

# THAILAND AUTOMOTIVE CLUSTER



Microeconomics of Competitiveness 2007  
Final Paper

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## 1. Introduction

This project examines the competitiveness of the Thai economy in general, and that of its automotive cluster in specific. We begin with a review of Thailand's macroeconomic performance since the Asian Financial Crisis in 1997 to provide a backdrop for the assessment of national competitiveness. While recognizing the attractiveness of Thailand as an investment destination, we identify key bottlenecks in terms of regulatory burden, skill and infrastructural shortages. These same weaknesses are found at the cluster level. However, the automotive cluster has performed robustly in terms of expanding its share of world exports. The study concludes that to sustain growth, Thailand needs to improve its productivity and make a transition from a Factor/Investment-driven phase of growth into an Innovation-driven phase of growth<sup>1</sup>, by addressing its skills, regulatory and infrastructure bottlenecks. Rather than compete on factor cost with its neighbors, it can leverage on its neighborhood by positioning itself as the hub for common clusters in the Greater Mekong Region. The automotive cluster can lead in this transition. By deepening technical and marketing skills and attracting MNCs to relocate their higher end product development and marketing activities to Thailand, this cluster can transit from a “production base” to a “home base” for MNCs to tap the growing demand for automotives in Asia, even while demand for automotives is declining in other parts of the world.

## 2. Country analysis

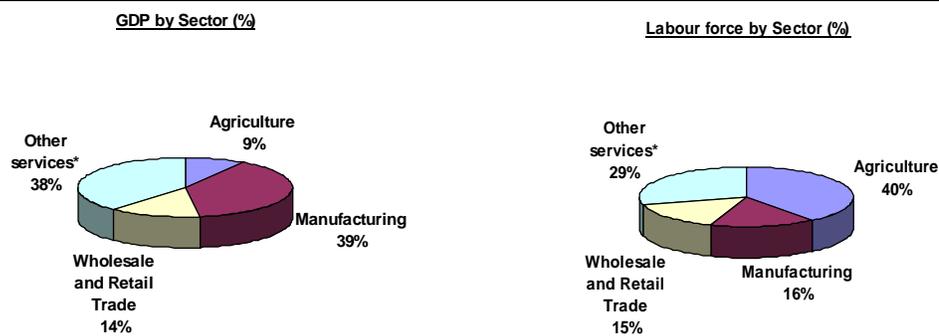
The Kingdom of Thailand is located at the heart of Indochina and Southeast Asia. A developing country of about 66 million people, **Thailand has been successfully transiting from a factor-driven to an investment-driven economy by pursuing greater economic openness**

**and macroeconomic stability.** In 2006, Thailand posted a 5% rate of real GDP growth, while keeping inflation at 4.6% (EIU: 2007a).

**In terms of the structure of the economy, the manufacturing sector in 2004 accounted for the largest share of GDP at 39%, but employed only 16% of the workforce.** In contrast, the agriculture sector was the largest employer with 40% of the labor force, but generated only 9% of GDP (BOT: 2004) (see Figure 1).

**Figure 1: Thailand GDP by sector and labor force by sector**

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Source: Bank of Thailand

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**Today, Thailand is at another crossroad of political transition.** In a September 2006 coup, the military ousted the caretaker government of Thaksin Shinawatra. The military's Council for National Security appointed an interim government and pledged to hold democratic elections by Dec 2007. While Thailand is no stranger to military coups, the short-term economic outlook has been dampened by uncertainty regarding the interim government's economic policy orientation. In December 2006, the Bank of Thailand, with the endorsement of the interim government, imposed capital controls to stem speculative pressures on the Thai Baht. In January 2007, the government also approved plans to amend the Foreign Business Act (FBA) to prevent foreign investors from using nominee shareholders or preferential voting rights to take control of Thai companies in restricted sectors.

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<sup>1</sup> Reference : "Microeconomics of Competitiveness" class notes

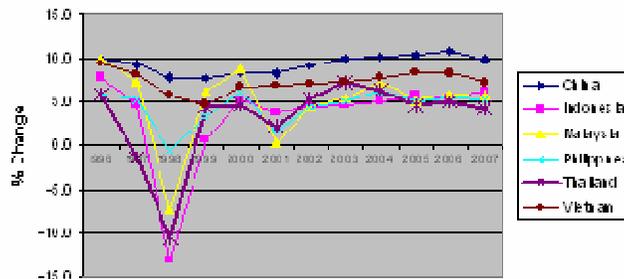
**While these policies shifts have not been as far-reaching as earlier thought, investor confidence has been adversely affected.** Furthermore, the government’s public promotion of a “sufficiency” theory to strengthen the economy’s resilience to external shocks has caused some investors and analysts to misinterpret this policy of economic prudence as one of reversing Thailand’s openness to foreign investment and international trade. Confidence in Thailand, long regarded as one of the most stable investment destinations in South-east Asia, could be further eroded if not enough is done to clarify the government’s economic stance.

## 2.1 Overall economic performance

**The Thai economy has recovered strongly from the 1997 Asian Financial Crisis.** It grew steadily at 6% annually in 2002-04, matching the performance of its regional competitors such as Indonesia, Malaysia, the Philippines and Vietnam (see Figure 2). **This economic growth has benefited the poor considerably.** From 2000 to 2005, Thailand achieved a 67% decrease in the poverty headcount, compared with an average of 42% decline in the East Asia region (World Bank: 2006a). However, economic growth slowed down over the past two years due to depressed domestic demand given high energy prices, rising interest rates and political uncertainty.

**Figure 2: Annual real GDP growth for selected Asian countries**

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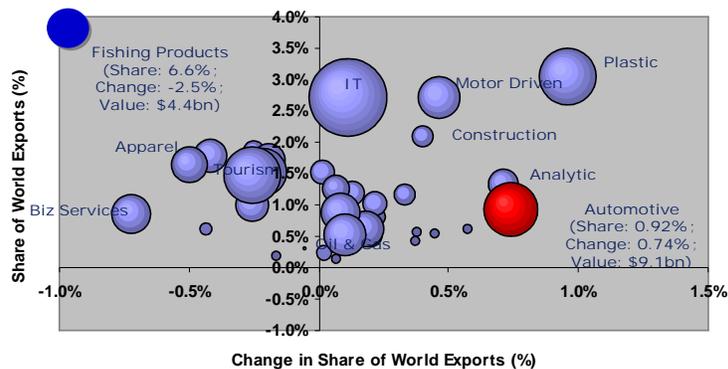
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Source: EIU 2007

Strong export growth, resulting from faster global growth in 2006, helped to mitigate the slow-down. In 2006, the expanded global demand for Thai exports increased export volume and values by 9% and 18% respectively, with the US, Japan and the EU as the main markets (World Bank: 2006a). The rebound of the tourism sector from the 2004 Indian Ocean tsunami drove the growth of exports of services.

**In terms of the share of world exports, the relative performance of Thailand’s export clusters in 1997-2005 demonstrate the structural shift from factor-driven to investment-driven economic development over the past decade (see Figure 3). Over 1997 to 2005, Thailand’s export of fishing products (valued at US\$4.4bn) constituted 6.6% of total world exports, but this sector saw the sharpest fall (-2.5%) in the share of world exports. In contrast, Thailand’s automotive cluster exported about US\$9.1bn over the same period, which more than tripled its share of world exports from 1997.**

**Figure 3: Thai export performance (1997-2005)**



Source: ISC-HBS

The relatively strong export performance of the automotive cluster vindicates the Thai government’s efforts to become a world leader in this particular niche market. In 2003, a vision of becoming the “Detroit of Asia” was articulated on the strength of the cluster’s growing market share. At the same time, Thailand had also selected the tourism, fashion, food and software

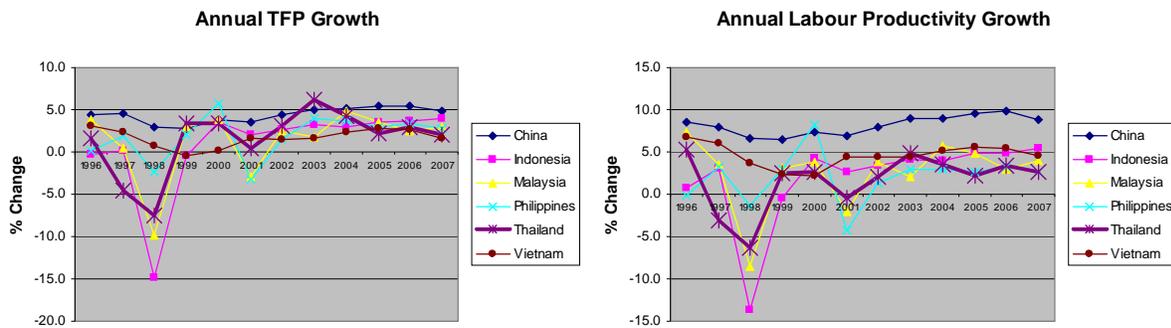
clusters as niche clusters to develop. Porter and Ketels (2003) had indicated then that only the automotive and tourism clusters had significant potential for greater value add and further growth. Unfortunately, the tourism cluster has suffered as a result of the SARS in 2002 and the Indian Ocean tsunami in 2004. The fashion cluster has also lost world export share during the period although a separate study by the Thai government found that the cluster had consolidated its position as the fifth world exporter of synthetic fiber, with a market share of 7% in 2004 and the fastest growth rate amongst the top ten exporters.

**Thailand's strong overall export performance was helped by the government's liberalization efforts since 1997.** Its external trade to GDP ratio has risen from about 80% before the financial crisis to about 140% in 2005, while its import tariff revenue to total import ratio has fallen from about 7% to about 2% in the same period. However, this openness also exposes the Thai economy to external shocks. From 2007, Thailand's main trading partners – the US and Japan – are expected to see a gradual slow-down in economic growth. Tax exemption for Thai exports under the US Generalized System of Preferences expired in 2006 and the Thailand-US free trade agreement talks have also stalled, but Thailand was able to sign a FTA with Japan in early 2007.

**The government has also established a stable macroeconomic environment through internal fiscal prudence and good inflation management.** Since 2002, the Thai government has been running a modest budget surplus of under 2%. Projecting ahead for the fiscal year 2006/7, the interim government is planning to run a small budget deficit of about 1.7% of GDP, largely as the disbursement of the delayed budget to fund the mega-projects planned by the previous administration (EIU: 2007b). In terms of inflation, the forecast is that inflation will actually fall below 4% in 2007.

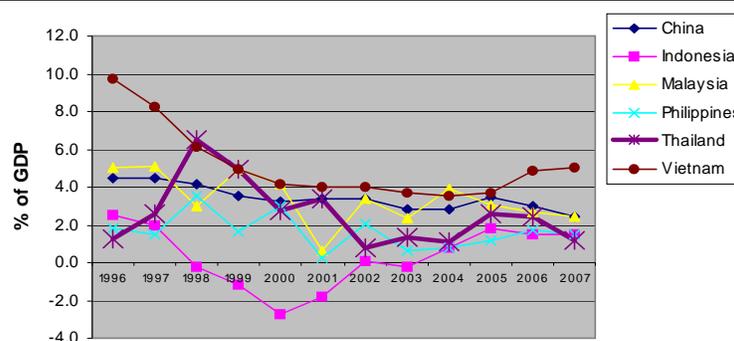
However, there is a need to increase the value-add and productivity of the Thai economy. In terms of Total Factor Productivity (TFP) growth, Thailand lags its regional competitors. Apart from a slight rebound in 2003, TFP growth has been slow, with labor productivity growth exhibiting the same sluggish trend (see Figure 4). Based on a World Bank constructed Knowledge Economy Index, Thailand has maintained its edge over the Philippines, China, Indonesia and Vietnam since 1995, but its lead has been narrowed in the last decade (World Bank: 2006a).

**Figure 4: Productivity levels for selected Asian countries**



Source: EIU 2007

Thailand has also not been as successful in attracting FDI, particularly private investments. In fact, since the Asian Financial Crisis, inward FDI as a ratio of GDP has fallen below 3% since 2001 (see Figure 5), while private investment growth has fallen from a high of 18% in 2004 to about 6% in 2006 in spite of capacity utilization recovering to their pre-crisis levels. In other words, private investors appear to be deferring their investments at a time when capacity utilization would suggest a need to expand production capacity to cope with future demand growth.

**Figure 5: Inward FDI as ratio of GDP**

Source: EIU 2007

This underinvestment is of considerable concern. For Thailand, private investment adds not only to the capacity of the economy, but also to its productivity, primarily through capital replacement, deepening and broadening. Therefore, prolonged underinvestment could lead not only to a capacity bottleneck in the medium term, but also weaken productivity and therefore undermine the ability of the Thai economy to compete regionally and globally. We seek to understand the reasons for the lack luster performance in FDI attraction and private investment by examining Thailand's National Diamond conditions in the next section.

## 2.2 National competitiveness

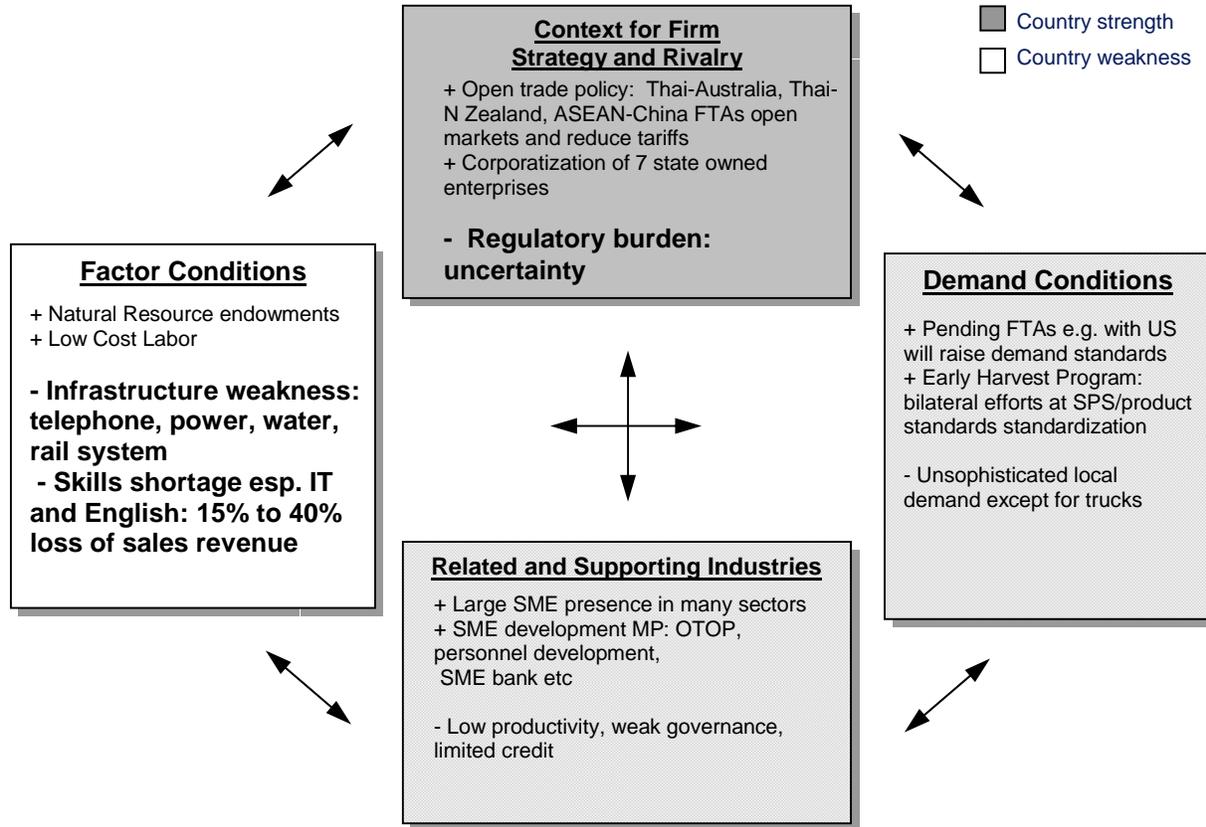
**Thailand does not seem to be making significant gains in its national competitiveness.** The Global Competitiveness Report's Business Competitiveness Index ranks Thailand 37<sup>th</sup> out of 121 countries in 2006, but compared to a consistent set of countries, Thailand's competitive position seems to have stagnated and slightly slipped over the past 5 years. An analysis of the National Diamond conditions highlights 3 binding constraints (**in bold**) which have reduced Thailand's competitiveness and explained the sluggish private capital investment we observed in the past few years (see Figure 6):

**Table I: Thailand’s Global Competitiveness ranking**

	2002	2003	2004	2005	2006
<b>Business Competitiveness Index</b>	33	32	33	33	34
<b>National Business Environment</b>	34	33	33	33	34
<b>Company Operations and Strategy</b>	32	31	33	33	30

Source: Global Competitiveness Report

**Figure 6: Thailand Country Diamond**



Source: Team analysis

## 2.3 Constraints to growth

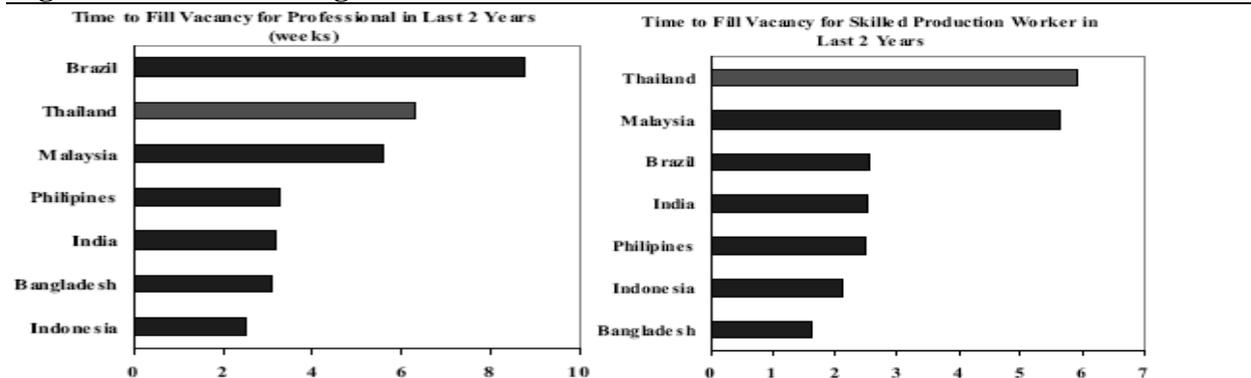
### Skills Shortage

The first constraint is skills shortage. The quality of both the current stock, as well as the flow of human capital into the workforce, needs to be upgraded to sharpen

**Thailand’s competitiveness.** In terms of the existing workforce, there seems to be both a quantitative shortage in terms of output from educational institutions, as well as a mismatch between employers’ demand and supply of skills from educational institutions (World Bank: 2006b). For instance, in Thailand’s Private Investment Climate Survey (PICS) 2005, some 60% of managers and 40% of managers respectively rate the English and IT skills of the local professional workforce as poor, compared to only 12% and 20% in a similar survey in Malaysia.

As a result of the skills shortage, the World Bank’s “Thailand Economic Monitor Nov 2005” report estimates that it takes much longer (see Figure 7) to hire a skilled production worker or a professional compared to other benchmark countries, firms operate with a lower than optimal mix of skilled to unskilled worker and firms pay large premiums to workers with tertiary and technical education. The same report estimates that skills shortage is “costing firms 15% of their sales on average” while firms surveyed by PICS revealed that lack of qualified IT personnel is a key reason for not introducing or expanding ICT use in their business.

**Figure 7: Time for filling vacancies**



Source: Thailand PICS, 2005

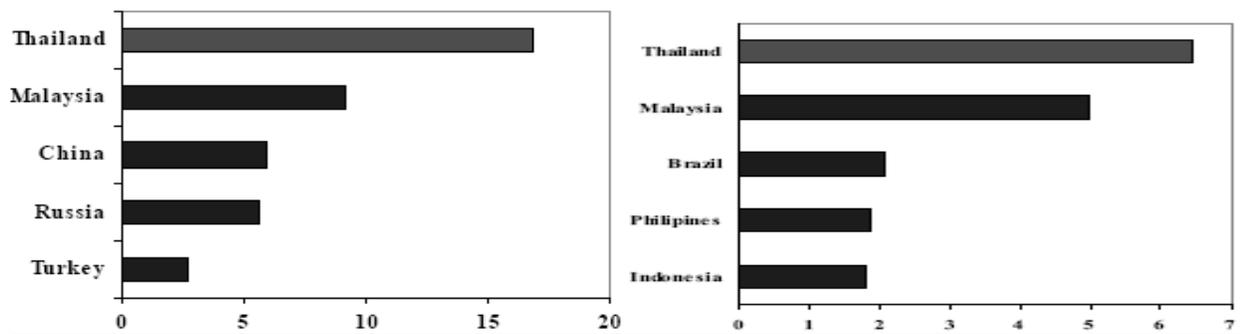
**The outlook is worrisome as both the size of the flow of qualified new workers entering into the workforce and their quality seem lacking.** For instance, the completion rate of secondary education was 4.1% in 2000 compared to 23.6% in Malaysia, and the “Trend in Mathematics and Science Study” (TMSS) revealed that Thai secondary education students score

lower than average in Math and English (World Bank 2006b). In addition, the percentage of students enrolling in vocational training is declining, from 46% in 1994 to 34% in 2001 (World Bank 2006b), and a survey on vocational education in Thailand (Krismant Whattananarong) concluded that the curriculum is “not flexible, obsolete and not fitted to the needs of the employers”.

***Infrastructure Constraints***

**The second constraint is inadequate infrastructure.** Thailand is particularly weak in electricity, water and telecommunications infrastructure. For instance, it takes 30 days and 20 days respectively to obtain electricity and phone connections in Thailand as compared to only 10 days and 15 days respectively in the Philippines (PICS 2005). Firms in Thailand also experience a higher frequency of power outages, phone disruptions, and insufficient water supply (see Figure 8):

**Figure 8: Frequency of Power Outages (2003)      Frequency of Phone Interruption (2003)**



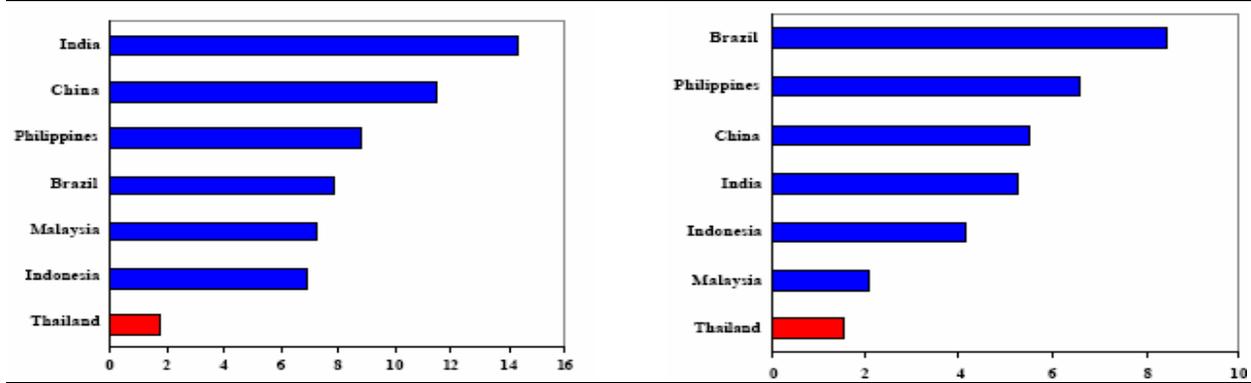
Source: Thailand PICS (2005)

***Regulatory Burden***

**The third constraint is the regulatory environment.** In many ways, Thailand is an attractive location for foreign investment. For instance, it is relatively easier to register a property and start a business in Thailand and firms in Thailand spend fewer days for inspections and meetings with officials or clearing customs for their exports (see Figure 9). Thailand is in fact

one of two Southeast Asian countries, other than Singapore, that was ranked among the top 20 in World Bank’s “Doing Business 2005-2008” survey. **However, it is the uncertainty in obtaining approvals and certificates that is a concern.** For instance, there is a 32% chance that it will take a Thai firm 5 or more weeks and a 5% chance that it would take 8 weeks or more for a Thai firm to obtain an approval or certificate from the local government, rather than the average two week delay (World Bank 2006b).

**Figure 9: Senior Mgt Time Dealing w/Regulations Days to Clear Customs for Exports**



Source: Thailand PICS (2005)

***Government Needs to Act Faster***

The Thai government had put in place a public investment plan to address the key bottlenecks but implementation was slow. In 2005, the Cabinet approved a Bt1.8trillion mega project plan which included planned investments in the upgrading of the mass transit and transportation system, as well as investments in improving country-wide water system and investments in basic education. However, the implementation of the plan and fund disbursement was delayed, in part due to the political uncertainty starting in 2006, and the plans were disrupted with the military coup in Sep 2006. As a result, these key binding constraints in the national diamond conditions are likely to remain.

**Table II: Mega Project Investments (Billion BT)**

	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>Total</b>
<b>Planned</b>	42.7	290.0	506.1	514.5	450.9	<b>1804.2</b>
<b>Estimated Expenditure</b>	35.0	99.0	140.0	165.0	139.0	<b>578.0</b>

Source: Public Expenditure Review Mar 2006

### 3. In-depth analysis of automotive cluster

Thailand's automobile cluster has emerged during the 1990s and grew rapidly after the Asian Financial Crisis to become one of the leading exporting sectors of the country. Between 1997 and 2004, production increased on average by 81.2 percent per year<sup>2</sup>. By 2005, Thailand is the largest production hub of automobiles in ASEAN, exporting about 540,000 cars per year and generating over USD 5 billion of export revenue. Thailand is also currently the second largest exporter of pickup trucks in the world and has more customized model variations than anywhere in the world. Thailand's market has been dominated by multinational companies (MNCs) especially Japanese manufacturers. In 2005, Toyota, the best-selling brand in Thailand, capturing 40.6 percent of domestic market share while Isuzu and Honda had the second (25.4 percent) and third (7.1 percent) highest market shares<sup>3</sup>.

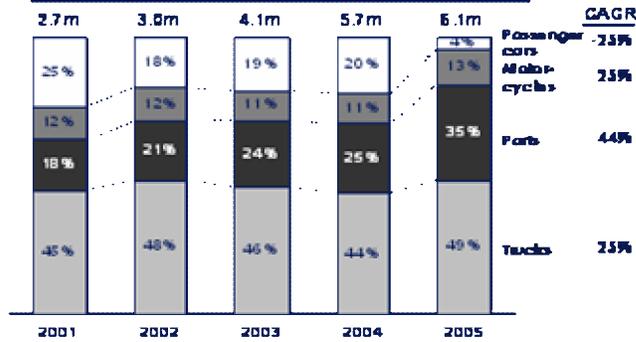
The export performance since the crisis, however, was asymmetric across different products. As Figure 10 indicates, while exports of trucks, parts and motorcycles have compounded average growth rates (CAGR) of 25 percent or more, passenger cars did not perform well. During the same period, the export dropped by 25% and the share of total exports

<sup>2</sup> Thai Automobile Institutes (2006)

<sup>3</sup> These are based on domestic sales in the first half of 2005.

also decreased. Trucks have always represented a significant proportion of exports value, while parts have increased their share significantly during 2001-05.

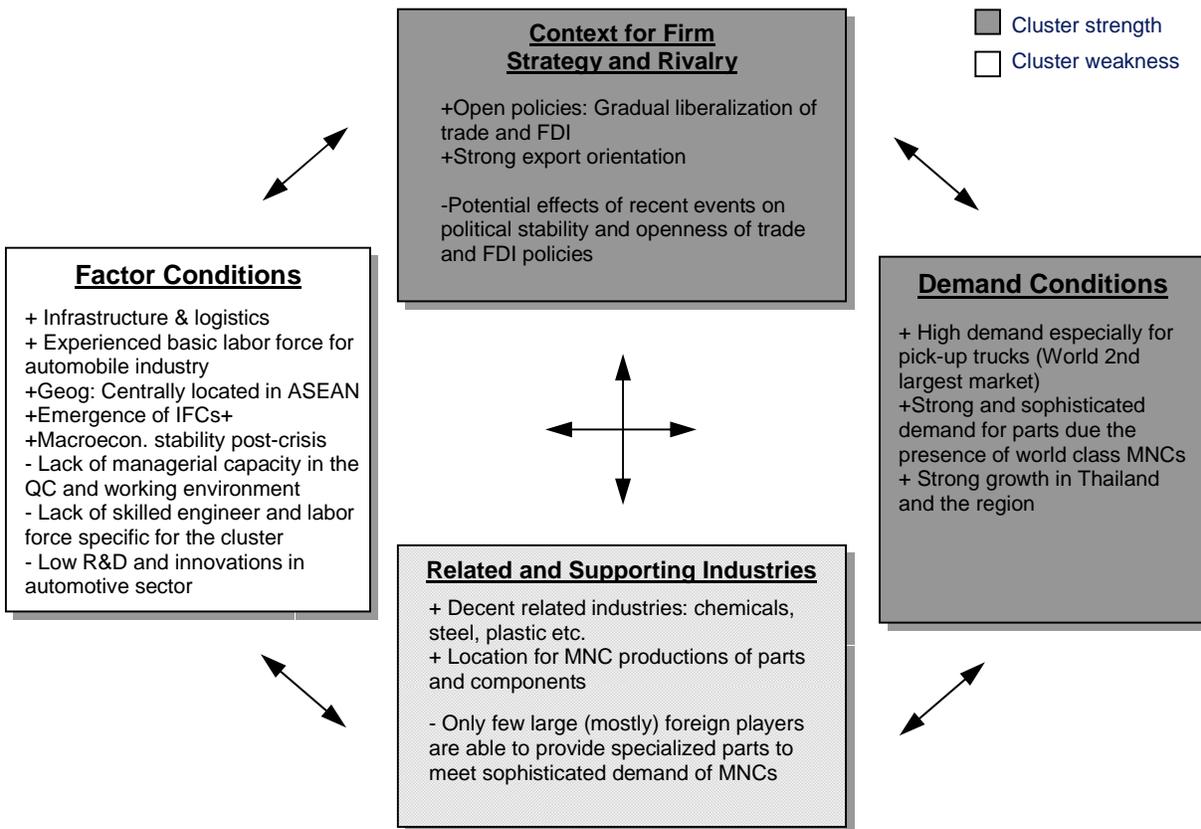
**Figure 10: Export Performance of Different Automotive Products 2001-2005**



Source: UN Commodity Trade Statistics Database, accessed from International Trade Centre, <http://www.intracen.org/tradstat/>

### 3.1 Thai Automotive Cluster Diamond

**Figure 11: Diamond Model for Thai Automotive Cluster**



Source: Team analysis

To understand the driving forces behind the development of Thai automotive cluster, we apply Michael Porter's Diamond Framework. **We found that a strong local demand condition and continuous improvement in the Context for firm Strategy and Rivalry (CSR) have been the key driving forces for the cluster development.** Figure 11 summarizes the key 'diamond conditions' for the Thai automotive cluster. Combinations of favorable domestic demand for pickup trucks, and an open trade regime, helped attract auto-related FDI into the country. This has also strengthened the related and supporting industries such as parts manufacturing.

***Strong Demand Conditions for pickup trucks***

Thailand's sustained strong economic growth performance, as described in the first section, has contributed to the strong local demand condition in general. However, the country's particular strength lies in the domestic demand for 1-ton pickup trucks which account for more than 60 percent of all vehicles on the roads. As Vallop Tiasiri, director of the privately-funded Thailand Automotive Institute, explained, "The strength of our truck industry lies in the size of our domestic market that makes production cost competitive"<sup>4</sup>. Thailand has the world's second largest market for 1 ton pick-up trucks after the US. This is partly reflected by the sheer size of production. Figure 12 shows the ranking of the world's top ten producers of pickup trucks for 2004, with Thailand in the second place. More recently, in 2006, the domestic sales of pickups were estimated to be at 510,000 units as compared to the 651,000 units forecast in the United

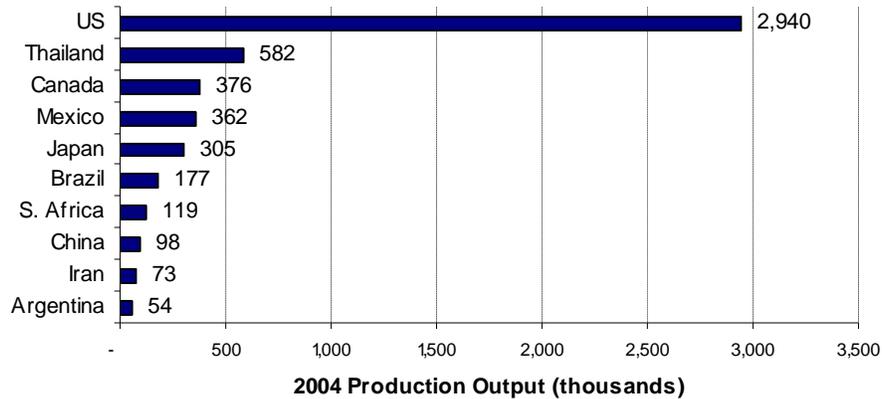
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<sup>4</sup> **"Toyota boosts Thai truck industry"** CNN World Business News April 15, 2007. Available at <http://edition.cnn.com/2007/BUSINESS/04/15/thailand.trucks.reut/index.html>

States<sup>5</sup>. **This unmatched domestic demand for pickup trucks has helped distinguish Thailand from other Asian countries including China.**

**Figure 12: The World's Top Ten Producers in Pickup Trucks**

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Source: Detroit News

The strong and sophisticated local demand for trucks is understandable in view of Thailand's local conditions. The light pickup truck is an all-purpose commercial vehicle that is most suited to the needs of rural dwellers, which still account for the majority in the population. The truck fits their needs as it can carry large families as well as agriculture products such as rice sacks to the market, especially when roads conditions are less than ideal. Thus, one-ton pickup trucks have greatly benefited from the strong domestic demand conditions that other vehicle such as passenger cars do not have.

### ***Gradually Improving CSR conditions***

**While all ASEAN countries used import-substitution industrial strategy for automotive at some point in time, Thailand's open door approach to foreign manufacturers has helped the cluster to grow.** Unlike nations such as Malaysia and Indonesia that set up national car programs to develop their local industries and reduce reliance on foreigners, the Thai

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<sup>5</sup> *ibid*

government has pursued a strategy aimed at attracting global vehicle and auto-parts manufacturers to the country. Table III compares different automotive industrial policies across the three countries.

**Table III: Automotive competitive analysis with neighbors**

	<b>Policy environment</b>	<b>Brands</b>	<b>Status of cluster</b>
<b>Thailand</b>	<ul style="list-style-type: none"> <li>Initially interventionist</li> <li>Switched from import substitution to facilitating exports</li> </ul>	<ul style="list-style-type: none"> <li>Blue-chip MNCs, e.g., Toyota, Honda, GM, Ford</li> </ul>	<ul style="list-style-type: none"> <li>Highly competitive with world markets, especially pickup trucks</li> </ul>
<b>Indonesia</b>	<ul style="list-style-type: none"> <li>Intense government intervention</li> <li>Rent-seeking activity</li> <li>High import protection</li> </ul>	<ul style="list-style-type: none"> <li>“Mobnas” brand: national car initiative</li> </ul>	<ul style="list-style-type: none"> <li>Now known in Indonesia as <b>“bayi yang sudah tua”</b> (an old baby)</li> <li>Never reached economies of scale</li> </ul>
<b>Malaysia</b>	<ul style="list-style-type: none"> <li>Government <b>directly involved in production</b>, attempting to reduce reliance on foreigners</li> </ul>	<ul style="list-style-type: none"> <li>Tried to create national brand “Proton”</li> </ul>	<ul style="list-style-type: none"> <li>Ten times less exports than Thailand (in value)</li> </ul>

Although the government used some protectionist policies during 1971-1989, these policies did not significantly retard the cluster’s progress for two main reasons. First, many protectionist policies during the 1970s and 1980s were not motivated by nationalistic objectives to reduce reliance on foreigners by restricting trade or foreign investment. Instead they were designed to leverage on the presence of existing foreign multinational companies to help local companies grow. For example, the government imposed local content requirements (LCRs) and high import tariff rates on parts, while also providing various fiscal incentives for foreign direct investments. The policies partly led to the widespread use of subcontracting, which benefited the local auto-parts manufacturers.

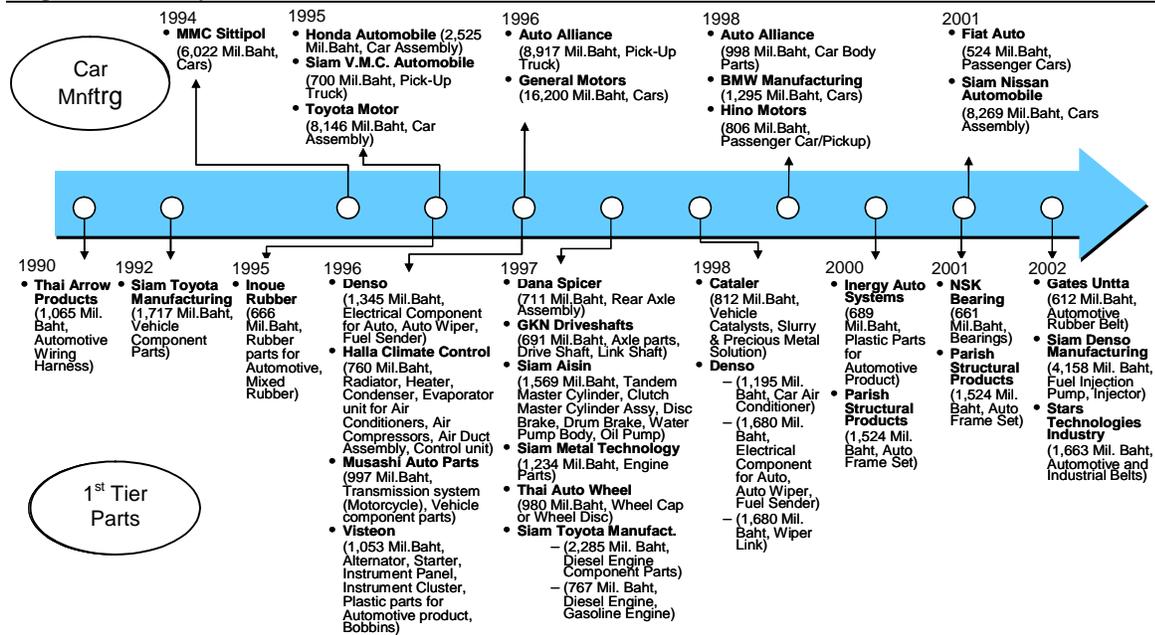
**Table IV: The Key Policy Milestones in Thailand from the 1990s Onwards**

<b>Early 1990s</b>	<ul style="list-style-type: none"> <li>• AFTA: Tariff cut for trade of auto-parts within ASEAN</li> <li>• TRIMS: commitment to phase out local content in 5 years</li> </ul>
<b>1996</b>	<ul style="list-style-type: none"> <li>• Further Reduction in tariffs on parts and components within ASEAN to facilitate production network within ASEAN</li> </ul>
<b>1997</b>	<ul style="list-style-type: none"> <li>• Liberalization of ownership: allowing foreigners to increase shareholding dramatically in Zone 1 and 2 of IE and allowing any FDI to qualify for investment promotion incentives (180 companies with BHT 20billion, mostly in auto mobile).</li> </ul>
<b>1999</b>	<ul style="list-style-type: none"> <li>• Change in Foreign Business Act: Harmonization of investment laws and standards as indicated by IMF conditionalities</li> </ul>
<b>2000</b>	<ul style="list-style-type: none"> <li>• Complete abolishment of local content rule (as part of TRIMS)</li> </ul>
<b>2001</b>	<ul style="list-style-type: none"> <li>• Thai Auto Institute set up and active in consulting with government to improve policies (Master plan 2002-2006), standard settings, training and R&amp;D</li> <li>• More R&amp;D and Technology transfers to allow improvement in product engineering process e.g. Toyota Technical Center Asia Pacific.</li> </ul>
<b>2003</b>	<ul style="list-style-type: none"> <li>• AFTA came into full effects: import tariffs down to 0-5%</li> </ul>

*Source: Niyomsilp (2005) and Author's compilations*

More importantly, the policies were gradually eliminated in the 1990-2000s (see Table IV for the summary of the key policy milestones). The government initiated step-by-step liberalization of local content requirements and reduction in tariffs on auto-parts in the early 1990s under the ASEAN Free Trade Agreement (AFTA) and Trade-related Investment Measures (TRIMs). Thus, Thailand has continuously improved the cluster's CSR condition. This has allowed the country to fully benefit from the global trend of production-relocation by Japanese firms during mid-1990s. During this period, we observed both an expansion of investment by existing Japanese players and the entry of major European and US players in both the areas of assembly and parts manufacturing. In 1996, for example, General Motors (GM) invested over USD 4 billions in the SUV production, while Mitsubishi set up a global center for pickups production in Thailand. The entry of key 1<sup>st</sup> Tier parts manufacturer such as Denso and Visteon also helped spur the development of parts industry and therefore enhance RSI conditions.

**Figure 13: Key Automotive FDI into Thailand from 1990-2003**



Source: Thai Auto Parts Manufacturing Associations (TAPMA) (2007).

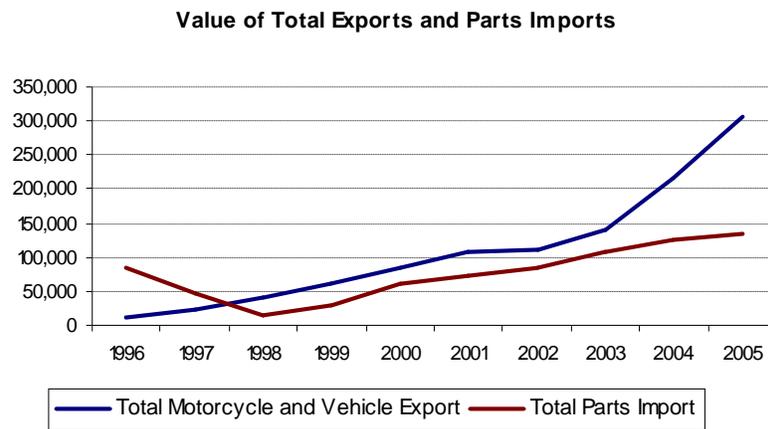
Another major improvement in CSR condition took place after the Asian Financial crisis. In 1997, Thailand was forced to significantly relax further its Foreign Business Act to allow greater foreign ownership in the Thai businesses due to the need to recapitalize the exporting industry. Together with the baht's depreciation (which makes investment cheaper, and exports more competitive), these policies sparked further rapid inflows of investment by foreign assemblers and auto-parts manufacturers.

All these forces have contributed significantly to the deepening of the cluster and an increase in export value-added by Thailand. Figure 14 shows how the gap between the value of exports of automotive products and the imports of parts and components evolves over time. This graph helps approximate the production value-added in Thailand. The widening of the surplus from 1998 onwards reflects the enhanced capabilities to produce auto-parts locally due to entry of foreign parts producers, thus reducing the need to import components. From 2003 onwards,

the rise in export was achieved without a commensurate increase in imports, suggesting that Thailand was able to contribute greater value to the automotive production chain.

**Figure 14: Value of Total Exports and Parts Imports 1996-2005**

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Sources: Thai Automotive Institute and Sakkarin (2006)

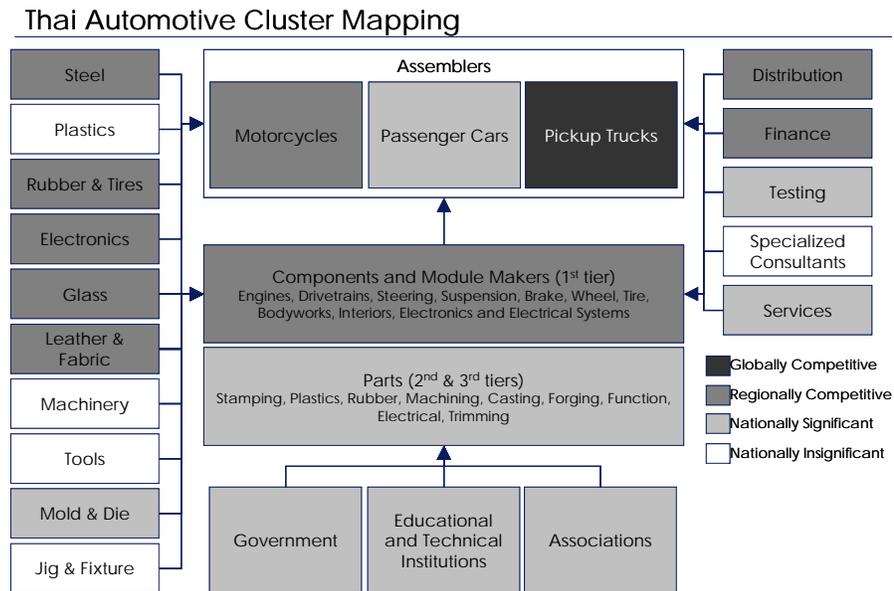
#### ***Weak Related and Supporting Industries, Reflecting Weak Factor Conditions***

**Despite its startling performance, the cluster is still relatively shallow. Most of activities conducted in Thailand are still focused on assembly and less on more technologically sophisticated activities such as R&D and product development or process engineering<sup>6</sup>. While there have been some recent positive signs of improvement (e.g. when Toyota set up the first technical center in the developing countries, the Toyota Technical Center Asia Pacific, in Thailand in 2003) in general, **the deepening of the cluster and move towards sophisticated activities has been impeded by weak supporting industries and weak factor conditions.****

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<sup>6</sup> See, for examples, Limsavarn (2004), and Sakkarin (2006).

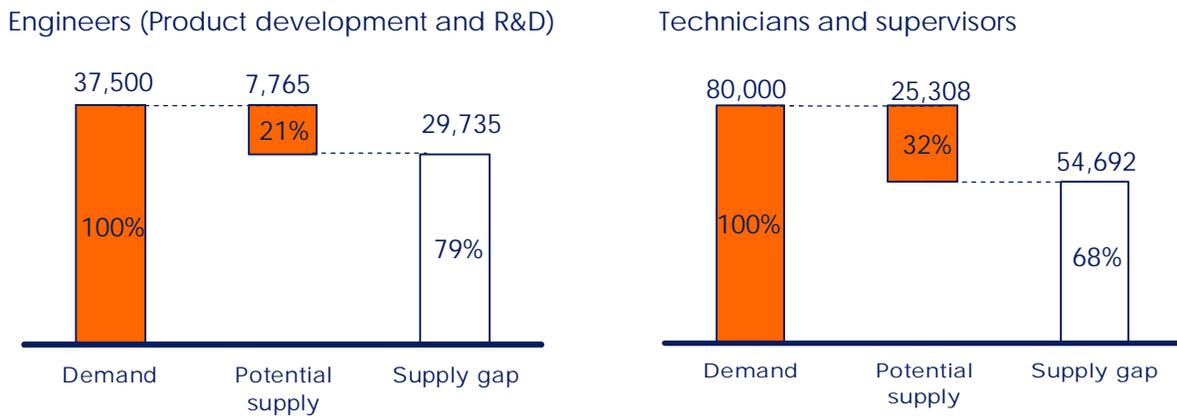
**Figure 15: Thai Automotive Cluster Mapping**



Source: Team revision of Christian Ketels, "Thailand's Competitiveness: Key Issues in Five Clusters", ISC/HBS, May 2003

The weak RSI condition is reflected in the analysis of Thai automotive cluster map and the competitive strength of each component (Fig 15). Some of the key areas of the cluster are still considered uncompetitive, such as 2<sup>nd</sup> and 3<sup>rd</sup> tier parts producers. Most of the more sophisticated parts (drive trains) are either imported or produced by foreign firms. Local firms are mostly small and medium scale enterprises serving as 2<sup>nd</sup> Tier part producers, supplying the raw materials and basic components (e.g. body parts) to the first tier suppliers. **A study by Thai Auto-Parts Manufacturers Association or TAPMA (2002) has found that the scarcity of skilled workers, and low management abilities in the area of quality control among local firms are the main reasons why they fail to develop products to meet up international standards.** These problems also hold back the development of 1<sup>st</sup> Tier parts sub-cluster which plays an important role in deepening the automotive cluster.

**Figure 16: Estimates for 2008 demand and supply of skilled labor**



Source: Thai Development Research Institute (2003);

The World Bank’s Thailand Investment Climate Survey 2006 suggests that the automotive cluster could gain at least 4.6% in sales if skills shortages are reduced. **The shortage of skilled labor in engineers, technicians and supervisors is also the main constraint that will hinder the future expansion of the Thai automobile cluster to higher value added activities such as R&D.** According to the Thai Development Research Institute, automotive companies are projecting needs in 2008 of 37,500 engineers and 80,000 supervisors and technicians, yet the supply of such skilled labor will fall short by 70-80%, as seen in Figure 16.

There are four main reasons why the current shortage in skills exists. First, there is a lack of linkages between universities and automotive companies, such that there is a mismatch between graduate skills and company requirements. For example, in technical schools, supervisors are trained in repairing instead of in product development.<sup>7</sup> Second, there is a weak technical base of labor from the public education system. This reflects gaps in the current education policy, which does not have an adequate pipeline to provide enough quantities of

<sup>7</sup> Thai Development Research Institute 2003.

students trained in engineering.<sup>8</sup> Third, as discussed in the country analysis section, while foreign workers can be hired to fill some of the skills gaps, the hiring process for foreigners is overly bureaucratic.

### **3.2 Strategic issues in Thai automotive cluster**

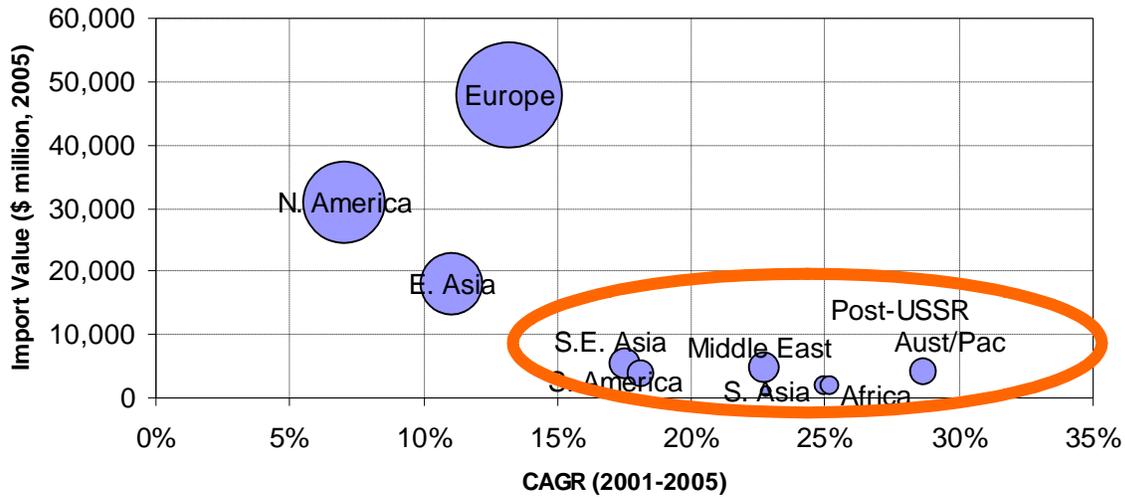
**The key strategic issue for the Thai cluster is whether it can successfully transit from being simply a production and assembly base, to a “home base” for MNCs involved in higher value added activities. Although Thai automotive cluster has benefited from unique demand conditions, it is unlikely that this alone will ensure the sustainability of the cluster competitiveness in the long run.** The rapid economic expansion and continuous improvement in CSR condition in countries such as China and Vietnam may threaten Thailand’s competitive position in future. In fact, such a trend has already been observed for the 2<sup>nd</sup> and 3<sup>rd</sup> Tier parts production. Thailand’s markets are increasingly flooded with these less technologically sophisticated parts from China. Therefore, Thailand needs to move ahead of the curve quickly in order to benefit from rather than be threatened by rapid growth and development in these economies.

**We see immense opportunities for Thai automotive cluster in the future. Asia will see a rising demand for automotives even as the demand in other parts of the world slows.** There exists a large opportunity for Thailand to grow exports and expand its value chain towards R&D and product development. As seen in Figure 17, which shows truck and motorcycle imports by region from 2001-2005, the fastest growing markets are in developing country

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<sup>8</sup> *ibid.*

**Figure 17: Truck<sup>9</sup> and motorcycle imports by region, 2001-2005**



Source: UN Commodity Trade Statistics Database, accessed from International Trade Centre, <http://www.intracen.org/tradstat/>; team analysis

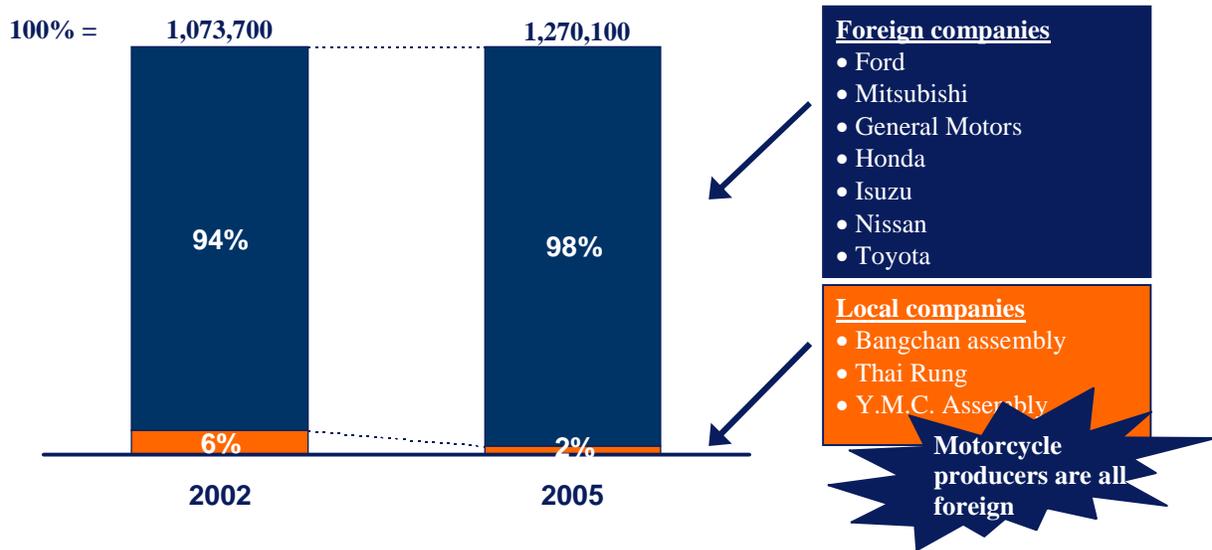
regions which average 15-30% cumulative annual growth. As the top emerging market producer of trucks, Thailand is positioned well to target the fastest growing markets. Trucks are developed to handle relatively poorer road conditions, high humidity environments and frequent flooding<sup>10</sup> which is common among many developing countries. Thailand therefore has a significant opportunity to play a leading role in developing truck and motorcycle products and parts for emerging market conditions.

**Thailand should leverage on the existing presence of MNCs to deepen its cluster, by inviting them to locate more R&D, product development and marketing activities in Thailand.** Once these capabilities are built up among locals in the country, Thailand can then be in a position to consider developing its own brand. However, this aspiration should only be pursued in the long-run, given the current composition of automotive manufacturers (Figure 18).

<sup>9</sup> Includes pickup trucks and heavy trucks

<sup>10</sup> Discussion with Thai consumer.

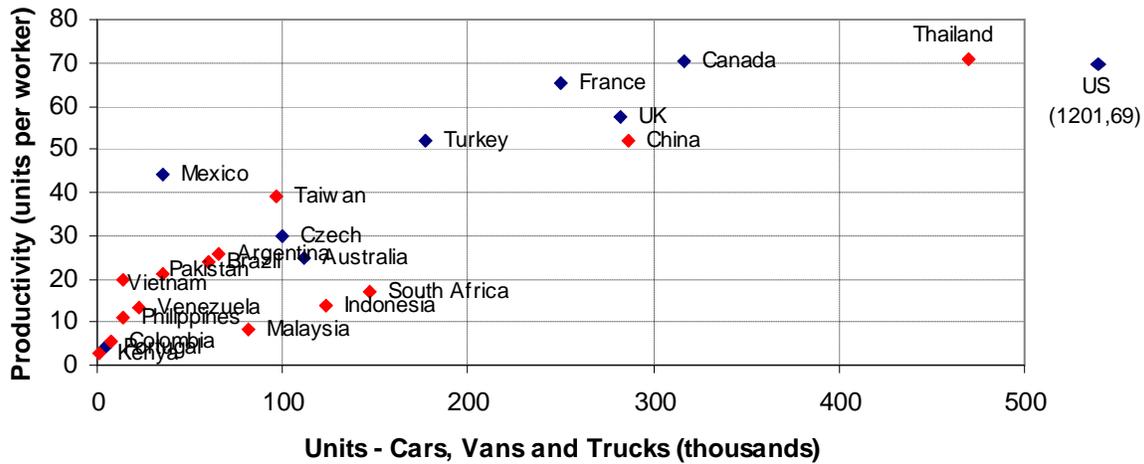
**Figure 18: Distribution of vehicle assembly by foreign vs. local firms**



Source: Thai Automotive Institute

Thailand is a very attractive location for MNCs to locate their “home base” of R&D, product development and marketing activities for reaching emerging markets. In addition to having similar demand conditions to emerging markets, Thailand has several attractive features for MNCs to expand their automotive activities in the country. First, as described in the first section, Thailand has an extremely attractive business environment for investment both in an absolute sense (top 10 most attractive locations for investment according to UNCTAD) and relative to other Asian countries (top in “Ease of Doing Businesses” other than Singapore and Hong Kong). Second, due to large domestic and export markets, Thailand is very productive in manufacturing automobiles. Figure 19 graphs labor productivity of all Toyota production plants in the world outside of Japan, and shows how Toyota has the highest average labor productivity relative to both OECD and developing countries. From the chart, Thailand appears to be at the production possibility frontier in manufacturing automobiles, given that it has the same labor productivity as the US which has more than twice the output.

**Figure 19: Labor productivity across all Toyota manufacturing sites outside Japan**



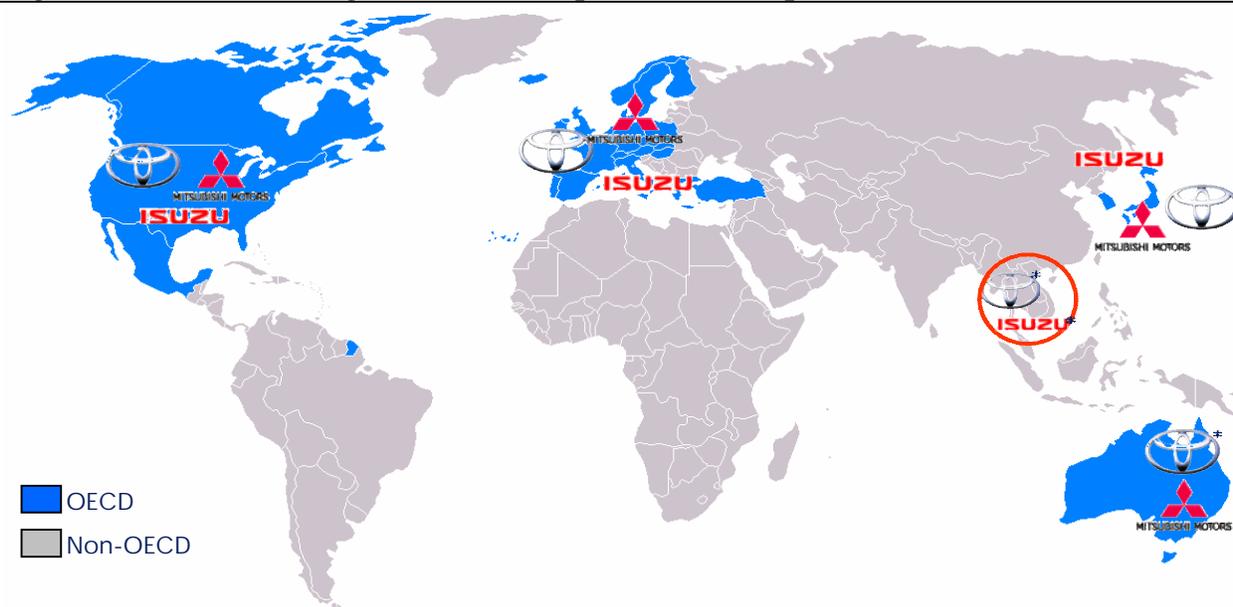
Source: Toyota Company website; team analysis

**There are already positive signs in this direction.** It appears that MNCs are increasingly realizing Thailand’s potential for R&D. Toyota recently established a technical and testing R&D facility in the country in 2003 to conduct “research and development work on product design, testing and evaluation” and “technology-related information within the Asia Pacific region.”<sup>11</sup> A survey of the R&D and design locations for Thailand’s top three automotive producers (Toyota, Isuzu and Mitsubishi) reveals that Thailand is the only non-OECD country where these companies have such facilities, as seen in Figure 20. Thailand should capitalize on its favorable positioning relative to other developing countries to further deepen the value chain of its automotive cluster.

<sup>11</sup> [http://www.toyota.co.jp/en/about\\_toyota/rd/index.html](http://www.toyota.co.jp/en/about_toyota/rd/index.html)

**Figure 20: R&D and design locations of top 3 automotive producers in Thailand**

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*\* Technical/testing facility only; also, Isuzu has R&D site in China, but it is focused on buses  
Source: Team analysis; company websites*

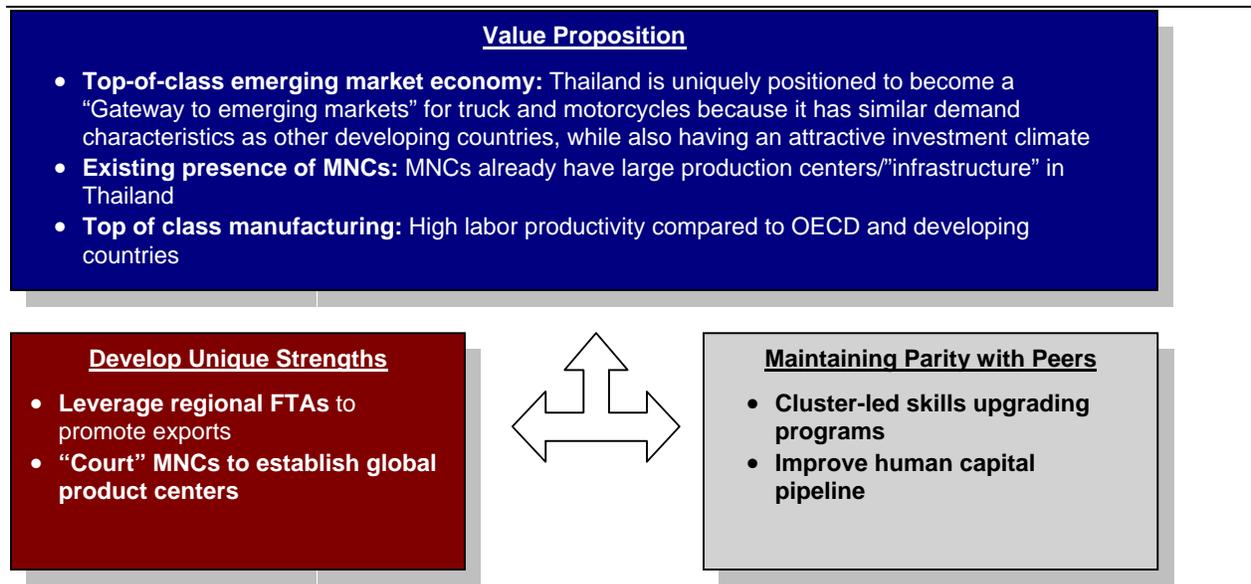
## 4. Recommendations

### 4.1 Cluster

To develop as a “home base” for automotive MNCs to reach emerging market countries, Thailand needs to (a) develop a unique positioning for itself among automotive companies and (b) take concrete steps to overcome the key weaknesses in its factor conditions. As described in the previous section, Thailand has a distinctive value proposition as a “top-of-class” emerging market country. This feature, combined with economies of scale generated by large existing domestic and export markets, places Thailand in a strong position to court MNCs to locate more R&D, product development, and marketing activities within the country. The Thai government should actively engage with the large automotive MNCs currently involved in Thailand to determine what missing factors they require in order to deepen along both sides of the value chain.

**The main weakness in Thailand’s automotive cluster that needs to be addressed is in factor conditions, notably the shortage of skilled labor.** Thailand’s ability to become a “home base” for automotive MNCs is hindered because skills shortages impede the ability of Thai companies to provide reliable and sophisticated parts to support the cluster. The skills shortages can be addressed in two ways. First, the government should facilitate cluster-led skills upgrading programs. In partnership with IFCs, the government should improve skill training and matching between industry and universities/overseas skilled workers. Second, the government needs to improve the human capital pipeline. Government education policy needs to dramatically increase supply of skilled workers, as well as streamline the hiring process for foreign skilled workers.

**Figure 21: “From Production Base to Home Base”**



Source: Team analysis

## 4.2 Country

### *Strategic issues*

The automotive cluster is a microcosm of strategic challenges faced by Thailand’s economy. Thailand faces two strategic issues. **The first issue is whether Thailand can make a**

**successful transition to becoming an innovation-driven economy.** Thailand's past growth has been driven primarily by high capital accumulation (esp. prior to 1997) and the transfer of labor from less productive sectors (e.g. agriculture) to more productive sectors in manufacturing and services, while productivity within most clusters remain low. However, going forward, this mode of growth is no longer viable. Thailand faces serious regional competition especially from China as a low cost manufacturing destination, and is beginning to lose its competitive position as a FDI destination to Malaysia. Whether Thailand can sustain its growth will depend on its ability to make a transition from factor-driven and investment driven growth to innovation-driven growth i.e. its ability to compete on innovation and value-add rather than on cost.

**The second issue is more fundamental: whether Thailand will make a policy U-turn away from its open market and free trade policies, thereby undermining its current position as an attractive location for FDI.** Although Thailand's trade and export performance has benefited from a liberal trade policy and bolstered by a series of recent FTAs, recent public debate has surfaced suspicions that certain FTAs were politically motivated to benefit the then ruling party and its family members, which could give rise to popular sentiments against free trade policies in the future. This popular sentiment could have contributed to the new government's advocacy of "self reliance" and adoption of certain policies (e.g. capital controls, FBA amendments) in the aftermath of the coup, which, while targeted at the domestic audience, had inadvertently given negative signals to international investors and erode Thailand's competitiveness in the future.

### ***Recommendations***

**Clearly, to sustain growth, it is critical for the new government to give clear signals over the next 1-2 years that it is strongly committed to a policy of promoting trade and**

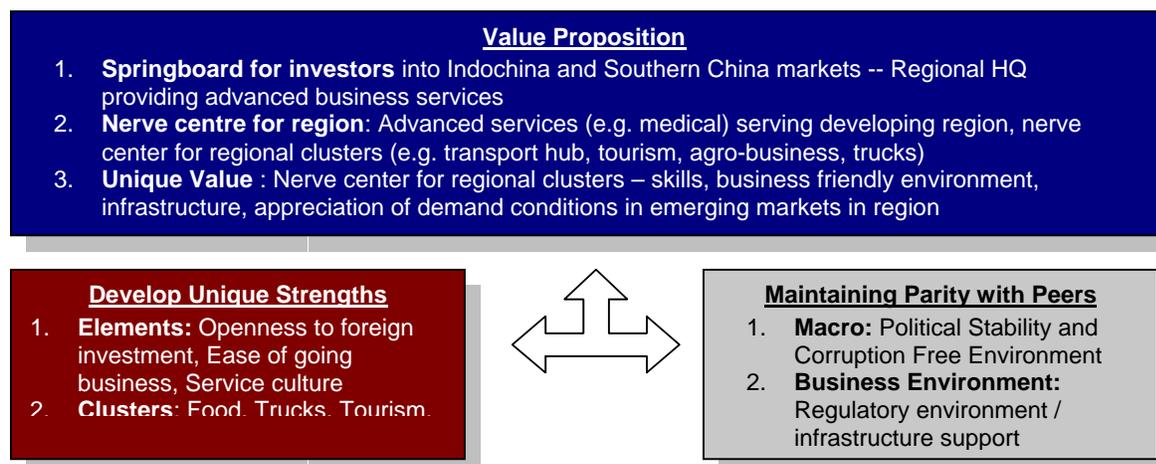
**investments, so that FDI will continue to flow into Thailand, and with it, new skills, technology and expertise.** If it fails to convince international investors that its door remains open, it may undermine the very foundation of its past economic success.

**Secondly, to transit to an innovation-driven economy, Thailand needs to first correct the current weaknesses in its national diamond, namely, key weaknesses in terms of regulatory uncertainty as well as bottlenecks in skills and infrastructure.** Thailand needs to significantly reform its regulatory framework by streamlining tax, custom and trade regulations, eliminating price controls and reducing uncertainties about labor and other business regulations. It also needs to embark on a major skill enhancement program, covering vocational skills, technical competency as well as ICT and language proficiencies. This will need to be accompanied by infrastructural developments in the east and central regions.

**Third, it can position itself favorably for future growth by serving as the gateway to the Greater Mekong Region. Instead of competing head-on based on cost with its neighbors (especially Vietnam), it should act fast to position itself as the hub for regional clusters and work with its Indochina neighbors to further tap the China market (Fig 22).** Thailand is in a leading competitiveness position in Indochina and it also scores (4.88) higher than Vietnam (2.69) and Laos (0.85) on the World Bank's Knowledge Economy Index. Thailand's exports to China have also been growing strongly as compared to its ASEAN neighbors (World Bank 2005). Since 1980, Thailand's exports increased in real terms by 1 % to Laos, 13% to Cambodia, 24% to Vietnam and 23% to Myanmar per year (World Bank : 2005). It can therefore realistically aim to be the springboard for investors into the region and a home base and nerve center for the common clusters within the region. To do so, it must not only further enhance its competitiveness as a FDI destination, it must also proactively foster regional collaborative efforts

to develop linkages with its neighbors (e.g. logistical linkages and custom alignment) and promote the development of common clusters such as Tourism. Table V tabulates the specific recommendations for Thailand to improve its national competitiveness.

**Figure 22: Thailand—“Gateway to Indochina”**



Source: Team analysis

**Table V: Detailed country recommendations**

Reform Agenda	Specific Recommendations
Regulatory Reform	<ol style="list-style-type: none"> <li>1. Streamline tax regulations/ reduce tax burden</li> <li>2. Streamline customs and trade regulations</li> <li>3. Eliminate price controls, service restrictions</li> <li>4. Reduce labor regulations (e.g. hiring of local worker)</li> <li>5. Reduce regulatory uncertainty through clearer guidelines to local agencies/government</li> </ol>
Skills Enhancement	<ol style="list-style-type: none"> <li>1. Establish a vocational workforce training infrastructure</li> <li>2. Incentives for cluster-based skills upgrading (e.g. matching grants)</li> <li>3. National ICT literacy programmes for the workforce</li> <li>4. Reform secondary education system : increase completion rates and quality</li> <li>5. Strengthen English, ICT, science and technology curriculum at all levels</li> <li>6. Promote R &amp; D in universities and R&amp;D opportunities for graduates</li> </ol>
Infrastructure Upgrading	<ol style="list-style-type: none"> <li>1. Infrastructure development in East and Center regions</li> <li>2. Improve contestability in telecommunications sector</li> <li>3. Develop public ICT infrastructure, support cluster-specific ICT standard setting/promotion of best practices in ICT usage</li> </ol>
Improve Linkages to Neighborhood	<ol style="list-style-type: none"> <li>1. Implement the Greater Mekong Region Cross Border Transport Agreement : transport infrastructure linkages / alignment of customs procedures</li> <li>2. Promote common clusters : Product development , R&amp;D, Market development, cross border private investments</li> </ol>

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