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EXPORT IMPACT
FOR GOOD

THAILAND IN GLOBAL AUTOMOBILE NETWORKS

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Preface

The International Trade Centre (ITC) is the joint technical cooperation agency of the United Nations and the World Trade Organisation (WTO). ITC supports policy makers in developing and transition economies to integrate the business sector into the global economy for export success.

To achieve this, ITC promotes business advocacy to ensure that business priorities are integrated into national trade policies, and that the needs of business, especially small and medium sized enterprises (SMEs) are taken into consideration in the negotiation of international trade agreements. Linking the business sector, through their representative trade support institutions, to policy makers is a key factor for the promotion of a conducive business environment.

The purpose of this study is to examine the growth trajectory and the current state of Thai automotive industry¹, paying particular attention to factors that underpinned the successful transition from the import-substitution phase to global integration through export expansion. To gain perspectives, the study also compares the Thai experience with that of Malaysia. The two countries are excellent candidates for a paired case study as they represent two distinct experiences of automobile industry development. The Malaysian policy may be characterized as state-led, while the Thai policy is representative of a private-sector led, market-conforming strategy.

The study aims to broaden our understanding of the causes of development or otherwise of the internationally competitive automotive industry. It will help the businesses to make the case for framing policies for better outcomes in an era of rapidly evolving international trading environment.

¹ The term 'automotive industry' refers here to the assembly and production of parts and components of passenger cars and commercial vehicles. Motor bicycles are excluded from the product coverage.

1. Introduction

The automobile industry in Thailand has grown rapidly over the past two decades. Growth has been much faster from the late 1990s when a world-class automobile cluster emerged in the country through global integration. In 1995, automobile exports from Thailand amounted to half a billion US dollars, well below exports from India (0.9 billion) and Malaysia (0.7 billion) among the Asian countries. By 2008 annual exports approached 28 billion, making Thailand 13th largest automobile exporter in the world, and the third largest in Asia, after Japan and South Korea. The marked success in the expansion of the automobile industry has transformed the country into the 'Detroit of the East' (Economists Intelligence Unit 2008, p 21), with most of the major players in the international auto industry using the country as a production platform.

Automobile industry has been the target of industrial development in many countries as a growth driver - a source of employment, technological expertise, and a stimulus to other sectors through backward linkages. The automobile is a complex product, consisting of a large number of parts and components which involve different production processes and factor proportions. Many of these parts and components are manufactured by independent suppliers in other industries such as textiles, glass, plastic, electronics, rubber products, and steel and other metals. Promotion of the automotive industry can therefore lead to the expansion of numerous complementary investments by auto parts firms, thereby laying down the foundation for broad-based industrial growth. But, only a handful of developing countries have managed to develop an internationally competitive automotive industry which delivers the anticipated development dividends; in most cases automobile production has turned out to be a high-cost activity carried out within the confines of a protected domestic market while heavily relying on direct government support. This study aims to broaden our understanding of the cause of these mixed outcomes and thereby help framing policies for better outcomes in an era of rapid structural change in the process of vehicle production at national, regional and global levels.

The study is based on data/information gathered from two main sources. The discussion on automotive policy, and trends and patterns of production and trade in the two countries is based on a survey of previous studies and analysis of data pieced together from various secondary sources. The information used in analyzing firms perception of government policy and the nature of linkages between automakers and parts producers in Thailand come from firm-level surveys conducted in during June-August 2006 and August-September 2009² The surveys covered 41 firms (5 carmakers and 36 auto part suppliers) located in the automotive clusters in Rayong and Chonburi provinces.

The remainder of the study is arranged in five major sections. Section 2 surveys the evolution and key instruments of Thai policy regime relating to the automotive industry. The growth of automotive industry is examined in Section 3, with emphasis on the experience following the policy transition from import substitution to global integration in the late 1990s. This section also looks at the linkages between automakers and parts and components producers and the role of Thailand within regional automobile production networks. Section 4 probes factors underpinning Thailand's emergence as a successful players in the global automobile industry. In Section 5, performance of the Malaysian automobile industry is surveyed, drawing attention to differences in policy choices and outcomes between the two countries. The final sections summarises the main findings and policy inferences.

² The first (2006) survey was carried out by Kohpaiboon as part of his doctoral research (Kohpaiboon 2006). The second survey was carried out by a research team led by him as part of an ILO-funded research project (Kohpaiboon *et al.* 2010).

2. Policies

The Thai policy regime relating to the automotive industry has evolved, as an integral part of the overall industrialization strategy, through two distinct phases. During the period from the early 1960s until the late 1980s import substitution was the basis tenet of development strategy. During this period Thai government enticed car makers to set up assembly plants in the country by providing tariff protection for vehicle manufacture and imposing local-content requirements (LCRs) to promote local parts manufacture. From 1990 onward the government has begun to rely on market mechanisms. Table 1 provides a chronology of key policy changes.

2.1. Import-substitution era

As in many other developing countries, in Thailand automobile industry was one of the first targets of industrial development through import substitution. In the early 1960s, tariffs of 60%, 40% and 20% were imposed on imports of completely built units (CBUs) of passenger cars, vans and pick-up trucks, respectively. Tariff rate applicable to imports of completely knocked-down (CKD) kits and parts of each of the three categories were set at half of the CBU rates. High end-product tariffs combined with lower tariffs on imported inputs naturally favoured domestic assembly of hither-to-imported vehicles. Motor vehicle tariffs were by far the heights in the overall import duty structure of Thailand throughout the ensuing four decades.

From 1960 the government embarked on an investment promotion policy to complement the protectionist trade policy regime. The Board of Investment (BOI) was established to approve foreign investment projects and implement investment promotion measures under the Investment Promotion Act (1960). The BOI introduced a range of investment promotion measures, including income tax breaks for approved investment projects. Unlike in many other developing countries, investment promotion policy in Thailand treated domestic and foreign investors equally. A revision made in 1977 to the Investment Promotion Act stipulated majority Thai ownership in domestic-market oriented joint-venture firms (firms which sell more than 70% of output in the domestic market). Other than this ownership restriction, foreign investment policy regime continued to remain highly liberal throughout the ensuing years. Foreign firms had the option of setting up affiliates in Thailand without obtaining BOI approval³.

By the late 1960s, there was a growing concern in Thai policy circles that the nascent automobile industry had failed to set the stage for broad-based industrial growth through backward linkages with local parts and components industry. In response, the government set up an Automotive development Committee (ADC) in 1969 (which consisted of officials from BOI, Ministry of Industry, Ministry of Finance, Ministry of Commerce and Bank of Thailand, and representatives of Automobile Industry Club and the Association of Thai Industries) to design and implement local content requirement (LRC) measures. According to the LCR system designed by DAC which came into effect in 1975, domestically assembled passenger vehicles had to use locally produced parts equivalent to at least to 25% of the total value of the vehicle in order to qualify for the import of CKD kits and auto parts. The LCR requirement for commercial vehicles and pick-up trucks was set at 15%.

The introduction of LCR system was accompanied by an upward adjustment in import tariffs on CBU units of passenger vehicles, vans and puck-up trucks to 80%, 60% and 40 %,

³ Business ventures set up without BOI approval were however not eligible for investment incentives or to own land. For these reasons almost all major MNE affiliates operating in the country have been set up under BOI approval.

combined with an increase of the respective rates on CKD kits to 50, 40 and 30%.⁴ As a further measure to promote local content, in 1978 an import ban was imposed on CBU passenger vehicles and import duties on CKD kits were increased to 80%. The tariffs on CBU units and CKD kits of vans and pick-up trucks were increased to 80 and 60%, respectively. Approval of new automobile assembly plants was withheld in 1978 because the existing plants were running under capacity. In 1984, domestic assembly of passenger cars was limited to two models each of 42 brands.

The new LCR system soon encountered implementation problems for two reasons. First, value-based LCR calculation was rather sensitive to exchange rate fluctuations, making it difficult to calculate the domestic-currency value of the imported parts. Second, there was also evidence of widespread manipulations of the system by car makers by understating the value of CKD kits on shipping documents and over invoicing the value of local purchase. To redress these problems the ADC, in consultation with the carmakers, developed a new point-based LCR system. Under the new system, which came into effect in 1983, every car part was assigned a point and auto assemblers were required to use locally produced parts up to a minimum mandatory total, initially set at 50 points. This was reduced to 45 points in the following year in response to requests by automakers.

In 1983, the then Minister of Industry (Ob Vasuratna) mooted the idea of a 'Thai Vehicle' project which aimed to increase the local content of domestically assembled cars first to 70% and then to 100% within a period of ten years. Naturally, the project was warmly welcomed by local part manufacturers, but it faced strong resistance from the carmakers, in particular Toyota, by far the largest local car assembler in the country (Doner 1991). The major concern of carmakers was that the high local content requirement could depress domestic demand for both vehicles and parts with adverse implications for the growth of the nascent car industry. The underlying logic of the argument was that, given the prevailing ban on CBU imports, carmakers could easily pass the increase in cost of production resulting from high LCR on to customers. The compromise response of the government involved two key elements.

First, the LCR target for passenger cars was set at 54 points based on a two-way classification of auto parts—a mandatory list (Account A) and selective list (Account B)—with LCR points divided equally (27 each) between the two lists. Car makers were required to adhere strictly to Account A in procuring inputs and they were permitted to choose items freely from Account B. If any of the parts in list A was not available locally, carmakers could select substitutes from the selective lists to fulfil the requirement. Account A consisted of several parts (e.g. radiator, battery, wiring harness, muffler, wheels and tyres, glass doors, rear spring) which most carmakers had already been procuring domestically. Thus there was little resistance from the carmakers to the new system.

Second, a new project specifically aimed at local production of diesel engines for one-ton pick-up trucks was launched (labeled, 'one-ton diesel engine project'). The project included two key elements: (a) giving government approval to three selected firms (Siam Toyota Manufacturing, Isuzu Engine Manufacturing, and Thai Automotive Industry (Nissan affiliate)) to locally produce diesel engines for one-ton pick up truck subject to specific LCR and export performance requirements and (b) creating a captive market for the engine producers by requiring local assemblers of one-ton pick-up trucks to use only locally produced engines.

The number of approvals was limited only to three firms in order to enable the firms to achieve efficiency through economies of scale. The specific LCR requirement applicable to engine manufacturers stipulated that they use at least at least 20% engine parts locally in the

⁴ As part of the new policy, the government also rationalized the output mix of local production by setting limits by models and engine sizes as well as minimum capacity limits on individual assembly plants. However, this rationalization policy lasted only 6 months.

first year (1989) and increase this by 10% every year to achieve 70% local content by the end of the seven-year implementation period (1995). The producers were given the flexibility of deciding what components are to be procured locally, subject to the condition that they achieve full localization of casting, forging and machining of cylinder blocks, cylinder heads, crankshafts, camshafts, and connecting rods by 1995. According to the export performance requirement, an engine manufacturer had to export (in gross value) not less than 120 million baht (around \$ 4.8 million) worth of engines during the first four years, and at least 280 million baht (\$ 11.2 million) worth of engines in each of the subsequent three years.

The diesel engine for one-ton pickup trucks was selected as the specific target of this project based on an assessment of domestic demand. At the time, this vehicle model had the largest domestic demand among all vehicle assembled in Thailand, because of its popularity as a multi-purpose vehicles among farmers and urban vendors. Production volume was rapidly approaching the 100,000 mark by the mid -1990s⁵. In addition, the one-ton pickup truck is largely a homogenous product whereas a given brand of passenger vehicle has a number of models.⁶ This greatly facilitated achieving economies of scale in production

The project was designed by ADC based on extensive consultation with the relevant private sector stake holders. For instance, the original LCR scheduled prepared by the ADC the final LCR target was 80% and this had to be achieved by 1992. This was subsequently reduced to 70% and the implementation period was extended by three years based on requests by producers. The project was strongly supported and pushed by the large Thai-owned agglomerated company, Siam Cement Group, whose subsidiary, Siam Nawaloha Foundry (SNF), was successfully manufacturing agriculture diesel engines under a joint-venture arrangement with Kubota, Japan. According to our interviews, the chief executive of the Group (an engineer, who was also the Chairman of Federation of Thai Industries and a board member of BOI) had profound faith in the viability of the project. His views had a strong influence on ADC officials. At the planning stage of the project, SNF sponsored a visit by senior officials of BOI and MOI to diesel engine production facilities in Japan.

2.2. From import-substitution to global integration

Since the late 1980s there has been a palpable shift in Thai automobile policy from domestic market orientation and toward global integration, setting the stage for the country to emerge as centre of automobile and auto part manufacturing in the region. The Thai economy entered a period of rapid growth from about 1988. The resulting increase in domestic demand caused a shortage of locally assembled vehicles. In response, the government repealed in 1990 the limits on the number of series of cars permitted for local production. In the following year the import ban on brand new cars was lifted. Since then the import trade regime for automobile have remained free of quantitative restrictions, with the sole exception of non-automatic licensing for the importation of certain types of diesel engines and a ban on motorcycle engines and used passenger cars (WTO 2007, pp 115-16).

During 1998-2000, the Thai government honored its commitment under the WTO agreement on Trade Related Investment Measures (TRIMS), becoming the first developing-country WTO member to do so. Abolition of LCR (with effect from January 2000) was announced in 1998. In the area of FDI policy, all selective incentives granted to export-oriented activities and 49% equity ownership restriction on domestic-market oriented projects were abolished with immediate effect in 1999.

⁵ Data on Thai auto industry reported in this paper, unless otherwise stated, come from Thailand Automotive Institute website (www.thaiauto.or.th).

⁶ For example Toyota Thailand produces one model of pickups but five models of passenger cars (Vios, Yaris, Altis, Camry and Wish).

In 1995 Thailand became a signatory to the ASEAN Brand-to-Brand Complementation (BBC) programs (1995).⁷ This program aimed to promote trade in parts and components among auto companies operating in ASEAN member countries. It provided for 50% reduction in prevailing import duties on parts and components trade among member countries, while treating these imports as part of the local content in estimating the minimum local content of the final products (40%) applicable to duty concessions under the ASEAN Free Trade Agreement (AFTA).

Since 2002 Thailand has signed a number of bilateral free trade agreements. Of these, the Thai-Australia FTA and the Thai-New Zealand FTA have been in operation since 2005. The FTA with Japan came into effect in 2007.

In addition to these preferential tariff reductions, general (MFN) tariffs on CBU passenger vehicles and CKD kits have also been reduced at successive stages starting in 1992, exposing the domestic auto industry to increased import competition (Table 2). However, automotive tariffs continued to remain high with a pronounced cascading pattern: duties on CKD kits ranges from 10% (chassis with engine under HS87.06) to 30% (most items), while rates on completely-build-up (CBU) automobiles ranges from 20% to 80%, depending on the type of vehicles. Given the cascading nature of the tariff structure, the effective rate of protection (ERP)⁸ for domestic motor vehicle production is much higher than the average tariff. According to estimates based on data for 2005, the effective rate of protection for producing automotives for the domestic market is as high as 64.8% compared to the overall manufacturing average of 24.4% (Jongwanich and Kohpaiboon 2007, Table 5)⁹.

3. Outcome

Following the imposition of import tariffs in the early 1960s, multinational car makers, who had until then serving the Thai market through exports from their home bases, set up assembly plants in Thailand. By the late 1960s all Japanese carmakers (Toyota, Honda, Nissan, Mitsubishi, Daihatsu, Isuzu), three European carmakers (Volvo, Renault Mercedes) and the two major US carmakers Ford and General Motors) were present in Thailand. Many of them, especially Japanese carmakers, operated through joint ventures with large local conglomerates, although foreign ownership restrictions had not yet been implemented (until 1977).

Following the sharp increase in oil prices during the early 1970s, there was a sharp decline in domestic demand for automobiles, accompanied by a notable compositional shift in demand to smaller-engine vehicles. As a result, five non-Japanese carmakers ceased to operate. Given the government suspension of approval of new assembly plants and the imposition of import ban on CBU vehicles in 1978, the number of carmakers remained unchanged at 12 for the next two decades (Kohpaiboon 2006, p. 195).

Until the implementation of LCR measures in 1975, local car assembly was predominantly on imported parts and components. At the time, there were about 20 parts and component manufacturers, but they were producing predominantly for the replacement equipment markets (REM) (supplying spare parts to car users). Following the imposition of LCR, MNE car manufacturers began procuring parts locally. Some Japanese part producers establish

⁷ In 1998, this program was generalized to cover entire auto part trade under the new title ASEAN Investment Complementary Operation (AICO) program.

⁸ The ERP measures the proportionate increase in per unit value added of a given industry/sector due to the complete system of tariffs. More specifically, it takes into account the protection on output and the cost-raising effects of protection on inputs.

⁹ A pertinent issue here is how Thai industry achieved a notable export success under a trade regime which continued to have a significant anti-export bias (as reflected in a relatively high rate of effective protection for production for the domestic market). This is discussed in Section 4.2.

production plants in Thailand. At the same time some carmakers engaged REM firms as original equipment manufacturing (OEM) suppliers. The number of parts manufacturers had increased to around 180 enterprises by 1980. The range of locally manufactured auto parts had widened and included rubber parts, suspension systems, radiators, inner panel pressed parts, brake drums, gaskets, pistons, safety glass, electrical equipment and wiring harnesses. Because the part producers tended to locate closer to their customers in order to meet the requirements of just-in-time production, LCR mechanism set the stage for the formation of production clusters in Rayong and Chonburi provinces.

The three firms involved in the one-truck pickup truck project (Toyota, Nissan and Isuzu) began to implement their production plans in the late 1980s. In 1986, Nissan's expanded its operations aiming to export pickup trucks to South Korea, Malaysia, Australia and New Zealand as part of the company's global plan. In the same year, Isuzu announced a three-step export plan for the production of engines and then pickup trucks. The three firms together designed a production sharing arrangement among them in order to make the implementation of the project feasible, particularly in the areas of casting, forging, and machining processes. Under this arrangement each firm agreed to produce designated components to be exchanged among them. For instance, forged crankshaft and connecting rods were manufactured by Isuzu and sold to Toyota and Nissan. Meantime, Toyota and Nissan made casting cylinder blocks and cylinder heads, respectively.

Ford, Daimler Chrysler and General Motor (GM) re-entered Thailand in the mid-1990s with the prime objective of producing one-ton pick up trucks. Following its merger with Mazda in 1993, in 1995 Ford resumed vehicle assembly in Thailand using Mazda's existing production base. In the same year Daimler Chrysler re-entered Thai auto industry through its merger with Mitsubishi. GM established its own new assembly plant 1996.

Production capacity in the car assembly industry began to increase rapidly from the second half of 1990s. Total production capacity recorded a ten-fold increase (from 160 thousand to 1.6 million) between 1989 and 2006, with Japanese car makers accounting for over 90% (and Toyota alone accounting for a third) of the total installed capacity (Tables 3 and 4). One-ton pick-up trucks accounted for 57% of the total capacity.

The expansion of auto assembly industry through MNE participation was accompanied by a similar expansion in local auto part industry. Auto parts manufactures, which had already entered Thailand, expanded their operations. The expansion of activities of Denso, a Japanese auto-parts maker, in Thailand provides a clear example. Denso first set up a factory in 1972 to produce cooling systems. It then established two new factories in 1995 and 2000 and five more since then to produce a wide range of auto parts (Figure 1). Many foreign part suppliers, which had been operating through joint ventures with local partners, expanded production capacity following the removal of ownership restriction in 1998, by increasing their equity shares and, in some cases, by acquiring full ownership. With change in ownership, MNEs also started bringing in cutting edge technology, better managerial practices and close supervision of assembly/production by bringing in foreign technicians and managers¹⁰

Until the mid 1990s, the 'foreign' segment of the Thai auto automobile part industry was dominated by Japanese companies. Since the mid 1990s, several world class non-Japanese multiple-parts manufacturers entered the industry: Dana (1994), TRW Steering & suspension (1998), Visteon Thailand (1998), Johnson Controls (1999), Delphi Automotive Systems (2000) and Tenneco Automotive (2002), Jason Engineering (UK affiliate), Siam Calsonic Co. Ltd and Visteon (Ford supplier) and Halla Climate Co. Ltd (Ford supplier) Suppliers). By 2008 there

¹⁰ In interviews, local partners of these firms stressed that the removal of ownership restriction played an important role in assuring foreign partners greater commitment to the expansion of local production activities both in terms of increasing capital commitments and transmission of up-to-date technology

were around 700 first-tier firms, and 1,100 second and third-tier firms in Thai auto part industry.

3.1. Growth and Composition of Production

Automobile production increased at an annual rate of over 10 percent from the mid 1980s, passing the half-a-million mark by 1996 (Figure 2). This impressive growth trend was interrupted by the financial crisis during 1997-1999, but production had regained the pre-crisis (1996) level by 2002. Output expansion during the ensuing years, when industry became increasingly export-oriented, was much faster: between 2002 and 2008, total production increased 0.8 to over 1.4 million in 2008, recording an annual compound rate of over 20%. In 2008, Thailand was the 14th largest auto producer (8th largest producers among countries in the periphery¹¹) in the world, accounting for 2.0% of the total world output. It was by far the largest auto producer in ASEAN and the fifth largest in Asia after Japan, South Korea and India (Table 5).

From about the early 1980s, commercial vehicles accounted for nearly 70% of total domestic vehicle production (Figure 3). However the share has recorded a mild but persistent decline from about 2005 reflecting diversification to passenger cars. One-ton pickups account for the lion's share of commercial vehicle production (over 90%). Production volume of pickups increased from 47,000 in 1985 to 410,000 in 1995 and to over 950 thousand in 2008.

The global economic downturn caused by the global financial crisis has begun to have a notable contractionary effect on Thai auto industry. Production contraction has been observed since the last quarter 2008. Production declined from 124,656 units in October 2008 to 53,644 units in April 2009, the lowest level since the 1997-98 Asian financial crisis. From May 2009, vehicle production has begun to show some signs of recovery. However the indications indicate that the recovery would be gradual and a V-shaped rebound is unlikely. Prospects for expanding exports to emerging market have not been severely affected by the crisis. However demand in developed countries (in the EU in particular), which accounts for nearly half of total exports, is likely to remain subdued at least for the next 2 to three years.

3.2. Export trends and patterns

The first export shipment of motor vehicles from Thailand (by MMC Sittipol, the Mitsubishi affiliate) took place in 1988. However, until the late 1990s Thai automotive industry continued to remain heavily domestic market oriented, with exports, on average, accounting for less than 5% of total sales (Figure 2). Export volume (measured in units) recorded a five-fold increase between 2000 and 2008 (from 153 thousand units to 838 units). Its value (US\$) terms, the increase was even sharper, from 2.8 billion to 195 billion, suggesting a compositional shift in exports toward higher value items (Figure 4). During 2000-2008 exports accounted for over 60% of total increase in the volume of automobile exports (Figure 2). The share of automobile exports in total merchandise export from Thailand increased from about 1.5% in the 1990s to 13% in 2008 (Figure 5).

Parts and components export accounted for over a three fourth of total automobile exports in the 1990s. Since then, this share has decline sharply reflecting a notable shift in export

¹¹ The term 'countries in the periphery' is used here to refer to countries other than the traditional automotive producers – UK, USA, Japan, Germany, France and Sweden.

composition toward completely built vehicles. However parts and components still account for about a fifth of total exports (Figure 4).

Table 6 provides data on the composition of vehicle exports. One-ton pickups have continued to remain the dominant type among exported vehicles. However, their share in total export value has declined sharply, from 74.6% to 42.6% between 1999 and 2007. Smaller passenger cars (1000-1499 cc) have accounted for the corresponding export share gains. However, the share of larger passenger cars (1500-3000cc) too has increased over time, although with some year-to-year fluctuation. In sum, the data point to a notable diversification in the composition of car exports over time.

The geographic profile of automobile exports from Thailand has undergone notable changes since the early 1990s (Table 7). The most notable change in the sharp increase is the market share of ASEAN-10 countries— from 6.7% during 199-2001 to about 20% in 2006-07. This increase seems to reflect preferential access to markets in these countries under the CEPT tariff preferences. However, extra-regional exports still accounts for the lion's share of total motor vehicle exports, with a notable shift from EU-15 to other countries (countries in the Middle East, in particular).

Exports to Japan and USA has accounted for a tiny share in total exports throughout. Japan's smaller share is consistent with the export patterns observed for other manufactured good exports from Thailand (and other countries in the region) as well, and reflects the well know patterns of Japanese firms using production bases in the other countries in East Asia to export to third country markets (Athukorala 2005b). The smaller export share to USA is understandable because all major international car makers have set up production plants in the US and/or use production bases in Latin America, in particular those in Mexico, to serve the US market.

There are no significant differences in change in product mix over time among the major market. A notable exception is the sharp increase in the share of passenger cars to Australia. The Australian share of total passenger car exports increased from 14.9% in 2002-05 to 29.9% in 2006-07. This could well reflect the effect of Thai-Australia bilateral FTA which came to effect in 2006.

3.3. Automotive Industry in the National Economy

During the period from 1960 until about the late 1990s, the rate of growth of automobile industry in Thailand was compatible with the overall growth of the manufacturing sector; the share in manufacturing output (i.e. value added) remained around 8% (about 2% of GDP). The ensuing years have seen much faster growth lifting its share in GDP to about 8% by 2008.

Employment in the automotive industry too has grown over time, but at a much slower rate, from about 3.3% in total employment in the 1990s to 4.5% (around 350,000 workers) in 2008. The gap between output and employment shares reflects the relatively high capital intensity of automobile industry compared to the average level of total manufacturing. The value added per worker (a rough indicator of capital intensity of production) in transport equipment manufacture is about three times of that of total manufacturing (Kohpaiboon 2006, p. 174).

A major concern of the debate on national gains for the expansion of auto industry in Thailand relates to the extent of its value addition to the national economy. A number of studies conducted in the early 1990s have come up with estimates which suggest very low value added, less than 20% (Kohpaiboon 2006). However, the evidence we have collected through

firm level surveys suggests that value added would have significantly increased during the ensuing years as the local production of parts and components have rapidly increased in line with rapid output expansion. The bulk of parts and components embodied in locally assembled cars (over 90%) are now sourced locally, although the import content of some automotive components are admittedly still high.

Data needed for precise estimation of domestic value added are hard to come by. However, some idea about the overall trends in change in domestic values added in line with output expansion can be obtained by looking at the co-movement of parts and components imports and domestic automobile production. One way of doing this is to calculate the real value of parts and components imports (that is after adjusting import value for changes in prices) per unit of local production (per locally assembled vehicle). Our calculations for the period from 1988 to 2007 are plotted in Figure 6. (Methodology is spelled out in the note to Figure 6). The real US\$ value of parts and component per vehicle (at 1985 price) has declined sharply from about 8,500 in the early 1990s to around \$ 2000 in 2007. This pattern is consistent with our findings of our firm-level survey. Interestingly, the rate of decline is much sharper during the period after the abolition of LCR requirements compared to the preceding period. This suggests that the market-driven process of localization of auto industry has yielded a much better outcome compared to the outcome of the LCR regime.

3.4. Thailand in Regional Automobile Production Networks

The data summarised in Table 8 shed light on the relative importance of individual carmakers in vehicle assembly in Thailand and the relative importance of Thailand as a production base for these firms in their global operations. Japanese automakers dominate automobile assembly in Thailand, accounting for over 80% of total output. MNEs The two largest US carmakers (GM and Ford) accounted for a mere 7.5% of total production in 2008¹². Production in Thailand accounted for about a fifth of total automobile production by Japanese in Asian countries (excluding Japan). However, Thailand accounts for a much smaller share of the total global production of Japanese auto firms (4.1% in 2008). For the US firms the share is still smaller (0.8%).

What is the role of Thailand within global automobile production networks? Figure 7 helps answer this question. Toyota, which has continuously accounted for the largest share in production in Thailand of both passenger cars and pickups, uses the country as a production and export base of small-to-medium passenger cars and one-ton pickups. Toyota exports the cars mostly to Southeast Asian countries, Australia and New Zealand. It exports pickups mostly to Europe. Passenger cars manufactured by Honda in Thailand (i.e. Honda accord, civic and city) are exported to other Southeast Asian countries whereas Honda Stream is produced in Indonesia and exported to other countries in the region, including Thailand. Ford and Mazda use their production base in the Philippines for producing passenger cars (Ford Laser, Ford Escape, Mazda Protégé, and Mazda Tribute) for the other countries in the region including Thailand.

For all car makers listed in Figure 7, Thailand is the regional production base for the production of one-ton pickups. These firms adopt platform production strategy to produce one-ton pickups to more than 100 countries. In the platform production strategy, automakers use a small number of underbody platforms as the basis for a greater number of vehicle models. This strategy reduces costs of platform development and enables component sharing among models. For example, platform sharing between Chrysler and Mitsubishi allowed Mitsubishi to reduce its number of light-vehicle platform from 12 to 6. Another example,

¹² Data for Chrysler are not available. They are presumably included in the figures for Mitsubishi, Chrysler's global partner.

Honda Odyssey and Accord share the same platform. The platform used for Ford Everest and Mazda Fighter are also the same.

3.5. The link between Assembler and Parts Suppliers

As global competition becomes more intense, MNE carmakers tended to increase local parts procurement in order to strengthen their international competitiveness. Many vehicle parts are characterized by high 'weight to value' ratios and some of them are bulky. Therefore there is sizable trade cost involved in procuring all the parts from distant suppliers. There is also a need for close cooperation between car manufacturers and parts suppliers to match their production plans and delivery schedules in order to ensure just-in-time production while maintaining the quality of the final product. Local procurement also serves to reduce exposure to exchange rate risk. These considerations explain the tendency for geographic clustering of automobile industry, with car assemblers at the centre surrounded by part suppliers.

According to ADC records there are 1,454 indigenous part suppliers in Thai auto industry. Of these 354 are first-tier suppliers, while the rest operates at the second- and third-tiers in the supply chain (Figure 8). The first-tier suppliers involved in designing and manufacturing of modules, not just individual parts and components. They directly deal with car manufacturers. The second and third- tier suppliers produce parts and components for the first-tier suppliers.

At present there only about 10 local firms among the first-tier suppliers who are truly involve in design and manufacture modules. The others local firms are involved in manufacturing simple inner body parts. Prior to the abolition of ownership restriction on foreign-affiliated firms in 1997, there were many more first-tier local suppliers operating under technology licensing agreements with foreign part producers. Since then the technology owners have taken over most of these local firms.

The dominance of MNEs at the first-tier of the supply chain is not unique to the Thai auto industry. The phenomenon of foreign firms consolidating their position at the first tier of the automotive supply chain has become an integral part of the globalization of auto industry (Klier and Rubentein 2008). For example, by the late 1990s in Brazil (a regional automotive hub in Latin America) there was only a single locally owned firm among 13 largest component producers (Humphrey and Oeter 2000). In South Korean, many large auto part firms were taken over by Western first-tier suppliers in the aftermath of the 1997-98 financial crisis (Doner et al. 2004). Given concerns about securing proprietary asset in cutting edge technology in a highly competitive market setting, the fully-owned affiliate has become the increasingly preferred mode of international operation of MNE auto part producers.

The fact that only a few indigenous suppliers have been able to maintain their OEM status suggests that LCR regime during the 1970s and 1980s has failed to have a significant lasting positive impact on local part suppliers. Of course LCR regime and other protection measures would have helped local suppliers in gaining technological capability. But, the relevant issue is whether such protection measures are capable of laying the foundation for sustainable development of a local auto part sector. The Thai experience suggest that these measures were not a sufficient condition in building up the technological capability of local suppliers and allowing them to benefit from the gains of dynamic economies. Evidence from firm level interview suggests that the success of the few local OEM producers has come not from the protection provided by LCR measures, but from their ability to forge links with the car assemblers whose production strategy shifted in the late 1980s toward export orientation. The expansion of production in these firms began in unrest only from the mid-1990s when policy reforms, in particular the removal of LCR enabled them to forge links with world class part makers.

In the new globalised auto industry, at the initial stage of global integration opportunities available for pure local firm to become OEM suppliers on their own (that is without forging links with MNE part suppliers) within MNE-dominated production network seems limited. Their activities are going to be heavily concentrated at the second and third tiers until they gain technological expertise and establish themselves as quality players within the automotive chain. The few local OEM suppliers are currently concentrated in the production of auto-body parts. Designing of body-related parts is normally undertaken by the car assemblers (since these parts are directly related to the appearance of the vehicle). Therefore, production of these parts does not require a high level of technological capability. However, there are indications that the local OME suppliers and some local firms involved at the second tiers have begun to move up the technology ladder. For instance the Thai company Aapico, has emerged as one of the world's best suppliers of low-volume tooling. A recent study of the procurement practices of Japanese automakers in Thailand has found many cases of Japanese automakers and first-tier firms expanding over time procurement of high-tech parts from second-tier local firms (Japan Finance Corporation 2007)¹³

The number of local firms joining the automotive production chain at the second and third tiers has significantly increased over the past decade or so. They are involved in the production of standard parts and components, and intermediate inputs such as such as plastics, textile products, and leather products. Growth prospect in these product lines seem promising because of the high growth of vehicle production and the increased local content of locally assembled vehicles. Evidence from interviews suggests that the process of knowledge and technology transfer from OEM firms and final assemblers to suppliers at the lower tiers has strengthened over time as the auto industry has become increasingly globally integrated.

4. What explains Thai success?

There is no single explanation for the recent rapid export-oriented growth in Thai auto industry. It has been underpinned by a combination of restructuring and geographic change in the auto industry, and pragmatic Thai policy which made the country an attractive location for international production. The size of the domestic market which enabled automakers to gain scale economies at the initial stage of global reach too seems to have played a role

4.1. Structural shifts in the global auto industry

There has been a massive transformation in the structure, conduct and performance of world auto industry over the past two decades or so, opening opportunities for countries in the periphery to join the global automotive production network (Klier and Rubenstein 2008, Shapiro 1994). Until about the mid-1980s, auto firms were predominantly engaged in multi-market operations by setting up production bases in individual countries to serve those markets. Since then the automobile industry has become increasingly globally integrated in the sense that manufacturing, sourcing and marketing has become increasingly cross-national. Production standards have become increasingly universal, accompanied by a palpable shift in production process from generic to modular technology. Consequently parts and components production has grown rapidly to cater for multiple assemblers. In this context, intense competition among carmakers has transformed the geographic spread of the automobile industry beyond the mature industrialized countries. Car assemblers now have to decide which models to produce at what locations, at what prices and quality standards, and for which markets. The search for low-cost production sites have led to new waves of setting up production plants by automotive MNEs in peripheral countries.

¹³ We thank Shuhei Nishitatenno for drawing our attention to this study.

The process of global spread of auto industry has also been aided by a notable shift in global demand patterns. The principal automobile markets in North America, Western Europe and Japan have been rapidly approaching the point of saturation in recent years. In contrast, growth perspectives for vehicle sales are increasingly promising in emerging market economies. This shift in demand patterns has led auto MNEs to set up new assembly bases to serve regional markets. With this regional focus, carmakers tend to consolidate their assembly facilities within a region and decide which models to produce at which locations (country), at what prices and quality standards, and for which markets (either region or global).

4.2. Favourable Policy Environment

Thailand was well placed to benefit from the global spread of auto industry, given its track record of market-conforming approach to making automotive-sector policies during the import-substitution era and the subsequent, well-timed policy transition toward greater outward orientation.

During the import substitution era, the policy tools used by Thai policymakers were not very different from that in other developing countries. However, the policy environment in Thailand remained relatively more liberal and stable than in Malaysia, Indonesia, and the Philippines (and many other developing countries). First and foremost, Thailand never had an explicit goal to promote a national car, as in Malaysia or Indonesia. The then president of Toyota Motor Thailand stated in 1999 'Thailand is the best candidate for hub status because it has no "national-car" policy and offers a playing field for both local and foreign firms' (Bangkok Post Economic Review, 1999, P. 5). At the same time, Thailand did not have an explicit target for localizing parts and component production: Thai authorities adopted a consensual approach to setting LCR target in consultation with automakers. The sole case of explicit LCR program the one-truck diesel engine plan, but it was carefully designed in consultation with the private sector stakeholders. Furthermore, the degree of policy uncertainty, resulting from frequency of reversing policy direction, was much lower in Thailand compared to Indonesia and the Philippines. This was especially true in Indonesia where modification of specific policy targets and objectives occurred more frequently than in any of its three neighbours.

The Automobile Development Committee provided an effective institutional setting for middle-level and senior officials to formulate policies in consultation with firms and business organizations. Interference of political leaders and top-level policymakers was virtually absent in the decision making process¹⁴. The fragmented nature of political parties and frequent changes in governments prevented any political group or private firm capturing sector agencies on a permanent basis. Moreover, the role of the state in designing industrial policy was not orchestrated by a planning agency with direct allocation control of economic resources. In this political setting, consensual approach to policy making and absence of abrupt policy shifts created stable expectations and confidence in the overall business environment. As policy formulation was based on government-private sector consensus, there were no sudden/abrupt policy shifts. As already discussed, the formulation of LCR policy and subsequent changes to LCR targets, and the design of one-ton diesel engine program attest to this consensual, pragmatic approach to policy making.

¹⁴ Thailand became a constitutional monarchy in 1932, modern political institutions continued to remain weak and unstable. Political parties are impermanent and subject to constant fragmentation. Few parties operate nationwide and have grass-root bases. They are not based on consistent political philosophy or policy agenda. Hence, bureaucracy plays an important role in policy making. Industrial policy making is spread across a wide array of agencies. In the absence of direct political influence and associated lobby group pressure, industry-specific policy making is normally undertaken by middle and senior officials in consultation with firms and trade associations under ad hoc multiple-office committees (Christensen et al. 1993, Phongpaichit and Baker 1999).

By design or by sheer luck, Thai government's move to liberalise the auto industry from the late 1980s coincided with the beginning of the structural shift in global auto industry towards the production of a 'global' car. Thailand, therefore, benefited from a first mover advantage in attracting global players to set up production bases in the country. In particular, the abolition of local content requirements and the ownership restriction on local affiliates of foreign firms were instrumental in setting the stage for linking the domestic industry to global production networks. As discussed, abolition of these restrictions prompted and facilitated MNE automakers and part suppliers to set up new affiliates and/or to bring more cutting edge technology to the affiliates in Thailand by consolidating their ownership in these firms.

An important aspect of the performance of Thai auto industry which requires clarification is the coexistence of high tariff protection (which implies an anti-export bias) and rapid export growth. As discussed in Section 2.2, in spite of some reductions in recent years, tariffs on completely built automobiles continued to remain much higher than tariffs on other imports. Moreover, given the cascading nature of the tariff structure, the rate of effective protection for domestic automotive assembly is even higher than the average applied nominal rate. Viewed from the stranded (mainstream) policy advocacy for designing export promotion policy, an interesting issue here is why continuing anti-export bias was not a deterrent to rapid export growth. A possible explanation is that export expansion has been predominantly driven by MNEs, which set up production plants in Thailand to produce for the global market, not just for the Thai market. The conventional advocacy for removing anti-export bias as a precondition for export expansion is based on the implicit assumption that exporting is an act of domestically owned firms whose marketing decision is driven by the relative profitability of exporting compared to selling in the domestic market. Relative profitability in selling in the domestic market is not a binding consideration for a MNEs involved in manufacturing, sourcing and marketing within a global production network. At the same time, firms involved in the production of export in Thailand have access to both imported and locally-procured intermediate inputs virtually at world market price.¹⁵

So far we have examined trade and investment policy relating to the automotive industry. Sound trade and investment policy regime is, however, a necessary but not sufficient condition for successful global economic integration. Equally important is the conduciveness of the overall economic environment for doing business. International competitiveness requires high quality infrastructure, both hard and soft, especially for successful participation in time-sensitive global production and purchasing networks. Labour markets need to reflect underlying supply and demand conditions, with wage growth and differentials driven by productivity. Prudent macroeconomic management is required to provide a stable and predictable commercial policy environment, and to ensure that exchange rate outcomes do not impair competitiveness. Above all, political stability and policy certainty figure prominently among pre-requisites for profitable long-term investment, particularly in the site selection decision of MNEs.

In recent years there have been various attempts to assess comparative attractiveness of business environment in individual countries on the basis of investor surveys or other subjective assessments covering large number of countries. Thailand rank consistently high in these rankings. Table 9 shows the rankings of the Asian countries in one of these surveys: Doing Business survey of the World Bank, which has by far the widest country coverage among the alternative databases¹⁶. Thailand ranks 13th among all 140 countries covered in this survey. Among Asian countries, only Singapore, Hong Kong and Japan, rank higher than Thailand. Malaysia, Indonesia, and the Philippines rank below Thailand by a wider margin.

¹⁵ In 1983, the import duty drawback scheme (in operation since 1975) was supplemented with a complete direct duty exception for export-oriented firms (firms with export-sale ratios of more than 30%). Customs procedures relating to these imports have been greatly simplified from about 1997. In 1994, parts and components supplied by domestic firms to production of automobiles for export markets were exempted from all domestic taxes (See Table 1).

¹⁶ Data are given only for the latest year for which the survey results are available; there has not been significant change in the ranking of individual Asian countries since the commencement of survey in 2004.

As regards the general macroeconomic environment, the consensus inference of the existing literature¹⁷ is that macroeconomic policy in Thailand has been largely consistent with the country's commitment to outer-oriented development strategy. Thailand, as its high-performing counterparts in East Asia, has never experienced episode of hyper-inflation and massive exchange rate misalignment endemic of most countries in Latin America and Africa.

4.3. Domestic market

The size of the domestic market is an important consideration in the site selection process of automotive MNEs. This consideration was much more important at a time when location decisions were driven by import-substitution consideration. However, even in the modern era of globally integrated production, the market size matters in achieving economies of scale at the initial stage of operation. The cost of domestically produced parts is also inversely related with the size of the domestic market.

Thailand has the largest domestic market for automobiles in the region (Table 10 and 11). For the past two decades, annual vehicle sales in Thailand has ranged from about 300,000 units to 500,000 units, accounting for over 40% of the total sales in the ASEAN-4 countries, followed by Indonesia (27%), Malaysia (22%) and the Philippines (10%). A market which can absorb 40,000–50,000 units is generally considered of sufficient size for achieving economies of scale for a give car model. The one-ton pick-up truck, given its peculiar appeal in Thailand for farmers and urban vendors, met this criterion from as early as the mid-1980s. Total domestic sales of pick-up trucks amounted to 85 thousand in 1985 and increased to nearly 250 thousand in 2008. This is considered a key factor for the emergence of this vehicle model as the prime mover of rapid expansion of automotive exports from Thailand (Doner 2009). Thailand is now the world's second largest producer (after the USA) and the largest exporter of one-ton pickup trucks.

5. Malaysian automotive industry

In the 1960s and 1970s, the automotive industry policy in Malaysia was quite similar to that in Thailand. In line with the import-substitution industrialisation program, governments in both countries used tariff protection to entice foreign automobile producers to set up assembly plants to serve the domestic market. LCR requirements were subsequent introduced to force the nascent automobile industry to forge backward linkages. However, in the early 1980s the Malaysian government embarked on a national car project, in a sharp departure from the Thai approach of private-sector led growth centred on MNE involvement.

5.1. Beginnings

In September 1963, the Malaysian government announced its intention to encourage the establishment of an automobile industry, beginning with assembly of cars, to give impetus to the industrialisation program. The Ministry of Trade and Industry (MTI) established a special interdepartmental agency to oversee the auto sector, the Motor Vehicle Assembly Committee (MVAC), whose functions included price administration, import regulation, promotion of local contents, and control of the number of assemblers, makes, and models. Based on a feasibility study done by Arthur D. Little Inc, in February 1966, protective tariffs were imposed. Initially the tariff rates ranged from 30% to 80% on built-up vehicles, depending on the engine capacity, and 20% to 30% on CKD kits and car parts.

¹⁷ See Corden (1996 and 2003), World Bank (1993) and the works cited therein.

The first assembly plant, Swedish Motor Assemblies (a joint venture with Volvo) commenced operation in 1967. During the next three years the government approved to six assembly plants to start operations in Malaysia. By 1980 there were 11 assembly plants in Malaysia which produced 122 models of 25 makes of passenger cars and commercial vehicles. Fiat, Mitsubishi, Volvo, Honda, Peugeot, Mercedes Benz, Toyota, Daihatsu, Ford, Chrysler, Land Rover, Citroën were involved in assembly activities through equity and/or technical tie-ups with Malaysian (mostly Chinese) partners. By 1974 the annual output of locally assembled cars had reached 48,000. Most of the large auto part producing firms were foreign owned, predominantly by Japanese companies (Doner 1991).

As in Thailand, low domestic content of locally assembled cars became a major concern of Malaysia within few years of the birth of the local assembly industry. At the time, local content was averaged to less than ten percent and was largely limited to tyres, batteries, paints and filters, amounting to less than 5% of the value of an assembled car. In 1972, the government implemented a localisation policy which aimed to increase local content (by weight) starting with 10% in 1972 to reach 35% in 1982 (Lim and Onn 1983).

In 1979 MVAC came up with a 'mandatory deletion program' as a further measure to promote localisation. This policy involved deletion of certain components from import approval lists depending on their local availability thereby creating market opportunities for local part manufacturers. By the early 1980s, there were around 200 parts and components producers and the local content levels of locally assembled cars had reached about 20% by the early 1980s (Jomo 1993, p. 265).

5.2. The 'national car' policy

In November 1980, the Minister of Trade and Industry Dr Mahathir Mohamad (who became Prime Minister a year later) announced a state-sponsored heavy industry project with the stated objective of 'strengthening the foundation of the manufacturing sector' (Malaysia 1984, p. 27). The project was based on the premise that direct state involvement was necessary to overcome private investors' caution about high-cost, high-risk ventures with long gestation period. State sponsorship was also seen as a way to achieving the ethnic redistribution targets set under the New Economic Policy (NEP)¹⁸ announced a decade earlier.

In November 1980, the Heavy Industries Corporation of Malaysia (HICOM), a public-sector holding company, was incorporated to act as the apex government body for the implementation of the new policy. HICOM's mission was to establish industries in areas such as petrochemicals; iron and steel; cement; paper and paper products; machinery and equipment; general engineering; transport equipment; and building materials. The symbol of HICOM's industrialization program was the national car company Perusahaan Otomobil Nasional (Proton), a joint venture between HICOM and Mitsubishi Motor Corporation. The joint-venture contract was signed in May 1983. Mitsubishi contributed to 30% of equity capital with the balance coming from HICOM financed through a 33 million yen loan arranged by Mitsubishi.

Proton project made headlines at the time as Southeast Asia's most ambitious state-led project to develop a national car industry. Malaysia was the first (and so far the only) country in the region which sought to displace the existing private sector auto-makers with a state-backed national car company. The national car company was expected to rationalize the automobile industry, promote parts and components and other supportive industries, and

¹⁸ A sweeping affirmative action policy package introduced by the Malaysian government in 1971 with a view to maintaining national unity and social harmony by eradicating the gap in economic status between native Malays (Bumiputeras) who were mostly involved in low-income activities in the rural economy and other ethnic groups, mainly Chinese who were mostly involved in the modern sector of the economy.

increase Bumiputera involvement in the automobile industry which had long been dominated by foreign and local ethnic Chinese capital. At the time the project was launched, domestic assembly was undertaken by MNE either through fully-owned subsidiaries or joint-venture arrangements with local firms (fully-owned 27%, joint-venture with Chinese firms 43%, joint-ventures with Malay firms 30% (Bowie, 1991, p 132).

Automobile and other industries earmarked for promotion under the heavy industrialisation move were provided with heavy tariff protection. The initial automobiles tariff range from 40% to 60% on completely knocked down (CKD) kits and auto parts, and from 80% to 150% on completely built up (CBU) cars, with the highest rates on cars with engine capacities of 1200CC and 1600CC earmarked for Proton. Proton was also placed at a huge competitive edge over the other carmakers in the protected market through various tax concessions and indirect subsidies. Proton cars were exempted from the newly introduced 40% import duty on CKD kits, and also exempted from various internal taxes, such as sales tax, exercise tax at various rates, and road taxes (based on engine capacity). Malaysian Industrial development Authority (MIDA) began to force (formally or informally) other carmakers to produce only a limited range of models which do not directly compete with proton cars (officially or unofficially) (Doner 1991, pp. 110-11). In later years, low interest rate loans were given to civil servants for purchase of national cars.

In 1983, the first Proton plant was built in the HICOM industrial estate in Shah Alam (15km from Kuala Lumpur). It was designed to produce 80,000 cars with provision for extending the capacity to 120,000 by 1988. The first Proton car (Proton Saga, with 1300cc and 1500cc engines) was based on the Mitsubishi Lancer. A second factory was built in Proton City at Janjung Malin in the late 1990s with an initial capacity of 250,000 (with provisions for expanding to 500,000 at phase 2).

Four years after the heavy industrialisation strategy was launched, the Malaysian economy was hit by a world commodity slump, the worst since the country's independence in 1957. The economy which had been growing at an annual rate of nearly 8% during the previous five years contracted by 1% during 1985-6 as a result of a sharp decline in the prices of tin and palm oil which dominated Malaysia export composition at the time. The motor vehicle project was among the worst hit by the recession. To make matters worse, the weakened economy and the resulting balance of payment deficit caused a massive depreciation of the Malaysian currency, ringgit against the currencies of the major trading nations. This coupled with the steep appreciation of the yen after the Plaza accord in September 1985 caused Proton's repayment burden on the start-up yen loan to increase in ringgit terms. Ringgit cost of CKD kits too increased sharply with the yen appreciation, increasing Proton's cost of production. In this volatile climate, in 1988 the government opted to place the management of Proton under Mitsubishi, in return for a promise to expansion of capacity and begin exporting proton cars.

Proton's alliance with Mitsubishi soon came under stress because of the incompatibility of Malaysia's objective of developing an international competitive national car industry with the objectives of Mitsubishi's corporate strategy driven by global profit maximization. Conflicts of interest begun to emerge in relation to two areas of operation: procurement of parts and components locally and exporting the national car. Relating to the former, the Malaysian government intended its national car to be something more than a vehicle stamped by Mitsubishi using parts and components imported from its parent company in Japan. In the joint-venture agreement Mitsubishi did agree to the objective of increasing the local content of Proton cars. However, in practice, it was reluctant to accept local components, often labeling them 'inferior'.

There were frequent conflicts between Mitsubishi and the Joint Coordinating Committee on Local Content for the national Car (JCC) (a Committee set up by MTI to monitor localization of the automotive industry) on removing from its list of parts and component imports those items

which were locally available. In most cases JCC's intervention was virtually ineffective because there was no standard procedure for verifying Mitsubishi's quality concerns and also because of Mitsubishi's ability to dictate prices relating to intra-firm transactions. Under the cover of the original Joint-venture agreement, Mitsubishi also opposed Proton purchasing components from other competitive sources. For instance, an attempt by the Malaysian government to set up a joint venture to produce high-quality ABS breaks in Malaysia to be used in the next generation of Proton cars had to be abandoned because of the opposition by the Mitsubishi management.

As regards exporting the national car, the original agreement with Mitsubishi contained a de facto restriction on exports of Proton cars: the contract stated that for five years Mitsubishi would help produce a car for the domestic market. It could be that, assuming that the domestic market's rapid growth would absorb most of the Saga, Dr Mahathir simply did not press Mitsubishi on exports at the planning stage of the project. However, the need for exporting for the viability of the project became clear when the domestic auto market collapsed in the aftermaths of the economic crisis. In 1985 Prime Minister Mahathir suddenly ordered Proton to start exporting within two years after commencing commercial production. Officially Mitsubishi promised to consider the proposal, but it never acted on the promise. Presumably Mitsubishi had little incentive to export a vehicle that is in direct competition with Mitsubishi autos in the 1.3- and 1.6-liter range produced in Japan, Thailand and elsewhere. The Mitsubishi management also often expressed concern that Saga's low quality would damage Mitsubishi's image.

In addition to the conflict of interests on local procurement and exporting decisions, over time the Malaysian authorities became increasingly concerned about outdated technology provided by Mitsubishi in exchange for high management and technology fee paid and the high cost of auto parts imported from within the Mitsubishi global network (Jomo 1993). These considerations led the Malaysian government to turn to forging alliance with other global partners, bypassing Mitsubishi.

In 1991, Prime Minister Mahathir announced plans for a second national car company, Perodua (Perusahaan Otomobil Kedua, or Second Automobile Enterprise) to produce a smaller car (Kancil) with an engine capacity of less than 1,000cc and costing much less than the Proton (to create a new lower middle class car market). Another Japanese company, Daihatsu (associated with Toyota) was selected as the joint-venture partner although Mitsubishi was capable of producing small cars with the same engine capacity. The new company was established in 1993, and began production in 1994 with the same tariff concessions, tax rebates and other specific government supports enjoyed by Proton.

The first three Proton models (Saga, Wira and Iswar) were all based on Mitsubishi platform model. Subsequently, Proton turned to British engineers in designing the Proton Saga facelift, the Iswara and subsequently collaborated with Citroën and its local partner (Diversified Resource Bhd) in producing two other new models. On October 30, 1996 Proton acquired a controlling interest (64% stake) in Lotus Group International Ltd in England, a leading independent supplier of engineering services and technology to the global automobile industry. Lotus was engaged in the design of cars (starting with Proton Gen-2 (code named Wira) to be produced at the new Tanjung Malim plant which commenced operation in 2004.

Eventually, Mitsubishi sold its stake in Proton to Khazanah National BHD (the government's investment arm) in 2004. Since then Proton has been a fully Malaysian-owned and managed company and its link with Mitsubishi has been limited solely to the purchase of some car components through arm's length deals.

5.3. Outcomes

The first Proton Saga came off the Proton assembly line at the end of August 1985, nearly a year before the date originally scheduled. The new car had a local content amounted to 47% of its value, compared to 35% of other locally-assembled vehicles. Total sales (70,000 cars) accounted for 45% of all passenger car sales in that year. Production dropped to 33,500 during the ensuing two years because of the economic recession, but recovered sharply reaching 82,000 units in 1990 (70%) of total sales. Domestic contents had reached 80% by then. The two national car companies had captured more than 90% of the domestic car market by 2000 (Table 12). They had captured virtually the entire domestic market for cars under 1600cc by the turn of the 20th century. The number of parts produced locally had increased from 228 in 1985 to 4850 by the late 1990s, increasing the local content of Proton cars to over 80%.

Proton's rapid penetration in the domestic market was based largely on price competitiveness artificially created by government policy (see above). Given the import duty concession on imported parts and components and other tax concessions, Proton was able initially to price its cars initially at least 10% cheaper than the equivalent makes in the 1.3 to 1.5 liter class. With increase in overall tariff levels and additional government supports in the form of low-interest loans to the customers of national cars, the price differential increased in subsequent years reaching to about 20% by the late 1990s. In face of 'competition' from Proton, the other automakers dramatically cut production, closed down operations (Ford and Mazda), or shifted production to commercial vehicles and/or high-price cars that did not compete with Proton cars.

Given the small domestic market, domestic sale expansion was not adequate for Proton to achieve economies of scale. Throughout the 1990, its annual output remained well below 200,000 units, the minimum efficiency scale of production for a single plant (Bowie 1991, p, 121), because of the failure to penetrate export markets. Therefore, Proton continued to remain a high cost producer whose survival depended crucially on government support through tariff protection, and other preferential treatments, including periodic capital injection on concessionary terms by the government through the Employee Provident Funds and the government-owned oil company, Petronas (Rasiah 1997).

Penetrating export market turned out to be a key focus of Proton ever since its sales plummeted during the recession in the mid-1980s. Given the Mitsubishi's reluctance to engage in exporting, the Malaysian management of Proton began to focus on developing marketing channels independently of Mitsubishi. They tried to strike deals with car seller in many countries, but selling a Mitsubishi car through non-Mitsubishi dealers turned out to be a daunting task.

In 1984 Proton joined hand with a prominent Malay business figure, Kushiri, to set up as exporting firms, Edarlaus Enterprise. In late 1984, Proton signed an agreement (through Edarlaus) with Mainland Investment, a car dealer in the UK who already held exclusive franchise rights for the distribution of eleven makes of cars catered for the low-end car market in the country. Initially, the promotion of Proton saga in UK under the banner of Japanese Technology, Malaysian Style had some success. Saga was able to compete successfully with the Soviet Lada and Yugoslavian Zastava, eventually driving them off the UK market. By the late 1990s total annual sales of saga in UK amounted to over 10,000. The success was short lived, however. In face of stiff competition from Japanese and Korean cars which rapidly gained better image over the 'cheap, but low quality' image of Proton, sales began to fall precipitously in the subsequent years. Total sales declined from 2752 in 2002 to 1518 in 2008 and then to 960 in 2009.

In December 1986, Proton signed a letter of intent with Bricklin Industries Inc. of New York, nominating the company as its sole distributor in the lucrative US market. Bricklin came up with a plan to sell 100,000 Sagas in the first year (1988). But Bricklin exited from the deal after failing to obtain the technical approval from the US authorities for Proton Saga imports, costing Proton millions of ringgit in the subsequent law suit. There was anecdotal evidence that the deal fell because Proton export model failed to meet American safety standards and the new Mitsubishi management team (which took over the management of Proton in mid-1988) ensured the demise of the deal through 'implicit disapproval' by simply shunning their responsibility for quality assurance.

Proton also attempted to penetrate markets in various other countries including Australia, New Zealand, Ireland, Trinidad and Tobago, Sri Lanka and China with little success. The company exited from some of these markets (e.g. New Zealand and Ireland) after few years, and, in other countries, its sales have remained negligible, without showing any market share gains.

By the early 2000, total export accounted for less than 10% of total sales. The net contribution of exports to the company's balance sheet was even much lower than the gross figures suggest because the cars were sold in the UK and other overseas markets a significantly lower price than in Malaysia. Moreover, exporting a car that was specifically designed for the Malaysian market required certain modifications to meet safety regulations in those countries. This meant that it was more expensive to build these models than those sold in the domestic market.

Proton cars have continued to suffer from a 'cheap car image' from the very beginning, even in the domestic market, simply because Proton's marketing strategy relied overwhelmingly on price rather than on quality in winning markets. Immediately after Dr Mahathir ceremoniously drew the first Proton Saga off the assembly line of the Shah Alam factory in September 1985, local wits promptly dubbed Proton Saga 'Proton Haga' (meaning 'cut price' Proton). This image remained deeply rooted in the minds of both local and overseas customers. Proton failed to erase this bad image through quality improvement. In the J.D. Power survey of consumer perception, Proton cars have been ranked persistently at the very bottom end of the user-satisfaction scale. In a recent nationwide survey of car owners in Malaysia, out of 14 brands (makes) Proton came second from bottom, just above the other Malaysian national car, Perodua (Media News 2010).

Lackluster outcome of the export drive meant that the very size of the domestic market continued to be a stumbling block for Proton's operations; limited domestic market size precluded realization of economies of scale which could lower unit cost of production. The expansion of production capacity by building a large second plant, driven by political expediency rather than based on sound economic reasoning, and the competition from the second national car company at the lower end of the car market presumably confounded Proton's problems.

Figures 9 and 10 compares automobile production and exports from Malaysia and Thailand. In the early 1990s production levels in the two countries were not very different. But the gap has increased rapidly during the ensuing years (Figure 9). By 2008 total production in Malaysia amounted to only a third of Thai production. The major explanation for the widening gap is the failure of the Malaysian auto industry to penetrate export markets (Figure 10). In the 1990 value of total automobile exports (vehicles and parts) was comparable to that of Thailand. But the gap in export value between the two countries has widened dramatically: by 2008 exports from Malaysia (US\$271 million) amounted to a mere 13% of exports from Thailand (US\$19,586 million) (Figure 10). The Malaysian car industry, moulded by the national car policy for over two decades, is characterised by a continued heavy concentrated in passenger car production (Table 13). Given the continued emphasis placed on producing

passenger cars under heavy overall protection and preferential treatment for the two national car producers, unlike in Thailand, the product composition has not diversified into commercial vehicles (Section 3.2).

5.4. Trade liberalisation and the future of the national car project

Malaysia has significantly reduced tariffs and virtually eliminated quantitative import restriction over the past two decades— as part of market-oriented policy reforms from the late 1980s and under WTO commitments since 1995 (Athukorala 2005a). Heavy protection accorded the motor car industry and, in particular, favoured treatment of the two national car producers has remained a major anomaly in Malaysia trade policy regime.

By 2005, automobile tariffs ranged from 42% to 80% on completely knocked down (CKD) kits, and from 140% to 300% on completely built-up cars. Most automobile parts and components, except tractor parts (duty free) are subject to 25-30% tariffs. According to estimates based on data for 2005, the effective rate of protection for passenger motor vehicle was 57.1% compared to an overall manufacturing average of less than 10% (Athukorala 2005a).¹⁹ As already noted, government policy has kept the national cars cheaper than other makes by the simple strategy of taxing the competitors, while giving the two national car producers exemptions or rebates from these same taxes.

This anomaly in the trade and industry policy regime has already reached the day of reckoning. The closeted life enjoyed by the two national car producers under heavy protection has come under threat from Malaysia's liberalisation commitment under the AFTA and a number of free trade agreements (AFTA) have signed with some of its major trading partners. Maintaining high-tariffs is also not consistent with Malaysia's WTO commitments.

Malaysia is a founding member of the Association of the South East Asian nations (ASEAN) and the ASEAN Free Trade Agreement (AFTA) (Signed in 1992). Under the Common Effective Preferential Tariff (CEPT) provision of AFTA, in 2002 Malaysia reduced tariffs applicable to imports from AFTA member countries on 8,764 tariff lines to between 0 to 5%. However, Malaysia has obtained AFTA approval for not including automobile products (218 tariff lines) into CEPT scheme in view of the difficulties faced by the domestic automobile industry. The postponed reduction commitments were eventually honoured on 01 January 2008. The next round of CEPT cuts to be implemented in 2010 is expected to eliminate all import duties on intra-FTA trade. CEPT scheme also effectively bans all tariff and non-tariff barriers in member countries which discriminate against goods (including vehicles) that are considered "Made in ASEAN" (in terms of the 40% cumulative value added criterion). This means that preferential exercise tax and other preferential treatments enjoyed by the two national car companies are AFTA inconsistent. Malaysian authorities have not yet declared when these commitments would be honored, but once that is done, most of the price advantage enjoyed by the two national car companies by way of the 50% rebate on duties parts and component imports and domestic excise tax concessions would be eliminated. According to some tentative estimates these concessions have so far kept comparable imported cars 30% to 60% more expensive compared to cars produced by Proton and Perodua cars.

Tariff reductions under the CEPT scheme have already begun to expose the two national car producers to competition from the international carmakers who have already established production bases in other AFTA member countries, particularly in Thailand. Proton's sales

¹⁹ The average effective protection rate for automobile reported here masks much higher protection given to various vehicle types produced by the two national carmakers..

drop from 166,118 in 2005 to 115,538 in 2006, a 35% contraction. In 2007 Proton lost the top selling position in the Malaysian market (to Perodua) for the first time since 1985. The combined market share of the two companies has also declined in recent years (from 92.7% in 2000 to 72.3% in 2008) as foreign car makers have begun to increase assembling cars in Malaysia (Table 12). In the 2006 financial year Proton recorded a loss of US\$23 million in 2006 and this increased to US\$ 46 million in 2007. In January 2008, the government arranged the EPF to purchase 830,000 shares to support the financial position of the ailing carmaker. The relative resilience of Perodua in face of import competition seems to reflect its competitive edge in the low-end of the car market.

What are the options available to the Malaysian authorities to avert collapse of Proton in the new competitive market setting? One option is to sell it to an overseas firm. This option is not politically palatable not only because of the political sensitivity of any move to loose a national champion, but also because of possible employment losses and the unavoidable disruption to the supplier/trader network built around Proton over the years. Many of Proton's car part supplying firms are owned by bumiputera business men who form the backbone of the support base of the ruling UMNO party (Rasaih 1997). The only viable option seems to be to find a strategic partner in order to enhance Protons competitiveness in the domestic and global markets.

In October 2004 Proton initiated negotiations with Volkswagen AG of Germany to establish a strategic partnership. Under the proposed tie-up, Proton was to gain access to Volkswagen Group's superior technical capabilities and technology. Volkswagen was to utilize Proton's spare capacity at the Tanjung Malim plant to assemble cars for export to the Southeast Asian market, where the German auto giant had a weak presence. In January 2006, Proton announced ending of partnership talks. According to media commentaries, talks collapsed because of Proton's refusal to let a foreign company become a substantial shareholder or take a major management role. This unexpected announcement resulted in a 19% overnight drop in Proton's share price to their lowest value in seven years. Subsequent talks with PSA Peugeot Citroën France (in January 2007) and with General Motors (in February 2007) also failed.

Eventually Proton turned to its old joint-venture partner, Mitsubishi. In September 2008, Proton and Mitsubishi agreed to negotiate on a technical-cooperation pact (The Star 2008). Under this arrangement Proton is to source a Mitsubishi vehicle produced in Japan to replace one of its current models (Waja) and Mitsubishi take Persona and a proton's upcoming multipurpose vehicle to be marketed through the Mitsubishi market networks in certain markets. The agreement would also involve Mitsubishi and Proton jointly developing a small hatchback car (A-class segment car, with space and greater fuel economy) for sales in both domestic and international markets. Mitsubishi has clearly stated that it does not intend to make any equity contribution to Proton under the deal.

In March 2009, Proton entered into a production-sharing agreement with Detroit Electric, a US-based start-up carmaker²⁰. Under the agreement, Detroit Electric will produce electric cars on Proton's sedan car and hatchback manufacturing platforms, with style changes made to distinguish them from Protons existing model. Proton will use Detroit Electric's drive systems in its own cars for sale in Southeast Asia. Detroit Electric aims to sell 40,000 Malaysian made cars globally in its first year and 270,000 by 2012. Market analysts however have expressed doubts about the success of the new venture: the new electric car had mixed results when the company invited prospective US dealers to test drive it last year (Financial Times, March 2009).

²⁰ Detroit Electric was launched in 2008 with \$100 million from investors led by Albert Lam, a former chief executive of Lotus Engineering owned by Proton.

Whether these new deals, which essentially involve tinkering on the surface rather than revamping ownership/management structure and the domestic procurement based, would be able to resuscitate the ailing Proton is yet to be seen. As the Proton's chief executive, Syed Zainal Abidin, has admitted, "the time is not on our ['Proton's] side' (Financial Times, 3 February, 2006).

6. Summary and references

Over the past two decades, Thailand has emerged as a hub of vehicle production for the regional and global markets. Rapid expansion in auto industry has spawned a parts and components supplier network in the country, resulting in an impressive increase in the content of locally-procured inputs in Thai-made cars.

Thai success in automotive production has been underpinned by a favourable combination of three factors: (a) structural changes in global auto industry which opened up countries in the periphery to join production networks to produce for the global and regional markets; (b) pragmatic, market-conforming policy posture of the Thai authorities which enabled domestic auto industry to evolve in line with trends in the wider global economy; and (c) the size of the Thai maker which has met the market requirements of domestic car assembly (in particular the one-truck pickup truck) to achieve economies of scale at the early stage of production expansion.

The policy instruments used by the Thai authorities during the import-substitution era were basically the same as those used by their counterparts in Malaysia and other developing countries: tariff protection to entice MNEs to set up production plants to serve the domestic market and local content requirements to force these plants to forge back-ward linkages with local auto part makers. However, the Thai policymakers implemented these policy instruments in a market-conforming manner in consultation with auto makers and other private-sector stake holders. This pragmatic approach to policy making was instrumental in winning investor confidence and thus laying a solid foundation for building a world-class production base. Unlike Malaysia and Indonesia (for a limited period), Thailand never pursues a national car policy; both foreign and local companies involved in the automotive industry were treated on an equal footing.

The process of Thailand becoming a regional hub was facilitated by the timely abolition of local content requirements and ownership restrictions on affiliates of foreign companies under the cover provided by the WTO commitments. Thailand was the first developing country member of WTO to honor these commitments. These reforms, undertaken at a time when the global auto industry was beginning to go global, played a pivotal role in setting the stage for the domestic auto industry to become a part of global production networks.

Tariff protection on auto imports continued to remain high, but this was not a binding constraint on auto exports because domestic auto industry (dominated by foreign subsidiaries) had become a global production network, no longer serving only the domestic market. Expansion of domestic sales, benefiting from tariff protection, and expansion of export (at a faster rate) driven by the competitiveness of the domestic production within the wider global production networks are not mutually exclusive phenomenon in a globalised auto industry.

Both car manufacturing and component production are dominated by foreign firms, with most pure local firms involved in the production network as second and third-tier suppliers of simple, diffused-technology parts and components. But, this does not seem to make a case for government intervention to promote local interest; increased involvement of foreign firms in both car assembly and parts production has been a universal phenomenon driven by a structural shift in global auto industry from the traditional multi-market mode of production to a globally integrated system of production. In the new era of 'world car', strategic alliance forged between the key players in the industry and firms of different national origin has become the norm of cross-border operation. This by no means implies that Thai companies do not have the ability to move up the production ladder as they acquired expertise and technological capabilities over time. There are already indications of this happening.

In marked contrast to the Thai success with building a world class automotive production base with the participation of foreign investors, the Malaysian experiment with state-centred national car industry policy has produced a high-cost, non-competitive domestic car industry whose survival now remains doubtful in a rapidly globalizing world car market. The explanation for the tragic fate of the Malaysian dream of building an internationally competitive national car lies in the very conception of the project.

Even though the new selective industrialization push was often rationalized as an attempt to emulate the examples of Japan and Korea (hence the 'look East policy', a term coined by Mahathir in 1981), in practice the national car project based largely on traditional import-substitution criteria. The two national car companies were continuously supported with heavy tariff protection and various tax concessions and restrictions imposed on potential private-sector competitors, without subjecting their performance to any market-based performance norms. In particular, unlike in Korea, trade protection and other government supports were not made conditional on export performance. Export performance was later made a performance criterion as an afterthought; but was not effective because it was not part of the original joint-venture agreement.

Output expansion within the confine of a limited domestic market was not adequate for Proton to achieve economies of scale. Subsequent attempt to expand exports failed because of lack of a firm commitment on the part of its joint-venture partner, Mitsubishi. Proton made many attempts to penetrate export markets independently of Mitsubishi, but selling a Mitsubishi car through non-Mitsubishi dealers turned out to be a daunting task. Given the export failure, Proton continued to remain a high cost producer whose survival depended crucially on government support through tariff protection, tax concessions, and other preferential treatments, including periodic capital injection on concessionary terms.

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Table 1: Chronology of Trade and Investment Policies Impacting on Thai Automotive Industry 1960 -2008¹

1961	1960 Industrial Investment Promotion Act provides incentives for the local assembly of automobiles.
1962	1962 Industrial Investment Promotion Act announced 50% reduction in tariffs on CKD kits: new rates, passenger cars 30%; pick-ups 20%; and trucks 10%.
1969	Ministry of Industry set up Automotive Development Committee (ADC). 20% increase in tariffs on CBU vehicles: new rates, passenger cars 50%; pick-ups 40%; and trucks 30%.
1971	MOI restricted the number of locally assembled passenger car, pick-ups and trucks models. Announced local content requirement (LCR) measures to become effective in 1974: domestically assembled vehicles had to use locally produced parts to at least 25% of the total value of the vehicle.
1976	An import duty rebate scheme for export producers came into operation.
1978	Banned CBU imports and increased import duty on completely knocked down (CKD) kits to 80% Suspended approval of new assembly plants to reduce over capacity. Tariffs of CBU passenger cars and CKD passenger cars were increased to 150% and 80% respectively.
1982	LCR requirement for all vehicles set at 45%
1983	The duty rebate scheme (introduced in 1997) was supplemented by outright import duty exemption for intermediate inputs imported by export-oriented firms (that is, firms exporting more than 30% of total output) approved the Board of Investment
1983	Intermediate inputs imported by export-oriented firms (firms exporting more than 30% of production) approved by the Board of Investment were exempted from import duties
1985	Mandatory local-content list imposed Ban on imported CBU vehicles with engine capacity over 2,300cc lifted.
1986	LCR for passenger cars lifted to 54%. List for compulsory and non-compulsory parts introduced.
1989	Ceiling on production capacity of existing assembly plants lifted.
1990	Abolished restrictions on domestic production of series and models. Replaced quantitative import restriction (including the ban on imports of CBUs under 2.3 liters) on passenger cars with tariff.
1991	Reduced tariffs on all types of CBUs and CKD kits: <ul style="list-style-type: none"> - CBUs over 2.3 liters from 300% to 100% - CBUs under 2.3 liters from 180% to 60% - CKDs for cars, pickups and vans from 112% to 20% Required use of locally produced diesel engines for 1-ton pickup trucks
1992	Exempted pick-up trucks from exercise tax
1993	Ban on new assembly plants lifted.
1994	Supply of parts and components by domestic firms to automotive assembly for export was exempted from all domestic taxes as part of the government policy for facilitating development of backward linkages of auto industry
1995	Reduced CKD tariffs from 20% to 2%.
1997	Abolished local ownership requirement on foreign-invested projects (announced 1993; implemented 1997). Implication/streamlining of customs procedures for facilitating importation of intermediate inputs used in production for export commenced.
1999	Raised tariffs on CKD vehicles from 20% to 30-35% to cushion against the potential adverse impact of impending LCR abolition.
2000	Abolished LCR requirement.

	The WTO Agreement on Customs Valuation came into operation.
2003	Tariff preferences under the ASEAN Free Trade Agreement (AFTA) came into full effect: import duties applicable to intra-ASEAN trade down to 0--5%

Note: ¹No significant policy changes after 2003.

Source: Compiled from various government policy reports and press releases.

Table 2: Tariff and Taxes (on Completely Built-up (CBU) and Completely Knocked-down (CKD) Vehicles, 1985-2008 (%))

	1985- 92	1992	1999	2000-2008 ⁴
Completely built-up (CBU) vehicle				
Passenger cars over 2,400 cc. ¹				
Tariff rate	300	68.5	80	80
Excise tax	44-55	41.8	43-50	41-48
Passenger cars under 2,400 cc. ¹				
Tariff rate	180	42	80	80
Excise tax	44-55	35.75	41.25	38.5
Pick-up truck				
Tariff rate	120	60	60	80
Excise tax	9.9	9.9	5.5	3.3
Completely knocked-down (CKD) vehicle				
Passenger cars over 2,400 cc. ¹				
Tariff rate	112	42	20	33 (30) ⁴
Excise tax	44-55	41.8	43-50	41-48
Passenger cars under 2,400 cc. ¹				
Tariff rate	112	42	20	33
Excise tax	44-55	41.8	41.25	38.5
Pick-up truck				
Tariff rate	72	20	20	33
Excise tax ²	9.9	3.0	5.5	3.3-19.8 ³
Memorandum item				
Average manufacturing tariff rate	41.2 ⁵	38.7	17.1	14.0 ⁵

Notes: ¹Before 1992, the engine capacity used in the two-way tariff classification of passenger cars was 2,300 cc.

²Excise tax includes the municipal tax.

³Excise tax for one-ton pick-up trucks is 3.3%; for 'pick-up passenger vehicle (PPV) it is 19.8%.

⁴Tariff rates have remained unchanged since 2000 with the exception of reduction in the tariff rate on passenger cars under 2,400CC to 30% in 2005.

⁵Annual average.

Source: Compiled from official documents, Ministry of Finance.

Table 3: Production Capacity (Units) of Thai Car Assemblers, 1989-2006

	1989	1994	1999	2003	2005	2006
Toyota	24,000	100,000	200,000	240,000	350,800	450,000
Mitsubishi	40,000	126,600	160,000	190,200	170,200	208,000
Isuzu	27,400	83,200	140,600	189,600	200,000	200,000
General Motor	---	---	40,000	40,000	100,000	160,000
Auto Alliance & Mazda	7,200	8,400	135,000	135,000	135,000	155,000
Nissan	23,520	96,500	113,100	124,000	102,000	134,400
Honda	8,220	39,000	70,000	80,000	120,000	120,000
Hino	9,600	9,600	9,600	28,800	28,800	28,800
DaimlerChrysler	2,340	4,600	14,900	18,100	16,300	16,300
YMC Assembly	12,000	12,000	12,000	12,000	12,000	12,000
Volvo	6,000	6,000	6,000	6,000	10,000	10,000
BMW	---	---	---	---	10,000	10,000
Total	160,280	485,900	901,200	1,063,700	1,255,100	1,576,500

--- Not available.

Source : Thai Automotive Industry Association

Table 4: Production Capacity of Carmakers Classifies by Type of Vehicles, 2006

	Passenger Cars (1)	Commercial Vehicle (2)=(3)+(4)	One-ton Pickups (3)	Other Commercial Cars (4)	Total (5)= (1)+(2)
Toyota	200,000	250,000	200,000	50,000	450,000
Mitsubishi	50,000	230,000	150,000	80,000	208,000
Isuzu	-	200,000	180,000	20,000	200,000
General Motor	40,000	120,000	120,000	-	160,000
Auto Alliance	-	155,000	150,000	5,000	155,000
Nissan	36,000	98,400	96,000	2,400	134,400
Honda	120,000	-	-	-	120,000
Hino (Suzuki)	-	28,800	-	28,800	28,800
Daimler Chrysler	16,300	-	-	-	16,300
YMC Assembly	12,000	-	-	-	12,000
BMW	10,000	-	-	-	10,000
Volvo	10,000	-	-	-	10,000
Total Capacity (% share)	494,300 (31)	1,082,200 (69)	896,000 (57)	186,200 (12)	1,576,500 (100)

Note: number in parenthesis is percentage share of total production capacity

Source: Thai Automotive Industry Association

Table 5: World Motor Automobile Production¹: Top 20 Producing Countries, 2000, and 2008

Rank	2000			2008		
	Country	Production, 1000 units	Share (%)	Country	Production, 1000 units)	Share (%)
1	USA	12800	21.9	Japan	11564	16.4
2	Japan	10141	17.4	China	9345	13.3
3	Germany	5527	9.5	USA	8705	12.3
4	France	3348	5.7	Germany	6041	8.6
5	South Korea	3115	5.3	South Korea	3807	5.4
6	Spain	3033	5.2	Brazil	3220	4.6
7	Canada	2962	5.1	France	2569	3.6
8	China	2069	3.5	Spain	2542	3.6
9	Mexico	1936	3.3	India	2315	3.3
10	UK	1814	3.1	Mexico	2191	3.1
11	Italy	1738	3.0	Canada	2078	2.9
12	Brazil	1682	2.9	Russia	1790	2.5
13	Russia	1206	2.1	UK	1650	2.3
14	Belgium	1033	1.8	Thailand	1394	2.0
15	India	801	1.4	Turkey	1147	1.6
16	Poland	505	0.9	Iran	1051	1.5
17	Czech Rep.	455	0.8	Italy	1024	1.5
18	Turkey	431	0.7	Poland	951	1.3
19	Thailand	412	0.7	Czech Rep.	946	1.3
20	Taiwan	373	0.6	Belgium	724	1.0
	Total, top 20	55379	94.9	Total, top 20	65053	92.2
	Total, world	58374	100	Total, world	70527	100

Note:

1. Production comprises "passenger cars" and "commercial vehicle" including light commercial vehicles, heavy commercial vehicles and heavy bus and coach.

Source: OICA (<http://www.oica.net/>)

Table 6: Automobile Exports and Imports Classified by Vehicle Type, 1999-2007

	1999	2000	2001	2002	2003	2004	2005	2006	2007
Export (\$million)	1275	1627	1924	1968	2649	3858	5198	6648	8227
<i>Percentage share</i>									
Passenger car 1000-1499 cc.	1.1	1.4	1.2	2.5	14.1	16.1	9.4	8.8	7.9
passenger car 1500-3000 cc.	7.1	8.8	21.9	14.9	14	10.4	18.9	22.7	23.3
one-ton pickups	74.6	70.7	54.9	61.1	55.5	54.9	44.1	47.1	42.6
Import (\$million)	558	526	382	417	618	608	795	772	1013
<i>Percentage share</i>									
passenger car 1500-3000 cc.	60.9	33.4	39.8	27.1	50.3	34.5	33.0	23.8	18.6
passenger car larger than 3000 cc.	5.4	8.8	8.5	12.9	9.9	8.8	5.6	5.8	4.2
Bus	7.9	18.6	13.2	18.4	11.8	17.1	28.9	28.9	32.7
Truck	5.3	11.8	15.3	14.7	6.8	7.1	5.4	5.4	7.3

Notes: passenger car 1000-1499 cc., 1500-3000cc. and greater than 3,000 cc are referred to HS870322, 870323 and 870324, respectively. One ton pick up truck is HS870421 whereas bus and truck are HS8702 and 8704, respectively.

Source: Compiled from UN Comtrade Database

Table 7: Direction of Automobile Exports from Thailand, 1999-2007 (%)

	ASEAN-10	Indonesia	Philippines	Australia	Japan	USA	EU-15	Others	Total (\$ million)
1999-2001									
Passenger cars	11.9	1.5	0.1	14.8	9.7	0.0	45.4	62.3	353.1
Trucks	4.5	0.2	0.7	23.8	0.1	0.0	41.8	71.6	1,266.7
Others	73.6	3.1	1.1	1.5	0.3	5.3	3.1	24.1	14.2
Total	6.7	0.5	0.6	21.7	2.2	0.1	42.2	69.2	1,634.1
2002-05									
Passenger cars	50.1	21.3	10.6	14.9	7.8	0.0	9.5	26.3	1,134.4
Trucks	6.8	2.7	0.9	23.0	0.2	0.0	32.4	70.1	2,223.2
Others	77.4	1.0	0.4	1.4	0.5	1.0	2.0	20.4	26.0
Total	21.8	8.9	4.1	20.1	2.7	0.0	24.5	55.0	3,383.5
2006-07									
Passenger cars	34.3	10.7	9.6	29.9	1.6	0.2	1.8	34.2	3,387.7
Trucks	5.8	2.5	1.0	18.6	0.2	0.0	27.5	75.4	3,990.3
Others	77.6	2.2	0.1	16.2	0.5	0.2	0.7	5.6	59.7
Total	19.4	6.2	4.9	23.7	0.9	0.1	15.6	56.0	7,437.6

Source: Compiled from UN Comtrade Database

Table 8: Automobile (CBU) Production¹ in Thailand Classified by Car Makers

	2000		Thai share in Asian production ² (%)	Thai share in world Production ³ (%)	2008		Thai share in Asian production in ² (%)	Thai share in world Production ³ (%)
	Production Units (1,000)	%			Production Units (1,000)	%		
Japanese car makers	239	58.1	23.0	1.1	1,135	81.4	20.8	4.1
Toyota	63	15.3	21.1	1.1	573	41.1	34.6	6.2
Honda	36	8.7	25.1	1.4	162	11.6	20.3	4.1
Nissan	19	4.6	20.2	0.7	74	5.3	14.0	2.2
Mazda	30	7.3	68.9	3.2	48	3.5	30.1	3.6
Mitsubishi	91	22.1	19.8	5.0	173	12.4	57.6	13.1
Isuzu	67	16.3	39.6	12.4	135	9.7	64.7	25.1
US car makers	9	2.1	22.1	22.1	105	7.5	4.5	0.8
GM	9	2.1	22.1	0.1	104	7.5	5.2	1.3
Ford					1	0.1	0.3	0.0
Other	164	39.9	1.7	0.6	153	11.0	1.6	0.5
	412	100.0	3.1	0.7	1,394	100	8.0	2.0

Notes:

1. Production comprises "passenger cars" and "commercial vehicle" including light commercial vehicles, heavy commercial vehicles and heavy bus and coach.

2. Excluding Japan

3. Including production in the source country of the car maker.

Source: Compiled from the International Automobile Association database (Source OICA (<http://www.oica.net/>))

Table 9: Indicators of ease of doing business ranking of selected Asian countries, 2009

Economy	Starting a Business	Dealing with Construction Permits	Employing Workers	Registering Property	Getting Credit	Protecting Investors	Paying Taxes	Trading Across Borders	Enforcing Contracts	Closing a Business	Overall rank
Singapore	10	2	1	16	5	2	5	1	14	2	1
Hong Kong, SAR	15	20	20	74	2	3	3	2	1	13	4
Japan	64	39	17	51	12	15	112	17	21	1	12
Thailand	44	12	56	5	68	11	82	10	25	46	13
Malaysia	75	104	48	81	1	4	21	29	59	54	20
Korea	126	23	152	67	12	70	43	12	8	12	23
Taiwan	119	127	159	26	68	70	100	30	88	11	61
Pakistan	77	93	136	97	59	24	124	71	154	53	77
China	151	176	111	30	59	88	132	48	18	62	83
Vietnam	108	67	90	37	43	170	140	67	42	124	92
Sri Lanka	29	161	110	141	68	70	164	66	135	43	102
Bangladesh	90	114	132	175	59	18	90	105	178	106	110
India	121	136	89	105	28	38	169	90	180	140	122
Indonesia	171	80	157	107	109	53	116	37	140	139	129
Philippines	155	105	126	97	123	126	129	58	114	151	140

Note: * The dataset covers 181 countries. Countries are ranked in ascending order (Best practicing country = 1).

Source: World Bank, *Doing Business 2009* (<http://www.doingbusiness.org>)

Table 10: Domestic Automobile sale in Indonesia, Malaysia, the Philippines, and Thailand, 1980–2005 ('000 units)

	Indonesia	Malaysia	Philippines	Thailand	Total
1980	172	101	56	89	418
1985	144	107	7	86	344
1990	275	186	58	304	823
1991	261	200	48	268	778
1992	170	145	61	363	738
1993	211	155	84	456	905
1994	321	200	103	486	1111
1995	379	285	128	572	1364
1996	332	365	162	589	1448
1997	387	405	144	364	1299
1998	58	164	80	144	446
1999	94	288	74	218	674
2000	105	200	120	262	687
2001	180	240	140	298	858
2002	202	300	160	340	1002
2003	300	340	185	450	1275
2004	400	503	251	691	1842
2005	424	511	246	739	1920

Notes: Total is the sum of vehicle sales of Indonesia, Malaysia, the Philippines, and Thailand.

Data for 2000–5 are the forecast except for Thailand in 2000–1.

Source: data for Thailand are from Thailand's Automotive Industry Directory 2003–4, and data for other ASEAN countries from Guilheux and Lecler (2000: p.226) and Standard and Poor (S&P) (2000). The forecasted data are from Fourin (1998).

Table 11: Domestic Vehicle Sales in Thailand Classified by Vehicle Type, 1990-2008 ('000 units)

	Total	Passenger cars	Commercial vehicles						
			Total	Vans & buses	1 ton pickups	2-4 ton trucks	Trucks over 4 tons	Less than one ton	Other
1990	304	66	238	7	168	16	32	12	4
1991	269	67	202	8	155	10	16	10	3
1992	363	121	242	10	183	12	18	14	4
1993	456	174	282	12	224	13	16	14	4
1994	486	156	330	13	258	14	22	20	3
1995	572	163	408	12	324	16	32	16	5
1996	589	173	416	13	328	17	32	15	13
1997	363	132	231	8	188	9	11	6	8
1998	144	46	98	3	81	3	4	3	4
1999	218	67	151	4	130	4	3	3	7
2000	262	83	179	6	152	5	5	4	8
2001	297	105	192	7	169	4	4	3	6
2002	409	126	283	8	241	5	6	2	22
2003	533	179	354	8	309	7	11	1	16
2004	553	184	369	9	326	8	13	1	10
2005	703	188	515	13	470	12	14		5
2006	682	195	487	13	329	10	13	1	
2007	631	183	448	18	286	10	12	2	
2008	614	239	375	16	246	7	10	7	

Source: Data downloading from Thailand Automobile Institute website at http://www.thaiauto.or.th/statistic/vehicle_production.asp

Table 12: Domestic Car Sales and the Market Share of National Carmakers, 1985-2009

	Total (units)	Share of national cars		
		Total	Proton	Perodua
1985	63857	12	12	
1990	80420	64.2	64.2	
1995	224991	80.2	62.5	17.7
2000	282103	92.7	63.4	29.2
2005	416692	81.9	40.3	34.9
2006	366738	73.8	32.2	41.6
2007	442885	74.7	30.3	42.4
2008	497459	72.3	29.2	43.1
2009	486342			

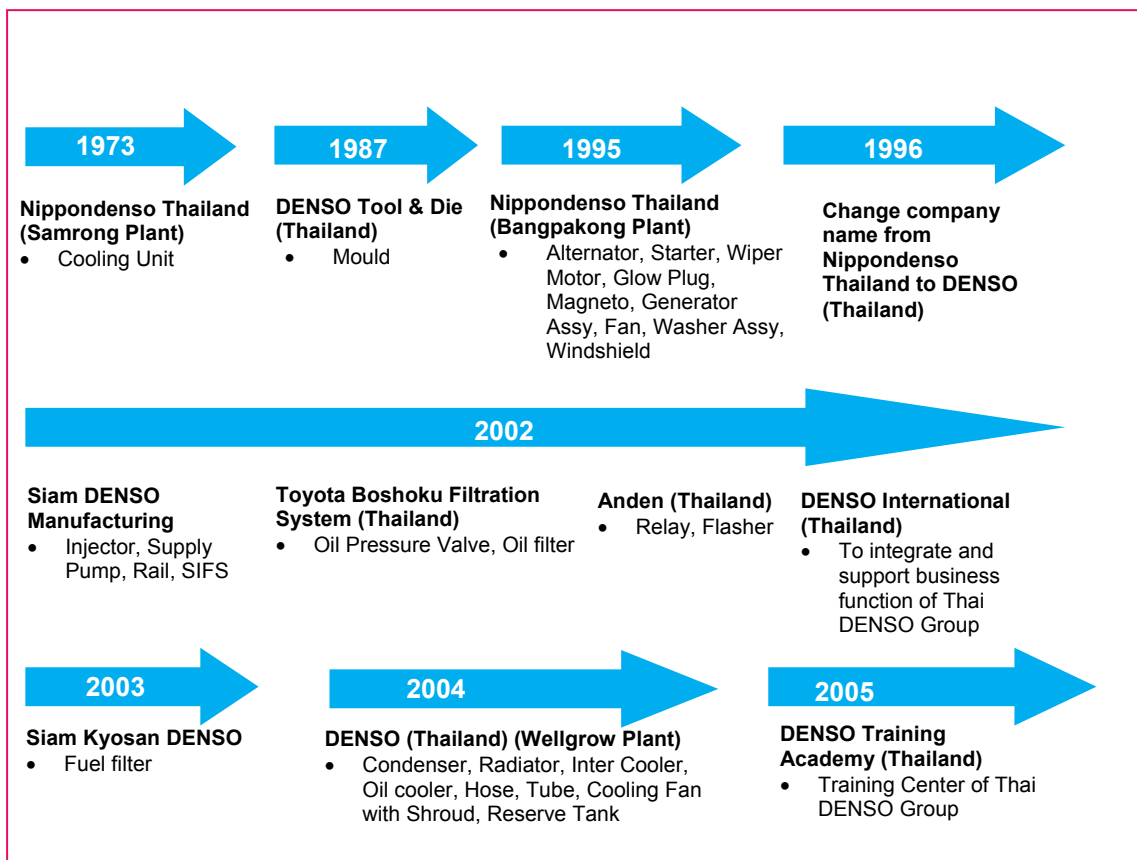
Source: 1985-2000: Tham (2003); 2001-09: Malaysian Motor Traders Association, http://www.maa.org.my/info_summary

Table 13: Domestic Automobile Production and sales in Malaysia, 1980-2009 ('000 units)

	Production				Sales			
	Total	Passenger vehicles	Commercial vehicles	4 by 4 vehicles	Total	Passenger vehicles	Commercial vehicles	4 by 4 vehicles
1980	104	80	24		97	80	17	
1985	107	70	37		95	64	27	4
1990	192	117	63	12	166	106	51	8
1995	288	231	46	11	286	225	47	14
2000	359	295	37	27	343	282	34	27
2005	564	422	96	46	552	417	98	38
2006	503	378	97	29	491	367	90	34
2007	442	403	38		487	443	44	
2008	531	485	46		548	497	51	
2009	489	447	42		537	486	51	

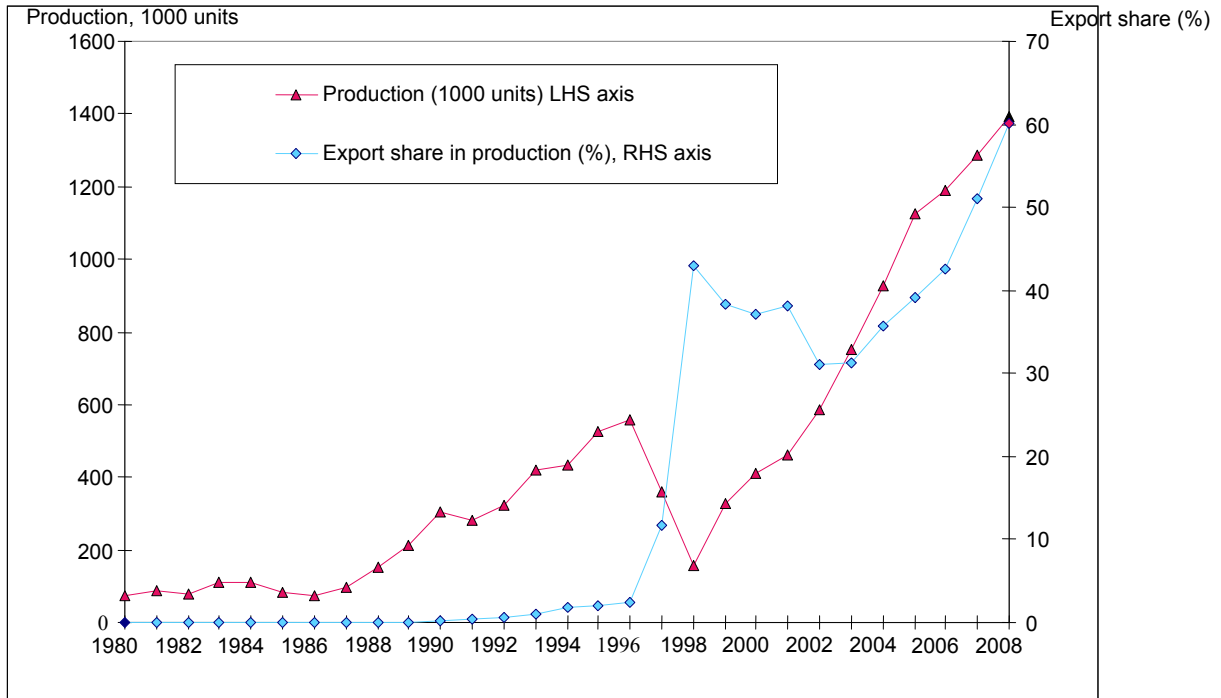
Malaysian Motor Traders Association, http://www.maa.org.my/info_summary

Figure 1: Evolution of Denso Affiliate in Thailand, 1972-present



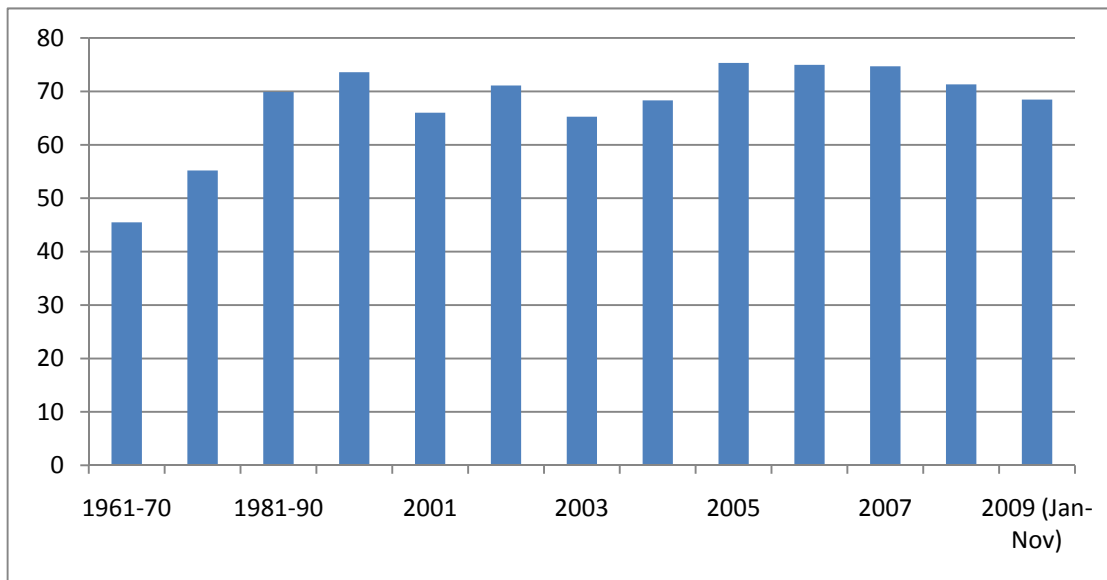
Source: Compiled from Company Profile

Figure 2: Volume of Vehicle Production and Share of Vehicle Exports, 1961-2008



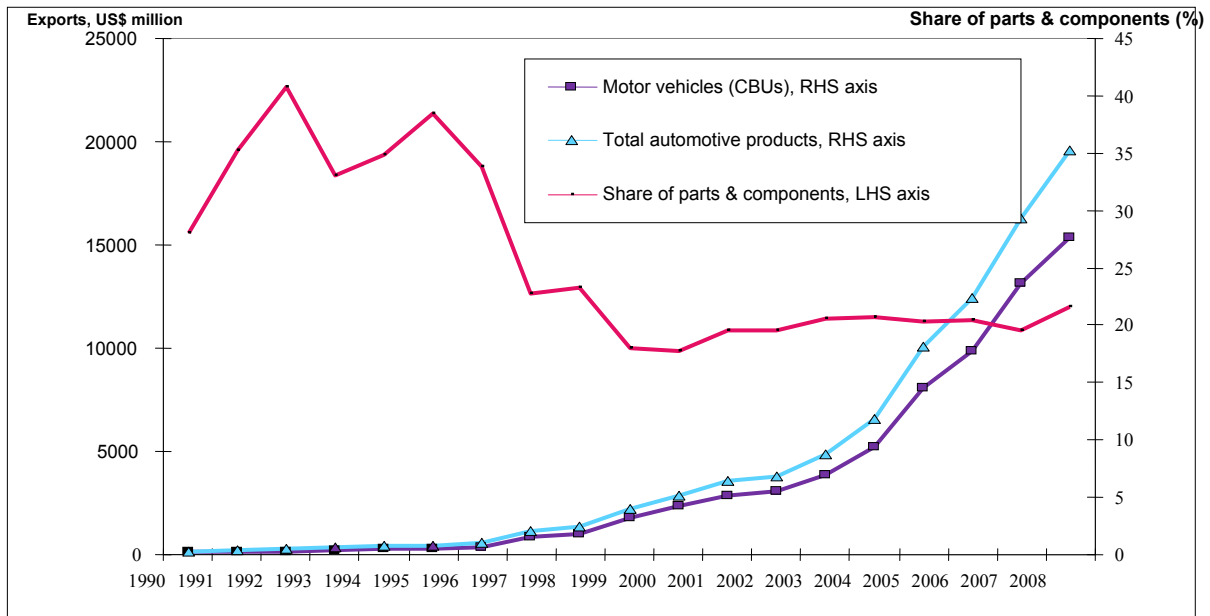
Source: Based on data provided by the Thai Automotive Association

Figure 3: Percentage of Commercial Vehicles in Total Locally Assembled Vehicles, 1961-2009 (Jan-Nov)



Source: Data downloading from Thailand Automotive Institute website at http://www.thaiauto.or.th/statistic/vehicle_production.asp

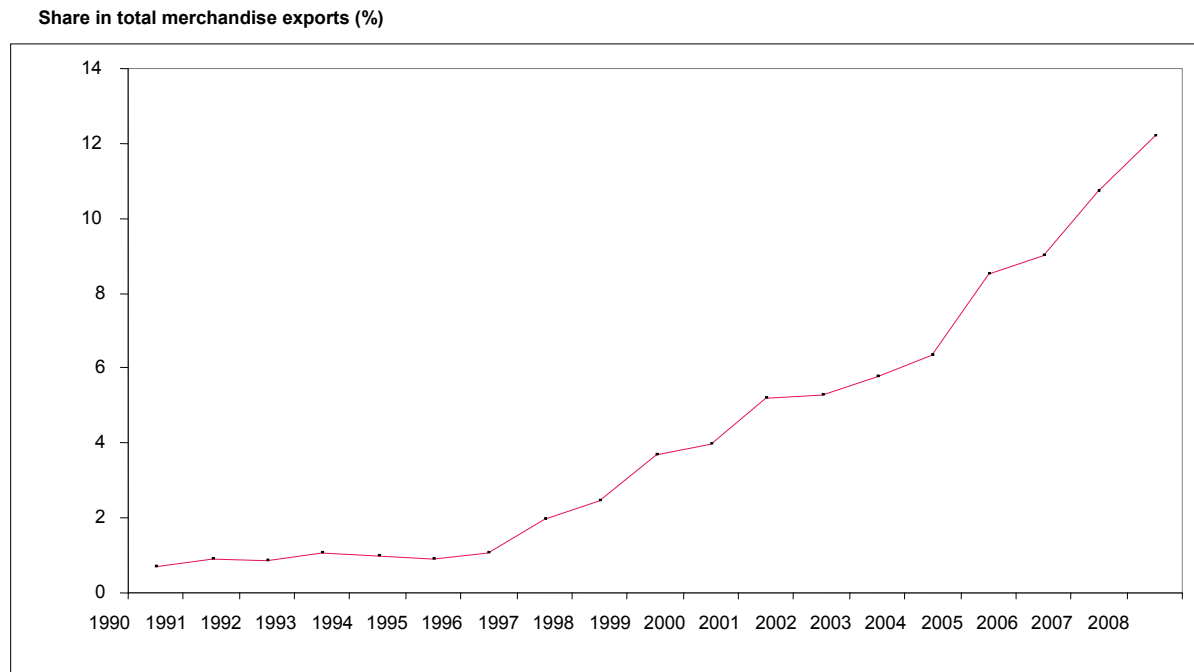
Figure 4: Automobile exports from Thailand, 1990-2008



Note: * The list of parts and components cover 91 items from HS39, HS40, HS85 and HS87. See the full list of auto parts in Appendix 1 of Kohpaiboon (2009).

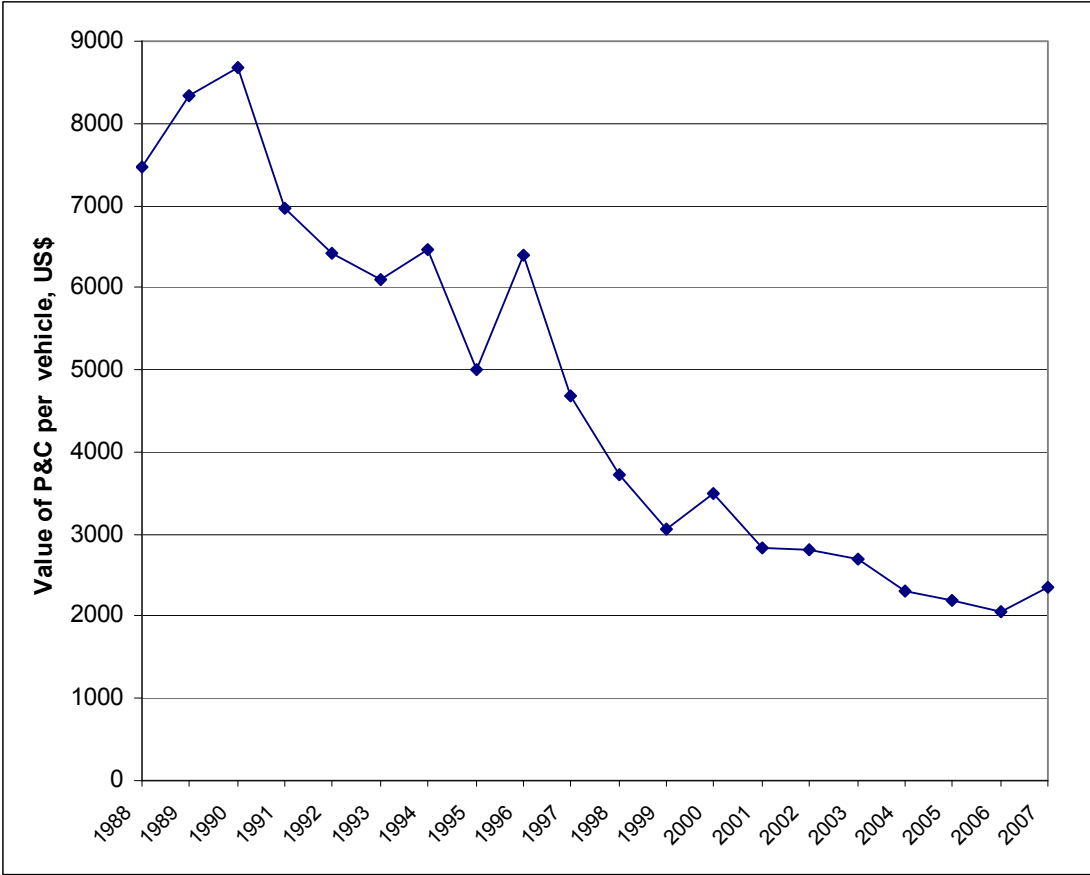
Source: Based on data compiled from UN Comtrade Database

Figure 5: Share of Automotive exports in total Merchandise Exports from Thailand, 1990-2008



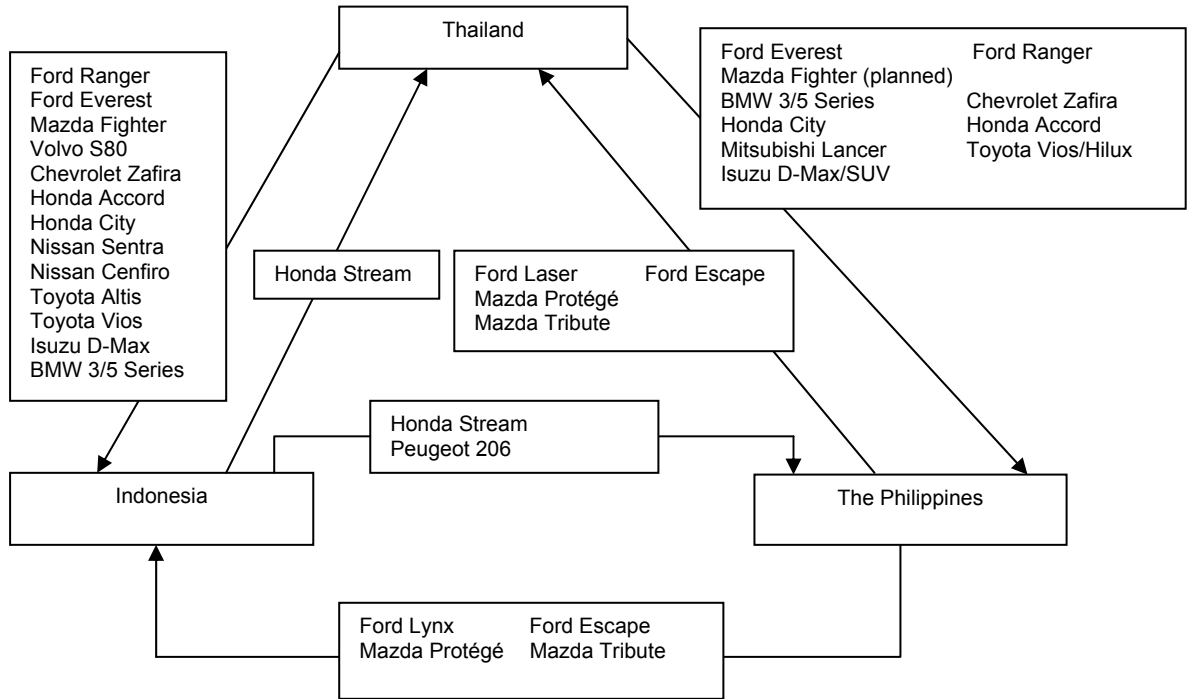
Source: Based on data compiled from UN Comtrade Database

Figure 6: Value of Imported Parts and Components per Locally Assembled Vehicle (US\$, at 1988 price), 1988-2007.



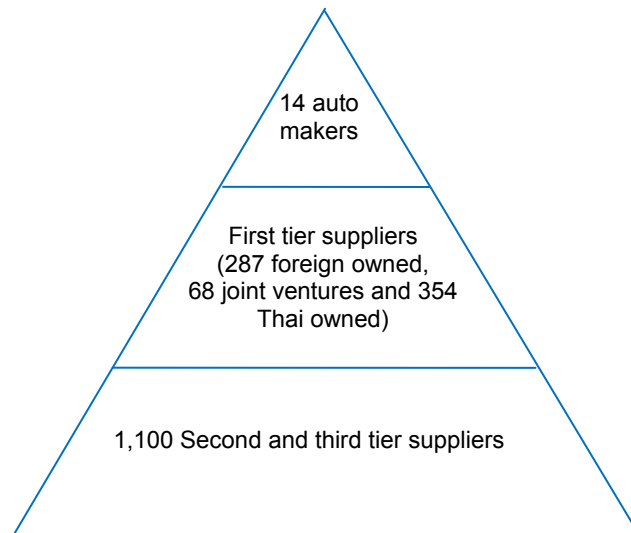
Source and method: Import value of parts is compiled from UN Comtrade Database. Data on locally assembled vehicle units are from Thai Automotive Industry Association. Value of imported parts and components are deflated by the implicit GDP deflator for transport equipment derived from data on Thai national accounts extracted from the electronic database of Bank of Thailand.

Figure 7: Pattern of Regional Division of Labour in the Automotive Industry: Evidence of Southeast Asian Economies



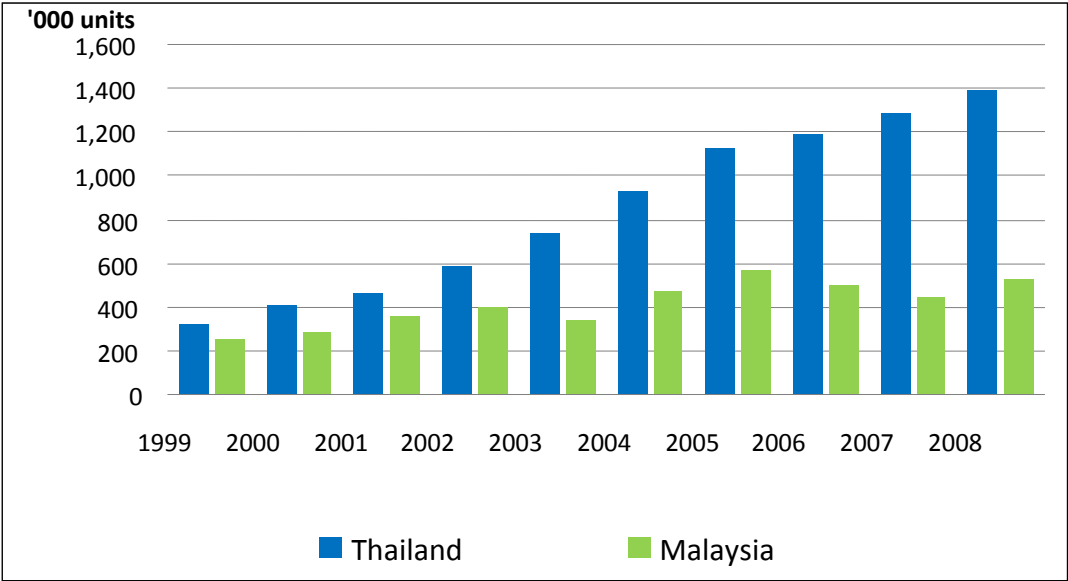
Source: Firm interviews.

Figure 8 A Relationship Structure in the Thai Automotive Industry



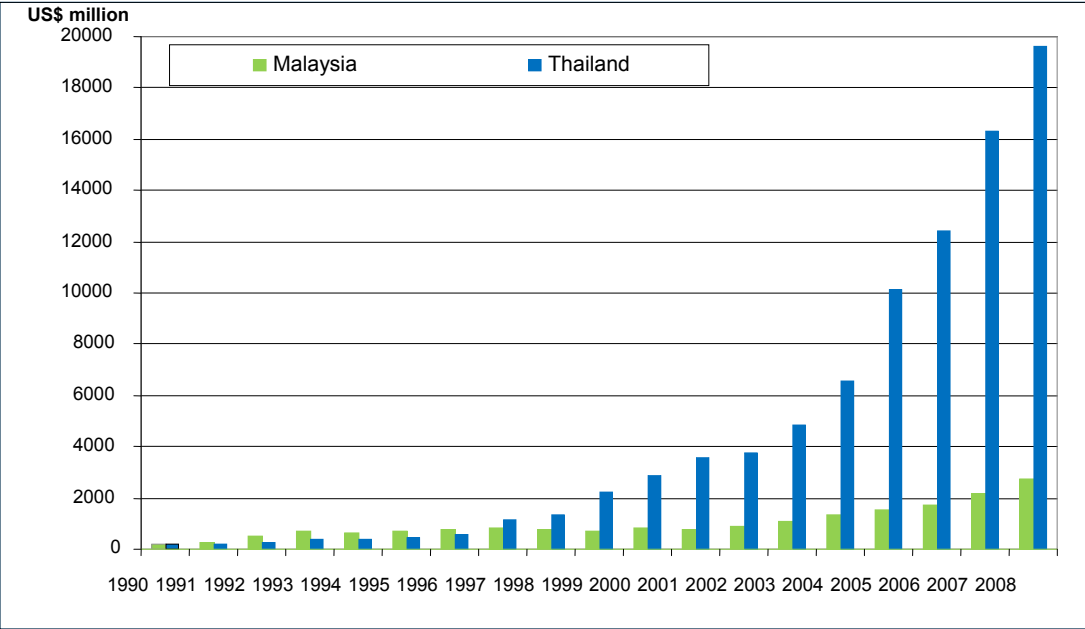
Source: Thai Automotive Industry Association (2008).

Figure 9: Automobile Production¹ in Malaysia and Thailand, 1999-2008 ('000 units)



Note:
 1. Production comprises "passenger cars" and "commercial vehicle" including light commercial vehicles, heavy commercial vehicles and heavy bus and coach.
 Source: Based on data compiled from OICA (<http://www.oica.net>)

Figure 10: Automobile exports from Malaysia and Thailand, 1990-2008



Source: Based on data compiled from UN Comtrade database.