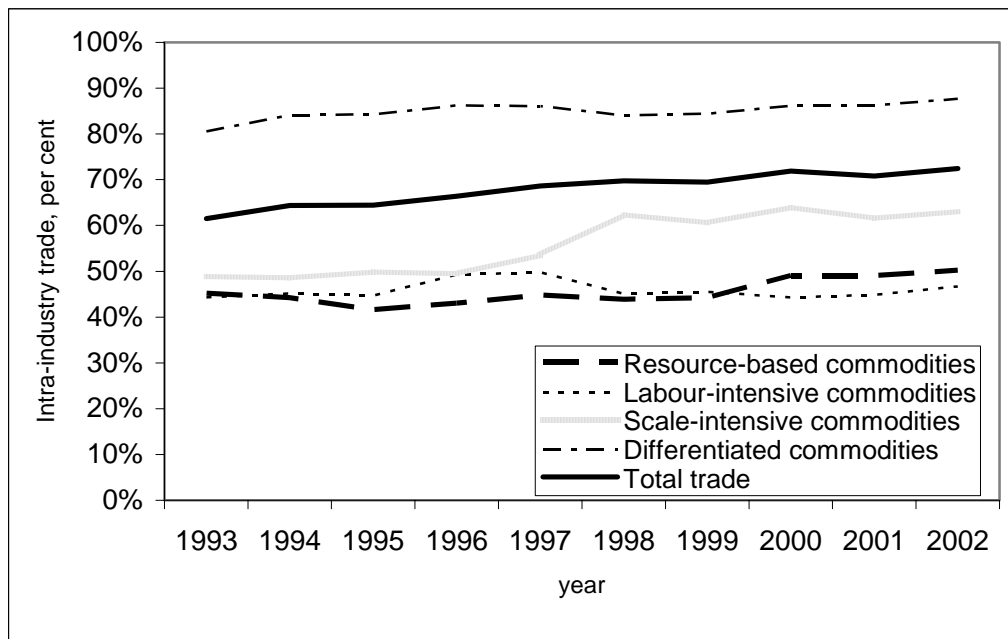
group 48 and 57 per cent respectively while the Labour-intensive commodity group remains unchanged at 43 per cent. The Labour-intensive group represents less than 5 per cent of all intra-industry trade in ASEAN, while the Resource-based and Scale-intensive groups are more or less equally large at 15 per cent each. The Resource-based and the Scale-intensive commodity groups show growth rates of similar levels, about 13 per cent, while the Labour-intensive commodity group had a growth rate of 8 per cent. It is also notable that the section Mineral products stands for approximately two thirds of the intra-industry trade in the Resource-based commodity group.⁶⁵

Figure 5.1: Intra-industry trends as share of intra-ASEAN trade, commodity-specific



Source: Calculated from trade data provided by ASEAN Secretariat

⁶⁵ See Appendix IV

Figure 5.2: Intra-industry trends as share of total trade with World, commodity-specific

Source: Calculated from trade data provided by ASEAN Secretariat

The picture of the development of the different commodity groups looks somewhat different in the second time period. After the crisis, the growth rates in intra-industry trade have declined drastically, which aligns with the overall decrease in growth rates in trade flows. Still the Differentiated commodity group present the highest GL values. However, Figure 5.1 reveals that the Differentiated commodity group exhibits a downward trend in GL indexes, whereas an upward trend can be distinguished for both scale-intensive commodities and resource-based commodities. Indeed, the Scale-intensive commodity group that had the highest growth rate in ASEAN trade volume after the crisis show an even higher growth rate in intra-industry trade of 4,2 per cent, and managed the best of the four commodity groups, see Table 5.3. The Resource-based and the Differentiated commodity groups show growth rates in intra-industry trade just about one per cent and the Labour-intensive commodity group show negative growth rate at -4,2 per cent. In total, this implies that the ASEAN growth rate in the second period ended up at a more modest 1,2 per cent.

To conclude, intra-industry trade is by far most apparent in the Differentiated commodity group mainly due to intra-industry trade in the chapters Computer/Machinery and Electrical Equipment. However, the most continuously positive trend of intra-industry trade development can be seen in the Scale-intensive commodity group, which shows highest

growth rates after the Asian crisis. In this regard, ASEAN appears to have enabled producers to exploit economies of scale since the relevant market for domestic industries has increased, and thereby improving levels of technical efficiency in production. Moreover, the intra-industry trade is not insignificant in the Resource-based commodity group, while the intra-industry trade in the Labour-intensive commodity group shows the worst development.

5.2.2 Level of economic development and intra-industry trade

2) *The share of intra-industry trade is expected to be higher in trade between economies with high per capita income and between economies with greater similarities in their per capita income.* Taking per capita income of the ASEAN economies into consideration, and the fact that only two of the member countries are classified as high-income countries, the intra-industry trade within ASEAN is expected to be relatively small. The high-income countries, Brunei and Singapore are expected to have the highest share of intra-industry trade while the countries with the lowest per capita income, Myanmar and Cambodia, are expected to have the lowest share of intra-industry trade. Moreover, the great diversity in per capita incomes across the member countries is expected to have a negative impact on the share of intra-industry trade in intra-ASEAN trade.

3) *The share of intra-industry trade is expected to be higher in trade between larger economies and the more similar the economies are in size.* None of the ASEAN economies are large in comparison to industrialized economies and the size of the ASEAN economies differs widely, which is expected to make the share of intra-industry trade within ASEAN small. However, similarities in economic size can be seen between the larger economies i.e. the middle-income countries and Singapore, and hence, this is expected to contribute to higher intra-industry trade.

4) *Open economies are expected to have higher shares of intra-industry trade than closed economies.* The ASEAN countries have different ratios of openness, which means that the countries with lower openness, in particular Indonesia and Myanmar, are expected to lower the degree of intra-industry trade in ASEAN. However, the high openness of Singapore and Malaysia is anticipated to contribute to higher intra-industry trade.

When analyzing intra-industry trade on a country level it is apparent that the high-income country Singapore, which has the highest per capita income and the most outward-looking trade regime, also presents the highest values of intra-industry trade with approximate GL values of 0,80, presented in Table 5.1. On the contrary, the country with the second highest per capita income, Brunei, exhibits very low values: 0,05 during the years 1993-1997 and 0,12 during the years 1998-2002. The differences between the two high-income countries become even clearer when considering their intra-industry growth rates presented in Table 5.3. Between 1993 and 1997, Singapore exhibited a growth rate in intra-industry trade about the same size as the ASEAN average, but during the following years the growth rate declined to -0,3 per cent. Brunei on the other hand showed severe negative growth rate of -43,1 per cent from 1993 to 1997 but incredible 39,9 per cent during the years of the Asian crisis and up till 2002.

For Singapore, the result is not surprising since the country had the highest GL value of all countries in the Differentiated commodity group and in the first time period an above average growth rate in intra-industry trade. Hence, the high share of Singapore intra-industry trade with the other member countries, above 75 per cent, takes place in the Differentiated commodity group which signifies a developed industrial structure. The low levels of intra-industry trade in Brunei may be explained by the structure of the Brunei trade; the Resource-based commodity group is prominent and therefore intra-industry trade is less likely to occur. Considering that Brunei is a nation with large oil reserves, it becomes obvious that exports of chapter 27, Lubricants/Fuel/Oil, stands for most of the trade within the commodity group. Most of the Brunei intra-industry trade with ASEAN takes place in the Scale-intensive commodity group; however, no obvious pattern of specialization in intra-industry trade can be seen. Furthermore, the fact that Brunei neither has a large economy, and hence has small home-market effect, nor as open trade policy, might contribute to the explanation of the low GL values and low average intra-industry growth rate.

After Singapore, the middle-income countries are next in rank in terms of levels of intra-industry trade, with Malaysia having the highest GL values of 0,71 followed by Thailand, the Philippines and Indonesia. The GL values for Thailand have increased the most from 0,58 to 0,68, while Malaysia and the Philippines remains about the same GL values over the years. Indonesia on the other hand, which has the lowest per capita income in the middle-income

group and in comparison also has a much more controlled trade policy, exhibits a decrease in GL values from 0,53 to 0,49. It is obvious that all middle-income countries have experienced remarkably high annual growth in the first time period. The Philippines had the highest growth rate of 37,9 per cent, followed by Thailand, Indonesia and finally Malaysia, see Table 5.3. The high growth rates of intra-industry trade may be explained by the high levels of foreign direct investment that started to flow into the region in the middle of the 1980s and continued in the 1990s, which enabled the manufacturing sector to expand.⁶⁶ Hence, the highest GL values for the middle-income countries in intra-ASEAN trade can be found in the Differentiated commodity group. For example, the intra-industry trade in the Philippines in the Differentiated commodity group accounts for about 80 per cent of all Philippine intra-industry trade with ASEAN. Thailand relies somewhat more on scale-intensive commodities whereas Indonesia shows a more diversified trade structure than the other middle-income countries and 95 per cent of the Indonesian intra-industry trade with ASEAN is split between the Resource-based commodity group, about 40 per cent, and the Scale-intensive, about 30 per cent and the Differentiated commodity groups about 25 per cent.

In the second time period, the already mentioned decline in growth rate of intra-industry trade for Singapore also took place in the middle-income countries. Hence, the decline in growth rates in overall intra-ASEAN trade flows, presented in chapter four, that came as a consequence of the Asian crisis, also affected the growth of intra-industry trade. Most significant is the negative trend in the Differentiated commodity group since most intra-industry trade is represented in this group. However, the intra-industry trade in the middle-income countries, with average growth rates of about 2,5 per cent, seem to have managed the crisis somewhat better than Singapore. This is mainly due to better growth rates in the Scale-intensive commodity group, which suggests that the home market effect has been significant and in turn has enabled the countries to take advantage of economies of scale in production. Notable is also that the Labour-intensive commodity group continues to exhibit the lowest growth rates with the exception of Indonesia, that has significant intra-industry trade in this commodity group. Moreover, it is interesting to compare the poorer middle-income countries with similar per capita income, Indonesia and Philippines, since Indonesia is a larger economy but at the same time less open than the Philippines. Interestingly, the Philippines exhibit both higher GL values and higher growth rates than Indonesia. In the case of

⁶⁶ Minns, John (2001) p. 32-33

Indonesia, this indicates that economic size does not compensate for a more closed trade policy.

The GL for the low-income countries' trade with ASEAN in the second time period are much lower than the other ASEAN members', see Table 5.1. This implies that the inter-industry trade is of main importance for these two economies. This is not surprising since their trade relies relatively more on the Resource-based and the Labour-intensive commodity groups and have no considerable dependency on the Scale-intensive and the Differentiated commodity group. Hence, they are unable to take advantage of economies of scale. However, the low-income countries exhibit very high growth rates in intra-industry trade. Myanmar has an incredible growth rate of 103,2 per cent of intra-industry trade in the Resource-based commodity group while severe negative growth occurs in the rest of the commodity groups. Cambodia shows the highest growth rate in the Differentiated commodity group and lower growth rates across the other three sectors. Altogether, the low-income countries have higher average growth rates than the middle-income countries in general, which in turn have higher growth rates than the high-income countries. This indicates that growth rates in the individual countries indicate a catch-up effect in intra-industry trade shares of total trade.

To conclude, the high-income country Singapore, exhibits the highest GL values and much higher growth rate in the Differentiated commodity group than in the other commodity groups. This implies that the Singapore growth rate in intra-industry trade contributes to a bias in ASEAN towards specialization in differentiated commodities. The middle-income countries together have shown a specialization in intra-industry trade in the Differentiated commodity group. Especially noteworthy is that in the second period, the Scale-intensive commodity group is developing. The low-income countries have low shares of intra-industry trade in trade with ASEAN, and neither of them is specialized in intra-industry trade in the commodity groups characterized by economies of scale or differentiated commodities. Brunei would be expected to perform better in intra-industry trade in all commodity groups considering its high per capita income.

Integration and Intra-Industry Trade in ASEAN

Table 5.1: GL index and Share of total Intra-industry trade in ASEAN-ASEAN trade, country and industry-specific⁶⁷

	Resource-based commodities		Labour-intensive commodities		Scale-intensive commodities		Differentiated commodities		Total											
	1993-1997		1998-2002		1993-1997		1998-2002		1993-1997		1998-2002									
	GL	Share of IIT	GL	Share of IIT	GL	Share of IIT	GL	Share of IIT	GL	Share of IIT	GL	Share of IIT								
<i>Low-income countries</i>																				
Cambodia	-	-	0,05	20,6%	-	-	0,14	36,4%	-	-	0,12	30,5%	-	-	0,15	12,5%	-	-	0,10	100,0%
Myanmar	-	-	0,41	80,9%	-	-	0,08	3,1%	-	-	0,06	6,0%	-	-	0,27	10,0%	-	-	0,28	100,0%
<i>Middle-income countries</i>																				
Indonesia	0,57	40,5%	0,53	37,5%	0,13	3,2%	0,19	3,6%	0,53	26,9%	0,59	35,3%	0,70	29,3%	0,42	23,6%	0,53	100,0%	0,49	100,0%
Malaysia	0,58	17,1%	0,67	17,7%	0,54	4,4%	0,58	3,2%	0,72	15,4%	0,74	16,7%	0,78	63,1%	0,73	62,4%	0,71	100,0%	0,71	100,0%
Philippines	0,27	9,5%	0,34	8,8%	0,36	2,8%	0,32	1,4%	0,35	9,7%	0,46	6,0%	0,84	78,0%	0,70	83,8%	0,59	100,0%	0,60	100,0%
Thailand	0,26	11,5%	0,56	17,8%	0,41	4,8%	0,43	4,1%	0,59	18,0%	0,61	20,0%	0,78	65,7%	0,80	58,1%	0,58	100,0%	0,68	100,0%
<i>High-income countries</i>																				
Brunei	0,02	18,8%	0,03	12,1%	0,09	10,3%	0,37	43,4%	0,09	41,1%	0,10	26,2%	0,16	29,8%	0,25	18,3%	0,05	100,0%	0,12	100,0%
Singapore	0,57	10,9%	0,64	10,1%	0,51	4,5%	0,52	3,1%	0,53	8,7%	0,60	8,5%	0,93	75,8%	0,91	78,3%	0,79	100,0%	0,82	100,0%
ASEAN	0,48	14,4%	0,57	15,0%	0,43	4,3%	0,43	3,2%	0,56	14,6%	0,61	15,8%	0,85	66,7%	0,81	66,1%	0,69	100,0%	0,71	100,0%

Source: Calculated from trade data provided by ASEAN Secretariat

Table 5.2: GL index and Share of total Intra-industry trade in ASEAN-World trade, country and industry-specific⁶⁸

	Resource-based commodities		Labour-intensive commodities		Scale-intensive commodities		Differentiated commodities		Total											
	1993-1997		1998-2002		1993-1997		1998-2002		1993-1997		1998-2002									
	GL	Share of IIT	GL	Share of IIT	GL	Share of IIT	GL	Share of IIT	GL	Share of IIT	GL	Share of IIT								
<i>Low-income countries</i>																				
Cambodia	-	-	0,05	8,5%	-	-	0,08	62,2%	-	-	0,08	21,1%	-	-	0,12	8,2%	-	-	0,08	100,0%
Myanmar	-	-	0,32	76,9%	-	-	0,06	6,9%	-	-	0,04	5,7%	-	-	0,14	10,6%	-	-	0,18	100,0%
<i>Middle-income countries</i>																				
Indonesia	0,29	31,4%	0,38	33,4%	0,29	13,5%	0,28	10,1%	0,39	29,9%	0,58	33,5%	0,40	25,2%	0,53	23,0%	0,34	100,0%	0,45	100,0%
Malaysia	0,32	7,5%	0,44	8,9%	0,51	4,9%	0,51	3,5%	0,49	15,1%	0,65	14,8%	0,90	72,4%	0,87	72,9%	0,69	100,0%	0,75	100,0%
Philippines	0,32	10,7%	0,29	6,3%	0,20	5,0%	0,21	2,8%	0,29	10,5%	0,44	9,2%	0,88	73,9%	0,79	81,7%	0,56	100,0%	0,63	100,0%
Thailand	0,31	10,3%	0,38	10,5%	0,44	13,4%	0,49	10,6%	0,40	20,6%	0,59	22,4%	0,82	55,7%	0,93	56,6%	0,55	100,0%	0,68	100,0%
<i>High-income countries</i>																				
Brunei	0,01	12,9%	0,01	6,8%	0,15	16,8%	0,22	26,0%	0,11	48,1%	0,22	52,8%	0,10	22,3%	0,14	14,5%	0,05	100,0%	0,08	100,0%
Singapore	0,84	13,7%	0,78	11,7%	0,80	5,4%	0,77	4,2%	0,71	15,2%	0,72	14,2%	0,89	65,6%	0,88	70,0%	0,85	100,0%	0,84	100,0%
ASEAN	0,44	12,8%	0,48	12,1%	0,47	7,2%	0,45	5,4%	0,50	16,9%	0,62	16,8%	0,85	63,1%	0,86	65,7%	0,65	100,0%	0,71	100,0%

Source: Calculated from trade data provided by ASEAN Secretariat

⁶⁷ Share of IIT is calculated as follows: Share of IIT_j = IIT_{j,i} / IIT_j where j denotes the country and i denotes the commodity group.

⁶⁸ Ibid.

Table 5.3: Growth rate in Intra-industry trade ASEAN-ASEAN, country and industry-specific

	Resource-based commodities		Labour-intensive commodities		Scale-intensive commodities		Differentiated commodities		Total	
	1993-1997	1997-2002	1993-1997	1997-2002	1993-1997	1997-2002	1993-1997	1997-2002	1993-1997	1997-2002
<i>Low-income countries</i>										
Cambodia	-	20,8%	-	17,4%	-	20,7%	-	87,8%	-	28,3%
Myanmar	-	103,2%	-	-9,3%	-	-11,3%	-	-83,3%	-	50,6%
<i>Middle-income countries</i>										
Indonesia	28,1%	1,6%	6,4%	10,3%	16,5%	8,3%	17,0%	-2,3%	20,6%	3,0%
Malaysia	7,9%	-3,7%	-3,1%	-6,0%	13,5%	5,3%	11,7%	2,9%	10,5%	2,0%
Philippines	28,1%	6,1%	13,4%	-1,9%	31,7%	5,9%	41,1%	2,5%	37,9%	3,2%
Thailand	41,3%	-1,3%	11,8%	-3,5%	24,8%	7,3%	19,6%	1,5%	22,9%	2,1%
<i>High-income countries</i>										
Brunei	41,3%	-12,6%	-61,3%	64,3%	-151,7%	95,7%	-262,0%	165,4%	-43,1%	39,9%
Singapore	3,3%	3,7%	14,4%	-7,1%	7,5%	-1,2%	22,6%	-0,4%	17,9%	-0,3%
ASEAN	12,9%	1,5%	8,0%	-4,2%	13,7%	4,2%	20,1%	0,8%	17,4%	1,2%

Source: Calculated from trade data provided by ASEAN Secretariat

Table 5.4: Growth rate in Intra-industry trade ASEAN-World, country and industry-specific

	Resource-based commodities		Labour-intensive commodities		Scale-intensive commodities		Differentiated commodities		Total	
	1993-1997	1997-2002	1993-1997	1997-2002	1993-1997	1997-2002	1993-1997	1997-2002	1993-1997	1997-2002
<i>Low-income countries</i>										
Cambodia	-	15,5%	-	26,4%	-	0,7%	-	55,5%	-	21,7%
Myanmar	-	99,4%	-	-2,9%	-	-5,5%	-	-46,3%	-	44,2%
<i>Middle-income countries</i>										
Indonesia	12,4%	7,9%	0,6%	0,8%	13,6%	6,6%	20,3%	2,0%	13,0%	5,4%
Malaysia	12,2%	8,2%	6,3%	-2,4%	15,5%	3,2%	16,9%	4,2%	15,8%	4,1%
Philippines	7,5%	-0,8%	14,3%	-5,8%	13,9%	5,5%	35,1%	3,0%	28,5%	2,7%
Thailand	11,0%	3,9%	8,3%	0,7%	11,6%	7,5%	16,8%	3,5%	13,9%	4,1%
<i>High-income countries</i>										
Brunei	-12,7%	-10,4%	7,7%	14,9%	-199,0%	137,0%	-282,5%	177,1%	-45,3%	41,5%
Singapore	4,3%	-1,6%	8,7%	-5,7%	10,6%	-2,7%	16,4%	-2,0%	13,3%	-2,2%
ASEAN	7,8%	3,9%	7,4%	-2,5%	12,3%	3,2%	18,1%	1,5%	14,9%	1,8%

Source: Calculated from trade data provided by ASEAN Secretariat

5.2.3 Intra-industry trade and trade creation

5) *The intra-industry trade is expected to grow faster within the integration area than with the World.* The growth rate of intra-industry trade within ASEAN is expected to be higher than in ASEAN trade with World. This should be especially notable for the ASEAN economies that are able to take advantage of economies of scale. Thus, the middle-income countries and the high-income countries are expected to induce higher intra-industry trade within ASEAN than with the World.

The empirical results of estimating the ASEAN trade reveal generally high GL indexes. With a slight increase in intra-industry trade as a share of total trade in ASEAN during the ten years, the GL index increases about 5 per cent units up to some above 70 per cent, see Table 5.1. The intra-industry trade between ASEAN and the World, shown in Figure 5.2, displays a more upward trend, starting at a lower value of 61 per cent and increasing up to about the same share as intra-industry within ASEAN. Hence, it becomes apparent that intra-industry trade as a share of total trade has increased more with the World than within ASEAN.

However, with 17,4 per cent during the years 1993-1997 and 1,2 per cent during the years 1997-2002, the annual growth rate of intra-industry trade within ASEAN is somewhat higher than the growth rate with the World, which is 14,9 per cent and 1,8 per cent respectively. Moreover, the growth rates in intra-industry trade are all higher than the growth rates in trade volume presented in chapter four, but at the same time the difference between the growth rates is larger for ASEAN's total trade than for intra-ASEAN trade. Hence, even though it may seem that the intra-industry trade has performed better in trade with the World than within ASEAN because of the greater increase in the share of total trade, it becomes apparent that intra-industry trade within ASEAN has performed better than intra-industry trade with the World, when considering the actual growth rates since both intra-industry trade and trade volume has exhibited higher growth rates in trade within ASEAN than in trade with the World.

The patterns of intra-industry trade in terms of the different commodity groups are quite similar between intra-ASEAN trade and with the World. In general, the relative importance of the Labour-intensive and Scale-intensive commodity groups is greater in intra-industry trade

with the World than of intra-ASEAN intra-industry trade, while the opposite is true for the Resource-based and the Differentiated commodity groups, see Table 5.1 and Table 5.2. In spite of a generally higher growth rate in intra-industry trade within ASEAN in the first time period, no greater structural differences in intra-industry trade can be distinguished between commodity groups in intra-ASEAN trade and in ASEAN trade with the World. However, after 1997, the growth rates are somewhat higher in intra-industry trade with the World than within ASEAN. Nevertheless, some exceptions and observations are worth pointing out.

One would expect that the intra-industry trade in the Differentiated and the Scale-intensive commodity groups would develop the most out of all commodity groups within ASEAN since the potential for more differentiated production increases. However, regarding the Differentiated commodity group, this is not quite the case considering the GL values and the importance of the intra-industry trade in the commodity groups, see table 5.1 and 5.2. At the same time as a downward trend was exhibited in intra-ASEAN trade, an upward trend was experienced in the same measures of intra-industry trade with World. Still, in the first period, the Differentiated commodity group exhibited the highest growth rate of intra-industry trade of all commodity groups and the growth rate was somewhat higher within ASEAN than in total trade. After 1997, the Scale-intensive commodity group had the best development of intra-industry trade within ASEAN. That was the case in trade with the World too, only with somewhat lower growth rates. Noteworthy is that the Resource-based commodity group was of greater importance for intra-industry trade within ASEAN than with World.

The Labour-intensive commodity group exhibits higher GL values in trade with World than within ASEAN and this in combination with lower shares of total ASEAN intra-industry trade in all country groups than in ASEAN intra-industry trade with World indicates that the intra-industry trade of Labour-intensive commodities between the ASEAN members is of less importance than the intra-industry trade of other groups of commodities. A contributing explanation to the low intra-industry trade in the Labour-intensive commodity group, not only in trade within ASEAN but also in trade with World, may be the bias in the classification. However, the growth rates in the Labour-intensive commodity group have generally been lower or even negative than in other commodity groups. This is interesting since it makes it possible for ASEAN to develop its intra-industry trade in other, more capital-intensive commodity groups instead. Or it could be the other way around; the capital-intensive production pushes the labour-intensive production off the market.

Intra-industry trade between the ASEAN member countries and the World shows only marginal but still sustainable differences in the pattern of specialization, when comparing with intra-industry trade within ASEAN. In the high-income country group, only Singapore shows notable differences in intra-industry trade between ASEAN and with World. The only commodity group where Singapore exhibits higher GL values with ASEAN than in total trade is in the Differentiated commodity group, which accounts for more than 75 per cent of intra-industry trade with ASEAN in both time periods, while it is about 10 per cent units lower in intra-industry trade with World, see Table 5.1 and Table 5.2. Interestingly, the growth rates for Singapore have also been higher in intra-industry trade in this commodity group in trade with ASEAN, for the first period 22,6 per cent and 16,4 per cent respectively and in the second period less negative -0,4 per cent in intra-industry trade with ASEAN and -2,0 per cent with World, see Table 5.3 and Table 5.4. This could imply that the middle-income countries have developed up to levels of quality and quantity that attract Singapore consumers. This can also indicate that the function as an entrepôt has intensified over the years.

For the middle-income countries, the most obvious difference between trade with ASEAN and with the World is that the GL values in the Scale-intensive commodity group are higher in trade with ASEAN than with the World, and so are the growth rates. When considering the excess demand for scale-intensive products in these countries, as seen in chapter four, and the positive development of the commodity group within ASEAN, the creation of the free trade area may be seen as successful since the middle-income countries seem to benefit more from trading with each other than they do by trading with the rest of the World, since they otherwise would export outside the free trade area.

The growth rates for the middle-income countries differ between the two time periods. During the first period, the growth rate is larger in intra-industry trade with ASEAN than with World, mainly due to the higher growth rates in the Resource-based and in the Scale-intensive commodity group. The middle-income countries are large and have high natural resource endowments, which can be further exploited with the industrial development taking place. An example is the Philippines that have utilized the domestic energy resources only in the past

years.⁶⁹ The countries produce and demand the same kind of products and as a consequence, intra-industry trade is high. During the second period, when the growth rate in intra-industry trade declines dramatically both in total trade and with ASEAN, the growth rate for the middle-income countries' intra-industry trade with World ends up only marginally higher than with ASEAN.

The largest difference between the low-income countries' intra-industry trade in trade with ASEAN and in trade with the World is that the Labour-intensive commodity group is much more important in trade with the World. This is especially notable in Cambodia, which labour-intensive intra-industry trade accounts for more than 60 per cent of Cambodian intra-industry trade, see Table 5.2. However, the growth rates are somewhat higher in intra-industry trade with ASEAN than with the World, and the largest differences are found in the growth rates in the Scale-intensive and the Differentiated commodity group. While Cambodia shows high growth rates in all commodity groups, Myanmar shows high growth rate only in the Resource-based commodity group. One should have in mind that these economies are still very small and in spite of high growth rates in intra-industry trade, the effects on total ASEAN intra-industry trade are only marginal.

Altogether, the pattern of intra-industry trade is very similar within intra-ASEAN trade and in ASEAN trade with the World. When considering the relative increase of intra-industry trade, i.e. the increase in GL values, the ASEAN trade with the World perform better than within ASEAN. However, the intra-industry total trade as a share of trade is on average somewhat higher for intra-ASEAN trade than for ASEAN countries' trade with World, and so is the growth rate in intra-industry trade. Up till the Asian crisis the intra-industry trade performs better within ASEAN while it performs better in trade with the World in the second time period. However, the process of development towards more differentiated commodities in the first time period and towards scale-intensive commodities in the second time period among the ASEAN countries, particularly in the middle-income countries, can be seen in the high growth rates in the commodity group. This trend is more apparent in intra-ASEAN trade flows than in ASEAN trade flows with the World, which indicates that the regional integration has enhanced industrial development.

⁶⁹ Rankin, Mei-Leng (1996) p. 116

5.3 Conclusions

The previously stated hypotheses on intra-industry trade are evaluated and confirmed or dismissed by the results of the empirical analysis.

The hypothesis predicting higher intra-industry trade in the Scale-intensive and Differentiated commodity groups than in the Resource-based and the Labour-intensive commodity groups is supported by the observations of GL values in this study. The Differentiated commodity group clearly has the highest share of intra-industry trade, and is followed by the Scale-intensive, Resource-based and the Labour-intensive commodity groups. This pattern can be seen in both time periods. When considering the growth rates, it becomes even clearer that the Differentiated commodity group is progressing and contributes to a structural change in ASEAN.

The positive relationship between level of per capita income and intra-industry trade is apparent in this study. Thus, in intra-ASEAN trade as well as in total trade the richest member country, Singapore, has the highest degree of intra-industry trade followed by the other countries in descending order in terms of per capita income. The only clear exception from this pattern is the high-income country Brunei that exhibits very low GL values. Similarities in per capita income appear to have had a positive impact on intra-industry trade in ASEAN, considering that the growth rates are the highest in the middle-income countries. Hence, the hypothesis expecting higher degree of intra-industry trade with higher per capita income and similarities in per capita income and intra-industry trade is supported by the result.

The empirical results are rather ambiguous in supporting the hypothesis that larger economic size will contribute to higher intra-industry shares, considering in what order the countries would be expected to descend in. Still, the home-market effect seems to be a variable that can explain the high share of intra-industry trade in the middle-income countries, which is especially notable in the Scale-intensive commodity group. If the middle-income countries and Singapore are considered to be of about equal size, and the low-income countries and

Brunei to be of equal size, the hypothesis is supported. The larger economies have the highest GL values and the substantially smaller economies' GL values are much lower.

A fairly positive relationship between openness and intra-industry trade is distinguished in this study. The most open country Singapore has the highest shares of intra-industry trade, followed by Malaysia and the other countries in descending order of openness. However, again the relatively open country Brunei distinguishes itself from the pattern of the other ASEAN countries with the low GL value. Also Cambodia should, according to the hypothesis, have a higher GL value. In all, the higher shares of intra-industry trade in the more open economies support the hypothesis.

The effects from integration on intra-industry trade are only marginal. The intra-industry trade as a share of total trade is higher within ASEAN than in trade with the World and a higher growth rate within ASEAN indicate a successful integration. The better development within ASEAN of the intra-industry trade in the more dynamic commodity groups also indicates a positive influence from integration. This is especially notable in the middle-income countries, which indicates that they are important for increased integration. However, the relative increase in intra-industry trade favours the trade with the World. This is further supported by the higher growth rate in total trade in the second time period, which makes the pattern of intra-industry trade vague and thus the effects of integration uncertain. Hence, the hypothesis expecting higher growth rate in intra-industry trade within ASEAN than in total trade is not supported.

6 Concluding remarks

Since the signing of the AFTA agreement in 1992, several measures have been taken in terms of reduction of trade barriers in order to increase trade liberalization. In comparison to free trade areas in developing countries, ASEAN has a fairly high average income per capita, a noteworthy economic size and a certain degree of openness. Still, the task was not easily implemented considering the diverse trade regimes among the member countries. The general abolishment of tariffs was finished off in 2003, which gave each individual country the possibility to gradually reduce barriers.

During the first years of trade liberalization, the extent of trade flows within ASEAN showed remarkable progress. There are several explanations for this result. One contributing factor must be the general internalization of the world, including ASEAN, which implies a general expansion in trade flows. Second, the common goal to attract foreign direct investments in order to develop an independent industrial structure provided incentives for increased cooperation in trade policies, and hence induced increased trade flows within ASEAN. Furthermore, the previous undervalued ASEAN currencies set up for extensive foreign direct investments, which expanded the manufacturing sector in ASEAN, which in turn led to increased trade flows in the Differentiated commodity group. The second time period showed the dramatic impact the Asian crisis had on overall trade performance. The ASEAN currencies had become overvalued and the trade balance had been negative for several years, which contributed to a severe crisis spreading to most parts of the ASEAN economies. The negative effects from the crisis on trade within ASEAN and in total show that the attempts of deepened integration had been unsatisfactory. The trade data reveals that Singapore and the middle-income countries dominate the ASEAN trade, and their development are naturally of great importance for ASEAN as a whole. Consequently, the positive development in the dynamic commodity groups in the middle-income countries constitutes a positive element of the ASEAN development.

The intra-industry trade in ASEAN was clearly affected by the overall trade performance before and after the Asian crisis. A couple of factors that are supposed to affect the degree of intra-industry trade were set up as hypotheses, and matched with the ASEAN trade data. Economies of scale and product differentiation, higher per capita income and similarity in per capita income, larger economic size and similarity in economic size and open trade policy are all expected to have a positive impact on the degree of intra-industry trade. The hypotheses generally prove to hold. However, the Brunei deviations from the other examined ASEAN member countries do not support any hypothesis but the hypothesis on economic size. Furthermore, intra-industry trade was applied as a measure on economic integration within ASEAN in comparison to intra-industry trade with the World. Before the crisis, the positive development of intra-industry trade gave signs of enhanced integration, but this was contradicted by the lack of integration after 1997, since the intra-industry trade of the member countries had a better performance with the World. Still the development of intra-industry trade in the more dynamic commodity groups, the Differentiated and the Scale-intensive commodity groups, signify a positive effect from integration. The middle-income countries clearly show the most positive development in terms of integration due to continuous increases in intra-industry trade in first and foremost the Scale-intensive commodity group.

The conclusion of the analysis is that the integration has had only minor effects on trade flows and intra-industry trade within ASEAN. Positive development in terms of intra-industry trade in first and foremost the middle-income countries makes it worth while to emphasize the difficulty in equal distribution of benefits. Further internationalization of the world, including the gigantic developing countries China and India, puts pressure on the ASEAN countries to deepen their political as well as economical cooperation, in order to keep the status as a competitive region. Still, with continuous investments, the ongoing transfer of technology and the upgrading of the differentiated commodities make ASEAN a potential region for higher value added production, with enhanced intra-industry trade.

Appendix I

Table A: Classification key, chapter-section

Section		Chapter	
	<i>Resource-based commodities</i>		<i>Resource-based commodities</i>
01-05	Live Animals	01	Live Animals
		02	Meat & Edible Meat Offal
		03	Fish
		04	Dairy Produce
		05	Other Animal Products
06-14	Vegetable Products	06	Live Trees
		07	Edible Vegetables
		08	Edible Fruit & Nuts
		09	Coffee, Tea, Spices
		10	Cereals
		11	Malt & Wheat Gluten
		12	Seeds
		13	Lac, Gums & Resins
		14	Other Vegetable Products
15	Fats and Oils	15	Fats & Oils
16-24	Prepared Foodstuffs	16	Preparations Meat/Fish
		17	Sugars
		18	Cocoa
		19	Prep. Cereals/Flour/Milk
		20	Prep. Vegetables/Fruit/Nuts
		21	Misc. Edible Products
		22	Beverages
		23	Waste from Food Industry
		24	Tobacco
25-27	Mineral Products	25	Salt/Sulphur/Lime/Cement
		26	Ores
		27	Lubricants/Fuels/Oil
44-46	Wood and Wood articles	44	Wood
		45	Cork
		46	Straw
	<i>Labour-intensive commodities</i>		<i>Labour-intensive commodities</i>
41-43	Hides and Leather	41	Raw Hides & Skins
		42	Articles of Leather
		43	Fur skins

Section		Chapter			
50-63	Textiles and apparel	50	Silk		
		51	Wool		
		52	Cotton		
		53	Paper Yarn		
		54	Man-made Filaments		
		55	Man-made Staple Fibres		
		56	Wadding		
		57	Carpets		
		58	Special Woven Fabrics		
		59	Laminated Textile Fabrics		
		60	Knitted Fabrics		
		61	Apparel, Knitted		
		62	Apparel, not Knitted		
		63	Other Textile Articles		
64-67	Footwear	64	Footwear		
		65	Headgear		
		66	Umbrellas, Walking Sticks		
		67	Prepared Feathers		
71	Gems	71	Jewellery		
93	Arms	93	Arms & Ammunition		
94-96	Miscellaneous Manufactured articles	94	Furniture		
		95	Toys		
		96	Misc. Manufactured Articles		
99	Other	99	Other		
28-38	<i>Scale-intensive commodities</i> Chemicals		<i>Scale-intensive commodities</i>		
		28	Inorganic Chemicals		
		29	Organic Chemicals		
		30	Pharmaceutical Products		
		31	Fertilizers		
		32	Tanning/Dyeing Extracts/Ink		
		33	Cosmetics		
		34	Soap, Waxes, Pastes		
		35	Glues		
		36	Explosives		
		37	Photographic Goods		
		38	Misc. Chemical Products		
		39-40	Plastics	39	Plastics
				40	Rubber
47-49	Pulp and paper	47	Wood Pulp		
		48	Paper & Paper Board		
		49	Books, Newspapers		
68-70	Stone/Cement/Ceramics	68	Stone/Plaster/Cement		
		69	Ceramic Products		
		70	Glass and Glassware		
72-83	Base metal and Metal articles	72	Iron and Steel		
		73	Articles of Iron or Steel		
		74	Copper		
		75	Nickel		

Section		Chapter	
		76	Aluminium
		78	Lead
		79	Zinc
		80	Tin
		81	Other Base Metals
		82	Tools
		83	Miscellaneous Base Metals
86-89	Vehicles	86	Railway
		87	Cars, Trucks, Autos
		88	Aircraft, Spacecraft
		89	Ships, Boats
	<i>Differentiated commodities</i>		<i>Differentiated commodities</i>
84-85	Machinery and Electrical Appliances	84	Computer/Machinery
		85	Electrical Equipment
90-92	Optical, precision & musical instruments	90	Optical/Medical Instruments
		91	Clocks
		92	Musical Instruments
97-98	Antiques and works of art	97	Works of Art
		98	Postal Packages & Special Transactions

Appendix II

Table B: Trade volume 1993-2002

	1993		1994		1995		1996		1997		1998		1999		2000		2001		2002	
	ASEAN	World	ASEAN	World	ASEAN	World	ASEAN	World	ASEAN	World	ASEAN	World	ASEAN	World	ASEAN	World	ASEAN	World	ASEAN	World
<i>Low income countries</i>																				
Cambodia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	625	2 772	1 164	2 997	690	3 581
Myanmar	-	-	-	-	-	-	-	-	-	-	-	-	1 275	2 621	1 507	3 413	2 270	5 030	2 412	4 570
<i>Middle income countries</i>																				
Indonesia	7 656	65151	9 138	73629	10695	86072	13859	100463	14264	92954	13906	76185	13061	72669	17665	95639	15234	87280	16865	88448
Malaysia	21890	90705	26205	112523	30958	138588	37376	149550	38089	154446	34551	138075	34298	147966	40343	177802	36278	161130	39372	172075
Philippines	2 678	28972	3 889	34747	4 847	39034	6 982	47926	8 309	61160	8 250	59156	9 450	65779	10938	69466	9 651	61701	11072	68785
Thailand	11680	84518	15070	99882	19430	131920	21869	128340	21647	120910	13753	88193	17889	104429	25576	131160	24404	127190	22523	138838
<i>High income countries</i>																				
Brunei	1 374	1 374	1 452	3 786	1 543	4 904	3 295	6 928	1 473	5 025	812	3 200	1 271	4 061	1 174	3 237	1 320	4 840	1 283	4 291
Singapore	37167	159229	49729	189438	56308	214734	61804	240761	66191	264147	49646	211299	55510	225623	71075	273033	61806	237606	64404	241379
ASEAN	82444	429948	105483	514006	123781	615251	145185	673968	149973	698642	120918	576108	132756	623148	168903	756521	152117	687774	158621	711966

Source: Compiled from statistics provided by ASEAN Secretariat

Appendix III

Table C: Growth rate in ASEAN Export to ASEAN, country- and industry-specific

	Resource-based commodities		Labour-intensive commodities		Scale-intensive commodities		Differentiated commodities		Total	
	1993-1997	1997-2002	1993-1997	1997-2002	1993-1997	1997-2002	1993-1997	1997-2002	1993-1997	1997-2002
<i>Low-income countries</i>										
Cambodia	-	21,9%	-	33,6%	-	-10,8%	-	87,7%	-	9,5%
Myanmar	-	68,7%	-	13,0%	-	11,7%	-	-83,3%	-	54,7%
<i>Middle-income countries</i>										
Indonesia	16,3%	1,8%	-3,6%	-11,4%	9,8%	5,6%	37,3%	5,1%	14,3%	2,3%
Malaysia	7,6%	-7,7%	1,3%	-2,1%	17,6%	0,7%	18,2%	0,6%	14,6%	-1,0%
Philippines	23,6%	5,5%	15,7%	-8,9%	23,7%	3,6%	43,7%	11,2%	36,6%	9,5%
Thailand	36,3%	-5,9%	14,2%	-0,9%	14,9%	6,9%	17,5%	-2,2%	20,3%	-1,0%
<i>High-income countries</i>										
Brunei	6,7%	-4,3%	-61,4%	77,3%	-179,7%	138,7%	-262,0%	166,6%	1,9%	6,4%
Singapore	2,6%	2,3%	15,4%	-13,4%	11,1%	-3,7%	23,2%	-0,1%	16,6%	-1,1%
ASEAN	11,3%	-0,7%	6,8%	-7,0%	13,2%	1,1%	22,1%	1,0%	16,7%	0,2%

Source: Calculated from trade data provided by ASEAN Secretariat

Table D: Growth rate in ASEAN Import to ASEAN, country- and industry-specific

	Resource-based commodities		Labour-intensive commodities		Scale-intensive commodities		Differentiated commodities		Total	
	1993-1997	1997-2002	1993-1997	1997-2002	1993-1997	1997-2002	1993-1997	1997-2002	1993-1997	1997-2002
<i>Low-income countries</i>										
Cambodia	-	6,8%	-	6,5%	-	3,9%	-	-18,1%	-	4,3%
Myanmar	-	13,5%	-	21,4%	-	-7,2%	-	-5,8%	-	4,6%
<i>Middle-income countries</i>										
Indonesia	21,9%	5,5%	9,6%	9,9%	17,8%	7,6%	10,9%	-2,8%	17,8%	4,9%
Malaysia	10,3%	-3,7%	23,4%	-22,6%	14,0%	3,3%	11,4%	7,5%	12,8%	3,0%
Philippines	13,1%	6,8%	14,9%	0,9%	19,4%	1,2%	34,4%	1,3%	23,8%	2,6%
Thailand	-5,5%	0,2%	11,9%	2,1%	10,1%	9,0%	19,6%	2,6%	9,0%	3,5%
<i>High-income countries</i>										
Brunei	6,7%	-11,2%	11,6%	-4,8%	-11,4%	-10,0%	9,0%	-11,0%	-0,2%	-9,8%
Singapore	0,3%	0,3%	6,0%	-2,6%	6,0%	-1,5%	16,8%	0,4%	12,1%	0,0%
ASEAN	5,4%	2,3%	12,3%	-5,0%	11,4%	4,1%	16,4%	2,4%	12,8%	2,2%

Source: Calculated from trade data provided by ASEAN Secretariat

Table E: Growth rate in ASEAN Export to World, country- and industry-specific

	Resource-based commodities		Labour-intensive commodities		Scale-intensive commodities		Differentiated commodities		Total	
	1993-1997	1997-2002	1993-1997	1997-2002	1993-1997	1997-2002	1993-1997	1997-2002	1993-1997	1997-2002
<i>Low-income countries</i>										
Cambodia	-	-22,5%	-	16,2%	-	21,9%	-	56,1%	-	16,9%
Myanmar	-	35,5%	-	27,3%	-	-2,4%	-	-34,8%	-	30,0%
<i>Middle-income countries</i>										
Indonesia	4,0%	1,0%	-0,9%	3,1%	12,4%	8,2%	40,9%	-1,3%	8,3%	2,2%
Malaysia	6,6%	0,0%	7,9%	-1,7%	14,8%	1,4%	16,2%	6,1%	12,9%	3,7%
Philippines	3,8%	-2,9%	4,2%	-2,4%	11,9%	3,9%	34,4%	10,0%	19,9%	6,7%
Thailand	8,4%	-0,4%	4,4%	-1,3%	11,5%	7,7%	17,0%	3,9%	10,7%	2,7%
<i>High-income countries</i>										
Brunei	16,0%	-3,5%	13,9%	28,3%	-199,2%	137,0%	-282,5%	177,8%	14,0%	-0,2%
Singapore	4,3%	-2,0%	7,4%	-5,0%	10,9%	2,1%	16,8%	-0,6%	13,7%	-0,5%
ASEAN	6,1%	0,2%	3,9%	0,3%	12,1%	4,5%	18,7%	2,8%	12,6%	2,3%

Source: Calculated from trade data provided by ASEAN Secretariat

Table F: Growth rate in ASEAN Import from World, country- and industry-specific

	Resource-based commodities		Labour-intensive commodities		Scale-intensive commodities		Differentiated commodities		Total	
	1993-1997	1997-2002	1993-1997	1997-2002	1993-1997	1997-2002	1993-1997	1997-2002	1993-1997	1997-2002
<i>Low-income countries</i>										
Cambodia	-	4,6%	-	15,9%	-	5,5%	-	-8,4%	-	8,5%
Myanmar	-	7,6%	-	9,7%	-	-1,7%	-	1,1%	-	2,9%
<i>Middle-income countries</i>										
Indonesia	16,3%	4,4%	2,3%	-5,0%	9,2%	-5,1%	8,5%	-16,4%	9,7%	-5,7%
Malaysia	17,7%	2,7%	8,3%	-6,6%	11,6%	-3,8%	14,9%	2,4%	13,8%	0,5%
Philippines	12,8%	0,2%	5,8%	-4,5%	12,0%	-5,9%	25,9%	0,3%	17,8%	-1,4%
Thailand	9,1%	2,5%	1,1%	1,6%	4,5%	-1,3%	10,8%	-0,6%	7,4%	-0,1%
<i>High-income countries</i>										
Brunei	5,5%	-11,6%	14,0%	-3,3%	4,1%	-5,5%	1,9%	-10,5%	4,8%	-7,3%
Singapore	7,0%	-0,3%	7,9%	-6,0%	9,2%	-5,7%	14,5%	-2,7%	11,7%	-3,1%
ASEAN	10,9%	1,8%	5,5%	-2,6%	8,9%	-3,9%	14,4%	-1,5%	11,7%	-1,6%

Source: Calculated from trade data provided by ASEAN Secretariat

Appendix IV

Table G: G-L index at two-digit level, ASEAN-ASEAN

Chapter	Section	1993		1994		1995		1996		1997		1998		1999		2000		2001		2002		
		GL	Share of IIT	GL	Share of IIT	GL	Share of IIT	GL	Share of IIT	GL	Share of IIT	GL	Share of IIT	GL	Share of IIT	GL	Share of IIT	GL	Share of IIT	GL	Share of IIT	
	<i>Resource-based commodities</i>																					
01-05	Live Animals	0,30	0,75%	0,39	0,72%	0,40	0,77%	0,41	0,82%	0,45	0,80%	0,46	0,91%	0,50	1,01%	0,55	0,88%	0,56	1,00%	0,49	0,84%	
06-14	Vegetable Products	0,44	1,30%	0,38	1,08%	0,33	1,06%	0,29	0,96%	0,34	0,94%	0,25	0,96%	0,23	0,84%	0,28	0,59%	0,31	0,62%	0,31	0,64%	
15	Fats and Oils	0,34	0,94%	0,44	0,88%	0,33	0,67%	0,39	0,48%	0,38	0,51%	0,38	0,65%	0,36	0,55%	0,37	0,36%	0,42	0,42%	0,51	0,67%	
16-24	Prepared Foodstuffs	0,42	1,50%	0,44	1,40%	0,40	1,45%	0,23	1,36%	0,36	1,49%	0,39	1,31%	0,44	1,55%	0,43	1,42%	0,48	1,98%	0,48	2,06%	
25-27	Mineral Products	0,54	12,64%	0,54	8,83%	0,56	8,39%	0,67	10,38%	0,75	10,61%	0,76	9,17%	0,72	9,10%	0,74	12,28%	0,72	12,21%	0,66	10,40%	
44-46	Wood and Wood articles	0,14	0,46%	0,17	0,49%	0,18	0,44%	0,14	0,39%	0,17	0,49%	0,19	0,32%	0,17	0,34%	0,18	0,32%	0,26	0,42%	0,29	0,32%	
	<i>Labour-intensive commodities</i>																					
41-43	Hides and Leather	0,43	0,14%	0,54	0,18%	0,55	0,17%	0,64	0,21%	0,54	0,18%	0,58	0,18%	0,63	0,18%	0,65	0,16%	0,75	0,23%	0,56	0,22%	
50-63	Textiles and apparel	0,32	2,53%	0,34	1,91%	0,40	1,88%	0,41	1,74%	0,34	1,91%	0,43	1,55%	0,38	1,59%	0,39	1,55%	0,39	1,60%	0,40	1,41%	
64-67	Footwear	0,25	0,11%	0,16	0,09%	0,25	0,11%	0,35	0,12%	0,16	0,09%	0,45	0,10%	0,42	0,11%	0,45	0,10%	0,44	0,11%	0,49	0,11%	
71	Gems	0,67	1,75%	0,52	1,24%	0,59	1,33%	0,39	1,17%	0,66	0,95%	0,27	0,77%	0,52	0,69%	0,62	0,80%	0,56	0,78%	0,66	0,66%	
93	Arms	0,20	0,00%	0,45	0,00%	0,33	0,01%	0,18	0,00%	0,45	0,00%	0,18	0,00%	0,38	0,00%	0,46	0,00%	0,16	0,00%	0,21	0,00%	
94-96	Miscellaneous Manufactured articles	0,58	0,84%	0,57	0,72%	0,58	0,63%	0,54	0,62%	0,57	0,72%	0,47	0,43%	0,39	0,46%	0,39	0,40%	0,45	0,41%	0,51	0,46%	
99	Other	0,44	0,27%	0,80	0,10%	0,64	0,09%	0,59	0,30%	0,80	0,10%	0,55	0,31%	0,86	0,38%	0,37	0,17%	0,09	0,05%	0,16	0,10%	
	<i>Scale-intensive commodities</i>																					
28-38	Chemicals	0,47	3,12%	0,44	2,54%	0,42	2,65%	0,48	2,91%	0,44	2,54%	0,50	3,69%	0,51	4,10%	0,54	4,15%	0,57	4,52%	0,55	4,49%	
39-40	Plastics	0,55	3,87%	0,54	3,17%	0,53	3,55%	0,61	3,21%	0,54	3,17%	0,63	3,09%	0,69	3,98%	0,63	3,98%	0,65	3,80%	0,70	4,15%	
47-49	Pulps and paper	0,64	1,47%	0,58	1,33%	0,62	1,49%	0,60	1,06%	0,58	1,33%	0,60	1,24%	0,59	1,31%	0,61	1,27%	0,61	1,33%	0,65	1,32%	
68-70	Stone/Cement/Ceramics	0,69	1,13%	0,66	0,95%	0,63	0,87%	0,63	0,90%	0,66	0,95%	0,65	0,71%	0,64	0,74%	0,62	0,68%	0,67	0,71%	0,69	0,70%	
72-83	Base metal and Metal articles	0,61	4,99%	0,64	4,26%	0,61	4,46%	0,66	4,56%	0,64	4,26%	0,65	4,80%	0,61	4,53%	0,68	3,80%	0,70	3,99%	0,69	3,77%	
86-89	Vehicles	0,52	2,04%	0,48	1,66%	0,48	1,46%	0,52	1,77%	0,48	1,66%	0,40	0,98%	0,59	1,55%	0,57	1,47%	0,52	1,57%	0,68	2,23%	
	<i>Differentiated commodities</i>																					
84-85	Machinery and Electrical Appliances	0,83	57,43%	0,90	66,27%	0,88	65,96%	0,85	64,28%	0,90	66,27%	0,83	66,33%	0,80	64,62%	0,82	63,46%	0,82	61,53%	0,81	62,58%	
90-92	Optical, precision & musical instruments	0,72	1,84%	0,66	1,57%	0,60	1,44%	0,65	1,73%	0,66	1,57%	0,71	1,67%	0,67	1,56%	0,70	1,52%	0,76	1,86%	0,77	2,00%	
97-98	Antiques and works of art	0,64	0,87%	0,62	0,58%	0,73	1,12%	0,74	1,01%	0,62	0,58%	0,30	0,80%	0,56	0,82%	0,64	0,65%	0,68	0,85%	0,67	0,86%	
	<i>Total</i>	0,67	100%	0,73	100%	0,72	100%	0,71	100%	0,72	100%	0,70	100%	0,69	100%	0,72	100%	0,72	100%	0,72	100%	

Source: Calculated from trade data provided by ASEAN Secretariat

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Table H: G-L index at two-digit level, ASEAN-World

Chapter	Section	1993		1994		1995		1996		1997		1998		1999		2000		2001		2002	
		GL	Share of IIT	GL	Share of IIT	GL	Share of IIT	GL	Share of IIT	GL	Share of IIT	GL	Share of IIT	GL	Share of IIT	GL	Share of IIT	GL	Share of IIT	GL	Share of IIT
	<i>Resource-based commodities</i>																				
01-05	Live Animals	0,40	1,21%	0,37	1,00%	0,36	0,93%	0,37	0,90%	0,40	0,88%	0,41	0,89%	0,43	0,89%	0,40	0,75%	0,45	0,96%	0,50	0,93%
06-14	Vegetable Products	0,34	1,09%	0,32	1,04%	0,30	0,91%	0,28	0,87%	0,29	0,77%	0,26	0,75%	0,26	0,75%	0,30	0,61%	0,30	0,63%	0,27	0,60%
15	Fats and Oils	0,25	0,53%	0,22	0,48%	0,19	0,41%	0,20	0,30%	0,18	0,33%	0,16	0,35%	0,19	0,34%	0,16	0,19%	0,17	0,21%	0,16	0,27%
16-24	Prepared Foodstuffs	0,55	2,59%	0,54	2,32%	0,52	2,04%	0,47	2,10%	0,53	2,04%	0,53	1,91%	0,50	1,73%	0,51	1,47%	0,51	1,75%	0,52	1,77%
25-27	Mineral Products	0,56	9,73%	0,56	7,76%	0,52	6,81%	0,54	7,80%	0,54	7,47%	0,55	6,23%	0,55	6,91%	0,58	8,79%	0,57	9,13%	0,60	9,06%
44-46	Wood and Wood articles	0,17	0,83%	0,19	0,73%	0,19	0,60%	0,18	0,56%	0,21	0,53%	0,23	0,44%	0,22	0,48%	0,24	0,45%	0,25	0,45%	0,26	0,45%
	<i>Labour-intensive commodities</i>																				
41-43	Hides and Leather	0,29	0,30%	0,34	0,31%	0,37	0,30%	0,40	0,30%	0,45	0,28%	0,42	0,26%	0,38	0,24%	0,38	0,22%	0,40	0,25%	0,46	0,23%
50-63	Textiles and apparel	0,42	4,54%	0,45	4,05%	0,46	3,70%	0,46	3,34%	0,47	2,95%	0,45	2,89%	0,44	2,93%	0,42	2,73%	0,41	2,77%	0,41	2,50%
64-67	Footwear	0,19	0,28%	0,17	0,25%	0,16	0,23%	0,21	0,24%	0,27	0,24%	0,24	0,18%	0,21	0,17%	0,24	0,17%	0,23	0,16%	0,26	0,15%
71	Gems	0,66	1,74%	0,63	1,63%	0,55	1,75%	0,70	1,81%	0,64	1,52%	0,53	1,32%	0,70	1,29%	0,78	1,26%	0,81	1,50%	0,83	1,48%
93	Arms	0,12	0,01%	0,20	0,01%	0,13	0,01%	0,07	0,00%	0,33	0,01%	0,16	0,00%	0,32	0,01%	0,44	0,00%	0,48	0,01%	0,29	0,00%
94-96	Miscellaneous Manufactured articles	0,47	1,17%	0,47	1,04%	0,47	0,97%	0,46	0,97%	0,46	0,82%	0,41	0,65%	0,35	0,65%	0,33	0,59%	0,36	0,62%	0,37	0,63%
99	Other	0,71	0,42%	0,59	0,19%	0,50	0,20%	0,74	0,54%	0,66	0,45%	0,58	0,37%	0,67	0,41%	0,34	0,18%	0,38	0,23%	0,46	0,25%
	<i>Scale-intensive commodities</i>																				
28-38	Chemicals	0,51	4,31%	0,50	3,95%	0,53	4,23%	0,55	4,08%	0,58	4,14%	0,64	4,55%	0,61	4,74%	0,64	4,62%	0,64	4,98%	0,63	4,98%
39-40	Plastics	0,62	4,14%	0,56	3,52%	0,62	4,19%	0,58	3,41%	0,65	3,46%	0,70	3,63%	0,74	3,88%	0,76	3,98%	0,75	3,95%	0,73	3,98%
47-49	Pulps and paper	0,49	1,05%	0,49	1,09%	0,55	1,35%	0,53	1,04%	0,60	1,07%	0,62	1,25%	0,57	1,21%	0,57	1,21%	0,59	1,23%	0,59	1,19%
68-70	Stone/Cement/Ceramics	0,66	0,87%	0,63	0,78%	0,66	0,81%	0,66	0,76%	0,68	0,67%	0,70	0,62%	0,65	0,62%	0,65	0,60%	0,68	0,64%	0,70	0,66%
72-83	Base metal and Metal articles	0,41	4,05%	0,42	3,73%	0,47	4,57%	0,44	3,77%	0,47	3,75%	0,57	3,95%	0,54	3,65%	0,58	3,48%	0,56	3,51%	0,56	3,45%
86-89	Vehicles	0,42	3,47%	0,46	3,75%	0,36	2,96%	0,40	3,00%	0,45	3,01%	0,58	3,06%	0,57	2,66%	0,61	2,42%	0,50	2,52%	0,59	2,76%
	<i>Differentiated commodities</i>																				
84-85	Machinery and Electrical Appliances	0,82	53,80%	0,85	58,55%	0,85	59,33%	0,87	60,46%	0,89	61,53%	0,87	62,67%	0,85	62,51%	0,87	62,69%	0,87	60,30%	0,88	60,46%
90-92	Optical, precision & musical instruments	0,73	2,93%	0,75	2,85%	0,73	2,64%	0,78	2,87%	0,80	3,16%	0,87	3,11%	0,84	2,94%	0,83	2,90%	0,93	3,38%	0,91	3,24%
97-98	Antiques and works of art	0,53	0,95%	0,65	0,98%	0,67	1,07%	0,57	0,87%	0,33	0,93%	0,27	0,94%	0,56	1,01%	0,49	0,68%	0,50	0,83%	0,54	0,93%
	<i>Total</i>	0,61	100%	0,64	100%	0,64	100%	0,66	100%	0,69	100%	0,70	100%	0,69	100%	0,72	100%	0,71	100%	0,72	100%

Source: Calculated from trade data provided by ASEAN Secretariat

Appendix V

Trade performance Brunei 1993

Table 4.1: Average trade volume, country-specific (Million US Dollars)

Table I: Collected values for Brunei including values from 1993 (Million US Dollars)

	1993-1997	
	ASEAN	World
Table 4.1	1827	4403

Table 4.2: Share ASEAN trade of Total trade, country and industry-specific

Table 4.5: Growth rate in trade flows ASEAN-ASEAN, country and industry-specific

Table 4.6: Growth rate in trade flows ASEAN-World, country and industry-specific

Table 5.3: Growth rate in Intra-industry trade ASEAN-ASEAN, country and industry-specific

Table 5.4: Growth rate in Intra-industry trade ASEAN-World, country and industry-specific

Table C: Growth rate in ASEAN Export to ASEAN, country- and industry-specific

Table D: Growth rate in ASEAN Import to ASEAN, country- and industry-specific

Table E: Growth rate in ASEAN Export to World, country- and industry-specific

Table F: Growth rate in ASEAN Import from World, country- and industry-specific

Table J: Collected values for Brunei including values from 1993

	Resource-based commodities 1993-1997	Labour-intensive commodities 1993-1997	Scale-intensive commodities 1993-1997	Differentiated commodities 1993-1997	Total 1993-1997
Table 4.2	46,6%	55,6%	55,5%	47,0%	49,3%
Table 4.5	4,0%	3,8%	0,2%	-4,8%	1,8%
Table 4.6	38,2%	25,2%	27,8%	21,0%	32,4%
Table 5.3	-30,6%	-34,4%	-76,2%	-184,5%	-37,1%
Table 5.4	-27,6%	33,0%	-73,1%	-184,5%	-9,5%
Table C	1,8%	-56,5%	-76,4%	-184,5%	0,5%
Table D	8,2%	7,2%	0,5%	-3,9%	2,4%
Table E	43,9%	32,0%	-73,3%	-184,5%	42,9%
Table F	18,2%	23,9%	28,0%	21,9%	24,0%

Source: Calculated from trade data provided by ASEAN Secretariat

Table 4.3: Export and Import as shares of total trade with ASEAN, country- and industry-specific

Table 4.4: Export and Import as shares of total trade with World, country- and industry-specific

Table K: Collected values for Brunei including values from 1993

	Resource-based commodities 1993-1997		Labour-intensive commodities 1993-1997		Scale-intensive commodities 1993-1997		Differentiated commodities 1993-1997		Total 1993-1997	
	Exp	Imp	Exp	Imp	Exp	Imp	Exp	Imp	Exp	Imp
Table 4.3	23,7%	33,2%	0,4%	6,4%	1,7%	23,3%	0,8%	10,5%	26,6%	73,4%
Table 4.4	43,9%	17,0%	1,0%	4,8%	1,2%	20,4%	0,6%	11,3%	46,6%	53,4%

Source: Calculated from trade data provided by ASEAN Secretariat

Table 5.1: GL index and Share of total Intra-industry trade in ASEAN-ASEAN trade, country and industry-specific

Table 5.2: GL index and Share of total Intra-industry trade in ASEAN-World trade, country and industry-specific

Table L: Collected values for Brunei including values from 1993

	Resource-based commodities 1993-1997		Labour-intensive commodities 1993-1997		Scale-intensive commodities 1993-1997		Differentiated commodities 1993-1997		Total 1993-1997	
	GL	Share of IIT	GL	Share of IIT	GL	Share of IIT	GL	Share of IIT	GL	Share of IIT
Table 5.1	0,03	28,1%	0,09	10,7%	0,08	34,3%	0,14	26,9%	0,06	100,0%
Table 5.2	0,02	17,7%	0,15	16,4%	0,11	44,3%	0,09	21,6%	0,05	100,0%

Source: Calculated from trade data provided by ASEAN Secretariat

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