

**AUTOMOBILE AND AUTO  
COMPONENTS INDUSTRIES  
IN ASEAN:  
CURRENT STATE AND ISSUES**

# **AUTOMOBILE AND AUTO COMPONENTS INDUSTRIES IN ASEAN: CURRENT STATE AND ISSUES**

Edited by  
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# Table of Contents

<i>List of Figures</i>		ii
<i>List of Tables</i>		iii
<i>List Abbreviation and Acronyms</i>		iv
<i>Preface</i>		vii
CHAPTER 1	Current State and Issues of the Automobile and Auto Parts Industries in ASEAN	1
	<i>Hideo Kobayashi</i>	
CHAPTER 2	Logistics of ASEAN Automotive Components	25
	<i>Seiji Kurosu and Akira Koyama</i>	
CHAPTER 3	Mobility of Skilled Workers in ASEAN	33
	<i>Mitsuhide Shiraki</i>	
CHAPTER 4	The CLMV Automobile and Auto Parts Industry	41
	<i>Hideo Kobayashi and Yings han Jin</i>	
CHAPTER 5	The Indian Automotive Industry and the ASEAN Supply Chain Relations	51
	<i>Tristan Leo Dallo Agustin and Martin Schröder</i>	
APPENDIX	Regarding the “ASEAN Economic Community and Japan”	115
	<i>Kazushi Shimizu and Hideo Kobayashi</i>	

## List of Figures

Figure 1.1	GDP per capita of ASEAN member states, 2012	2
Figure 1.2	Total vehicle production in ASEAN5 countries, 2010-2013	3
Figure 1.3	Total vehicle sales in ASEAN5 countries, 2010-2013	5
Figure 1.4	Organisation of the IMV project	19
Figure 3.1	Management composition and careers in bi-national and multinational TNCs	35
Figure 3.2	Management composition and careers in transitional TNCs	35
Figure 5.1	Indian automotive components imports, exports, and trade balance	66
Figure 5.2	Automotive components' import sources	67
Figure 5.3	Automotive components' export destinations	67
Figure 5.4	Rane Group sales in 2012, by product	85
Figure 5.5	Number of Toyota Kirloskar Auto Parts employees	99

## List of Tables

Table 5.1	Vehicle production in India	61
Table 5.2	Indian vehicle sales by vehicle class	62
Table 5.3	Vehicle exports from India	63
Table 5.4	Passenger car sales by brand, FY 2011 and FY 2012	64
Table 5.5	Logistics Performance Index ranking of ASEAN member states and India	71
Table 5.6	Indian two-wheeler market in FY 2012 and FY 2013 (until November 2013)	73
Table 5.7	Automotive parts JVs of TVS Group	74
Table 5.8	Tata Motors production volume by segment	80
Table 5.9	Tata Motors sales by segment and location	81
Table 5.10	Tata Motors' Nano sales	83
Table 5.11	Hyundai's domestic sales in and vehicle exports from India	88
Table 5.12	Pentadaewha customers by product	90
Table 5.13	Centralised and localised components production in ASEAN and India	94
Table 5.14	Production and export of components under the IMV project	97
Table 5.15	IMV project overview	98

## List of Abbreviations

AAF	=	ASEAN Automotive Federation
ACMA	=	Automotive Component Manufacturers Association of India
AEC	=	ASEAN Economic Community
AIC	=	ASEAN Industrial Complementation
AICO	=	ASEAN Industrial Cooperation
AIP	=	ASEAN Industrial Program
ASC	=	ASEAN Security Community
ASCC	=	ASEAN Social and Cultural Community
BAIC	=	Beijing Automotive Industry Holding Corporation
BBC	=	brand-to-brand complementation
CBTA	=	Cross-Border Transport Agreement
CBU	=	completely built unit
CEPA	=	Comprehensive Economic Partnership Agreement
CKD	=	completely knocked-down
CLM	=	Cambodia, Laos, and Myanmar
CLMV	=	Cambodia, Laos, Myanmar, and Viet Nam
CMF	=	Common Module Family
CO <sub>2</sub>	=	carbon dioxide
EAFTA	=	East Asia Free Trade Agreement
EEV	=	Energy Efficient Vehicle
EU	=	European Union
FDI	=	foreign direct investment
FTA	=	free trade agreement
GDP	=	gross domestic product

GM	=	General Motors
HS	=	Harmonized System (code)
IMV	=	Innovative International Multi-purpose Vehicle
IPC	=	International Parts Center
IPR	=	intellectual property right
JIT	=	just-in-time
LCGC	=	low cost green car
LCV	=	light commercial vehicle
MERCUR SOR	=	Mercado Común del Sur
MHIPE	=	Ministry of Heavy Industries and Public Enterprises
MNE	=	Multinational Enterprise
MRA	=	Mutual Recognition Agreement
NAFTA	=	North American Free Trade Agreement
OEM	=	Original Equipment Manufacturer
PCMP	=	Progressive Car Manufacturing Program
RCEP	=	Regional Comprehensive Economic Partnership
R&D	=	research and development
ROO	=	rules of origin
SIAM	=	Society of Indian Automobile Manufacturers
SKD	=	semi-knocked-down
SUV	=	sport utility vehicle
TCIE	=	Tan Chong Industrial Equipment
THACO	=	Truong Hai Automotive Corporation
TKAP	=	Toyota Kirloskar Auto Parts
TNC	=	transnational corporation
TPP	=	Trans-Pacific Partnership

VAT = value-added tax  
VW = Volkswagen  
WTO = World Trade Organization

# Preface

The ASEAN region is going through a time of changes. Concretely, efforts towards the realisation of the ASEAN Economic Community (AEC) 2015 are under way, which will result in a common market with a population of over 600 million. This is roughly half of the Chinese population and the creation of a common market will have great consequences for the world economy.

This research project is focusing on the impact of AEC 2015 on the automotive industry, which includes vehicle producers and auto parts suppliers. The reason is that the brand-to-brand complementation (BBC) scheme as proposed by Mitsubishi Motors allows the automotive industry to play an important role in the historic development of AEC. The BBC scheme and the ASEAN Industrial Cooperation (AICO), which went replaced by the ASEAN Free Trade Area (AFTA), developed into the present AEC 2015. However, this development is not the only relationship between the automotive industry and AEC. In fact, the AEC is the driving force in the development of the automotive industry. It cannot be denied that the agglomeration of the automobile original equipment manufacturers (OEMs) and the extensive supplier industry are linked to this growth. Moreover, it cannot be doubted that the production of completely built units (CBUs) in various ASEAN member states is based on the use of a system of intra-regional reciprocal parts supply. In short, the automotive industry has been a main promoter and beneficiary of regional integration. Therefore, the research will be limited to exploring the impact of the forthcoming AEC 2015 on the automotive industry.

Basing on the latest 2013 available data, vehicle production in the ASEAN5 (Indonesia, Malaysia, the Philippines, Thailand and Viet Nam) countries surpassed 4.44 million units and sales reached 3.50 million units. If we are presuming a 5 percent annual growth rate for production and 7 percent for sales, this would result in 5.90 million produced and 5.60 million sold units in these countries by 2020. In fact, this estimate is relatively moderate as it partly includes the so-called CLMV countries (Cambodia, Laos, Myanmar, Viet Nam), which can be expected to experience a rapid market expansion. If

the annual growth rate would reach 10 percent, the market would even surpass the 6 million unit mark.

If one adopts this projection, the ASEAN market has a truly high growth potential. Naturally, this is not to deny other markets: If projections for the Chinese automobile market are correct, sales will reach 25 million units in the same timeframe. However, the supremacy of the ASEAN market lies in its political stability, the advanced state of certain markets, and the historical impact of Western culture on institutions. This market has created a production system that rests on the international division of labour between diverse countries, meaning that this automotive production system differs from the Chinese or Western systems.

This volume contains six chapters. In the first chapter, Kobayashi gives an overview of the automotive industry in the ASEAN region. He identifies that under the forthcoming AEC 2015, automobile production separates into two distinct subtypes. On one hand, production is located in fully developed clusters such as the region around Bangkok in Thailand. In such industrial agglomerations, production relies on the fully integrated supply chain in the country with few inputs from neighbouring countries. On the other hand, production is diffusing to less developed countries such as Viet Nam. In such locations, low volume production is largely dependent on the import of components from ASEAN, Japan, Korea or China. Thus, the automotive industries in these countries follow different patterns, which can be understood as the next evolutionary stage of automotive industry development in the ASEAN region.

In the second chapter, Kurosu and Koyama explore automotive logistics in ASEAN. They describe the general industry dynamics and identify hard and soft infrastructure issues that trouble the logistics industry. While they find that ASEAN governments have already identified these problems, the authors show that the implementation of policies is behind schedule and needs more attention in order to support manufacturing industries like the automotive industry, which depends on timely production.

In the third chapter, Shiraki discusses the differences in human resource utilisation in Japanese and Western multinational enterprises (MNEs) and

issues for MNEs operating in the ASEAN region. He finds that ASEAN lacks fundamental data on labour-related migration which makes the analysis of the issue complicated, effectively limiting investigations to case studies. Thus, he argues that ASEAN countries should consider the creation of a comparable data to enable data-based analysis and policy formulation for migration-related issues in the region.

In the fourth chapter, Kobayashi and Jin explore the current situation of the automotive industry in CLMV countries in more detail. They find signs that these countries are attracting investment in labour-intensive parts production from neighbouring countries such as Thailand. However, they also observe several remaining issues for the development of an automotive industry in these countries, mostly related to insufficient infrastructure development and bureaucratic red tape.

In the fifth chapter, Agustin and Schröder explore the supply chain relations between ASEAN and India from the latter's perspective. They find that despite increasing trade in automotive components, the relation is rather one-sided, in that India imports much more from ASEAN than it exports to the region. Their case study approach demonstrates that India gets slowly integrated into supply chains in the ASEAN region. However, it becomes clear that the historic development as separated markets is still impacting the present relation. Case studies suggest that the division can be explained by lower cost of intra-ASEAN sourcing as opposed to imports from India, Indian companies' concentration on other markets as well as the relatively low technology level of Indian component manufacturers.

In the appendix, Shimizu and Kobayashi consider the impact of AEC 2015 on the Japanese economy and the prospects for future trade liberalisation in the different contexts of the Regional Comprehensive Economic Partnership (RCEP), the Trans-Pacific Partnership (TPP) as well as various free trade agreements (FTAs) with neighbouring countries such as China or India. This chapter also highlights remaining issues for the full realisation of AEC 2015.that while it appears safe to assume that a liberalised trade in goods will be achieved, the authors doubt that the other pillars of AEC 2015, namely liberalisation of services trade, investment and finance, and free movement of individuals will be realised on schedule.

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# CHAPTER 1

## Current State and Issues of the Automobile and Auto Parts Industries in ASEAN

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### Introduction

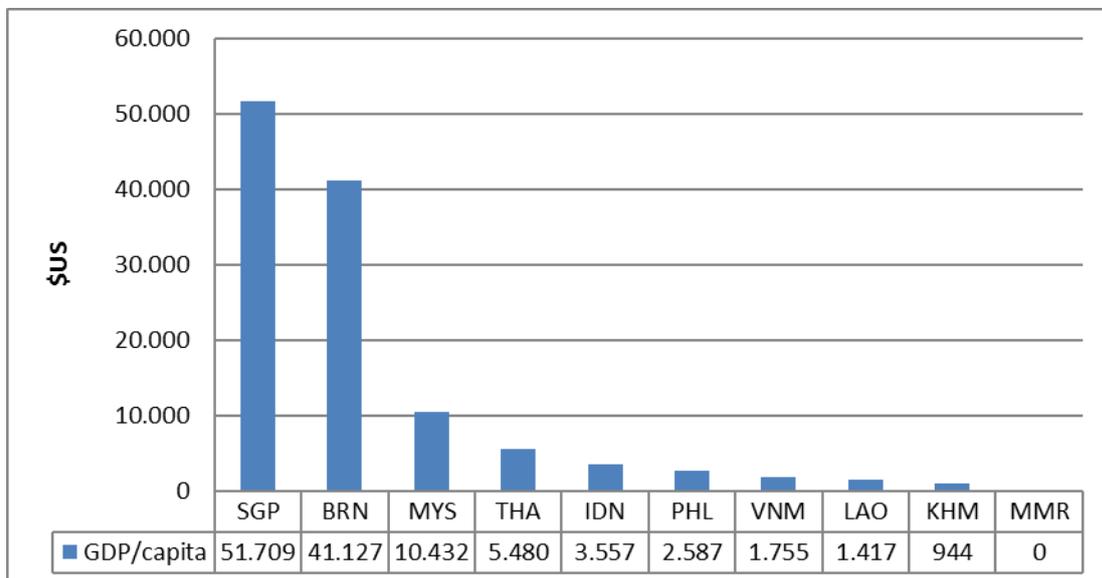
This chapter provides an overview of the current situation of the automotive industry in ASEAN and certain member states. The current state of the ASEAN automobile industry will be explained by putting into global context, including the ASEAN strategy of original equipment manufacturers (OEMs) from Europe, Japan, and other countries. Thereafter, the impact of the ASEAN Economic Community (AEC) on OEMs and parts suppliers will be discussed using case studies.

In general, AEC 2015 is likely to influence the automotive industry in distinct patterns: on one side, there is production in developed markets with an integrated supply chain while on the other side, there is production in developing markets that is mainly based on assembly of imported completely-knocked-down (CKD) kits. While Toyota's Intelligent International Multi-Purpose Vehicle (IMV) project represents the former, those of Tan Chong and Truong Hai Auto Corp. (THACO) represent the latter. Thus, cases will be investigated to show the distinct effects of AEC 2015 on automobile production within the ASEAN region.

# 1. Outline of the Chapters

In 2012, Singapore was the most advanced economy among the ASEAN5 countries in terms of gross domestic product (GDP) per capita and its gap from trailing countries Brunei, Malaysia, or Thailand was considerable (see Figure 1.1). However, at present, Viet Nam, Laos, and Cambodia have reached high income levels that the current phase can only be labelled as the dawn of motorisation, which is commonly associated with US\$2,000-3,000 GDP per capita.

**Figure 1.1 GDP per capita of ASEAN member states, 2012**



*Note:*\* Data for Myanmar are not available

*Source:* World Bank.

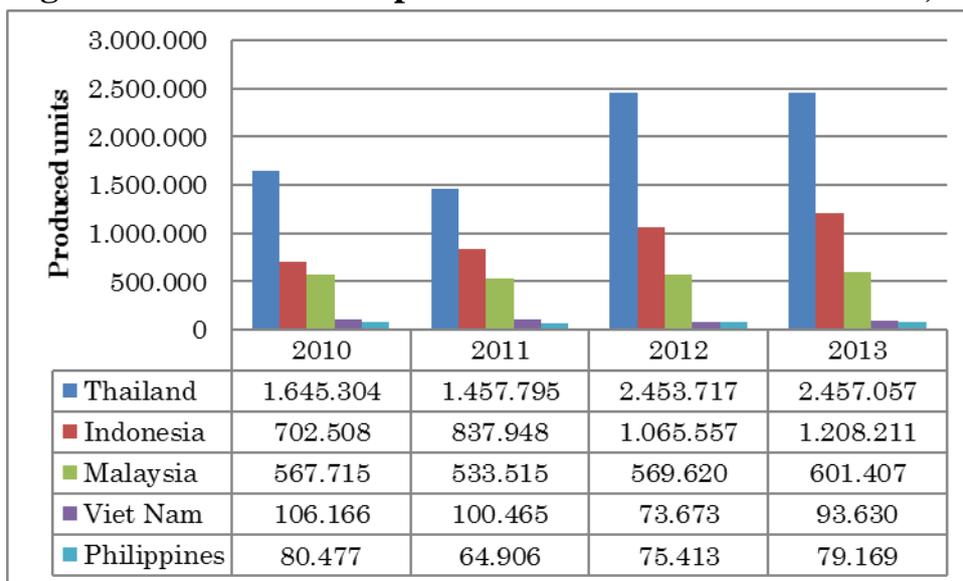
According to the ASEAN Automotive Federation (AAF), the ASEAN5 countries (Indonesia, Malaysia, the Philippines, Thailand, and Viet Nam) produced 4,439,474 units of automobiles in 2013 or a growth rate of 4.8 percent in comparison to the 4,327,980 units in 2012 (see Figure 1.2).

Regarding production figures at the national level, two ASEAN5 countries, Thailand (2,457,057 units) and Indonesia (1,208,211 units), account for 83 percent of gross production. The following places are occupied by Malaysia (601,407 units), Viet Nam (93, 630 units), and the Philippines (79,169 units).

Breaking down gross production in 2012, Thailand has achieved a minimal growth of 0.1 percent and Indonesia has grown by 13.4 percent, which indicate that Indonesia is developing into the second largest automobile-producing country in ASEAN. Production in the remaining three countries dropped in the last few years (2010-2013) but Viet Nam still registered a 27.1 percent growth in 2013 while the Philippines almost stagnated at 5 percent growth in the same year. As the only highly industrialised country among the ASEAN5, Malaysia posted a 5.6 percent increase.

It can be stated that Thailand continues to play a major role in the ASEAN automotive industry. However, Thailand's growth rate is marginal while Indonesia's automobile industry has posted a stable growth in production figures although Thailand's production figures is still unmatched. Its production for the domestic market is increasing, along with its exports suggesting that growth can still continue further. Contrarily, automobile production in the Philippines and Viet Nam continue to be mediocre. In the Philippines, Ford and Mazda have ceased production and Honda plans to reduce the number of vehicles built thus decreasing the country's role in automotive assembly. Moreover, while production in Viet Nam has increased again in 2013, it still cannot be said that the country is back on a stable growth path.

**Figure 1.2 Total vehicle production in ASEAN5 countries, 2010-2013**



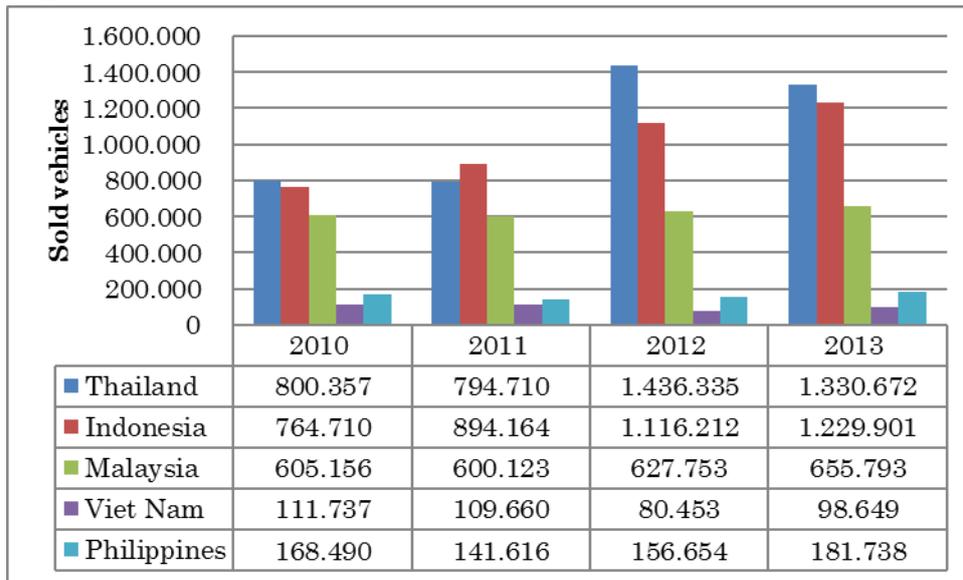
Source: AAF.

## **2. Concerning the State of Automotive Sales in ASEAN 5**

In 2013, a total of 3,496,753 units have been sold in ASEAN5 countries, which is an increase of only two percent from the 3,417,407 units sold in 2012. This meager increase shows a varying rate of fluctuation in the markets. Thailand was by far the largest market with 1,330,672 units sold but this is a decrease of 7.4 percent on a year-on-year basis, making the country the only ASEAN5 member posting a negative trend. Following Thailand are Indonesia with 1,229,901 sold units (or a 10.2% increase), Malaysia with 655,793 units (4.5%), the Philippines with 181,738 units (16%), and Viet Nam with 98,649 units (22.6%).

In both production and sales, Thailand has become ASEAN's largest market. However, recent government policies such as the removal of consumer incentives (refer to section 4.1) are the main factor for the decline of Thai automobile sales in 2013. In contrast, Indonesia's automobile market is consistently growing. Its automobile sales have grown parallel to the general economic growth of the nation. Since 2013, the Indonesian government has nurtured the industry in a way that is similar to Thailand's previous strategy such as the low-cost green car (LCGC) promotion policy (refer to section 4.1). Another is that instead of importing from neighbouring ASEAN countries such as Thailand and Malaysia, domestic production in Indonesia has been increased, which seems to have contributed to the total increase of sales. As to production and sales in Malaysia, no significant change has occurred. But at a time when Japanese cars captured most sales, the number of imports from other countries has increased.

**Figure 1.3 Total vehicle sales in ASEAN5 countries, 2010-2013**



Source: AAF.

### 3. ASEAN's Position in the Global Automotive Industry

In 2012, global production of passenger cars and commercial vehicles totaled 84,100,167 units, of which the ASEAN5 countries produced 3,882,277 units. Although these countries share in global production is just 5 percent, it is expected that the Thai automotive industry will recover, and that Indonesia and other ASEAN member states will continue to grow so that ASEAN's automotive industry will play an important role in the global industry. Furthermore, Thailand and Indonesia are already strategic assembly bases for Japanese and American OEMs as well as bases for automobile research and development (R&D) directed at emerging countries, hence strengthening the position of these countries.

Concerning Thailand, Japanese OEMs such as Toyota, Honda, Nissan, Mitsubishi, Mazda, Isuzu, and Suzuki as well as Western manufacturers GM, Ford, BMW, and Mercedes-Benz have production sites in this country.

Thailand plays a central role in Toyota's IMV project directed at emerging markets, especially concerning the production of Hilux pickup trucks and Fortuner SUVs (or sport utility vehicles) that are based on a similar platform.

These models are mainly exported to ASEAN and the Middle East, making Thailand an important base of operations. The Hilux is also exported to Europe and Australia. Until 2013, Toyota has developed a compact car platform directed at emerging countries and using this platform, production of the Yaris hatchback (versions for Europe, North America, and Japan have slight differences in design and specifications) and Vios sedan (also exported to the Middle East) has been started in Thailand. Although the upper sedan Camry and mid-level sedan Corolla are also produced in Thailand, these models are only exported within ASEAN. Moreover, Toyota established an R&D facility in 2003 where local engineers develop solutions for tough road conditions in ASEAN and other emerging countries.

In its Thai plant, Honda produces the Brio (which fulfills the criteria for the Thai eco-car standard), the strategic global compact car Jazz (called Fit in Japan), the compact sedan City, the mid-sized SUV CR-V, and the upper segment sedan Accord. The Brio has been jointly designed and developed by both local and Japanese engineers in the Thai R&D centre. Concerning exports, the Accord is shipped to ASEAN markets and Australia, and although advanced technology is required, Honda decided that the Thai production plant is capable of this task.

Meanwhile, Nissan produces the pickup truck Navara (or Frontier in other markets), the luxury sedan Teana, the mid-sized sedan Sylphy, the compact hatchback March, and the compact sedan Almera (or Sunny, which is based on the March platform) in Thailand. Nissan uses Thailand as a strategic export base especially for the March and Almera, which are exported to ASEAN, Europe, Japan, and Australia.

Mitsubishi produces the mid-sized sedan Lancer, the pickup truck Triton, the SUV Pajero Sports (which shares the same platform as Triton) as well as the compact hatchback Mirage and its compact sedan derivate Attrage. With the exception of North America, the Triton is exported to the rest of the world and the Mirage is exported globally from Thailand.

Mazda produces the compact hatchback Mazda2 (or Demio in Japan), the derived sedan Mazda3 (or Axla in Japan) in Thailand for the domestic and ASEAN markets as well as the BT-50 pickup truck, which is sold

domestically and in ASEAN and Australia. On the other hand, Isuzu produces the D-Max pickup truck and the SUV MU-7, both of which use the same platform. The D-Max is exported to the ASEAN region, Australia, Europe, and Africa.

Interestingly, Ford and GM produce with Mazda and Isuzu, respectively, but for separate markets. Using the same components, Ford produces Mazda's BT-50's sister model, which is sold domestically and abroad as Ranger. Ford also produces the compact hatchback Fiesta and the mid-sized hatchback Focus. GM produces Isuzu's D-Max sister model Chevrolet Colorado for the ASEAN and the Australian market where it is sold under the local brand as Holden Colorado. GM also produces the mid-sized sedan Cruze and the Trailblazer SUV in Thailand.

Turning to Indonesia, Japanese OEMs Toyota, Daihatsu, Honda, Suzuki, Nissan, and Mitsubishi have built production bases in the country.

Japan's largest manufacturer Toyota uses Indonesia like Thailand for the production of IMV models such as the Fortuner SUV and the Innova multi-purpose vehicle (MPV). These two models are exported within ASEAN and to the Middle East. While all Vios models used to be imported from Thailand, the updated Vios is now produced in Indonesia.

In Indonesia, Daihatsu trails Toyota in terms of market share, but because it is part of the Toyota group, Daihatsu produces and sells main models in cooperation with Toyota. Daihatsu produces the popular compact MPV Xenia and its sister model, the Toyota Avanza. While –with the exception of the brand logo– these two models are identical, the Avanza is exported to ASEAN, South Africa, and some countries in the Middle East. Daihatsu also produces the Ayla that conforms to the LCGC policy as well as its sister model Toyota Agya since 2013. Again, these two vehicles are identical. As to the Agya, there have been plans to export to the Philippines from February 2014. Lastly, Daihatsu assembles the Terios SUV and the rebadged version of the Toyota Rush.

In order to conform to the LCGC policy requirements, Honda assembles the subcompact Brio Satya. To increase localisation, it plans to produce the

Mobilio MPV, which is based on the Brio's platform. Moreover, the company produces the Freed, which is exported to Thailand and Malaysia.

Suzuki uses Indonesia as its strategic base where it produces the compact Swift, the Grand Vitara SUV, and the compact MPV Ertiga where it is rebadged as Mazda VX-1. Regarding exports, all models that are produced in Indonesia are exported to the ASEAN market. To meet the LCGC requirement, Suzuki has developed the Karimun Wagon R, which is based on Wagon R.

Nissan produces the Livina MPV and the Juke SUV in Indonesia. In order to expand sales, it will introduce the Datsun brand that will be sold domestically through Nissan dealers starting with the Go model. Although not a Nissan brand model, the Go is Nissan's response to the LCGC policy.

Malaysia promotes its national OEM brand Proton, which is mainly sold in the domestic market. Another national carmaker, Perodua produces and sells rebadged Daihatsu models. As to exports, both brands ship few units to the UK and Australia as well as to neighbouring countries Thailand and Indonesia.

Automobile production in the Philippines and in Viet Nam are almost exclusively directed at the domestic market but the time for increasing exports can be expected. There are mainly Japanese brands in the Philippines while Viet Nam hosts production by Chinese and Korean OEMs. The Philippines produces the Vios and the IMV-based Innova for Japan's Toyota. Due to quality issues in Viet Nam, IMV models and the Corolla, Camry, and Vios are only produced from CKD kits. Honda and Nissan have also set up plants in Viet Nam but they also operate through CKD assembly.

Korean's Kia has contracted production to Truong Hai, a Vietnamese company, which already produces Kia's Picanto for the popular small car segment, but production has not really started yet. The same goes to Hyundai, which contracted production to Thanh Cong.

## **4. Recent Trends in the ASEAN Automobile and Auto Parts Industries**

### **4.1. Thailand**

For a long time, Thailand has been playing the leading role in the ASEAN automotive industry. Against this background, Thai governments have used the automobile and auto parts industry as the central pillar of their industrialisation policies, which have not only provided consumer incentives for car purchases but also promoted export growth and attracted investment from foreign automobile OEMs.

However, as aforementioned data have revealed, the number of domestically produced vehicles has stagnated between 2012 and 2013. The main reason for this is domestic policy to refund more than half of automobile acquisition tax (government incentive) has ended in 2012. Furthermore, CBU exports from Thailand depend on the economic condition in importing partner countries and should domestic demand not compensate for declining exports then the central position of the automotive industry in Thailand can turn into a vicious circle for the domestic economy. From 2007, the first phase of the eco-car promotion policy started to reduce the environmental impact of cars in Thailand and promote modernisation of the industry. The policy's second phase was slated to end in March 2014, during which all OEMs were asked to fulfill the requirements. However, if one compares the emission requirement in phase two with those of phase one, the standard has become stricter so that OEMs are concerned that instead of a modest investment, huge sums are required to meet the requirement.

In addition, the domestic political turmoil since the latter part of 2013 undermines a positive outlook because there is the fear that present tensions could turn into prolonged instability, which in turn would negatively affect components and automobile production as well as automobile sales.

In contrast to this negative perspective, Thailand's highly developed level of automobile and components production should not be overlooked because it is the main reason why OEMs and suppliers regard the country as a very good business location. For this reason, it can be observed that more companies

such as Toyota and Denso have shifted their Asia-Pacific headquarters from Singapore to Bangkok. More and more leading and intermediate parts makers have also opened R&D facilities in Thailand to develop and design components for the ASEAN region and other emerging countries, hence the transfer of responsibility from Japan to Thailand. So as not to lose against Japanese and German rivals, domestic Thai parts makers increasingly invests in advanced technology and human resource development. The large domestic Thai Summit group has acquired company O and further tries to increase its production capacity by creating joint ventures with Japanese, German, and American competitors.

## **4.2. Indonesia**

Since 2010, the automotive industry in Indonesia has grown quickly such that it looks like it could come close to that of Thailand. This trend is related to the economic development, which allows the growing urban middle class to buy a car for the first time. Since 2013, Indonesia's government has implemented an industrial promotion strategy that includes OEMs and parts makers by aiming at achieving growth through promotion of eco-friendly and low budget cars, otherwise known as low cost green car or LCGC.

LCGC policy means that the government gives a tax holiday on the 10 percent luxury tax that has to be paid when buying a car if the vehicle does not cost more than JPY 650,000, can drive at least 20km per liter, and the vehicle has a local content ratio of more than 80 percent. Therefore, Japanese OEMs have introduced models that meet these LCGC requirements; Daihatsu, Honda, and Nissan have constructed new assembly plants for LCGC production, hence it can be stated that Japanese companies contribute much to the development of the automotive industry in Indonesia.

The strength of the Indonesian automotive industry is that it enjoys political stability and that LCGC policy gives the industry a clear perspective. Political stability deserves attention as the political environment before 2004 was often erratic, which negatively affected the economy. However, since the 2004 election of Susilo Bambang Yudhoyono as president, Indonesia's political affairs have stabilised and the economy has become stronger and Indonesia has turned into an ASEAN driving force.

However, there are remaining issues. First, there is the drastic increase in wages. In 2014, wages in Jakarta are 60 percent higher than in 2012. From a long-range perspective, this may increase the potential number of people that can afford a car, but currently these sudden increases are a huge problem for companies. It follows that there is the potential that labour-intensive industries will be shifted to Laos, Cambodia, or Myanmar, which would then be a problem for both company and government.

Second is the domestic economic gap. The economic difference between Jakarta and the country's second largest city Surabaya on one side and the rest of Java as well as Sumatra, Kalimantan, and New Guinea on the other side, is still huge. Thus, at the moment, a further growth of automobile sales outside of Java cannot be expected due to this gap. Therefore, only when the economic gap is bridged can the market potential of Indonesia's large population be realised.

Third, road and port infrastructure is still insufficient. Against the background of quickly increasing car ownership, the road infrastructure in Jakarta appears inadequate. Thus, OEMs and parts suppliers located in the suburbs of Jakarta experience severe problems in meeting just-in-time (JIT) schedules due to traffic jams. Moreover, the import and export of CBUs and auto parts is negatively affected by the limited capacity of port facilities that can process deliveries on a JIT basis. As Indonesia attempts to rival Thailand for the leading position in the ASEAN automotive industry, it follows that building adequate infrastructure is an urgent task.

Finally, on the number of Indonesia's auto parts suppliers, there are only 550 or a mere third of Thailand's supplier industry. Tier 1 to Tier 3 suppliers mainly consist of foreign parts makers while locally owned companies are hardly found. While, at the moment, high-tech components must be imported from Thailand, it is assumed that the LCGC policy will promote the upgrading of technology so that Indonesian parts suppliers can play an important role when foreign parts makers do invest and transfer technology.

### 4.3. Malaysia

Malaysia is a unique case in ASEAN as it locally produces Japanese cars under the Proton brand since 1983 and the Perodua brand since 1993. While the two brands are – or used to be – national companies, the main components technology is provided by Mitsubishi and Daihatsu. By promoting national cars this way, Malaysia has achieved a high diffusion rate of 369 cars per 1,000 people. However, in the second half of 2000, the popularity of national cars somewhat declined and the presence of foreign OEMs in Thailand and Indonesia in combination with the domestic focus of the national car producers left Malaysia behind these countries in terms of production. Furthermore, AFTA is surely the main reason why national cars came under pressure; while Toyota and Honda have constructed their own plants, Nissan, Mitsubishi, Suzuki, Mazda, and Subaru have relied on local distributors and CKD assembly. Since 2011, German Volkswagen (VW) models are assembled via CKD and semi-knocked-down (SKD) by its Malaysian partner DRB-HICOM while Peugeot use Naza to assemble CKDs since 2006, hence making Malaysia likely to become the production centre in ASEAN for this brand. Thus, as foreign OEMs contribute to the development of the industry in Malaysia and the government must liberalise due to pressure from ASEAN, it appears that national car policy is gradually being replaced. In January, the Malaysian government declared the National Automotive Policy '14, its new national car policy that contains five relevant items. First, Malaysia should become the hub for eco-friendly vehicles (referred to as Energy Efficient Vehicles; EEV). Second, production of high value-added parts should be promoted. Third, automotive exports should be promoted. Fourth, until 2020, CBU exports should reach 200,000 units and components exports should reach 10 billion Ringgit. Fifth, acquisition taxes should be reduced in the future. And sixth, national carmakers and bumiputra companies should be included.

On the first point, the promotion of EEV will not be limited to national brands but to foreign OEMs as well. As Honda is going to produce the compact hatchback Jazz Hybrid, then EEV planning is in progress.

The number of automotive parts makers in Malaysia stands at 690, which are classified as A or bumiputra companies, B or Chinese companies (A and B

are local companies) and C are foreign companies. Due to the lasting effect of the national car policy, Malaysia's supply system is mainly directed at the domestic market, as only 26.8 percent of production is exported. Due to the renewed automotive government policy, it does not appear unlikely that Malaysia can become the centre of eco-friendly production through the localisation of parts makers with advanced know-how.

#### **4.4. The Philippines**

As Figure 1.1. shows, automobile production in the Philippines is decreasing. On the other hand, domestic sales are increasing. This situation occurs because OEMs are using AFTA to relocate production to Thailand or Indonesia and export from these countries. Remaining domestic production bases are operated by Toyota, Honda, Nissan, and Mitsubishi. Mitsubishi follows Toyota in terms of sales and has announced that it will construct a new factory until 2015.

So, why is automobile production in the Philippines declining? One reason is that the alliance of Ford and Mazda has ended production in the country by relocating the base to Thailand. While the companies did not explain the move, answers can be gleaned from research by Rosellon & Medalla (2011) on the automotive and electronics industry supply chains in the Philippines. An interview with Ford<sup>1</sup> provided the following important detail: In comparison with Thailand, production in the Philippines has a cost of US\$1,500-2,000 per unit. Therefore, shifting production to Thailand can be understood as a business decision to decrease cost. Moreover, Ford pointed out that suppliers in the Philippines could not produce components in the required quality so that certain parts had to be imported, which further jacks up the cost. This indicates that the level of the auto components industry is insufficient, which is partly due to the absence of a clear automobile industry support policy such as the one in Thailand or Indonesia.

Nevertheless, the Philippines continues to function as a source of OEMs' inhouse parts production (e.g. transmission). Mitsubishi set up a localised production along the lines of the Progressive Car Manufacturing Program

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<sup>1</sup> Rosellon & Medalla did not identify the company as Ford. However, they stated that the interviewed company was an American assembler. As Ford was the only American OEM with assembly operations in the Philippines, it follows that the unidentified company is indeed Ford.

(PCMP) policy which required companies to produce parts domestically by founding Asian Transmission Corporation during the 1960s. Similarly, Toyota made the Philippines part of its ASEAN strategy by making the country its transmission manufacturing hub. This continued under AFTA and the brand-to-brand complementation (BBC) scheme such that the Philippines played an important role in the overall concept. This explains why the country had a positive trade balance in the automotive sector: The value of components exports was higher than that of vehicle imports. However, it has been shown that vehicle imports are increasing, leading to a shrinking trade surplus in the sector (Rosellon & Medalla 2011). As the trend continues, the Philippines might no longer be able to maintain a trade surplus in this sector.

Under the forthcoming AEC 2015, it can be assumed that motorisation in the Philippines is going to continue through increasing imports. However, without concrete government policy, the automotive industry of the Philippines may continue to stagnate.

#### **4.5. Viet Nam**

Automobile production in Viet Nam in 2012 reached only 67,000 units but the industry recovered in 2013. Assembled CBUs in Viet Nam use only a few domestically produced parts with the main components imported from Thailand and Indonesia as well as a small fraction from Japan. After assembly, these vehicles are mainly sold in the Vietnamese market. The reason for such large parts imports is that the domestic components industry is underdeveloped and there are little signs of growth.

Recently, Viet Nam has attracted global attention as the production site of Samsung smartphones. However, in the electronics industry, components are simply imported from countries of origin and neighbouring countries (in case of Samsung, these are from South Korea and China) so that production in Viet Nam merely consists of assembly. Therefore, it can be stated that Viet Nam's automotive industry is similar to its electronics industry.

As in the Philippines, absence of clear government policy towards the industry contradicts considerations of foreign OEMs to set up production in Viet Nam, which is further complicated by lengthy bureaucratic approval

procedures. Thus, the Vietnamese automotive industry is at a critical phase and a concrete government policy is required in order to ensure its future viability.

The Vietnamese automotive industry is going to face a challenge with the upcoming AEC 2015, which requires Viet Nam to eliminate all import tariffs on ASEAN products until 2018. Thus, it appears possible that in the worst case scenario, the country is going to face the same situation as the Philippines where a growing domestic demand is satisfied by imports from Thailand and Indonesia, and Viet Nam will not play a role as a production base for OEMs.

#### **4.6. Cambodia, Laos, and Myanmar**

It is not appropriate to say that the automotive industry in Cambodia, Laos, and Myanmar (collectively known as CLM countries) has reached the initial stage. While Cambodia and Myanmar allow for the imports of used vehicles from Japan and North America and then sell these in the domestic market, Laos has banned used car imports but allow import of newly produced vehicles from Thailand, Korea, and Japan.

Of the CLM countries, Cambodia and Myanmar are engaged in CBU production through CKD kits. In Cambodia, Hyundai joined with KH Motors and the conglomerate LYP Group, both of which are locally based, to produce the H1 from CKD kits in the Koh Kong industrial zone near the border of Thailand. China's Beijing Automotive Industry Holding Co., Ltd (BAIC) and a local company founded Khmer First Car, which is located near the Phnom Penh airport and produces light trucks with components imported from China. Among the triad OEMs, Ford was the first to enter Cambodia. Ford's plant is located in the Sihanoukville Special Economic Zone in the city port. This plant is operated by the Thai automobile distributor RMA, which produces the Everest SUV with parts imported from Thailand. In Myanmar, China's Chery produces its rebadged model as the Myanmar Mini. In the same fashion, ZX Auto (Hebei Zhongxing Automobile) produces pickup trucks with a company affiliated with Myanmar's Ministry of Industry. Local company Super Seven Star licenses designs from China to produce commercial vans via CKD assembly. Under military rule in Myanmar, Suzuki

produced the minitruck Carry and the small car Wagon R until 1998. Due to internal conflicts that influenced the market, Suzuki suspended production until democratisation commenced. Since May 2013, Suzuki restarted local production of the Carry. Suzuki has a positive attitude towards the market and plans to build a new factory within the Tirawa Special Economic Zone in the outskirts of Yangon by 2015.

It appears possible that the production of labour-intensive parts will be shifted from Thailand and Indonesia to CLM countries.

## **5. The Foundations of the Regional Free Trade System in ASEAN**

ASEAN was founded in 1967 by Indonesia, Malaysia, the Philippines, Singapore, and Thailand, mainly in order to create peace and stability in Southeast Asia. Despite these truly political functions, ASEAN extended to the whole of Southeast Asia after the end of the Cold War and simultaneously assumed a function to promote regional economic cooperation. In the economic sphere, the creation of a free trade system is especially remarkable because it is unique throughout all of Asia. Thus, in 1993, the so-called ASEAN6 (original five members plus Brunei) have agreed to create the ASEAN Free Trade Area (AFTA). AFTA incorporated a phased approach wherein, with some exceptions, tariffs between members were first gradually lowered to below 5 percent and by 2010, all tariffs are to be eliminated. After the creation of AFTA, Viet Nam (1995), Laos and Myanmar (1997), as well as Cambodia (1999) – collectively known as the CLMV countries – joined ASEAN. Due to their late entry, these countries were granted a delay schedule for tariff elimination. Nevertheless, the CLMV countries must reduce tariffs on some goods before 2015 and eliminate all tariffs until 2018, so that the regional free trade zone will be completed.

As mentioned, the strategic decision on trade liberalisation was made in the first half of the 1990s. In fact, Japan's Mitsubishi Motors introduced the plan to reduce import tariffs on components produced in different member countries. This idea was implemented in the form of the BBC scheme in 1988. After the creation of AFTA, this project was extended as the ASEAN

Industrial Cooperation (AICO) scheme in 1996 to incorporate not only OEMs but also parts suppliers. It follows that the basic idea for the creation of the ASEAN free trade system and regional division of labour has its roots in the automotive industry during the second half of the 1980s.

## **6. ASEAN Economic Community (AEC) 2015 and the Automotive Industry**

Since 2003, ASEAN has established three communities – ASEAN Security Community (ASC), AEC, and ASEAN Social and Cultural Community (ASCC) – that should be in place by 2020, a sign that can be regarded that ASEAN plans to further deepen integration. In 2007, all member states have agreed to realise the aims of these communities until 2015 so that a more integrated ASEAN community will be in effect by next year.

Of these three communities, the development of AEC is the most necessary and one with the most expectations. AEC contains the consolidation of a common market through policy coordination, reduction of the socio-economic gap between member countries, and addressing the issues of ASEAN+1 FTAs, especially concerning the elimination of tariffs and non-tariff barriers. Through AEC, ASEAN will implement the targets of the 2007 Blueprint of creating a common market by 2015. It indicates a relation to local production bases. The community's plan rests on four pillars, which are the free trade of goods or the elimination of tariffs, services liberalisation, finance and investment liberalisation, and free movement of skilled workers. As to free trade, it appears that ASEAN will achieve the 20-year old aim without problems. On the other hand, because all ASEAN member states have some highly sensitive issues with at least one of the items, it appears very unlikely that liberalisation of services, finance, investment, and individual movement of persons is going to achieve meaningful results. The automotive industry has been explicitly mentioned as a priority field in the Blueprint and the industry has hopes for standardisation of technical, environmental, and safety requirements within the ASEAN region.

The elimination of tariffs is the most anticipated issue in the automotive industry but given the advanced state of tariff reduction in ASEAN especially

the presently existing elimination in ASEAN6 countries, this step appears unproblematic. On the other hand, the timeframe between AEC implementation in 2015 and 2018 will be a decisive phase for the economic lot of the CLMV countries. The reason being that CLMV countries must eliminate tariffs until 2018, including those currently protected through negative lists, including automobiles. In short, the import and export of vehicles and auto parts will be liberalised. Using Viet Nam as an example, this means that although assembly plants currently assemble CBUs domestically, these products have to compete against products from Thailand or Indonesia by 2018. As these countries are already the regional centers of sourcing and assembly operations, the potential for shifting production to these countries and replacing local production through imports cannot be denied as tariff elimination makes concentrated operations more attractive.

Contrarily, labour-intensive production of components such as wire harness is likely to be shifted from countries with considerable wage increases to CLMV countries, hence it cannot be ruled out that countries such as Thailand, Indonesia, and Malaysia are going to experience a hollowing-out of their domestic parts and components industry, which means that the auto component supply system may evolve into an entirely new form.

## **7. Case Study on the Utilisation of AEC 2015 by Automotive Firms**

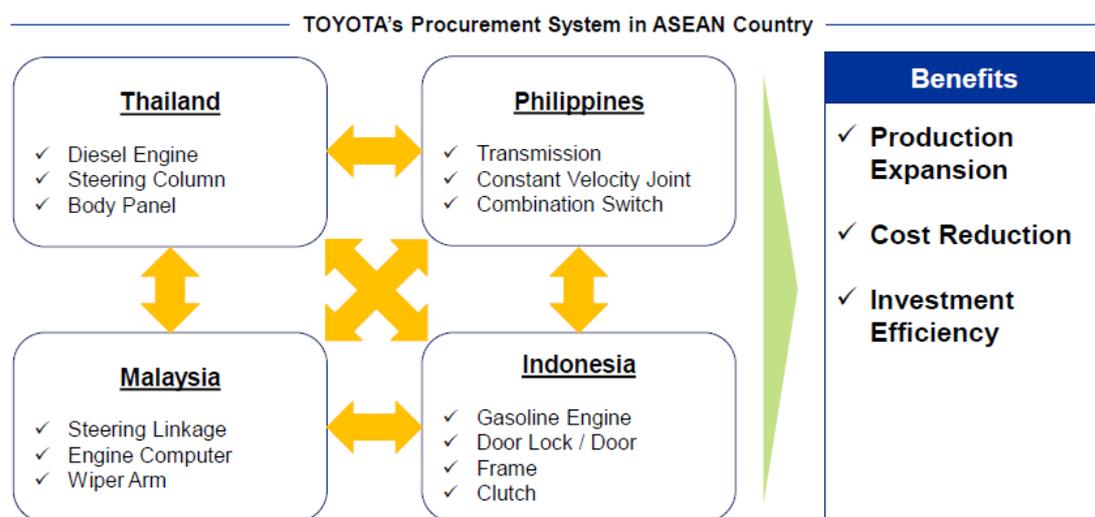
### **7.1. Toyota's IMV project**

Toyota's IMV project was announced in 2002 with the aim to increase brand sales in emerging markets. IMV's characteristic is that a single platform is used to produce pickup trucks, SUVs, and mini vans, which simultaneously allows to increase productivity, decrease cost, and to greatly extend the ratio of locally sourced parts. IMV models are produced not only in ASEAN (Thailand, Indonesia, the Philippines, Malaysia, and Viet Nam) but also in South Asia (India and Pakistan), Latin America (Argentina and Venezuela), and South Africa.

While IMV models are produced in these countries, the IMV project is especially remarkable in the ASEAN region. The company used the ASEAN free trade system that is characterised by “reciprocal parts supply” and “intra-regional inter-process division of labour” so that it is possible to organise intra-regional import and export of components as well as to export parts to countries outside the region such as India or South Africa. The IMV project was a success because Toyota greatly increased procurement of parts from this region (as most components were produced in Thailand, Indonesia, Malaysia, and the Philippines) and then exported using AFTA or other country-specific FTAs to reduce costs of CBUs.

In the future, it can be expected that not only OEMs such as Toyota but also parts suppliers will utilise AFTA and AEC to establish their own systems of reciprocal parts supply. Parts makers will adapt their production to local conditions especially concerning the costs and skills of labour as well as technological capabilities so that it can be expected that the supply chain is going to diversify even further. While the supply system of Tier1 suppliers already strongly resembles that of OEMs, this pattern will supposedly become a major point of emulation for Tier2 and Tier3 suppliers.

**Figure 1.4 Organisation of the IMV project**



Source: Toyota Motor Asia, 2014.

## 7.2. The cases of Truong Hai and Tan Chong

As AEC 2015 will eliminate tariffs on parts and components, the use of regionally shipped CKD kits that are utilised for final assembly into CBUs in countries with comparatively small sales volumes such as Viet Nam and the Philippines are likely to increase. Truong Hai Auto Corp. (THACO), a passenger car, bus, and truck manufacturer from Da Nang is a representative case for the Vietnamese automotive industry. Founded in 1997, the company has more than 7,000 employees today. It started to produce Kia buses from 2001 and in 2003, the company established a new factory in the Chu Lai Industrial Zone in Quang Nam Province, south of Da Nang. Truong Hai today assembles passenger cars for Korean Kia, Japanese Mazda, and French Peugeot, all from CKD kits, from this new factory. Since locating in Chu Lai Industrial Zone, Truong Hai has expanded its operation to include 23 subsidiaries with around 4,000 employees working in the automotive division. From different workshops, wire harness, seats, and truck frames are produced that are used to completely assemble CKDs. The company operates a training centre where its future employees are trained for six months before they start actual work. Moreover, Truong Hai built its own harbour terminal which is roughly one kilometer away from the workshops and assembly line so that CKD kits and other components can be directly shipped to assembly plants. Kia's small car model Morning and its successor Picanto are so popular that the Koreans overtook Toyota in the small car segment and became the market leader. Key components such as engine and transmission are all directly shipped in containers from Korea. While Mazda originally formed a joint venture (JV) with Truong Hai that imported passenger cars and pickup trucks from Japan and Thailand that the Vietnamese distributed domestically, the arrangement since 2010 was changed to a local CKD assembly. Similar to the Kia case, more than half of the components are imported from Mazda plants in Japan and China. Mazda has started test exports of locally assembled passenger cars to Laos. Similarly, Peugeot has started cooperation with Truong Hai as its local distributor and since 2013, CKD assembly has been initiated with the French manufacturer, which is considering making Viet Nam an export base for other emerging markets. CKD parts are not only imported from France but also from China. Truong Hai has a technical cooperation with China's Foton Motors in truck production and also produces Hyundai Kia trucks from CKD kits.

Similar to the Truong Hai case is the Tan Chong company located in Da Nang and founded in 1957 by two Chinese Malaysian brothers. Tan Chong has a long and strong business relationship with Nissan: in 1976, the company started to assemble Nissan cars from CKD kits; in 1977, the production of Nissan Diesel trucks was contracted; in 1994, production of vans was initiated; and in 2004, operates a CKD assembly for Nissan's French partner, Renault. Moreover, the company has produced Subaru models since 2012 and the CKD assembly of Mitsubishi SUVs was initiated in 2014. Tan Chong operates two factories in Malaysia. In 2010, the company formed a majority JV with Nissan (74:26) that operates Nissan's Vietnamese subsidiary and produces the small car Sunny by CKD assembly. Tan Chong also plans to produce the licensed Sunny from 2015 onwards in Myanmar.

It can be concluded that in the shadow of the forthcoming AEC 2015, two types of automobile production can be identified. The first type is the traditional fully integrated production of CBUs where main and heavy components are produced in close proximity to the final assembly location and light components are sourced regionally by respective headquarter or procurement unit. This represents one way of using AEC 2015. The second type is embodied in the cases of Truong Hai and Tan Chong, which are importing almost all components as CKD kits from overseas and simply assembling these locally. As the anticipated tariff elimination further disadvantages low volume production, it is necessary to contract production from several OEMs in order to make operations viable. The first type of production is observed by most Japanese manufacturers and by Ford while the second type can be in a minority of Japanese OEMs (Nissan and Mazda), Korea's Hyundai-Kia group, European, American GM, and Chinese producers such as Chery.

## **8. The post-2015 ASEAN Automotive Industry: Thailand and Indonesia**

As mentioned earlier, tariffs between ASEAN members are to be eliminated between 2015 and 2018. This will supposedly be accompanied by shifting production of components such as wire harness, small motors or automotive

seat cover, which require many manual inputs and are therefore labour-intensive, to Cambodia, Laos, and Myanmar.

Against a background of sudden wage increases in Thailand and Indonesia as well as political instability in Thailand and also due to exploitation of country-specific conditions (specifically labour cost and skills) to reduce costs and avoid the risk of overconcentration in certain countries, it can be expected that the model of Thailand and Indonesia+1 will become more common.

What we mean by the label Thailand and Indonesia+1? Let us demonstrate using actual industry cases of two Japanese companies. Company Y is a major wire harness supplier and Company TB mainly produces interiors; both export materials or intermediate products from Thailand to plants in Cambodia and Laos. These inputs are then assembled and subsequently re-imported to Thailand for final production steps. Thus, production is partly shifted to plants located in industrial zones close to the Thai border.

Then consider Myanmar, which has been called Asia's last frontier: Company A, a subsidiary of a major component maker, already set up a factory in a suburb of Yangon. This plant is going to be responsible in producing parts currently manufactured in Indonesia and these components will be exported to Indonesia and probably also to Thailand.

The extension towards CLMV countries depends on resolution of certain issues, especially on infrastructure and human resource. As to infrastructure, Cambodia and Myanmar both face similar issues: first, reliable electricity supply, which is indispensable for factory operations, is not guaranteed. Second, road conditions are wanting and make transportation of parts very problematic. Concerning human resources, there is information that due to low literacy rates and a limited number of people who have completed high school education, it is often even difficult to find qualified employees for relatively simple production steps. In Laos, the abundant sources of electricity and the linguistic similarity to the Thai language makes human resource training and plant operation relatively unproblematic. However, the relative lack of permanent employment (otherwise known as job hopping) is a negative situation found in many developing countries.



## Conclusion

From 2015 onwards, all ASEAN member states – especially the CLMV countries – will most likely face substantial changes. While these countries have a high potential to host satellite production for Thai automobiles, Viet Nam and Myanmar have the most potential to develop independent automobile production bases. Regarding future developments under the conditions of AEC 2015, a differentiation into either fully integrated or CKD production is likely. However, it is probable that SKD and CKD productions are merely the starting phase in a phenomena that will gradually develop into integrated production by OEMs.

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# CHAPTER 2

## Logistics in the ASEAN Automotive Components Industry

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### Introduction

The logistics industry's share of global gross domestic product (GDP) is 10 percent (Japan's share is 7-8%). This figure can increase in large countries. Since the 1990s, logistics vocabulary has become more popular. While formerly simply referred to as distribution, logistics terms such as material flow are now more widely used. The reason why logistics have received increased attention is the more complicated production process so that the movement of components and raw materials has become more important. Furthermore, aspects related to this movement like tools, technology, and efficiency have evolved.

In turn, problems that occurred in these related aspects have increased the need for logistics (solutions). For example, resource security (rare earths), dealing with waste and residual materials (prime example is nuclear waste), rapid increase of carbon dioxide or CO<sub>2</sub> (emissions from ships, airplanes and

trucks), aging society (distance between place of production and place of consumption), or the expansion of mail order and internet shopping.

## 1. Logistics in the ASEAN Context

### 1.1. Defining logistics

“Providing the right thing, at the right time, at the right place” is the formula of the Toyota Production System (otherwise known as JIT or just-in-time). Exactly for this reason, Toyota is successful. Applying this definition means that we are adopting a managerial perspective on logistics and supply chains, and not a macroeconomic one. We use this perspective and as a concrete case study in order to highlight existing problems in supply chain logistics and identify whether these issues arise from industrial dynamics, hence the business side, or from regulation and implementation on the state side. Thus, we intend to show the roots of practical problems in nowadays (automotive) logistics in ASEAN and where government intervention could help in solving these issues.

The definition of the Toyota Production System means that the idea of reducing the inventory to zero is pursued through means – called sustainment – even if producers and consumers are geographically and timely separated.

A further meaning of the term supply chain should be explained because the term is often used in a false way. In which situation is it possible to call a supply chain interlinked? If the cooperation between Firm A and Firm B leads to a win-win situation (determining the reason for a win-win situation is difficult). Using a supply chain can create advantages through cooperation such as stabilising production volume through a secure (arranged) quantity of orders (zero inventory), which enables direct business transactions. In a case where the business relation is not limited to Firms A and B then there is no supply chain. If Firms C and D are also included and firms engage their transactions in an open market, there is no supply chain.

## **1.2. The importance of logistics in the context of ASEAN**

Concerning the ASEAN region, logistics possess special importance. The reason for this is that AEC is going to eliminate tariffs, which means that uninterrupted distribution becomes the key for organising business operations. In the automotive industry's case, as a car consists of 20,000 to 30,000 parts the timely supply and smooth customs procedures play especially decisive roles for overall operations. Therefore, the control over distribution planning – read supply chain – necessarily is of crucial importance. In the ASEAN context, Singapore has so far assumed the function of the brain that organises all operations. However, while Singapore will continue to perform these planning and control functions in finance and distribution under the ASEAN economic Community (AEC), manufacturing related functions are increasingly shifted to the actual production centre that is Thailand. This paper will analyse the importance of logistics for business in general and for the automotive industry in ASEAN in particular based on the example of logistics service provider Company V.

## **2. Case Study: Automotive Components Logistics**

### **2.1. The historic development of Company V**

Company V is an integrated automotive components logistics, forwarding, and distribution company founded 1954 in Yokohama as a subsidiary of N Motor to handle logistics. In 1990, the company name was changed to YV and during the management crisis in Nissan 10 years later, the company became independent through a management buyout. Then, the air transport logistics firm TAC founded in 1976 became a wholly owned subsidiary of Company V and was called VWT in 2005. In 2009, Company T, a former affiliate of N Motor, was integrated. However, in 2011 Company H placed a takeover bid so that since 2012, Company V is a wholly-owned subsidiary of company H. Further, Company H reorganised parts of its own sea- and airborne logistics subsidiary HTSSA into present Company HTSVF.

The following sections will rely on information provided by Company V. Its business is mainly related to car logistics for N Motor and delivery from affiliated (or *keiretsu*) suppliers.

## **2.2. Company V business and locations**

Although the company has mainly had N Motor and its *keiretsu* suppliers as key customers since its foundation, it now has Mitsubishi, Suzuki, and Bridgestone as its new Japanese parts distribution customers as well as German companies Bosch and Mahle Filter Systems. Although business with Toyota was initiated, as Toyota is a company that takes *keiretsu* relations very serious, Company V faces several challenges one of which is that its trucks cannot enter Toyota's company property to directly deliver components. As to turnover of domestic operations, 84 percent depend on automotive industry (of which 43% come from the N Motor *keiretsu* and 41% from other automotive industry clients). Furthermore, overseas business has expanded. In 2012, Company V's gross turnover was JPY1.466 million of which overseas companies contributed JPY260 million or 18 percent of the total. Company V handles forwarding, transport, inventory, and packaging for the US, the United Kingdom (UK), the Netherlands, Russia, China, India as well as Thailand, Indonesia, Malaysia, and Singapore in the ASEAN region.

## **2.3. Company V's strength**

The strength of Company V is automotive (parts) logistics, which is based on know-how accumulated through long-term practice. Through relations to the N Motor *keiretsu*, the company understands N Motor's production control and related transport requirements well. However, since N Motor came under the influence of Company R in 1999 and CEO Carlos Ghosn formulated the "N Motor Revival Plan", Company V gained independence and had to compete with cheap, non-*keiretsu* logistics companies. However, regarding automotive parts logistics, packaging must be adapted depending on each parts' type and destination (whether domestic or overseas) and a pure cost-based transport may create a problem and negatively affect the quality of goods. Therefore, the company must achieve cost reductions while maintaining the proper way of components logistics and to develop its role as a pioneer in auto parts logistics even further.

## **2.4. Company V's new approach**

Induced by N Motor's new parts production method called Common Module Family (CMF), the company has realised the necessity of handling module components transport. Therefore, regarding international inter-process division of labour in auto parts production (subsequently mentioned as ASEAN's current state and future task), Company V set up six facilities in connection to N Motor's so-called International Parts Center (IPC) network (of import-export facilities) in the UK, India, Thailand, Mexico, and the US. At these locations, Company V must manage the inventory, and plan and package properly (depending on domestic or overseas shipment) for JIT delivery to assembly plants or directly assembly lines, which must also be adjusted to N Motor's assembly schedule changes. It is worth mentioning that due to the Japanese suppliers' excellence in keeping the schedule, there is no IPC in Japan.

## **2.5. Future and tasks for auto parts logistics in ASEAN from Company V's perspective**

It is no exaggeration to state that in the era of international inter-process division of labour in auto component production, ASEAN is a role-model. Demand for new vehicles in Thailand and Indonesia is increasing. In response, OEMs increase their model range, which also increases competition and simultaneously increases the necessity for precise and complex supply chain management. Now, three examples will be discussed.

First, each car and component must meet increasing quality requirements. In the previous years, a system of reciprocal complementation has been established in ASEAN so that many Tier2 and Tier3 as well as Tier1 parts suppliers have located to ASEAN countries. OEMs have located their assemblies to Thailand and Indonesia but due to the development of intra- and inter-regional integration, OEMs are not just producing for the ASEAN markets but also for Australia or Europe such that different vehicles are produced, which in turn require different supplies and different shipping procedures. Thus, concerning auto parts, production in different locations requires collection from these locations and redistribution, which is made

complicated by the packaging and parts design changes. Therefore, the extension of logistics networks and bases is necessary for supply chain management but companies must simultaneously balance increasing cost from these networks with customers' price expectations. A current concern is the existence of so-called dead stock where parts are stored at a logistics firm's warehouse in anticipation of a shortage, which turns into prolonged storage in the inventory because problems do not occur. As storage creates cost, logistics companies get stuck with these inventories without compensation. OEMs and parts suppliers plan to reduce this unneeded inventory to bring down long-term cost, this is a problem that must be resolved quickly.

Moreover, during parts transport the quality can be affected and deformations can occur. Considering ASEAN's geographic conditions, production and development adjusted to the hot and humid climate would help logistics companies to offer high quality logistics services to customers.

Second, the main issues are infrastructure-related, may it be hard (conditions of roads and ports) or soft (customs procedures or other bureaucratic obstacles).

As the automobile industry has severe delivery requirements to decrease cost related to inventory and overall efficiency, keeping the schedule is a main issue. Regarding automotive logistics in ASEAN and time issue, the most critical problem is the lack of hard infrastructure. While each member country has different conditions, it is no exaggeration to claim that especially improving the road infrastructure for safe passage by trucks is a main challenge in most ASEAN countries. Moreover, as most automotive industry plants in Indonesia and the Philippines are located in close proximity to the capitals, the severe traffic jams are an obvious problem for JIT delivery. Harbour facilities are often overburdened as ships may enter the port, but cannot unload due to lack of port storage capacity. Hence, in order to contain difficulties on the intra-ASEAN system of complementation, improving hard infrastructure appears mandatory.

Regarding soft infrastructure, logistics firms do have concerns with customs clearance delays and complex procedures. So far, only Singapore has a positive record regarding both hard and soft infrastructure. Nowadays, the

customs procedures in Thailand and Malaysia are comparatively smooth. However, bribing officials is still a common problem in some ASEAN countries and India, so that elimination of such practice is a desired and much needed task.

Third, there is the issue of qualified human resources. While every industry has different requirements, automotive logistics need human resources qualified in on-the-spot handling of packaging. As automotive parts trade will increase, it is expected that the need for industry-specific logistics will also rise. Due to these expectations, training and qualifying human resources is an urgent task for Company V.

### **3. Remaining Issues**

Regarding automotive logistics, Japanese OEMs and parts suppliers in ASEAN face many tasks. Multiple ways of diversification and simultaneous price competition are present, which for logistics companies mean that their OEM customers require the construction of IPCs for import-export operations that further creates additional costs. Thus OEMs increasingly apply universal quality standards, which becomes difficult for emerging countries due to the high required level of technology. On the backside, this means that driving logistics cost down may impact on the quality of the product, which in turn could undermine the brand (image).

Furthermore, as OEMs follow a cost-down approach, there is the risk of claims for damaged parts while in transport that will increase as defects usually occur after assembly. In such cases, the formerly lucrative black box (between suppliers and OEMs) of transport costs, has now turned into an additional task for logistics companies.

### **Conclusion**

Finally, regarding future development, Japanese automotive parts suppliers and some OEMs are going to end their dependence on trading companies by creating their own production network. Becoming more actively involved in supply chain management will become increasingly necessary.

As to human resource development, every country has to manage increasing skills level without excessively increasing wages. Regarding the future generation of workers, understanding the requirements of JIT production and delivery are central conditions for working in the automotive industry and related branches. It is also necessary to better understand local customs and work ethics in Japanese OEMs and to find ways of teaching Japanese requirements as this awareness will determine the success or failure in markets in ASEAN and in India.

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# CHAPTER 3

## Mobility of Skilled Workers in ASEAN

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### Introduction

International workers mobility may be defined first in terms of political pressure to migrate and second in terms of economic shortage and need. The first type should be understood as caused by past conditions of imperialism, where colonial states would induce migration from conquered countries to the imperial centre. However, this pattern no longer exists. Nowadays, the second phenomenon is the main cause for international workers mobility. It is mainly induced by three conditions: the difference in economic prosperity, the differences in the level of technology, and migration in relation to foreign direct investment (FDI).

This paper will cover these three phenomena in relation to transnational corporations (TNCs) in the automotive industry that are active in ASEAN countries under the conditions of the forthcoming ASEAN Economic Community (AEC) 2015.

### 1. Human Resource Use of TNCs

ASEAN created AEC 2015 in order to continue attracting FDI from Japanese and Western TNCs. Furthermore, these targeted TNCs are regarded as having excellent human resource utilisation and management capabilities. However, there are huge differences in human resource management in TNCs. Here, the

differences between human resource utilisation and career between Japanese and Western firms must be compared.

First, in the case of a Japanese firm it can be described as a bi-national type. This means that the top senior management level consists mainly of Japanese expatriates and a small number of domestic nationals. Moreover, while domestic nationals can become managers, they hardly ever are able to assume leading management functions in the global headquarters of Japanese firms.

Next, in contrast to Japanese firms, Western companies use a multinational type or a mix of domestic nationals, TNC's country of origin nationals and third-country nationals – the latter two as expatriates – in their top and senior management, which increases international mobility (Figure 3.1). Moreover, the label describes that nationals who do not hold the passport of a TNC's country of origin are regularly promoted to perform management functions in the company's global headquarter.

On the other hand, there are unmistakable signs that even Japanese firms are moving slowly into the direction of the Western type. While many Japanese firms still practice the old style, it appears that third-country nationals will gradually appear in the top and senior management level as well as being seconded as expatriates in the global headquarter. At present, the label bi-national still appears appropriate, but as these firms are characterised by the transformation from the bi-national to the multinational type, the alternative label transitional type may also be fitting (Figure 3.2). Therefore, it can be expected that the competition for international human resources will intensify and that the time will come when Japanese firms will shift to the use of third-country nationals as expatriates.

Figure 3.1 Management composition and careers in bi-national and multinational TNCs

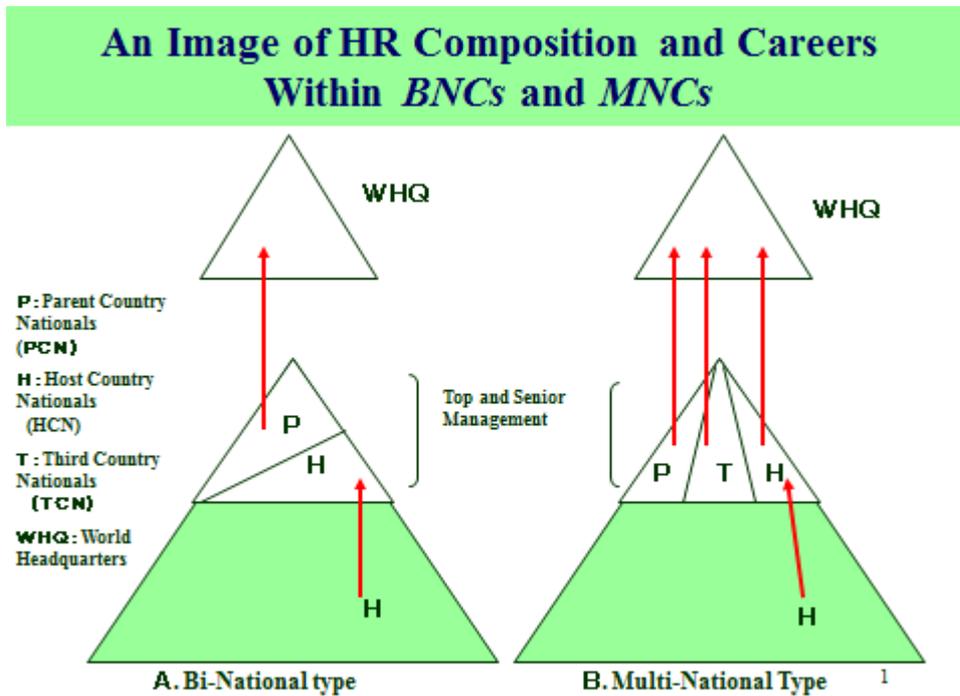
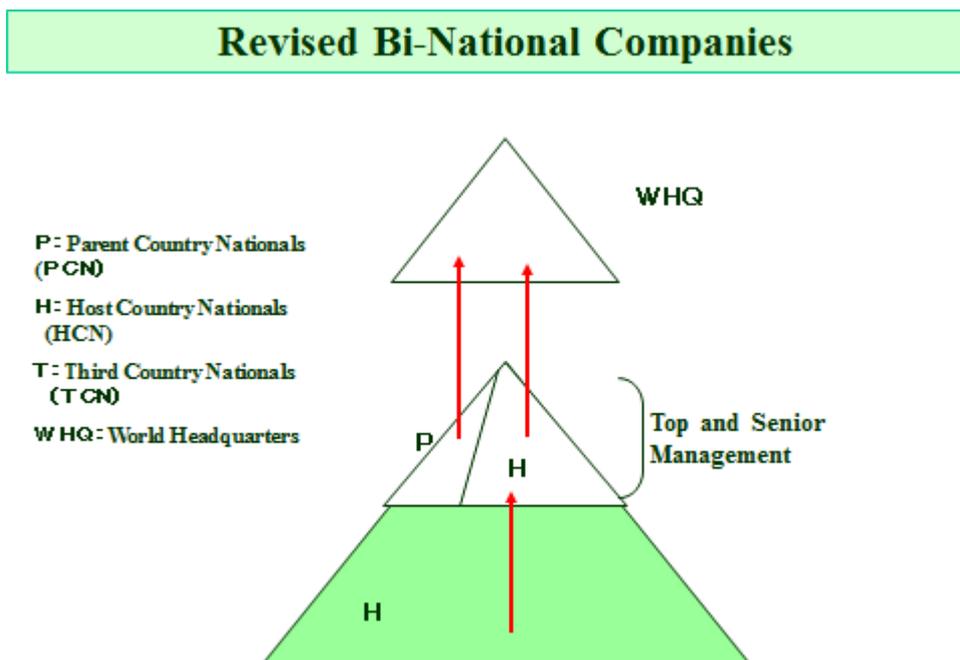


Figure 3.2 Management composition and careers in transitional TNCs



Concerning automotive industry TNCs operating in ASEAN, the multinational type can certainly be observed, such as in the case of Tan Chong from Malaysia. Tan Chong was founded by a Chinese Malaysian during the 1970s and went from assembling vehicles for Nissan to vehicles distribution and created an extensive network within the ASEAN region. When we conducted an interview with the company on 25 February 2014 in Da Nang, we met a multinational senior management. The top position (general director) was occupied by a Malaysian national, the manufacturing manager was a Chinese Malaysian, and the manager in charge of process engineering was a Filipino.

Therefore, a multinational management is not limited to North American and European firms, but can already be observed at companies originating from ASEAN countries. Regarding the utilisation of multinational senior management, it can therefore be concluded that companies whose country of origin lies in ASEAN are already one step ahead of Japanese TNCs.

## **2. Tasks for ASEAN Regarding AEC 2015**

ASEAN has explicitly mentioned “skilled workers movement liberalisation” in the AEC Blueprint. In 2005, member states reached an agreement on mutual qualification recognition for certain industries (e.g., Mutual Recognition Arrangement, or MRA, on Engineering Services or MRA on Accountancy Services). In 2012, it decided on the “Agreement on the free movement of individuals” that eases the conditions for company-internal transfer of expatriates. To implement the MRA on Engineering Services, ASEAN created a register for certified engineers with the aim of allowing certified staff to work easier within the region after certification is completed. Moreover, the implementation of the register and related national rules is monitored by an ASEAN coordinating committee that should help implementation from a professional point of view. However, it appears difficult to tell if ASEAN member states actually want to liberalise movement or not. The approval process for engineers appears quite lengthy so that the procedure may be too long to help companies that need to send engineering staff on unplanned business trips, such as troubleshooting or customer

support. Thus, while ASEAN made a step in the right direction with the MRA, the actual implementation, especially concerning time, and the unexplored linkage to working permit procedures seem to require improvement.

Related to this migration issue are the lack of migration data and the problem of defining a skilled worker and movement of individuals. Hence, describing and analysing the issue is complicated as comparable data are not available. Moreover, ASEAN members tend to be conservative on related subjects like liberalising service trade and investment rules.

Therefore, if ASEAN really wants to create single market, it must seriously address the issue on workers' mobility.

### **3. Current Condition and Future Perspective of Individuals' Mobility**

With the April 2013 decision to introduce a business travel card for business travels by 2015 and individual member states procedures that favour business travellers over non-business travelers has increased individual mobility. It also appears certain that ASEAN member states are going to establish a common tourist visa to attract tourism. Further, due to the formulation in AEC 2015 on the "free movement of individuals," ASEAN will have to improve the conditions for business travellers, especially concerning TNCs who are active in ASEAN, through policy measures.

Mobility of workers is reinforced by the argument in section 2 that not only Western TNCs but also Japanese companies are going to increase the use of human talent from third-countries in their operations. The possibility for third-country nationals to get a working permit would directly benefit TNCs and their superior system of human resource utilisation. On the other hand, liberalising mobility will create new issues that in turn will have to be addressed. This would also increase the number of highly-skilled expatriates in ASEAN and stop the brain-drain phenomenon in the region. This is also possible as the minimum wage in urban centers like Bangkok, Jakarta, or Manila is around US\$200 or roughly the same level. The related issue of

unskilled labor will have to be addressed in the future but presently it appears that liberalising skilled workers – or better expatriates – mobility is the more pressing task. Moreover, the brain-drain issue – especially towards the USA and Europe – is a real concern for developing countries. Therefore, ASEAN and each member country should make working conditions more attractive in order to give incentives not only for companies but also for employees to work in ASEAN.

## Conclusion

The main point that this paper wants to highlight is the lack of information on the movement of skilled and unskilled workers within the ASEAN region. The lack of data on the international movement of workers applies to the intra-ASEAN situation as well as for the movement between ASEAN and the rest of the world. This lack of data is also the reason why this paper adopted a case study approach. Therefore, the first condition to study the international movement of workers more systematically is that all member states support the collection of comparable statistical data on the subject. Besides data collection, it is crucial that all countries understand that such a database allows them to identify what sort of workers they need for the domestic economy so that they can attract this kind of worker. While the AEC 2015 Blueprint recognises the issue, it must be concluded that the necessary data are still not available.

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# **CHAPTER 4**

## **The CLMV Automobile and Auto Parts Industry**

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### **Introduction**

To begin, consider the general economic characteristics of Cambodia, Laos, Myanmar and Viet Nam, collectively known as the CLMV countries. These countries joined ASEAN relatively late and are economically less developed than the original members. According to the World Bank (2012), Viet Nam's GDP stood at US\$155.8 billion in 2012, Myanmar's is estimated to be around US\$50 billion, Cambodia at US\$ 14.04 billion, and Laos at US\$9.41 billion. Therefore, these countries can be labelled as developing countries. This is also reflected in their gross domestic product (GDP) per capita. While Viet Nam and Laos have roughly around US\$1,500, that of Cambodia and Myanmar are below US\$1,000 and therefore among the least developed countries.

More than 20 years after the end of the civil war, Cambodia still has not made a lot of progress in the economic sphere. Under the military junta, Myanmar's economy also stagnated but with the gradual democratisation process, the country is receiving foreign direct investment (FDI) and appears to slowly move towards improving its economic status. However, while all these countries are on the path towards market economy and are strengthening their trade relations with Western countries, the common characteristic is that these

countries' economic relations are strongly linked to the United States, China, South Korea, and Thailand. Indeed, while the presence of the US, neighbouring countries China and Thailand, as well as Korea especially in Myanmar, Laos, and Cambodia is striking, economic relations with Japan are marginal.

## **1. The Importance of the Agricultural Sector in CLMV Countries**

The most outstanding characteristic of the sectoral composition of CLMV economies is the weight of the primary sector. Only Viet Nam has a robust manufacturing sector while Cambodia, Laos, and Myanmar have their agricultural sectors playing the most important role. The manufacturing sector takes the second rank in Cambodia and Laos, and third in Myanmar, behind agriculture and services. This condition is also reflected in the main trade products of these CLMV countries. Products of their primary sectors are their most important exports, which mainly consist of industrial products. Laos has been labelled as ASEAN's battery as the country can use the Mekong river to generate large quantities of electricity; it can sell surplus electricity to Thailand and is an important business potential. In case of Cambodia, the tourism industry centers on the cultural heritage of Angkor Wat and is of great importance to the national economy. However, these imply that these countries lack a diversified economy.

The relative weight of labour-intensive manufacturing has rapidly increased in CLM countries since 2010. In Myanmar and Laos, textile and garment industries are trending while in Cambodia, there is the growth in manufacturing houseware products. These recent developments mean that labour-intensive manufacturing is not yet contributing as much as the primary sectors mentioned earlier but the increasing wages in Thailand suggest that the tendency to shift production to CLM countries is going to continue.

## 2. General Condition of Vehicle Sales in CLMV Countries

Let us investigate the vehicle sales in CLMV countries. A shared characteristic of these car markets is that used vehicles constitute a higher percentage of total sales than new cars. Of the four, Viet Nam has the highest number of new car sales. However, while a mark of 140,000 vehicles was reached in 2009, the number steadily declined in the subsequent years as it fell below 100,000 units in 2012. Besides the general economic condition, restrictive fiscal policy and an increase of the vehicle tax discourage sales. Reliable (time series) data on Cambodian vehicle sales are unavailable but it is said that 1,300 new cars and 29,000 used cars were sold in 2011. A similar lack of data exists in Myanmar. During the military rule, second-hand vehicle imports were severely limited and subject to high import tariffs, but with democratisation, these restrictions were relaxed in 2011, thus, about 113,000 – mostly Japanese – used vehicles were imported in 2012. Meanwhile in Laos, second-hand vehicle imports were legally prohibited until 2011, hence there are no data on such imports. However, whoever visits Laos can observe that the prohibition obviously was not enforced as the number of foreign vehicles is high. Regarding new vehicle sales, a total of 34,500 units were sold in 2012, which consists of 15,700 passenger cars and 7,000 pickup trucks. While the lack of official statistics for second-hand vehicle imports forces us to narrow our view to Cambodia and Myanmar, it must be stated that the phenomenon definitely also exists in Laos, but due to an official policy, the magnitude cannot be accounted for.

### **3. Current Condition of the Automobile Industry in CLMV countries**

A most striking characteristic of the CLMV automotive industry is the presence of Chinese, European, Japanese, Korean, Malaysian, and US original equipment manufacturers (OEMs) in Viet Nam and operations of completely knocked-down (CKD) assembling companies in Cambodia and Myanmar. So far, there is no CKD assembly plant in Laos.

Concerning Japanese OEMs, the country's leading car-maker Toyota started production in Viet Nam in 1996. In the same year, Suzuki set up a small truck production. Honda, which at the time was one of the leading two-wheeler producers in the Vietnamese market, started four-wheeler production in 2006.

Regarding Korean car-makers, Kia's small car Picanto is assembled from CKDs by Vietnamese company Truong Hai Auto Corp. (THACO). Seemingly trying to establish a strong position in the large developing market to profit from the anticipated motorisation, Kia has rapidly increased its sales and now occupies the second rank in vehicle sales behind Toyota in 2013.

Turning to Western OEMs, General Motors (GM) took over the Vietnamese plant of bankrupt Daewoo and uses it for production. Similarly, Ford entered the market in 1997 and today produces sedans, sport utility vehicles (SUVs), and hatchbacks. Mercedes-Benz (Daimler) uses the plant of a local company for the assembly of its cars.

China's Chery contracted compact car production to local companies Viet Nam Motors Industry Corp. (Vinamotor) and Vinaxuki, the latter produces models of (Harbin) Hafei Motors.

The Vietnamese companies Truong Hai and Tan Chong, which are both located in the Da Nang area in central Viet Nam, are remarkable cases. While Truong Hai is a privately owned Vietnamese company, Tan Chong was founded by a Chinese Malaysian. However, both firms sought to establish vehicle production in Viet Nam's central region around Da Nang during the

1990s.<sup>1</sup> Both companies assemble CKD kits into completely built units (CBUs) for some major global OEMs. In Truong Hai's case, it receives technological assistance or technology transfer from its partners. Central components are imported from abroad, Kia ships CKD kits from Korea while Mazda supplies kits and components from Japan and China. The company even built an own port where CKD kits and other components are delivered and operates its own training facility for its future staff. In the case of Tan Chong, the company assembles CKD kits for Nissan, which are sourced from ASEAN and India. This production method deserves attention as it is likely to increase for developing markets just like the CLMV countries.

Among the CLMV countries, Cambodia and Myanmar have CKD-based assembly plants. In Cambodia, Hyundai operates a shared management joint venture (JV) with two local companies to assemble the H1 model from CKD kits in the Koh Kong industrial zone, which is near the border of Thailand. The Beijing Automotive Industry Corp. (BAIC) and a local company founded Khmer First Car, which is located near Phnom Penh airport and produces light trucks with components imported from China. Ford became the first OEM from the triad to open a plant in Cambodia, precisely in the Sihanoukville Special Economic Zone and close to the city's airport. This plant is operated by the Thai automobile distributor RMA and it produces the Everest SUV with parts imported from Thailand. In Myanmar, China's Chery produces its rebadged model as the Myanmar Mini. In the same fashion, ZX Auto (Hebei Zhongxing Automobile) produces pickup trucks with a company affiliated to Myanmar's Ministry of Industry. Moreover, local company Super Seven Star licensed designs from China to produce commercial vans by CKD assembly. Under military rule, Suzuki produced the mini truck Carry and the small car Wagon R until 1998. Due to internal conflicts that influenced the market, Suzuki suspended production until democratisation commenced. Since May 2013, Suzuki restarted local production of the Carry. The OEM has a positive attitude towards the market and plans to build a new factory in the currently established Tirawa Special Economic Zone in the outskirts of Yangon by 2015.

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<sup>1</sup> In an interview conducted with Tan Chong on 25 February 2014, a staff explained that the company planned to set up production in Da Nang in 1997 but gave up preparations in 1997, when the Asian Financial Crisis hit the region, including Malaysia, which in turn introduced foreign exchange controls to stabilise the Ringgit.

## 4. Current Condition of the Automotive Components Industry in CLMV Countries

A common characteristic of the auto parts industry in all four CLMV countries is that this industry is relatively poorly developed. While some auto parts suppliers have already located production to these countries, especially in Viet Nam, it is certainly not wrong to state that in comparison to other ASEAN countries, the industry is weakly developed. However, if one takes a closer look at the component producer's activities, it becomes clear that parts production dedicated to two-wheelers is considerable. In fact, Viet Nam is among the top 4 countries in two-wheeler production and sales (Fujita 2012). Therefore, it can be expected that suppliers currently focused on two-wheeler parts production may shift towards four-wheeler component production. The large presence of Japanese two-wheeler producers is also the reason why Company T, which produces seat covers for Toyota and two-wheeler co-driver seats, has set up production in 1997. While the company formerly supplied components for the two-wheeler production of Suzuki, Yamaha and other competitors, it mainly supplies Toyota's car assembly operations today. Similarly, Company S, a shock absorber manufacturer of the Honda *keiretsu*, started operations in 1996. During that phase the company only supplied two-wheeler shock absorbers to Honda, however in 2012, the company opened a second plant that produces components for four-wheelers. While the main component producing companies in Viet Nam were mainly Japanese that supplied Japanese OEMs, it must be stated that Korean suppliers and OEMs also significantly increased their presence. For example, since Hiroshima-based Company O which specialises in machining entered the market, its sales to Korean companies such as Hyundai-Kia account for 30 percent of total sales turnover.

Regarding the auto parts industry in Cambodia, Laos, and Myanmar, it must be stated that it is presently underdeveloped. As vehicle production is only conducted via CKDs, these operations rely on overseas imports for the vast majority of components and that production depends on foreign inputs. Thus, parts suppliers with independent design capabilities can hardly be found. Probably the strongest aspect for the industry in these countries is that they share a border with Thailand, the centre of automobile production in ASEAN.

Hence, labour-intensive production steps are increasingly conducted by so-called satellite plants that are close to the border between Thailand and the respective CLM country. Thus, it can even be stated that shifting labour-intensive production to CLM satellite plants may be the basis for future industry agglomerations. Therefore, while the concentration of advanced parts production and final assembly seems to concentrate in Thailand and Indonesia, there is on the other hand the simultaneous diffusion process in less complex production stages towards neighbouring countries such as Cambodia, Laos, and Myanmar. It appears reasonable to assume that labour-intensive parts production – prime examples are wire harness and castings – in Thailand will be under pressure due to increasing wages so that the responsibility for these components will be shifted towards neighbouring countries.

In 2012, two major wire harness producers – Sumitomo Electric and Yazaki – independently from each other established production sites close to the Thai border. Similarly, Denso built a plant for labour-intensive electronic parts in the proximity of the Thai-Cambodian border. While a similar influx so far cannot be observed for Laos, automotive component manufacturers Toyota Bōshoku and Asahi Tec are said to be considering setting up production in the country. In Myanmar, Asumo (Denso) as well as Inoue Kogyo intend to begin production in 2014. Furthermore, Chinese and Korean parts suppliers also quickly seek to set up subsidiaries in Myanmar and future investments from Indian, Indonesian, and Malaysian firms are anticipated.

## **Conclusion: Problems for Auto Parts Makers in CLMV Countries**

Automotive component producers in CLMV countries face numerous issues. First, the issue of insufficient infrastructure must be raised. Undoubtedly, abundant workforce and low wages are attractive but reliable electricity supply and sufficient road infrastructure are necessary conditions for attracting manufacturing industries. Regularly occurring black-outs not only disrupt production but also create serious issues for quality standards. Therefore, each company must secure emergency electricity supply

(generators), which increases costs and reduces profits. Automotive component producers in CLMV countries face numerous issues. First, the issue of insufficient infrastructure must be raised. Undoubtedly, abundant workforce and low wages are attractive but reliable electricity supply and sufficient road infrastructure are necessary conditions for attracting manufacturing industries. Regularly occurring black-outs not only disrupt production but also create serious issues for quality standards. Therefore, each company must secure emergency electricity supply (generators), which increases costs and reduces profit. Regarding road infrastructure, while main roads are still not completely asphalted, there is the task of extending the network of asphalted roads to branch roads. The second main issue is education of workers. While a normal worker's wage is truly cheap, the level of physical endurance and capacity is reportedly lower than that of Thai workers. Hence, improved education and training are certainly desirable.

Regularly occurring black-outs not only disrupt production but also create serious issues for quality standards. Therefore, each company must secure emergency electricity supply (generators), which increases costs and reduces profit. Regarding road infrastructure, while main roads are still not completely asphalted, there is the task of extending the network of asphalted roads to branch roads. The second main issue is education of workers. While a normal worker's wage is truly cheap, the level of physical endurance and capacity is reportedly lower than that of Thai workers. Hence, improved education and training are certainly desirable. In addition to the mobility issue of normal workers, there is also a shortage of skilled labour and managers. This shortage poses a severe problem in technology transfer and is connected to the third issue: as Thai or Malaysian skilled labour usually are in charge of technology transfer and employee training, it is necessary that the working visa procedures for this kind of skilled workers are harmonised and facilitated. Improving the level of technologic capability in CLMV countries is strongly dependent on the support of these individuals, granting easier access would help to develop the automotive parts industry in CLMV countries.

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# **CHAPTER 5**

## **The Indian Automotive Industry and the ASEAN Supply Chain Relations**

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### **Introduction**

The topic of automotive supply chains has been increasingly studied as it raises questions of economic development, especially from the perspectives of simultaneous globalisation and regionalisation, and trade. While ASEAN is a prime example of intraregional production networks, supply chains that connect ASEAN and India have not been studied in depth. Therefore, this paper investigates the Indian automotive industry, which is composed of automobile original equipment manufacturers (OEMs) and parts and components producers, and other supply chain connections to the neighbouring ASEAN region.

This study is structured as follows. First, we will take a look at the historic development of the automotive industry in India, as it provides the context for the development of companies and their capabilities that are crucial determinants for their ability to join supply chains. The investigation will not

be limited to Indian firms because as case studies of the ASEAN region forcefully demonstrate, foreign OEMs and parts suppliers may use developing and emerging markets as specialised production bases of their global and regional supply chains. Second, against the historic background, the current condition of the automotive industry in India will be analysed by discussing industry data. Third, we will conduct case studies of automotive companies from India, Japan, and South Korea to investigate how India and ASEAN are connected through supply chains and determine which chains integrate Indian companies. We will analyse to which extent industrial and trade policies promote or hinder the extension of ASEAN supply chains to India and vice versa. As a final step, policy recommendations will be formulated based on the findings in order to improve the automotive trade between India and ASEAN.

## **1. Historic Development of the Automotive Industry in India**

Production of automobiles in India started during the latter part of the colonial period when Ford and General Motors (GM) set up assembly facilities (Balcer & Bruschi 2010, 136) in the 1920s. After gaining independence from the United Kingdom in 1947, India's economy can be characterised as *dirigisme* that was underpinned by socialist ideology. Hence, the economy was heavily regulated and the automotive industry was no exception. Importing completely built units (CBUs) was banned in 1949, followed by increased local content requirements for semi-knocked-down (SKD) assembly by domestic firms in 1953. In 1951, the government had introduced the Industrial Licensing Act, often referred to as the "license raj." This regulation had the following effects on the automotive industry. First, OEMs could only produce models that were approved by a license, meaning that they could only diversify their product range if they obtained additional licenses from state authorities. In practice, regulators did not grant new licenses, so that OEMs mainly produced two- and three wheelers (Bajaj), passenger cars (Hindustan Motors, Premier Automobiles, Standard Motors),

or utility and commercial vehicles (Ashok Leyland, Mahindra & Mahindra, and Tata).<sup>1</sup>

Most models were based on designs of foreign OEMs, which had licensed the technology to Indian producers. Regulation via the license raj also prohibited OEMs to vertically integrate production as it required automobile producers to procure specific quantities of parts from domestic suppliers (Kumaraswamy *et al.* 2012, 371). Due to these restrictions, pioneering manufacturers Ford and GM abandoned their Indian operations. Moreover, the license raj also specified the production volume, making expansion of the production volume dependent on licenses. Again, these were rarely granted because the political leadership saw cars as a luxury product that should only be produced in minimal quantities. This first and foremost regulation applied to passenger cars, the production of which was severely limited to 25,000 units annually. The government, instead, focused on utility, mass transport, and agrarian vehicles (Tewari 2001, 10). For the same reason, price controls were enforced so that the market, especially for passenger cars, stagnated in the absence of any meaningful way to compete for increased profitability or market share (D'Costa 1995, 487). Thus, the vehicle market could not grow and the OEMs did not have any incentive to upgrade their technology and improve their product. Not only were the automobile producers regulated in this restrictive manner but the parts and components makers as well.

The situation slightly changed in 1977 when the component industry became subject to relaxed regulation. The aim of the government was to reduce inefficiencies that existed due to the limited scale of manufacturing, thus, the deregulation of parts and components industry started before the deregulation of the automobile market. It was the starting point for the professionalisation and differentiation of the supplier industry.

Shortly after this gradual liberalisation move, the Indian government initiated a deal that transformed the automotive industry with the creation of the Maruti-Suzuki joint venture (JV). The Indian partner, Maruti Udyog, had been formed in 1971 to develop an indigenous, affordable car even before the initial liberalisation steps were first taken. Maruti was headed by Sanjay

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<sup>1</sup> Formerly, Tata's motor division operated under the name Tata Engineering and Locomotive Company (TELCO).

Gandhi, the son of contemporary Prime Minister Indira Gandhi. Despite the political mission and backing, Maruti remained unsuccessful so that the Indian government started looking for a foreign partner to help turn Maruti Udyog around. Initially, the favoured partner was Volkswagen (VW) but the government realised that the preferred Golf model was too expensive for the Indian market. Thus, negotiations with Daihatsu, Mitsubishi, Nissan, and Suzuki were conducted. The latter turned out to be the successful candidate because Suzuki was willing to take a 26 percent stake in the JV with the option to increase its share to 40 percent later (Kale 2011: 13). Government originally wanted the partner to take 40 percent from the beginning but no OEM was willing to make such an investment. While the JV was set up in 1981, operations started only in 1983.

The entrance of Suzuki started to transform the automotive industry. As suppliers of Maruti-Suzuki had to be developed in order to localise production for cost reduction, a number of Indian suppliers modernised their production and management. Kale (ibid: 23) has documented that 97 percent of parts had to be imported from Japan, exceptions being only tires and batteries. Government set the goal at 93 percent local content within five years, hence Suzuki and related suppliers started developing local companies by transferring modern Japanese manufacturing and management methods that can be subsumed as lean manufacturing. Gulyani (2001) has demonstrated that insufficient (road) infrastructure in India encouraged the emergence of automotive clusters around OEM plants. To avoid negative impacts on their supply chain, Maruti and other foreign OEMs devised strategies to locate key suppliers in close proximity around their assembly plants to mitigate infrastructure related problems. Hence, local agglomeration and cluster development can partly be explained as a coping strategy that enabled OEMs to implement just-in-time (JIT) supply chains. With the sharp increase of the Yen after the Plaza Accord in 1985, Suzuki had another strong incentive to reduce imports as much as possible to make the venture profitable.

Following the initial partnership between Maruti-Suzuki, other Japanese carmakers entered into JVs with Indian OEMs (D'Costa 1995: 488). While Mazda, Mitsubishi, Nissan, and Toyota entered JVs that produced localised

versions of their original light commercial vehicles (LCVs),<sup>2</sup> Hino, Isuzu, and Nissan transferred technology to their Indian partners thereby allowing them to upgrade their models. This initiated a similar dynamic than in the Maruti-Suzuki case because immediate suppliers of these new JVs had to meet quality and price expectations. While this contributed to the development of the Indian components industry, growth mainly stemmed from the domestic market and not from exports (Kumaraswamy *et al.* 2012: 372). Japanese OEMs brokered JVs between their trusted *keiretsu* suppliers (or affiliates) from Japan and local Indian suppliers. These ventures are not only characterised by introducing advanced production and management techniques but also by traits typical of Japanese industrial relations, that is, trust-based relations between buyers and suppliers that are grounded on mutual dependence, equipment sharing between firms or inhouse unions (D'Costa 2004: 346-352).<sup>3</sup> This subsequent wave of Indian-Japanese JVs became possible because the government finally allowed OEMs to diversify their product line-up, meaning that this part of the license raj was effectively phased out. Increasing competition caused the established Indian car producers Hindustan Motors and Premier to lose significant market shares to Maruti, and Standard Motors to exit the automotive business altogether in the late 1980s.

Liberalisation became more encompassing after 1991. Foreign companies were allowed to have majority-owned or wholly-owned enterprises. Moreover, larger Indian and foreign firms were allowed to acquire up to 24 percent of domestic suppliers. Due to deregulation, international OEMs such as Daewoo, Daimler, Fiat, Honda, Hyundai, Mitsubishi, Peugeot, and Toyota entered the market<sup>4</sup>, and Ford and GM made comebacks. Government authorities had initially prohibited the completely knocked-down (CKD) assembly process to protect domestic suppliers by forcing foreign OEMs to

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<sup>2</sup> Initially, localised versions of the Titan, Canter, Cabstar, and Dyna models were produced. These tie-ups have all been dissolved: Nissan's partner Mahindra & Mahindra integrated the JV in 1993. Toyota withdrew from its partner DCM when South Korea's Daewoo took over in 1995. While Mitsubishi withdrew its stake in Eicher in 2009, Mazda ended its partnership with Swaraj in 2010, but Sumitomo Corp. and Isuzu hold stakes in Swaraj Mazda (44 percent and 15 percent respectively), which now mainly produces Isuzu models.

<sup>3</sup> D'Costa observed that the introduction of Japanese management and production methods is not dependent on a Japanese partner as Indian firms with British JV partners also introduced them.

<sup>4</sup> Again, most OEMs entered into JVs with local firms but with higher equity than in the 1980s. For a detailed overview of the investment projects during the mid-1990s, see: Humphrey *et al.* 1998: 158.

source locally. However, as it became clear that carmakers would not start operations without CKD, the government negotiated individual memorandum of understanding (MOU) with OEMs and specified to which extent the new market entrants would increase the local content of produced vehicles. Furthermore, MOUs contained targets for production and export volume. In 1997, government went away from negotiating individual MOUs and defined requirements for all new entrants (Kumaraswamy *et al.* 2012, 373): First, 50 percent local content had to be achieved within three years and 70 percent within the fifth year of operation. Second, entrant firms were required to export an amount equal to their SKD and CKD imports by the third year. By this measure, India ensured a balanced trade record while leaving it to companies to decide whether they wanted to fully localise their production quickly or use the country as an export hub. Third, in order to operate a wholly owned subsidiary, the minimum investment was US\$50 million. Thus, policy forced investors to either make a large investment that would create considerable employment in India or to form a JV with a local partner which would most likely result in technology and skill transfers. Hence, it can be stated that while regulation was scaled down, the Indian government still utilised the policy as a tool to promote employment or technology transfer via JVs.

In 2002, India's Ministry of Heavy Industries and Public Enterprises (MHIPE) introduced its Auto Policy that specified eight main goals, namely (MHIPE 2002):

1. Promote the automobile industry as a means to achieve economic and employment growth;
2. Nurture a globally competitive automotive industry, which includes exporting parts and components;
3. Establish India as a hub for small car manufacturing and export. The plan was to allow the nation to assume the same position in affordable passenger cars, tractors, and two-wheelers production;
4. Encourage balanced transition to open trade, meaning a careful shift from a protected to liberalised trade;
5. Induce modernisation and development of indigenous design, and research and development (R&D) capabilities;

6. Steer the Indian information technology (IT) industry towards producing automotive technology;
7. Develop vehicles that utilise alternative forms of energy;
8. Harmonise Indian standards with international technical and industry standards.

However, MHIPE merely defined these objectives without formulating any actual policies that could have induced or supported the automotive industry to reach these aims. Four years later, MHIPE released the Automotive Mission Plan (AMP) 2006-2016. This plan included goals similar to the preceding Auto Policy such as promotion of small car manufacturing and exports, creating a negative list of items and rules of origin for FTAs, and crafting of an appropriate tariff policy to attract investment or investment to the automotive industry (MHIPE 2006, 47). However, with regard to tariffs, the plan pointed out that India's import tariffs on commercial vehicles (12.5 percent) were significantly lower than those of the United States (US) at 25 percent or EU (22 percent) (MHIPE 2006, 31). Moreover, the AMP clearly stated that the automotive industry should be protected from the anticipated effects of trade liberalisation. The document referred to 77 automotive and engine components that should be part of a negative list in free trade area (FTA) negotiations. Therefore, recommendations stated that the aforementioned discrepancy and negative list should be kept in mind when negotiating for FTA deals, especially with ASEAN, the Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC)<sup>5</sup>, China, the Economic Union (EU), Japan, South Korea, and Thailand. This implied that the government should either protect the market by not reducing tariffs or do so only under the condition that India gets similar concessions for its exports. Regarding tariffs in general, MHIPE called for maintaining a three-tier tariff structure on raw materials, intermediate, and finished products to make production in India more attractive (MHIPE 2006, 36). This time the government adopted the following measures to reach the formulated targets (Agustin 2012, 262):

1. Maintaining a lower excise duty for small cars (3.8m length or less)

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<sup>5</sup> BIMSTEC member countries are Bangladesh, Bhutan, India, Myanmar, Nepal, Sri Lanka, and Thailand.

2. Creation of the National Automotive Testing and R&D Infrastructure Project (NATRiP) to provide testing facilities open to OEMs in India. Allotted budget was INR 22.9 billion.
3. Creation of the Automotive Skills Development Council to develop employee's skills. Allotted budget was INR 85 million.
4. Under the Technological Upgradation and Development Scheme (TUDS), loans are provided to OEMs for technology investment. Allotted budget for loans was INR 75 billion.

These concrete steps suggested that AMP implemented policies aiming at technological development of the industry and particularly encouraged production of the small car segment.

Hence, the combination of Yen appreciation after 1985, the poor condition of transport infrastructure in India, R&D and technology support as well as gradual and strategic phase-out of policies that promoted localisation explains why foreign OEMs created supply chains in India to serve local assembly operations. These factors as well as the strikingly similar process within ASEAN might explain why empirical analysis found that automotive inter-industry trade – which can be translated as supply chains – between India and most Asian countries, with the notable exception of Indonesia, was insignificant despite rapid expansion (De 2011, 87-89). It has further been found that India applies among the highest tariffs on vehicles in the Asia-Pacific region and on auto parts in the main global markets, if not isolated categories are highlighted but relevant Harmonized System (HS) code items are aggregated (Kohpaiboon and Yamashita 2011, 329-331). Thus, it can be stated that India still protects the domestic market to a considerable degree. India is certainly not exceptional in this regard as Thailand, the main assembly hub in ASEAN, also protects domestic production through selective tariff reduction in FTAs (ibid). Given this historic background, it appears that companies largely aimed at creating high degrees of localised production within India and within ASEAN that were supplemented with imports of unavailable and critical components from OEMs' home countries. This implies that manufacturers created supply chains within India and ASEAN but not between these two. However, if elimination of trade barriers via FTAs continues, it would be possible that the already increasing trade may extend to

the creation of new production networks between the ASEAN region and India.

Concerning the existing FTA between India and ASEAN, some clarifications need to be made. India is going to reduce tariffs on goods – with some restrictions<sup>6</sup> – for all ASEAN member states except the Philippines from 2011 until 2016. At the same time, Brunei, Indonesia, Malaysia, Singapore, and Thailand are going to lower their tariffs for India. The so-called CLMV countries – Cambodia, Laos, Myanmar, and Vietnam – are going to reduce tariffs for Indian goods from 2016. Also from 2016, India and the Philippines are going to lower tariffs on a reciprocal basis. Simply put, it can be stated that while India is in the process of reducing tariffs for all ASEAN members except the Philippines, only the more advanced ASEAN members are opening up for exports from India.

CLMV countries enjoy a special status during a transition period until 2016; they get a more liberal access to the Indian market without opening their markets for Indian products in a similar fashion.<sup>7</sup> Regarding automotive parts, the tariff reduction schedule for India does not reveal signs of strong protection for certain products. However, tariffs on certain products (clutches, flywheels, and gaskets) are only mildly reduced from 7.5 to 5 percent by 2020. As will be discussed in one of the case studies, this lowered level of protection might still be high enough to make exports from India to ASEAN less attractive than sourcing within ASEAN.

## **2. Current Condition of the Automotive Industry in India**

Looking at the Indian automobile industry in more detail, what general patterns can be observed? Available information from the Society of Indian Automobile Manufacturers (SIAM) reveals several aspects about the

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<sup>6</sup> Items that India classified on the “highly sensitive track” are agricultural products such as black tea, coffee, palm oil (crude and refined), or pepper. Thus, the automotive sector is not subject to special protective measures.

<sup>7</sup> Studying individual countries’ tariff reduction schedules reveals that CLMV countries actually reduce tariffs but to a lesser degree and in a slower pace.

automotive industry's condition. Production has roughly doubled between 2007 and 2012 (Table 5.1).

**Table 5.1 Vehicle production in India**

	Financial year										
	2001	2002	2003	2004	2005	2007	2008	2009	2010	2011	2012
Passenger cars	564,052	608,851	842,437	960,505	1,045,881	1,777,583	1,838,593	2,357,411	2,982,772	3,146,069	3,233,561
Commercial vehicles	268,175	318,176	421,327	599,182	654,110	549,006	416,870	567,556	760,735	929,136	831,744
Three-wheelers	212,748	276,719	340,729	374,414	434,424	500,660	497,020	619,194	799,553	879,289	839,742
Two-wheelers	4,271,327	5,076,221	5,624,950	6,526,547	7,600,801	8,026,681	8,419,792	10,512,903	13,349,349	15,427,532	15,721,180
<b>Total</b>	<b>5,316,302</b>	<b>6,279,967</b>	<b>7,229,443</b>	<b>8,460,648</b>	<b>9,735,216</b>	<b>10,853,930</b>	<b>11,172,275</b>	<b>14,057,064</b>	<b>17,892,409</b>	<b>20,382,026</b>	<b>20,626,227</b>

Source: SIAM.

Production of all vehicle types has increased rapidly but it is clear that India currently specialises in the production of two-wheelers. If one considers a longer timeframe, the development is even more impressive: Total vehicle production reached 6,279,967 units in financial year 2002, which means that production more than tripled between 2002 and 2012.

It must be stated that this is strongly related to domestic conditions where mobility is still largely achieved through two-wheelers, which make up the majority of domestic sales (Table 5.2). This highlights India's status as a developing country where most citizens cannot afford a car.

**Table 5.2 Indian vehicle sales by vehicle class**

	<b>FY 2007</b>	<b>FY 2008</b>	<b>FY 2009</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
Passenger cars	1,549,882	1,552,703	1,951,333	2,501,542	2,618,072	2,686,429
Commercial vehicles	490,494	384,194	532,721	684,905	809,532	793,150
Three-wheelers	364,781	349,727	440,392	526,024	513,251	538,291
Two-wheelers	7,249,278	7,437,619	9,370,951	11,768,910	13,435,769	13,797,748
<b>Total</b>	<b>9,654,435</b>	<b>9,724,243</b>	<b>12,295,397</b>	<b>15,481,381</b>	<b>17,376,624</b>	<b>17,815,618</b>

*Source:* SIAM.

While car sales have increased by around 70 percent between 2007 and 2012, two-wheeler sales grew by almost 85 percent in the same period and from a much higher base. At the moment, mobility is first and foremost achieved by two-wheelers, not cars. However, carmakers see the potential that present owners of two-wheelers want to become car owners in the future and therefore have entered the market early. Moreover, India's huge population represents potential future customers. This may explain why the automobile industry in India is strongly focused on the domestic market and exports are only a recent phenomenon (Table 5.3).

**Table 5.3 Vehicle exports from India**

	2000	2001	2002	2003	2004	2005	2007	2008	2009	2010	2011	2012
Passenger cars	22,990	50,088	70,828	126,249	160,677	170,193	218,401	335,729	446,145	444,145	507,318	554,686
Commercial vehicles	17,892	14,947	13,432	20,294	35,685	46,160	58,994	42,625	45,009	74,043	92,663	79,944
Three-wheelers	16,263	15,462	43,366	68,138	66,801	76,885	141,225	148,066	173,214	269,968	362,876	303,088
Two-wheelers	111,138	104,183	179,682	264,669	366,724	513,256	819,713	1,004,174	1,140,058	1,531,619	1,947,198	1,960,941
Total	168,283	184,684	307,308	479,350	629,887	806,494	1,238,333	1,530,594	1,804,426	2,319,956	2,910,055	2,898,659

Source: SIAM.

Again, taking a longer timeframe into consideration reveals the automotive industry growth: total vehicle exports were at a mere 307,308 units in financial year 2002, meaning that exports almost increased tenfold within 10 years. While exports are increasing rapidly, the similarities to the domestic market are clear: India largely exports two-wheelers, not cars. Thus, while India is strong in this vehicle type, it is also clear that two-wheelers are less profitable and less technologically complex than other vehicles. However, these vehicle exports are largely conducted by domestic OEMs, especially Bajaj. In 2012, Bajaj exported 1.3 million units, the lion's share of the total 1.96 million

Regarding passenger car market shares, while Suzuki-Maruti is still in a leading position, the entrance of foreign OEMs as described earlier resulted in heightened competition and a more segmented market (Table 5.4).

**Table 5.4 Passenger car sales by brand, FY 2011 and FY 2012**

	Sales	
	FY 2011	FY 2012
Maruti-Suzuki	855,730	861,337
Hyundai	387,168	382,851
Tata	257,966	174,692
Ford	90,423	75,771
Honda	54,108	73,182
Toyota Kirloskar	90,969	72,000
GM	86,849	67,220
VW	78,265	65,379
Nissan	32,971	35,504
Skoda	32,334	27,941
Mahindra & Mahindra	17,839	15,344
Renault	3,301	12,887

BMW	9,593	7,221
Fiat	16,074	6,933
Audi	6,547	6,901
Mercedes-Benz	7,419	5,006
Hindustan Motors	2,954	3,485
Jaguar-Land Rover	796	1,597
Porsche	0	220

*Source:* The Hindu, 04.10.2013; based on SIAM data.

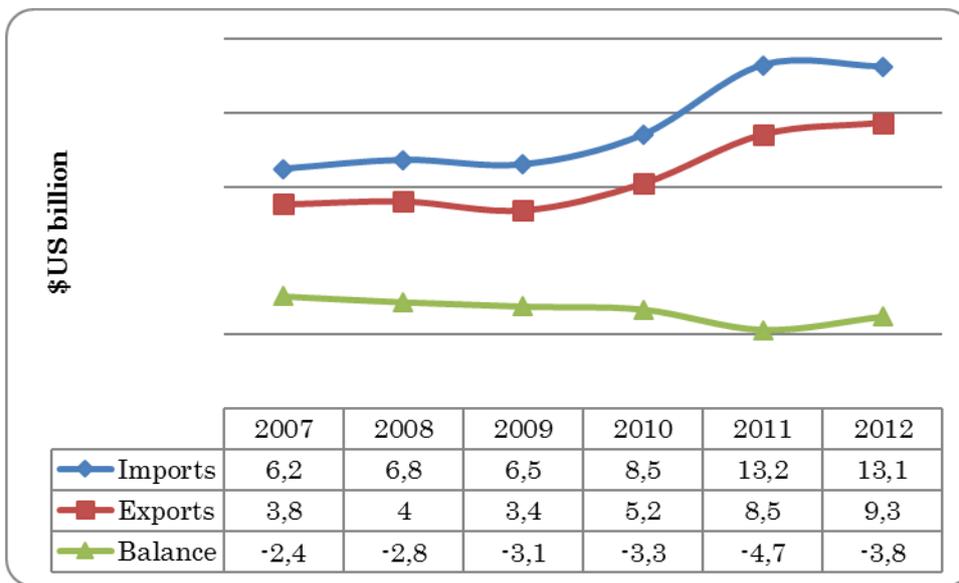
As data indicate, Maruti-Suzuki still accounts for more than 40 percent of total sales. This is more than double that of the second-largest competitor, Hyundai. Third-ranked Tata is the only Indian OEM with a significant share in the passenger car market. However, these data must be put in the industry context; they underrepresent the strength of two OEM groups. If one adds up all brands of the VW group (Audi, Porsche, Skoda, and VW), total sales reach 100,441 units, which would put it in the fourth position. Also, the Renault-Nissan alliance is stronger (48,391 units) if one adds up their figures. Jaguar-Land Rover belongs to Tata but currently this brand does not play a strong role in the Indian market.

It is necessary to point out that these data conflict with SIAM data. While the brands' disaggregated data totalled 1.895 million units in 2012-13, SIAM reported a total of 2.686 million in the same period; this is a huge gap. Significantly, the disaggregated version would mean that car sales declined for the first time in 10 years (by 6.69%), while the aggregated version reports a minimal increase. Therefore, these data must be considered carefully when drawing conclusions.

Before turning to case studies, it is important to clarify the situation of the automotive components industry. It can be claimed that almost all leading international parts and components makers have located in India at this point in time. However, how does this affect supply chain relations

between India, ASEAN, and the rest of the world? According to data from the Automotive Component Makers Association of India (ACMA), both imports and exports have rapidly expanded over the recent years (Figure 5.1).

**Figure 5.1 Indian automotive components imports, exports, and trade balance**

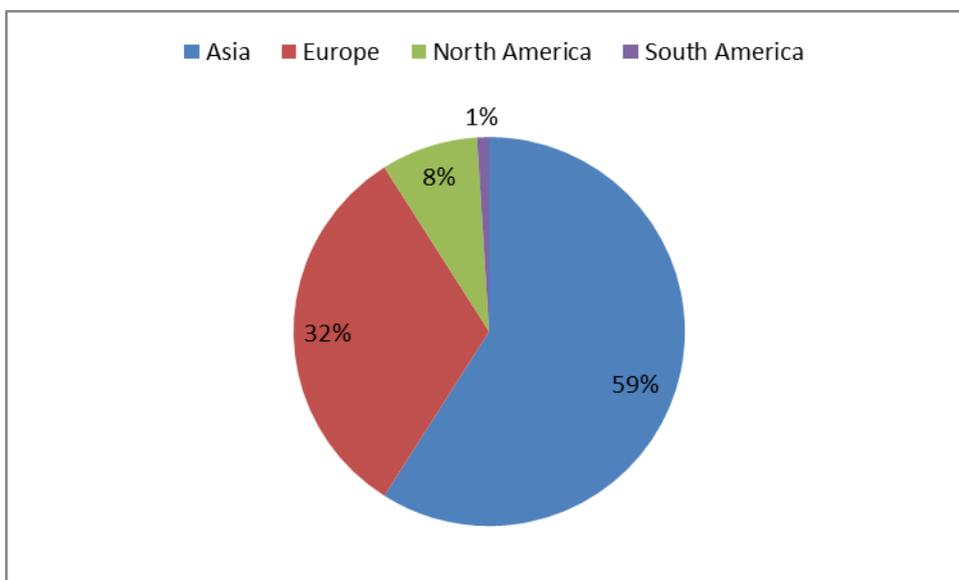


Source: ACMA.

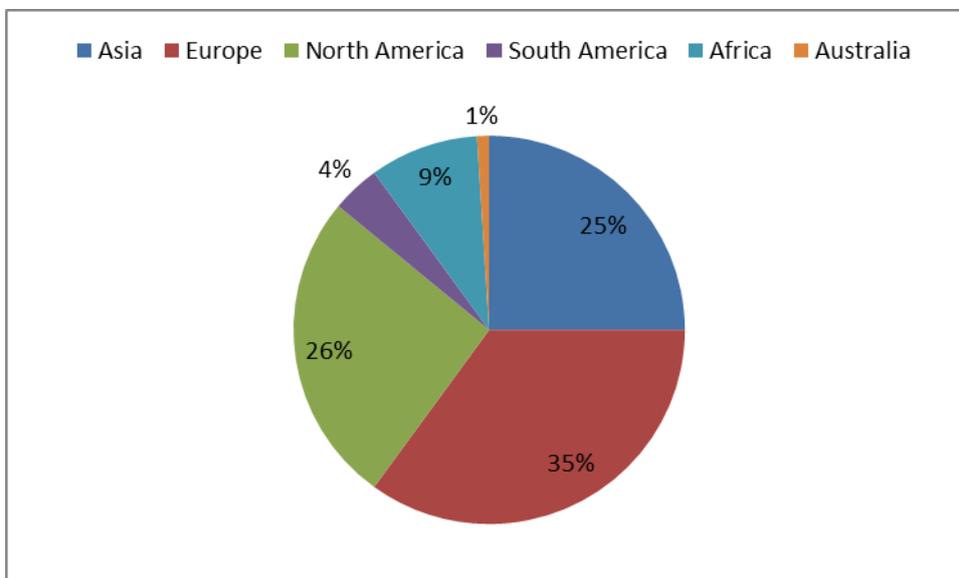
While both exports and imports have more than doubled between 2007 and 2012, India’s trade deficit in automotive components also increased significantly. This at least superficially suggests that Indian suppliers are mainly exporting simple technology and intermediate parts while importing more complex and costly components.

If one compares import and export destinations (Figures 5.2 and 5.3), it becomes clear that Asia is the main source for imports, while exports are much more evenly distributed.

**Figure 5.2 Automotive components' import sources (Source: ACMA)**



**Figure 5.3 Automotive components' export destinations**



Source: ACMA.

These data show that currently, supply chains to India are much stronger than supply from India. Thus, given the underlying trade pattern, it can be

concluded that presently, India absorbs parts imports from Asia but is unable to balance it with exports to the region.

A more general issue shall be discussed briefly. As the case studies in the following section will demonstrate, a repeating industry topic is localisation. This trend has continued for roughly the last decade and is somewhat contradictory to regional or global supply chains. The drive towards localisation can be described as two-fold. First, governments – especially of larger countries – demand localisation to reap the benefits of local production, namely employment and technological development through the forward and backward linkages typical in the automotive industry. Second, companies seek localisation, partly in response to those demands and also to avoid expansive imports from their respective country of origin. Third, localisation is further promoted by the emergence of trade blocks such as ASEAN, the EU, North American Free Trade Agreement (NAFTA), and Common Market of the South (MERCUSOR). These regional regimes reduce or eliminate tariffs on intra-regional trade that promotes the creation of localised production. While this trend does not counter supply chains in general, it forces markets to adopt a more nuanced perspective. It appears that localisation is first and foremost taking place within regional trade blocks and not so much between them. While certainly there are supply chains between those blocks, localisation in the automotive industry seems to occur mainly in these blocks. In this regard, India and China are exceptional. These two countries have such huge domestic markets that they could maintain comparatively restrictive tariff and policy regimes, are not part of any regional trade block and yet able to successfully attract investment by OEMs and component makers. Our case examples largely suggest that the same localisation trend applies to India: foreign OEMs seek to achieve high local content ratios to drive costs down by reducing expansive imports for local assembly.

Before turning to the case studies, the main obstacles for automotive trade between India and ASEAN should be discussed.<sup>8</sup> First, it needs to be pointed out that while the ASEAN Economic Community (AEC) 2015 is bringing down import tariffs to zero by conducting tariff elimination, the India-ASEAN FTA is only reducing tariffs. Hence, in comparison to intra-regional trade, trade with India is less attractive, which means that supply chains are more likely to further evolve inside ASEAN than between India and ASEAN.

Second, interstate taxes in India were frequently mentioned in interviews with OEMs and suppliers conducted for this research. This issue and the related absence of a common value-added tax (VAT) are well known and subject to prolonged political and scientific debate (Rao, 2000; Cnossen, 2013). Indeed, AMP specifically identified the complicated tax system and the non-existence of a common VAT as an obstacle for exporting from India (MHIPE 2006, 36). As the timeframe of these publications indicates, India has not yet found a solution. Nayar (2011) has identified India's federal structure – more precisely the veto power of the states, their interest in making reform revenue neutral, and intermingling reform with party politics – as the main reason why the introduction of a common VAT referred to as goods and service tax (GST) has not made headway. Certainly, it appears that India's political economy does not suffer from ignorance but from its inability to find a viable compromise between all political actors. While they aim to eliminate obstacles, the truth is that such problems still exist. The consequences are visible on transportation, logistics, and eventually trade. One such effect is this: considerable administrative paper work from check points between Indian states that produce long waiting times, which in turn may delay delivery. Under conditions of JIT production, this is a serious issue for OEMs, suppliers,

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<sup>8</sup> If not indicated otherwise, this section is based on discussion with staff of automotive logistics company Vantec Corporation on 27 January in Tokyo and with JETRO and Nippon Express in Singapore, both conducted on 27 February 2014.

and logistics firms. Therefore, the often articulated call for completing tax reform can only be re-emphasised without adding new suggestions.

Third, this issue is further complicated by infrastructure conditions. While roads were identified as the most serious issue, port and airport facilities are also problematic. Insufficient road conditions are responsible for many accidents, endangering the employees' lives and undermining production schedules.<sup>9</sup> Therefore, improving hard infrastructure is certainly a necessary condition to strengthen the automotive industry in India and its potential trade with the ASEAN region. A useful indicator for logistical issues is the Logistics Performance Index (LPI) developed by the World Bank. It shows that there are indeed significant problems in India as well as in some ASEAN member states (Table 5.5).

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<sup>9</sup> One interviewed company illustrated problematic infrastructure conditions with photos of roads and crash sites. While the topic of the interview was India and ASEAN, the interviewee pointed out that all the photos were actually from India. While such anecdotes should not be overemphasised, this one represents the view of most interviewed companies.

**Table 5.5 Logistics Performance Index ranking of ASEAN member states and India**

	<b>Rank</b>	<b>Score</b>	<b>Customs</b>	<b>Infrastructure</b>	<b>International shipments</b>	<b>Logistics competence</b>	<b>Tracking and tracing</b>	<b>Timeliness</b>
Singapore	1	4.13	4.10	4.15	3.99	4.07	4.07	4.39
Malaysia	29	3.49	3.28	3.43	3.40	3.45	3.54	3.86
Thailand	38	3.18	2.96	3.08	3.21	2.98	3.18	3.63
India	46	3.08	2.77	2.87	2.98	3.14	3.09	3.58
Philippines	52	3.02	2.62	2.80	2.97	3.14	3.30	3.30
Viet Nam	53	3.00	2.65	2.68	3.14	2.68	3.16	3.64
Indonesia	59	2.94	2.53	2.54	2.97	2.85	3.12	3.61
Cambodia	101	2.56	2.30	2.20	2.61	2.50	2.77	2.95
Lao PDR	109	2.50	2.38	2.40	2.40	2.49	2.49	2.82
Myanmar	129	2.37	2.24	2.10	2.47	2.42	2.34	2.59

*Note:*\*Brunei Darussalam has not been ranked

*Source:* World Bank 2012.

As the index shows, there are significant differences: Singapore is the global leader, Malaysia and Thailand follow, then India. The Philippines, Viet Nam, and Indonesia are somewhere in the middle ranks, while Cambodia, Laos, and Myanmar are performing below average.

Fourth, interviewed logistics service providers aired their grievances on corruption in India. Independently from each other, it was reported that government officials approached companies to offer faster procedures in exchange for payment. However, India was not the only country covered by this research that faced corruption issues. Indonesia was reported to have a similar level of attempted misuse of official power. Further, Nippon Express also identified Viet Nam and Myanmar as problematic in this regard. As Vantec did not operate frequently in these markets, the company stated that it could not comment. On the other side, all interviewed companies stated that Singapore had excellent conditions and that corruption was not an issue in Malaysia and Thailand. Hence, in order to eliminate unequal treatment of companies, India and mentioned ASEAN members should intensify their anti-corruption measures.

Last but not the least, the quality and reliability of logistics subcontractors in India was described as problematic. From the perspective of the interviewees, subcontractors – but also partly their own local staff – do not understand the requirements of the automotive customers and therefore lack the quality deemed necessary. While it is not possible to argue the opposite, this point is rather secondary and does not require political intervention. In our view, it would be more effective if automotive and logistics service companies engage in transferring their best practice to Indian companies in order to overcome these issues.

### 3. India-ASEAN Supply Chains

As the focus is mainly on supply chains between India and ASEAN, the first step will be investigating the role of Indian OEMs and vehicle component producers.

TVS Group is an Indian conglomerate that specialises in automotive components manufacturing. Even non-automotive activities like several logistics subsidiaries have strong focus on supply chain solutions. The group's core company is TVS Motors, India's third-largest two-wheeler producer founded in 1911 (Table 5.6).

**Table 5.6 Indian two-wheeler market in FY 2012 and FY 2013 (until November 2013)**

	Market share	
	FY 2012	FY 2013
Hero	45.2%	42.2%
Honda	14.9%	18.8%
Bajaj	19.1%	18.5%
TVS	14.1%	13.0%
Suzuki	2.5%	3.0%
Yamaha	2.6%	2.6%
Mahindra	1.0%	0.9%
Royal Enfield	0.6%	0.8%
Piaggio	-	0.2%

Source: Business Standard, 11.01.2013.

TVS Motors set up a production site in Indonesia that became operational in 2007, making it the first overseas location of an Indian manufacturer. Furthermore, the company has repeatedly considered setting up production in China but so far these plans have not materialised.

TVS Group is characterised by an extensive web of JVs with foreign suppliers such as Borg Warner, Bridgestone, Dana, Delphi, Dunlop, Dynacast, Koito, Kokusan Denki, Lucas Industries (today integrated with TRW), and ZF Friedrichshafen (Table 5.7).

**Table 5.7 Automotive parts JVs of TVS Group**

<b>JV name</b>	<b>JV partner</b>	<b>Foundation</b>	<b>Product</b>
Lucas-TVS	Lucas	1961	starter motor, alternator, wiper motor, fan motor, small motor, ignition, horn
Brakes India	Lucas	1962	brakes
Wheels India	Dunlop	1962	wheels
Sundaram Brake Linings	Abex (Federal-Mogul)	1976	brake linings
Turbo Energy	Borg Warner	1982	turbochargers
Axles India	Dana	1983	axles
India Nippon Electricals	Kokusan Denki	1984	electronic ignition
Delphi TVS	Delphi	1989	diesel injections systems
Sundaram Dynacast	Dynacast	1993	die castings
India Japan Lighting	Koito	1996	lamps and reflectors
ZF Electronics TVS	ZF Electronics	2002	automotive and white good electronics, computer input devices

*Source:* compiled from company websites.

In most cases, detailed information about JV arrangements is unavailable, hence making it impossible to judge the actual strength of TVS Motor in these ventures. In case of Sundaram Brake Linings, TVS split away from its partner Abex in 1992 and is today a wholly-owned TVS subsidiary. In all other cases, exact arrangements are obscure. However, some JVs are not directly between the TVS Group and its respective partners but with Lucas-TVS (Delphi, Koito, and Kokusan Denki). In case of Koito, Lucas-TVS and the Japanese lighting specialist are equal partners (50% each). A case study on Lucas-TVS revealed that besides JVs, the company used several technology agreements, mainly with Denso but also with Mitsubishi and Hitachi, to improve their technological capability (Sahoo, *et al.* 2011, 17f.). Technology transfer is conducted by short-term stays of Lucas-TVS engineers at partner companies. Since 1978, the company operated its own R&D department, meaning that it did not solely rely on external sources of knowledge. However, the company used Japanese consultants to introduce modern product development processes and acquire quality management certification (ISO/TS16949). Moreover, the company set up a benchmarking unit, which compares the company's products to those of competitors.<sup>10</sup> Furthermore, Lucas-TVS conducted supplier development among Tier2 and Tier3 manufacturers around Chennai, meaning that it not only absorbed foreign know-how but that it also transfers these skills and capabilities towards its own supplier base. These steps seemingly enabled the company to become more independent from foreign technology sources. It has been claimed that more than 70 percent of its sales turnover are generated by products developed inhouse (Sahoo, *et al.* 2011, 18). Hence, Lucas-TVS is an example that shows how companies may successfully move from technologic dependency towards independent, self-reliant technological capabilities: While initial absorption of foreign know-how is important to stay in the business, automotive suppliers need to complement this with their own R&D efforts to become independent.

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<sup>10</sup> While benchmarking is a modern term, the practice basically is nothing else than reverse engineering. Through industry contacts, we can state that is by no means limited to emerging country firms but also common among advance OEMs and suppliers.

Regarding the time of JV foundation, it can be stated that TVS already had business ties with foreign companies during the era of tight state regulation. However, the lion's share of ventures was created during or shortly after the creation of Maruti-Suzuki, which illustrates the aforementioned influx of foreign suppliers that accompanied the gradual modernisation and liberalisation of India's automotive sector.

Concerning supply chain relations, it appears that the bulk of customers are located in India. However, some TVS subsidiaries export. Lucas-TVS exports its products to Germany (Wabco), Italy (Denso, Iveco, Yamaha or Motori Minarelli), Malaysia (Proton) and the US (Cummins, Commercial Vehicle Group). Delphi TVS supplies Ford in the UK and Peugeot in France in 1997. Axles India exports to one of its stakeholders, Dana, in the US. In a similar fashion, India Nippon Electricals supplies Kokusan Denki in Japan. However, this JV has been exporting to Diesel engine manufacturer Lombardini in Italy since 2004. Thus it appears that most customers served by exports are not located in ASEAN but in Europe and the US. One possible explanation for this phenomenon could be that JV partners – like the Hero-Honda case explored below – already have subsidiaries in the ASEAN region so that they do not need or explicitly prohibit exports from India. However, given the unclear status of the JVs, it is impossible to determine if foreign partner interest could prevent TVS from extending exports to ASEAN.

Hero Motors, another two-wheeler OEM illustrates the limitations of domestic companies. According to the JV, its former partner Honda could not sell its motorcycles in India to protect Hero as it specialised in motorcycles. Honda could only sell scooters, which Hero does not manufacture. In turn, JV arrangements barred Hero from exporting motorcycles to markets where Honda was active, which virtually prohibited exports (Economic Times of India, 28.05.2013). Here, two crucial points must be made. First, such arrangements are usually not disclosed, so that invisible export barriers may exist. These contractual arrangements between JV partners may even have more impact on trade than formal tariffs. The problem is, of course, that information about such arrangements

is usually not disclosed or shared only on a mutual understanding basis that it cannot be published. Information tends to be only disclosed if a JV brakes up, that is, *ex-post*. Hence, there is little or no evidence that would allow an estimate of the impact of these contractual barriers. Second, despite such contractual limitations on trade, JVs are a common phenomenon in emerging countries. The simple reasons are technology and supply chain. In Hero's case, it appears that the Indian OEM was largely dependent on Honda's technological know-how. Apparently, Hero tries to balance the loss of its former partner by entering new relations with Austrian (engines), Italian (design) and US (premium bikes) partners. In order to be competitive, Indian companies often need access to know-how from their foreign partners. Moreover, in case of suppliers, the access to technology is a critical condition for joining a supply chain. Therefore, emerging country firms have little choice but to accept that their foreign partners may only transfer technology under the condition that partners do not enter into their established markets. However, the example of Bajaj shows that companies can be successful without a foreign partner if they have sufficient design and R&D capabilities.

Another rather successful case is Tata Motors. Like many Indian companies, it is a subsidiary of a large conglomerate. As mentioned, Tata used to specialise in commercial vehicles. Initially, the company cooperated with Mercedes-Benz but the relationship was dissolved in 1969. During the economic reform era, Tata diversified into sport utility vehicle (SUV) production by launching the Sierra in 1991. Following this diversification trajectory, the OEM released the Indica mini car in 1998. Although the car body was designed in Italy, the model can be regarded as the first passenger car developed in India because major components like the engine were developed domestically. It is also noteworthy to mention that Tata sold a rebadged version of the Indica, the Rover CityRover, in the UK.

While being largely focused on the domestic market, Tata actively sought to internationalise its business via JVs and takeovers. It now appears that Tata's commercial vehicle business is more internationalised in terms of

sales and production. In 2004, Tata acquired the commercial vehicle division of the defunct Daewoo *chaebol*, which had been spun off in 2002. While the core of production remains in South Korea where the company is the second largest truck manufacturer, completely knocked down (CKD) kits are exported to India and Pakistan for final assembly. In 2005, Tata started with a holding a minority stake of 21 percent in the Spanish Hispano Carrocera – one of Europe’s largest bus and coach cabin manufacturers – and then acquired the company in 2009. By doing so, Tata entered the European commercial vehicle market and gained access to manufacturing know-how.<sup>11</sup> Similarly, Tata strengthened this business segment by forming a majority JV with Marcopolo (51:49), a bus manufacturer from Brazil. Buses for the Indian market are produced in Dharwad, Karnataka and combined body design and manufacturing know-how from the Brazilian partner with Tata chassis and engines. In 2011, Tata set up production in South Africa by forming a JV with Tata Africa Holdings, another company of the Tata group (Tata Group, 22.07.2011). In a plant near Pretoria, SKD kits are assembled for African markets. Historically, Tata Motors had exported commercial vehicles to South Africa since 1998, followed by passenger cars since 2004. According to Tata, around 32,000 commercial vehicles and 31,000 passenger cars had been exported since then. It appears that the relatively simple SKD production is a necessary step to start localised production in another emerging market.

Concerning passenger cars, Tata formed a 50:50 JV with Fiat that encompassed joint production of vehicles, engines, and transmissions. Through this collaboration, Tata gained access to Fiat’s diesel engine technology as locally produced engines are used for Fiat’s Linea and Grande Punto as well as in Tata’s Indica, Indigo, Manza, and Vista models (Business Standard, 10.11.2011). In 2008, Tata took over Jaguar-Land Rover (JLR) from Ford, which includes the Jaguar, Land Rover, and Rover brands. Taking over well-known but commercially unsuccessful brands,

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<sup>11</sup> However, due to the economic crisis in the Euro Zone, which especially affects southern Europe, Tata closed down operations in Zaragoza, the main plant of former Hispano Carrocera in 2013.

with the exception of the Land Rover, shows that Tata seems to be mainly interested in the know-how. However, regarding investment decisions to the UK, it appears that Tata intends to further strengthen the Land Rover, which already is successful in its particular niche market, and to revive Jaguar. So far, plans for the Rover brand are still unknown.

Also in 2008, Tata's majority JV (70 percent) with Thai assembler Thonburi Automotive (30 percent), who also manufactures Mercedes-Benz passenger cars, released locally produced Tata Xenon pickup trucks in Thailand (Economic Times of India, 18.12.2006).<sup>12</sup> Different Xenon versions are available, the first ones were produced with diesel engines, which are popular in Thailand, and the latter versions came with compressed natural gas (CNG) engines. Local content of Xenon variants is at 45 percent, just enough to evade tariffs. It also appears that Tata did not encourage its Indian suppliers to enter the Thai market to support Thonburi's production. The reason for not localising its supply chain seems to be insufficient volume as sales are simply too small to justify a relatively large investment.<sup>13</sup>

While Tata entered the pickup segment via production, it decided against exporting passenger cars to Thailand because it regards tariffs as too high (The Nation, 16.08.2012). At the same time, the OEM declared that due to AEC 2015, it considered building an assembly plant with an annual production capacity of 50,000-60,000 units. Furthermore, established assembling nations Thailand and Indonesia are candidates for this planned assembly site. In 2013, Tata slightly altered its policy and went for limited sales of the Nano to expand brand sales (The Nation, 01.05.2013). Similarly, Tata announced its entry to Indonesia starting with passenger cars and commercial vehicles. While manufacturing operations are planned within the next two or three years after the brand launch in late 2013, Tata will initially use a dealer network fed through imports. Moreover, Tata has

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<sup>12</sup> The JV agreement was reached in 2006, but operations began in 2008.

<sup>13</sup> During the research phase of this project, it was not possible to elucidate which components makers supply Tata assembly at Thonburi. Lacking hard evidence, the authors agree with Prof. Kriengkrai Techakanont (Thammasat University) that Tata will use a mix of imports from India and procurement from suppliers located in Thailand.

selected Pilipinas Taj Autogroup (TAJ) as its distributor in the Philippines in late 2013 (Manila Times, 09.12.2013). TAJ organised the sales network in the Philippines on behalf of Tata Motors. In Malaysia, DRB-HICOM became Tata's distributor for commercial vehicles in 2013 (Tata Motors, 09.09.2013).

All in all, it still appears uncertain if Tata will set up production in Thailand or Indonesia. However, two reasons for this careful approach can be identified. First, viable assembly operations need a critical sales volume, so that the brand must be developed and Tata must test the market. Second, Tata representatives explicitly referred to the 40 percent local content requirement in ASEAN when explaining the intended business schedule (Jakarta Post, 08.07.2013). From an industry perspective, a subsidiary argument must be added to this point: meeting local content requirements depends on suppliers. Only if Tata can find component manufacturers that are able to meet its quality and cost requirements, it will be able to localise production. As will be demonstrated below, this would mean that the mostly non-Indian suppliers of the Nano can offer the same components at the same price in India as in ASEAN. Moreover, as many Indian suppliers of this model rely on foreign JV partners, it is not clear that they can follow Tata to the ASEAN market.

Despite the diversification into the passenger car segment, Tata Motors still mainly produces and sells commercial vehicles and SUVs (Tables 5.8 and 5.9).

**Table 5.8 Tata Motors production volume by segment**

	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013 *</b>
M & HCV	187,304	125,076	99,215
LCV	305,396	335,928	258,468
Utility	41,801	40,110	25,533
Passenger cars	215,507	160,168	88,109
<b>Total</b>	<b>750,008</b>	<b>661,282</b>	<b>471,325</b>

*Note:* \*FY 2013 includes production figures until January 2014.

Source: Tata Motors.

**Table 5.9 Tata Motors sales by segment and location**

		<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013 *</b>
M & HCV	Domestic	165,708	117,900	88,660
	Export	12,019	7,803	8,860
	Subtotal	177,727	125,703	97,520
LCV	Domestic	254,339	315,041	232,238
	Export	33,931	29,911	25,277
	Subtotal	288,270	344,952	257,515
Utility	Domestic	42,354	41,166	26,090
	Export	529	940	922
	Subtotal	42,883	42,106	27,012
Passenger car	Domestic	199,540	158,020	88,400
	Export	5,817	4,629	5,009
	Subtotal	205,357	162,649	93,409
<b>Total</b>		<b>714,237</b>	<b>675,410</b>	<b>475,456</b>

Note:\*FY 2013 includes production figures until January 2014

Source: Tata Motors.

As the production and sales figures indicate, Tata is currently experiencing difficulties, especially in the domestic market, particularly in the passenger segment. Indeed, while all segments of the Tata brand are registering decreasing sales in India and abroad, the company has managed to turn around JLR as Jaguar and Land Rover sales are increasing (Fourin 2014, 42). Jaguar brand sales increased from 53,860 in 2010 to 78,946 in 2013. Land Rover sales went from 178,584 units in 2010 to 346,302 units in 2013. While JLR increased its sales by 20.2 percent on a year-on-year basis in 2013, Tata Motors total sales fell by 30.2 percent in the same period.

These overall difficulties can be illustrated by Tata Motors' most well-known model, the Nano. Released in 2008, this model attracted attention as

the world's cheapest car. In the context of supply chains, the Nano is also an interesting subject. Industry weekly Automotive News (03.03.2008) identified key suppliers for the model and found that most of them were global MNCs such as Bosch (body electric parts and brake system), Continental (fuel level sensor and fuel supply pump), Delphi (instrument cluster), Denso (windshield wiper system), Federal-Mogul (pistons and gaskets), Mahle (camshafts, fuel, and air filters), Saint-Gobain (car glass), and Teksid (engine block), among others. Indian parts producers could also supply components but often only in cooperation with international partners, such as TVS-Lucas and Bosch (alternator and starter motor) and Wheels India (wheels); well as Subros<sup>14</sup> and Behr (HVAC module); or Tata Auto Comp Systems (TACO) with its JV partner, Visteon (air induction system).

TACO supplied a large number of components for the Nano through these JVs: Ficosa (gear shifter and mirror), GS Yuasa (car batteries), Johnson Controls (seats), T.Rad<sup>15</sup> (radiator fan module), and Yazaki (wire harness) (TACO, 24.03.2009). Moreover, TACO independently supplied several other components such as bumpers, dashboard, and several drivetrain plastic components, among others. Again, it must be highlighted that it is mainly parts with relatively low level of technological complexity are independently produced while more complex components are manufactured under JVs. Hence, with much caution, it could be stated that Tata produced the Nano with many parts that were produced by vertically integrated companies. However, TACO is another typical case for an Indian supplier that mainly consists of JVs with foreign companies. Again, as in previous examples, it is not possible to determine the ownership structure of most JVs, thus making it hard to determine how much control Tata actually has over these companies and the level of related know-how. Therefore, caution about the possibly misleading previous statement is absolutely necessary. TACO is simply not transparent enough to draw a clear conclusion. In 2012, TACO's JV (50:50) with wiring harness

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<sup>14</sup> Subros is a JV that was established in 1985 between Suzuki (13%), Denso (13%) and the Indian Suri family (40%) to supply air conditioning systems for Maruti-Suzuki.

<sup>15</sup> The company was formerly known as Toyo Radiator.

producer Yazaki ended when the Japanese company was able to integrate its operations and become a wholly-owned subsidiary by acquiring TACO's stake (Yazaki, 05.11.2012).

Similar to TACO, wholly-owned Indian parts manufacturers such as Natesan Synchrocones (bronze synchroniser rings), Parkash Automotive (sheet metal components), Shivani Locks (hood latch), and Yeshshree Press (wheel back plate) only supplied relatively low technology components. Some of these companies are SMEs with less than 50 employees and they are effectively confined to the role of Tier2 or Tier3 suppliers.

While many observers – including scientists – nevertheless expected that the Nano would revolutionise the automobile industry, these forecasts proved false. One particular issue of the Nano was that 50 percent of initial bookings were made for the most expensive version, 30 percent for the mid-range, and only 20 percent for the base version (Wells 2010: 448). These figures indicate that the idea of a no-frills car was not appealing to most customers and so the potentially revolutionary nature of the minimalist configuration approach did not find a market niche. Hence, sales did not reach the expected level while the factory was laid out to produce 350,000 units per year (Table 5.10).

**Table 5.10 Tata Motors' Nano sales**

	Sales
FY 2009	30,350 (estimate based on production figures reported by Business Week)
FY 2010	70,432
FY 2011	74,527
FY 2012	53,848

*Source:* Indian Express, 26.04.2012; Business Week, 11.04.2013; Hindustan Times, 05.05.2013.

Thus, Tata has only sold 229,157 units of the Nano in four years, less than its projected annual production capacity. Moreover, Tata could not keep the initial price of INR100,000 (US\$2,000), so that it went up to INR142,000

(US\$2,600). Despite the mediocre performance of the Nano, Tata Motors is still by far the strongest domestic car producer. However, the dramatic decline in FY 2012 sales suggests that Tata must adapt to increasing competition with foreign OEMs.

Concerning the topic of supply chains between India and ASEAN, Tata is again an example showing how Indian companies are not quite integrated with the ASEAN region. It appears that instead of the adjacent ASEAN region, Tata targets different markets. If one considers Tata's commercial vehicle section with a contracted production in Thailand, the only ASEAN countries where models are sold are in Thailand and Myanmar. On the other hand, Tata only produces in South Africa but sales and distribution units cover a large number of African countries.<sup>16</sup>

Based on the background laid out in this paper and a look into the establishment of sales networks in ASEAN, data suggest that Tata has only recently discovered ASEAN member states as a possible market. As the Indian market becomes more difficult, the currently booming ASEAN market becomes a target for expansion. AEC 2015 apparently is a second major motivation for setting up production in ASEAN. If the OEM is successful in localising production, this could lead to a further intensification in automotive components trade between India and ASEAN. However, it is not clear if such a development would support suppliers from India, ASEAN member states or even the West as Japanese, and Korean suppliers already active in ASEAN.

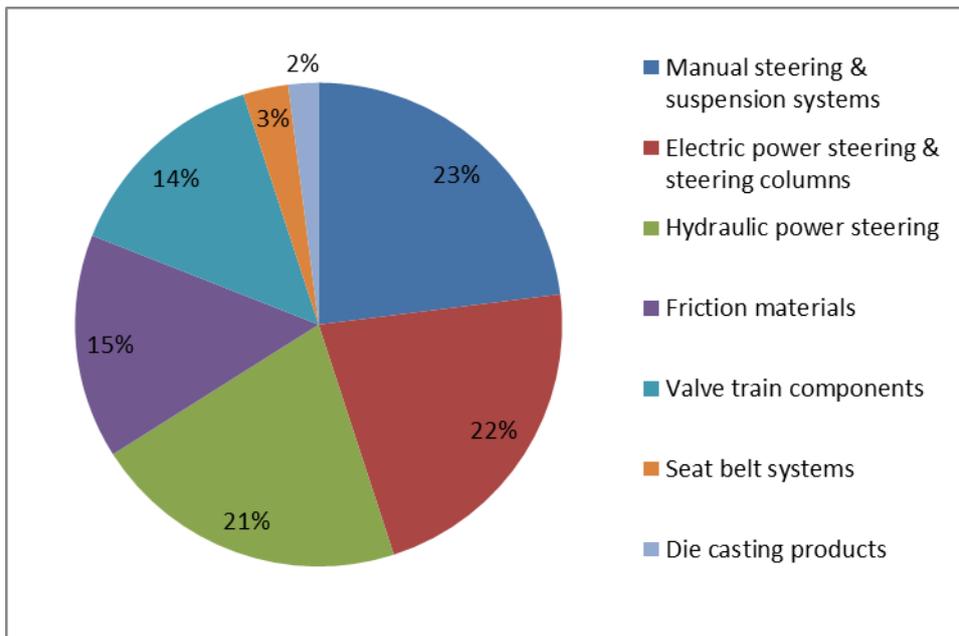
A further example for an Indian parts manufacturer is Rane Group, a Tier2 supplier that mainly produces safety relevant components (Figure 4). Rane has established several JVs with international suppliers, which are its strategic partners. It collaborates with TRW (hydraulic power steering), NSK (electric power steering), and Nisshinbo (friction materials & brakes). In the case of NSK, the Japanese supplier took control over the JV in 2010

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<sup>16</sup> African countries include Algeria, Angola, the Democratic Republic of Congo, Djibouti, Ghana, Kenya, Mozambique, Nigeria, Senegal, South Africa, Sudan, Tanzania, Uganda, and Zambia.

with a 51 percent stake. TRW and Rane, on the other hand, are equal partners (50-50). Rane holds 42.5 percent of the venture with Nisshinbo.

**Figure 5.4 Rane Group sales in 2012, by product**



Source: Rane Group 2013a.

The company is India's leading engine valve supplier with 85 percent market share. Its main customers in India are domestic OEMs as well as Hyundai, Honda, Maruti-Suzuki, and Toyota. In the case of Hyundai, valves for the so-called Kappa engine are supplied to Hyundai-Wia, an affiliated supplier which mainly produces transmissions, constant velocity joints, engines, and machine tools. Rane further exports engine valves to Audi, Deutz, and VW in Germany, VW in Brazil, and Skoda in the Czech Republic. Its supply relation with VW started in 2003. Moreover, Rane became a global supplier of Yamaha in 2003, exporting valve guides to Taiwan and Thailand. Of its valve products, 30 percent of passenger car engine valve sales are shipped abroad while 46 percent of commercial and agricultural engine valve sales are generated through exports (Rane Group, 2013b). The die casting business does not contribute much towards total

sales turnover but still, 78 percent are exported. However, the export share of JVs' sales is significantly lower: the TRW JV export share reaches 14 percent but only six percent for the Nisshinbo JV and the venture with NSK only exports a mere 0.66 percent of total sales. Among these activities, the NSK JV exports steering systems to Nissan in Mexico. Steering components produced in the TRW JV are exported to Renault – to its low cost brand Dacia – in Romania (since 2010) and Brazil (since 2011). Domestically, a Rane subsidiary supplies brake linings for Tata Motors' Nano.

Present situation suggests that Rane largely depends on technology from its JV partners. Apparently, self-controlled business units such as die casting or engine valve production have a higher export ratio than JV units. Hence, the company's own expertise seems to be critical for exports. As the technology used by the JV partners should not be the constraining export capability, it appears that these ventures were set up to cater to the domestic market. Thus, from its leading position in this segment of the Indian market, Rane diversified activities with the help of foreign JV partners. It appears that the company wants to become less dependent on its partners, which is indicated by the fact that R&D investment increased from 0.5 percent of sales turnover to 1.5 percent (Rane Group, 2013b). While this investment ratio is marginal in comparison to leading suppliers, this plan reflects the need to have some degree of learning and innovative capability to survive in the industry in the long run. This phenomenon is not limited to India, it is global. Due to supply chains and the role of assembling OEMs and their trusted Tier1 suppliers in the networks, parts and components manufacturers must upgrade their technology so as to be integrated in these chains. Otherwise, they will not get orders or will only be confined to the role of Tier2 or Tier3 suppliers that are largely dependent on cheap labour inputs. These findings are very similar to Humphrey's (2003) study on the automotive industry in Brazil and India, observing that OEMs increasingly rely on Tier1 suppliers and therefore encourage "follow sourcing". Hence, these Tier1 suppliers aggressively enter markets at the same time that their main customers set up local production. Even in a relatively high developed country with an indigenous

automotive industry like the Czech Republic, the transformations after the collapse of the Soviet Union resulted in the removal of two-thirds of Skoda's pre-1990 suppliers from its supply chain during the socioeconomic transformation in the 1990s (Pavilinek and Zenka 2010, 573).

In general, it appears that successful Indian suppliers have developed production know-how and technology in cooperation with foreign partners. As the case of Hero highlights, even OEMs may need expertise from advanced production country partners in order to be competitive. A case study covering Mahindra & Mahindra and supplier Bharat Forge (Balcer and Bruschi 2010, 137-154) offers a useful comparison to this paper's own findings; Mahindra & Mahindra operates through a conglomerate structure, has its own parts manufacturing division, and although selling to various countries, ASEAN is not an important export destination. However, it retreated from former OEM JVs and appears determined to succeed by simultaneously acquiring expertise through acquisitions and increased R&D spending.<sup>17</sup> Bharat Forge is somewhat different as it mainly accessed technology initially by purchasing modern production equipment, introducing modern management practices, and relying on IT-based organisation. Differing from all mentioned cases, Bharat Forge exports around 40 percent of total sales. Again, ASEAN is not an important export destination unlike the US, UK, and Japan. While it is beyond the scope of this study to determine why ASEAN plays such a minor role for Indian automotive companies, it would be an interesting question for future research. The relative neglect of the ASEAN market can be linked to a recurring pattern of a dual focus on developing countries – in particular, Africa and South Asia – and developed markets such as the USA and Europe.

The cases of Hyundai and its related suppliers should be considered. Hyundai entered India in 1997 by setting up a wholly owned subsidiary, making it the first international OEM to do so. Park (2004, 3553f.) described that Hyundai encouraged trusted Korean suppliers to set up production within a 50km radius of its assembly plant. Suppliers which

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<sup>17</sup> In 2011, the Indian OEM took over SsangYong Motors from South Korea.

followed Hyundai to India chose various modes of entry, including wholly-owned subsidiaries or either majority or minority JVs with Indian or other foreign firms. Hence, it can be claimed that Hyundai implemented a clear “follow sourcing” strategy, urging key suppliers such as Mando or Sungwoo to establish production in India in order to ensure quality. As mentioned, this is by no means exceptional: Humphrey and colleagues (1998: 175) have documented that when Fiat entered India, its most critical suppliers from Italy also set up operations. Subsequently, Hyundai successfully conquered market shares from Maruti. Although localised models are all in the mini (or city) and subcompact segment, Hyundai chose to sell imported larger models. And aside from expanding its domestic sales by steadily increasing exports from India (Table 5.11), it has become the country’s principle passenger car exporter with 48 percent of total exports. According to Hyundai, it exports six models to 119 countries.

**Table 5.11 Hyundai’s domestic sales in and vehicle exports from India**

	<b>Domestic sales</b>	<b>Exported units</b>
1998	8,447	0
1999	17,627	20
2000	82,896	3,823
2001	87,175	6,092
2002	102,806	8,245
2003	120,325	30,416
2004	139,759	75,871
2005	156,291	95,560
2006	186,174	113,339
2007	200,411	126,749
2008	245,397	243,919
2009	289,863	270,017
2010	256,717	247,102

2011	373,709	242,330
2012	391,276	250,005

*Source:* compiled from Hyundai Motor India website.

These data document Hyundai's strategy of not only conquering this emerging market but of its clear plan to use India as its small car export hub. Initially, the Korean OEM used India to produce SKD and CKD kits that were exported to neighbouring South Asian markets such as Bangladesh, Nepal, Pakistan, and Sri Lanka. Afterwards, key components of Indian market model Santro such as engine, transmission, and body panels were exported to South Korea and assembled in its Ulsan plant as the Visto (Park, 2004, 3554). It should be highlighted that Hyundai first used India to enter adjacent South Asian markets via knock-down kit assembly, it did not export to ASEAN. Moreover, it appears that the small car hub strategy came under questioning and then partly abandoned. India is still the Korean's second largest production base after its home country but Hyundai faced repeated problems. India had been the sole production base for the i10 and i20 models but the OEM shifted the volume for the European market from Chennai to Izmit, Turkey in order to balance exports with domestic sales and reduce waiting times for popular models in India (The Hindu, 22.03.2010). Repeated strikes including violence against firm property and even among fellow workers in Chennai came up as a secondary reason for partly shifting production to Turkey (Economic Times of India, 07.06.2010).

Humphrey *et al.* (1998, 176) and Park (2004, 3554) have listed firms that followed Hyundai's expansion to India in 1997 and these are mainly Korean Hyundai affiliates that entered into JVs with local Indian companies. How did these companies develop over time? Are they confined to the Indian market or did they become integrated into global supply chains?

Our first example is Daewha Fuel Pump from Incheon near Seoul. In its home market, Daewha's main customers are Hyundai, Kia, and Daewoo,

which is owned by GM since the collapse of the Daewoo *chaebol* during the Asian financial crisis. The company mainly produces different fuel pumps (mechanic and electric), die casting parts, and engine mounts. When the company entered the Indian market, it formed a JV called Pentadaewha with Pentafour, a local conglomerate with automotive, chemical, solar energy, and media divisions. At the time of entry, Daewha had a 51 percent majority stake and Pentafour held the remaining 49 percent stake (Park 2004, 3554). A detailed list of products and customers of the Indian facility is available from Daewha's website (Table 5.12).

**Table 5.12: Pentadaewha customers by product**

Product	Customers
Fuel pump	Hyundai, Tata, India Japan Light, Lucas-TVS, Bosch, Hanil Lear
Fuel filter	Nissan, Hyundai
Oil filter	Maruti, Tata, Hyundai
Plastic injection parts	Hyundai
Press and die castings products	Hyundai

Source: Daewha Fuel Pump.

Pentadaewha mainly supplied parts for Hyundai's subcompact Accent (Verna) and mini Santro (Atos) models, which are produced in Chennai. This suggests that the Indian subsidiary mainly catered to Hyundai, but gradually extended its customer base. As the list shows, customers are either JVs between Indian and foreign firms or even between two foreign firms.<sup>18</sup> However, the list suggests that customers are largely based in the Chennai area. Hence, the company is an example of localising an already existing supply chain of trusted suppliers, in this case through partnering with local companies. While the export performance of Daewha itself was limited, it must be kept in mind that the end customer Hyundai uses India

<sup>18</sup> Hanil Lear is a 50:50 JV of US-based Lear and the Korean Kia-affiliate Hanil E Hwa, which are both automotive seat producers.

as a global export hub for small cars. However, according to information provided by Daewha (14.02.2014), the company sold the plant to INZI Controls, another Korean automotive parts supplier in 2007. Daewha did not disclose the reason for selling the Indian factory, but explained that the received funds were used to set up production in the Kaesong industrial region, located north of the inner Korean border.

JKM Dae Rim is a producer of engine and transmission components. Since its foundation in 1979, it supplies Hyundai with components. The company exported its products to the USA and Japan, but India was the first production facility outside of Korea. It formed a minority JV (27 percent) called JKM Dae Rim Automotive with local conglomerate Dynamics Technologies (73 percent), which is active in various engineering related fields such as hydraulics, aerospace, and defence. Dynamics has a long-term relationship with Mahindra & Mahindra, which it supplies with hydraulic gear pumps for its tractors. Similar to Daewha's JV, components for the Accent and Santro models were delivered to Hyundai. Indian operations apparently grew to such an extent that a new factory was established in 2007 to serve Hyundai, but also other customers. Concretely, unspecified transmission components are procured from agricultural machinery producer John Deere and Fiat-Tata in Pune. Water pumps are supplied to Komatsu Cummins and compressor housings to Honeywell. Moreover, main engine bearing caps are delivered to Ford in Argentina, South Africa and Thailand. In the same year, Dynamics acquired a production facility in the UK to internationalise its business, especially the automotive and aerospace divisions.

In 2008, Dynamics bought out JKM Dae Rim, taking full control of the Indian operations. In 2011, Dynamics took over Eisenwerk Erla, a German foundry that is active in Germany and Chennai, and supplies Bayerische Motoren Werke AG (BMW), Borg Warner, Daimler and VW Group (Audi and VW brands). Operations of Eisenwerk Erla and JKM Dae Rim Automotive were subsequently unified as JKM Erla Automotive. Differing somewhat from Daewha, JKM Dae Rim has sold its Indian business to its partner Dynamics, which appears to internationalise its

operations via acquisitions. As part of the process, its customer base diversified, but apart from exporting to several Ford subsidiaries, Dynamics appears to largely serve customers directly in India, and through its acquired subsidiaries in Germany and the UK.

Another supplier that entered the Indian market is SL Corporation, formerly known as Sam Lip. The company produces various automotive parts and components such as lighting, mirrors, chassis parts and front-end modules. When SL followed Hyundai to Chennai, it created a majority-owned JV (75.2 percent) called SL Lumax with Lumax (20.3 percent) and Hyundai (4.5 percent) (Park, 2004, 3554). Lumax is part of Indian conglomerate DK Jain Group and has a long-term partnership with Japanese component supplier Stanley Electric. Lumax and Stanley Electric teamed up after Maruti-Suzuki was founded in 1984 and today Lumax has rounded 60 percent of the market in automotive lighting systems in India. However, this figure must be qualified as Lumax does not own the majority of SL Lumax. The status of the other eight production sites could not be elucidated. According to Lumax, its shares are owned by Stanley Electric (35 percent), Indian promoters (35 percent) – most likely DK Jain – and unnamed institutions (30 percent). Thus, the somewhat non-transparent ownership structure suggests that Lumax has created many JVs in the automotive lighting segment but it is not possible to state if it controls all these companies. As mentioned in the case of SL Lumax, it only owns a minority stake, while the rest is controlled by SL and Hyundai. SL Lumax in Chennai today produces lighting, trim and chassis parts. SL Lumax was formerly dedicated to Hyundai, but according to SL Corp., it also supplies Indian operations of GM (chassis parts and lamps) and Ford (lamps).

Nevertheless, Lumax deserves attention, even if the JV with SL Corp. urges caution against overrating it. Lumax has created dedicated production sites to serve Bajaj (Waluj, Aurangabad), Maruti-Suzuki (Gurgaon), Tata (Pune), and former Hero-Honda (Haridwar). Moreover, Lumax is interesting in the context of this article because its non-domestic customers include Nissan, agricultural vehicles producers CNH and John Deere, Italian scooter manufacturer Adiva as well as commercial vehicle lighting

specialists Truck-Lite (USA) and Vignal (France). As all production is located in India, these clients import from India. Thus, it can be stated that Lumax is a company focused on the Indian market and partly dependent on the technological know-how of its partner Stanley Electric. However, products are competitive enough to export to certain international customers.

Turning our attention to a representative Japanese presence in India with regard to geographic clustering in India, it has been observed that Japanese investment has been concentrated in Bangalore, Chennai, New Delhi, and Pune (Horn *et al.*, 2010, 355). This is remarkable as the last three are regularly described as the centers of India's automotive industry (e.g. Kumaraswamy *et al.*, 2012, 374f.). Thus, it can be stated that foreign investment created a fourth centre in Bangalore.<sup>19</sup>

Denso, one of world's leading suppliers is headquartered in New Delhi. As the company established its presence in India in 1984, it can be safely concluded that Denso was one of the companies that supplied Maruti-Suzuki from the beginning. The company is also interesting in one regard, it is involved in the creation of a regional supply system in ASEAN and in India. For the ASEAN region the company employs a strategy that can be summed up as centralising the production of small components in a single country and producing bulky components in various countries with OEM assembly plants (Table 5.13).

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<sup>19</sup> Horn and colleagues (2009, 357f.) find that by 2008, 11 Toyota-affiliated companies had invested in Bangalore. However, they also point out that different from Honda or Suzuki, Toyota *keiretsu* firms are much more dispersed among the four centers. Thus, while the location choice of an OEM can cause localisation of suppliers, Bangalore's development into India's fourth automobile centre should not be solely attributed to Toyota. *Keiretsu* members such as Aisin Seiki, Denso, Tōkai Tekkō, Toyoda Gōsei, Toyota Bōshoku, and Toyota Tsūshō are located in Bangalore, which also hosts Continental, Faurecia, software development by Delphi and Bosch's India headquarters.

**Table 5.13 Centralised and localised components production in ASEAN and India**

Category		Component	Thailand	Indonesia	Malaysia	Philippines	Viet Nam	India
Heat control	A/C system	HVAC*	●	●	●	●		●
		Evaporator	●					●
		Condenser	●		●			●
		Compressor		●				
		Radiator	●	●	●			●
Electric		Starter, alternator	●					●
		Electric power steering ECU**			●			
Electronic		Meter				●		●
		Engine ECU**			●			●
		Relay	●					
		Relay flasher	●					
Powertrain		Air cleaner	●	●		●		●
		Oil filter	●					
		Fuel pump module	●			●		●
		Common rail	●					
		Gasoline injector	●					●
		Spark plug, coil, O <sub>2</sub> sensor		●				
		Horn		●				

	Exhaust gas recirculation valve						
	Accelerator pedal module					●	
Small motors	Wiper motor		●				●
	Wiper arm & blade			●			
	Power window motor		●				●
	Electric power steering motor		●				
	Variable nozzle turbo motor		●				

*Note:* \* Heating, ventilation, and air conditioning

\*\* Electronic control unit

● Produced in multiple countries

● Centrally produced

*Source:* Information provided by Denso.

The classification in Table 5.13 has been adopted from the original plan and it shows that the supplier regards India as only loosely connected to ASEAN. Although labelling parts produced in India as “produced in multiple countries” is somewhat misleading, this indicates that Denso established different production networks for ASEAN and India. Clearly, India is not a part of the ASEAN system as both small and bulky components are produced with few exceptions, that is, an extensive range of products is locally produced within India and that only a limited number of components must be imported. Denso provides a perfect example of separated markets, a Tier1 supplier that created dedicated supply chains for both ASEAN and India. Hence, an integrated production in a multi-country network is mainly limited to ASEAN and rarely incorporates India.

One of the world’s leading OEMs, Toyota, has relocated to Bangalore after forming the Toyota Kirloskar JV in 1997. Its partner Kirloskar, a conglomerate mainly producing machinery and technical equipment such as valves, pumps, engines or electric motors, initially had a 24 percent stake, which it later reduced to one percent and re-raised to 11 percent. Toyota Motor Corp. and Toyota Industries Corp. own the remaining stakes. Thus, this JV is somewhat different from others in that the partners are not both automobile OEMs. It has been said that Kirloskar was interested in cooperating in order to learn modern processes and indirectly benefit from clustering for its machine-tool business (Richet and Ruet 2008, 456). Indeed, after this initial JV, Kirloskar and Toyota created five additional ventures.

One of these is Toyota Kirloskar Auto Parts (TKAP), which was founded in 2002.<sup>20</sup> Its ownership structure is similar to the initial JV, with stakes of Toyota Motor (64 percent), Toyota Industries (26 percent), and Kirloskar Group (10 percent). TKAP is located just 2.3 kms away from Toyota Kirloskar Motor, the original assembly JV. Although the adjacent location suggests that its primary function is serving local production, it is also playing a role in Toyota’s global supply chain. This particular company allows some insights into the developing supply chains between India, ASEAN, and the rest of the world. After its foundation, TKAP initially produced axles and shafts for locally produced model Qualis. Facilities were enlarged to produce manual transmissions, first for export and subsequently for domestic

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<sup>20</sup> If not indicated, all information in this section relies on TKAP.

production. Manufactured transmissions were dedicated to Toyota's Innovative International Multi-purpose Vehicle (IMV) project. Toyota began planning the IMV project in 2002 and began manufacturing operations of IMV models in 2004. Key components for IMV models are produced in India and ASEAN countries. Manual transmissions were produced by TKAP in India and another Toyota subsidiary in the Philippines, gasoline engines were produced in Indonesia and Diesel engines in Thailand. These components were initially assembled into complete vehicles in Indonesia, Thailand, South Africa, and Argentina, which are the main export hubs of the IMV project. According to TKAP, it only supplies transmissions for production of the Hilux pickup truck in Thailand and Argentina, which suggests that Indonesia and South Africa are supplied through the Philippines. Since 2005, the IMV-based Innova mini-van is produced by Toyota Kirloskar Motor in Bangalore and TKAP supplies its propeller shaft, front and rear axles. In 2009, the production of the Fortuner SUV, another IMV model, started at Toyota Kirloskar, which uses locally produced transmission from TKAP. Regarding the role of India in the supply chain, it is relatively small, especially in comparison to the Philippines (Table 5.14).

**Table 5.14 Production and export of components under the IMV project**

	<b>Component</b>	<b>Production (2011)</b>	<b>Export (2011)</b>
India	Manual transmission	148,000	137,000
Indonesia	Gasoline engine	115,000	40,000
Philippines	Manual transmission	333,000	325,000
Thailand	Diesel engine	370,000	131,000

*Source:* Toyota 2012.

Reported production and export figures reveal that India – like the Philippines – is mainly a component export base for Toyota's supply chain. On the other hand, Thailand and Indonesia export significantly less components, indicating their functions as assembly locations. It appears that Toyota mainly relies on its established production bases in ASEAN as assembly locations and export hubs while Argentina and South Africa are its regional assembly and export hubs. Other countries have only limited assembly capacities that cater to

domestic markets. This can also be backed up by information Toyota released about the IMV project (Table 5.15).

**Table 5.15 IMV project overview**

	Plant	Produced model	Start of production	IMV production capacity*	Production (2011)	Export (2011)
Thailand	Samrong	Hilux	Aug. 04	230,000	338,000	202,000
	Ban Pho	Hilux	Jan. 07	120,000		
Indonesia			Fortuner		Jun. 10	100,000
	Innova		Sep. 04			
South Africa		Hilux	Apr. 05	120,000	117,000	87,000
		Fortuner	Feb. 06			
Argentina		Hilux	Apr. 05	92,000	70,000	47,000
		Fortuner	Sep. 05			
India		Innova	Feb. 05	90,000	63,000	n.a.
		Fortuner	Aug. 09			
Philippines		Innova	Jan. 05	n.a.	12,000	n.a.
Malaysia		Hilux	Mar. 05	n.a.	23,000	n.a.
		Innova	May 05			
		Fortuner	Aug. 05			
Viet Nam		Innova	Jan. 06	n.a.	12,000	n.a.
		Fortuner	Feb. 09			
Taiwan		Innova	Jun. 07	n.a.	3,000	n.a.
Venezuela		Hilux	Jul. 05	n.a.	5,000	n.a.
		Fortuner	Mar. 06			
Pakistan		Hilux	Oct. 07	n.a.	4,000	n.a.
Egypt		Fortuner	Apr. 12	n.a.	n.a.	n.a.

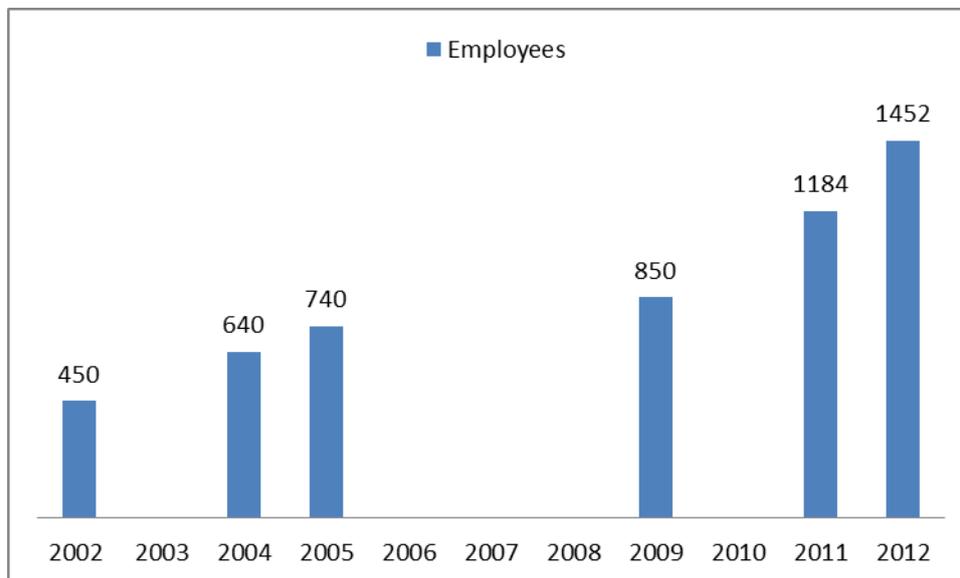
*Note:* \*Toyota defines production capacity as two shifts without overtime. Hence, actual production can exceed production capacity if overtime or extra shifts occurred.

*Source:* Toyota 2012.

Since 2012, TKAP became involved in supply chain activities for a new Toyota model. It produces transmissions and gasoline engines for the Etios sedan and hatchback models. With the localised sourcing of these components from TKAP, the local content ratio of the Indian Etios rises over 90 percent. In this case, engines are only produced for domestic assembly. However, transmissions are both utilised for local assembly (45 percent) and for export to Brazil (55 %). It appears safe to assume that the common use of flex-fuel engines in Brazil effectively prohibits exports of normally configured engines, which explains why Toyota points out that the Etios models sold in Brazil are capable of using bio-ethanol-gasoline blends (Toyota 2013: 12). However, an interview with Toyota Asia-Pacific in Singapore (26.02.2014)<sup>21</sup> revealed that while Toyota has some Indian suppliers, these are mostly JVs with Japanese or other foreign firms. This means that the OEM relies on the non-Indian suppliers to ensure the quality of delivered parts.

The steady expansion of Toyota’s Indian activities can be traced through the increase in TKAP’s workforce (Figure 5).

**Figure 5.5 Number of Toyota Kirloskar Auto Parts employees**



Source: Toyota Kirloskar Auto Parts.

<sup>21</sup> For Toyota, operations in Asia-Pacific are not controlled centrally in Singapore. The city state is the finance and trading hub for regional operations while engineering and R&D-related functions are located in Bangkok.

It is noteworthy that the increasing number of employees correlates with mentioned events like the sourcing for the IMV project (2004), subsequent localised production of IMV models (2005; 2009), and localisation and global sourcing of Etios components (2012).

Overall, the inclusion of its Indian subsidiary TKAP into the IMV and Etios supply chains is directed by Toyota. The growing, but nevertheless still limited, role of India as a sourcing location indicates that Toyota gradually integrates its Indian operations into the global supply chain. ASEAN member states still play the major role in this supply chain, which can be explained by the fact that they were the first to be integrated as both components sources and regional assembly locations. From Toyota's perspective, it is only natural to integrate additional countries as supporting roles to the already established main actors in ASEAN.

A remarkable point is that sourcing for the IMV project from India coincides with the India-Thailand FTA of 2004. Also, India and MERCUSOR signed a Preferential Trade Agreement (PTA) in 2004, which became effective on 1 June 2009.<sup>22</sup> However, the mentioned planning process of the IMV project that started in 2002 suggests that the existence of an FTA was not the main factor for choosing India as a sourcing base. This is even reinforced by the supply link to Argentina, which was served from India in absence of an FTA or PTA. Hence, it must be concluded that FTAs are not necessary condition for sourcing arrangements in supply chains. Rather, FTAs can promote and reinforce already existing supply chains through inter-industry or even intercompany trade.

However, two other Japanese OEMs show that India and ASEAN can be connected in different ways. First, Mitsubishi entered into an agreement with Hindustan Motors in 1998 to use the latter's facility near Chennai to assemble the Montero, Outlander, and Pajero SUVs as well as Mitsubishi's Cedia

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<sup>22</sup> MERCUSOR can be described as a common market and customs union. Original members are Argentina, Brazil, Paraguay, and Uruguay. Venezuela joined in 2012. Moreover, Bolivia (1997), Chile (1996), Columbia (2004), Ecuador (2004), Guyana (2013), Peru (2003), and Suriname (2013) are associated members. Bolivia became an acceding member in 2012, which means that it has to implement rules to become a full member.

India and Argentina had signed a first trade agreement in 1966, but it seems to have had little impact.

sedan.<sup>23</sup> The Indian partner also operates a dealer network for Mitsubishi, which enables the company to benefit from the downstream business. In the case of the Pajero Sport model, CKD kits are imported from Thailand and locally assembled. Before CKD assembly commenced, CBUs were imported from Thailand. Through localisation via CKD assembly, the company could reduce the sales price by around 7.6 percent, which shows why companies seek to localise production. Initially, local content was only at 14 percent, but the aim was to reach 30 percent in 2013. Locally sourced parts included alloy wheels, battery, headlining, lamps, seat belts, tires, window glass, and wiper assembly (Hindustan Motors, 18.12.2012). However, at a Mitsubishi Motors interview in Thailand (28.02.2014), Mitsubishi staff pointed out that local suppliers for Pajero Sport CKD kits are mostly JVs with foreign companies. This indicates again that foreign OEMs in India mostly rely on foreign companies for parts supply, whether in a JV with or local company or by wholly-owned subsidiaries. Moreover, it was pointed out that the decreasing exchange rate of the Thai Baht against the Indian Rupee was a concern for the operations.

While Mitsubishi uses ASEAN as a source of CKD assembly kits for India, Nissan takes the opposite approach for certain ASEAN markets. In Viet Nam, the Nissan Sunny (Almera) is assembled by Tan Chong Industrial Equipment (TCIE), a subsidiary of Malaysia's Tan Chong group.<sup>24</sup> Located in the Hoa Khanh Industrial Zone in Da Nang, TCIE assembles the Sunny for the local market, other models may be added later to diversify the available product lineup. The base model is produced in India with most components of CKD kits imported from Chennai where Nissan and Renault operate a plant and so-called International Parts Centre (IPC). Other components are imported from China, Japan, and Thailand as well as from Renault operations in Spain. TCIE is not involved in supply chain logistics as it only orders from Renault and Nissan Asia Pacific, which is located in Thailand, but is responsible for regional supply chain management, among other tasks. In turn, Nissan Asia Pacific coordinates delivery from mentioned Asian locations to Viet Nam.

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<sup>23</sup> In 2013, Hindustan Motors reached an agreement with Isuzu to assemble models of the Japanese OEM in the same facility.

<sup>24</sup> The following section is based on information obtained from a TCIE staff in an interview and plant visit in Da Nang on 25 February 2014.

Locally produced parts only include antenna, battery, seat, and wheel. One particular component—seats—can be used to illustrate the impact of regulation and business considerations on automotive parts suppliers. The seats of the Sunny are locally produced by a Japanese seat manufacturer in Da Nang, 500m away from TCIE’s plant. Regulation provides the first main reason for localisation. According to breakdown regulation, imported CKD seats must be separated into head rest, back rest, and seat base in order to receive reduced tariff rates. However, the design of the seat manufacturer is incompatible with this regulation as the back and head rest are fixed together and cannot be separated. Thus, in order to avoid violating Vietnamese breakdown regulation, Nissan required its seat supplier to localise production in Da Nang. As the volume is still limited (to 2,500 units per annum in the start-up phase), it is highly likely that the supplier operations are not profitable, so that the incompatibility between seat design and regulation must be regarded as a major factor for localising production. Local content is a secondary regulative impact. If a Sunny is ordered with leather seats, this part alone represents 13 percent of total value (in case of other trim material, it is around 8 percent). Hence, localising this single component is an effective way of increasing local content and meeting requirements. The second reason is more business related. Importing finished seats has the downside that these items are relatively heavy and bulky, making imports comparatively expensive. Hence, by localising seat production, OEMs can evade associated costs.

The impact of the India-ASEAN FTA on operations in ASEAN can be well described through the following case. Initially, the agreed plan of Nissan and TCIE was to source around 80 percent of content from India but due to remaining tariffs, imports are quite costly and reduced the margin of TCIE. Thus, TCIE renegotiated with Nissan to not source parts from India but from the ASEAN region. Using the Harmonised System (HS) Code, company staff compared tariffs for imports from India and ASEAN to track down particularly suitable components to be sourced from ASEAN instead of India. As TCIE was capable of providing exact information which components should be sourced from ASEAN to reduce costs and make operations more viable, Nissan agreed to shift delivery, so that Indian content decreased to roughly 40 percent or half of the initial percentage. Thus, due to lower tariff barriers between ASEAN members than between ASEAN and India, the

original plan of mainly sourcing from India was given up. This case also illustrates that the slower tariff reduction in CLMV countries allows Viet Nam to maintain higher tariff barriers towards India. The effect is that it is cheaper to source products from ASEAN than from India for newly set-up production sites in CLMV countries. Hence, this case illustrates that intra-ASEAN automotive components trade is currently significantly easier and less costly than between ASEAN and India. Therefore, the issue in the automobile industry regarding the trade between India and ASEAN revolves on the notion that FTA reduces tariffs, not eliminates them. This explains why sourcing for production in ASEAN is predominantly relying on the intra-regional supply chain, not on components imported from India.

Regarding Chennai, Horn *et al.* (2010, 356) mention investments of BMW, Ford, Hyundai, and Renault-Nissan. In 2012, Daimler joined these OEMs by opening a new truck plant in Chennai. Production of Daimler's Japanese subsidiary Fuso is also taking place in this facility. However, products are branded differently for different markets and segments, either as Bharat Benz (India and South Asia) or Fuso (India, ASEAN, Africa, and Arab Gulf Cooperation Council (GCC) states). Initial export destinations for Fuso trucks are Kenya, Sri Lanka, and Zambia (BharatBenz, 26.09.2013). Despite different branding, vehicles share similar components. While Daimler planned to create a common group platform to share as many components as possible, this plan was given up as it was found that creating a standard had numerous technical difficulties. Overcoming these difficulties would have made the common platform expensive, hence reducing benefits. Thus, a standard may only be created for future models. Regarding content, Fuso seeks to achieve 80-90 percent localisation.

Daimler's initial plan was very similar, stipulating that 41 percent of all components should be procured from Tamil Nadu or from companies located in relatively close proximity to the assembly plant, 44 percent should be delivered from other Indian states, and the remaining 15 percent of components will be imported (Daimler, 2012). This level of localisation should be achieved by using parts from local suppliers, sometimes based on Daimler or Fuso designs. However, Fuso experienced some problems in finding capable suppliers. Even though drawings were provided, Fuso's procurement division found that delivered parts lacked sufficient quality.

Addressing this issue, Fuso invited engineers from local suppliers to come to Japan in order to receive trainings from Fuso engineering staff. Thus, the OEM engaged in direct supplier development to solve quality issues. This case suggests that the limited technological capability of suppliers is not only a problem in getting orders from India but may be a major constraining factor for exports.

On the other hand, engines are a key component locally produced in Chennai, one among three Daimler commercial vehicle plants that do so. In general, all medium- and heavy-duty Fuso trucks are utilising engines from Mercedes-Benz<sup>25</sup> and light-duty trucks use engines jointly developed by Iveco and Fiat.<sup>26</sup> While heavy-duty engines are produced with 63 percent local content, Fuso's older light-duty 4D34 engine is localised up to 74 percent and is produced by Avtec, a company of the CK Birla group. The latter company is another major Indian conglomerate whose flagship company is Hindustan Motors. Lastly, Korean body parts supplier MS Autotech and Indian frame maker KLT Automotive are located in the Daimler complex.

## Conclusion

Summing up, it can be stated that the historically separated automotive industries and markets of India and the ASEAN region are slowly becoming more integrated. While intra-regional components trade in ASEAN is still far more important and advanced in comparison to automotive parts trade between India and ASEAN as the case of Tan Chong (Nissan) demonstrates, India's automotive industry has rapidly evolved in the last decade.

However, our case studies suggest that similar to the ASEAN occurrence – in much the same way as in Eastern Europe, Mexico, or Brazil – the development is mainly induced and driven forward by foreign OEMs and suppliers. Here, different strategies can be identified. First, companies like Toyota mainly are interested in the domestic market and take an incremental approach towards integrating India into its existing global supply chain by

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<sup>25</sup> This also applies to Daimler's US subsidiaries Freightliner and Western Star.

<sup>26</sup> Some models still use older engines, but this engine will become part of Fuso's global platform. All light-duty trucks will use this engine, sometimes with minor modifications.

upgrading the technological capability of the Indian subsidiaries. Interestingly, as the Japanese OEM already has a developed supply chain network in ASEAN, India only plays a minor role in supplying parts to this region and is utilised to serve assembly hubs in South America.

Second, companies such as Mitsubishi with an established supplier base in ASEAN use these networks to produce CKD kits and then ship them to India for final assembly. Unlike Toyota, India becomes another market and not a production location to be gradually developed. Hence, the main difference is that Mitsubishi's supply chain ends in India while in the case of Toyota, India is both final assembly location and component source for global supply chains.

Third, companies such as Hyundai-Kia and Daimler-Fuso (applies to the German majority owner) that do not have sophisticated supplier networks in ASEAN like many Japanese OEMs chose India as a major export hub besides their respective home bases.<sup>27</sup> Thus, Hyundai basically transplanted large parts of its Korean supply to India. From this site, Hyundai exports small cars to the global market without a strong focus on ASEAN. However, the Daimler-Fuso case demonstrates two aspects. One, it reveals that a large proportion of components can be sourced from India. Even if Fuso does not locally produce the most modern engine, fully outsourcing engine production to a local company shows that some Indian companies have reached a very respectable level of technology. Second, it appears that especially smaller Indian companies still need assistance to reach global quality requirements. This in turn could explain why automotive components exports cost lower than imports. Some Indian companies' technology is not competitive in the global market and other Indian firms can only access technology through their foreign JV partners. As illustrated by the cases of Hero, Rane, TVS, and partly TACO, using foreign know-how may come at the price of being confined to the domestic market or to those markets where partners are not active. Thus, the level of technology – more precisely an independent control of it – is an important factor for the participation in global supply chains.

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<sup>27</sup> A research by Kobayashi *et al.* (forthcoming) has shown that this is only partly correct. Hyundai-Kia entered pre-motorisation markets in ASEAN such as Laos or Viet Nam where Japanese car makers have not yet occupied a dominant market position as in older markets such as Thailand or Indonesia.

While JVs are an effective way to become part of a domestic supply chain, they may simultaneously turn into an obstacle in joining global chains.

Fourth, as the Tata and TVS cases show, Indian companies only recently developed an interest in the ASEAN region. They mainly seek to penetrate established markets such as Thailand and Indonesia via production. In the case of Tata, the creation of a regional dealership network can also be observed. However, the strategy could prove inferior to that of Hyundai-Kia in the long run. While Indian OEMs seek to gain market shares in relatively developed markets, Hyundai-Kia's and Tan Chong-Nissan's strategy is to enter markets and earn a brand reputation before the market takes off. Tata faces not only the established Japanese OEMs in the developed ASEAN markets but also Western carmakers: Volkswagen's partner DRB-HICOM started localised production through SKD kits of the Passat sedan and later through CKD kits of the Polo hatchback shipped from India and Jetta compact sedan in Malaysia and assembly of SKD kits of the T5 van imported from Germany by its partner Indomobil in Indonesia. Renault also partnered with Indomobil to assemble SKD kits of the Duster SUV imported from India.<sup>28</sup> These new entrants certainly can be related to forthcoming AEC 2015 as global OEMs seek their share of the ASEAN market. Therefore, all our interviewees expect competition in the region to intensify. This in turn is presumably more problematic for companies like Tata that lack the reputation and prestige of already globalised OEMs.

Our findings can be regarded as contrary to the research of Balcer and Bruschi (2010), which highlights two success stories. The point is that these positive examples achieved their success by upgrading technology and developing design capabilities that are independent from foreign partners. Hence, taking steps into the same direction as Mahindra & Mahindra and Bharat Forge may be the main condition for Indian automotive firms to develop exports. Indeed, staff from a Japanese Tier1 supplier based in Thailand's Samut Prakan Province stated that the main reason why India is

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<sup>28</sup> Renault also sells the Koleos SUV and Mégane RS hatchback in Indonesia that are imported from South Korea and Spain, respectively. Moreover, Renault intends to locally produce additional models from 2015 (Automotive News, 22.09.2013). These examples again highlight India as a source of limited CKD exports to ASEAN but VW intends to reach 40 percent local content in order to be able to export to the whole ASEAN region. Thus, analogous to the Tan Chong example, it stands to reason that the OEM will try to replace content imported from India by parts sourced from local vendors.

only loosely integrated with the ASEAN operations of the company is that Indian employees and companies lack *monozukuri* skills (Company D, 28.02.2014).<sup>29</sup> Thus, as companies – especially suppliers – in the automotive industry are mainly technology-driven, the importance of technological capabilities should not be overlooked. Therefore, besides eliminating tariff and non-tariff barriers to trade as discussed before, the Indian government should consider strengthening support to component makers such as giving them access to favourable finance to acquire technology or giving stronger R&D incentives. As Agustin (2012, 263f.) has shown, Indian OEMs use the National Automotive Testing and R&D Infrastructure Project (NATRiP) to save costs in procuring equipment. Hence, the Indian government should consider if NATRiP could be scaled up further, possibly by creating divisions dedicated to information dissemination to partner companies or specialised in training and know-how transfer to smaller parts suppliers. To survive in the automotive industry, technology is a key element and therefore, companies, preferably with government support, need to acquire skills and know-how in order to secure a place in either global or regional supply chains.

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<sup>29</sup> *Monozukuri* literally means “making things” and therefore is often translated as manufacturing. However, the term encompasses the notion of creating products through craftsmanship and has been scientifically defined as covering all value-creating activities, such as product development, sales and purchasing (Aoki *et al.* 2014: 373).

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# APPENDIX

## Regarding the “ASEAN Economic Community and Japan”<sup>1</sup>

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### Introduction

Since the Lehman Shock, China and the ASEAN countries have received more attention. The main reason for this has been the strong economic growth of these countries. Japanese companies are not exceptional so that under the so-called “China+1” framework, ASEAN as a whole and each ASEAN country has received attention. However, aside from such scenarios, ASEAN was able to take steps towards regional integration. These efforts have materialised in the form of the ASEAN Economic Community (AEC), which will be implemented from 2015. If AEC is completed, it will form a unified market of 600 million consumers, which is more than a third of China’s population. It is unnecessary to explain the consequences of this huge, unified market for the global economy – let alone for the neighbouring Japanese economy. In this book, the authors trace the historic development and give a detailed description of the current state of ASEAN and AEC.

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<sup>1</sup> Enomoto Yuta, MA student at Waseda University, helped in writing this Appendix.

This paper provides an overview of the book authored by Koichi Ishikawa and colleagues titled “ASEAN Economic Community and Japan: The Birth of a Large Common Market” (2013) and discusses remaining issues with Kazushi Shimizu, one of the book’s original authors.

## **1. Current State of and issues in the ASEAN Economic Integration**

First, a brief overview of this book’s content is provided. This volume consists of three parts. The first part consists of two chapters, namely “The global economy and ASEAN regional integration” (Chapter 1) and “Can ASEAN achieve regional integration?” (Chapter 2). In Chapter 1, the developments since the foundation of ASEAN are covered, including problems and struggles in the process of maturing into a single market mechanism, the foreign capital induced system of division of labour, the foundation of AEC 2015 that aims at achieving even more economic growth as well as the question of whether ASEAN can become the core of East Asia’s integration. Chapter 2 covers the ASEAN Blueprint that includes market consolidation, policy coordination, reduction of interstate gaps, and the situation of free trade areas (FTAs). Under the current condition, while tariffs between ASEAN member states are going to be eliminated, there is still the severe issue of non-tariff barriers that must be addressed.

The second part consists of six chapters: “Liberalisation and harmonisation of ASEAN trade in goods” (Chapter 3), “Liberalisation of service trade, investment and movement of individuals” (Chapter 4), “ASEAN connectivity and improvement of traffic and infrastructure” (Chapter 5), “ASEAN community and energy cooperation” (Chapter 6), “Concerning finance and financial services cooperation under AEC” (Chapter 7), and “Current state and future perspective of IPR in ASEAN” (Chapter 8). Chapter 3 highlights the difference between original member states’ advanced state of tariff reduction, high degree of openness towards FTAs, and the road to newer member states’ complete liberalisation as well as an argument that the automotive and electronics industries are the main users of FTAs. Through these examples, the necessity for smoothly harmonising rules of origin

(ROOs) is highlighted. Chapter 4 underlines the importance of not only liberalising trade in goods, but also in services, finance, and the movement of individuals (skilled labour). However, in reality, every state has its own perspective on liberalisation, so that a trend towards protectionism is highlighted. Despite these extreme difficulties, the authors explain the importance of overcoming these barriers. Chapter 5 stresses the necessity of the transport sector for better economic integration in regard to the ASEAN connectivity and the creation of sufficient road, sea, and air transport infrastructure that should be addressed urgently. Specifically, creating an economic (transport) corridor and the liberalisation of aviation are necessary, because these enable a free, smooth and timely arrival of people and goods. Chapter 6 argues that energy as a main factor for the economy requires cooperation. Practically, the build-up of electricity grid and gas-pipelines should be prepared. It is also mentioned that the considerate use of environmental resources and the utilisation of renewable energy are necessary. In Chapter 7, the importance of cooperation in financial services and finance is highlighted. In this context, the lessons of the 1997 financial crisis and the consensus-based cooperation between ASEAN, Japan, China, and South Korea are explained. However, it is stressed that the liberalisation of financial transactions requires member states to conform to the market. Chapter 8 argues that ASEAN must cooperate in the protection of intellectual property rights (IPRs). As the protection of IPRs is central to competitiveness, required by the international community and beneficial for ASEAN, the community should consider creating a unified patenting system. Furthermore, creating an intellectual property system would promote trust not only internationally but also locally within ASEAN resulting in companies that will surely encourage exports from and investments to ASEAN.

The third part consists of five chapters, namely “Closing the gap” (Chapter 9), “East Asian FTAs and ASEAN” (Chapter 10), “Concerning deepening ASEAN regional integration beyond 2015” (Chapter 11), “Japanese companies and AEC” (Chapter 12), and “AEC and Japan-ASEAN cooperation” (Chapter 13). Chapter 9 explores the narrowing gap between Cambodia, Laos, Myanmar, and Viet Nam or collectively known as CLMV and the pioneer countries. In the last years, the improvement of infrastructure, natural resource use, and specialisation in the garments industry have led to a wave of investments into Cambodia, Laos, and Myanmar (or the CLM

countries), which has caused economic growth. From now on, due to ASEAN Economic Community (AEC) related infrastructure projects such as the economic corridor and the Cross-Border Transport Agreement (CBTA), it is expected that CLM countries will become increasingly attractive for manufacturing industries. However, this makes it necessary to invest in human resource development. Thus, the link between attracting investments and economic competitiveness is underlined. Chapter 10 discusses the five free trade areas (FTAs) that encompass East Asia, Australia, New Zealand, and India as well as the issues related to the Trans-Pacific Partnership (TPP) headed by the United States. While TPP has the potential to speed up AEC integration, it is also possible that it will have the opposite effect. In any case, ASEAN is regarded as the core of East-Asia's integration. In Chapter 11, the ASEAN development beyond 2015 is discussed with respect to the question of whether ASEAN is going to become a customs union or an Asian copy of the European Union (EU). Chapter 12 discusses whether the already strong relationship between Japanese firms and ASEAN is going to become even deeper due to AEC. It is worth mentioning that with Japanese companies having a strong business presence in the region, these have forwarded requests to ASEAN regarding simplifying customs procedures and ROOs, standardisation of safety regulation, cooperation in infrastructure development, and the necessity to become an ASEAN partner. Chapter 13 explores the issue on whether Japan and ASEAN can go beyond the current strong economic relationship and build a reciprocal relation that is based on shared values such as the rule of law.

## **2. Historic Development towards Economic Integration of ASEAN**

In 1998, Shimizu analysed the process of regional integration in Asia and related issues in *The Political Economy of ASEAN Regional Economic Cooperation*. Chapter 5 discussed the so-called brand-to-brand complementation (BBC) scheme for the automotive industry in detail. The scheme is a general foreign investment-based, export-oriented industrialisation strategy, which has caused the development of the ASEAN automotive market as well as the creation of supply chains. Subsequently, Ishikawa and Shimizu published the *ASEAN Economic Community* under

JETRO in 2009. This book discusses the relation between AEC and the ASEAN Charta, and the AEC basic schedule and tasks as well as the effects on every member state's key industry and Japan's cooperation under the scheme. Furthermore, Shimizu published *AEC and Japan* shortly after and explored similar questions. It is possible to state that each work analyses the contemporary state and problems of ASEAN's development. Through these three volumes, one can trace ASEAN's progress up to the current point and, to some extent, foresee the direction of its development. While the question of ASEAN being the core of East Asia's economic integration is widely discussed, it appears necessary to further observe the development in order to understand the process. The achievements have been credited but the problematic points must also be named, which according to Chapter 11 in *AEC and Japan* are:

1. The ability to further deepen integration beyond AEC 2015 as described by the ASEAN Blueprint. If this would be the case, what does the author think as necessary solutions for such a strangling of the automobile and components industries?
2. Concerning AEC 2015, the CLMV countries are delaying the implementation of tariff elimination. What kind of change in the CLMV countries is expected? Moreover, what kind of influence can older member states have over CLMV countries?
3. Negotiations on TPP are progressing at present and ASEAN member states Singapore, Malaysia and Viet Nam are involved. Regarding the period beyond AEC 2015, what kind of relations will TPP negotiations bring to ASEAN? Furthermore, what kind of influence would joining TPP have on Japan?
4. Regarding East Asia (China, Japan, South Korea), what lessons must be drawn if AEC and TPP are intertwined?

### **3. Remaining Issues for the Economic Integration of ASEAN**

Based on the preceding section, Kobayashi developed the following questions. The responses and clarifications were provided by Shimizu.

### ***Issue 1***

Regarding the development of the ASEAN Economic Community beyond 2015, Chapter 11 argues that it depends on the implementation of the ASEAN Blueprint. In case that this process impacts on the automobile and auto parts industries, likely problems are taken into account and possible solutions are considered. Some problems include the practical consequences of the unrestricted intra-regional trade of completely built units (CBUs) and vehicle components as well as free movement of capital.

### ***Issue 2***

Under AEC 2015, tariff reduction in all CLMV countries will be delayed until 2018. During this period, which changes must be implemented in these countries? Furthermore, what influence can the older member countries have over them in this process?

### ***Issue 3***

Negotiations on TPP are progressing at present and ASEAN member states Singapore, Malaysia and Viet Nam are involved. Regarding the period beyond AEC 2015, what relation will the TPP negotiations bring to ASEAN? Furthermore, what kind of influence would joining TPP have on Japan?

### ***Issue 4***

Regarding East Asian nations (China, Japan, and South Korea), what insights can be drawn from the interwoven nature of AEC 2015 and TPP?

### ***Response 1***

Due to the forthcoming regulations developed as the four pillars of AEC 2015, the following will be liberalised:

1. Trade in goods (as tariff is reduced to zero)
2. Service trade
3. Capital and investment conditions

#### 4. Movement of individuals.

It appears possible that further liberalisation can be achieved. In one such step, the ASEAN 6 countries (Thailand, Indonesia, Malaysia, the Philippines, Singapore, and Brunei) have eliminated tariffs, with a few exceptions only. From 2015, CLMV countries will – again, with some restricted items – reduce their tariffs to zero, which is an anticipated huge change. Thus, it is expected that CLMV countries will have eliminated all tariffs by 2018. At present the ASEAN 6 still apply a 5 percent tariff to the goods mentioned above and 98 percent of all goods are traded without any tariff. While it is possible to state that AEC's core is AFTA, which currently still allows a 5 percent tariff rate (however, it is aiming for reduction to zero for intra-regional transport), it is also clear that ASEAN 10 will be a further step towards a regional free trade system. It is possible that AEC 2015 will become the starting point of further (outward) tariff reduction.

Regarding the liberalisation of services, capital, and movement of individuals, it appears highly likely that these goals are not going to be fully implemented by 2015. Hence, while the liberalisation of trade in goods is going to be implemented by 2015 on one hand, the liberalisation of services, capital, and skilled labor on the other hand is most likely going to be delayed. There are those who say that AEC 2015 is only a tariff elimination program, however, this is not entirely correct. Let us consider the long-term perspective: While the initial economic cooperation – specifically the ASEAN Industrial Program (AIP) and ASEAN Industrial Complementation (AIC) schemes of 1976 – failed, the second half of the 1980s saw the implementation of a common market strategy commence. Subsequently, Japan's Mitsubishi Motors applied for the BBC scheme and in 1992, AFTA was created. The implementation of AFTA marked the beginning of numerous tariff reductions and, at that time, complete tariff elimination was regarded as impossible by member countries. However, some 20 years later, the impact of globalisation, the Asian financial crisis as well as the rise of China have led ASEAN to create a remarkable free trade system. (Additionally, it can be stated that the BBC scheme and its successor the ASEAN Industrial Cooperation (AICO) have played leading roles in reducing tariffs on intra-regional auto parts and vehicles trade.)

The first half of 2000s witnessed an import and export crisis and simultaneous liberalisation in parts trade in the automotive industry. Toyota's IMV project is a representative example of an intra-regional system of parts complementation using Thailand and Indonesia as assembly centers. While this is the general structure of complementary production in ASEAN, it depends on the strategy of individual OEMs if this is also their future model. Of course, it is possible that liberalisation may encourage OEMs to continue final vehicle assembly in Thailand or Indonesia. However, wage increase in Thailand and other countries currently promotes the relocation of certain production to Laos and Cambodia (refer to question 2). In the end, a mixed system of concentrated assembly and simultaneous production in peripheral regions can be expected. Each company has to ask and answer the question if the current system can be continued or if relocating production to newer member countries is necessary.

Moreover, there is the problem of non-tariff barriers. Eliminating non-tariff barriers should be the next step. For example, security standards or non-tariff levies are issues that have to be addressed when tariffs are eliminated.

### ***Response 2***

As AEC promotes trade liberalisation, an increase in intra-regional automobile imports and exports may be expected. For example, it is not only possible that CLMV countries will increase their domestic production but that car imports from Thailand, Indonesia, and Malaysia are going to increase as well. Furthermore, under the rules of the World Trade Organization (WTO), it is no longer possible to use taxation (on goods) as a protective measure. On the contrary, CLMV countries must accept tariff-free imports of vehicles produced under the system of shared labor-inputs in the region. Thus, it is necessary to develop the automotive parts industry and to find a specialised task in the production and supply system. As Thailand and the CLMV countries are geographically close, wage increases may encourage the transfer of labor-intensive production steps to Cambodia, Laos, and Myanmar; this is an extension of the regional production network. In other words, CLMV countries have the potential to expand industry by becoming part of the inter-process production network of the automotive industry.

### *Response 3*

It is likely that TPP negotiations are going to have an impact on ASEAN's economic integration and it is important to consider the possible impacting issues of TPP on ASEAN itself. At the moment, 12 countries are involved in TPP negotiations. In the beginning, four APEC member countries (Singapore, Brunei, Chile, and New Zealand) have concretely agreed to engage in trade liberalisation. Subsequently, the United States (US) joined the negotiations and quickly gained strong influence. TPP is a combination of the world's leading country in gross domestic product (GDP) terms and rather small economies. However, when Japan joined the negotiations in 2011, this even increased any possible impact on ASEAN and it becomes necessary to consider the possibility of having Japan and USA – the No. 1 and No. 3 countries in GDP terms – together in TPP.

Parallel to the TPP, the regional East Asian FTA called Regional Comprehensive Economic Partnership (RCEP) is also progressing. ASEAN 6 member states decided in 2003 that tariffs in AFTA should be reduced to 5 percent and to zero by 2010. Against this background, ASEAN could create a system of FTAs with Japan, South Korea, China, India, Australia, and New Zealand, called ASEAN+1, which are basically extensions of the ASEAN internal system. Furthermore, as there is no FTA between the leading countries in East Asia (there are no Japan-China, Japan-South Korea, or South Korea-China connections), the chances for ASEAN are extremely favourable. How is the ASEAN initiative opposed to China's proposal called the East Asia FTA (EAFTA) and Japan's Comprehensive Economic Partnership Agreement (CEPA)?

TPP negotiations take place under such conditions. While it appears currently possible that Japan is going to join TPP, China has proposed EAFTA (ASEAN+3) in August 2011 while CEPA (ASEAN+6) represents another possible compromise. These attempts to promote regional FTAs under Chinese and Japanese leadership, which will undermine ASEAN centrality, have left ASEAN in a tense condition.

While ASEAN has created a system of ASEAN+1 FTAs, Japan and China's individual initiatives would leave this currently best solution as second-best.

Furthermore, while RCEP has the potential to leave ASEAN sidelined, the success of AEC 2015 is more important to address and would probably eliminate the current sense of crisis. Thus, RCEP will speed up the implementation of AEC.

Moreover, ASEAN economic integration is not restricted to ASEAN but involves the attraction of foreign investment and exports, and engaging the world outside the region is necessary. Furthermore, as ASEAN practices a common foreign investment-based and export-oriented strategy since 1987, outward relations, economic integration and FTA are a well-known demand. Despite this background, at the moment it appears as if ASEAN may push back further economic integration. ASEAN must defend itself by promoting RCEP and pushing forward its own economic integration. Thus, it can be concluded that while TPP is being negotiated, there is pressure to promote RCEP and to successfully implement AEC.

#### ***Response 4***

This question is related to RCEP. While it is presently negotiated, it looks like RCEP's system is fundamentally unable to meet the expectations that AEC 2015 and ASEAN+1 FTAs have created. However, AEC 2015 should be the decisive factor for the evolution of RCEP. Naturally, RCEP's legal clauses can in turn also impact the development of AEC 2015, especially regarding the IPR issues. However, it will be difficult to make RCEP more liberal than AEC with regard to services and investment, which makes it even more important for ASEAN to widen from the core to East Asia.

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