Japan and the ASEAN4 Automotive Industry

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Developments and Inter-Relationships in the Regional Automotive Industry

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CONTENTS

List of Tables

List of Figures

FOREWORD

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FINAL REPORT

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1.1 Overview

This research paper examines the future prospects for Japanese foreign direct investment and trade with the ASEAN automobile and components industries, in the context of significant restructuring in Japan, rapid changes to the world automobile industry and the gradual recovery of regional economies from the Asian economic crisis. The study comes at a pivotal time, with trade liberalisation, increasing foreign investment and corporate rationalisation in ASEAN countries, especially Malaysia, Thailand and Indonesia, forcing a new perspective on the future of the regional automobile and parts industries.

While the ASEAN automobile industry is comparatively small, representing around 2 per cent of the world market in 2000, it has the potential for significant growth in the future as per capita incomes grow and tariff liberalisation occurs, allowing a more integrated regional market to develop. There was a sharp contraction in demand for vehicles from 1997, due to the impact of the Asian economic crisis. Total vehicle sales in the ASEAN4 region fell over 60 per cent, from almost 1.5 million units in 1996 to about 450,000 units in 1998. However, production volumes and demand have recovered strongly in the last two years to the end of 2000. A three to four-fold expansion in demand has been forecast by the end of the decade (PECC, 2000).

Currently Japanese automobile manufacturers dominate regional production, recently European and American production facilities have been established, especially in the more rapidly liberalising economies of Thailand and the Philippines. The newer facilities tend to be larger in scale and more outwardly oriented – intending to take advantage of the reductions in protection that are scheduled under the ASEAN Free Trade Agreement (AFTA).

Recent developments have created uncertainty over the future of Japanese-ASEAN joint ventures in the automobile and components industries which have hitherto been protected

by national policies, because of the forthcoming removal of intra-regional and extra-regional barriers to free trade. The de facto appreciation of the yen, caused by the sudden collapse of ASEAN regional currencies, also increased pressure on the competitiveness of these industries. Hence there is increased interest in ASEAN, both as a market and a base for automobile production.

Regional governments have responded to the Asian economic crisis by changing their policy approach to the industry. Intra-regional trade barriers are planned to be reduced to 5 per cent or less by 2005, although this date represents a deferral from the previous target of January 2003 due to exceptions in the auto sector in Malaysia. The larger regional market that was promised by these changes is one incentive for the increased foreign investment and industry rationalisation that is occurring.

The efficient allocation of vehicle and components production among the ASEAN members depends on factors such as scale, transport and communications costs – but the policy environment critically influences the pattern of production and exports. Inappropriate national policies can lead to large consumer losses in supporting uncompetitive industries – already the Indonesian government's attempts to create a viable national car is estimated to have lost over $US2 billion in recent years (Findlay and Abrenica, 2000). The reluctance of the Malaysian Government to expose its automotive industry to regional or international competition may lead to losses of a similar significance.

For the present, production of automobiles and automotive parts and components in the ASEAN region remain fragmented, with many producers of low volumes competing in small national markets, although intra-regional trade has risen to about $US 500 million in 1999 under the regional trade facilitation scheme. As trade liberalisation proceeds over the next few years it is inevitable that many changes will occur to the industry. Increased local production of vehicles, parts and components will only proceed if such ventures are viable in the changing environment of increasing openness and more diverse investment.

While the ASEAN automotive sector has a number of competitive advantages in terms of labour costs, technological capability and potential market size, there are also significant quality and logistical problems due to the fragmented and uncoordinated nature of automobile production in the region. The ASEAN car industry must also compete with other countries and regions to attract foreign direct investment, embodying both capital and technology, if it is to maintain or increase its international competitiveness. The potential for China to divert FDI and become a major regional competitor is clear. Nevertheless trade liberalisation will accelerate ASEAN's linkages with the world automobile market.

Overall, the automobile industry in the ASEAN region represents one of the most important opportunities for upgrading the manufacturing potential of the region. The ASEAN market of 500 million people is to reach another milestone on the route to a free trade area in 2002 when most tariffs will be reduced to between 0-5 per cent, and Japanese-ASEAN automotive joint ventures are currently adjusting their 'full-set'

production strategies to take account of the likely rise in intra-regional and international competition. Although it is difficult to predict future specialisation and market shares in the region, a likely trend is for Thailand to specialize in light trucks, Indonesia in all-purpose vehicles and Malaysia in passenger vehicles, while labour-intensive parts production concentrated in the Philippines.

1.2 Challenges and Opportunities

In recent years there have been major changes to the structure and ownership of the Japanese automobile industry and large-scale mergers and acquisitions have occurred for the global industry. More than one third of the Japanese automobile industry is now owned by the French, German and American automobile industry. In Japan, the newly international management is focusing on reducing company costs and restoring competitiveness and profits – particularly through cutting the number of suppliers, reducing capacity and lowering staff numbers.

Despite Japan's close links with the ASEAN automotive industry, prospects after 2001 remain unclear. While Japan's major five carmakers initially planned to raise their level of overseas production from under 5 million vehicles in 1996 to over 7 million by 2000, the contribution to this target of Japanese-ASEAN car industries is uncertain. Currently the ASEAN4 subsidiaries of Japanese original equipment manufacturers (OEMs) are both production and exports are relatively small compared to world-scale plants. Over 60 per cent of production is exported to other member countries, suggesting that a more outward approach will be necessary to overcome the current crisis and to ensure faster future growth. Global OEMs and automotive suppliers all face increased competitive pressure, with global capacity exceeding actual production by a considerable margin.

Faced with these competitive pressures, producers are seeking to reduce operating costs and the number of their suppliers. Marketing and cost reduction strategies for OEMs and their suppliers increasingly reflect the highly competitive state of the world market. The return on capital in the international automobile industry is relatively low, although it has been higher in pockets of protected industry, such as in the ASEAN region. Increased competitive pressure in the next few years will cause a further rationalisation of the industry and a lowering of these margins. However, the lower prices that follow liberalisation will be of benefit to consumers in ASEAN and also help make the domestic industry increasingly competitive.

Japanese companies have a central role in ASEAN and in Indonesia, Malaysia and Thailand alone there are over 5,000 Japanese affiliated companies. Japanese affiliated manufacturing companies employ around 410,000 people in the ASEAN4 region. Japanese affiliated companies account for 20 per cent of the region's GDP and Japan absorbs up to 23 per cent of ASEAN exports[1] In 1998 Japanese affiliated companies accounted for about 10 per cent of ASEAN exports. Japanese producers have been seeking to increase their economies of scale through mass production in different

[1] Keizai Koho Center, *Japan-ASEAN Cooperation*, January 1999.

ASEAN countries, followed by intra-regional trade supported by the BBC and AICO schemes. [2]

Most of these companies are based in the ASEAN4 and operate in the electronics or automobile industries.. Early waves of Japanese manufacturing FDI in the ASEAN4 automobile industries were concerned with the creation of relatively fragmented vehicle assembly and parts manufacturing behind significant import barriers. However, since the Asian economic crisis from 1997, the motivation for Japanese investment in the region has begun to change and ASEAN automobile plants are increasingly being linked to other markets through both vehicle and parts exports, whether on an intrafirm basis or between different firms.

The Japanese automobile companies in the region have for some time sought to create regional specialisation in the member countries of ASEAN4 especially, using the various complementation schemes that have been adopted by ASEAN.[3] In 1995, for example, Toyota announced that it would quadruple its regional trade in parts within ASEAN from xxx 21 billion in 1995 to 90 billion in the year 2000. Nippondenso also supported the concept of regional specialisation in parts and components and has centred its production of alternators and starter motors in Thailand; the production of air conditioners in Malaysia; the production of compressors and spark plugs in Indonesia; and the production of meters in the Philippines.[4]

However, the ASEAN automobile market remains fragmented, although national governments have allowed concessional intra-regional trade to grow on a reciprocal basis. Greater liberalisation will provide an opportunity for increasing the scale of production and making regional industry more competitive. Japanese automobile manufacturers have indicated that they would significantly increase investment in ASEAN4 if their governments would endorse transparent policies on integrating the car market within the region. This is the view from JAMA. The chairman of JAMA Mr Koji Wanaka[5], stated in July 2000 that:

> The Japanese automobile industry is prepared to work hand-in-hand with ASEAN manufacturers and suppliers so as to ensure sound development and anticipate spectacular growth in the ASEAN automobile industry in the 21st century. Most of all, ASEAN countries will need to further increase their transparency as well as

[2] Originally the ASEAN Industrial Cooperation (AICO) scheme provided that a corporation could seek concessional duties on interregional trade if at least 30 per cent of its equity was held by an ASEAN concern and if the company exported more than 50 per cent of its products.

[3] These include the BBC and the more recent ASEAN Industrial Cooperation (AICO) schemes which have allowed an increasing number of parts to be traded within ASEAN at concessional (0-5 per cent) tariff rates and also to qualify for local content credits. The aftermath of the East Asian economic crisis led the ASEAN governments to suspend minimum national equity requirements to participate in the scheme and to broaden the scope of the AICO scheme.

[4] See Ishizaki, Y. and M. Mori (1996), 'Present Situation and Issues Concerning the Automobile Industries in Individual Countries (in ASEAN)', *RIM, Pacific Business and Industries*, Vol. III, No. 33.

[5] Mr Wanaka is also deputy general manager for government and international affairs at Honda Motor Co Ltd.

formulate stable medium and long-term automobile policies that comply with the World Trade Organisation rules.[6]

Notably, Toyota Motor Corporation has continually indicated that inconsistency in ASEAN government policies have hindered investment decisions of Japanese automotive manufacturers. Malaysia's decision to defer implementation of the ASEAN Free Trade Area (AFTA) for the automobile industry from 2003 to 2005 would make it difficult for the Malaysian national carmaker (Perusahaan Nasional Bhd, or Proton) to improve its international competitiveness. While some liberalisation has occurred, especially in Thailand, there are still numerous disincentives to large-scale foreign investment. An illustration of the small size of the Malaysian market in the protected environment afforded the national car manufacturer Proton, is a decision by Honda in October 2000 to build a car plant with production of only 10,000 units annually.[7]

1.3 Structure of the Report

This report focuses on the future outlook for the ASEAN automotive industries as they emerge from an environment of protectionism and inward looking industry policies of the member countries. It examines how the trend towards tariff liberalisation will lead to major restructuring in these industries, as many firms lose market share and become uncompetitive. Other firms will gain market share and economies of scale as they respond more flexibly to the changing market and policy signals. European and American producers will gain market share and the components sector will be sharply rationalised. The automotive trade and investment relationship between Japan and the region will further evolve, away from the high dependence upon imports of parts and components.

The report encompasses seven sections. The following section provides an overview of the current ASEAN automobile market and outlines the pattern of industry and details trade, and investment flows. Section three examines the changing environment for the automotive industry in the region because of the Asian economic crisis and policy changes of the member countries. Section four considers the industry's situation in the differing ASEAN4 member countries of Thailand, Malaysia, Indonesia and the Philippines. The next section considers the corporate aspect of readjustment, as incumbent and newly entering firms seek to compete for existing market share and also prepare for the expected expansion of the regional market. The outlook for ASEAN as a regional hub of the global automotive industry is then considered.

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[6] 'Japanese auto makers keen to invest in ASEAN', *The Star*, 22 July 2000.

[7] Oriental Holdings agreed in October 2000 to form a joint venture with Honda Motor Co. and DRB-Hicom to manufacture and distribute Honda cars in Malaysia. The joint company, called DRB-Oriental-Honda and capitalized at M$500 million (US$131.5 million) will be owned 49% by Honda Motor, 36% by DRB-HICOM and 15% by Oriental. The partners intend to build 10,000 cars next year and a flexible assembly line. See *AutoAsia*, 6 October 2000.

2 ASEAN AND JAPAN

2.1 Market Profile

Japan has a long history of economic involvement in the ASEAN region and Japanese companies have been among the leading investors in member countries over a period exceeding three decades. These close economic links are maintained by 5,000 Japanese affiliated companies, which currently operate in the region. Japan has also provided extensive ODA and financial assistance to the ASEAN members.[1] There are also extensive ties between Japanese automotive producers, such as Toyota, Nissan and Mitsubishi, and their ASEAN subsidiaries or joint venture partners.

Table 2.1 Automobile Market in the ASEAN4 Countries, 1999-2001

Indicator	Thailand	Malaysia	Indonesia	Philippines
Population (m)	62	23	208	71
GDP per capita (1999, %)	$US2,200	$US3,600	$US680	$US1,050
GDP growth, 1999	4.2	5.8	0.9	3.3
GDP growth, 2000	4.3	8.5	4.8	3.9
GDP growth, 2001 (f)	3.0	6.0	4.0	4.0
Vehicle sales				
1996	589,126	373,677	382,698	162,095
1999	218,330	281,700	87,500	74,414
PC: CV (a)	32:68	88:12	10:90	43:57

Note: Passenger vehicle to commercial vehicle ratio.
Source: PECC (2000) and PECC (2001)

Notably, Japanese automobile and component manufacturers established comparatively small-scale production and sales networks in the region, particularly in the early phase of their involvement. The pattern of production and trade was strongly influenced by the strong emphasis on import replacement and heavy protection for the local automotive industries in the ASEAN countries, resulting in a degree of isolation from the competitive world market. This chapter will examine the evolving nature of the ASEAN automotive market (Tables 2.1 and 2.2) and its relationship with the Japanese automotive industry (Tables 2.3 and 2.4). The focus is on the linkages between Japan and ASEAN up to the time of the 1997 economic crisis.

The ASEAN automotive market is characterised by a large number of vehicle and parts producers relative to market size. Governments of the ASEAN4 countries have been

[1] See Tateisa, N. (1999), 'Initial Remarks on The Road to Economic Recovery in Asia: Japan-ASEAN Cooperation', *Occasional Paper Series, No. 7*, January, Japan Institute for Social and Economic Affairs (see http://www.kkc.or.jp/english/activities/publications/007.html.)

strong supporters of a national automotive industry as a means of ensuring industrial development, but have used market closure as a strategy to allow vehicle assembly and parts production to develop. Japanese subsidiaries dominate in the vehicle sector, but there are hundreds of parts and components manufacturers.

As a result, most of the vehicle and parts production in the region is not internationally competitive, although the promise of a larger market after intra-regional trade liberalisation when it eventually occurs in full in 2005 has attracted larger scale American and European OEMs and parts and component producers. These firms cannot effectively enter the ASEAN market without local production because of the high tariff barriers on extra-regional imports of vehicles and parts. A common ASEAN market would lead to higher volume production of different models in different countries. Currently protectionism forces Toyota to assemble small volume Corollas in five different ASEAN countries and a larger common market would lower costs and allow rationalisation of models and plants.

Table 2.2 Sales in the ASEAN Vehicle Market, 1996-2000

ASEAN Country	Motor Vehicle Market (1996)	Motor Vehicle Market (1998)	Motor Vehicle Market (2000)	Change on 1999 (%)
Thailand	589,126	144,063	262,189	+20
Malaysia	364,788	163,849	343,173	+19
Indonesia	330,000	58,311	298,633	+218
Singapore	45,000	34,181	84,889	+58
Philippines	162,096	80,231	83,949	+13
Vietnam	na	Na	13,957	-38
Brunei	na	Na	5,136	-3
Total ASEAN	1,491,010	480,635	1,091,926	+44

Source: *Dow Jones Newswires*, 2 February 2001.

The ASEAN region is a key area in the international production and distribution networks of the Japanese automobile industry that was expanding rapidly until the onset of the Asian economic crisis. Recent developments have created uncertainty over the future of Japanese-ASEAN joint ventures in the automobile and components industries which have hitherto been protected by national policies, because of the forthcoming removal of intra-regional and extra-regional barriers to free trade. The depreciation of local currencies relative to the yen, caused by the sudden collapse of ASEAN regional currencies, also increased pressure on the competitiveness of these industries.

The ASEAN automotive industry is fragmented, has small domestic markets and has industrial capacity problems…

Two key problems with the ASEAN automobile industry are the small size of domestic markets and the limited development of parts and component industries. As a result the automobile industry is dependent upon imported parts and materials, with most parts and

materials for parts production imported from Japan and other countries. Recently, however, there has been a sustained economic recovery in most ASEAN countries and the regional group's current share of world car sales, of about 1 per cent, is projected to rise by a factor of 3 or 4 by the end of the decade (PECC, 2000). Hence there is increased interest in ASEAN, both as a market and a base for automobile production.

Table 2.3 Japanese Domestic Vehicle Production by Company

Company	Volume (1999)	Volume (2000)	Share (%)
Toyota	2,877,566	2,960,402	19.24
Daihatsu (Toyota group)	793,407	793,799	5.16
Nissan	1,591,701	1,430,537	10.12
Fuji (Nissan group)	511,002	525,478	3.42
Honda	1,357,265		9.30
Mitsubishi	1,126,252	1,150,241	7.48
Suzuki	869,855	869,079	5.65
Mazda	746,591	807,041	5.25

Ai-Online.com (see http://ai-online.com/stats/100stats.htm)

Partnerships between Japanese and ASEAN firms in the automobile industry are increasingly likely to focus on international competitiveness and a clearer international division of labour between these countries – suggesting that falling production in Japan itself will be further relocated to other countries, including China and ASEAN members. National incentives for investment and changing strategies of Japanese investors encourage a greater role for local suppliers of parts, components and services. However, scale of production is of increasing importance as trade liberalisation proceeds, with the ASEAN automobile industries needing to increase their international competitiveness.

2.2 Industry Structure

While most developed country modern automobile factories have an output of 200,000 units, ASEAN markets range in size from 100,000 to 350,000 vehicles in size, sometimes with ten separate producers in each country, each accounting for between 10-30,000 units. Leading producers have not exceeded 100,000 units, until recently. There are significant scale problems in operating in ASEAN unless plants become export oriented (Autopolis, 2000).

Has ASEAN the capacity to be a regional production hub…

A key question is whether ASEAN has the potential to become a low cost production hub for the global vehicle and parts industries. Hitherto, the region's automobile industries

have not had the technology or the production volumes to be internationally competitive. At current levels of technology, a factory needs to reach production of 250,000 cars a year to become profitable in a world market characterised by low utilisation rates. Components production requires even higher scale (Autopolis, 2000).

> In Southeast Asia as a whole for example, there is barely the local sales volume needed to justify one air-conditioning plant let alone the ten or more that exist in the region today. The costs of labour are not an especially important element of car production either. Indeed the world's most productive factories are currently in Japan, a country with one of the highest labour rates in the world. And in terms of logistics it makes little sense for European, US or Japanese producers to build cars so far from their main markets and shipping lines.[2]

The worldwide automotive sector's consolidation, which has included the acquisition by DaimlerChrysler, itself a major merger of 34 per cent of Mitsubishi in 2000; Ford's acquisition of Jaguar and Land Rover, General Motors' acquisition of Saab and Renault's major investment in Nissan. The changes have been driven by production low plant utilisation rates, indebtedness and pressure to increase shareholder value (UNCTAD, 1999). In calendar 2000 about 54 million cars and trucks were built around the world, up slightly from the previous year, but much below capacity.

Table 2.4 Japanese Automotive Manufacturing Activities in ASEAN4

Japanese Manufacturer	Indonesia	Malaysia	Philippines	Thailand
Daihatsu	Cars & CVs	Cars & CVs	Cars & CVs	Cars & CVs
Fuji Heavy Industries		CVs		
Hino	CVs	CVs	CVs	CVs
Honda	Cars	Cars	Cars	Cars
Isuzu	CVs	CVs	CVs	CVs
Mazda	Cars & CVs	Cars & CVs	Cars & CVs	Cars & CVs
Mitsubishi	Cars & CVs	Cars & CVs	Cars & CVs	Cars & CVs
Nissan	Cars & CVs	Cars & CVs	Cars & CVs	Cars & CVs
Nissan Diesel	CVs		CVs	CVs
Suzuki	Cars & CVs	Cars & CVs	Cars & CVs	Cars & CVs
Toyota	Cars & CVs	Cars & CVs	Cars & CVs	Cars & CVs

Note: Includes assembly operations. CVs = Commercial vehicles.
Source: Japan Automobile Manufacturers Association

Consolidation of the international automobile industry through mergers and acquisitions and alliances could trigger further corporate activity in the automotive components sector, especially in the area of e-commerce and on-line buying exchanges and retailing to lower costs. Carmakers are aiming to substantially reduce costs and take advantage of economies of scale, as well as pursuing global outsourcing. Advances in information

[2] Autopolis Data, (2000), *Asia Regional Summary*, October, p9.

communications technology is leading to an international bidding system that should lead to significant cost savings for carmakers.

Western manufacturers have focused on a world car, while Japanese producers have aimed at an ASEAN car…

The leading OEMs have developed global platforms that allow the development of vehicles for particular markets. Hence US and European manufacturers have focused on 'world cars' which have a basic platform and common major parts, such as the chassis, gearboxes and engines – thereby creating costs savings and flexibility in production. Japanese producers in ASEAN have instead focused on an 'ASEAN' car which also shares platforms, but is often based on older technology and model types, with some modifications for local conditions (Poapongsakorn and Wangdee, 2000).

> The ASEAN automobile market is very fragmented outside Japan with most countries supplied by local assemblers. By far the largest suppliers of technology are Japanese, however. In Japan, Toyota and Honda lead, with Renault-Nissan next and then DaimlerChrysler-linked Mitsubishi…In Southeast Asia, Toyota dominates the markets outside Malaysia where Proton and Perodua hold a virtual duopoly. But as Proton is heavily dependent upon Mitsubishi for technology and Perodua is an off-shoot of Toyota's Daihatsu, Japanese firms still hold the upper hand.[3]

The Japanese industry is now increasingly international since Western car companies are involved in the ownership and management of Mitsubishi (DaimlerChrysler); Mazda (Ford), Nissan (Renault); Isuzu (Ford); Fuji Heavy Industries (Ford) and Suzuki (Ford) while Toyota and Honda have technical exchange agreements with the major Western companies. [4]

The Japanese automotive industry is increasingly international and is expanding…

The global output of Japan's five major automobile companies in 2000 rose by 6.9 per cent in 2000 to reach 13 million units, with Toyota producing a record 5.2 million vehicles world-wide, up 9.5 per cent. Global output by Nissan rose 9.8 per cent to 2.6 million units, due to an almost 30 per cent jump in overseas production despite a fall in domestic sales. Mitsubishi Motors was fourth with sales of 1.8 million globally, a rise of 5.5 per cent. Mazda ranked fifth with sales of 931,000 vehicles in Japan and overseas.

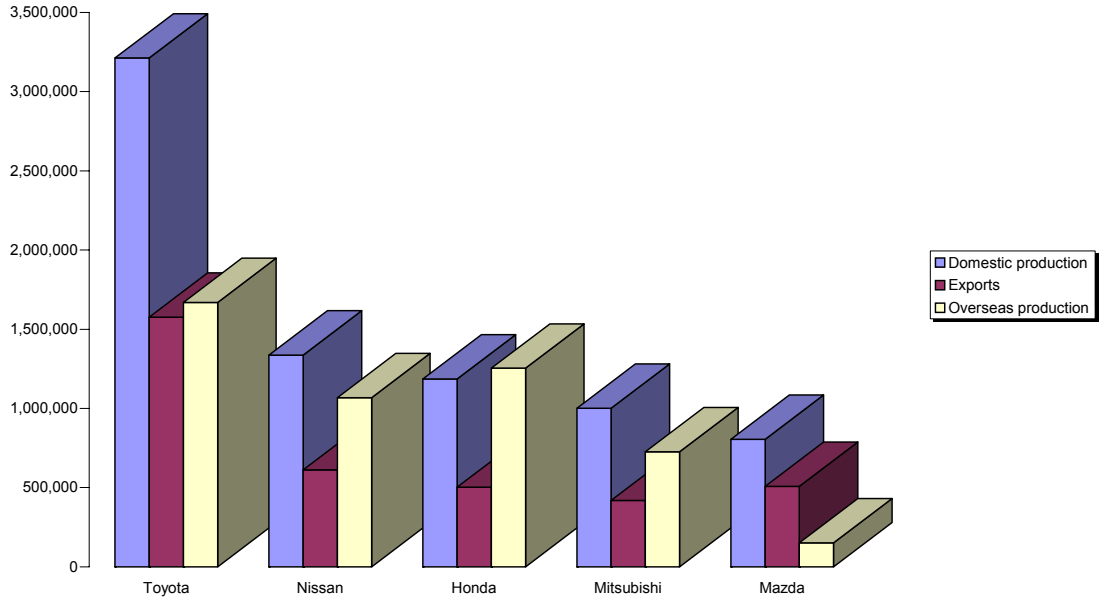
[3] *Ibid*, p8

[4] There are seven main groups of assemblers in Japan; the Toyota group (Toyota, Daihatsu, Hino, Toyota Auto Body, Kanto Auto Works and Araco), the Nissan group (Nissan, Fuji Heavy, Aichi Machine Industry, Nissan Shatai, Nissan Diesel Motor), Honda, Mitsubishi, Mazda, Suzuki and Isuzu. As DaimlerChrysler has a major interest in Mitsubishi, Renault has a major interest in Nissan and Ford has minor interests in Mazda, Suzuki and Isuzu, only Toyota and Honda remain completely independent producers.

In the ASEAN region, Japanese producers have a defensive strategy in relation to market share…

In a global sense, the position of the Japanese automobile industry is expanding (Table 2.5), but in the ASEAN region the future development of the incumbent Japanese producers and their associated suppliers is unclear, with the emphasis placed on the maintenance of existing market share, because of the high share of current sales held by

Figure 2.1 Output and Sales Directions of Leading Japanese Automobile Producers,



1999

Source: JAMA (2000).

Japanese incumbents are increasingly being challenged by the new entrants…

Toyota, Mitsubishi and Nissan. Nevertheless, this share is being increasingly challenged by new market entrants from Europe and the United States. Part of the reason for the restructuring of the Japanese automobile industries through foreign investment and mergers and acquisitions has been the funding required to compete in the global market. Large investments are continually required to develop new vehicle platforms in different international markets, together with the growing cost of environmental modifications and the introduction of increasing amounts of IT into vehicles.

Table 2.5 Japan's Trade in Automotive Products, 1997-99 ($US billion)

Partner	Imports			Exports		
	1997	1998	1999	1997	1998	1999
North America	2.67	2.09	1.96	35.11	36.62	43.14
Latin America	0.04	0.04	0.09	4.48	4.90	3.40
Western Europe	6.84	5.01	5.67	15.20	16.55	16.76
C.Europe/Baltic States/CIS	0.01	0.01	0.01	0.85	0.83	0.60
Africa	0.00	0.01	0.01	2.27	2.19	1.96
Middle East	0.00	0.00	0.00	4.47	5.53	4.51
Asia	0.64	0.66	0.85	17.53	10.98	12.27
Total	10.2	7.82	8.59	79.91	77.6	82.64

World Trade Organisation (2000*), International Trade Statistics 2000*, December, p196.

Both Nissan and Mitsubishi incurred huge corporate debts trying to maintain their positions in the Japanese and international markets, which are not particularly profitable for OEMs. In 2000 Honda announced the highest profit for a Japanese manufacturer of only 6 per cent return on capital. This constraint is reflected in Table 2.6, which also reflects the higher return that was previously available to Japanese assemblers in the protected ASEAN markets.

Table 2.6 Profitability of Japanese Industry, by Region, 1998 (Return on Equity, %)

Industry	Japan	North America	Asia	Europe	World
Transport equipment	5.69	3.21	11.37	-0.44	6.57
Electrical and electronic equipment	4.52	2.14	5.88	0.15	3.94
Precision machinery	7.50	0.10	8.42	6.01	5.65
General machinery	4.29	2.40	7.71	-0.10	3.22
Manufacturing	4.64	2.82	6.25	1.74	4.65

Source: MITI Basic Survey (1998).

Import barriers against automotive imports into ASEAN have transferred resources to the incumbent manufacturers and allowed higher profits…

The availability of import barriers for vehicle assembly operations in the ASEAN4 countries allowed high profitability for the incumbent manufacturers, thereby encouraging reinvestment, but had the effect of preventing domestic industry from progressing towards international competitiveness. As a result of these incentives, a disproportionate share of Japanese automotive industry is located in the ASEAN region, relative to investment from other industries (see Table 2.7).

Table 2.7 Location of Japanese Overseas Production, 1997 (per cent of total output)

Industry	ASEAN4	NIES4	World
Transport equipment	4.4	1.5	24.9
Electrical and electronic equipment	3.7	4.4	19.7
Steel	2.3	0.7	12.1
General machinery	0.8	2.2	11.7
Chemicals	1.4	1.7	10.0
Textiles	1.8	3.1	7.6
Total manufacturing	1.9	1.8	11.6

Note The 'world' column refers to the share of Japanese manufacturing output, by industry, that is located outside Japan, according to the 1998 MITI Basic Survey. Hence, the 'transport equipment industry, which is essentially the automotive industry, has almost one quarter of its manufacturing output outside of Japan, of which 4.4 per cent of total world output is located in the ASEAN4 countries – a comparatively high proportion compared to other Japanese industries located in the region.
Source: MITI Basic Survey (1998).

2.3 Pattern of Trade

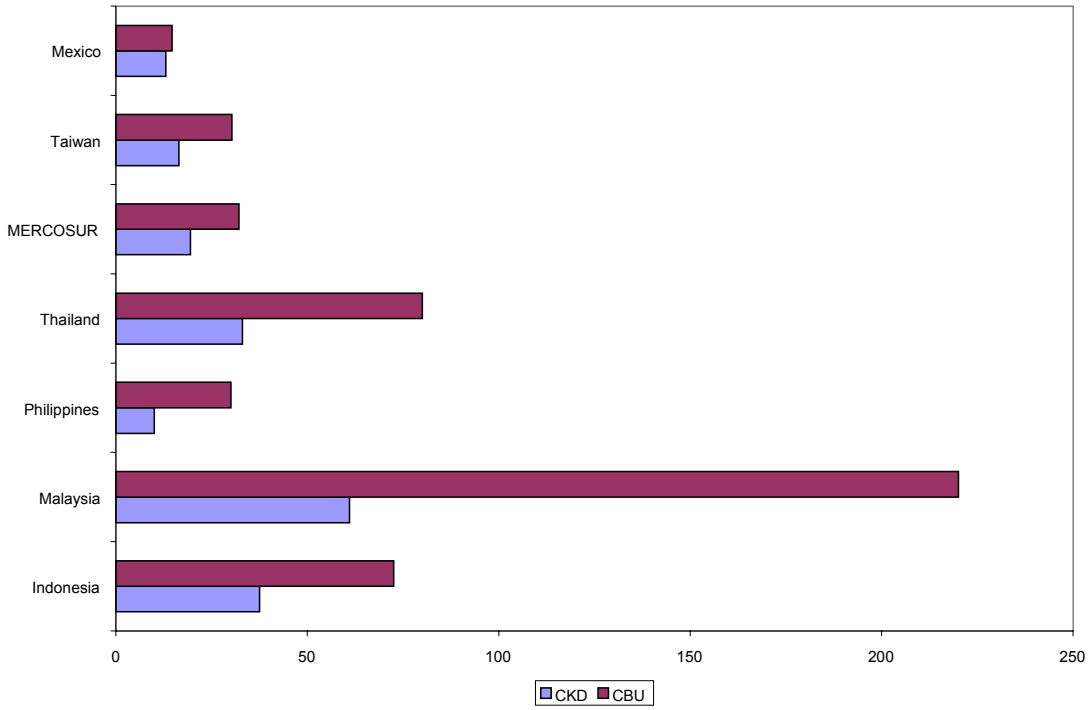
There are a number of significant structural weaknesses in the ASEAN automotive industry, particularly its dependence on parts and materials for the production of parts and components from Japan and other countries. The size of the market in each member country is still relatively small, although there has been a significant recovery in 2000 after the contraction following the East Asian economic crisis. Even in 1996, at the peak of sales, there were only sales of 160,000 in the Philippines and 590,000 in Thailand. Notably, the national car policies of the ASEAN members has prevented sufficient growth in the scale of production, while there is also duplication of production, so that unit costs have been kept relatively high (Masuyama, 2000).

Sharp rises in import prices are encouraging increased local procurement and exports…

After the crisis the ASEAN automotive industries have gradually become more export-oriented as the Japanese companies and newer US and Western auto producers have sought to establish larger production runs and greater scale economies. Nevertheless the ASEAN economies have maintained their import dependence, since export growth has increased demand for imports of parts and materials, unless significantly greater local procurement, sub-contracting and production occurs in the future. The sharp rise in prices of imported parts and materials after 1997 has stimulated efforts to increase the level and sophistication of local production.

Import barriers in ASEAN have affected the trade structure…

Figure 2.2 CBU and CKD Tariffs in Selected Economies, 2000



Source: Findlay and Abrenica (2001)

The trade pattern of the ASEAN automotive industries has been markedly affected by the structure of tariffs that protect the domestic industries from import competition (Table 2.8). Each member economy has a range of automobile and parts and components suppliers that assemble or manufacture at costs well above prices in the world market – but are protected by tariffs on intermediate goods and vehicle kits and even higher tariffs on finished vehicles. Figure 2.2 shows the structures of tariffs in the ASEAN economies, compared to a selection of other economies or groups. Tariff levels remain relatively high compared to the other economies in the Figure (other than in the Philippines) and for all economies the margin of preference in favour protection for built-up vehicles is relatively high.

Table 2.8 Comparison of Automotive Tariffs and Non-tariff Barriers in ASEAN4, 1998

	Average applied tariff rates		Share of imports subject to NTBs	
Country	Parts	Vehicles	Parts	Vehicles
Indonesia	21.8	86.4	0.0	70.2
Malaysia	16.3	53.1	9.4	81.5
Philippines	11.5	23.3	2.5	40.6
Thailand	42.7	43.3	2.4	44.7
ASEAN (average)	26.6	47.2	2.8	64.7

Source: Abrenica (2000), 'Liberalising the ASEAN Automotive Market: Impact Assessment, PECC Conference Paper, May.

The ASEAN economies have a common effective preferential tariff (CEPT) schedule under the ASEAN Free Trade Agreement (AFTA) which provides for rates to converge to between 0 and 5 per cent by the year 2003. The main exception to this phasing process is Malaysia which has sought exemption for its motor vehicle industry until the year 2005.

Table 2.9 Japanese Firms in ASEAN4, Sales Strategies by Production Base, (per cent)

Sales	Automobiles (assembled vehicles)	Automobiles (components)
Sales in ASEAN		
FY 1998	95.1	77.1
FY 1999	93.5	73.2
Sales to Japan		
FY 1998	2.0	17.8
FY 1999	0.0	18.1
Sales to US & Canada		
FY 1998	0.0	1.4
FY 1999	0.0	1.3
Sales to the EU		
FY 1998	2.4	3.5
FY 1999	3.5	1.4
Sales to other countries		
FY 1998	0.5	3.1
FY 1999	3.0	6.0

Source: Survey by the JBIC, May 2000.

ASEAN trade and investment ministers agreed on 1 May 2000 to Malaysia's request to protect its automobile industry. The agreement on the contentious tariff issue came on the first day of a two-day Ministerial meeting in Yangoon. Under AFTA's free-trade plan, six of the ten ASEAN members have agreed to cut tariffs on a list of manufactured and agricultural products to between 0 per cent and 5 per cent by the end of 2002. Malaysia was due to include its car industry, but in 1999 announced it needed a delay to rehabilitate the industry after being affected by the Asian economic crisis.

According to Poapongsakorn and Wangdee (2000), there is an urgent need to continue trade liberalisation in ASEAN in order to make the domestic automobile industry more outward looking and internationally competitive:

> Asean must continue to liberalize the automotive sector. A recent UN comparative study found that Mexico has successfully developed a truly internationally competitive automotive industry, while the Asean automotive industry still rely quite heavily on tariff and protection. The recent reduction in tariff and non-tariff barriers in the region is a positive sign. Liberalization will pressure firms to upgrade their production process. There is evidence that some parts companies in Thailand have started to adopt serious development programs to reduce cost and to improve productivity. Notably, the target area of

development is in the production process. However, there are still some serious constraints in the Asean automotive industries.

These constraints include the lack of scale of most ASEAN automotive plants and the inadequate development of the parts and components industries, which have become fragmented and inward looking after decades of significant protection from imports. The direction of sales of Japanese companies is focussed within the ASEAN group, especially for automobiles but less so for parts where sales back to Japan take up a significant proportion (Table 2.9). However, the incumbent Japanese automotive firms have already assessed the competitive strengths of each ASEAN member through the complementation scheme which provides for concessional trade barriers for inter-regional trade (Table 2.10).

Table 2.10 Toyota Automotive Exports from Subsidiaries in ASEAN4, 1999 (units)

Country	Export	Destination	Export (1999)
Indonesia	TUV vehicles	Brunei, PNG	294
	5K engine blocks	Japan	4,000
	7K engines	Japan, Taiwan, Philippines, Malaysia	45,000
	CKD parts for TUV	Malaysia, Philippines, Vietnam, Taiwan	28,000
Thailand	Hilux, Soluna vehicles	Pakistan, Philippines, Thailand, Fiji, PNG, Malaysia, Brunei, Middle East	12,202
	2L engines	Portugal, Malaysia, Pakistan, Laos, Indonesia, Japan, Philippines	31,000
	Parts for cams and blocks	Japan	-
	Body parts, resin parts, rubber parts, lamps, etc	Philippines, Malaysia, Japan, etc	-
Malaysia	Manual steering gears	Thailand, Philippines, Indonesia, Taiwan, South Africa, Turkey	17,000
	Power steering gears	Thailand, Indonesia, Philippines, Taiwan, South Africa, Vietnam	83,000
	Suspension lowerball joints	Thailand	60,000
	Parts for the TUV, Corolla, Soluna, resin parts, rubber parts etc.	Thailand, Indonesia, Philippines, Taiwan, Vietnam	83,000
Philippines	Transmission cases	Thailand, Malaysia, Taiwan, Portugal, Japan, South Africa	117,000
	Constant velocity joints	Thailand, Taiwan	61,000
	Aluminium castings for transmission cases, gears	Indonesia	24,000
	Press parts for the TUV, etc	Taiwan, Indonesia, Thailand, Malaysia	9,840

Source: *Toyota and the World, 2000*.

Further moves are likely to increase exports from ASEAN factories, to compensate for depressed consumer demand in ASEAN, and the continuing opportunities of supplying the still growing US and European markets. There is now pressure on ASEAN countries to follow the path to more advanced industry, with a higher level of value added and sophistication, especially in manufactures such as the automotive and automobile parts

industry. Nevertheless, increased local production of vehicles, parts and components will only proceed if such ventures are viable in the changing environment of increasing openness and more diverse investment, especially from the United States and potentially from Australia and Korea – depending on progress in regional trade groupings.

The decline of domestic sales in 1998 had a number of significant effects: (1) the low level of production made it difficult to keep factories open and retain workers; (2) the value of foreign debt of the overseas automobile affiliates increased sharply because eof the depreciation of local currencies; and (3) the domestic orientation and low exports/sales ratios of the automobile affiliates made it difficult to generate foreign currency denominated sales to offset the other effects.

Currency changes have increased the returns to exports, but also raised the cost of necessary imported materials, parts and components…

Currency depreciation also had the effect of reducing wage costs in ASEAN compared to China and increased the automobile industry's international competitiveness somewhat. Nevertheless, the currency changes have not produced a sharp rise in ASEAN4 exports of automobiles or automobile parts to other countries.

2.4 Changing Investment Flows

Japanese firms have made very large investments in the ASEAN region, particularly from the mid-1980s to take advantage of yen appreciation. Investment by Japanese automobile companies in the ASEAN4 region has long dominated the region. Japan has accounted for 16.6 per cent of net FDI received by ASEAN from 1995 to 1999, but has trended downwards. These flows were disrupted by the East Asian economic crisis from 1997. In FY99 Japanese FDI into ASEAN fell to US$4.1 billion, or half the 1997 figure, while flows into the automotive industries suffered a similar decline.[5]

Most automotive FDI into ASEAN has gone to Thailand…

Most Japanese automotive FDI into the ASEAN region in recent years has been directed at Thailand, with a more open foreign investment policy, whereas Malaysia has attracted negligible inflows (Figure 2.3 and Tables 2.11 and 2.12). Overall, Japan is the largest cumulative investor in Indonesia, Malaysia and Thailand.[6] The ASEAN Secretary, Rodolfo Severino recently noted that Japan was the source of one fifth of net FDI flows into Southeast Asia from 1995 to 1999, with over $US50 billion invested in ASEAN by

[5] Japan was one of the top five investor nations until 1998 when the ongoing recession in Japan reduced FDI outflows, but conversely led to rising FDI into Japan, including the automotive industry. French firms have been the largest investor in Japan, spending $US6.7 billion acquiring firms in the car, car parts, finance and insurance sectors. Renault spent $US4.9 billion acquiring a stake in Nissan, while DaimlerChrysler has spent $US2.1 billion acquiring a controlling share of Mitsubishi, with both companies suffering from excessive debts but with a significant production and distribution network in ASEAN.

[6] Chi, A. and Miyake, M. (1999), 'Japan and Asia: Developing Ties', *OECD Observer*, Summer.

Japanese firms in the period 1990 to 1998.[7] There is considerable concern, however, over the rise in international investment in the Chinese automobile industry and its potential as a regional exporter of automotive products.[8]

Japanese parts and components manufacturers relocated to ASEAN…

The need for Japanese automobile firms to increase their level of local procurement in the 1990s, because of local content policies and the increasing exchange rate cost of imports from Japan, led to a series of investments in the ASEAN region from Japanese parts and components manufacturers who relocated part of their output to the region to assist their OEM partners.

After the Asian economic crisis Japanese subsidiaries in ASEAN began to export…

After the Asian economic crisis, Japanese automobile companies were forced to export, but have not achieved significant profits from export due their need to increase imports of parts and components from Japan, in line with increased exports – although local sourcing is increasing. Nevertheless, some companies have reported quality problems in using locally produced parts and components, as occurred when Toyota began to export commercial trucks to Australia.[9] The company is aiming to raise local content from 70 per cent to 100 per cent in Thailand, but this does not mean that all materials, parts and components will be actually be domestically produced.

> Local content is generally in the 40-70 per cent range, but calculation schemes in all countries allow local content to be increased simply by acquiring certain designated parts locally (the 'given percentage' method'). In Thailand, as an extreme example, it is possible to achieve 27 per cent local content just by purchasing mandatory domestic parts that require low levels of processing (and therefore have only low value added).[10]

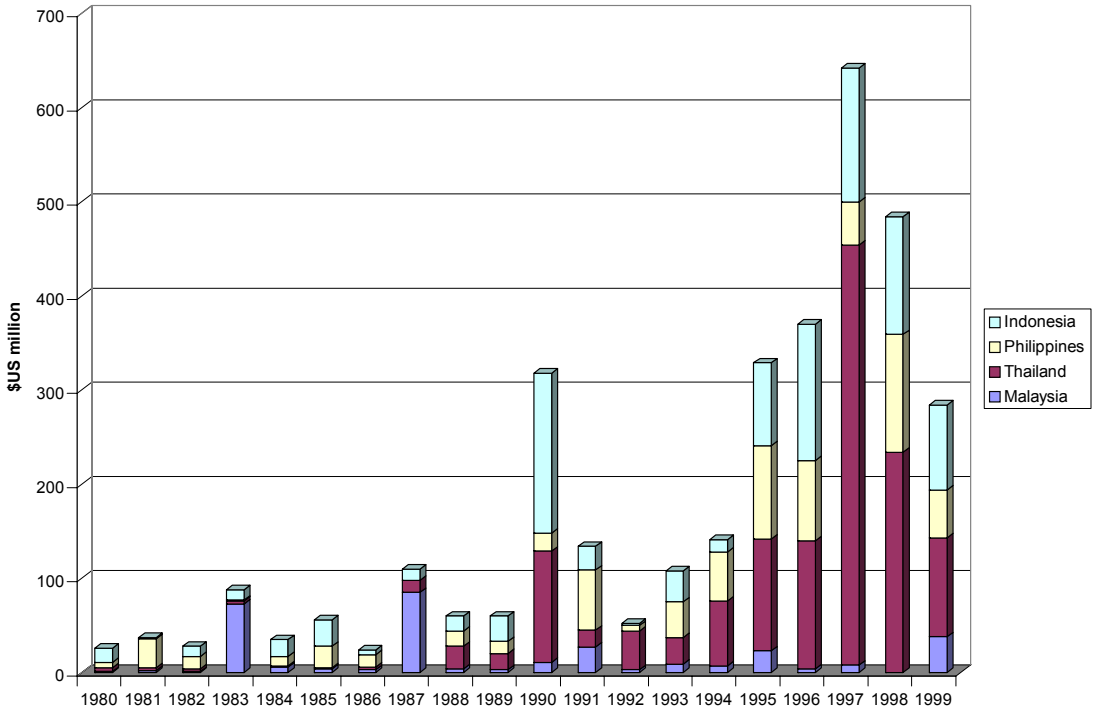
Toyota has increased pressure on its suppliers in Japan to establish factories in ASEAN, so that its costs will fall in that region. Recently, a Nagoya engine maker to Toyota was requested to relocate some production of engines to Thailand to increase the viability of Toyota Thailand's operations, particularly for exports (Fieldwork briefing).

ASEAN countries are offering incentives to attract FDI…

[7] *JEI Report* 10B, 10 March, 2000.
[8] On 29 May 2000 for example, the largest Japanese carmaker, Toyota, announced that the Chinese government had officially authorised the company to launch a joint venture in Tianjin to produce passenger cars. Toyota plans to immediately establish a joint venture to start production of 1300cc passenger cars in 2002. Toyota is the third Japanese car manufacturer to have joint production approved, after Suzuki and Honda. Toyota will found the Tianjin Toyota company as a 50-50 joint venture, with initial production of 30,000 units annually.
[9] Interview with Sakura Research Centre.
[10] See http://www.btm.co.jp/html_e/databank/review4e.htm.

To accelerate the return of Japanese FDI inflows, the ASEAN countries have introduced a series of investment incentive schemes, beginning with the October 1998 expansion of the ASEAN Investment Area. In December 1998 the Hanoi Action Plan introduced further incentives, including lower taxation schemes and tariff exemptions.[11] The ASEAN bloc has increasingly become concerned that the region's share of foreign direct investment is declining. On 24-25 October 2000 ASEAN Leaders dispatched a joint investment mission to Japan to try to reverse the decline in Japanese investment in Southeast Asia. The mission consisted of the heads of investment agencies in ASEAN's ten member states.[12]

Figure 2.3 Japanese FDI in the ASEAN Automobile and Automotive Industries



Source: Ministry of Finance.[13]

The main source of automotive FDI have changed from Japan to Europe and the US...

Recently, however, there have been significant changes in the sources and pattern of investment into the ASEAN region generally and into the automotive industry especially. In contrast, FDI from the United States into ASEAN in 1999 grew rapidly from US$1.1

[11] See Castellano, M. (2000), 'Rapid recovery in Southeast Asia strengthens Japan-ASEAN economic relations', *JEI Report No. 24*, 23 June.
[12] *Japan Times*, 5 November 2000.
[13] Note: Fiscal year. Further, the MOF statistics do not include reinvestments, such as the decision in March 2001 of Nissan Motor Co. to increase its investment stake in its two affiliates in Thailand from 25 per cent to 74.9 per cent (*Japan Times*, 20 March 2001.

billion in 1998 to US$9.4 billion in 1999, while investment from the European Union rose from the European Union rose from US$4.7 billion over the same period.

Table 2.11 Japanese FDI in the Automobile Industry in ASEAN and China (US$m)

JFY	Malaysia	Indonesia	Thailand	Philippines	China
1990	11	170	118	19	1
1991	27	25	18	64	9
1992	3	2	41	6	33
1993	9	33	28	38	83
1994	7	13	69	52	224
1995	23	88	119	99	370
1996	4	145	136	85	249
1997	8	142	446	46	100
1998	0	125	234	125	138
1999	38	90	105	51	93

Note: JFY 1999 is the period from April 1999 to March 2000.
Source: Ministry of Finance.

These investment flows have created a challenge to the Japanese automobile industry's position of dominance in the ASEAN car industry. General Motors, Ford and Chrysler (the big three US auto manufacturers) have sought to expand activities in Asia (Takayasu and Toyama, 1997). Since the 1970s the market share of US auto producers in Asia was

Table 2.12 Investments in ASEAN4 by major Japanese manufacturers of automotive components and parts (number of cases, 1998)

Year	Thailand	Malaysia	Indonesia	Philippines
Before 1965	8	0	0	0
1966-1970	7	2	0	0
1971-1975	12	4	9	3
1976-1980	6	6	8	3
1981-1985	10	11	3	0
1986-1990	51	16	17	12
1991	2	4	6	2
1992	4	1	3	1
1993	6	1	2	1
1994	23	5	4	7
1995	26	9	8	10
1996	40	1	16	10
1997	19	0	11	4
Unknown	1	2	1	1
Total	215	62	88	54

Source: Auto Trade Journal, (1998), *The Japanese Automotive Parts Industry* (Nihon no Jidosha Buhin Kogyo).

negligible but is now increasing. Through investing in production facilities in the region, GM hopes to increase its share in the Asia-Pacific market from 5 to 10 per cent by 2006, while Ford aims for 15-20 per cent of sales in the region.

Japanese producers in ASEAN are increasingly linking with global company networks…

Increased competition in the regional automotive market is likely to increase pressure on Japanese manufacturers to link their ASEAN operations with their global production and marketing networks, since reliance on the domestic market only will maintain the fragmented and small-scale nature of the current industry structure – which would become increasingly uncompetitive against the newly established American and European manufacturers that have established larger-scale plants. The Japanese automobile and automobile components industries have so far developed as domestic suppliers and only a low proportion of production has been exported, especially for vehicles (Table 2.13). There appears a greater prospect for increasing exports of automotive parts and components.

Table 2.13 Overseas Production Ratio for Japanese Industry, FY 1998-2002 (per cent)

Industry	1998	1999	2002 (expected)	Change in percentage units, 1998 to 2002
Transport accessories	15.0	15.0	20.0	5.0
General machinery	16.3	17.1	20.0	3.7
Chemicals	14.8	16.9	20.3	5.5
Steel	19.0	19.0	23.0	4.0
Electrical and electronic accessories	20.2	21.5	25.4	5.2
Transport vehicles	20.5	21.7	25.5	5.0
Precision machinery	27.0	30.3	35.0	8.0
Textiles	32.5	34.4	37.5	5.0
Electrical and electronic equipment	33.2	34.4	38.1	4.9

Note: The overseas production ratio is defined as the value of overseas production as a proportion of domestic sales and overseas production combined.
Source: International Cooperation Bank (2000).

Japanese companies are responding to the phase out of local content policies by linking output and exports to other regions…

ASEAN automotive policies have long emphasised local content provisions to accelerate regional industrialisation and development, but these are being phased out under WTO

rules.[14] These provisions reinforced the development of the ASEAN automotive industries as relatively fragmented vehicle assembly and parts manufacturing behind significant import barriers. However, since the Asian economic crisis from 1997, the motivation for Japanese investment in the region has begun to change and ASEAN automobile plants are increasingly being linked to other markets through both vehicle and parts exports, whether on an intrafirm basis or between different firms.

Earlier trade patterns were characterised by heavy import dependence…

The earlier pattern of trade and investment in the ASEAN4 automobile industry was characterised by a heavy dependence upon imported materials, parts and components, often from Japan and a dearth of export potential because of the low competitiveness of these operations, which had developed behind import barriers. The depreciation of the ASEAN4 currencies from 1997 sharply raised the cost of sourcing from other countries and especially Japan – thereby increasing incentives for raising the capabilities of the basic machinery and metal fabrication industries in these countries.

AFTA is an incentive for Japanese firms to reorient their operations…

The sudden contraction of local markets also forced Japanese firms to consider the possibility of raising intraregional exports, as well as seeking economies of scale through exports to Japan and other countries, particularly of parts and components. The ASEAN Free Trade Agreement (AFTA) has also increased incentives for Japanese automobile firms to reorient their operations towards exports and increased local procurement.

Direct investment and foreign trade are linked through intrafirm operations…

There is a clear link between direct investment and foreign trade through the intrafirm operations of multinational companies, as noted by Chia (1994):

> Multinational enterprises, through their majority equity ownership, are able to exercise considerable control over subsidiaries' decisions on the sourcing of capital equipment and intermediate inputs, and on the marketing of production. Direct investment has an impact on trade at both the macroeconomic and firm levels. It can be either trade-creating or trade-suppressing, depending upon national trade and industry strategies, sectoral orientation, corporate strategies and the lifecycle of the FDI project.[15]

Japanese companies have used FDI to restructure domestic production and to shift towards higher value added processes and products in Japan while relocating more labour-intensive operations to lower cost countries, especially in Asia. Domestic operations have moved to sourcing parts and components from their overseas operations.

[14] The World Trade Organization (WTO) is accelerating deregulation measures and in January 2000 the local content requirements were abolished by the WTO's Agreement on Trade-Related Investment Measures (TRIMs). Thailand enacted the WTO decision in January 2000.
[15] Chia and Drysdale (1995, p227-228).

As a result of this relocation the overseas host countries often need to import higher value added parts and components from Japan, so that greater integration is created between regional economies.

Table 2.14 ASEAN Automotive Trade Balance, 1996 and 1998 (US$m)

Category	Thailand		Philippines		Malaysia		Indonesia	
	1996	1998	1996	1998	1996	1998	1996	1998
Exports								
Parts	967	1,034	858	894	838	932	702	708
Vehicles	364	630	11	17	202	257	84	102
Total	1,331	1,664	869	911	1,040	1,189	786	810
Imports								
Parts	4,064	884	799	429	1,113	472	2,853	963
Vehicles	1,409	128	1,419	379	2,394	499	525	283
Total	5,473	1,012	2,218	808	3,507	971	3,378	1,246
Net Inflows	(4,142)	652	(1,349)	103	(2,467)	218	(2,592)	(436)

Findlay and Abrenica (2000).

ASEAN remains concerned about the shift in automotive industry investment to China…

At the May 2000 Yangoon meeting of trade ministers from Southeast Asia and Japan, China and Korea pledged to harness the 'huge potential' for heightened trade and investment in the region on 2 May 2000. Ministers promised to expand the $US122 billion in trade between ASEAN and its three large neighbours. Nevertheless, ASEAN leaders are concerned that foreign investment is shifting from ASEAN to other areas, including China. The ASEAN region could be caught in a transition from 'an older model of Japanese-style, State-planned economic growth and a new and unproved model base don free movements of capital and labour.' There are also indications that a 'stark new technology divide' is emerging between ASEAN and developed countries.[16]

Japan is proposing new levels of official support for the ASEAN automotive industries…

Notably, Japanese Trade Minister Takashi Fukaya stated in May 2000 that Japan would conclude an investment agreement with each member of the Association of Southeast Asian Nations to boost mutual investment. Japan is currently negotiating with Indonesia for an investment agreement, which is expected to serve as a basis for similar agreements with other ASEAN countries. Fukaya also proposed that Japan send experts to ASEAN countries to help them develop a components supply industry in automotive and electrical appliance sectors. Further Japanese assistance, from both government and business, is therefore likely to occur in the future, helping the sector adjust to a changing economic environment.

[16] 'ASEAN warns of threat of globalisation', *AFR*, 8 September 2000.

Future relationships and prospects for the industry depend upon a range of factors, including the trade policy regime of the future The outlook for the automotive industries of ASEAN will be discussed in the coming chapters.

3 THE CHANGING ENVIRONMENT

3.1 Impact of the Crisis

When the East Asian economic crisis arrived in July 1997, the Southeast Asian automotive market shrank dramatically to only one third of its size in 1996. Both the Japanese manufacturers in the sector, as well as local assembly and component companies, experienced a sharp contraction in domestic demand. The significant depreciation of local currencies also reduced the viability of automobile assembly operations, since an important part of materials, components and parts were imported, especially from Japan. Employment and profitability in the ASEAN automotive industries fell precipitously in 1998 and a degree of rationalisation occurred, especially in the component manufacturing sector.

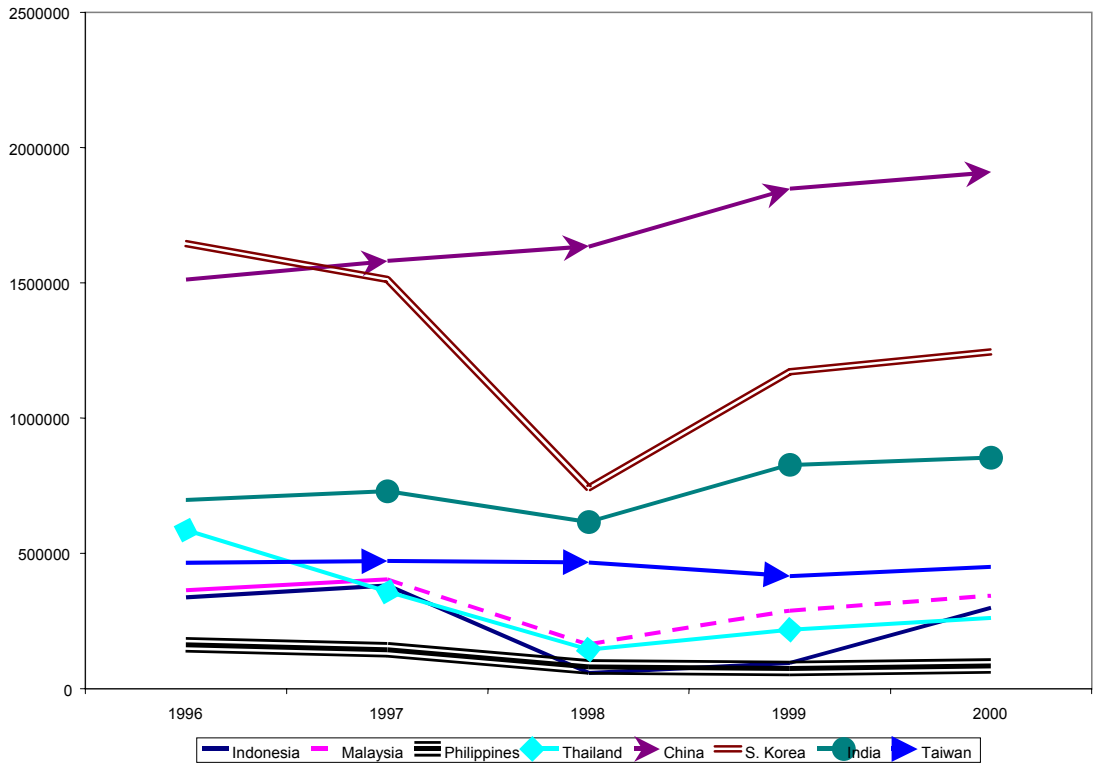
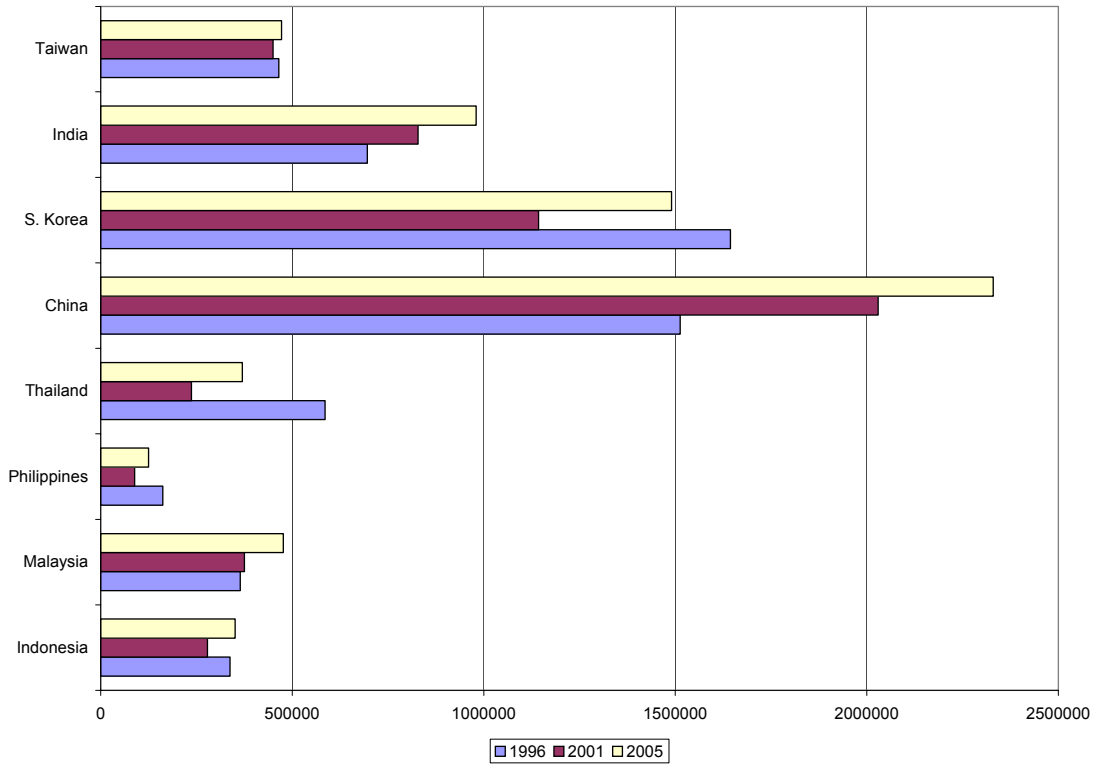


Figure 3.1 Vehicle Sales in Asia

The year 2000 brought a major recovery in sales for automobile manufacturers in the ASEAN region, whose combined sales rose by 44 per cent compared to the previous year (Figure 3.1). Further, the overall ASEAN automobile market made a strong recovery in 2000, in line with overall economic recovery for most countries in the region (Figure 3.1). Total ASEAN4 vehicle sales rose to 1,091,926 units. Of this, Malaysia recorded sales of 343,173 units in 2000, up 19 per cent from 1999, while sales of vehicles in

Figure 3.2 Forecast Vehicle Sales in Asia



Source: MotorBusiness Asia.com.

Indonesian sales rose sharply by 218 per cent to 298,633 units. In Thailand and Singapore, 262,189 and 84,889 motor vehicles were sold in 2000 respectively. The Philippines recorded sales of 83,949 units, a rise of 13 per cent from the previous year. Nevertheless, the region's automotive market is still only two-thirds of its size before the crisis, while the expansion of China's market continues. The ASEAN regional market is forecast to account for only half of China's 2.3 million vehicle sales by 2005 (Figure 3.2).

The Asian economic crisis caused major industry problems…

The contraction of economic activity in the ASEAN countries after 1997 imposed a number of problems on the Japanese automotive companies operating in the region. Notably, the low capacity utilisation of plants due to the sharp fall in domestic demand created operational problems. Secondly, many Japanese companies also found it necessary to provide financial assistance to contractors and sales companies that were suffering from liquidity problems due to the associated contraction of the financial system in these countries.

The crisis severely affected both vehicle assemblers and their suppliers. The long period of protection of local automotive parts and components companies in the fragmented

ASEAN market has significantly affected the international competitiveness of many firms. The Asian economic crisis forced Japanese assemblers to increase equity shares in their main joint venture partners to keep them operating, but many of the smaller firms have experienced considerable problems because of their limited technological or manufacturing capacities. Newly entering Western firms are also reluctant to acquire existing local automotive or components firms due to their limited technology and production quality.

> Those firms still in business have weathered the storm but at the same time many firms which have failed are not being forced to close down or service debts, therefore the manufacturing base in Asia remains largely intact. The Japanese have financially propped up local partners by increasing equity beyond 50%. It's to their credit that Japanese OEMs have taken advantage of this. Small, non-Japanese operations are being squeezed out and many of them are not good M&A targets at any price. There are few good targets for Western OEMs. Is unrealistic pricing the problem? No, it's not the primary reason. In fact, most of these companies were looked at before the crisis but were ruled out due to low technology and quality.[1]

The experience of the collapse of domestic demand in ASEAN created a greater awareness of the need for export orientation and the achievement of economies of scale for cost competitiveness, although, the depreciation of local currencies provided an offsetting factor in lifting the international competitiveness of these subsidiaries.

Japanese automotive companies were forced to restructure…

While the ASEAN automobile market dramatically shrank after the 1997 economic crisis, recovery was evident by 1999 and particularly in 2000 due to an economic turnaround in most member countries and a range of other factors, such as lower interest rates. Japanese automotive companies were forced to restructure their operations, including retrenchments and re-financing from their parent companies. Yet, already boasting a major presence in the Association of Southeast Asian Nations (ASEAN), they have surmounted the crises with assistance from their parent companies or through their own export expansion efforts.

According to JETRO (2001), there were two main reasons that Japanese manufacturers overcame the crisis:

> They withstood the rapid contraction of the ASEAN automobile market for two reasons. Firstly, they had production bases there as a result of investing heavily in ASEAN countries at the request of their governments which hankered for domestic car production. Accordingly, the Japanese auto makers found it difficult to exit the ASEAN market because they had to stay there to recoup their

[1] Statement by Mr Jay Kunkel, Managing Director of Visteon Automotive's operations in Asia-Pacific *AutoAsia*, 17 December 2000.

> investments. Secondly, they believed in the potential growth of the ASEAN auto market. Such a stance was shared by European and American auto makers.[2]

For a few years before the Asian economic crisis, ASEAN was targeted for investment by international OEMs, as well as the entrenched Japanese assemblers and considerable excess capacity built up. The crisis caused a hiatus in investment and a restructuring in the operations of auto and component makers in the region. Toyota, for example, began to start assembly of the Camry in Thailand and decided to export pick-up trucks and subcompact sedans from ASEAN. Similarly Nissan Mitsubishi relocated production of one-ton trucks from Nagoya to Thailand, while Isuzu intends to shift production of its pick-up trucks from Japan to Thailand by 2002.[3]

Japanese automotive companies have been restructuring…

Surveys by the Japan Bank of International Cooperation (previously the Japan EXIM Bank) show evidence of restructuring by Japanese automotive firms in the ASEAN4 region (see tables). Japanese automotive firms in ASEAN responded to the contraction in local demand through significant changes in their corporate operations. Virtually all firms were forced to reduce employee numbers, while a quarter of surveyed vehicle assemblers downsized production. Compared to Japanese subsidiaries in the more export-oriented ASEAN electronics industry, those in the protected automotive industry were more severely affected.

The ASEAN market shrank to one third of its size due to the crisis after 1997…

When crisis struck East Asia in July 1997, the Southeast Asian automotive market shrank to a third of its size in 1996. While recovery began in 1999, the market is not expected to fully recover its lost volume before 2005 (Figure 3.2). Excess capacity, exacerbated by new investments and an influx of imports, is particularly severe in the ASEAN region where utilisation rates, ranging from 65 per cent to 75 per cent, are much lower than in Western Europe and North America (Findlay and Abrenica, 2001).

Table 3.2 lists a series of responses to the crisis considered by all Japanese automobile sector firms compared to electrical equipment and electronics products makers. Table 3.3 shows the much lower levels of capacity utilitisation in assembled vehicles compared to components in the financial years to which the data refer, those of 1997 and 1998. The utilisation rates in automobiles are low compared to all industries. There is also considerable variation between economies, with much higher rates of utilisation in the Philippine component sector, for example.

[2] Japan Economic Foundation (2001), 'Asian Auto Market recovering', January (http://www.jef.or.jp/en.).
[3] See the Thailand Bank of Investment, http:www.boi.go.th

Table 3.1 Japanese Manufacturers in ASEAN4, Restructuring after the Asian Crisis

Approach	Automobiles (assembled vehicles)	Automobile Components	Electrical equipment and electronics (assembled products)
Reduction in local employees	100.0	96.4	60.0
Downsizing facilities	25.0	7.1	20.0
Reorganising production	18.8	14.3	18.8
Rolling back business base	6.3	3.6	6.3
Reduction in employees from Japan	68.8	46.4	68.8
Other approach	6.3	0.0	6.3

Source: Kaburagi et al (2000)

In response to the marked changes in exchange rates between Japan and the ASEAN region, which has sharply increased the cost of materials, parts and components imported from Japan, subsidiaries of Japanese automotive companies have begun to raise local procurement ratios and seek higher exports, but especially particularly of automotive components.[4] As illustrated in Table 3.4, Thailand, Malaysia and the Philippines appear to have had some success in raising component exports, relative to local sales, although this change may also reflect the higher value of existing exports to Japan, in local currency values (JBIC, 2000).

Table 3.2 Japanese Manufacturers in ASEAN4, Capacity Utilisation, FY98-FY99

Location	Automobiles (assembled vehicles)		Automobile Components		All Industries	
	FY98	FY99	FY98	FY99	FY98	FY99
Capacity utilisation						
ASEAN4	31.8	38.6	62.8	74.1	79.2	86.0
Thailand	35.0	48.3	56.2	68.5	76.6	85.3
Malaysia	27.5	35.0	68.3	78.3	81.7	88.6
Indonesia	16.4	19.3	55.0	59.0	76.5	81.6
Philippines	53.0	57.0	87.9	102.1	86.4	91.2

Note: Year refers to the timing of the survey, but the data collected refers to the previous year.
Source: Kaburagi, *et al* (2000).

Table 3.3 Japanese Manufacturers in ASEAN4, Crisis Adjustment, FY98-FY99

Location	Automobiles (assembled vehicles)		Automobile Components		All Industries	
	FY98	FY99	FY98	FY99	FY98	FY99
Local procurement ratio						
ASEAN4	40.0	41.4	43.4	55.6	45.2	53.8
Thailand	53.0	55.0	46.4	64.1	46.4	58.0
Malaysia	41.0	na	21.3	50.5	45.5	na
Indonesia	43.3	43.0	42.1	48.5	39.2	52.2
Philippines	41.0	35.0	35.0	46.8	40.0	43.5
Export ratio						
ASEAN4	4.9	6.5	22.9	26.8	31.5	36.6
Thailand	11.7	18.6	14.5	17.2	27.4	31.8
Malaysia	0	0	8.7	29.4	31.8	36.1
Indonesia	0.4	6.7	19.4	22.1	30.5	38.2
Philippines	8.3	0	69.5	60.2	42.9	48.5

Note: Year refers to the timing of the survey, but the data collected refers to the previous year.
Source: Kaburagi, *et al* (2000).

3.2 Policy Responses

Under the ASEAN Free Trade Area or AFTA the ten members of the regional organisation plan to gradually eliminate all import duties for each other's products. By 2001, ninety per cent of manufactured and agricultural products are to be set under a 0-5 per cent tariff, with all products falling under this tariff range by 2002. In the case of automotive products, intra-regional trade will be subject to a tariff of only 5 per cent after 2005, after Malaysia successfully extended the reduction deadline from 2003.

A range of ASEAN automotive complementation schemes have operated…

To encourage regional automotive trade, a range of complementation schemes have operated. Japanese automotive manufacturers supported the BBC (Brand-to-Brand Complementation) program that operates in ASEAN. Under this program there was no restriction on the flow of auto components between member countries, allowing greater economies of scale for the ASEAN region. In response, Toyota's production of vehicles for the ASEAN market featured country specialisation, with the production of steering gears in Malaysia, car engines in Indonesia, transmissions in the Philippines and diesel engines in Thailand. The succeeding scheme after BBC is known as AICO (ASEAN Industrial Cooperation) was also supported by the Japanese automobile manufacturers. The AICO scheme was designed to encourage cooperative industrial production in ASEAN, with a broader range of manufacturing covered – whereas BBC was limited to the car industry only.

AICO aims to encourage regional trade…

The aim of AICO is to allow approved companies in different ASEAN countries to access preferential tariff rates (from zero to 5 per cent) for intra-regional trade. To participate in the scheme, firms originally needed to be have – at least 30 per cent of their shares held in that country. This condition was relaxed at the end of 1998, so that participating companies had only to be incorporated and operating in ASEAN economies. Also exchange between companies belonging to the same group was permitted after that time.

However, national governments have sought reciprocity in trade flows…

The AICO scheme permits participants to get early access to preferential tariff rates and it creates profitable opportunities while the normal tariff rates remain high. However there has been some resistance in the operation of the scheme. The member governments of ASEAN have tended to require a degree of reciprocity in terms of balanced trade flows under the agreement.[5] . One estimates is that trade in 1999 under AICO had reached only $US500 million between all four countries.[6]

The change in the rules at the end of 1998, on the other hand, have led to a burst of new applications. By early 2001, there had been 60 arrangements approved in the automobile industries. A significant number of these involve Japanese companies that have long been established in ASEAN. Toyota has a network of automotive parts suppliers and assemblers in Southeast Asia and sought to utilise the AICO scheme to create greater economies of scale for segments of their production and assembly operations. Isuzu also planned to introduce a flexible truck supply scheme using AICO.

3.3 Approach to Trade Policy

The patterns of protection in the ASEAN4 are summarised in Table 3.6. Evident in the table are the rises between 1997 and 2000 in tariff rates on CBU and CKD imports (except in Indonesia and except for CBU imports in the Philippines) and the deletion of local content in Thailand and Indonesia. We commented in the previous chapter on the high tariff rates which are being applied in these cases, and on the significant margins between CBU and CKD imports.

The structure of the existing automotive industries in ASEAN reflects the import substitution strategy that has operated for three decades, but without a significant increase in exports or the development of a viable domestic industry. As Krueger notes (1980, 35):

> The fact that domestic markets are too small to support efficient sized plants makes the traditional criticism of the infant industry argument for protection – that it imposes costs on consumers and that a production subsidy would be

[5] To obtain approval for concessional tariff treatment for intra-regional exports of automotive parts, manufacturers needed to apply directly to the national government of the relevant import market. This process led to considerable administrative resistance to trade imbalances.
[6] This amount is less than Mitsubishi Motors' annual exports from Japan to Singapore and Malaysia.

preferable – even more forceful than is apparent at first sight, since protection reduced the size of the domestic market and simultaneously reduced the incentive to seek the export markets that would actually be necessary to support production on an optimum scale.

Over this period, Japanese assemblers have almost 80 per of the market in terms of production and sales, but have been forced to produce in small batches and without any economies of scale for either vehicle or parts manufacturing. The low value added nature of the existing assembly operations has meant a high level of effective protection for the protected industries and discouraged exports, while encouraging significant imports of parts and components and even basic materials such as steel which cannot be efficiently manufactured in the closed markets of ASEAN.

Table 3.4 Changes in the ASEAN4 Structure of Trade Barriers, 1997-2001

	Tariff Structure				Local Content
Country	CBU		CKD		
	Passenger car	Commercial vehicles	Passenger car	Commercial vehicles	
Thailand					
1997	42-68.5%	30-66%	20%	10-20%	PC: 54% CV: 45-72%
2000	80%	33-60%	33%	33%	deleted
Philippines					
1997	40%	20-45%	3%	3%	PC: 45% CV: 13.77 to 45%
2000	30%	30%	10%	10%	retained
Malaysia					
1997	140-200%	35-50%	42%	5%	PC: 60% CV: 45%
2000	140-300%	60-200%	42% to 80%	5% to 40%	retained
Indonesia					
1997	200%	5-105%	65%	0-25%	CKD tariffs based on local content
2000	65-80%	5-45%	25-50%	25%	abolished

Findlay and Abrenica (2000).

The structure of assistance has also limited the extent of technology transfer and spin-offs from foreign investment in the automotive industry. Even if the presence of many assemblers in the Asian markets unleashes the force of competition and thus helps raise the technological level of Asian automobile industries, it would be difficult for Asian automobile industries to catch up with level of those in developed countries, unless product designing and developing capabilities should develop in Asia.[7] At least the

[7] Takayasu, K. Toyama, A. and Minako, M. (1999), 'ASEAN's Industrial Structures: Currency Turmoil Spawned by Import-inducing Structures', *RIM*, Center for Pacific Business Studies.

development of a regional market would offset some scale problems and help prevent the diversion of foreign investment to the Chinese automobile industry by leading OEMs.

The financial capacity of Japanese automotive firms varies greatly…

There is a contrast between the capabilities of companies such as Nissan, which has significant debt problems, and Toyota, which has significant financial assets. After the Asian economic crisis began in 1997, Nissan decreased its ASEAN production levels, while Toyota began to increase local procurement and exports to ensure survival of its subsidiary in a dramatically changed economic environment.

3.4 Local Content and Procurement

The significant changes in exchange rates between Japan and the ASEAN4 countries has encouraged Japanese automotive companies in ASEAN to give priority to raising local procurement rates in ASEAN, where possible. The MITI (1999) survey of expected procurement from the region (Table 3.7) shows that over 50 per cent of automotive assemblers and parts manufacturers in ASEAN intended to raise procurement levels substantially, while over 20 per cent of the remaining respondents intended to raise procurement slightly.

Table 3.5 Expected Procurement from Japan by Japanese Affiliates in ASEAN4, 2000

Region/Industry	(Valid responses)	Further increase	Slight increase	No change	Slight decrease	Large decrease
Total World	337	37.1	28.8	19.3	12.5	2.4
ASEAN4						
Malaysia	87	31.0	35.6	21.8	6.9	4.6
Thailand	129	41.9	23.3	15.5	17.1	2.3
Philippines	29	31.0	34.5	20.7	31.8	0.0
Indonesia	64	43.8	28.1	17.2	9.4	1.6
Industry						
General machinery	11	27.3	18.2	36.4	9.1	9.1
Electrical/ electronic assembly	75	13.3	33.3	24.0	24.0	5.3
Electric/ Electronic parts	108	42.6	31.5	18.5	6.5	0.9
Auto assembly	13	53.8	23.1	15.4	7.7	0.0
Auto parts	85	54.1	27.1	5.9	10.6	2.4
Precision machinery	5	40.0	20.0	40.0	0.0	0.0
Others	40	27.5	22.5	35.0	15.0	0.0

Note: (a) The category 'others' includes chemicals, clothing and textiles, die processing, as well as other industries. (b) Shares obtained by dividing valid responses for each region and industry.
Source: MITI, (1999), 29th Survey of Overseas Business Activities, Fiscal 1999, MITI (See http://www.jetro.go.jp/it/e/pub/whitepaper/trade2000/1-6.html.)

Trade liberalisation in the ASEAN region is behind the trend towards global parts sourcing, which is forcing Thailand's components industry to improve both quality and bring down prices. However, many local firms do not have the resources and know-how to easily achieve these goals. From 1 January 2000, when local content regulations were lifted automobile manufacturers located in the region have been able to source parts from anywhere in ASEAN.[8] Even though WTO commitments pressed for this change, the business environment has actually tended to increase local content levels, rather than reduce them.

The Japanese automotive industry has sought to reinforce ties between the Japanese automotive industry and its subsidiaries and associated companies in ASEAN. Table 3.8 illustrates the range of linkages in the case of Toyota. The procurement policies of Japanese companies and the development of supporting industries in ASEAN have been a priority in recent years. The Japan External Trade Organisation (JETRO) has developed a database designed to better match Japanese buyers with ASEAN suppliers, thereby encouraging increases in the capacity and capabilities of local industries in ASEAN.

Case Study: Procurement by Toyota Thailand

In November 2000, Toyota Motor Co. announced that it would raise the local content ratio of its products in Thailand to 100 per cent by 2003 in an effort to improve its profitability. Already many local assemblers are producing vehicles with a high level of Thai content. Toyota Motor Thailand currently has 80 per cent local content for its cars and 54 per cent for its pickup trucks. The company sources components and materials from over 100 local suppliers.[9] Similarly, AutoAlliance, the joint Ford-Mazda assembly plant in Rayong, turns out Ford Ranger and Mazda Fighter pickups with 70 per cent local content. Mitsubishi expects to lift local content to 80 per cent for pickups (up from 60 per cent) and 60 per cent for cars (up from 50 per cent).[10]

[8] However, according to Mr Pramote Pongthong, president of the Thai Auto Parts Manufacturers Association, 'Local suppliers will continue to deliver parts for existing models but model changes will increase competition with imported components.' Ibid.

[9] In a recent interview, Mr Yoshiaku Muramatsu, President of Toyota Motor Thailand (TMT), stated that: 'Our policy is local sourcing but every purchase depends on quality and price competitiveness."

[10] The president of AutoAlliance (Thailand), Mr Toshihide Saeki, has stated that: 'Tough competition will force automakers to produce higher quality cars at cheaper cost, so local suppliers must rapidly raise their competitiveness and quality to reach global standards'.

3.5 Product Strategies

There is a different automobile market in each ASEAN economy which reflects a range of excise and tariff arrangements that influence the choice of passenger and commercial vehicles by consumers in these countries. Only in Malaysia do commercial vehicles not receive significant incentives compared to passenger vehicles, so that commercials are much more popular in Thailand, Indonesia and the Philippines.

Each Japanese producer has targeted different product ranges…

Each Japanese automobile producer has targeted different product ranges in each ASEAN market., according to their particular competitive advantages. Mitsubishi Motors, for example, has a new mid-term business plan covering the period through fiscal 2003, called "Heart Beat 21," under which the company expects to boost ordinary profits to 100 billion yen and target Japan, other Asian countries (including ASEAN) and North America as its leading markets. There will be no change in the lineup of existing Mitsubishi models, with its Dynamic Family Wagon (DFW), L300 van and 1-ton pickup truck L200 Strada marketed as its main range of vehicles.

Mitsubishi intends to use Thailand as its global production base for 1-ton pickup trucks, exporting the Thai-made L200 Strada to 83 countries. Mitsubishi does not intend to shift passenger car production to Asia although demand for passenger cars is increasing in the region. In view of the current ASEAN market situation, Mitsubishi will integrate the production of DFW parts and strengthen the parts complementary system in the region.

Table 3.6 Toyota's Operations in ASEAN4 and China, by Company and Product

Country/ location	Affiliated company	Entry date	Main products
Thailand	Siam Toyota Manufacturing	1989	Engines
	Thai Hino Industry Co.	1969	Dyna
	Toyota Auto Body Thailand	1979	Stamped parts
	Toyota Motor Thailand	1964	Camry, Corolla, Soluna, Hilux, etc
Philippines	Toyota Autoparts Philippines	1992	Transmissions, etc
	Toyota Motor Philippines Corp	1989	Camry, Corolla
Malaysia	Assembly Services Sdn. Bhd.	1968	Camry, Corolla, Dynda, Hiace, etc
Indonesia	P.T.Toyota-Astra Motor	1970	Crown, Camry, Corolla, etc
China	Tianjin Fengjin Auto Parts Co. Ltd.	1998	Constant velocity universal joints
	Tianjin Jinfeng Auto Parts	1997	Steering assembly, Propeller shafts
	Tianjin Toyota Motor Co.	2002	New compact passenger cars
	Tianjin Toyota Motor Engine Co.	1998	Engines

Source: Toyota (2000), *Suppliers Guide for Doing Business with Toyota*, p14.

Most Japanese automobile companies in ASEAN have used recycled models and platforms developed for other markets, with modifications for local conditions, rather than relied on the development of a product designed solely for the region. Nissan has traditionally dealt with the Asian market through the redesigning of existing models, but is likely to market new models simultaneously with the expected recovery of the Asian auto market in 2004 or 2005. Nissan Motor Company has been involved in a capital tie-up with French automobile manufacturer Renault since 1999 and is restructuring under the 'Nissan Revival Plan'. According to the company, the marketing of new models will be preceded by the establishment of a mechanism under which Asian bases will complement each other.

Nissan's main models in the ASEAN region are the Sunny (compact class) and the Cefiro (large class). The Cefiro is a luxury car aimed at Taiwan, while the Sunny is aimed at the markets of Thailand, Malaysia and the Philippines. The company is reworking the design of existing models up to 2002, after which it will start marketing new models. Nissan's regional strategy is to have Asian bases complement each other through the process of redesigning and marketing new models. For parts manufacture, Nissan will focus on press parts for passenger cars and then expand parts production to include air-conditioners, seats, meters and engine pistons.[11]

Table 3.7 Case Study: Renault's Investment in Nissan's Regional Operations (per cent)

Nissan Subsidiary	Renault Equity Holding in Nissan Subsidiary
Thai Automotive Industry (Thailand)	35.0
Siam Motors and Nissan (Thailand)	25.0
Siam Nissan Casting (Thailand)	30.0
Siam Metal Technology (Thailand)	25.0
SNN Tools and Dies Co (Thailand)	27.8
P.T. Ismac Manufacturing (Indonesia)	35.0
Nissan Motor Philippines (Philippines)	23.0
Yulon Loone Motor Co. Ltd (Taiwan)	25.0

Source: JAMA (2000), *The Motor Industry of Japan* (2000), Tokyo.

The strategies of the newly entering American and European automobile companies reflects their initial marginal position and ability to make a fresh start by focusing on larger-scale, more specialised production and exports. Ford's corporate strategy in ASEAN is to have single motor vehicle lines in each country, which can then be utilised for regional trade as AFTA proceeds. The company has a 'specialisation and complementation business strategy' for the region which includes a focus on truck production in Thailand and car production from its newly built factory in the Philippines (Tyndall, 2000).

[11] Product information taken from Nissan brochures and AutoAsia surveys.

Although Ford withdrew from the ASEAN market in the 1980s, the availability of the managerial know how and supplier network that Mazda established in ASEAN has allowed the OEM to effectively reenter the regional market with good prospects of expanding its market share (Toyama, 1999).

3.6 Trade Opening and Corporate Restructuring

The rationale of the development of the ASEAN automobile industry behind import barriers has long been one of industry development, although after three decades of protectionism many of these industries still lack international competitiveness. As English (1980, p114) noted:

> The motive of individual automotive companies to assemble a few hundred or at most a few thousand units has to be defensive. No major international producer likes to be left out of a region, especially if there is any possibility that the regional market could eventually become large. To be left out is to concede market share and risk longer-term loss on its product and marketing investment. Hence small, protected branches, joint ventures or licensed domestic affiliates proliferate. To rationalise the situation is very difficult in the case of the automobile industry since the product has a high public profile, and closure or consolidation of automobile plants is likely to generate political criticism.

The trade policy approach of each of the ASEAN4 countries has varied significantly in recent years, with Malaysia choosing to preserve its national car industry as a high priority, whereas Thailand has shifted to a more open trade policy (Nipon and Chayanit, 2000). Decisions in the early 1990s to cut tariffs help increase sales in Thailand and to attract the attention of foreign investors. The Thai strategy was to move first and establish its industry as a regional hub. In November 1997, restrictions on foreign shareholding in this sector were also removed. The Thai Government, after the crisis, decided in early 2000 to relax restrictions on the sourcing of auto parts from overseas where the local content rules were also abolished.

The Thailand policy change has attracted large-scale production from international automobile companies, such as a GM's decision to locate a plant in Thailand with a capacity of 150,000 and a Ford investment in a plant in Thailand with production capacity of 135,000. In contrast, over the past three decades, Japanese assemblers established a considerable number of plants in Asia, but less than ten plants of these are over 100,000 units in capacity because of the emphasis on import-substitution operations (Takayasu and Toyama, 1997).

To many industry observers, Thailand has chosen a more effective long-term policy:

> Thailand took the most effective approach in shunning protectionism to allow foreign car makers to take the lead in developing the local industry. In contrast, Thailand's main Southeast Asian competitors, Indonesia and Malaysia, tried to

> get their car sectors off the ground by building national cars and by restricting foreign investment. Thailand and the Philippines have been the most active in developing an open and competitive market with strong local sales and manufacturing base as well as an emphasis on developing an export base through open market competition. By comparison Malaysia has tried to develop its automotive sector through closed protectionist policies.[12]

The higher profile taken by Ford and GMH in the region is also important for trade structure, since their share of the ASEAN automotive market is increasing from its previous negligible share. Notably, Ford announced in May 2001 that it is seeking to initiate a multi-million dollar regional production swapping agreement between its Thailand and Philippine subsidiaries and is asking Bangkok and Manila for preferred duties under the ASEAN Industrial Cooperation (AICO) scheme.[13]

Ford is pursuing two-way trade between its Thailand and Philippine subsidiaries at preferred duties of between 0-5 per cent under the AICO scheme. However, the pursuit of the ASEAN Free Trade Agreement (AFTA) remains a priority for international investors in the region.

AFTA is a priority for international automotive companies in the region and its implementation will significantly change ASEAN trade structure…

The President of Ford Asia-Pacific Operations, Mr Koshkarian, recently stated that AFTA would absolutely change automotive production and marketing in the region:

> Currently, cars are much higher-priced in ASEAN then in the US. Even after AFTA, retail prices still will be higher due to a lack of competitiveness of local suppliers and higher tariffs for CKD imports. But AFTA can lead to large scale production and export opportunities like in Thailand, where Ford started producing from scratch in 1998. Today we have a 12 per cent market share and export to more then 60 countries! [14]

3.7 Components and the Automotive Supply Chain

The ASEAN parts industry is comparatively small and fragmented (Table 3.10). Japanese automobile companies in the region have for some time sought to create regional specialisation in the member countries of ASEAN4 especially, using the various complementation schemes that have been adopted by ASEAN.

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[12] Cheesman, B. (2000), 'GMH engineers Thai auto hub', *AFR*, 27 October 2000.

[13] Ford Motor Co. Philippines is planning to assemble the Escape SUV and Laser/Lynx/Mazda 323 sedan at its Sta. Rosa plant for export to Thailand and Indonesia. In exchange, Ford's Thai subsidiary, AutoAlliance (Thailand), would ship Ranger pickup trucks and Volvo passenger cars to the Philippines. AutoAsia, 9 May 2001.

[14] AutoAsia, 19 April 2001

Table 3.8 Structure of the Automobile Parts Industry in ASEAN, 1998

	Thailand	Indonesia	Malaysia	Philippines	Singapore	ASEAN5
			ASEAN market sales			
1998	144,065	58,198	144,232	81,062	37,493	465,050
1999	218,330	94,023	288,210	74,282	49,009	723,854
			Total number of parts manufacturers			
Number	750-800	150-200	200-250	150-200	~50	13-1500
Japanese affiliates or subsidiaries						
Number	209.0	82.0	61	54	17	423
Share (%)	27.0	46.9	27.1	30.9	34.0	30.2
US and European affiliates or subsidiaries						
Number	21	7	19	5	4	56
Share (%)	2.7	4.0	8.4	2.9	8.0	4.0

Source: Jochen Legewie, (1999), 'Japanese firms and the development of the ASEAN Automobile Industry', Deutsches Institut Fur Japanstudien, *Working Paper*.

Nippondenso has also supported the concept of regional specialisation in parts and components and has centred its production of alternators and starter motors in Thailand; the production of air conditioners in Malaysia; the production of compressors and spark plugs in Indonesia; and the production of meters in the Philippines (Table 3.11).[15]

Traditionally few parts and materials were actually sourced in ASEAN by Japanese automobile companies, with local content limited to simple processing and manufacturing operations, as well as basic materials such as paint, glass, simply caste and forged parts, if delivery and cost considerations allowed it. The development of regional specialisation still requires the achievement of minimum standards by parts and component manufacturers, such as the ISO 9000 certification – a set of basic international standards for quality management – which is necessary for tier 1 or 2 suppliers to the major automobile companies.

Japanese companies have reacted to the Asian economic crisis, and the significant changes in exchange rates between home and host countries, by seeking to increase their procurement of parts and components in the region. An example is the removal of cold weather processing of Japanese cars made in ASEAN, so as to lower costs. They are also seeking to standardise platforms for car production to prepare for global procurement.

Parts and component manufacturers in ASEAN, which are often subsidiaries of Japanese companies, need to access the global supply chain by forming linkages with module suppliers to OEMs. The existing relationship with parent and associated companies is becoming weaker – particularly for Nissan and Mitsubishi – which are partly foreign-owned. Increasing Western investment in a number of Japan's major OEMs is opening up the traditionally closed system of procurement from keiretsu group suppliers.

[15] See Ishizaki, Y. and M. Mori (1996), 'Present Situation and Issues Concerning the Automobile Industries in Individual Countries (in ASEAN)', *RIM, Pacific Business and Industries*, Vol. III, No. 33.

E-commerce Procurement Strategy of DaimlerChrysler in Asia

DaimlerChrysler has invested more than US$290 million buying equity stakes in Internet companies such as Powerway and Cobalt Group. The company recently consolidated its internet business activities into a new unit called DCX Net to improve co-ordination and efficiency from parts procurement to retail sales. DCX Net starts life with a capital base of US$500 million and will work closely with independent e-business firms and make its own technology investments. DCX Net will cover all of Daimler e-business activities from business-to-business (B2B) procurement to business to consumer (B2C) sales and marketing and telematics online vehicle and fleet management systems. [16]

Nissan is beginning to source components from outside its keiretsu grouping…

Nissan, for example, which has been partly acquired by Renault is beginning to source components from Toyota group suppliers because of better price or quality.[17] Denso, one of Toyota's biggest affiliates, will supply a common-rail fuel injection system for diesel versions of Nissan's X-Trail SUV, with orders rising sharply to US$12.6 million in 2001. Similarly, Aisin Seiki Co., is supplying seat parts, intake manifolds, aluminium bumpers and door parts to Nissan for use in its remodeled Cima luxury sedan, while Aisan Industry is supplying a module component consisting of an accelerator pedal fitted with an angle sensor.[18]

Table 3.9 Trade in Parts and Components for ASEAN (Denso production)

Country	Parts and Components
Thailand	Starters, alternators, wiper motors
Indonesia	Compressors, spark plugs, bus A/C
Malaysia	Engine ECU, A/C amplifiers, relays
Philippines	Instrument clusters

Source: Thailand Bank of Investment (http://www.boi.go.th).

One of the key issues for ASEAN automotive exports to Japan is whether Japanese companies in ASEAN react to the opportunities to relocate parts production to ASEAN. Secondly, it is unclear as to whether regional parts and components producers can become more competitive and able to utilise the newly emerging e-commerce marketing opportunities to supply the major automotive assemblers in Japan and other countries.

[16] DaimlerChrysler, *Press Release*, 20 October 2000.
[17] *AutoAsia*, 8 March 2001: 'Nissan Motor turns to Toyota group suppliers'.
[18] Ibid.

Table 3.10 Complexity of Automotive Parts and Components

Suppliers Within Keiretsu Relationship for Parts and Components (a)		Other Suppliers (b)
Complex Parts and Components	Less Standard Parts and Components	Standard Technology Parts and Components
Connecting rod	Steering gauge	Battery
Engine metal	Suspension spring	Spark plug
Piston	Stabililiser	Fuel pump
Piston pin	Disc brake	Ignition coil
Piston rings	Drum brake	Electrical fuel injection
Timing belt	Brake cylinder	Starter
Oil cooler	Brake booster	Starter
Carburetor	Window glass	Alternator
Pressure regulator	Radiator grill	Indicator
Seat belt	Side mirror	Control Gauge
Fuel pump	Make	Wiper
Fuel filter	Door handle	Window washer
Fuel tank	Door hinge	Cigarette lighter
Charcoal canister	Door weather strip	Headlamp
Air cleaner	Door lock	High mounted stop lamp
Inter-cooled manifold	Window regulator	Pressure unit
Exhaust manifold	Head rest	Horn
Muffler	Seat belt	Meter
Oil pan	Steering grip	Wire harness
Oil pump	Panel	Power lever
Radiator	Ash tray	Car audio
Rotary pump	Sun viser	Clock
Water pump	Axle pedal	Other Parts
Semi-starter	Clutch pedal	V-belt
Clutch release cylinder	Brake pedal	Oil filter
Clutch master cylinder	Combination switch	Clutch facing
Change lever	Air conditioner	Power steering hose
Main transmission	Heater	Shock absorber
AT lever		Brake pad lining
Door control lever		Brake tube
Power steering		Tyre
Steering hose		Stabilizer
Steering joint		Wiper blade

Note: (a) Components that require special knowledge (proprietary knowledge) of the manufacturer. Typically know-how is sourced from the assembler companies, which are the main market for the in-house (keiretsu) suppliers; (b) General parts and components typically sourced in the after market.
Source: See Appendix 1

Corporate organisation affects patterns…

An appropriate corporate organisation has been argued to be necessary to facilitate trade (Nobeoka, 1998). One marketing opportunity lies through intra-industry trade between subsidiary and parent companies, within keiretsu groupings. The alternative approach is

to specialise in standard automotive parts and components which are sold on the aftermarket and which incorporate standard technology. The increasing scale of newer automotive plants in ASEAN and recent currency changes suggest that producers in the region can become competitive, especially in more standard parts and components, as listed in Table 3.12.

Without utilising corporate ties, it is very difficult for ASEAN auto producers to specialise in parts and components which incorporate complex technology…

It is likely to be much more difficult for independent ASEAN producers to become regional or global suppliers of automotive parts and components which incorporate more complex technology or less standard production processes, unless such technology and production processes are transferred to the region. However, Japanese and Western automotive companies are re-examining their trading and procurement strategies and may give their ASEAN subsidiaries a clearer regional role if their international competitiveness changes, which will depend on whether trade barriers come down within the region.

Ownership and management structures in ASEAN have changed significantly, but the impact on trade is as yet unclear…

There have been considerable ownership and management changes in both the international and Japanese automotive industries, such as through the acquisition/merger of Nissan by Renault and the acquisition/merger of Mitsubishi by DaimlerChrysler, so that trade and procurement strategies are becoming significantly more flexible. To test the impact of these changes in corporate organisation on trade between ASEAN and Japan, trade data over a ten-year period to 2000 are examined in chapter six to identify trends in exports of automotive parts and components to Japan.

4 COUNTRY PROFILES

4.1 Introduction

This section considers the position of each ASEAN4 member's automotive industry and associated policy approach in more detail, focusing in particular on how policy has shaped industry structure. National governments have supported their car industries as a key sector in the process of further industrialisation, but the high degree of import protection accorded these industries has affected the international competitiveness of these sectors. The promotion of regional automotive trade is one way of improving the competitive strengths of each industry, but the AICO trade concession scheme is only operating on a reciprocal benefit basis.

Japanese automotive companies have long dominated the ASEAN market…

Incumbent Japanese automobile manufacturers in ASEAN have long controlled most of market sales in the region. However, European and American companies have recently re-entered production and are seeking to establish a stronger market position in anticipation of rapid growth in future demand (Table 4.1). Annual sales in the region are expected to grow faster than demand in more mature markets as recovery continues. The success of the incumbent and newly entering companies in this growing market depends on the extent of future opening up of the regional market through tariff liberalisation and their corporate capacities in terms of competitiveness, capital reserves and strategic approach.

Table 4.1 US and European Investments in Japanese Automakers (%)

Investee	Investor	Equity Stake
Isuzu	GM	49.0
Suzuki	GM	20.0
Nissan	Renault	36.8
Nissan Diesel	Renault	22.5
Mazda	Ford	33.4
Mitsubishi	DaimlerChrysler	34.0

Source: (Parts and Materials Committee) Japan Automobile Manufacturers Association Inc (JAMA)

World markets have long been dominated by a group of major original equipment manufacturers (OEMs). Increasing competition has reduced profit margins in the industry and led to a number of major producers becoming overly reliant on debt-financed expansion. This led to the virtual takeovers of Mitsubishi by DaimlerChrysler and Nissan by Renault in 1999 which has changed the position of Western and Japanese manufacturers in the ASEAN market, as well as the corporate strategy of these firms.

Linkages between companies have increased…

Linkages between leading manufacturers through joint investment and other collaborations have also increased. These include combined research and

development, such as between Ford and Toyota to develop a new fuel cell car, cost reduction through the use of standardised parts and components (Tyndall, 2000).

In 1990 Japanese automobile manufacturers held over 90 per cent of local production, but this recently fell to 85 per cent with challenges from Ford, General Motors and DaimlerChrysler. If account is taken of the significant linkages of these three Western majors with a range of Japanese firms in the region, their share of production and distribution networks in the ASEAN market has risen considerably.

American and European automotive companies have begun to expand in ASEAN…

In Thailand, Ford acquired 10 per cent of the pick up truck market only two years after establishing its new plant. GM aims to produce 100,000 Opel Zafiras annually in Thailand at a newly established factory, which can achieve economies of scale through exports (AutoAsia, 2001). In response, Toyota, Mitsubishi, Honda and Isuzu have begun or increased exports from ASEAN so that they can lower unit production costs and achieve economies of scale. Notably, with this more international approach, major producers, even the incumbents, are now more interested in freer trade.

The incumbent Japanese producers have smaller, fragmented production…

However, the incumbent Japanese firms carry the legacy of decades of fragmented production forced upon them by the changing policies of the ASEAN4 countries. The following table, which details Toyota's operations in the region, is a good illustration of the small-scale nature of established automotive production. Toyota had a joint venture in Indonesia with Astra until early 2000, which had been established since 1970 – producing six different vehicles on a basic assembly basis - but the total volume was only 26,000. Similarly, its Philippines subsidiary assembles around 18,000 vehicles of three model types, so that the average production run is quite small.

Toyota prepared for free regional trade by fostering specialisation…

In the 1990s, Toyota increased the range of automotive parts and components produced in ASEAN4 on the basis of the perceived competitive advantage of each member economy, in preparation for freer regional trade under the Common Effective Preferential Tariff (CEPT) system of AFTA. Hence Toyota's subsidiary in the Philippines specialises in transmissions; the Thailand subsidiary specialises in stamped parts and engines; the Malaysian subsidiary specialises in engines; as does the Indonesian subsidiary – although the scale of production differs significantly. Notably since mid-1997, Toyota has established a wider range of plants in China to produce key parts and components, including continuous velocity joints, forging parts, steering parts and shafts – whereas the capacity to produce such automotive products in ASEAN is not well developed (Table 4.2).

The Asian and ASEAN4 region strategies of the major incumbent Japanese and newly entering Western automobile producers are considered in Table 4.3. Given their already significant market shares in the region, apart from China, the Japanese companies are mainly interested in the maintenance of their current market shares. Toyota and Nissan have both been seeking to establish 'complementary systems' of production in the region, based on specialisation in parts and components. Nissan and

Mitsubishi have the additional strategy of seeking to raise their profit level in the region through cost-cutting and other measures – due to heavy debts incurred by their parent companies.

Table 4.2 *Toyota Automotive Operations in Asia, 1999*

Country	Toyota Subsidiary	Start of Operations	Products	Number of Employees	Unit Output
China	Shenyang Jimbei	Nov. 1991	Hiace	6,500	38,305
	Tianjin Jinfeng Auto Parts P/L	June 1997	Steering parts, Propeller shafts	1,100	-
	Tianjin Toyota Motor Engine Co.	June 1998	Engines	1,600	-
	Tianjin Toyota Forging Co.	Dec. 1998	Forging parts	60	-
	Tianjin Fengjin Auto Parts	May 1998	Continuous velocity joints	200	-
	Sichuan Toyota Motor Co.	Jan. 2000	Coaster	200	-
Indonesia	P.T. Toyota-Astra Motor Co.	May 1970	Camry, Corolla, Crown, Dyna, Land Cruiser, TUV, engines	3,950	26,439
Malaysia	Assembly Services Bhd.	Feb. 1968	Camry, Corolla, Dyna, Hiace, Liteace, Hilux, Lamd cruiser, TUV, engines	712	13,966
	T & K Autoparts Sdn Bhd	July 1992	Steering gears, suspension lower ball joints	98	-
Philippines	Toyota Autoparts Inc.	Sep. 1992	Transmissions	445	-
	Toyota Motor Philippines Corp.	Feb. 1989	Camry, Corolla, TUV, engines	1,446	18,455
Taiwan	Kuozui Motors Ltd.	Jan. 1986	Corona, Tercel, TUV, Hiace	2,132	74,910
Thailand	Siam Toyota Manufacturing Co.	July 1989	Engines	708	-
	Thai Hino Industry Co.	Aug. 1969	Dyna	539	330
	Toyota Auto Body Thailand	May 1979	Stamped parts	87	-
Vietnam	Toyota Motor Vietnam Co.	Aug 1996	Corolla, Hiace, Camry, TUV	364	2,301

Source: *Toyota and the World*, 2000.

Table 4.3 Asian Strategies of Major Automobile Manufacturers, 2000

Firm	Target/ Period	Target Markets	Production bases, production system	Main affiliated automobile manufacturers	Main Export Destinations	Planned Strategic Cars
Toyota	Maintenance of market share	ASEAN, China, India	Establishment of complementary system through full use of production bases, with Indonesia to become mother factory for TUV	Daihatsu	Mainly ASEAN region	TUV, Yaris, Soluna, Corolla
Honda		Japan, ASEAN, North America	Japan, Thailand, North America, United Kingdom		From Thailand to Australia and New Zealand	City, Accord, Civic, CR-V
Nissan		ASEAN4, Taiwan	Establishment of complementary systems in ASEAN4 and Taiwan	Renault		Datsun truck, C22 Vanette, Cefiro, Sunny
Mitsubishi	Boost ordinary profits to 100 billion yen by 2003	Japan, ASEAN, Asia, North America	Thailand to become production base for 1-ton pick-up truck	DaimlerChrysler	L200 exported to over 80 countries, DFW intended for Asia	L200, L300, DFW, Gallant, Lancer
General Motors	Boost Asian Pacific market share to 10% in 2010	Thailand, Indonesia, China	Production in and export from Thailand, China, Indonesia, India	Opel, Isuzu, Suzuki	Asia, Europe, North America	Zafira, YGM-1, SUV
Ford	Boost Asian market share to 10% by 2007		Thailand	Mazda		Laser, Focus and others
Daimler Chrysler	Boost profit rates in Asia to 25%	Consignment CKD production in Australia, China, Japan and Thailand	Small strategic cars to be produced in Thailand. China likely to become base for production of multi-purpose cars	Mitsubishi	Worldwide	Smart, A-class cars and 4-seat cars are considered as small strategic cars

Source: Overseas JETRO reports.

General Motors and Ford have specific targets for increased market share in ASEAN and the wider region, which is accomplished would give them 20 per cent of the market, excluding the established minor market shares of their Japanese affiliates Isuzu, Suzuki and Mazda respectively. For DaimlerChrysler, which has achieved virtual control of the significant Mitsubishi production and distribution network, significant expansion in ASEAN appears unlikely and China is the main focus for expansion in the Asian region (JETRO, 2000).

Table 4.4 General Motor's Major Automotive Industry Ties in Asia

Automotive Tie-up	Description
Fuji Heavy Industries	GM has a 20 per cent equity stake in the company
Ta China Motor Co. Ltd (Taiwan)	Fuji Heavy Industries has a 45 per cent equity stake in the company
Auto Works of China Guizhou Aviation Industry Corporation	Fuji Heavy Industries has a 25 per cent equity stake in a joint venture for the production of auto parts
Isuzu Motors	GM has a 49 per cent equity stake
Isuzu Motors Thailand Ltd	Isuzu has a 47.9 per cent equity stake
Tri-Petch Isuzu (Thailand)	Isuzu has a 0.5 per cent equity stake for the mutual supply of pickups and passenger cars with Honda Thailand
Quingling Automotive (Group) Co. Ltd. (China)	Isuzu has an equity stake of 12.5 per cent
Taiwan Isuzu Motors Co. Ltd.	Isuzu has a 51 per cent equity stake
Suzuki (Japan)	GM holds a 10 per cent equity stake
Prince Motors Co. Ltd. (Taiwan)	Suzuki has a technology tie-up with the company
Daewoo Motor (Korea)	Suzuki has a technology tie-up with the company
Ford Lio Ho Motor Co. Ltd. (China)	Suzuki has a technology tie-up with the company
Indomobile Suzuki (Indonesia)	Suzuki has a 35 per cent equity stake
Vietnam Suzuki Corp (Vietnam)	Suzuki has a 44 per cent equity stake
Jiangxi Changhe Suzuki Automobile Co. Ltd. (China)	Suzuki has a 39 per cent stake
Chongquing Changan Suzuki Automobile Co. Ltd. (China)	Suzuki has a 35 per cent equity stake

Source: JAMA (2000), *The Motor Industry of Japan* (2000), Tokyo.

Japanese producers have focused on a regional strategy in ASEAN…

Western and Japanese companies have different strategies…

In terms of export orientation, there are clear differences in the strategies adopted by the established Japanese companies and the three international majors. While Toyota, Mitsubishi and Nissan are aiming just to supply domestic markets or the ASEAN market, the three internationals have a more global approach of exporting from Thailand and China especially, to markets in Europe, Asia and North America. Only Honda of the incumbents has targeted significant exports outside ASEAN, with its

Thailand subsidiary exporting to Australia and New Zealand (Table 4.3). Virtually all producers are focusing on small strategic cars for the passenger car market, while

An important aspect of the description of regional corporate plans of the Japanese, American and European automobile producers given in Table 4.3, is that Malaysia does not feature as a base for regional exports, or as a niche producer of parts, components or vehicles in the international automotive supply chain. This isolation of Malaysia, which has one of the most developed automotive, machinery, fabrication, electronics and design capacities of the ASEAN4 countries, reflects the antipathy of international producers towards the protectionist trade policy of the Malaysian Mahathir Government. A review of the Asia-Pacific operations of General Motors supports this proposition (Table 4.4) since the company has chosen not to affiliate with either of the Malaysian national car producers, or associated parts and components manufacturers.

Table 4.5 Corporate Links of an Incumbent: Mitsubishi's Automotive Industry Ties in Asia

Automotive Tie-up	Description
Hyundai Motor (Korea)	Equity stake of 1.8 per cent
Proton (Malaysia)	Equity stake of 8.0 per cent
MMC Sittipol (Thailand)	Equity stake of 46.23 per cent
Vina Star Motors Corporation	Equity stake of 25 per cent
China Motor Co. Ltd. (Taiwan)	Equity stake of 14.6 per cent
Hunan Changfeng Automobile Manufacturing Plant (China)	Equity stake of 20 per cent

Source: JAMA (2000), *The Motor Industry of Japan* (2000), Tokyo.

Despite long-established automotive production and distribution networks in the region, the Japanese incumbents continue to focus on the domestic markets of the ASEAN countries, without tending to establish export linkages with the world market. The regional corporate links of Mitsubishi (Table 4.5), show an international network comparable with the three internationals, but corporate strategy is oriented towards supplying the domestic markets of these countries.

4.2 Thailand

Thailand has traditionally had one of the largest automobile market in ASEAN, which peaked at 570,000 units in 1996. The development of the automotive industry in Thailand followed a similar path to the other ASEAN4 countries until the Asian economic crisis, with an emphasis on high barriers to imports of finished vehicles, but with a continuing dependence on rising imports of parts and components used in their assembly. The orientation of the industry was increasingly towards the expanding domestic market, but its international competitiveness worsened significantly with the exchange rate changes after 1996 (PECC, 2000).

The economic crisis in Thailand led to its trade deficit expanding to US$16.6 billion, or 9.1 per cent of GDP in 1998 (Toyama, 1999). As a result, domestic automobile

market fell from a peak of 590,000 units in 1996 to 144,000 in 1998. Overall investment to the region was also affected by the crisis. Japanese FDI to ASEAN fell in both 1998 and 1999 due to the static state of the Japanese economy and weak demand among industries in the ASEAN region that depended on domestic demand (JETRO, 2000).

Thailand has made more steps to internationalise its industry…

The Thai Government raised import duty on CKD passenger cars from 20 per cent to 33 per cent on 1 January 2000 to give the local parts industry time to adjust. Import duties on key raw materials for the automotive industry still range from 20-42 per cent. At the same time, the Thai Government has taken steps to further internationalise its economy, including the automotive industry. On 1 January 2000, Thailand's local content regulations were lifted, so that manufacturers located in the country are now able to source parts at the lowest prices including in South East Asia. The removal of local content requirements was effective for both new and existing projects.

Freer foreign investment policy is making Thailand the 'Detroit of the East'…

Thailand has also liberalised its foreign investment policy to permit rights to full foreign ownership. Thailand has made the most policy changes of the ASEAN countries so far to internationalise the automotive industry, Thailand has increasingly become known as the 'Detroit of the East' because of the concentration of Japanese and Western car and component manufacturers.

The lack of restrictions on sourcing and the absence of rules or restrictions on foreign investments has certainly been attractive to foreign investors. Higher protection also adds to profits on local sales, at least in the short run until AFTA commitments are implemented. Thailand is also benefiting from some first mover advantages, important in a industry where scale of production is an important determinant of costs.

However, there has been some slowing of market opening…

Further, to ease liquidity problems and to accelerate exports, the Thai BOI announced that BOI-promoted companies in 11 industries would receive an extension of their exemption from import duties on raw materials, until January 2001. These industries included automobile components. There are still a number of distortions in the policy mix affecting the automotive industry in Thailand, such as the scaling of excise tax.[1]

Other attractions of Thailand are the scale of the market and the mix of sales. Since the Asian crisis Thailand is exporting a range of lightweight utilities vehicles such as the Hilux to other countries, including the Hilux to Australia. Thailand's automobile exports to Australia have increased to 65,000 vehicles, or 40 per cent of total exports, with the value of exports increasing from $147 million in 1998 to $700 million in 2000. Mitsubishi and Ford have become the leading exporters, followed by Toyota

[1] Under the current arrangements there is no excise tax for vans in Thailand, but cars are taxed at 37.5 per cent (less than 2,400cc), 43 per cent (2,400-3,000) and 50 per cent (above 3,000). If the car has at least 10 seats, however, it can be classified as a van. Hence large MPVs such as the Toyota Granvia and the Nissan Elgrand have had extra seats installed that could be removed later by the purchaser. *Bangkok Post*, 28 January 2000.

and Honda. General Motors is aiming to export 80 per cent of local output, mainly to Europe.[2]

Thailand has a number of competitive strengths…

Thailand has developed a number of competitive strengths as an automotive producer, particularly as a producer of commercial light trucks, which is being further extended. The new policy environment is already attracting a significant inflow of foreign investment, in sharp contrast to the small investments made in the protected Malaysian market by international car and component producers.

Table 4.6 Thailand, Exports of Automobiles and Auto-parts ($US million), 1995-1999

Product Category	1995	1996	1997	1998	1999
Total car exports	97	197	593	711	1,267
Passenger cars	16	11	70	71	125
Commercial cars	81	186	532	640	1,142
Total parts and accessories	617	674	790	885	1,021
Total exports of cars and car parts	714	871	1,383	1,596	2,288

Source: Poapongsakorn, N. and C.Wangdee (2000).

The pressure to increase procurement rates, regardless of the easing of local content restrictions, is allowing international producers to assess the most suitable types of component production to be upgraded in Thailand, free of regulatory distortions. Already engine production has become a significant success, with sharp reductions in imports of engines and a switch to exports (See Tables 4.6 and 4.7).

Table 4.7 Thailand, Imports of Automobiles and Auto-parts ($US million), 1995-1999

Product Category	1995	1996	1997	1998	1999
Total car imports	1711	1341	600	152	468
Passenger cars	1553	1120	530	125	439
Commercial cars	158	221	71	27	29
Total parts and accessories	3860	3779	2008	633	1214
(Chassis with engines)	1319	1083	424	57	42
Total imports of cars and car parts	5571	5120	2608	785	1683

Source: Poapongsakorn, N. and C.Wangdee (2000).

Toyota Motor Thailand's cars currently have 80 per cent local content and pickup trucks 54 per cent.[3] AutoAlliance, the joint Ford-Mazda assembly plant in Rayong, manufactures Ford Ranger and Mazda Fighter pickup trucks, competes with Mitsubishi, a major player in Thailand, which also produces pickup trucks. Both

[2] For European automakers with lower sales volumes (and therefore poorer economies of scale) than the Japanese controlling procurement costs is of paramount importance. 'Thai suppliers have to globalize their outlook, ideally through joint ventures with global counterparts', stated Ralph-Rainer Ohlsen, President of BMW Manufacturing. 'Since 1990 Thai parts makers have improved their quality standards tremendously but many fail the durability test or are too expensive' according to a spokesman of BMW Thailand. See *AutoAsia*, 11 November 2000.

[3] Toyota's components and materials are sourced from about 100 local suppliers. According to Yoshiaku Muramatsu, President of Toyota Motor Thailand (TMT), 'Our policy is local sourcing, but every purchase depends on quality and price competitiveness.' See *Asian Eye*, June 2000.

companies have achieved a high level of local content, but still have significant problems with the quality and price of parts and components made in Thailand.[4]

Japanese companies have reinforced their subsidiary operations in ASEAN…

Nevertheless, Japanese companies boosted the capital of their local affiliates to allow them to readjust to the changed conditions, with Thailand increasingly viewed as a base for future export operations. Japanese automotive manufacturers began to transfer production from Japan to Thailand, aiming to export to markets outside the region, such as Australia, to maintain operating levels. Honda and Toyota, who transferred 4 and 2 billion baht, respectively made the largest investments, into their Thailand operations and their local suppliers.[5]

Western companies have brought in new investment, oriented to a wider market…

American and Western European manufacturers have increased foreign investment to Thailand in response to a change in the policy approach of the Thai Government towards encouraging both foreign investment and exports. GM and Ford have chosen Thailand as their base for large-scale automobile production and exports in Asia. Numerous foreign assemblers, including Japanese companies, have established operations in Thailand.

Thailand's industrial base has become more advanced than other ASEAN countries, thereby facilitating the establishment of production operations by assemblers. Recently, General Motors Thailand built a $US500 million plant at the Eastern Seaboard Industrial Estate in Thailand, with the first Zafira being assembled in May 2000 and modified for local conditions. The plant has a capacity of 100,000 Zafiras, although initial production is considerably lower. The cars will be exported to Europe, South Africa and Taiwan.

The Automotive Components Sector

At the end of 2000 there were about 1,000 automotive suppliers in Thailand compared with 1,600 before the crisis, with many operating below capacity, despite the recent rise in domestic demand and exports. The economic crisis placed many Thai automotive suppliers in a difficult position because of the drop in domestic demand and constraints on bank lending. As a result, foreign investors acquired more than 300 automotive businesses, most of them wholly Thai-owned, in the three years from 1997, according to the Thai Board of Investment (2000). Many have developed closer ties with Japanese producers, typically through acquisition or equity shares. [6]

[4] Mr Toshihide Saeki, president of AutoAlliance (Thailand) warned recently that: 'Tough competition will force automakers to produce higher quality cars at cheaper cost so local suppliers must rapidly raise their competitiveness and quality to reach global standards'. See *Asian Eye online*, June 2000.

[5] The rescue appears to have benefited the local companies because they could tap into the marketing networks of their parent companies in order to reduce surplus inventories. See *The Bangkok Post*, 9 August 2000.

[6] In the period from mid-1997 to mid-2000, 30 billion baht in foreign capital was invested in the Thai auto sector, with over 300 local companies acquired by foreign investors, according to the Thai Board of Investment. *The Bangkok Post*, 9 August 2000.

The reinforcement process has involved increased technology transfers from Japan and improved quality control in ASEAN subsidiaries…

This process allowed the possibility of closer technology and quality linkages. The direction of Thai industry policy and the business strategy of automotive producers are therefore changing from supplying the local market to exporting to other markets. Increased quality of production in Thailand will strengthen the country's exporting base. [7]

ASEAN producers need to expand scale and access wider markets, for example through competing for sub-contractor status to established assemblers…

For the Thai automotive industry to become internationally competitive, it is critical for local procurement to increase and Japanese and other manufacturers have sought to raise the quality of automobile and parts and components manufacturing. Within ASEAN, the Thai automotive parts industry is a leading supplier in PVC parts, seats and rims due to relatively low labor costs and raw materials. However, an expansion into more complex parts and components, such as body parts, would involve high investment costs and the need for economies of scale. Further, relatively few Thai parts manufacturers meet global standards.[8]

ASEAN producers have technological and production limitations which inhibits their competitiveness inn the market for non-standard automotive parts and components…

Honda Thailand, for example, has found continual difficulties with the quality and reliability of locally sourced material, parts and components in Thailand. This arises partly because of the lack of technological skills of local suppliers and their insufficient financial base. To overcome local manufacturing deficiencies in ASEAN, an increase in general machinery capability is required, according to interviews with Japanese company officials. In Thailand, for example, Honda has invested in a training college, open to all suppliers, but considers that it will take a considerable time to significantly raise productive capacity in this industry (Fieldwork Interviews, February 2001).

The abolition of local content in Thailand will lead to severe restructuring, but new opportunities…

One consequence of the abolition of local content requirements by Thailand is that the newly established American and European assembly operations will probably greatly increase the proportion of materials, parts and components that they source offshore – because of the technical and quality problems of the local suppliers. Whereas automobile producers were required to source 54 per cent of their parts locally before January 2000, there is now no obligation for local procurement. One estimate is that General Motors plans to import almost 85 per cent of its parts for models to be

[7] The country's main auto manufacturing region spreads across the eastern seaboard within three industrial sites in Rayong province. The estates contain BMW, Mitsubishi, Ford and General Motors Thailand Cheesman, B. (2000), 'Acquiring a real taste for Thai takeaway', *AFR*, 25 October, p19.

[8] Mr Orathai Kongsunthornkijkul, deputy director of GTZ Thailand stated in a recent interview that: 'Small and medium-scale Thai suppliers are generally uncompetitive due to low quality and high costs. Their productivity is low because of outdated production processes.' See *Ibid*.

released in 2002 (Veloso, 2000). Nevertheless, Thailand is likely to see increases in both exports *and* imports of vehicles and parts and components as a result of trade liberalisation and market opening.

4.3 The Malaysian Automotive Industry

Automobile industry policy often has political aspects and this is especially true in Malaysia where the incumbent government has publicly supported the development of the national car industry as a symbol of economic development.

> Malaysia's government, and particularly Prime Minister Mahathir Mohamad, has invested a great deal of political capital in the national car industry. As an indication of its psychological importance, Proton's production line graces the 100 ringgit note – the largest in circulation – and Kuala Lumpur is providing all the protection it can muster for the industry. Most significantly, Mahathir has already drawn the ire of his three car-making neighbours – Thailand, Indonesia and the Philippines – by succeeding in postponing implementation of Afta's 5% ceiling on car import tariffs by two years until 2005.[9]

Industry policy and the orientation of the Malaysian industry policy has changed a number of times, but in 1983 Malaysia established its own national car project, the Proton, which is a joint venture between Mitsubishi and the Heavy Industries Corporation of Malaysia (Hicom).[10] The project has both economic and political aims.[11] It is supported by high import barriers and a range of government incentive policies for both the industry and foreign investors[12] In terms of sales. Malaysia's Proton has been the most successful car maker in Southeast Asia, since the venture controls 65 per cent of Malaysia's new car sales, which were around 200,000 in 2000.

Proton has a significant price advantage due to the high import tariffs imposed on imported cars. Production volumes reached 213,000 in 1997, before the economic crisis reduced domestic demand, and Proton accounts for over 60 per cent of the local market. The company is nevertheless reliant on import protection and faces

[9] Holland, L. (2000), 'Moment of Truth', *Far Eastern Economic Review*, 23 November.

[10] Mitsubishi Motors Corporation and Mitsubishi Corporation each hold 8.3 per cent of the company. The rest of the shares are held by the state-owned oil corporation Petronas Bhd. (27.2 per cent), the government investment arm Khazanah Holdings Bhd. (17.5 per cent), other government agencies (9.5 per cent) and the remainder by local and foreign investors.

[11] The chief aim of the New Economic Policy was to encourage the participation of Bumiputra (the indigenous Malaysians) who were economically inferior, in the country's economic activity. But given the lack of Bumiputra capitalists in the private sector, the government had no choice but to provide capital in their place. Indeed the government's equity participation in heavy industries was largely prompted by such political considerations. See Takeuchi, J. 1997, 'The new industrialisation strategy of Malaysia as envisioned in the second industrial master plan' *Pacific Business and Industries* (RIM), Vol. III, No. 37.

[12] On 22 December 1998 the Japanese and Malaysian governments agreed to extend for another year to end 1999 a favourable tax treatment encouraging Japanese companies to invest in Malaysia. Under the two nations' tax treaty, Malaysia currently exempts Japanese firms from paying corporate tax when they invest in Malaysia under certain conditions. The Japanese side then deducts the amount of corporate tax exempted by Malaysia from the Japanese corporate tax levied on such companies, as if the tax was actually paid in Malaysia (Jiji Press).

significantly greater competition because of Malaysia's commitments with the ASEAN Free Trade Agreement and the WTO to eliminate quantitative restrictions and to lower tariffs.

Table 4.8 Production of Passenger Cars and Commercial Vehicles in Malaysia

Year	Passenger Vehicles		Commercial Vehicles		Share (a)
	Units	Increase (%)	Units	Increase (%)	(%)
1980	81,065	–	25,187	–	76.3
1985	69,769	–	42,053	–	62.4
1990	116,979	–	75,054	–	60.9
1991	136,184	16.4	81,099	8.1	62.7
1992	117,773	-13.5	34,750	-56.8	77.1
1993	123,521	5.0	34,929	-0.3	77.9
1994	157,536	27.4	43,834	25.4	78.2
1995	227,727	44.5	61,128	39.5	78.9
1996	280,944	23.4	92,733	51.7	75.2
1997	335,030	19.3	108,140	16.6	75.6
1998	128,979	-61.5	18,370	-83.0	87.5

Source: MIDA

Malaysia has special approval to retain protective automotive tariffs until 2003…

Under the ASEAN Free Trade Agreement, member countries have agreed to cut tariffs to between zero and 5 per cent by 2003, but Malaysia has so far received special approval to retain protective tariffs on automotive imports under AFTA. In August 2000 Malaysia persuaded its ASEAN partners to allow a unilateral pause in the tariff reductions under AFTA that would have increased competitive pressure from imports on the domestic producer. At the ASEAN Economic Ministers Meeting in early October 2000, tensions were revealed between Thailand and Malaysia, the two main car-making countries in ASEAN over the rate at which tariff reductions should occur within the context of AFTA, with Thailand demanding some form of compensation for the extended period of protection for the Malaysian automobile industry.

The Malaysian automotive industry has limited technological independence…

The additional adjustment period allows for further progress with Malaysia's second industrial development plan for the industry. One problem with the national car industry has been its reliance on reengineered versions of Mitsubishi models and platforms (Velosi, 2000). The local industry, backed by the Mahathir Government, is seeking to overcome this design and technological limitation. Proton's new mid-size Waja was unveiled on 2 May 2000, as a 'coming of age' for the Malaysian manufacturer. The new Volvo S40-sized Waja was launched in October 2000 and will be the basis of 11 possible variants, including utility vehicles, MPVs and a four-wheel drive. These cars are to be developed over the next 10 years making the Proton a world-wide volume supplier. The Waja uses the Mitsubishi Carisma platform, upon which the S40 is based, while styling and engineering for the Waja was carried out by Proton and Lotus, which also handled suspension and handling. About 50,000 Wajas will be built each year at Proton's new Shah Alam plant (Proton, 2000).

Recent Malaysian output seeks to upgrade technology and design…

Proton executives consider that the Waja's high local content should greatly reduce the company's foreign exchange outflows and royalty payments.[13] The company considers that approximately RM400 million (US$105 million) would be saved on foreign exchange outflows by minimizing the import content for the car and a further RM500 million on royalty payments over the lifespan of the product. In addition, the company hopes to earn RM450 million in forex inflows through exports (Proton, 2000). According to Proton, the car meets Euro III emission levels and new EU impact regulations, but price may be the main marketing problem.

Proton's corporate direction is significantly influenced by the Government…

The Malaysian Government has also rearranged corporate control of Proton, with the state oil company, Petronas, acquiring a controlling 27 per cent share from automotive group DRB-Hicom in December 2000. Petronas paid RM1 billion (US$263 million) for 25.8 per cent of Proton and took an additional 1.4 per cent through a share issue. The other major Proton shareholders are Khazanah Nasional Bhd (17.96 per cent); KWSP/EPF (11.02 per cent); and Mitsubishi Motors Corp./Mitsubishi Corp. (16.06 per cent). Petronas has indicated that the acquisition will allow it to realize potential synergies in automotive technology and accelerate the integration of the indigenous industry.[14]

The Mahathir Government has allowed smaller automotive producers to emerge…

Possibly, as an insurance policy, the Malaysian Government allowed a consortium of Honda, local industrial group DRB-Hicom and Honda's Malaysian distributor Oriental Holdings, to establish the country's third vehicle manufacturing plant in October 2000. Honda will be manufacturing Hondas, unlike Mitsubishi (the foreign partner in Proton) or Daihatsu, and aims to match Proton's annual capacity of 240,000 units. Initially, however, production will be only 10,000 units annually.[15]

The Automotive Components Sector

The Malaysian domestic auto parts and components industry produces a wide range of component parts for motor vehicle manufacturers and assemblers. To survive in an open trade environment, the industry needs to rationalise their operations and reduce dependence on the domestic market. In 2000 there were 320 passenger car and commercial vehicle parts manufacturers in Malaysia, producing 6,000 components

[13] The Waja program was sparked into life after Malaysian PM Dr Mahathir Mohamad threw down a challenge for the company to design and engineer its own car. Proton subsequently invested more than US$100 million in a modern R&D facility, featuring the most advanced rapid prototype center in South East Asia, the only climatic chamber test lab in ASEAN and the only passenger safety sled in Asia outside Japan and Korea (Proton, 2000).

[14] AutoAsia online service, 12 December 2000, See http://www.autoasia.com.

[15] Oriental Holdings agreed in October 2000 to form a joint venture with Honda Motor Co. and DRB-Hicom to manufacture and distribute Honda cars in Malaysia. The joint company, called DRB-Oriental-Honda and capitalized at M$500 million (US$131.5 million) will be owned 49% by Honda Motor, 36% by DRB-HICOM and 15% by Oriental. The partners intend to build 10,000 cars next year and a flexible assembly line. See *AutoAsia*, 6 October 2000.

parts such as tyres, air conditioners, coil springs, seat belts, radiators, safety glass, airbags, disc brakes, shock absorbers, drive shafts and alternators. Overall, over RM4.6 billion has been invested in plant and machinery in the sector to support the domestic car industry (AutoAsia, 2000).

Scale limitations remain a problem in Malaysia…

A key problem for Malaysia is in not having sufficient capability in the critical engine and transmission components production. To overcome this, the Malaysian Government and Proton have sought to assist parts manufacturers to upgrade their operations and capabilities. In the area of financing, the Malaysian Government has made loans available to SMEs to help them modernise equipment and improve productivity and quality.[16] There are structural weaknesses in the Malaysian parts industry, with 70 per cent of manufacturers dependent on the domestic market and supplying only one domestic vendor (PECC, 2000).

Most firms remain dependent upon foreign technology and are too small…

Most firms are also dependent upon foreign technology and have not significantly upgraded their technical capability. The Government is seeking to develop tier one suppliers by setting criteria on quality, manufacturing practices, technical capability and reliability. For SMEs that are too small and dependent on one vendor, consolidation may be pursued. Significant efforts have also been made to export parts and components. In 1999 products such as radiators, steering wheels and gear boxes wroth RM422 million were exported to Singapore, Thailand and Taiwan (Tyndall, 2000).

Future Prospects

The lowering of ASEAN regional tariff barriers to 5 per cent in 2005 will have a major impact on the Malaysian automobile industry that currently operates behind tariff walls of up to 300 per cent. Proton, the major national car company currently has 65 per cent of the domestic vehicle market, thereby providing significant scale economies for both Proton and its larger suppliers. However, Proton's market share in Malaysia is highly likely to contract sharply once AFTA tariff liberalisation occurs and imports from Thailand begin, whereas Perodua, the other national car company, has only a small share of the market and will also face intense competition.

If the Malaysia automotive market is liberalised through AFTA after 2005, Perodua will need new investment and enlarged capacity is it is to survive in the new environment. Daihatsu, currently a 25 per cent partner in the company (Mitsui&Co holds 7 per cent and three Malaysian firms hold 68 per cent) has indicated it would prefer to take over the management of its Malaysian car production joint venture.[17] Daihatsu, a subsidiary of Toyota, hopes to form a new holding company with Perodua,

[16] See the Malaysian MITI article: (2000), 'Automotive Parts manufacturers Gear up for Greater Competition', May. (http:www.miti.gov.my/.
[17] AutoAsia, 7 May 2001.

in which it will be the major shareholder and hence gain direct management control over the company's vehicle assembly and engine production operations. [18]

Proton needs to upgrade design and technology, as well as scale, which is very difficult without a larger international network…

To achieve international competitiveness in the regional ASEAN market and beyond, Proton needs to continue to upgrade its design and technological capabilities, while at the same time lowering price and focusing on consumer demand. However, this strategy will require further large capital investments, which may not ensure viability against more open competition with international OEMs based in Thailand. Therefore, Proton is likely to require an OEM partner to operate successfully in a more open environment from 2005, whereas Perodua either needs to specialise as a component supplier or to enlarge vehicle capacity.

Potential partners for Proton have been discouraged by the Government, which seeks to retain Malaysian ownership and control of the national carmaker…

So far, a number of potential partners for the Malaysian national car company have established operations in Thailand. However, Mitsubishi, while a partner for Proton, has insufficient resources to expand in the wider ASEAN4 market because of its domestic debt problems. Hence, is probable that Toyota, through its subsidiary Daihatsu, will become more deeply involved in the Malaysian industry, provided that further trade liberalisation and deregulation occurs – the Chairman of Toyota has already indicated that such steps would be necessary before the company formed a joint venture with Proton (AutoAsia, 2000).

Thailand, in contrast to Malaysia, has already established significant linkages with the global automotive assemblers and their tier one suppliers…

The reluctance of the Mahathir Government to concede ownership and management control of either Proton or Perodua to foreign investors further complicates the issue. Further, because of the predominance of Thailand's global automotive connections, Malaysian industry may have difficulty in establishing such ties.[19]

[18] 'The only path open for the smaller, six-year-old Perodua is to expand its role as an assembler for Japanese manufacturer Daihatsu. All its four models are currently based on technology from Daihatsu, and its main advantage is that it has carved out a niche market for the cheapest car on the road in the region. That means Perodua will face no direct competition from other producers within Afta and should have a chance to survive. Negotiations with Daihatsu and its new shareholder, Toyota, are already under way to expand the Perodua plant and make Malaysia a regional export base.' See Holland, L. (2000), 'Moment of Truth', *Far Eastern Economic Review*, 23 November.

[19] Dr. Jochen Legewie, head of the Economics Section at the German Institute for Japanese Studies in Tokyo has stated that: "These Western firms are interested in a wider regional division of labour including India, Korea, Taiwan and probably Japan and China. .In such a scenario, within Asean I only see Thailand as a winner and all the other countries gradually losing out." See *FEER*, 23 November 2000.

4.4 The Indonesian Automotive Industry

Indonesia's automobile industry is characterised by a range of relatively small producers competing in a market which peaked at sales of 387,000 cars in 1997 before the severe impact of the Asian economic crisis led to a collapse in sales to only 58,000 units in 1998. The sharp contraction in the market placed considerable financial pressure on producers, especially Astra, the leading firm, whose factory output fell to 30 per cent or less of capacity, while foreign debt rose to $US2 billion. A significant rationalisation of the industry is occurring as a result, although sales in 2000 have recovered remarkably to almost 298,000 units (Dow Jones, 2001).

Economic recovery in Indonesia has been relatively slow after the Asian crisis…

Despite this, the Indonesian economy has recovered significantly more slowly than the other ASEAN4 economies and considerable problems remain. The banking system has almost $US500 billion in bad loans, unemployment is currently around 14 per cent and the automobile industry is operating at only part of its 750,000 unit capacity.[20] Further, the rupiah has experienced four major devaluations since 1997, hampering the return of international investment. Japanese automobile companies have a dominant part of the Indonesian industry, with around 90 per cent of the market, but since the economic crisis their involvement in the Indonesian car industry has remained on hold.[21]

Up until recently the Indonesian Government intervened actively in the industry…

Automotive industry policy in Indonesia has historically been particularly interventionist and oriented towards the domestic market, with the aim of developing manufacturing capabilities through import replacement. However, the policy has isolated the fifteen local Indonesian assemblers from international competition, while the industry is also vulnerable to variations in exchange rates, due to the dependence upon imported inputs, especially from Japan (Aswicahyono, Basri and Hill, 2000).

In 1999 the Government abandoned the national car plan…

In June 1999, in response to the East Asian crisis, the Indonesian Government decided to liberalise the automobile industry, abandon the national car plan, eliminate local content rules, sharply reduce tariff, modify, luxury taxes and end the prohibition on imports of completely built-up vehicles (CBUs).[22] New CBU tariffs range from 45 per cent to 80 per cent, well below the previous tariffs of 100—200 per cent, while CKD tariffs have fallen from 65 to 25 per cent (Table 4.9). Further, in January 2005, intra-regional automotive trade will be subject to tariffs of 5 per cent or less (PECC, 2000).

[20] Chrysler, M. (2000), 'Indonesia: Automakers Face a Country in Crisis', *Wards Interactive*, 12 December (see http://www.wardsauto.com).

[21] On 8 February 2000 an Indonesian state minister for capital investment and state enterprises, Mr Laksamana Sukardi, called on Japanese companies to step up investment.

[22] On 11 May 2000 South Korea's Kia group, owned now by the Hyundai group, agreed to buy the Indonesian Government's share of the stalled Timor national car project, PT Timor Putra (PT TPN) and revive the program. Talks between the Indonesian and South Korean Governments revived the project, which began in 1996 but was stalled when the Suharto Government lost power.
See 'Astra International' *, FEER*, 10 February 2000.

Table 4.9 Indonesian Tariff Rates under the June 1999 Tariff Reform (%)

Type of Vehicle	CBU's		CKD's	
	New	Old	New	Old
Sedan, <1,500 cc	65	200	35	65
Sedan, 1,500-3,000 cc	70	200	40	65
Sedan, >3,000 cc	80	200	50	65
Minibus	45	105	25	65
Jeep	45	105	45	25
Bus	40	70	25	25
Truck, GVW, <24 tons	40	70	25	25
Truck, GVW >24 tons	5	5	0	0

Note: GVW refers to Gross vehicle weight.
Source Ministry of Trade and Industry, Jakarta and Aswicahyono (2000).

It is likely that the new approach will allow greater rationalisation of production and provide increased possibilities for export orientation, especially in the parts and components area (Tyndall, 2000). Nevertheless, there are significantly reduced incentives for Japanese automobile companies to maintain assembly operations. A spokesman for Mitsubishi Motors, Mr Uchiyama, stated recently that: 'If duties are the same (for CBU and CKD kits) we (MMC) have no reason to assemble here' (AutoAsia, February 2001).

The policy changes have changed the motivation for Japanese automotive production in Indonesia…

Almost 70 per cent of sales in the Indonesian automobile market are minivans such as the Toyota Kijang, the Isuzu Panther and the Mitsubishi Kuda, which although classified as commercial vehicles, are generally used as passenger vehicles. Toyota Astra Motors, is the leading automobile company in Indonesia, but experienced a sharp rise in foreign debt and declining sales as a result of the 1997 economic crisis.[23]

Table 4.10 Share of Imports into Indonesia of Total Intermediate Inputs, 1980-95

Year	Components	Assembly
1980	88	81
1985	74	66
1990	82	48
1995	89	30

Note: (a) Imported intermediate inputs as a share of total intermediate inputs.
Source BPS, Input-Output Tables and Aswicahyono (2000).

The key feature of automobile assembly in Indonesia is the low level of value added, given that imported raw materials and components account for about 80 per cent of the value of inputs used by the industry (Table 4.10). The proportion of local content is increased by the contribution of labour and other local costs, but assemblers are

[23] In 1999 Astra management negotiated a $US2 billion debt restructuring agreement that was accepted by creditors, but the company was subsequently acquired on 24 March 2000 by Singaporean car distributor Cycle & Carriage.[23]

unable to procure most materials and components from Indonesian suppliers. Most local intermediate industries lack economies of scale and technological capacity in areas such metal fabrication and engineering (Aswicahyono, Anas and Rizal, 2000).

Table 4.11 Indonesian Automotive Exports by Value, 1990-99 (a) ($ million)

Year	Vehicles (781-3)	Components (784)	Motor Cycles (785)	Total (781-5)
1990	7.6	6.5	24.6	38.7
1991	4.4	13.2	41.1	58.7
1992	9.6	22.5	110.1	142.2
1993	22.5	24.9	252.3	299.7
1994	18.1	34.4	243.2	295.7
1995	25.6	48.1	246.9	320.6
1996	36.5	62.4	183.6	282.5
1997	39.6	101.7	171.2	312.5
1998	44.9	100.6	164.5	310.0
1999	51.0	109.3	150.4	310.7

Note: (a) Figures in parentheses refer to Standard International Trade Classification (SITC) codes. (b) Includes components for all motorised vehicles. (c) Data are through to September.
Source: Aswicahyono, Anas and Rizal, (2000).

Most areas of the Indonesian industry lack international competitiveness. As a consequence, exports of vehicles, motor cycles, parts and components by the automotive industry are quite small – although component exports have increased somewhat in recent years (Table 4.10).

Recent foreign investment has been restrained…

While foreign investment in the automotive industry has been restrained in recent years, a further influx of capital and knowhow into larger scale automotive and vehicle production appears the main hope for the industry to raise its levels of international competitiveness. The slow recovery of the overall economy from the crisis has discouraged many foreign investors, but the decision to move away from protectionism in June 1999 is a positive point for potential investors. Notably, in early 2000, Proton signed a joint venture agreement to build and distribute its cars in Indonesia. [24] Further foreign investment, including reinvestment by established Japanese companies, appears vital for the restructuring of the Indonesian automotive industry.

However many problems remain and Astra, Indonesia's leading automotive producer, is severely affected by the falling rupiah because of the low value added in its assembly process and overall reliance on imported parts and components. In May 2001 the company indicated that it would find it difficult to meet a US$200 million principal debt repayment due next December.[25]

[24] *Astra International (Far Eastern Economic Review, 10 February 2000).*
[25] AutoAsia, 10 May 2001.

Indonesian assembly operations have been severely affected by currency depreciation and the depressed local market…

Indonesian assembly operations have been severely affected by currency depreciation since there are few opportunities for local substitution for imported parts and components. The weakness of the rupiah against the Japanese yen means that Astra has to pay significantly more for imported components from Toyota, its main strategic partner. Prices may have to be raised by 8 per cent in the second half of 2001, further reducing competitiveness.

The national assembler Astra has limited scope to expand…

Further, due to the sharp depreciation of the national currency against the $US, Astra has large foreign debt. This was restructured in 2000 to about US$1 billion and around Rp1,000 billion in debt to be paid over six years, beginning in 2000. The need for Astra to raise funds for debt repayment prevents it from any expansion in the scale of its Indonesian automotive operations.

4.5 The Philippines Automotive Industry

The Philippines automotive industry is small and fragmented, based on assembly operations. It consists of 14 major assemblers who are supplied by around 200 parts manufacturers, as well as imports, predominantly from Japan. The total market fell to less than 1000,000 vehicles annually after the Asian economic crisis (after a peak of 162,000 in 1996), so that no one producer can possibly attain sufficient scale or international cost competitiveness based only on the domestic market. Capacity utilisation is relatively low (Abrenica, 2000).

Since the crisis, the Philippines has sought to liberalise…

Following the Asian economic crisis, the Philippine government sought to liberalise automotive industry policy, so as to increase its sustainability and outward orientation. The Philippines government intends to retain the tariff for completely built-up units (CBU) at 50 per cent and 30 percent for completely knocked-down (CKD) units for a minimum period of four years, maintaining a gap of 20 to 30 percent. Imported CBU units are charged a 40 percent tariff and CKDs 10 percent. The Government plans to attract new foreign investment from international parts suppliers by lowering tariffs for materials (Tyndall, 2000) but the overall tariff structure for the automobile industry in the Philippines remains complex and distorted.

Local content provisions have been retained…

The Philippines uses the local content requirement to protect local automotive parts and components manufacturers. Under the Trade Related Investments Measures (TRIMs) of the World Trade Organization (WTO), local content requirements imposed by member countries should have been abolished in early 2000, but the Philippines Government sought an extension of trade-related investment measures under the Philippine Motor Vehicle Development Program (PMVDP).

The major Japanese automotive companies are represented in the Philippines…

The main investors and assemblers in the Philippines market have long been Honda, Toyota, Nissan and PAMCO (which assembles Mitsubishi vehicles) which account for 75 per cent of the domestic market for passenger vehicles and over 50 per cent of the market for commercial vehicles (Abrenica, 2000).

Philippines production is small and uncompetitive…

The automotive parts and components industry in the Philippines is characterised by small and uncompetitive producers, with little product standardisation and high cost production. Export revenues from the sector come essentially from a small number of companies that specialise in wiring harnesses, transmissions and stereos. Of considerable importance to the future potential of this sector is the technological backwardness of many firms. As Abrenica (1997) notes:

> But the backbone of the industry consists of small and medium-sized firms handicapped by technologies that are 10 to 20 years behind the frontier. The slow development of the sector compels the government to constantly adjust its target export revenues…The basic problem is the low level of technology in the metal engineering industry, specifically forging and machining…the 1995 levelm of ductile iron technology in the Philippines has not even reached Japan's 1965 level.

The basic cause of the inadequate development of the Philippine automotive industries is the structure of national car industry plans, which have distorted and fragmented the industry and discouraged outward orientation and international competitiveness. Nevertheless, the Philippine automotive parts industry is targeting the export of parts and components and improving ties with multinational suppliers so as to secure global sourcing contracts (Tyndall, 2000).

Vehicle production in the Philippines is unlikely to be competitive after liberalisation of the regional market…

The high cost of vehicle assembly sector in the Philippines means that the sector is unlikely to attain competitiveness with intra-regional imports after AFTA liberalisation is introduced in 2005. Hence assembly manufacturers are likely to phase out their vehicle assembly operations in the Philippines and to focus on the production of the production and export of components, with imported Thai and Malaysian vehicles accounting for a growing share of the market.[26] This restructuring process could be a difficult period for the Indonesian automotive industry.

[26] Hence the OEMs' strategies for the production of the Asian Utility Vehicles (AUVs) such as the Toyota Tamaraw, the Mitsubishi Freeca and the Isuzu's Highlander is of key importance, but all three manufacturers have established significant production facilities in Thailand which are more likely to attain sufficient economies of scale.

5 CORPORATE ORGANISATION AND STRATEGY

The automotive industry is characterised by increasing competition at the global level, with major players now formulating their corporate strategies on an international scale. The definition of markets in geographic terms, and from the perspective of threats of entry by competing suppliers, has extended beyond national boundaries. The aim of major automobile companies and their suppliers is to earn more profit by expanding their shares in the world market. Their strategy is to design their automobile manufacturing methods according to a global scale, while producing vehicles designed for particular local sub-markets. This strategy depends on more open procurement, so as to ensure sufficient scale and access to technological and production process developments.

Significant restructuring and rationalisation is affecting the global automotive industry…

More specific strategies include standardising platforms and reducing their number; increasing the use of modular parts in production; using IT and telecommunications systems in supply management and procurement; limiting supplier status to companies who meet global standards; and continually lowering costs of production and procurement (Takayasu and Toyama, 1997).

There are numerous one to four tier automotive suppliers to the main assemblers…

The number of tier three and four suppliers worldwide is estimated to be 250,000. They supply 30,000 tier two companies, 2,500 tier one companies, 28 major vehicle producers and hundreds of thousands of dealers serving about 40 million customers per year. [1] Many opportunities to reorganise the distribution and marketing structure of the automotive industry exist and managing this supply chain through the use of information technology has emerged as an important option to increase efficiency and lower costs.

Links with major assemblers and suppliers are critical for ASEAN export success…

These developments pose new challenges for ASEAN automotive companies. Their links with major assemblers and suppliers are critical for ASEAN export success. Regional subsidiaries of these players and their suppliers therefore will gain from responding to the changing nature of the industry at the same time as specialising in particular aspects of the production process for vehicles or parts and components.

Recent and significant changes in technology and corporate organisation in the global automobile and components industries are considered in this chapter. The likely impacts on Japan and the ASEAN region are considered in the following sections.

[1] Estimates by General Electric's e-commerce arm, GE Tradeweb, reported in AutoAsia, 23 December 2000.

5.1 The Role of Technology

In this section we review some of the main parameters of technological change in the industry, especially in ASEAN, before examining the IT-related issues in more detail in the following section.

Rapid change despite maturity…

In the automotive industry technological developments continue apace despite the apparently mature nature of the industry. Technology changes have affected manufacturing processes, such as advances in robotics and material science, and corporate organisation, including the widespread adoption of the 'just-in-time' inventory control system.[2] Even more significant changes in the technology of the product, in terms of its powertrain options, are possible, but are still some years away (Steiger and Oberg, 2001).

Changes are occurring at each stage of the automotive industry value adding chain and they are affecting the way suppliers interact with their customers. We discuss in more detail in the next section the implications of the adoption of "build-to-order" purchasing which has been described as the "game-changer" in the industry (Helper and MacDuffie, 2001, p1)

Spreading knowledge is a challenge…

Each major automobile manufacturer has a model to disseminate technological knowledge through its internal organisation and supplier networks, including linkages between companies in different countries.

Toyota has a reputation for rapid diffusion of knowledge within its organisation…

A key to successful sourcing is the management of the network of suppliers. Diffusion of knowledge within the network can reduce costs. Some firms appear to be more effective at creating and managing a successful knowledge-sharing network. Toyota has a reputation for the rapid diffusion of knowledge within its supplier system which contributes to its productivity advantage (Dyer and Nobeoka, 2000).

In particular, Toyota's network (eg, made up of the firms in Table 5.1) seeks to (1) motivate workers to participate and share knowledge while avoiding spillovers to competitors; (2) avoid free riders; and (3) reduce costs of accessing knowledge. A major factor in the system is that production knowledge is accepted as the property of the network, so that the network is rewarded for sharing.

Sharing knowledge in design…

[2] Technology such as robotics and computer aided design and computer aided modelling have changed the nature of product design and the manufacturing process.

The sharing of knowledge in an organisation is also critical in the design stage. A six year MIT research project into multi-project management at various Japanese automobile companies recently found that leading manufacturers, such as Toyota, were able to attain major cost savings in the development cost (engineering hours) and more effective use of newly developed technology and design by better coordinating their concurrent projects (Cusumano and Nobeoka, 1998). The study found that:

> The basic idea is to create new products that share key components but to utilise separate development teams that ensure that each product will differ enough to attract different customers. If possible, projects that share components and engineering teams should overlap in time so that a firm can deliver many products quickly and utilise very new technologies (Cusumano and Nobeoka, 1998).

Standardising platforms is increasingly important…

A priority target is to reduce the number of platforms used by each OEM.[3] Platform development, for example, accounts for about two thirds of new car development and cutting the cost of platform development and developing a variety of models using the same platform is a vital strategy (Takayasu and Toyama, 1997).

General Motors is currently reducing the number of platforms in its range from fourteen in 1997 to seven by 2005, by aiming for a minimum of one million vehicles per platform. Automobile OEMs are now under greater competitive pressure and increasingly need their tier 1 and tier 2 suppliers to have global networks to facilitate the move to fewer, global platforms. Delphi, a major tier 1 company, has for example expanded in Asia over the past few years.[4] The merger outlined in the box below provides another example of the sharing of technology.

Case Study: Mitsubishi Motors and DaimlerChrysler

Mitsubishi Motors Corporation succumbed to a virtual takeover from DaimlerChrysler which acquired 33.4 per cent of the company for 130 billion yen – a depressed valuation because of Mitsubishi's net liabilities of almost 2 trillion yen.[5] In exchange DaimlerChrysler obtained access to Mitsubishi's technology (it is a leader in direct injection engine technology) as well as its state-of-the-art Asian factories. Previously DaimlerChrysler's share of the Asian market accounted for only 3.2 per cent of 1999 revenue. Asia is regarded as the growth region for the next decade. The company has now become the world's third largest car producer, with sales of 6.5 million vehicles a year.

ASEAN automotive industries have been remote from these rapid changes…

[3] A platform is the basis of the automobile and consists of a chassis and driving system, including an engine compartment, driving shaft and transmission.
[4] See *AutoAsia*, 17 December 2000.
[5] About 50 per cent of MMC is owned by 28 Mitsubishi companies through a complex array of cross-shareholdings. Mitsubishi Heavy Industries has 27 per cent of the company, Mitsubishi Corporation has 8.4 per cent and the Bank of Tokyo-Mitsubishi of almost 5 per cent.

The ASEAN subsidiaries of Japanese automotive companies have not been at the forefront of technological developments. Typically, established platforms and older technology are used for these local markets, with some modification for different conditions. The technological structures of ASEAN appear to lack an 'independent industrial base' in which they can demonstrate 'fundamental' technological capabilities. Hence,

> Economic development and industrialization has been achieved by providing a wealth of low-cost labor; accepting foreign corporations; and encouraging the assembly sector, with its weak technology base. The foreign companies develop products in their home countries, bring established technologies and production facilities into the host countries, and avail themselves of plentiful local workers for simple assembly labor. The result is that most ASEAN countries continue to have few opportunities to build a foundation of fundamental technologies (Mitsuhiro, 1994, p96).

Advanced technology disseminates slowly to ASEAN…

The reliance on older technology is partly a function of the existing division of labour between ASEAN, Japan and other countries. Since Japanese companies established subsidiaries to manufacture for the small local market, they lack the required scale of production that would justify cost-saving technology transfers. Those Japanese companies in the region which operate at a larger scale and also export tend to be specialised in more labour-intensive production. Design and research functions in overseas affiliates are limited

Overseas production is associated with standardisation of a product…

This model of the diffusion of technology is consistent with the perspective of Vernon (1979) who argued that the shift of production to another country through FDI is typically associated with the standardisation of a product, with an emphasis on simpler production processes and the manufacture of basic components and parts in less developed economies.

5.2 E-Commerce and Management

The application of IT introduces new features in the finished vehicle. These include systems which aim to make a car more 'informative and intelligent'. Toyota has indicated that it intends to 'transform the automobile and its chief role of providing transportation into a mobile information processing and communications platform (access device) by equipping it with information functions ('Interactive Toyota' Company Brochure, 2000).

GM has a similar goal, using its OnStar service, and Nissan chief executive Carlos Ghosn recently announced that Nissan would wire its luxury vehicles to the internet.[6]

Table 5.1 Toyota's Major Automotive Industry Technology Ties in Asia

Automotive Tie-up	Description
Kouzoui Motors (Taiwan)	Toyota holds a 46.6 per cent equity stake, with 17.8 per cent equity stake of Hino
Sichuan Toyota Motor (China)	Toyota holds a 45 per cent stake
Tianjin Toyota Motor Co. Ltd (China)	Toyota holds a 50 per cent equity stake in the joint production of engines and engine parts
Tianjin Fengjin Auto Parts Co. Ltd. (China)	Toyota holds a 90 per cent equity stake for the production of auto parts
Tianjin Jinfeng Auto Parts Co. (China)	Toyota holds a 30 per cent equity stake for the production of auto parts
Kia Motors (Korea)	Diahatsu has a technical cooperation agreement for the production of Hijet pickup trucks and vans
Tianjin Automotive Industry (Group) Co. Ltd	Daihatsu has a technological agreement and supplies with components
Liushou Wuling Mini Auto Factory	Daihatsu has a technological agreement and supplies with components
Perodua Manufacturing Sdn.Bhd. (Malaysia)	Daihatsu has a oint venture to produce the Kancil and Rusa models
P.T. Astra Daihatsu Motor (Indonesia)	Daihatsu has an equity stake of 40 per cent
Longri Bus Co. Ltd. (China)	Daihatsu has an equity stake of 12.5 per cent
Kia Motors (Korea)	Hino has a technology tie-up

Source: JAMA (2000), *The Motor Industry of Japan* (2000), Tokyo.

These are some of the characteristics of the automobile which can now be developed – but does the customer want them? Our main focus here is how information on customer preferences can be used in the management of the production and distribution systems.

The goal of Toyota illustrates the impact of IT in this industry:

> All of Toyota's operational processes from sales to production, distribution, procurement and development should fully utilize IT and be seamlessly integrated into one organic whole. This makes it possible to grasp what a customer needs

[6] "Drive Distractions", by Charles Bickers, *Far Eastern Economic Review*, 21 June 2001, pp. 34-37. Features which might be included in a 'telematic car' include navigation, toll collection, web-browser email (perhaps audible, as might be the navigation system), TV, rear seat movies and games, and, reflecting consumer interests in security, crash auto-help and 'find me' options. On 5 March 2001 the Japanese Government announced that researchers from academic and business circles would join forces on a government sponsored project to develop and 'Internet car" which will be capable of sending information on traffic and weather conditions and would also provide drivers with wide-ranging access to the Internet. See *Japan Times*, 6 March 2001, p12.

> and wants and to provide products and services that perfectly meet any request. Obtaining this type of one-to-one business model is our goal, and one that can only be achieved using IT to create a 'market connected environment'. Accomplishing this will serve as the completing link in Toyota's 'value chain management'.[7]

Helper and MacDuffie (2001) outline the way in which this approach, also called build-to-order (BTO), will change the nature of businesses in the industry and the linkages between them. They suggest that the use of BTO will lead to:

- the greater use of modular designs, which contain standardised or common parts that can be substituted across models;

- a larger role for suppliers in designing, building, delivering and even installing modular parts;

- a new role for dealers in providing a conduit for information, providing samples for test drives and providing a contact point for complementary activities, like servicing (which could be relatively high margin activities compared to production and sales of new vehicles).

The OEMs in this environment, according to Helper and MacDuffie (2001), will manage the integration of consumer information with the component production and assembly systems. The OEMs will also collect data on consumer preferences to guide their product development.

The application of IT may also be associated with changes in the distribution system. Morita and Nishimura (2000) consider that there appear to be three main strategic patterns: firstly, the consolidation of dealer networks by manufacturers; secondly, dealer consolidations by retailers; and thirdly, the emergence of 'infomediaries'.[8] Helper and MacDuffie (2001) argue, however, that dealers will continue to be linked to particular OEMs because of the value of managing and collecting the information on consumer preferences.

E-commerce can allow the integration of EDI, supply chain management tools and electronic payment systems…

[7] Toyota (2000), *IT, Interactive Toyota, Toyota's IT Operations*, Corporate Brochure, p5.

[8] In 1 January 2000 Toyota Motor Corp elevated the status of its e-commerce department to a division and plans to make it an independent entity in the future, as a public corporation. The automobile industry, one that includes automotive parts makers and auto distribution networks, is one of the broadest based industries in Japan. Toyota is aiming to build up a network of automotive parts suppliers jointly with GM. More specifically, Toyota plans to spin off its Gazoo Division, an auto distribution network launched in April 1998. At present the division has a membership of about 400,000 and provides its members with information concerning new models and used cars through computer terminals installed at affiliated car dealers and convenience stores or through the Internet.

As this discussion indicates, the tools of e-commerce can allow the integration of a number of functions, including electronic data interchange (EDI), supply chain management methods and electronic payment systems through the Internet. This is possible even for relatively small factories. The IT-led changes can be applied in design and production processes, supply networks and purchasing of parts and components, communication within and between industry participants, as well as the marketing and sale of vehicles and other equipment. The options are summarised in Table 5.2.

Table 5.2 Introduction of IT into the Japanese Automobile Industry (multiple responses)

Area of Introduced IT	Share (%)
Procurement	41.8
Sales	48.8
Basic research	8.5
Applied research	15.0
Distribution	34.0
Manufacturing control (CAD/CAM)	60.1
Managerial and control, including accounting	75.2
For information gathering	60.8
Sharing of information	52.9
Other	4.6

Source: JBIC FY 2000 Survey (2000), 'The Outlook of Japanese Foreign Direct Investment' *JBIC, 12th Annual Survey*, October.

Significant effects….

A report in June 2000 by PricewaterhouseCoopers suggested that, as a consequence of the changes related to e-commerce, the cost of a new car could be reduced by $US2000 over the next few years. The emergence of on-line buying exchanges and online retailing has the potential to create car production savings, it was argued. Contributors to these cost savings from innovations in IT systems in automotive manufacturing are that lower-cost suppliers are accessed, administrative and purchasing costs fall. A. T. Kearney (2001), referring to examples of its clients, reports:

- 50% reductions in transactions costs per purchase order;
- reductions of 3-8% in purchasing cost price due to discounts induced by competition through online procurement;
- reductions of 12-20% through consortium buying;
- 50-70% reductions in order cycle time; and
- a doubling (from 40% to 80%) in compliance with purchasing agreements.

5.3 E-Commerce and the Japanese Automotive Industry

E-commerce appears complementary to the lean production systems pioneered by Japanese OEMs, as it can improve just-in-time production and delivery of parts to

assembly plants. However, in Japan, compared to the United States, there are differences in the patterns of corporate organisation model. There has been a closer connection between OEMs and their suppliers, with each partner closely involved in the planning and design of a vehicle.[9]

For companies such as Toyota and Honda, an Internet-based market for the common supply of parts to assemblers could disrupt traditional supplier-assembler relationships as well as risking proprietary knowledge about design, materials and process manufacturing. While the US and Western companies have adopted a more global strategy for the procurement and supply of parts, firms in the Japanese industry rely to a greater extent on the already established infrastructure of supplying industries. Keller (1997, p5) notes that:

> Japanese (producers) also have benefited from very close relationships with suppliers. In fact they were able to get new cars on the market every four years, mainly because their suppliers were linked to the automobile company in familial relationships that entrusted the supplier to a great deal of the engineering work for the manufacturer. In effect, the Japanese shifted a lot of their fixed costs onto their suppliers and became variable cost assemblers.

The traditional proprietary system also has its supporters and Katoh (2000) observes that "(b)y skillfully using the close relationship with their business partners (the keiretsu), the Japanese companies have not been bested by the Americans, but instead have made a Business-to-Business/Business-to-Consumer Information System, which in some respects is even better."

The IT technologies offer important opportunities to Japanese OEMs, other than on-line auctions. Japanese OEMs and components manufacturers are using e-commerce links to streamline procurement and reduce costs in the supply chain. Toyota has converted about 70 per cent of its kanban JIT ordering system to an on-line system that automates the process. This system has been tested with major suppliers, such as Denso and Aisin Yokohama Rubber, the tyre maker, has established e-commerce procedures to connect its dealers with manufacturing lines in order to reduce inventories and shorten supply lead times.[10]

Price competition tends to be greater for generic products…

One of the benefits claimed for e-commerce applications is lower procurement prices. However, price competition, and the scope for purchasers to gain from the use of online auctions, is greater for generic products. The scope to develop this sort of competition in the automobile industry is limited by the complexity of many parts and components. About 5 per cent of the cost of inputs in a car are estimated to be purely generic parts

[9] The transfer of technical information and data between Japanese companies typically involves parts information such as product specifications and information on parts makeup, together with information on the design of parts and products, as well as CAD information.
[10] *AutoAsia*, 10 February 2000.

(Table 5.3). This share is much lower for an automobile compared, for example, to a computer.

The use of the Internet by Dell in selling computers is a good example of how commodity-like products can be assembled and marketed. In contrast, the automobile is not yet a generic product. While a bicycle is widely regarded as a generic product since all the parts can be sourced from various suppliers and then assembled, a motorcycle is built from many specialised parts and components that involve proprietary knowledge of the manufacturer. Trucks (including commercial vehicles), on the other hand, use more combinations of standard components than passenger vehicles, because of the design of their body and frame and the manner in which they are combined.

Incentives for standardisation…

The key point is that the open procurement system is more relevant to generic parts, but the extent to which parts are generic currently varies between types of vehicles. However, if the gains from the application of IT are as significant as the industry reports suggest, there is an incentive to re-design automobiles and their production systems to increase the extent of standardization – as long as consumer preferences for variety can still be satisfied. Doing so might also be easier in some sub-markets than others. When consumers value effectiveness more highly than appearance or "feel" then standardisation might be easier to adopt.

Table 5.3 Types of Components in a Car and a Computer (%)

Share of Cost	*Japanese car*	*Dell computer*
Original Equipment manufacturer (OEMs)	30 per cent	
Specialist parts manufacturers	60 per cent	10 per cent
Contract supply	5 per cent	10 per cent
Outside suppliers	5 per cent	80 per cent

Source: Fujitsu Research Institute, Fieldwork Interviews.

Differences in Japan…

Different strategies are emerging in Japan, some closer to the US approach. Mitsubishi Motors, for example, has announced plans to introduce an internet-based vehicle order and production system in 2002. The company expects the system to shorten delivery times in Japan to only two weeks. The system will enable buyers to place orders directly with the automaker and allow them to specify everything from colours and interior trim to optional items. Similarly, Mazda Motor plans to test a service in 2002 that would let car buyers customize vehicles purchased over the Internet as a way to boost sales and

reduce costs.[11] We also examine below in more detail the strategies of Nissan and Toyota.

5.4 Modular Parts and Modular Suppliers

The modularisation of parts occurs when parts suppliers assemble individual parts into large units for supply to assemblers. The aim is to reduce the number of parts in assembly, lower the cost of parts assembly, and improve assembly times while maintaining quality. The major Western automobile manufacturers are also moving towards a greater reliance on more modular parts that can be supplied across model and platform types and are accepted by different OEM companies. General Motors, for example, is aiming to reduce the number of its suppliers from several thousand to about 600. Its plan to move to more modular parts and components is intended to reduce parts costs by 30 per cent, with the in-house production ratio falling from 70 to 40 per cent (Takayasu and Toyama, 1997).

When an assembler designates a primary supplier to provide modularised parts, the supplier is assured of large volume orders. A primary supplier company must be able to participate in the assembler's development and design process from the platform design stage. The company typically needs to have the capacity to control its own suppliers. Generally, OEMs select primary suppliers, which in turn want to create 'systems capable of supplying modularised parts on a global basis'.[12]

In summary, the supply model that featured an OEM being supplied by firms specialising in particular components. It is being replaced by one in which major component firms are becoming module suppliers to the OEMs and taking responsibility for the integration of special and common components into particular modules which are becoming increasingly sophisticated. The module suppliers, rather than the OEMs, will be procuring the individual components, and will be making choices about the use of online auctions or other procurement strategies.

As this process occurs, the OEMs will focus on the design of vehicles while module assemblers concentrate on research and development, within the framework of current technology, and on the processes of production. As we noted already, the competitiveness of the OEM will depend on its capacity to capture and process information on consumer preferences. It will also depend on providing consumers with sufficient options, while maintaining the scope to gain from production at large scale. Helper and MacDuffie (2001) paint the picture of "the most radical outcome" for the industry:

[11] Mazda President Mark Fields stated that: 'In January this year we introduced internet buying of the Demio and we learned a lot... Internet users want to build their own cars.' OEMs increasingly consider that internet-based, built-to-order options can significantly lower inventory costs while also giving buyers vehicles that better suit their preferences. See *AutoAsia*, 10 July 2000.

[12] The QS9000 standards were developed by the Big Three and five truck manufacturers to define quality requirements for suppliers of automobile parts and materials. They were developed as a common quality control system by changing the ISO9001 standards to conform to automobile industry standards. The benefits of QS9000 are quality improvements and cost reductions.

> With a new dominant design built around fuel cells creating an opportunity for a full modular design, OEMs eager to shrink their asset base and diversify their risk could outsource much design to suppliers and virtually all production to contract assemblers. Automakers could then focus solely on determining the over-arching or meta-design rules that would guide a modular product architecture, on developing and extending their brands, on differentiating their product line with respect to customisation and on developing and personalising a full array of 'mobility services' (p3).

5.5 Getting There

There are a number of ways in which this new structure and division of roles could be established, including using existing proprietary IT systems (Helper and MacDuffie, 2001). The requirements for these systems are listed by White (2001) as the following:

- Computer networks to enable people-to-machine and machine-to-machine communication;
- Data and application servers that store information and programming instructions;
- Software applications that activate it;
- Web-based tools and browsers that provide global accessibility;
- Digital identity and access control software to ensure that only the right people are authorised to execute transactions;
- Auditing and tracking tools to document business transactions and provide an audit trail; and
- A wide assortment of tools, middleware and interfaces that make it all work together.

The public Internet offers an infrastructure in which specialist software suppliers might provide these services. At present however the public Internet has some shortcomings in terms of security, reliability and performance. Various groups of firms in the industry have cooperated to overcome these problems and to build secure e-marketplaces.

The range of possibilities…

White (2001) observes that the e-marketplaces have generally started by focussing on basic services, such as product catalogues and auctions. He argues these activities are less time intensive and the impact of downtimes or interruptions is tolerable because of the savings possible compared to paper systems. However he argues that the longer run targets of these systems will be to introduce new activities such as collaborative design, which requires the managing of large files in a secure environment. Given the

shortcomings of the public Internet at present, these initiatives aim to preserve Internet features in a more controlled environment.

ATKearney (2001) review a number of options for the development of these e-marketplaces. Some are created by an OEM group. Large suppliers could also decide to create their own marketplace, but a bigger issue is whether to create a proprietary marketplace, a collaborative one (a group of OEMs with fixed membership) or an open one. Further variations relate to the coverage of the marketplaces – commodity specific, industry specific of cross-industry.

ANX and Covisint…

In the United States, OEMs have cooperated and collaborated on e-commerce initiatives, in recognition that cost savings will be large for all competitors. These savings are expected to flow from linking their supply chains and distribution channels to e-commerce networks, agreeing on common standards for the communications infrastructure and through the creation of joint ventures to improve the marketing of both vehicles and parts and components. These initiatives include ANX (Automotive Network eXchange); Covisint (a joint venture marketplace for OEMs and their suppliers); dealer networks and after market initiatives (Jahn, 2001).

There are a number of private and public industry networks…

ANX is a private virtual network which connects a large number of firms in the industry. Currently, there are almost 600 companies connected to it in the United States, including the 'Big Three' US OEMs and 75 per cent of automotive suppliers. Covisint is a procurement portal for the automotive supply chain which provides support for the marketing of goods and services in the industry.[13] Covisint will use both ANX and the public Internet to enable communication between trading partners at different levels of confidentiality. White (2001, p.42) reports that the vision of Covisint is to "have Internet technologies provide industry-wide, online services that span the life-cycle of a motor vehicle – from planning and design, through to procurement, supply chain management and distribution". Helper and MacDuffie (2001) point out that even if this vision is not completely realised, and if BTO is not completely implemented, the online auction functions will still generate significant cost savings.

The Japanese approach…

The Japanese automotive Network eXchange (JNX) was launched in October 2000 as a standard network for the car industry in Japan.[14] The aim of JNX is to connect all auto

[13] Covisint is an e-business exchange developed by DaimlerChrysler, Ford, General Motors, Nissan and Renault. Its current product and service offering is focused on procurement, supply chain and product development solutions, including catalogues, auctions, quote management and collaborative design.

[14] JNX utilizes a standard communication technology used by the Internet. This will allow parts suppliers to connect and communicate with all automobile manufacturers with a single link and a single protocol. It will also reduce communication and operation costs. JNX is designed as a reliable, secured, and high performance infrastructure for supply chain management, which will improve the information flow and

manufacturers and parts makers via a secure Extranet, or online marketplace, in which participants are able to efficiently exchange design information and to negotiate prices.[15] Previously, each auto manufacturer has had their own transmission circuits and terminals for each of their suppliers. Under JNX, however, participants can use standardised communication methods so that they can communicate with everyone else. JNX is also expected to ultimately hook up with counterparts in America and Europe – ANX and ENX – to form a Global Exchange Network, which will make it even easier for automakers to conduct business with their suppliers worldwide.[16]

Nevertheless, there is a lack of agreement about JNX in the Japanese automotive industry. Interviews in the industry in Japan suggest that there is resistance to the wide use of JNX. While agreement over a common system and the resolution of technical problems have already occurred, 'business issues' between companies remain the main obstacle to the success of such an exchange, which would operate outside of traditional networks between assemblers and suppliers. Some companies with their own internal EDI systems are not likely to replace them by external procurement of parts, components or services. As White (2001) remarks, "getting separate technologies to work together can be a lot easier than reaching agreement among competing stakeholders" (p42).

ASEAN options…

As we discuss in the next section, the ASEAN component makers are recording significant success in penetrating markets in developed economies. If the procurement system develops in the direction indicated in this chapter, it is valuable for the ASEAN suppliers to be able to communicate with the e-marketplaces and procurement systems set up by the OEMs or the module makers.

New ASEAN e-marketplaces could operate at a number of levels. The entry level would provide information and help establish a reputation (eg past history, standards certification, statements from customers etc) as well as provide catalogues. At the next level, orders by purchasers could be inspected, and work-flow control and billing and payment systems established. Online auctions are another option. The final stage could involve collaborative product development and further integration of the supply chain.

These systems would most likely be established industry-wide, to share investment costs and the costs of managing content, and to reduce the costs of connecting all the interested parties. In fact, a significant proportion of the transactions might actually take place within ASEAN.

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reduce marketing time ('Japan automated Network eXchange is launched', Statement by Covisint, 20 October 2000).

[15] The JNX Centre is run by the Tokyo-based Japan Automobile Research Institute, which expects to have 200 member companies, including the 13 Japanese car, truck and motorcycle companies, as members by March 2001. See http:www.japanauto.com.

[16] See JAMA 'JNX Network Opens', *Japan Auto Trends*, Volume 4, No. 4, December, 2000. The JNX website is at http://www.jnx.ne.jp

As the quality of the public internet develops, less coordination of the development of these services will be required. The interaction will be less controlled by one group of users, and the outcome is likely to be an open and cross-industry system. Users may still procure specialist services, for example, those provided by the developers of software relevant to each of the stages of the life-cycle of the car (or other software services on the list prepared by White and quoted above). The websites of these software or system providers may replace those of the e-marketplaces as the sites most frequently visited by transactors in this environment.

At that time, ASEAN component makers with Internet access will be able to 'log-on' direct to the OEM or module maker sites. But, until then, a commitment to establish a secure environment in which to conduct these transactions (eg an ASEAN e-marketplace) is required in order for these firms to participate directly in the new systems of procurement.

The ASEAN industry may decide to not proceed to build this marketplace, or its members may be unable to cooperate at sufficient scale to do so. This does not mean that ASEAN suppliers will be excluded from the world market for components. Another interface could be set up between them and the e-marketplace systems: this could take the form of a service provider who connects the e-marketplace system with a paper system, for example. Given the availability of other suppliers worldwide (who have direct access to OEM and module maker procurement systems) the ASEAN suppliers would need to bear the costs incurred in the construction of this interface, and also bear the costs of lower quality outcomes (eg errors in the fulfillment of orders). Bearing these costs is the alternative to investing in their own e-marketplace.

Different applications will emerge…

The use of the e-marketplace services will also vary, depending on the strategies adopted in vehicle design and production. OEMs that require modules specific to their vehicles will seek a lot of interaction with suppliers and this information exchange can be facilitated by services with Internet-like capabilities. Module makers who are responding to OEM-specific requests might also be seeking the production of specialised components. These sorts of firms will make more use of the system for sharing information and cooperative design. They will make less use of the service for procurement, for example, via online auctions.

Using the system for information sharing can be more demanding in terms of service quality, and high-level applications may appear later in the cycle of the development of these e-marketplaces. OEMs and module makers who put more stress on those information sharing applications may therefore be slower to abandon their proprietary systems. This difference in views of priorities makes it more difficult for all members of an industry to agree on the design of a system and its applications. The difference in approach may be one reason why the e-marketplace has been slower to develop in Japan compared to the US.

5.6 Overview

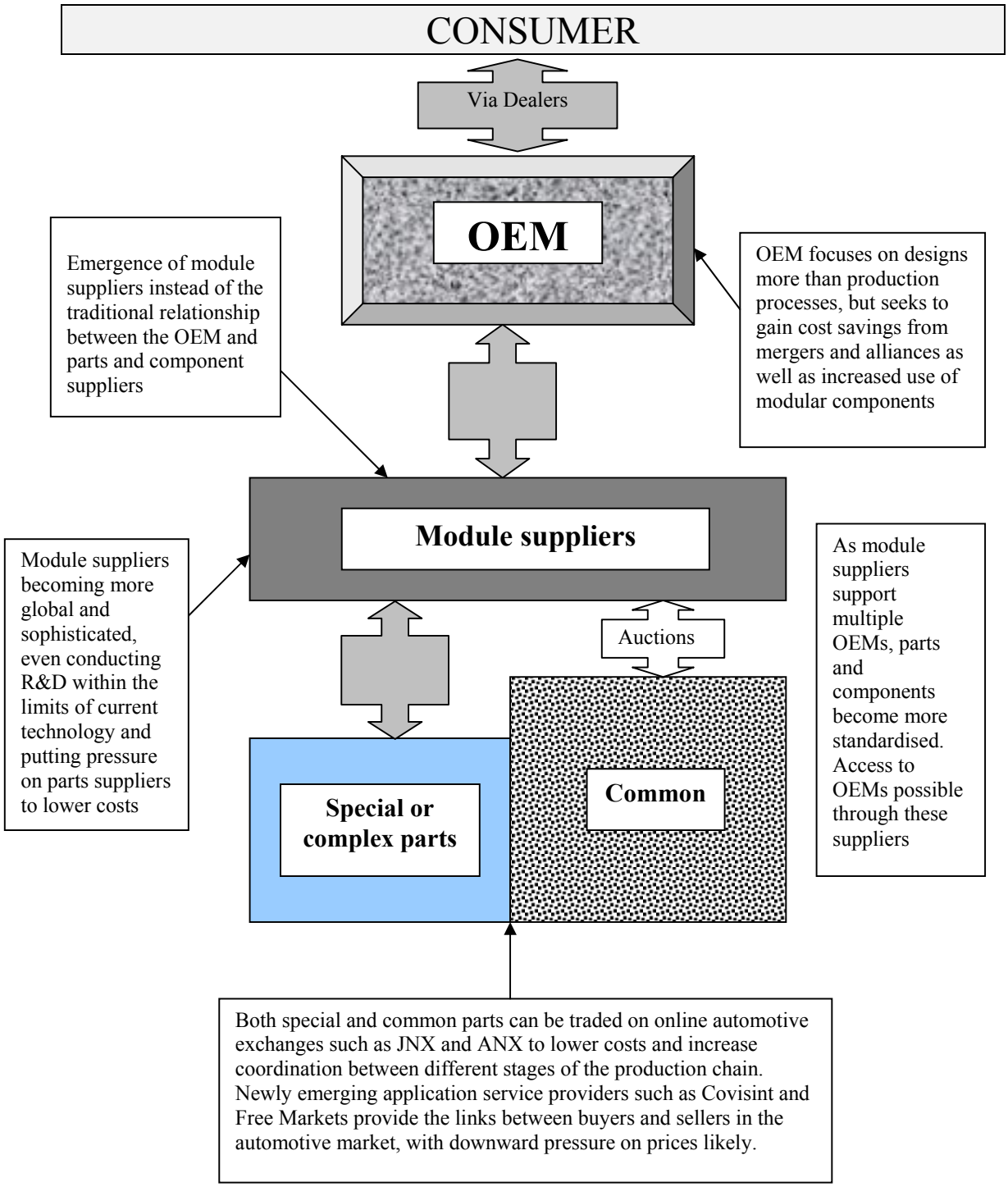
The structure of relationships is summarised in Figure 5.1.

The Figure shows the different sorts of firms in the industry (OEMs, module suppliers and various component suppliers) and the mechanisms through which they might be linked. The module suppliers appear between the component makers and the OEMs. Component makers can be generic parts makers or specialists, and the former are more likely to be involved in online auctions.

Other relationships (the grey shaded arrows) are likely to be longer term, but could still make use of various feature of Internet-based communications and information sharing, leading to collaborative design work and information sharing. There may be pressure to standardise a larger proportion of components. All elements of the Figure are connected by the IT systems which eventually run throughout the automobile lifecycle.

See Figure 5.1 overleaf...

FIGURE 5.1: AUTOMOBILE INDUSTRY RELATIONSHIPS



5.7 Case Study: Toyota's Procurement Policy

Toyota Motor Corporation has been one of the most committed Japanese automobile companies in the ASEAN region, leading the initiative to increase regional specialisation in parts and components production and encouraging the ASEAN governments to maintain the momentum of trade liberalisation. Toyota's basic approach towards purchasing is nominally to be open to any and all suppliers which are assessed on the basis of their quality, cost, technological capabilities and reliability in delivering the required quantities on time.

The company evaluates the potential strengths of suppliers and their amenability to continuing kaizen improvements. Toyota believes in developing: 'mutually beneficial long-term relationships (with suppliers) based on mutual trust. To foster that trust, we pursue close and wide-ranging communication with suppliers.'[17] Toyota operates an intrafirm proprietary system for monitoring the costs of international procurement called 'The Global Cost Comparison System' that is centred in Tokyo:

> The database is accessible from Toyota operations around the world. It contains information about tens of thousands of items that we purchase at each of our operations, about items in development, and about cost estimates from prospective new suppliers. Toyota operations worldwide refer to the world-class standards for cost competitiveness that this system illuminates. Those standards provide the basis for the improvement targets (target values) that our operations establish for suppliers.[18]

Within Toyota, the Parts and Components Purchasing Division is responsible for the purchasing of automotive parts from suppliers in Japan and overseas, while the Material, Facilities and Body Purchasing Division has responsibility for the purchasing of materials, equipment, machinery and transport services from suppliers in Japan and overseas. The procedure for evaluating potential suppliers begins with product exhibitions, global design competitions, benchmarking, meetings with potential suppliers, global cost comparisons and the selection of suppliers. Once a supplier begins a contract with Toyota there is a reinforcement program, with an evaluation of performance and suggestions to make improvements to become world-class suppliers. It is assumed that suppliers will maintain competitiveness through further cost savings.

Toyota is seeking to reform its procurement policy and its inventory policy through the application of Internet based networks, such as the 'Monarch' project being pursued by the US branch of the company. The project will use high-speed web-based networks to reduce daily supplies of total parts inventory by 50 percent, cut average days of backorders by 30 percent and reduce transportation costs by 25 percent.[19]

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[17] Toyota (2000), 'Suppliers Guide for doing business with Toyota'*, Corporate Brochure' p10.*
[18] Ibid.
[19] The President of Toyota's North American operations, Mr Toshiaki Taguchi, stated recently that: Right now we have 85 acres ... of parts warehouse space around the U.S. This huge space contains 19 million

Gazoo began in 1998 as a dealer only network but was then opened up as an open Internet site easily available on dedicated terminals in convenience stores in Japan. The web site allows searches of both new and used car specifications and prices along the Toyota network, with membership reaching 500,000 in January 2000.[20]

Toyota's view is to develop Gazoo into an integrated site for electronic commerce with a wide range of goods and services, instead of limiting itself only to the field of automobiles. For this, it has already begun dealing in clothes, foodstuffs and such items. Gazoo's activities are most certainly a manifestation of a vertical-enclosure strategic pattern.[21]

Toyota is seeking to reform its dealer network to allow 'vertical enclosures of customers and suppliers' through an online network (Morita and Nishimura, 2000). This type of manufacturer instigated strategy of controlling the distribution chain contrasts with the 'wide but thin horizontal dominance' strategic pattern of the independent Internet infomediaries such as Autobytel and Car Point, which have also been the main type of pattern in the United States.[22] Overall, the company is taking a broad approach to the integration of IT into the automotive production process and marketing.[23]

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parts and every day we ship $6.6 million worth to our Toyota and Lexus dealers. All those parts mean nothing to our customers unless we can get the right part to the right place at the right time for their vehicle. Through better forecasting, inventory deployment and improved procedures, we will decrease costs and provide better value and service to our customers. Source: Company brochures and interviews.

[20] Gazoo is Toyota's visual information network, which aims to provide a wide variety of information to its car users. The 'Auto Mall' provides details of prices and specifications of new and used cars, car catalogues and quotations, allows trade negotiation appointments, information on car maintenance and repair and trade-in prices. The 'Shopping Mall' allows access to non-car shopping. The 'Media Mall' is a shopping site specialising in music and electronic games; the 'Travelling Mall' allows users to search and book hotels, and the 'Gazoo Club' allows information exchange between members. Overall the Toyota Internet services are a closed system, but with a significant range of services related to its cars as well as related products.

[21] Morita, M and K. Nishimura (2000), 'Information Technology and Automobile Distribution: A comparative Study of Japan and the United States', *Mimeo*, University of Tokyo, November.

[22] Notably, the manufacturer-dealer relationship is stronger in Japan than in the United States, so that enclosure may be more successful than in the US where dealers have a degree of legal autonomy. However, this also implies that competition and information disclosure to consumers will be more limited in the enclosed network.

[23] To increase its access to IT and telecommunications developments, Toyota has a range of investments in companies such as KDD (8%), IDO (63%), KDDI (13%) TDC (61%) and Crosswave Communications (30%). It also has holdings in cable TV corporations (eg Himawari, Katch Network, Chita Medias Network), broadcasting companies (eg Nagoya Broadcasting, Music Bird Profile, FM Nagoya), multimedia companies (eg JDC (17%) and PiPit), digital broadcasting (MBC (17%) and All (33%) as well as Gazoo.

5.8 Case Study: Cost Reduction in Nissan

Nissan and Renault agreed to form a global alliance in March 1999, when Renault gained a controlling 36.8 per cent share in Nissan Motor, Japan's second largest automobile company. The aim of the alliance, with an annual output of 4.8 million vehicles, is to promote synergies in the group, while maintaining the brand identities of both partners. The 'Nissan Revival Plan' aims to return to profitability for FY 2000, achieve a consolidated profit of 4.5 per cent of sales by FY 2002 and to reduce net debt from 1.4 trillion yen to less than 700 billion yen by FY 2002 for its global network (Table 5.4).

Table 5.4 Nissan's Major Automotive Industry Ties in Asia

Automotive Tie-up	Main products	Share
Thai Automotive Industry (Thailand)	Datsun (Big M)	35.0
Siam Nissan (Thailand)	Cefiro, AD Resort	25.0
P.T. Ismac Manufacturing (Indonesia)	Cedric, Cefiro, Sunny, Terrano	35.0
Nissan Motor Philippines (Philippines)	Datsun (Pathfinder) Safar (Patrol), Terrano Caravan (Urvan)	23.0
Zhengzhou Nissan Automobile (China)	Datsun (Pi Ka)	5.0
Yulon Loone Motor Co. Ltd (Taiwan)	Cefiro, Sunny (Sentra), March, Atlas, AD Resort	25.0

Source: JAMA (2000), *The Motor Industry of Japan* (2000), Tokyo and Nissan, *Factfile* 2000, Nissan, Tokyo.

Under the revitalisation plan, five factories were closed, the number of suppliers was halved and the Nissan brand was restored and new cars launched. As a result of cost reducing measures, three assembly plants, two powertrain operations in Japan were closed, while the global operation fell by 21,000 workers. Non-core businesses have begun to be sold and the inventory-to-sales level will fall by 30 per cent. As a result of these changes, in September 2000 Nissan announced significant cost cutting measures, including plans for continuing cost savings from more selective procurement.

An important element of this plan was a rationalisation of Nissan's global purchasing. which aimed to optimise purchasing costs through a global approach, although the company has indicated that it will continue to support its core supplier base to strengthen their global presence and profitability. Nissan is aiming to reduce procurement costs by promoting concentrated and global purchasing and halving the number of suppliers. Purchasing costs account for 60 per cent of Nissan's costs and will be reduced by 20 per cent over three years from FY 2000 to FY 2002. In the financial half year to September 2000, Nissan reported that it had reduced purchasing costs by 10 per cent and recorded a consolidated net profit of ¥250 billion on sales of ¥6 trillion. At the same time net

automotive debt was reduced by ¥250 billion, bringing the company's estimated net automotive debt to 1.1 trillion yen, a fall of ¥150 billion lower than forecast.[24]

[24] Nissan, *Company Half Year Report to September 2000*, p10.

6 ASEAN MARKETING AND ACCESS

6.1 Regional and World Markets

Currently the ASEAN automotive market is relatively closed, with imports of CBU vehicles accounting for less than 5 per cent of the market and import duties ranging from 60 to 200 per cent. To both industry representatives and economists, deregulation and opening up of this market is the only realistic long-term strategy for the region. After rationalisation of the vehicle and parts and components sectors, industry sectors will specialise and competitive niches will emerge – preparing the various industries for freer trade with the rest of the world.[1]

Freer regional trade will allow competitive niches to be developed…

As AFTA proceeds or the AICO complementation scheme is more widely implemented, the Japanese OEMs, particularly Toyota, Honda and Mitsubishi will be able to utilise the complementation arrangements that are already in place. The product strategies of the companies would probably include both complementation of vehicles, parts and components. The role of each ASEAN country in the production strategy of each manufacturer would also become clearer as liberalisation proceeds.[2] Each member industry would have an incentive to specialise in the range of vehicle or parts and components production in which it had a competitive advantage.

Delays in liberalisation will affect capital inflows…

If AFTA is delayed, the ASEAN region will be overlooked for international investment in favour of other markets such as China.[3] The Japanese automobile industry may retain a regional dominance for a longer period, but will be unable to attain economies of scale from further regionalisation. The senior Managing Director of Toyota, Mr Koji Hasegawa, has stated that:

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[1] 'On paper, the ASEAN Free Trade Area looks like a good deal. Uniting the 10 countries of Southeast Asia into a single commercial union will create a market of 500 million people quickly. Manufacturers will build cars and trucks more efficiently by concentrating high-volume production of different models in different countries. Today, protectionism forces Toyota to assemble small volumes of the same Corolla model in five countries. It is hard to imagine a less efficient manufacturing system.' Automotive News International, 2 February 2001.

[2] Honda carries out extensive studies on investment-effectiveness for each country and has commented that: 'In this sense, progress towards AFTA implementation in a given country may influence us when we decide to where in the region we should shift production and procurement from Japan.' See 'Japanese auto makers keen to invest in ASEAN', *The Star*, 22 July 2000,

[3] At a major automotive conference in Bangkok on 28 March 2001, Japanese, European and US senior automotive company executives called on Southeast Asian governments to reduce tariffs and to implement a regional free trade agreement, or risk losing more foreign investment to China. The head of Ford Motor Company's Asia-Pacific operations stated that 'Global automakers will only move into the region when they see the same tariff and non tariff environments as in the rest of the world. See *Japan Times*, 27 March 2001.

> We would like to see AFTA realized, but not hastily. It may be more effective to develop the various component industries to more competitive levels as this would then have a positive effect on the cost structure of locally-assembled models. Most Toyota production in ASEAN would not be competitive against imports. AFTA is a necessity for component manufacturers to gain sustainable economies of scale. Once regional economies of scale and efficiency are achieved, it will be easier for component manufacturers in ASEAN to become part of a global network. The bottom line is lower production costs, lower prices and a bigger market. Ultimately, AFTA will translate into price cuts of about 20 – 50 per cent on vehicles in Thailand, Malaysia and Indonesia.[4]

Japanese automotive investment would increase if AFTA proceeds…

Most Japanese and Western automobile and automotive companies have indicated their preference for a more open regional market. Toyota, for example, has indicated that inconsistency in government policy had hindered investment decisions of Japanese automotive manufacturers. Nevertheless, tariff liberalisation remains a political decision of the respective member governments, although one with economic consequences. Malaysia's decision to defer implementation of the ASEAN Free Trade Area (AFTA) for the automobile industry from 2003 to 2005 would make it difficult for the Malaysian national carmaker (Perusahaan Nasional Bhd, or Proton) to improve its international competitiveness.[5]

Case Study: Ford investment in an export-oriented plant in Thailand

From the beginning of production in December 1998 to March 2000 Ford exported 52,995 pickup trucks, valued at over US$500 million. The AAT plant is now the second largest vehicle exporter in Thailand after Mitsubishi and the sole source for the Ranger and Fighter models, with main exports destinations being Europe, Australia and New Zealand. Over 3,000 Ranger were sold in Western Europe. In 2000, AAT was aiming to export about 68,000 CBU vehicles in addition to 22,000 CKD kits, as well as supplying 8 per cent of sales in the Thai pickup truck market. The Ford plant represents an investment of US$500 million and has over 120 local suppliers. The president of AAT, Mr Saeki Toshihige, recently stated that AAT is Thailand's largest producer of CKD kits in the region and "neither Toyota nor Honda have a similar CKD capacity anywhere in ASEAN" with the plant likely to supply 25 per cent of total pickup truck production in Thailand in calendar 2000.[6]

[4] AutoAsia, 15 November 2000.
[5] AutoAsia, June 2000, Interview with Managing Director.
[6] AutoAsia, 12 December 2000.

While Japanese manufacturers hold 85 per cent of the ASEAN automobile market, this market share is likely to fall in coming years, as Ford and GM expand production facilities in the region.

> The American automakers' strategy is clear. By exporting from the region, they can achieve production volumes that match or exceed those of entrenched Japanese who enjoy a tight hold on domestic sales. Mitsubishi, Honda, Isuzu and Toyota have responded by starting their own export programs. With production now oriented to export, it is natural for both Japanese and American companies to want easier market access. They are lobbying nations in that region to fulfil their promise of automotive free trade.[7]

However, if AFTA is further delayed investment from global car and components companies is likely to avoid Southeast Asia. Honda, for example, has indicated that continued liberalisation in Thailand will be a positive factor, but progress on AFTA is necessary. Automotive manufacturers and Tier One suppliers have linked further major investment in South East Asia with trade liberalisation. These include BMW and Delphi Automotive Systems.[8] Nevertheless, ASEAN's automotive supplier networks will have to become more internationally competitive to take advantage of a more open regional market.

6.2 e-ASEAN Marketing Initiative

The development of information technology has become a driving force in the world economy and offers potential for the ASEAN countries to reduce transaction costs on their trade in goods and services with the rest of the world and within the region. However, not all member countries have equal capability to take advantage of the Internet and its ability to lower costs on international economic transactions. There is a 'digital divide' between a number of these countries, which are at different levels of economic development.

The marketing potential of e-commerce is increasingly recognised in ASEAN…

The ASEAN Governments have increasingly recognised the potential of e-commerce for the region and have sought to upgrade their IT infrastructure. On 2 May 2000 the

[7] Automotive News International, 2 February 2001.

[8] President Cordoba of BMW Asia has stated that: 'Without AFTA, BMW's export objectives in the Asia-Pacific (of increasing group sales from 10% to 25% in the medium term in the medium term) aren't feasible.' In early 2001, BMW announced that it would go ahead with its plan to establish the first wholly-owned plant in Asia in Thailand, as a production base to manufacture BMW and Rover cars for export to the region. Initial capacity of the plant will be 10,000 units, increasing to 60,000 units by 2005. The strategic approach of the OEM is to consolidate regional operations in Thailand and expand exports to the regional market (Tyndall, 2000). President Ebbert of Delphi Automotive Systems Asia has stated that: 'All our investments in the region are geared towards localised production but with AFTA, we would also consider complementation where it is practical. Added investments in each facility will be made as demand grows and as AFTA eventually takes shape.'

Association of Southeast Asian Nations member states, Japan, China and South Korea agreed to strengthen their cooperation in developing information technology and ecommerce as well as human resources.

Some ASEAN firms have already become involved in advanced forms of IT applications in vehicle design and production. Malaysia's second endorsed national carmaker, Perusahaan Otomobil Kedua Sdn Bhd (Perodua), began an electronic data interchange system for vehicle endorsement and excise duty payment in November 2000. The Electronic Excise System (EES), an extranet connection, links Perodua, Jabatan Kastam dan Eksais DiRaja (JKED), Jabatan Pengangkutan Jalan (JPJ) and RHB Bank Berhad to facilitate the electronic submission and endorsement of the Excise 7 document, automation of excise duty payment, leading to an online vehicle registration.[9]

Japan is providing significant support to overcome the digital divide…

In July 2000 the Japanese Government announced a comprehensive policy package for narrowing the digital divide. In the IT sector, Japan promised to help ASEAN nations to develop human capital to work out uniform rules on consumer protection and dispute settlements under the e-ASEAN electronic commerce project. The five-year package concentrates on the ASEAN region and amounts to $US15 billion of ODA and non-ODA government funding.[10] An e-ASEAN Task Force was established in September 2000 to help establish better infrastructure for e-commerce in the region.[11]

6.3 ASEAN Access to the Automotive Supply Chain

Increasingly, global and local automotive component suppliers are using Internet links to cope with changing global trends in procurement by OEMs, a trend that began in North America, but is likely to shift eventually to the ASEAN region.[12] Accessing the global supply chain should be a priority option for ASEAN companies, since it offers a means of overcoming geographic isolation from a range of developed country markets.

Electronic procurement and management offers cost savings to both incumbent and newer automotive firms in ASEAN, as well as access to a wider market…

Japanese automotive manufacturers are also seeking to lower costs of parts and components in ASEAN, and e-commerce may be one means for this aim. Already a number of suppliers to the automotive industry in the region are considering more effective management and procurement through e-commerce systems. In Thailand, for

[9] Perodua is the first auto company in Malaysia "to initiate a cooperation with the government sector in line with the Government's vision towards the development of an e-commerce and e-government economy." See *AutoAsia*, 8 November 2000.
[10] Shinohara, T. (2000), 'IT Revolution and eODA', *JBIC Review,* No. 3, December.
[11] The Task Force's open call for pilot project is part of ASEAN's efforts to boost its presence in the global information economy. A list of selected pilot projects was presented to the ASEAN Heads of State and Government during their informal summit in November 2000. See *AutoAsia*, 10 September 2000.
[12] 'Automotive Parts Suppliers Must Get on Internet', *AutoAsia*, 2 April 2000.

example, steel manufacturers will establish an e-marketplace in 2001, to cut costs while the domestic market remains sluggish.[13]

The Thai Government is also providing support for e-commerce ventures, including automotive suppliers. The Thai government has indicated that it will launch a B2B site for the country's automotive and electronic parts manufacturers in mid-2001, according to Thailand's Board of Investment. An Internet site (www.ec-Automotive.com) is being launched in Thailand in June 2001 to provide a wide selection of e-commerce transactions. These include offering prices of automobiles, motorcycles and spare parts and accessories, as well as leasing services, insurance and after-sales services.[14][15] The Thai 'E-Exchange' portal is being developed in conjunction with National Electronics and Computer Technology Center (NECTEC), the government office developing Thailand's fledgling information technology sector. The Board of Investment hopes the site will ultimately provide a free online marketplace for about 6,000 Thai auto and electronic parts companies.[16]

E-commerce allows ASEAN suppliers to raise their market presence…

Greater speed of communication with OEMs and first tier suppliers allow ASEAN automotive suppliers to raise their international presence and market share, provided that they are internationally competitive. Further, previous electronic systems used in the automotive industry were expensive, compared to the Internet. Electronic Data Interchange (EDI) required dedicated networks and specific protocols and formats, but

[13] Mr Monthop Valayapetre, who represents the Iron and Steel's Mineral Resources Department's executive committee, said an e-marketplace would help cut costs when it came to buying and transporting raw materials. Seeing results from foreign countries using such a system, steel producers can cut transportation costs by sharing the same shipment when purchasing raw materials. The private sector, led by Sawasdi Horrungrueng's Nakornthai Strip Mill (NSM), has put forward the proposal to the Industry Ministry. The ministry has been asked to support the move using a Bt40 million budget from the Industrial Restructuring Program. The budget would be used to jointly develop the e-marketplace project, expected to be operational in the next six to seven months. See *AutoAsia*, 21 December 2000.

[14] This new B2C e-market has been developed by Thailand's Senior Com, which has an extensive background in making hire purchase software for the car industry. Dealers have to pay an initial fee to enter the system, an annual payment and a fee for each transaction. See *The Nation*, 30 November 2000.

[15] These include offering prices of automobiles, motorcycles and spare parts and accessories, as well as leasing services, insurance and after-sales. This new B2C e-market has been developed by Thailand's Senior Com, which has an extensive background in making hire purchase software for the car industry. The company forecasts that 10 per cent of car trading in Thailand will take place on the Internet within five years. About 100 of the existing dealer base of 400 are expected to join the website in the next three to five years. Dealers have to pay an initial fee to enter the system, an annual payment and a fee for each transaction. The company wants to expand its e-commerce business to ASEAN. See *AutoAsia*, 6 December 2000.

[16] Plans call for the exchange to launch with products from about 100 companies. Only about 1,200 of the Board of Investment's targeted companies currently have Internet access, but says it aims to have as many as 3,000 online by next year. Companies wishing to be included in the site must meet government qualifications for business practices and quality standards. The exchange would at first be operated by the government as a public service before being transformed into a private enterprise. To build an e-commerce facility suitable for Thailand's automotive and electronics parts manufacturers, which have led export growth in the flagging Thai economy, the Board of Investment expects to spend up to Bt1.2 billion (US$30 million). See AutoAsia, 27 November 2000.

small and medium-sized automotive suppliers in ASEAN have typically not used EDI because of the cost of the proprietary system.

Specialisation in niche markets may provide needed economies of scale…

There is also the possibility of achieving economies of scale and international competitiveness from specialising in niche markets. Targeting modular suppliers to OEMs as well the traditional OEM market appears a suitable approach since such firms are likely to be responsible for a greater part of automotive procurement in the future. To many industry observers, this is an appropriate strategy for ASEAN automotive producers.[17] Notably, as Ford's manufacturing operations in ASEAN increase and local procurement from component suppliers also rises, the company expects internal e-commerce networks to become increasingly important.[18]

Already the momentum of e-commerce marketing and procurement has reached the ASEAN region…

Both the incumbent Japanese OEMs and associated automotive suppliers and the newly entering American and European OEMs and modular suppliers have indicated that they will be using e-commerce systems in the ASEAN region, although the extent and effectiveness of their use is still unclear. Toyota, for example is piloting e-commerce applications in Vietnam with the target of including all of its Asia-Pacific production and distribution units in an e-commerce network. In December 2000, Ford introduced China's first online dealer network available to consumers.[19] Hence, the momentum of change is clear for the ASEAN region.

[17] 'There is a win-win scenario in which Asian suppliers get global reach and new technology. Western companies get an Asian presence and avoid cost by using local knowledge and production capacity.'Statement by the Managing Director of Visteon Automotive, Mr Kunkel, December 2000, See AutoAsia.

[18] Ford has used MFG/PRO-based systems since 1995 to manage component manufacturing, vehicle assembly and distribution and is targeting a standardised plant level information system for its worldwide operations. At Ford Thailand, for example, the MGF/PRO system is currently set up for 64 users but it is envisaged that this may soon increase to 96 users as new suppliers are brought on-line with further local content. See *AutoAsia*, 6 October 2000.

[19] The network will connect Ford's nine authorized dealers in China. The first fully functional website, the Sichuan Pioneer Motors Co. (http://pioneer.forddealer.com.cn), is already established and eight further sites will open soon. All the dealer sites will be linked to the Ford Motor (China) (http://www.ford.com.cn/) site. See AutoAsia, 30 November 2000.

Case Study: Honda and ASEAN

Honda has a long history of involvement in ASEAN4 but has not been able to develop large-scale production facilities because of the fragmented nature of the regional markets.[20] Since the Asian economic crisis the company has placed higher priority on exporting from the region to attain scale economies. Honda began production of its CR-V in Thailand in 1997, and also shifted the production of the Accord from North America to Thailand in 1999 for export to Australia and New Zealand. The shift of the Accord's production from North America to Thailand represented the first case of the export of finished cars from a developing country to advanced countries. Honda has turned Thailand into an export base since the country is home to its second leading production base, following Japan. The Thai auto industry is also considered advanced enough to clear the environmental and technological standards of advanced countries, a fact the company valued highly. Honda exports cars and multi-use parts from Thailand to scores of countries and the export base has become one of Honda's most important, along with Japan, North America and the United Kingdom.

Japanese technologies such as I-mode may provide a marketing advantage…

Notably, the recent development of the I-mode of wireless communication through the Internet, by the Japanese company NTT DoCoMo may also offers opportunities for countries with limited telecommunications infrastructure, such as some ASEAN members. This technology may provide Japanese firms with a key advantage in networking the fragmented ASEAN automotive market.[21]

E-commerce brings new opportunities, but also more competition for automotive suppliers…

While e-commerce may allow more ASEAN automotive suppliers to enter overseas markets, it also increases global competition to supply the established OEMs and first tier automotive suppliers. The challengefor companies in the ASEAN region to therefore upgrade their technological and human capital resources and to form joint ventures with

[20] Honda has a long history in Asia, where operations are weighted heavily toward motorcycle manufacturing and sales. Currently, a production network comprising more than 45 bases manufactures motorcycles, automobiles, and power products in the region. Honda has responded to local market needs by developing exclusive models and now exports locally manufactured products to many countries, including Japan. Honda's presence in Asia is built on a foundation of strong business ties developed over many years, including a network of more than 45 manufacturing bases for motorcycles, automobiles, and power products.

[21] Mobile communication with wireless technology is less expensive for civil works, its progress has outstripped that of fixed communications lines in many developing countries. This new technology means that developing countries do not have to follow the development of the developed countries. Instead, they have a chance to jump over unnecessary development stages, which the developed countries experienced (Shinohara, 2000).

global companies in order to adapt successfully to a more competitive environment in the future.

6.4 Trade Specialisation So Far

The impact of tariff liberalisation will also have positive dimensions as incumbent and newly entering vehicle and parts manufacturers seek to optimise their position by increasing niche exports to the regional and world markets and increase local procurement so that their ASEAN-based production facilities can be come more internationally competitive. The effects of trends are already becoming evident through higher export and procurement ratios of Japanese automobile and automotive companies in ASEAN (JBIC, 2000). This study has also gathered further evidence of the beginnings of a reorientation of industry away from the domestic market (Tables 6.1 and 6.2).

There is some evidence that ASEAN automotive suppliers are becoming more closely integrated with the Japanese market…

Table 6.1 ASEAN4 Participation in Japan's Automotive Import Markets, 2000

Imports increased in 2000 (to November) compared to the same period in 1999 by 50 per cent or more (highest to lowest)	Most important supplier from ASEAN (per cent share in Japan's imports)	
Safety glass	Thailand	(2.8)
Magnetos	Thailand	(2.8)
Tractor engines	Indonesia	(8.5)
Other body parts and accessories	Thailand	(9.8)
Motor vehicle receivers	Malaysia	(14.0)
Truck and tractor bodies	Malaysia	(14.0)
Windscreen wipers for motor cycles	Philippines	(0.3)

Source: Calculated from Japan Tariff Association statistics.

Tables 6.1 and 6.2 present trade data for ASEAN4 exports to the fastest growing automotive markets in Japan, one of the most difficult markets for automotive components producers, although the internationalisation of the Japanese automobile industry through foreign investment and mergers and acquisitions is making the market more open. There is some evidence that ASEAN automotive suppliers are becoming more closely integrated with the Japanese market – traditionally one of the most closed to imports. These components are being mainly sourced from Thailand and are typically standard rather than complex parts.

Table 6.2 ASEAN4 Participation in Japan's Automotive Import Markets, 1999

Imports increased in 1999 (to November) compared to the same period in 1998 by 30 per cent or more (highest to lowest)	Most important supplier from ASEAN (per cent share in Japan's imports)	
Other body parts and accessories	Thailand	(13.7)
Parts of gears	Thailand	(14.6)
Diesel engines	Thailand	(74.0)
Seats	Malaysia	(0.6)
Accumulators	Thailand	(1.1)
Wipers for motor cycles	Thailand	(1.1)

Source: Calculated from Japan Tariff Association statistics.

ASEAN automotive industries can find internationally competitive areas of production in a more open regional market…

Table 6.3 presents further evidence in support of the concept that the automotive industries in the ASEAN4 region will be able to successfully adjust to a less protected market environment and to find production niches in which they can become internationally competitive.

Table 6.3 Revealed Competitiveness of the ASEAN4 Automotive Industries

Economy	Components
Indonesia	Tyres, filters, sound systems
Thailand	Ignition wiring sets, engines and engine components
Malaysia	Sound systems. Oil filters, toughened safety glass
Philippines	Ignition wiring sets, gear boxes, radios with recording equipment, electric accumulators and car bodies

Source: Haryo Aswicahyono and Titik Anas (2000).

6.5 Access to the Japanese Automotive Market – New Opportunities?

As noted in chapters 3 (especially table 3.12) and chapter 5 of this study, the prospects for ASEAN automotive producers to export into the Japanese market depends on a number of factors; firstly on the type of products which are being targeted for export and secondly on the relationship between companies in each country. In the first case, the degree of complexity of exports affects the relative competitiveness of ASEAN producers – who are generally better placed to compete in the Japanese import market for standard technology automotive products (such as motorcycles) and automotive parts and components. These trends are examined in Table 6.4.

Marketing access may be reinforced by a keiretsu relationship, especially in relation to the procurement of complex parts…

Table 6.4 ASEAN10 Automotive Exports to Japan, 1990-2000

Import Source	1990		1995		2000	
Country	Value (¥ m)	Market share (%)	Value (¥ m)	Market share (%)	Value (¥ m)	Market share (%)
Motorcycles	418	2.7	2,756	11.3	6,114	16.5
Passenger vehicles	68	0.01	283	0.03	156	0.02
Commercial vehicles	40	0.31	82	0.68	766	6.80
Motor Vehicle Parts						
Complex	3,322	2.9	7,748	5.3	32,115	14.0
Less standard	3,601	6.4	3,128	5.9	16,011	13.9
Standard	10,373	8.9	29,056	22.6	80,336	35.2

Note: Complex parts and components and less standard parts and components are defined as requiring special knowledge (proprietary knowledge) of the manufacturer. Typically know-how is sourced from the assembler companies, which are the main market for the in-house keiretsu-type suppliers. General parts and components use standard technology and are typically sourced in the after market (see Table 3.12). The HS codes for these categories are contained in an appendix to the study.
Source: Japan Tariff Association (online).

Table 6.4 shows the rising shares of ASEAN exporters in motorcycles, commercial vehicles and components, especially standard components, over the 1990s. The ASEAN share of Japan's imports of standard parts grew from less than 10% in 1990 to over 35% in 2000. Their share of imports of complex parts doubled between 1990 and 1995, and more than doubled over the following five years.

Marketing access may be reinforced by a keiretsu relationship between companies in ASEAN and Japan, especially in relation to the procurement of standard parts. Accessing such a network can ease the effort needed to import into the Japanese market. As noted in chapter five, Japanese automotive producers such as Nissan and Mitsubishi are beginning to look beyond keiretsu ties and seek the lowest cost, quality producer of automotive parts and components, so as to increase their overall competitiveness. They are therefore more open to imports from their subsidiary companies in ASEAN, particularly as these subsidiaries also need to become more internationally competitive and outward looking to survive in a liberalised regional economy under AFTA. To examine the prospects for ASEAN automotive exports into Japan in more detail, data was collected on Japanese automotive import statistics for the period 1990-2000, as shown in the tables in the following sections.

Access to the Japanese Market for ASEAN Motorcycle Exports

The motorcycle represents an interesting blend of complex, non standard and standard or generic parts and accessories. In the ASEAN market lower incomes and restrictions on passenger motor vehicle production have long led to the popularity of motorcycles and

the scale of production is significantly higher than for vehicle production. In this area Japanese companies have increasingly transferred production overseas, especially to China and production in ASEAN has also risen. As can be seen in Table 6.5 ASEAN exports, especially from Thailand, are lifting their share of the Japanese market as they become more price and quality competitive. This larger sharer appears to be at the cost of Korea, which has become a more expensive source country.

Table 6.5 ASEAN Exports of Motorcycles to Japan, 1990-2000

Import Source	1990		1995		2000	
Country	Value (¥ m)	Market share (%)	Value (¥ m)	Market share (%)	Value (¥ m)	Market share (%)
Thailand	130	0.83	703	2.88	2,710	7.31
Malaysia	23	0.14	34	0.14	39	0.10
Indonesia	137	0.87	352	1.44	848	2.29
Singapore	66	0.42	831	3.40	1,203	3.24
Philippines	62	0.40	821	3.36	1,237	3.34
(Korea)	740	4.71	253	1.03	206	0.56
(China)	3	0.02	169	0.69	496	1.34
World	15,713	100	24,446	100	37,081	100

Note: HS Code 8711 and 8714.
Source: Japan Tariff Association (online).

Honda has begun to use Thailand as a regional production and export centre…

At the heart of this changeover is Honda's decision to use Thailand as a regional production and export centre, thereby giving its Thai subsidiary greater scope to supply the parent company and the home market. As noted in chapter 4, however, Honda Thailand considers that its capability to produce and export complex automotive parts and components is limited by the national manufacturing base, especially its metal fabrication, engineering and general machinery sectors.[22]

Cost changes in production are likely to explain the falling share of Korean exporters, while China is beginning to become a market presence.

[22] Honda Thailand, for example, has found continual difficulties with the quality and reliability of locally sourced material, parts and components in Thailand. This arises partly because of the lack of technological skills of local suppliers and their insufficient financial base. To overcome local manufacturing deficiencies in ASEAN, an increase in general machinery capability is required, according to interviews with Japanese company officials. In Thailand, for example, Honda has invested in a training college, open to all suppliers, but considers that it will take a considerable time to significantly raise productive capacity in this industry (Fieldwork Interviews, February 2001).

Access to the Japanese Market for Complex Auto Components

Complex automotive parts are defined as requiring special or proprietary knowledge from the manufacturer for their efficient production. Hence one would expect that few Japanese OEMs or first tier suppliers would seek to source supplies of such products from outside the keiretsu grouping – since proprietary knowledge would be lost or the reliability of supply might be compromised for a transitory price advantage. Interviews with Japanese automotive industry businessmen and experts revealed that only 5 to 10 per cent of complex parts were considered tradeable outside the intra industry grouping. Honda, for example, indicated that it would not access any complex automotive parts and components from outside its established network of suppliers. The expectation is then that independent component makers are unlikely to be successful in markets in Japan for these sorts of products.

Table 6.6 ASEAN Automotive Exports to Japan of Complex Parts and Components, 1990-2000

Import Source	1990		1995		2000	
Country	Value (¥ m)	Market share (%)	Value (¥ m)	Market share (%)	Value (¥ m)	Market share (%)
Thailand	940	0.81	1,838	1.26	16,133	7.06
Malaysia	408	0.35	638	0.44	1,288	0.56
Indonesia	442	0.38	1,877	1.28	5,075	2.22
Singapore	56	0.05	101	0.07	149	0.07
Philippines	1,476	1.27	3,291	2.25	9,202	4.03
ASEAN10	3,322	2.85	7,748	5.29	32,115	14.01
(Korea)	3,430	2.95	4,605	3.14	12,496	5.47
(China)	517	0.44	4,213	2.88	19,082	8.35
World	116,357	100.0	146,467	100.0	228,575	100.0

Note: Complex parts and components and less standard parts and components are defined as requiring special knowledge (proprietary knowledge) of the manufacturer. Typically know-how is sourced from the assembler companies, which are the main market for the in-house keiretsu-type suppliers.
Source: Japan Tariff Association (on-line).

Rising exports of complex automotive parts are between subsidiaries and parents…

According to the evidence in Table 6.6, and despite these challenges in trading complex components, there has been a rapid rise in ASEAN import penetration of Japan's markets for these products, especially by Thailand and the Philippines. The notable rise in exports of complex parts and components to the Japanese market therefore suggests that Japanese subsidiaries in ASEAN are successfully accessing the intra-company procurement markets of their parents in Japan – utilising the keiretsu-type links between OEMs and suppliers in both Japan and ASEAN.

Intra-company exports have not developed from Malaysia to Japan…

The shifts are less dramatic in the case of Malaysia. It could be surmised that the high cost structure (due to tariffs and quotas) in Malaysia discourages exports to Japan. Further, no Japanese automotive producer has a significant base in Malaysia because of the national car program. There are few opportunities to use intra-company sourcing strategies between Japanese subsidiary companies in Malaysia and their parents in Japan.

Thailand's export success is in contrast to Malaysia's performance…

On a country basis, the success of the Thai automotive industry in increasing complex automotive exports into the Japanese market stands in sharp contrast to the slow change in more inward looking countries such as Malaysia. Other notable changes in this table are the improved share of South Korea while the Chinese automotive industry dramatically improved its exports of complex parts to Japan. This change is further evidence of the competition between China and ASEAN in these markets.

Access to the Japanese Market for Less Standard Automotive Parts

Table 6.7 details exports of less standard automotive parts into the Japanese market for the period 1990-2000 and shows that a number of ASEAN countries, especially Thailand and Indonesia, were able to significantly increase their share of this market. Less standard automotive parts and components, like their more complex counterparts, require a significant level of proprietary knowledge and are therefore similarly difficult to trade outside the established OEM-supplier network. It would therefore be expected that most exports to Japan would be from the subsidiaries of Japanese companies in ASEAN.

Table 6.7 ASEAN Automotive Exports to Japan of Less Standard Parts and Components

Import Source	1990		1995		2000	
Country	Value (¥ m)	Market share (%)	Value (¥ m)	Market share (%)	Value (¥ m)	Market share (%)
Thailand	3201	5.73	2084	3.95	7917	6.86
Malaysia	22	0.04	353	0.67	350	0.30
Indonesia	37	0.07	78	0.15	4781	4.14
Singapore	332	0.59	290	0.55	415	0.36
Philippines	8	0.01	319	0.60	2284	1.98
ASEAN10	3601	6.44	3128	5.93	16011	13.9
(Korea)	2025	3.62	2390	4.53	3540	3.07
(China)	445	0.80	2503	4.75	6094	5.28
World	55915	100.0	52734	100.0	115,408	100.0

Note: Complex parts and components and less standard parts and components are defined as requiring special knowledge (proprietary knowledge) of the manufacturer. Typically know-how is sourced from the assembler companies, which are the main market for the in-house keiretsu-type suppliers.
Source: Japan Tariff Association (on-line).

Overall, the comparatively high market shares in Japan for ASEAN countries – for both complex and less standard automotive parts and components – compared to South Korea and China are in part a consequence of the long established presence of Japanese automotive companies in ASEAN.

Table 6.8 Automotive Exports to Japan of ASEAN Standard Technology Parts and Components, 1990-2000

Import Source	1990		1995		2000	
Country	Value (¥ m)	Market share (%)	Value (¥ m)	Market share (%)	Value (¥ m)	Market share (%)
Thailand	916	0.78	1,935	1.51	15,425	6.75
Malaysia	980	0.84	4,317	3.36	8,751	3.83
Indonesia	500	0.43	3,641	2.83	16,384	7.18
Singapore	467	0.40	1,466	1.14	1,442	0.63
Philippines	7,510	6.41	17,566	13.67	26,212	11.48
ASEAN10	10,373	8.85	29,056	22.6	80,336	35.18
(Korea)	6,697	5.72	7,186	5.59	11,895	5.21
(China)	889	0.76	8,104	6.30	45,579	19.96
World	117,174	100.0	128,534	100.0	228,351	100.0

Note: General parts and components use standard technology and are typically sourced in the after market (see Table 3.12). The HS codes for these categories are contained in an appendix to the study.
Source: Japan Tariff Association (on-line).

Access to the Japanese Market of Standard Automotive Parts and Accessories

Given the relative success of more complex automotive parts and components into the Japanese market from ASEAN, one could expect to see significantly increased exports of more standard or generic parts and components in the trade data (Table 6.8). This follows since production of standard automotive products in Japan is more costly, and as proprietary knowledge is not important for generic parts and components. Further, Japanese OEMs and major suppliers are more willing to access such parts to lower their procurement costs and to maintain international competitiveness.

Overall, ASEAN's share of the Japanese import market for standard automotive parts and components has risen sharply over the decade to 2000, from less than 9 per cent in 1990 to over 35 per cent in 2000.

In the standard category, exports from both Thailand and Indonesia to Japan have shown strong growth. Also noticeable is the failure of Malaysian exports of standard automotive parts and components to expand their share at all.

6.6 ASEAN and China

In all categories of components, China's penetration of the market has been growing faster than that of the ASEAN economies. The future relationship between ASEAN and China is a key factor in the development of the regional automotive industry. Local industries and governments in ASEAN are particularly concerned about the rapid development of the Chinese automotive industry and its scale and cost advantages, with increasing proportion of automotive FDI being directed to China instead of ASEAN.[23] However, it should be noted that China's automotive industry is more highly fragmented and technologically constrained than its counterparts in Southeast Asia. Also many of the 130 assemblers in China have quite small production runs (Findlay and Abrenica, 2001).

> Despite this, China's market, which is expected to surpass 2 million units in 2001, is difficult to ignore. Upon entry to WTO, many of the roadblocks that now render China's automotive market at a disadvantage will have to go. Quotas and local content requirements will be scrapped during an 8-year transition period. China has agreed to reduce import tariffs to a maximum of 25% by 2006 and to lift model restrictions and price caps. A restructured Chinese automotive industry can easily surpass the technological capabilities and avoid the lack of scale economies that are now evident in the Southeast Asian markets. Already China's buses and motorcycles are making inroads into the ASEAN market, particularly Vietnam and Indonesia. And unless exports from Southeast Asia move up the technological ladder, China's improved access to export markets could be at their expense (Findlay and Abrenica, 2001).

The data reviewed in the previous section highlight the interaction that is already occurring between ASEAN and China, especially in developed economy markets like Japan.

Findlay and Abrenica (2001) observe that the AFTA free trade pact is ASEAN's main counterweight to the attractions associated with China's giant market. In recent years, global automotive manufacturers established or expanded production facilities in ASEAN in anticipation of the market integration. Thus, Ford's strategy is to set up a complementary production network, akin to the strategy followed by Japanese assemblers in the 1980s. Such strategy has given the Japanese assemblers a command of over 80 per cent of the Southeast Asian market. In contrast, General Motors, BMW and Volkswagen are concentrating their production in Thailand, which could be used as a production base for trade within and outside the region.

[23]On 29 May 2000 the largest Japanese carmaker, Toyota, announced that the Chinese government had officially authorised the company to launch a joint venture in Tianjin to produce passenger cars. Toyota plans to immediately establish a joint venture to start production of 1300cc passenger cars in 2002. Toyota is the third Japanese car manufacturer to have joint production approved, after Suzuki and Honda. Toyota will found the Tianjin Toyota company as a 50-50 joint venture, with initial production of 30,000 units annually.

Apart from attracting FDI in the automotive industry, AFTA also has a role as a mechanism to improve production efficiency in Southeast Asia – thereby preparing the members for trade outside the region. Market integration allows scale economies, which reduce production costs. A rationalisation of automakers may also follow. Increased intra-regional trade of built-up units is likely to lead assemblers to focus production on large volume models, and on CBU imports of others. Some existing capacity would be rendered uncompetitive in a more open environment.

6.7 Looking ahead[24]

Notwithstanding the benefits of integration, doubts have been cast on the willingness of member economies to subsume national goals to regional interests.

The decision of Malaysia to defer to 2005 the implementation of its commitment to the ASEAN Free Trade Area (AFTA) is significant in at least two respects. First, since Malaysia currently accounts for more than half of the region's passenger car market, its withdrawal is fuelling speculation about the demise of AFTA.

Secondly, the Malaysian case demonstrates the difficulty of extricating the government from the market for as long as the fortunes of the automotive industry are still viewed as synonymous with national development. It appears that the Malaysian government is still hooked up to the vision of developing a globally competitive national automotive champion at all cost. However, since the other ASEAN members are not retracting their implementation schedules of AFTA, such a perspective is particular to Malaysia.

There is also doubt on whether economies of scale can be attained within the group in the event that Malaysia falls out of AFTA. One downside of Malaysia's withdrawal is a substantially smaller AFTA market for passenger car. Without Malaysia, the passenger vehicle market of AFTA will be reduced by more than half, *i.e.,* from 520,000 to 240,000 units (based on 2000 volume). This outcome is due to the production mix in Thailand and Indonesia that favors commercial vehicles over passenger cars by a scale of 3 to 2. Yet even with Malaysia in AFTA, the Southeast Asian car market fails to measure up in volume to the growing markets of China and India, more so of South Korea.

Some degree of scale economies has been achieved, however, in utility and light commercial vehicles. Thailand, for one, has attained sufficient scale in one-ton pick-up trucks to penetrate the markets of Australia, New Zealand and Europe. Indonesia has the largest market worldwide for utility vehicles, which enabled its biggest assembler, Toyota-Astra, to establish trade ties with Japan, Taiwan and South Africa. These initiatives can be further harnessed within an integrated market.

Apparently, a major problem for the ASEAN grouping is the lack of common vision, which weakens the momentum for AFTA. Measures to reduce resistance to change in Malaysia are an acid test of its resolve to pursue the goals of regional integration.

[24] This section is based on comments in Findlay and Abrenica (2001).

However the competitive pressures from world markets, especially foreign investors, will maintain pressure for reform in the longer term.

7 CONCLUSION

7.1 Overview

Significant changes are occurring to trading arrangements that affect ASEAN on all levels – including the bilateral, regional and multilateral levels. The regional automotive market of 500 million people is planned to become a free trade area in 2005 when tariffs will be reduced to between 0-5 per cent, and Japanese-ASEAN automotive joint ventures are currently adjusting their 'full-set' production strategies to take account of the likely rise in intra-regional and international competition. Already local content provisions have been abolished by Thailand and Indonesia. Market opening now appears to be irresistible, despite the considerable adjustment that local industry will have to make.

There is increasing international competition in the global automotive industry…

The automotive industry is becomingly increasingly integrated through international mergers, strategic partnerships and the development of e-commerce. Consolidation, such as the Daimler-Benz takeover of Chrysler and Ford's acquisition of Jaguar and Volvo, has been driven by interests in consolidating production capacity, and the scope to gain from emerging trends in e-commerce.

The supply chains of OEM and their major suppliers are opening up, especially for standard parts, but competition is also increasing…

These trends have a number of implications for automotive suppliers in the ASEAN4 region. Firstly, suppliers will have more access to the less-closed supply chains of OEMs and component assemblers – but there will also be more suppliers of generic parts seeking to access these markets. Hence both access and competition will increase in the automotive parts and components market around the world, including in Japan.

ASEAN automotive firms have four options…

If ASEAN firms are able to reach price and quality world standards they have four options.

Firstly they could retain their traditional mode of operations, or use an intermediary to try to break into overseas markets.

Secondly, they could seek to work with the rapidly developing IT applications and online exchanges that are opening up the global parts and components markets. This option requires upgrading their access to the IT software and hardware required to link into the online market, but significant improvements in product quality, reliability and service levels may be required to effectively enter such markets – especially as reliable delivery is a premium requirement for online suppliers.

A third option for ASEAN suppliers is to develop as a specialist supplier to OEMs or larger component assemblers (module makers), for example by focusing on R&D capacities.

Another option is to become part of a module supplier, a type of firm which is handling both specialist and general part acquisitions and assembly operations for the larger automobile companies.

China is widely seen as a challenge for ASEAN…

It is important to recognise that the ASEAN automotive sector has a number of competitive advantages in terms of labour costs, technological capability and potential market size. At the same time, there are also significant quality and logistical problems due to the fragmented nature of automobile production in the region.

The ASEAN car industry must also compete with other countries and regions to attract foreign direct investment, embodying both capital and technology, if it is to maintain or increase its international competitiveness. The potential for China to divert FDI and become a major regional competitor is clear. The increased attraction of China as a location for automotive production and manufacturing generally is evident in the huge increase in FDI inflows over the last five years, which has significantly expanded the industrial potential of China's economy.

At the ASEAN10 meeting at Siem Reap in early May 2001, China was widely seen as a challenge to the trade and investment appeal of ASEAN members and for the prospects of AFTA. In particular, Malaysia's Government and business community is concerned over declining FDI inflows when its economy is slowing due to the global slowdown. While trade liberalisation will accelerate ASEAN's linkages with the world automobile market, Malaysia is reluctant to support AFTA because its automotive industry is generally seen as especially vulnerable to import pressure and the government has built up Proton as a symbol of Malaysian industrial capability.

AFTA implementation is the response but time is running out…

Malaysia's diplomatic initiative within ASEAN of including China, Japan and South Korea in an ASEAN Plus Three 'framework' appears to envisage greater economic cooperation in East Asia, but this has not changed the bleaker trade and investment scenario for ASEAN and the reality of China's increasing industrial competitiveness. The time for AFTA to be effectively implemented is also running out, as shown by Singapore's efforts to develop stronger ties outside the region and a recent statement by Japanese Deputy Economic Minister Kono, at the Siem Reap meeting, for ASEAN to 'further accelerate integration of the regional economy to win back Japanese investment', noting that: 'ASEAN's move for integration has slowed from the original pace' suggesting that the region is becoming less relevant.[1]

Overall, the automobile industry in the ASEAN region represents one of the most important opportunities for upgrading the manufacturing potential and trade orientation of the region. Already Thailand has become a net exporter of automotive products, with exports of completely-built-up units reaching 152,836 units in 2000,

[1] See The Australian, 9 May 2001, 'ASEAN fears shift of global focus to China'.

with exports forecast to exceed 200,000 units in 2001 according to the Thai Auto Industry Association. Increased export orientation has been reinforced by the relocation of Nissan and Isuzu operations to Thailand and a switch to the Australian market, which absorbed over A$800 million worth of exports from Thai producers in 2000.[2]

The openness of the Japanese market to ASEAN automotive products is also increasing as standards and price competitiveness improves. This is evident in the study's discussion of the performance of ASEAN automotive exports into the Japanese market in the preceding chapter, which shows a gradual expansion of market share for motorcycles and a range of automotive parts and components.

7.2 Concluding Comments

There has been a major wave of consolidation, through mergers and acquisitions, in the automotive industry around the world and this is likely to continue in the future. PriceWaterhouse Coopers (2000) found that there are only six automotive manufacturers that have large enough volume to attain significant scale and market advantages. Consolidation is also occurring among first and second tier automotive suppliers to the major manufacturers (Jahn, 2001).

There are a number of conclusions that can be drawn from these trends:

- The ASEAN automotive industries are challenged by the small size of their domestic markets and by the value of exporting into major markets to achieve sustainable volumes. Nevertheless, there is some scope for specialising in the particular areas to complement each other and to act as competitive suppliers in the world market;

- The process of specialisation will be stimulated by the fulfilment of AFTA commitments, in the context of falling margins of preference with the rest of the world, in order not only to integrate ASEAN markets but also to encourage investments consistent with competitiveness in global markets.

- There are considerable manufacturing deficiencies at the automotive manufacturer and supplier levels in terms of their capacities to reduce the need for significant component imports from Japan and elsewhere, which significantly reduces the potential competitiveness of ASEAN exports, particularly of vehicles. The weaknesses in the component sector have occurred despite a long history of local content schemes. However, the economic pressures that have emerged since the financial crisis have actually led to rising levels of local content.

- ASEAN vehicle and component manufacturers can gain from becoming more integrated with their overseas parent companies, including their production and marketing systems. These subsidiaries can become much more cost efficient and internationally competitive. However, parent companies will also demand that

[2] The main models include the Toyota Hilux, the General Motors/Isuzu Rodeo and the Ford/Mazda Auto Alliance Thailand Courier/Ranger vehicle.

their suppliers have world's best practices for supply chain management, including B2B supply chain systems. These systems can also make the component market for OEMs much more competitive.

- An ASEAN automotive exchange modelled on the ANX and with links to US, European and Japanese networks, would enable automotive producers in ASEAN to connect with international markets more effectively. Only the independent Japanese producers, Toyota and Honda, are less likely to participate in activities like online auctions – because of their relatively closed supplier networks. There is a role for an ASEAN-specific procurement site to enable automotive companies in the region to better coordinate their supplier relationships and to achieve cost savings in other aspects of vehicle and component manufacture and marketing.

APPENDIX 1

Table A-1 Definition of Traded Automotive Parts and Components (HS Code)

Complex Parts and Components	Less Standard Parts and Components	Standard Technology Parts and Components
Bearing housings (84.8320)	Gears and gearing (84.8340)	Transmission belts (40.10.21-29)
Toughened safety glass (70.0711)	Gear boxes (87.0840)	Other transmission belts (40.1110-1140)
Laminated safety glass (70.0721)	Seats (94.0120)	Oil or petrol filters (84.2123)
Rear view mirrors (70.0910)	Piston engines (84.0731-34)	Other accumulators (85.0780)
Parts (84.8390)	Special engines (84.0820)	Sparking plugs (85.1110)
Bumpers and parts (87.0810)	Intake air filters (84.2131)	Ignition magnetos (85.1120)
Safety seat belts (87.0821)	Transmission shafts (84.8310)	Distributors; ignition coils (85.1110)
Other parts (87.0827)	Clutches and shaft couplings (84.8360)	Starter motors (85.1140)
Brakes and linings (87.0831)	Chassis fitted with engines (87.0600)	Parts (85.1190)
Other brake parts (87.0839)	Chassis (87.0710)	Signalling equipment (85.1211-30)
Wheels and accessories (98.0870)	Other (87.0790)	Windscreen wipers (85.1240)
Suspension check absorbers (87.0880)	Bearing housing (84.8330)	Parts (85.1290)
Radiators and parts (87.0891)	Flywheels and pulleys (84.8350)	Loudspeakers (85.1821-22)
Other parts (87.0891)	Drive axles with differential (87.0850)	Parts (85.1890)
Silencers and exhaust pipes (87.0892)	Driving axles and parts (87.0860)	Ignition wiring sets (85.4430)
Clutches and parts (87.0893)		
Steering wheels (87.0894)		
Other parts (87.0899)		

Notes: See Table 3.12 for a break-up of automotive parts and components into the categories of complex parts and components and less standard parts and components (which are mainly traded within a keiretsu group); and standard technology parts and components (which are mainly sold on the after market). Intra-group supplied parts and components generally require special knowledge (proprietary knowledge) from the manufacturer. Typically know-how is sourced from the assembler companies, which are the main market for the in-house keiretsu suppliers.
Source: See Nobeoka (1998) for a discussion of the above break down.

REFERENCES

Abrenica, J. (1998), 'The Asian Automotive Industry: Assessing the Roles of State and Market in the Age of Global Competition', *Asian–Pacific Economic Literature* 12 (1): pp12–26.

Abrenica, J.V. (2000), 'Liberalising the ASEAN Automotive Market: Impact Assessment', *PECC Conference Paper*, August (available from www.asean-auto.org).

Abrenica, J.V. (2000), 'The Philippine Automotive Industry', *PECC Conference Paper*, August (available from www.asean-auto.org).

ADB (2000), *World Development Report,* Manila.

ASEAN Secretariat 2000, World wide web site of the ASEAN Secretariat http://www.asean.or.id/economic.aico.html.

Aswicahyono, H. Anas, T. and Rizal, J. (2000), 'The Indonesian Automotive Industry', *PECC Conference Paper*, August (available from www.asean-auto.org).

Aswicahyono, H. and T. Anas, (2000), 'Understanding Patterns of Trade in the ASEAN Automotive Industry in the First Half of the 1990s', *PECC Conference Paper*, August (available from www.asean-auto.org).

Aswicahyono H., M.Chatib Basri and H. Hill (2000), 'How Not To Industrialise? Indonesia's Automotive Industry' *Bulletin of Indonesian Economic Studies*, Vol 36, No 1, April, pp209–41.

ATKearney (2000), "E-fulfilment 2000: corporate initiatives in automotive B2B", in *Global Automotive Manufacturing and Technology*, World Markets Series Business Briefing, World Markets Research Centre, London.

Australia-Japan Economic Institute, (1997) 'Japan's Automobile Industry 1987–1996', *Economic Bulletin*, Vol 15, No. 10. AJEI, Sydney.

Auto Trade Journal, (1998), *The Japanese Automotive Parts Industry* (Nihon no Jidosha Buhin Kogyo).

AutoAsia online (autoasia@topica.com).

Autopolis online (autopolis.com.au).

Bernard, M. and J. Ravenhill, (1995) 'Beyond product cycles and flying geese: Regionalization, Hierarchy and the industrialization of East Asia', *World Politics*, 47, No. 2, January, pp171–209.

Center for Pacific Business Studies, (1996), 'The imminent advent of the age of global competition for the automobile industry in Southeast Asia' in *RIM*, No. 33, September, Sakura Institute of Research.

Chi, A. and Miyake, M. (1999), 'Japan and Asia: Developing Ties', *OECD Observer*, Summer.

Chia, S.Y. (1995), 'The international procurement and sales behaviour of multinational enterprises', in Chen, K.Y. and P.Drysdale, *Corporate Links and Foreign Direct Investment in Asia and the Pacific*, PAFTAD, Canberra.

Cusumano, M. and K. Nobeoka (1998), *Thinking Beyond Lean*, The Free Press, NY.
Doner, R. F. (1987), *Domestic Coalitions and Japanese Auto Firms in Southeast Asia: A Comparative Bargaining Study*, Berkeley, University of California.
Doner, R. F. (1991) *Driving a Bargain: Automotive Industrialization and Japanese Firms in Southeast Asia*, Berkeley, University of California Press.
Dyer, J.H. and K. Nobeoka (2000), 'Creating and managing a high-performance knowledge-sharing network: the Toyota case', *Strategic Management Journal*, Vol 21, Issue 3, pp345-367.
Economic Planning Agency (EPA) (1990), *Foreign Direct Investment Changes, Japan and the World*, Tokyo.
Fane, G., and T. Condon (1996), 'Trade Reform in Indonesia, 1987–1995', *Bulletin of Indonesian Economic Studies* 32 (3): 33–54.
Farrell, R. (2000), 'Japanese foreign direct investment in the world economy 1951-1997', *Pacific Economic Paper No. 299*, January.
Findlay, C.C.and M.J.V. Abrenica, (2000), 'The ASEAN Automotive Industry: Challenges and Opportunities', *PECC Conference Paper*, August.
Findlay, C.C. and M.J.V. Abrenica (2001), 'The ASEAN Automotive Industry in China's Century', in *Global Automotive Manufacturing and Technology*, World Markets Series Business Briefing, World Markets Research Centre, London.
Ford Motor Company, *1999 Annual Report*. Also see Ford's home page (http://www.ford.com).
Fourin, 1999/2000, The Asian Automobile Industry (*Ajia no Jidosha Sangyo*).
Fujita K. and R. C. Hill, (1997), 'Auto industrialization in Southeast Asia: National strategies and local development' *ASEAN Economic Bulletin*, Vol. 13, No. 3, March.
General Motors Corporation, *1999 Annual Report*. Also see GM home page (http://www.gm.com).
Hatch, W. and K. Yamamura (1996), *Asia in Japan's Embrace: Building a Regional Production Alliance*, New York, Cambridge University Press.
Helper, S. and J. P. MacDuffie (2001), "How the automotive industry might evolve – the internet and consumer and supplier relationships", in *Global Automotive Manufacturing and Technology*, World Markets Series Business Briefing, World Markets Research Centre, London.
Hill, R. C. and K. Fujita (1996), 'Flying geese, Swarming sparrows or preying hawks? Perspectives on East Asian industrialization', *Competition and Change: The Journal of Global Political Economy*, 1, No. 3, pp285–97.
Hill, R. C. (1989), 'Comparing transnational production systems: The case of the automotive industry in the United States and Japan', *International Journal of Urban and Regional Research*, September, pp462–80.
Hill, H. (1984), 'Survey of Recent Developments', *Bulletin of Indonesian Economic Studies* 20 (2): pp1–38.
International Bank of Cooperation (see JBIC, 2000).

Ishizaki, Y. (1991), 'The development of the ASEAN economy', *RIM Pacific Business and Industries*, Vol. III.
Ishizaki, Y. (1994), 'The automobile industries of ASEAN countries: Toward greater regional cooperation and competition' *RIM: Pacific Business and Industries*, 1, 16–32.
Ishizaki Y. (1996), 'New phase in Asia strategies of Japanese affiliated automobile and parts manufacturers' *RIM Pacific Business and Industries*, Vol. I, No. 31.
Ishizaki, Y. and M. .Mori (1996), 'Present Situation and Issues Concerning the Automobile Industries in Individual Countries (in ASEAN)', *RIM, Pacific Business and Industries*, Vol. III, No. 33.
Jahn, K. (2001), 'New economy initiatives: Global developments and their implications for the Australian automotive industry', in ABARE, *Outlook 2001, Manufacturing, Tourism and Services*, Canberra, February.
JAMA (2000), *The Motor Industry of Japan* (2000), Tokyo.
Japan Automobile Manufacturers Association various issues, 'Automobile Statistics for Major Countries' (*Shuyo-koku Jidosha Tokei*), Tokyo.
Japan Tariff Association, *The Summary Report on Trade of Japan*, Tokyo.
JBIC (2000), JBIC Review, various issues, JBIC, Tokyo.
JETRO (2001), *JETRO Hakusho* (2000 JETRO White Paper), Tokyo, JETRO.
Kaburagi, S., Noda, H. and Ikehara, S. (2000), 'The Outlook for Foreign Direct Investment by Japanese Manufacturing Companies, *JBIC Review*, No. 1, May.
Katoh, H. (2000), 'An IT Network Revolution Changing the Framework of Business', *The Jama Forum*, Vol 18, No. 2.
Kawashima I. and S. Konomoto (1999), 'Time for more autonomy: Problems of Japanese companies in East and Southeast Asia' *NRI Quarterly*, Autumn, Vol. 8, No. 3.
Keller, M. (1997), 'International Automobile Production: How will Firms compete in the 21st Century?', *Occasional Paper No. 34*, Center on Japanese Economy and Business, November.
Legewie, J. (1999), 'Japanese firms and the development of the ASEAN Automobile Industry', Deutsches Institut Fur Japanstudien, *Working Paper*.
Machado, K.G. (1992), 'ASEAN State industrial policies and Japanese regional production strategies: The case of Malaysia's motor vehicle industry' in C. Clarke and S. Chan (eds), *The Evolving Pacific Basin in the Global Political Economy: Domestic and International Linkages*, Lynne Reinner Publishers.
Masayama, S., D. Vandenbrink and S.Y. Chia (eds), (2000), *Restoring East Asia's Dynamism*, NRI, Tokyo.
Menon, J. (1996), *Adjusting Towards AFTA: The Dynamics of Trade in ASEAN*, Singapore, Institute of Southeast Asian Studies.
Ministry of Finance, *Annual Report of the International Finance Bureau*, Tokyo.
Ministry of Finance, *Statistics Monthly*, Tokyo.

Ministry of International Trade and Industry (MITI) (2000), *Tsusho Hakusho* (2000 White Paper on International Trade), Tokyo.
MITI (2000), 'Automotive Parts manufacturers Gear up for Greater Competition', May.(http:www.miti.gov.my/.Mitari H. (1999), 'ASEAN's electronics industry and Japanese foreign direct investment' *NRI Quarterly*, Autumn, Vol. 8, No. 3.
MITI, (1999 and 2000), *Overseas business operations of Japanese Companies*, (Wagakuni Kigyo no Kaigai Jigyo Katsudo) 26th, 27th surveys, MITI, Tokyo.
MITI, *Statistics on Foreign Investment* (Kaigai Toshi Tokei Soran), various issues, Tokyo.
Mitsuhiro, S. (1994), *Beyond the Full-Set Industrial Structure: Japanese Industry in the New Age of East Asia*, LTCB, Tokyo
Mori, M. (1999), New trends in ASEAN strategies of Japanese–affiliated automobile parts manufacturers, *RIM*, *Pacific Business and Industries,* Sakura Institute of Research.
Morita, M and K. Nishimura (2000), 'Information Technology and Automobile Distribution: A comparative Study of Japan and the United States', *Mimeo*, University of Tokyo, November.
Mukoyama H. (1994), Active investment by Japanese parts and material process industries in Asia: Exploring the backgrounds of their moves in Thailand and China' in *RIM Pacific Business and Industries* No. 24.
Nipon Poapongsakorn and Chayanit Wangdee, (2000), 'The Thai Automotive Industry', *PECC Conference Paper*, August (available from www.asean-auto.org)
Nipon Poapongsakorn and Chayanit Wangdee (2000), 'The Impact of Technological Change and Corporate Reorganisation in the ASEAN Automotive Industry', *PECC Conference Paper*, August (available from www.asean-auto.org)
Oishi N. 1994, 'MITI aims to boost parts industries in Asia', *Nikkei Weekly*, 25 July.
Okamoto, Y. and F.Sjoholm (1999), 'Protection and the Dynamics of Productivity Growth: The Case of Automotive Industries in Indonesia' *Working Paper No. 324*, Stockholm School of Economics, Stockholm.
Pangetsu M 1986, 'The Pattern of Direct Foreign Investment in ASEAN: The United States vs. Japan', *ASEAN Economic Bulletin*, 3, pp301-28.
Paramjit Singh. (2000), 'The Malaysian Automotive Industry', *PECC Conference Paper*, August (available from www.asean-auto.org)
Paramjit Singh (2000), 'Regional Trading and Industrial Arrangements in the ASEAN Sector', *PECC Conference Paper*, August (available from www.asean-auto.org)
PECC (2000), *The ASEAN Automotive Industry*, August, Singapore (available from www.asean-auto.org).
PECC (2001), *Pacific Economic Outlook 2001-2002*, Asia Pacific Press, Canberra (available from www.pacificeconomicoutlook.com).

Porter, M. E. 1986, *Competition in Global Industries*, Harvard Business School Press.
PriceWaterhouseCoopers (2000), The Second Automotive Century Executive Summary (www.pwcglobal.csm/auto)
Proton 1995, *Proton Profile*, Shah Alam, Malaysia.
Sato, I. (1997), ASEAN Automobile Industry and Japanese Affiliates' New Strategy in Kitamura, K. (ed.) *Advancement of Industrial Structure in East Asia and Japanese Industry*, Institute of Developing Economies.
Sato, Y. (1996), 'The Astra Group: A Pioneer of Management Modernization in Indonesia', *Developing Economies* 34(3): pp247–80.
Sato, Y. (1998a), 'The Machinery Components Industry In Indonesia: Emerging Subcontracting Networks', in Y. Sato (ed), *Changing Industrial Structures and Business Strategies in Indonesia*, Institute of Developing Economies, Tokyo: pp107–48.
Seki, M. (1994), *Beyond the Full-Set Industrial Structure: Japanese Industry in the New Age of East Asia*, Tokyo, LTCB International Library Foundation.
Shinohara, T. (2000), 'IT Revolution and eODA', *JBIC Review,* No. 3, December.
Siam Toyota, (2000*), Company Profile*, Bangkok.
Steiger, W and H.J. Oberg (2001), "Outlook for alternative powertrain systems", in, *Global Automotive Manufacturing and Technology*, World Markets Series Business Briefing, World Markets Research Centre, London.
Sumiya, F. (1995), 'Chrysler to open parts distribution center here' *The Straits Times*, 27 March.
Tachiki, D. S. (1992), 'The competitive status of Japanese subsidiaries: Building a presence in regional markets' *RIM Pacific Business and Industries*, Vol IV.
Takahashi, Y. (2000), 'Technical Assistance to Japanese Affiliates – The Case of the Autoparts Industry in Thailand', in Okuda, S. (2000), *Industrial Linkage and Direct Investment in APEC*, APEC Study Center, Institute of Developing Economies, March.
Takayasu, K. and A. Toyama, (1997), 'Business development of the big three US automakers in Asia accelerating their global strategies' *RIM Pacific Business and Industries*, Vol III, No. 37.
Takayasu, K., Y. Ishizaki and M. Mori, (1996), 'The imminent advent of the age of global competition for the automobile industry in Southeast Asia' *RIM Pacific Business and Industries* Vol III, No 33.
Tarmidi, L. (1998), 'Industri Komponen Otomotif', in Perhimpunan Alumni Jerman (ed.), *Daya Saing Industri Indonesia, Perhimpunan Alumni Jerman*, Jakarta: pp36–98.
Tateisa, N. (1999), 'Initial Remarks on The Road to Economic Recovery in Asia: Japan- ASEAN Cooperation', *Occasional Paper Series, No. 7*, January, Japan Institute for Social and Economic Affairs. (see http://www.kkc.or.jp/english/activities/publications/007.html.).
The ASEAN Secretariat (2001), ASEAN Investment Area: Temporary Exclusion List, See ASEAN website: http://www.aseansec.org/
Thee Kian Wie (1997), 'The Development of the Motor Cycle Industry in Indonesia', in M. Pangestu and Y. Sato (eds), *Waves of Change in*

Indonesia's Manufacturing Industry, Institute of Developing Economies, Tokyo: pp95–135.
Timmer, M. (1999), 'Indonesia's Ascent on the Technology Ladder: Capital Stock and Total Factor Productivity in Indonesian Manufacturing, 1975–1995, *Bulletin of Indonesian Economic Studies* 35 (1): pp75–98.
Toyama, A. (1999), Asian Business Development of the World's Major Automobile Assemblers through strategic alliances', *Pacific Business and Industries*, Vol. 1, No. 43, pp2–12.
Toyota Astra Motor, (1999), *Toyota Astra Motor*, Company Brochure.
Toyota (2000), *IT, Interactive Toyota, Toyota's IT Operations*, Corporate Brochure.
Toyota (2000), 'Suppliers Guide for doing business with Toyota'*, Corporate Brochure'*
UNCTC (1999), *World Investment Report*, Geneva.
UNIDO, 1999, *International Yearbook of Industrial Statistics*, Geneva.
Veloso, F. (2000), 'Automotive Supply Chain: Global Trends and Asian Perspectives', *ADB Conference Paper*, October.
Ward's Communications (1999), *Ward's Automotive Yearbook*.
White, N. (2001), 'A quiet revolution?', in *Global Automotive Manufacturing and Technology*, World Markets Series Business Briefing, World Markets Research Centre, London.
Womack J. P., D. T. Jones and D. Roos, (1990), *The Machine That Changed The World*, New York, Rawson Associates, Maxwell MacMillan International.
Wonnacott, P. (1995), 'The Automotive Industry in Southeast Asia: Can Protection be made less costly?' *Research Paper*, Institute for International Economics, pp89-111.
World Trade Organisation (2000*), International Trade Statistics 2000,* Geneva.
Yamashita S. (*ed*) (1991), *Transfer of Japanese Technology and Management to ASEAN Countries*, Tokyo, University of Tokyo Press.