

- *Localisation processes – Thailand – Automobile industry – Components – Local content requirement*

Markus Hassler

Localisation Processes within Global Production Networks: Automobile Component Sourcing in Thailand

*Lokalisierungsprozesse innerhalb globaler Produktionsnetzwerke:
Komponentenbeschaffung in der thailändischen Automobilindustrie*

The political framework in Thailand regulating market access for global automobile firms aimed in particular to create and develop an industrial base in terms of component manufacturing and automobile assembly. The national regulatory framework included import substituting measures, such as a local content requirement (LCR), to force global automobile firms to use locally manufactured components for the assembly of imported completely knocked-down vehicles to benefit from much lower import tariffs as would be the case for the import of fully built-up vehicles. Therefore, with the increasing domestic demand for automobiles, this regulation also had the desired multiplier effects for Thailand's industrialisation and national economic development. This paper aims to show how a changing political economy affects the localisation processes of automobile firms in a developing country context.

1. Introduction

Many developing country governments have implemented strong regulatory measures towards the automobile sector as a step towards industrialisation and economic development (*Doner 1991, Barnes and Kaplinsky 2000, Humphrey et al. 2000, Humphrey 2003, Barnes et al. 2004, Sturgeon and van Biesebroeck 2010*). The potential multiplier effects for the entire national economy based on automobile assembly and production motivated governments

to implement import substitution policies. Therefore, these policies were usually not only related to the import of completely knocked-down (CKD) vehicles for local assembly, but also to the sourcing of locally manufactured components to receive favourable import tariffs. This aimed to generate employment, value and economic development in specific supplying industries. In fact, the potential economic and industrialisation effects of automobile production even motivated some developing countries in Southeast Asia, such as Malaysia (*Bello*

1998) and Indonesia (*Aswicahyono* 2000), to develop their own national car, based on technology and knowledge transfers from established developed country automobile producers. Although Thailand never aimed to develop their own national car, the development and growth of the Thai automobile industry has been influenced by a number of factors, which are primarily related to domestic economic policies. However, the recent introduction and establishment of the ASEAN Free Trade Area (AFTA) in 2003 now also affects the development of the Thai automobile industry, since it allows macro-regional automobile trade at preferential tariffs with selected member states.

This general framework has a distinct influence on the way firm-specific production networks of global automobile firms touch down and localise in the Thai economy, which developed to the 12th largest global vehicle manufacturer nation in 2010 (OICA 2011). In general, global production networks (GPNs) are defined as “the globally organised nexus of interconnected functions and operations by firms and non-firm institutions through which goods and services are produced and distributed” (*Coe et al.* 2004: 471). Therefore, the GPN approach provides a framework for the analysis of the organisation of state-firm relationships and how this organisation influences the localisation process of component sourcing in the automobile industry. The conceptual dimensions of value, power and embeddedness (*Henderson et al.* 2002, *Coe et al.* 2004) are used to analyse the way global automobile firms operate within and embed into the Thai economy. They have the analytical potential to understand the value creation processes in the context of varying power structures and dynamics of state-firm and firm-firm relationships.

Within this analytical context, this paper aims to establish the outcome of a changing political economy on firm-based sourcing decisions and strategies. It provides an empirical case study on

firm-specific localisation behaviours and is based on empirical data collected during 44 interviews with firm-based and government representatives in Thailand. The paper is structured into three parts. The first part will conceptualise component sourcing within global automobile production networks. The second and most substantial part will provide an overview on the changes of the political economy regulating the Thai automobile industry. In addition, this part will analyse firm-specific qualitative data on sourcing decisions in relation to the assembled product type as well as to specific components. The third part draws a conclusion.

2. Conceptualising Component Sourcing in Global Automobile Production Networks

Networks are a generic form of economic organisation. As *Coe et al.* (2008: 272) argue, “they reflect the fundamental structural and relational nature of how production, distribution and goods and services are – indeed always have been – organised” (original emphasis). GPNs are generally formed and shaped through a set of different actors, such as firms and states. These actors are variously powerful and integrated into production networks to different degrees and in different roles. Their interactions form relationships of different levels and degrees of strength and vary over time. Therefore, these networks define dynamic relational economic processes forming and reforming spatial as well as organisational structures (*Dicken et al.* 2001, *Bathelt and Glückler* 2003, *Yeung* 2005). As such economic actors within GPNs act and react to changes within specific market environments. These changes can be increasing or decreasing demands for goods and services but also changes within regulatory frameworks affecting production and trade.

Indeed globalisation tendencies within the automobile industry have been strongly af-

ected by regulatory frameworks at various scales. It is in particular the role of the state which has affected the spatial as well as organisational formations of automotive production networks. This is the case for developed as well for developing economies. As *Dicken* (2011: 342) argues, “[t]hroughout the history of the automobile industry the state has always played a key role”. There are in particular two aspects in which the state has influenced the formation of GPNs within this industrial sector. These are policies aiming at (1) how and under what circumstances firms are allowed to access the domestic market, and (2) how domestic actors in the automobile industry are supported and in turn how foreign firms are discriminated against them (*Dicken* 2011: 342).

These policy sets influence the way the localisation of production occurs at specific places within national territories. Access to the domestic market has been and still is a key theme for the industrialisation policies of many developing countries to generate multiplier effects in correlation to increasing national automobile demand (e.g. *Guiheux* and *Lecler* 2002, *Liu* and *Dicken* 2006, *Liu* and *Yeung* 2008). Tariff and non-tariff barriers, such as varying import duties in relation to the level of assembly of the vehicles, are tools to create a regulatory framework forcing dispersed firm-specific global automobile production networks. The import of vehicles in a knocked-down status demands local assembly, and a local content requirement demands the creation of a network of local or localised transnational suppliers. In consequence, the analysis of sector-specific networks also leads to questions how actors are embedded into networks, territories and societies (*Hess* 2004). The way actors engage and connect at specific spaces is a significant aspect of GPNs. As *Henderson et al.* (2002: 451) argue: “GPNs do not only connect firms functionally and territorially but also they connect aspects of the

social and spatial arrangements in which those firms are embedded and which influence their strategies and the values, priorities and expectations of managers, workers and communities alike. The ways in which the different agents establish and perform their connections to others and the specifics of embedding and disembedding processes are to a certain extent based upon the ‘heritage’ and origin of these agents” (*Henderson et al.* 2002: 451).

Variations in the institutional framework affect firms in their strategic orientation. As such, the varying interpretations of the capitalist system as well as the socio-cultural contexts create frameworks resulting in different approaches to management and internationalisation strategies. This has also been highlighted in the debate on business systems (e.g. *Whitley et al.* 2003, *Whitley* 2000, 2007). In addition to the influence of distinct institutional frameworks, the market and product segments firms operate within also influences how they potentially embed and organise in national territories (e.g. *Hassler* 2009). These aspects have a distinct influence on the organisation of value creation processes within GPNs.

However, although individual firms implement different strategies to achieve a competitive position within their market and product segments, there are some preconditions which shape the organisational structures within specific industrial sectors. This is also the case in the automobile industry. In particular, the way lead firms organise their product development processes and supplier relationship has similar structures. As such, the development of new vehicles is largely an external process to the lead firms, conducted by module and system suppliers. Automobile firms outline the general design and construction of new vehicle models. These are transferred to their pyramidal tiered supply network where the development and technical innovation processes are conducted (*Sturgeon et al.* 2008). Decentralised, tiered innovation proc-

esses aim, for example, to achieve shorter innovation periods for entire vehicles and to tap into the core competencies of specialised suppliers of systems and modules. Therefore, the value creation within product innovation is primarily an external process to the lead firm and has strong implication on the geographical patterns of supplier locations and the formation of clusters (Sadler 1994, Lecler 2002, Depner and Bathelt 2005, Depner and Dewald 2004, 2005, Pavlinek and Janak 2007). Lead firms within the automobile industry exercise their potential of power to enforce ideas of spatial formations as well as organisational structures for production and trade.

As such, spatial proximity between component suppliers and lead firms are defined through strategic decisions in relation to variable parameters of individual components.

“Production tends to be organised regionally or nationally, with bulky, heavy, and model-specific parts production concentrated close to final assembly plants to assure timely delivery, and lighter, more generic parts produced at distance to take advantage of scale economies and low labour costs” (Sturgeon et al. 2008: 304).

Local sourcing can create some forms of cost incentive, because it is cheaper in terms of import duties and freight costs. However, the potential for the level of cost savings depends largely on the production volume, because of the initial investment costs within the localisation process. In terms of investments, it is not only the demanded finance capital to set up the production facility, but also the investment for tooling and equipment to produce individual components. Even if potential suppliers already operate facilities in spatial proximity to the assembler, it is not necessarily economic to localise the production for certain components. This is strongly influenced by the actual production volume of the individual model and in particular a problem within the localisation process of

component sourcing in fragmented and/or developing markets such as Thailand.

3. Component Sourcing in Thailand

The organisation of component sourcing in Thailand is strongly influenced by the exercise of institutional power. However, the way institutional power has been exercised in Thailand has gone through various changes. While early domestic industrial policies aimed to create an economically viable basis for a profitable and competitive domestic automobile industry, more recently the Thai government aimed to promote a stronger export-orientation of it. Initially, a major impact on the industrial structure of the automobile industry in Thailand had the introduction of a local content requirement (LCR). The Thai government implemented the regulation of a LCR in 1971 to increase the use of locally produced components in automobile assembly (Doner 1991, Cuyvers and Puppavesa 1996, Ministry of Industry 2006). Initially, a share of 25 per cent of the vehicle value needed to be localised to receive a favourable import duty. However, the required local value share increased over the years and varied in relation to different product types. The maximum local content for passenger cars was reached in 1986 at 54 per cent. For pick-up trucks, the maximum was reached in 1994. The LCR for petrol-fuelled pick-up trucks demanded a 60 per cent local content, while the LCR for diesel-fuelled vehicles was even higher at a level of 72 per cent (Terdudomtham 2004: 39).

In addition to this government-defined demand to create a certain value on Thai territory, there was also a list of specific mandatory components for the local assembly of CKD imports. In 1987, for example, it became compulsory to use locally assembled engines in passenger car production (Doner 1991). This legislation was also extended to pick-up trucks in 1989, whereby

vehicles with an engine capacity of up to 2,500 cc had to use locally assembled engines. The compulsory use of locally assembled engines was further extended to smaller pick-up trucks. In 1991, the national government also decided that all pick-up trucks with an engine capacity of more than 1,000 cc had to use locally assembled engines. However, the regulatory framework of LCRs was abolished in 2000. As *Sadoi* (2010: 322) states “Thailand signed the Trade Related Investment Measures of the World Trade Organisation in January 2000 to formalise its liberal framework”. Therefore, it became possible to import 100 per cent of the demanded components for vehicles assembled and sold in Thailand.

However, in 2003, with the creation of the economic integration space of AFTA, a macro-regional LCR was reintroduced. In consequence, this created a dual regulatory framework in relation to the target market of the assembled vehicles in Thailand. For vehicles manufactured and sold in Thailand the geographical origin of the components is irrelevant, although imported components remain subject to the existing import duty. Vehicles manufactured in Thailand for export to other AFTA markets are subject to a macro-regional LCR of 40 per cent to qualify for this economic integration space. Therefore, automobile firms operating in Thailand follow sourcing strategies in relation to the geographical target market of their Thai factory output. In addition, the market volume for individual vehicle types creates a distinct variable for the extent and level of embeddedness into the Thai economy.

However, the share of locally sourced components also largely depends on the actual production volume generated in Thailand and varies in different product segments. Pick-up truck manufacturers are most active in local sourcing activities, since this type of vehicle has the largest market share in Thailand. A favourable excise tax regime created a national market environment enhancing demand. While passenger cars

are taxed at 30 to 50 per cent in relation to the engine size, pick-up trucks are only subject to excise taxes of 3 to 12 per cent in relation to the cabin size (Ministry of Industry 2006). Although there are also other niches in the regulatory framework for pick-up trucks in relation to the engines volumes or the power technology, in 2010 around 50 per cent of all vehicles sold in Thailand were one ton pick-up trucks and fall into these relatively low tax brackets (Thailand Automotive Institute 2011).

The favourable tax regime was the basis for the development of Thailand into the second largest global consumer market for pick-up trucks in absolute terms, after the US. In consequence, most pick-up truck manufacturers even have relocated global production for this product type from Japan to Thailand. Proximity to a key consumer market was the major incentive for the relocation of production. Manufacturers such as Mitsubishi, Isuzu, Toyota and Ford/Mazda followed this strategy; therefore, the production volume is a significant aspect defining their sourcing strategy for components. Larger production volumes justify economically increasing local sourcing activities for components. This also increases the level of embeddedness into the Thai economy of the involved firms. It enables them to localise a large part of the value creation processes. The local content of pick-up truck manufacturers ranges from 60 to 80 per cent.

This relatively high share of value created in Thailand within the pick-up truck segment is largely the result of the fact that there are only few competitors operating within this vehicle segment in Thailand. Each of these manufacturers usually only provides a single basic model to the market. Variations and product diversifications are largely based on different cab and engine sizes as well as minor interior and exterior design features. This also includes strategies of automobile firms to sell the same pick-up truck model under different brand names in

the market. Technical designs are shared, for example, by General Motors and Isuzu as well as by Ford and Mazda. This allows for synergies and economies of scale in component production and subsequent assembly.

Passenger car manufacturers face a very different challenge to localise component sourcing in Thailand, since their strategic market approach is largely defined through economies of scope. The overall smaller market share for this product type in Thailand is divided through a larger number of different models. These market pre-conditions also affect the production organisation within this product segment. Potentials for economies of scale and the localisation of component sourcing are much more limited. However, although it is possible to import entire CKD kits without demands for local sourcing, a number of passenger car manufacturers still embed into the national and macro-regional economy for component sourcing to qualify for exports to other AFTA markets.

However, the localisation of component sourcing is not an instant process and varies between different components. It has been commonly stated during fieldwork that the highest localisation barriers exist for stamped body parts. The major obstacle for the localisation of stamping processes is the capital intensity of the stamping equipment and the demanded tools, such as the stamping dices. These dices have to be made for each individual body part. As a car is composed of many different stamped body parts, it is a major investment to make all individual stamp dices for an entire car. While basically all automobile firms with assembly facilities for CKD vehicles import all of their stamped body parts, automobile firms with larger production volumes, such as the Japanese manufacturers dominating the market, tend to localise a large part of their press shop activities in Thailand. This is in particular the case in pick-up truck operations, but also in-

creasingly for certain passenger car models which are sold in larger volumes. These manufacturers sell sufficient volumes to justify the localisation of the metal stamping processes. In fact, these firms have the strongest involvement in local stamping activities in Thailand. However, even if the stamping processes are localised, it is common to subcontract certain stamping processes to local suppliers. In particular, small- to medium-sized body parts are stamped in external facilities, as a result of the high degree of manual labour and time intensity to handle some of these parts. In contrast, the larger parts are mainly stamped within the facilities of the automobile manufacturers. Since larger parts are usually visible parts of the vehicle body, they demand a high precision in terms of appearance and finish. Therefore, it is common to internalise the production of these parts, in order to have a stronger control on the quality. In addition, the transport of the larger and bulky body parts could create logistical problems. The following interview quote also confirms *Sturgeon et al.*'s (2008) statement cited in the previous section.

“We do 50 per cent of the stamping ourselves, including passenger cars. We just do the stamping for the big parts, but for the medium and small parts we purchase the stamping outside. This is from local suppliers and not from Japan. We do it because it is very difficult to handle. So we just invest in the big parts only. We do the big parts ourselves. The big parts need a lot of precision and also the appearance and finishing is very important for the big body parts. We would like to have more control on the quality. Another issue is the logistical problem. Since they are predominantly bulky parts, the handling is also more difficult” (interview with Toyota Thailand).

Toyota's competitor Nissan also has a relatively high share of a local content for their pick-up trucks. Again, the market dominance of pick-up

trucks allows for economies of scale which are difficult to achieve within the passenger car segment. Hence, the component production for Nissan's passenger cars is also increasingly brought to Thailand and also includes the localisation of the majority of the stamping parts for them. While the larger stamping parts are now locally stamped, the smaller parts are still imported from Japan. As in the case of Toyota, the decision to externalise the production of smaller body parts for Nissan's passenger cars is mainly influenced by the handling and logistics costs. The relatively small volume of production for their passenger cars in Thailand still creates an obstacle to localise all stamping parts. In fact, it is still cheaper to import these parts from Japan and to pay additional import duties rather than to invest into a complete set of stamping tools. In the case of one of their small volume salon models, where the largest share of body parts are still imported, Nissan even considered production locations in China and Taiwan to supply these components to the Thai facility.

"Most parts we buy in Thailand. Over 60 per cent of our parts are localised in Thailand. We do the stamping for the pick-up truck in Thailand. We have an in-house stamping plant. We have a big plant here in Thailand which produces the stamping parts for the pick-up truck. But we also do a large part of the stamping for most of our passenger cars in Thailand. Only the small-volume parts we import. If we sell only one or two hundred units per month it is not feasible to invest into the tooling. The volume of our sedan model Teana is very small. So, most of the stamping parts of the Teana are still imported from Japan. But now we consider to change the source of the stamping parts. It could be either China or Taiwan. Because we produce the Teana also in China and Taiwan. Therefore, we can consider these countries as sources for the parts we need in Thailand. It is the same parts we could import and they could be cheaper" (interview with Nissan Thailand).

This example shows that automobile operations in Thailand have potentials to be embedded into extended supply networks with linkages to company-internal or -external facilities in other emerging markets. Concentrated component production in emerging markets allows for access to relatively low labour costs, at least in comparison to Japan, and to generate some economies of scale. However, the main tendency within the Thai automobile production networks is to create suppliers relations to firms based in Thailand. Ford and Mazda have invested into their own joint production facility, Auto Alliance Thailand (AAT). This facility is located in Rayong, in the Eastern Seaboard Industrial Estate. At AAT, Ford and Mazda manufacture pick-up trucks for Thailand as well as for global markets. They relocated their pick-up truck manufacturing activities from Japan in the mid-1990s. Therefore, they had significant production volumes from the start of their manufacturing activities in Thailand. Within this relocation process they imported existing stamping presses, dices and tools, previously used for the manufacturing of the same models in their Japanese facility. Therefore, the initial investment costs to localise the press shop activities were not as significant as in cases where entire new sets of stamping dices had to be manufactured and purchased. However, Ford also sub-contracts some of their stamping processes for smaller parts to local suppliers.

In addition to the stamping parts, Ford also has an extended sourcing network to suppliers primarily located in close proximity to their production facility in Rayong. These suppliers basically followed the initial investment decision of the lead firm. As Rayong was initially also the investment location of General Motors and BMW, a distinct automobile production cluster of facilities for component production and subsequent automobile assembly emerged. This development was also the result of a favourable investment climate. To encourage the investment of transnational component suppliers, the Thai Board of Investment

(BOI) has set up a favourable investment framework for the Eastern Seaboard Industrial Estate, such as the duty free import of production equipment and tax holidays. As a result, a number of components suppliers also conducted investments in Rayong to follow their lead firms developing a distinct automobile cluster (Lecler 2002, Coe et al. 2004, Techakanont 2011).

In fact, most first-tier suppliers to the automobile firms operating in Thailand are global firms themselves. The investments of General Motors, Ford/ Mazda, BMW and Mitsubishi therefore created some form of pull factor for their established transnational component suppliers. However, the specific decision on the geographic origin of the components – local sourcing or import – is based on strategic options as well as cost advantages.

“On the one hand it is cheaper and logistically easier to have suppliers close to the manufacturing location, but on the other hand you need a certain volume to achieve economies of scale to make it viable. ... I wish there was a magic figure. There is no magic figure. It needs to be looked at on a component by component basis. For example, if I got a good plastic supplier here, the costs of a mould to do an insert on a dash board can be quite low. Although it is probably only a couple of thousand units a year I can afford to do it locally. But actually to do the full instrument panel, is a million dollar plus investment. For us to duplicate what is an existing investment in another country, because we are getting it already from Japan, we need to have a volume of maybe of 25 to 30.000 units” (interview with a representative of Ford Thailand).

As this interview quote indicates, the potential for the localisation of the value creation processes strongly correlates with the investment costs for the production tools. The initial investments into tooling demand a significant produc-

tion volume to secure a return on investment with competitive component prices. Niche market manufacturers, such as BMW in the luxury segment, therefore face significant problems to secure the 40 per cent local content necessary for exports into other AFTA markets.

“There are a number of Thai national suppliers which have an excellent quality. But the problem is, when we approach them and ask them to do our price, they just say your volume is too low. It is not sensible enough to do the tooling for just 3,000 cars. Unlike Toyota, if they approach a supplier and say I wish to manufacture 100,000 cars. The tooling costs are the same if you produce just one or 100,000 cars. But for BMW who only produce 3,000 cars it is not worth. The good suppliers always want to work for the mass car manufacturers and not for the small volume car manufacturers like BMW. We are premium, but we are small in volume. So it does not entirely depend on us if we can increase the local content” (interview with a representative of BMW Thailand).

The passenger car manufacturer Honda, which produces and sells at larger scales in Thailand and Southeast Asia than BMW, could localise a larger share of the demanded components. Again, most firms of Honda’s local supplier network are established global Honda suppliers. They were invited to join them in Thailand.

“The Thai suppliers are trusted and established suppliers of Honda in Japan. They invested into production facilities in Thailand and just manufacture the parts in Thailand to Honda Standards. We try to encourage those trusted suppliers to set up operations in Thailand and to manufacture for us. Everything is basically the same as in Japan, the quality and the technical standards, because we have long-established relationships with those suppliers. That’s why we have a lot of Japanese joint-venture suppliers here in Thailand. The major suppliers are basically the same

in Thailand, in Malaysia and the Philippines and in Japan, of course. We have some major suppliers which we have all over the world, wherever we might go” (interview with Honda Thailand).

This integration of global suppliers into the Thai production networks also had impacts on Thai supplier firms. They are increasingly marginalised (*Wad* 2009: 174). Although a number of Thai-owned suppliers were able to act as first-tier suppliers prior to the year 2000, most of the local suppliers were downgraded to the second or third tier, since first-tier supplier relations were taken over by TNCs operating in Thailand. As *Terdudomtham* (2004: 36) states, although there are “some medium-scale Thai firms that have successfully penetrated export markets by developing their technological and marketing capability ... most small- to medium-sized Thai parts suppliers have been marginalised producing only the low value added and labour-intensive parts”. The majority of these first-tier suppliers are of Japanese origin since Japanese automobile firms are responsible for around 90 per cent of vehicle production in Thailand (*Sadoi* 2010: 322). However, Honda also uses local suppliers mainly for parts which do not require a high level of technical content. These suppliers are called ‘minor suppliers’ by Honda and are in charge to satisfy the demand for items such as screws, bolts and certain wires. Even though these items have a low technical content, these suppliers also have to fulfil strict Honda-specific quality requirements for these parts and are regularly audited.

However, the fact that a large number of Japanese suppliers started operation in Thailand to serve their key customers is also the result of close buyer-supplier relationships within this industrial sector. Following the argument of *Sturgeon* et al. (2008: 303), that “suppliers have taken on a larger role in design”, the selection of the suppliers not only depends on the quality of production capabilities but also depends on the quality of their R&D capabilities.

“Within the automotive business, we have increasingly shorter life cycles. We don’t have the five or six year preparation for an individual model anymore. At the moment, we have only two years or 30 months, depending on the model. If there is only such a short time to design a new car, then the suppliers have to be involved within the development process. It is a dual development process where the suppliers have to work with the manufacturer. They [the suppliers] have R&D facilities themselves. We work together how to make the part, how to improve the quality and how to adjust the part” (interview with Toyota Thailand).

Although Toyota and their suppliers design and develop the vehicles which they manufacture and sell in Thailand at facilities located in Japan, this general structure of buyer-supplier relationships is also transferred to production sites in emerging markets. Therefore, component suppliers also set up operations in major production markets for Toyota, to provide short supply chains and to bypass trade restrictions, such as import duties and required local contents.

4. Conclusions

Since the national Thai government abolished the LCR, automobile firms are now able to reduce their territorial embeddedness within Thailand. Automobile manufacturers are now able to import 100 per cent of the required components to assemble their vehicles in Thailand. However, as this paper shows, the opposite is largely the case. As fieldwork evidence has shown, automobile firms operating in this country source a large share of the required components locally or in other AFTA countries. In fact, many firms even have extended their sourcing networks on a national and macro-regional level. Extended local component sourcing also increasingly includes technically more complex components. The possibility to source increasingly technically more complex components within Thailand and the

macro-region is in particular the result of the past and current regulatory framework which the Thai automobile industry is embedded into.

The institutional framework with an import-substituting orientation helped to develop a national automobile supply industry. In the past, automobile firms were forced by a national LCR to source certain components locally to receive preferential import tariffs for their imported knocked-down vehicles. Therefore, in direct correlation to the increasing market demand in Thailand, the volume of locally manufactured components also increased. This fostered the establishment of a local component industry. These suppliers were initially mainly locally owned. With the investment into own production facilities and the extension of the production volume, most first-tier suppliers are now joint-ventures or fully-owned subsidiaries of transnational component manufacturers. They followed their lead firms as they do in other parts of the world as well.

However, the degree of localised component sourcing, and therefore the level of embeddedness, is largely influenced by the product type manufactured by the automobile firms. In this context, Japanese pick-up truck manufacturers are able to generate a much higher degree of localisation than passenger car manufacturers. It is largely the result of potentials for economies of scale, necessary to distribute the fixed costs for tooling and to make local supply networks an economical option. Pick-up truck manufacturers are able to generate much higher production numbers than those operating in the much more fragmented passenger car market. As a result of the relocation of production activities for this product type, Thailand became a centralised production location for global markets. Therefore, the initial policy orientation of lower excise taxes in addition to high import duties for fully built-up vehicles fostered the development of a full-scale automobile indus-

try, based on strong national demand. Forced embeddedness transformed into voluntary embeddedness of a relatively high degree as a result of macroeconomic development.

6. References

- Aswicahyono, H.* 2000: How Not to Industrialise? Indonesia's Automotive Industry. – Bulletin of Indonesian Economic Studies **36** (1): 209-241
- Barnes, J. and R. Kaplinsky* 2000: Globalization and the Death of the Local Firm? The Automobile Components Sector in South Africa. – Regional Studies **34** (9): 797-812
- Barnes, J. R. Kaplinsky and M. Morris* 2004: Industrial Policy in Developing Economies: Developing Dynamic Comparative Advantage in the South African Automobile Sector. – Competition and Change **8** (2): 153-172
- Bathelt, H. and J. Glückler* 2003: Toward a Relational Economic Geography. – Journal of Economic Geography **3** (2): 117-144
- Bello, W.* 1998: East Asia: On the Eve of the Great Transformation? – Review of International Political Economy **5** (3): 424-444
- Coe, N.M., M. Hess, H.W.-C. Yeung, P. Dicken and J. Henderson* 2004: 'Globalizing' Regional Development: A Global Production Networks Perspective. – Transactions of the Institute of British Geographers **29** (4): 468-484
- Coe, N.M., P. Dicken and M. Hess* 2008: Global Production Networks: Realizing the Potential. – Journal of Economic Geography **8** (3): 271-295
- Cuyvers, L. and W. Puppavesa* 1996: From ASEAN to AFTA. Centre for ASEAN Studies (CAS) Discussion Paper **6**. – Antwerp. – Online available at: <http://webh01.ua.ac.be/cas/PDF/CAS06.pdf>, 02/02/2012
- Depner, H. and H. Bathelt* 2005: Exporting the German Model: The Establishment of a New Automobile Industry Cluster in Shanghai. – Economic Geography **81** (1): 53-81
- Depner, H. und U. Dewald* 2004: Globale Netzwerke und lokale Partner: Deutsche Automobilzulieferer und der Wachstumsmarkt China. – SPACES 2004-02. – Fachbereich Geographie, Philipps-

- Universität Marburg. – Online available at: <http://www.spaces-online.uni-hd.de/include/SPACES%202004-02%20Depner-Dewald.pdf>, 02/02/2012
- Depner, H.* und *U. Dewald* 2005: Deutsche Automobilzulieferer in China. – Zeitschrift für Wirtschaftsgeographie **49** (1): 23-41
- Dicken, P.* 2011: Global Shift. Mapping the Changing Contours of the World Economy. – London
- Dicken, P.* and *A. Malmberg* 2001: Firms in Territories: A Relational Perspective. – Economic Geography **77** (4): 345-363
- Dicken, P., P.F. Kelly, K. Olds* and *H.W.-C. Yeung* 2001: Chains and Networks, Territories and Scales: Towards a Relational Framework for Analysing the Global Economy. – Global Networks **1** (2): 89-112
- Doner, R.F.* 1991: Driving a Bargain: Automobile Industrialization and Japanese Firms in Southeast Asia. – Berkeley et al.
- Guiheux, G.* and *Y. Lecler* 2000: Japanese Car Manufacturers and Component Makers in the ASEAN Region: A Case of Expatriation under Duress – or a Strategy of Regionally Integrated Production? – In: *Humphrey, J., Y. Lecler* and *M.S. Salerno* (eds.): Global Strategies and Local Realities. The Auto Industry in Emerging Markets. – London, New York: 207-233
- Hassler, M.* 2009: Variations of Value Creation: Automobile Manufacturing in Thailand. – Environment and Planning A **41** (9): 2232-2247
- Henderson, J., P. Dicken, M. Hess, N. Coe* and *H.W.-C. Yeung* 2002: Global Production Networks and the Analysis of Economic Development. – Review of International Political Economy **9** (3): 436-464
- Hess, M.* 2004: 'Spatial' Relationships? Towards a Reconceptualization of Embeddedness. – Progress in Human Geography **28** (2): 165-186
- Humphrey, J.* 2003: Globalization and Supply Chain Networks: The Auto Industry in Brazil and India. – Global Networks **3** (2): 121-141
- Humphrey, J., Y. Lecler* and *M.S. Salerno* 2000: Introduction. – In: *Humphrey, J., Y. Lecler* and *M.S. Salerno* (eds.): Global Strategies and Local Realities. The Auto Industry in Emerging Markets. – London, New York: 1-15
- Lecler, Y.* 2002: The Cluster Role in the Development of the Thai Car Industry. – International Journal of Urban and Regional Research **26** (4): 799-814
- Liu W.* and *H.W.-C. Yeung* 2008: China's Dynamic Industrial Sector: The Automobile Industry. – Eurasian Geography and Economics **49** (5): 523-548
- Liu, W.* and *P. Dicken* 2006: Transnational Corporations and 'Obligated Embeddedness': Foreign Direct Investment in China's Automobile Industry. – Environment and Planning A **38** (7): 1229-1247
- Ministry of Industry 2006: Automotive Industry in Thailand. – Sectoral Industrial Policy Bureau I. Office of Industrial Economics. – Bangkok
- OICA 2011: 2010 Production Statistics. – Online available at: <http://oica.net/category/production-statistics/>, 02/02/2012
- Pavlínek, P.* and *L. Janák* 2007: Regional Restructuring of the Škoda Auto Supplier Network in the Czech Republic. – European Urban and Regional Studies **14** (2): 133-155
- Sadler, D.* 1994: The Geographies of Just-In-Time: Japanese Investment and the Automotive Components Industry in Western Europe. – Economic Geography **70** (1): 41-59
- Sadoi, Y.* 2010: Technological Capability of Automobile Parts Suppliers in Thailand. – Journal of the Asia Pacific Economy **15** (3): 320-334
- Sturgeon, T.J. (†)* and *J. van Biesebroeck* 2010: Effects of the Crisis on the Automotive Industry in Developing Countries. A Global Value Chain Perspective. – Policy Research Working Paper **5330**. – Online available at: http://unstats.un.org/unsd/trade/s_geneva2011/refdocs/RDs/Automotive%20Industry%20and%20Crisis%20%28Sturgeon%20-%20Jun%202010%29.pdf, 02/02/2012
- Sturgeon, T.J. (†), J. van Biesebroeck* and *G. Gereffi* 2008: Value Chains, Networks and Clusters: Reframing the Global Automotive Industry. – Journal of Economic Geography **8** (3): 297-321
- Sturgeon, T.* and *R. Florida* 2000: Globalization and Jobs in the Automotive Industry. – MIT IPC Globalization Working Paper 01-003. – Cambridge
- Techakanont, K.* 2011: Thailand Automotive Parts Industries. – In: *Kagami, M.* (ed.): Intermediate Goods Trade in East Asia: Economic Deepening Through FTAs/EPAs. – BRC Research Report **5** (6): 193-229
- Terdudomtham, T.* 2004: Thai Policies for the Automobile Sector: Focus on Technology Transfer. – In: *Busser, R.* and *Y. Sadoi* (eds.): Production Networks

in Asia and Europe: Skill Formation and Technology Transfer in the Automobile Industry. – London: 30-50

Thailand Automotive Institute 2011: Vehicle Domestic Wholesale (1990-2011 & 2006-2011). – Online available at: http://www.thaiauto.or.th/Records/eng/vehicledomesticwholesale_eng.asp, 02/02/2012

van Corswant, F. and P. Frederiksson 2002: Sourcing Trends in the Car Industry: A Survey of Car Manufacturers' and Suppliers' Strategies and Relations. – *International Journal of Operations & Production Management* **22** (7): 741-758

Wad, P. 2009: The Automobile Industry of Southeast Asia: Malaysia and Thailand. – *Journal of the Asia Pacific Economy* **14** (2): 172-193

Whitley, R. 2000: The Institutional Structuring of Innovation Strategies: Business Systems, Firm Types and Patterns of Technical Change in Different Market Economies. – *Organization Studies* **21** (5): 855-886

Whitley, R. 2007: Business Systems and Organizational Capabilities: The Institutional Structuring of Competitive Competences. – Oxford

Whitley, R., G. Morgan, W. Kelly and D. Sharpe 2003: The Changing Japanese Multinational: Application, Adaption and Learning in Car Manufacturing and Financial Services. – *Journal of Management Studies* **40** (3): 643-672

Yeung, H.W.-C. 2005: Rethinking Relational Economic Geography. – *Transactions of the Institute of British Geographers* **30** (1): 37-51

Summary: Localisation Processes within Global Production Networks: Automobile Component Sourcing in Thailand

Although Thailand never aimed to develop a national car, unlike countries such as Malaysia or Indonesia, the development and growth of its national automobile industry is strongly influenced by a number of factors which are primarily related to economic policies operating at various scales. These policies include, e.g. national regulations how global automobile manufacturers are allowed to serve the Thai

market or regulations in favour of specific product categories, such as pick-up trucks. In addition, more recently macro-regional economic policies at AFTA level also influence the organisation of automobile production at a national level. Within this policy framework, Thailand developed into the 12th largest global vehicle manufacturing nation in 2010 and into the second largest single consumer market in absolute terms for pick-up trucks, after the US. One key incentive to manufacture vehicles in Thailand is the existence of a local content requirement (LCR). Although the national LCR was abolished in 2000, a macro-regional LCR at AFTA level was introduced in 2003 to regulate market access in Thailand and intra-AFTA vehicle trade. This paper examines how global automobile manufacturers are dealing with changing policy frameworks to source their components in the Thai context. The study is embedded within the analytical framework of global production networks (GPN), to analyse state-firm and firm-firm relationships. Based on some arguments of the GPN debate, the paper provides a conceptualisation of component sourcing within automobile production networks. In terms of empirical data, the paper outlines the political economy affecting the strategic behaviour of automobile firms, followed by an analytical account of firm-specific sourcing behaviour in relation to assembled product types as well as specific components. One finding of the paper is the observation that pick-up truck manufacturers have the strongest localisation tendencies for component sourcing, while passenger car manufacturer are far less engaged in local sourcing. This is primarily the result of larger production volumes per model in pick-up truck manufacturing and therefore potentials for economies of scale.

Zusammenfassung: Lokalisierungsprozesse innerhalb globaler Produktionsnetzwerke: Komponentenbeschaffung in der thailändischen Automobilindustrie

Obwohl Thailand nie in den Bau eines nationalen Autos involviert war, im Gegensatz zu Malaysia

oder Indonesien, ist die Entwicklung und das Wachstum seiner nationalen Automobilindustrie stark durch ein politisches Regelwerk beeinflusst, das auf verschiedenen Maßstabsebenen wirkt. Dieses beinhaltet zum Beispiel den nationalen Gesetzesrahmen, der den Marktzugang für globale Automobilhersteller in Thailand definiert, oder produktspezifische Marktregulierungen, wie das vorteilhafte Steuerregime für Pick-up-Trucks. Zudem regulieren supranationale Gesetze auf AFTA-Ebene die Organisation der Automobilproduktion auf nationaler Ebene. Innerhalb dieses Rahmenwerkes hat sich Thailand stark als Produktionsstandort für die globale Automobilindustrie entwickelt. Im Jahr 2010 lag dieses Land an 12. Stelle der führenden Produktionsnationen. Zudem haben die geringeren Steuern für Pick-up-Trucks dazu geführt, dass Thailand nach den USA das Land mit der größten Nachfrage für diesen Fahrzeugtyp ist. Ein wichtiger Anreiz für die Produktion von Fahrzeugen in Thailand ist vor allem die Anforderung, einen lokalen Mindestanteil bei der Wertschöpfung (*Local Content Requirement* – LCR) zu generieren, um in den Genuss von vorteilhaften Einfuhrzöllen zu gelangen. Obwohl das nationale LCR im Jahr 2000 abgeschafft wurde, wurde ein supranationales LCR auf AFTA-Ebene im Jahr 2003 eingeführt, welches die Produktion in Thailand und den Intra-AFTA-Fahrzeughandel beeinflusst. Dieser Artikel untersucht die Zulieferstrukturen von globalen Automobilherstellern in einem sich verändernden regulierenden Rahmenwerk. Die Studie wurde im analytischen Rahmenwerk der globalen Produktionsnetzwerke (GPNs) durchgeführt, um Unternehmensbeziehungen zum Nationalstaat sowie anderen Unternehmen zu analysieren. Auf der Basis einiger Argumente aus der GPN-Debatte wird im Artikel eine Konzeptionalisierung der Komponentenbeschaffung in der Automobilindustrie entwickelt. Dem folgt ein Abriss über die politische Ökonomie, welche das strategische Verhalten von Automobilunternehmen beeinflusst. Zudem werden unternehmensspezifische Beschaffungsstrategien in Bezug auf das produzierte Produkt sowie spezifische Komponenten analysiert. Ein Ergebnis dieser Untersuchung im thailändischen Kontext ist, dass Pick-up-Truck-Hersteller wesentlich stärker in lokale Beschaffungsnetzwerke involviert sind als Pkw-Hersteller. Dies ist vor allem durch die wesentlich größeren

Produktionsvolumina je Fahrzeugmodell bei der Pick-up-Truck-Herstellung bedingt, welche Potentiale für Skalenerträge bergen.

Résumé: Des processus de localisation dans des réseaux de production globaux: l'achat des composants dans l'industrie automobile thaïlandaise

Bien que la Thaïlande n'aie jamais été impliquée dans la construction d'une voiture nationale, au contraire de la Malaisie ou de l'Indonésie, le développement de la branche automobile nationale est fortement réglementé par la politique économique sur différentes échelles. Cette réglementation contient par exemple le cadre national de la loi qui définit l'accès au marché pour les constructeurs automobiles globaux en Thaïlande ou encore les réglementations spécifiques aux produits comme l'avantage fiscal des camions pick-up. En outre, des lois supranationales au niveau de l'AFTA réglementent l'organisation de la production automobile au niveau national. Dans ce cadre de réglementation, la Thaïlande est devenue un site de production important pour l'industrie automobile. En 2010, la Thaïlande était en 12^{ème} position parmi les leaders mondiaux au niveau de la production automobile. Les taxes insignifiantes pour les camions pick-up font que la Thaïlande est le pays ayant la plus grande demande pour ce type d'automobile, après les Etats-Unis. Les *Local Content Requirements* (LCR), qui ont pour but de générer un part minimale locale de la valeur ajoutée, stimule la production d'automobiles en Thaïlande. Bien que le LCR national ait été aboli, un LCR supranational au niveau de l'AFTA était lancé en 2003. Ce LCR supranational a une influence en Thaïlande et dans les autres nations de l'AFTA. Cet article analyse les structures des fournisseurs des producteurs d'automobiles dans des conditions de réglementation qui changent de plus en plus. L'étude a été effectuée dans le cadre analytique des « *Global Production Networks* » (GPN) pour analyser la relation entre l'entreprise et l'état national ou bien d'autres entreprises. Sur la base de quelques éléments du GPN une conceptualisation de l'achat des composants dans l'industrie automobile a été développée. Ensuite, une vue d'ensemble de

l'économie politique et son impact sur le comportement stratégique des entreprises d'automobiles sera effectuée. En outre, des stratégies d'achat au niveau du produit et des composants spécifiques seront analysées. Un des résultats de cette recherche en Thaïlande est que les producteurs des camions pick-up sont plus impliqués dans des réseaux d'achat que ceux des véhicules particuliers. Cela est attribué au volume de production des camions pick-up, ce qui influence l'économie d'échelle.

Prof. Dr. Markus Hassler, Department of Geography, Philipps-Universität Marburg, 35037 Marburg, Germany, hassler@staff.uni-marburg.de

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