Session III: Global Supply Chains and Regional Production Networks: Lessons from Asia

Case Study II: Automotive Industry,Thailand

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Objectives

- Explain …
  - the history of industrial development in the Thai automobile industry
  - Why Thailand has become or ‘chosen’ part of the global automotive production network
  - Roles of government policies, domestic production and demand, foreign firms, and cluster
  - Pattern of intra-industry trade and international product fragmentation
  - Challenges

Conceptual Framework

- Global production network (Sturgeon 2000) & Global value chain (Gereffi, Humphrey, and Sturgeon 2005)
  - defined production networks in terms of organizational scale, spatial scale, governance style and productive actors
- Clusters (Porter 1989)
  - defined as geographic concentrations of firms and institutions that are interconnected in a particular location
- Cluster and Production Network
  - Marshallian industrial district => inter-firm linkage
  - Hub and spoke district => lead firms
  - Satellite platform => indigenous firms & local institutions

Structure of Manufacturers in the Automotive Industry in Thailand

Assembler

(Car 12 Co., Motorcycle 6 Co.)

100,000 workers

Tier 1

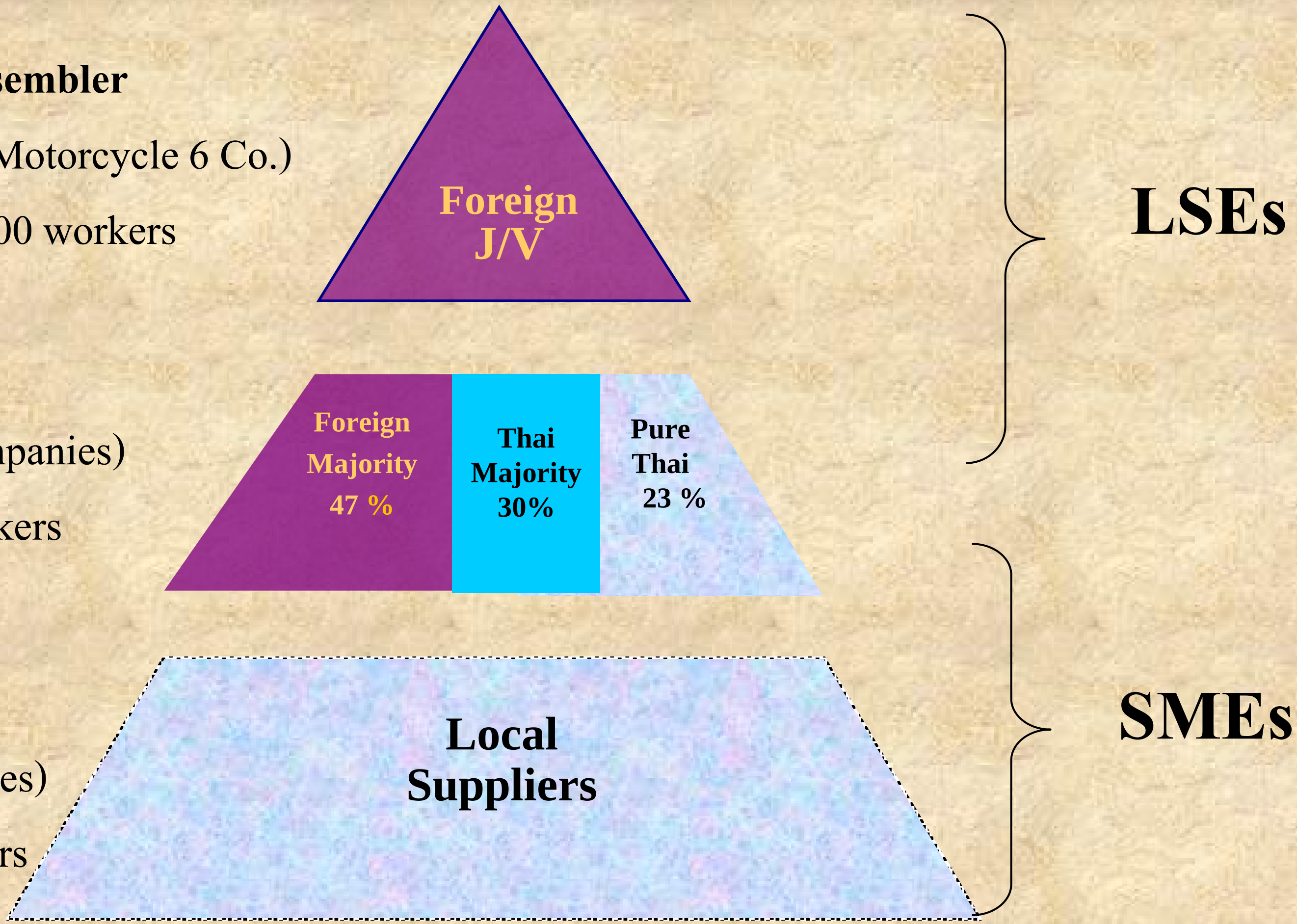
(Total 635 Companies)

250,000 workers

Tier 2,3

(1,700 Companies)

175,000 workers



Source: Thai Automotive Institute (TAI), updated July 2010

Number of Automotive OEM Part Suppliers Classified by Part

Group of Part	Thai	Thai Majority	Foreign Majority	Total
Engine Parts	20	8	35	63
Electrical Parts	15	10	27	52
Drive/ Transmission	17	6	29	52
Suspension/ Brake	13	1	21	35
Body Parts	57	17	47	119
Accessories	18	2	19	39
Others	214	24	111	349
Total	354	68	287	709

Source: Thai Automotive Institute (2011)

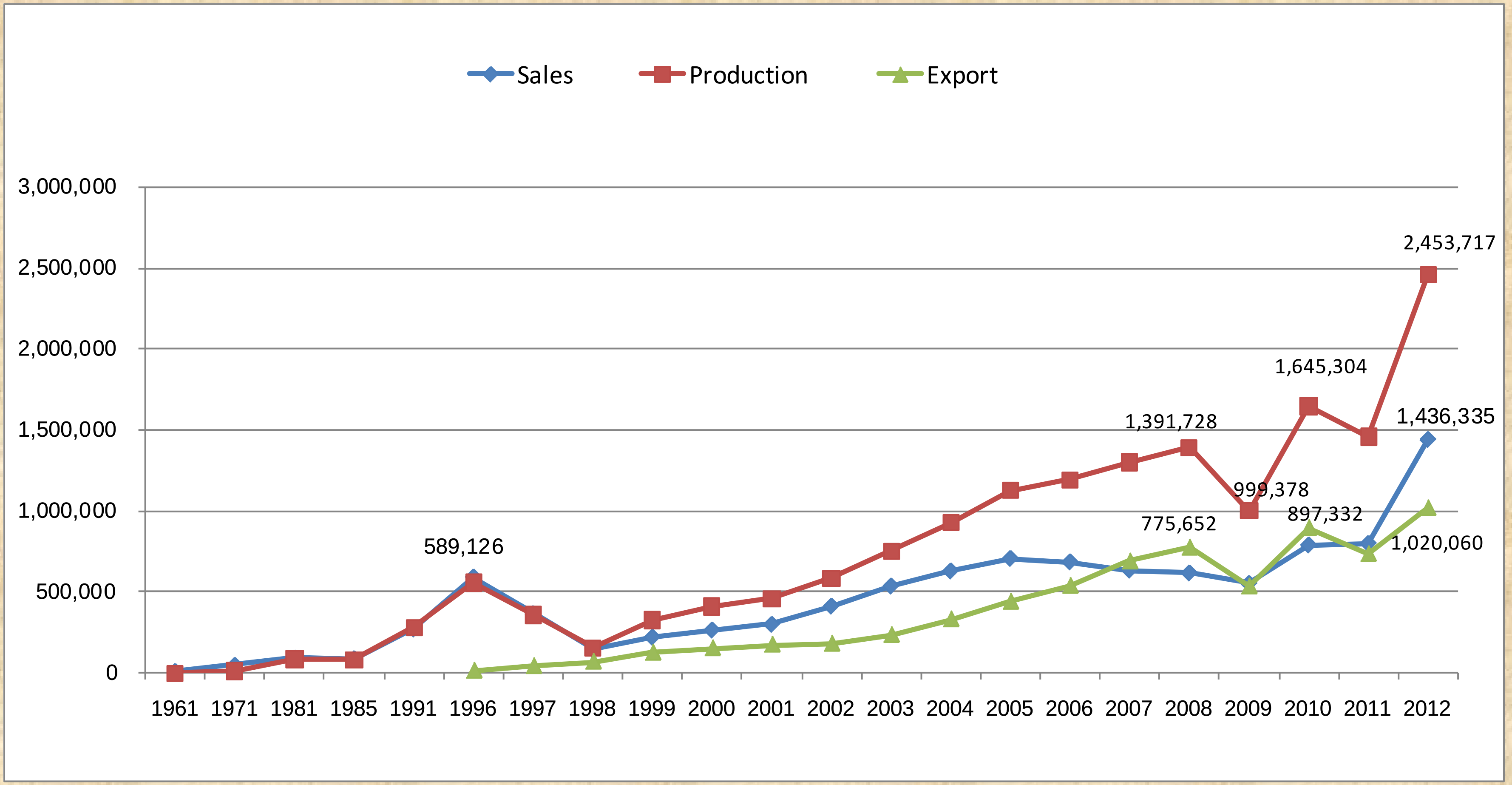
Number of labour employed

in the automotive industry

Industry	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Autmobile assembly	29,571	38,144	34,966	29,083	44,876	41,866	39,727	38,307	34,947	50,207	49,920
Body parts	3,996	8,154	21,972	10,749	20,295	13,193	14,399	8,774	7,224	14,153	14,794
Autopart and component	62,251	67,175	75,336	86,885	109,037	139,689	176,600	184,314	157,956	158,668	231,761
Motorcycle assembly	14,437	15,808	22,634	33,677	20,772	26,405	25,446	26,820	20,098	19,329	18,327

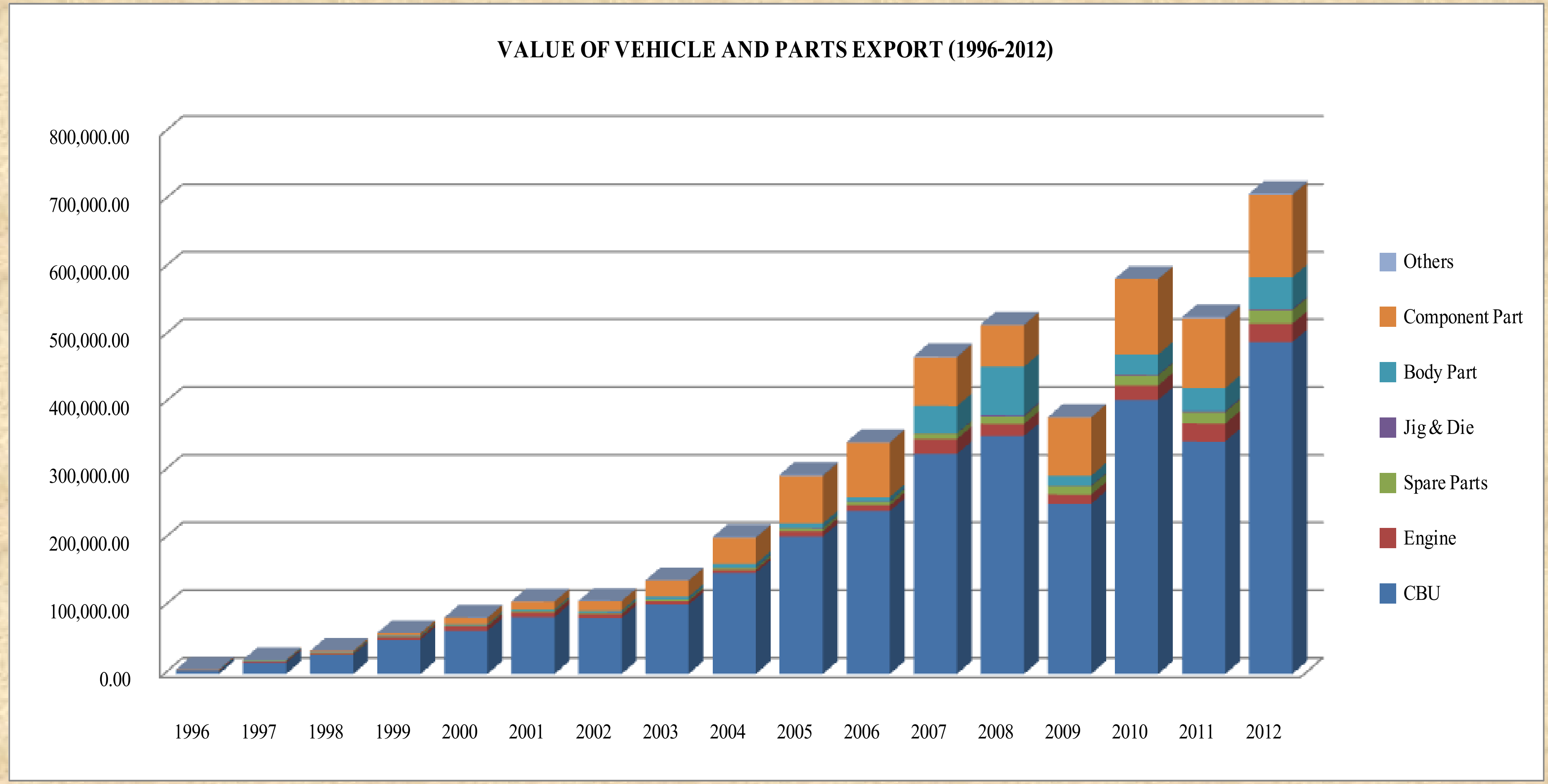
Source: NESDB

Thailand's Production, Sales, and Exports (1961-2012)



Source: Federation of Thai Industry

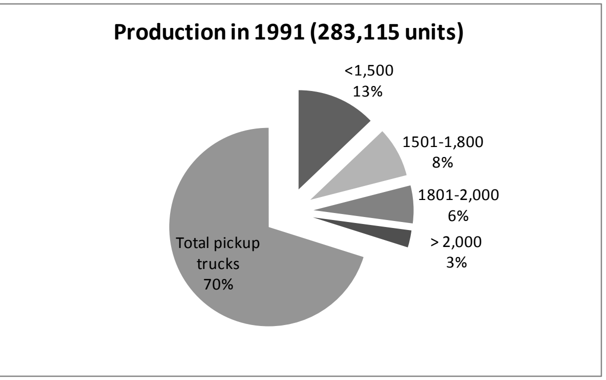
Structure of Thailand's automotive industry export (1996-2012)

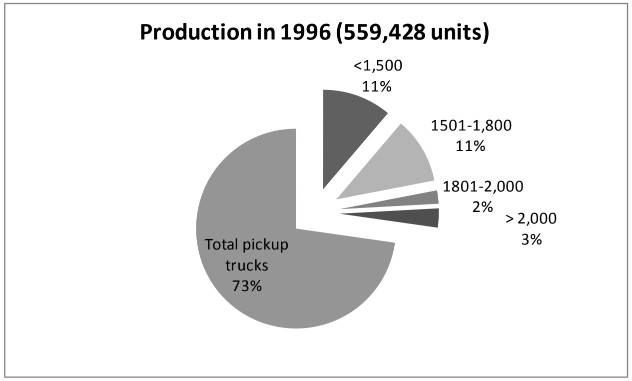


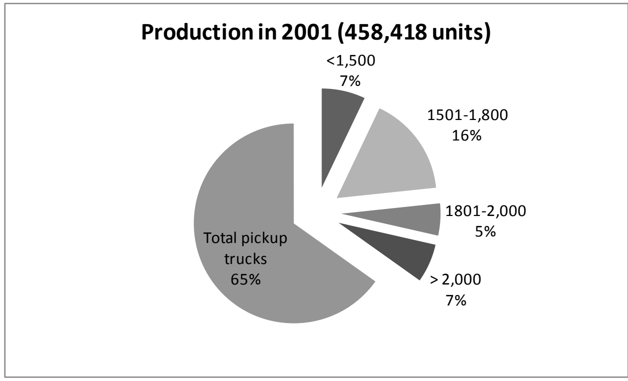
Source: Federation of Thai Industry

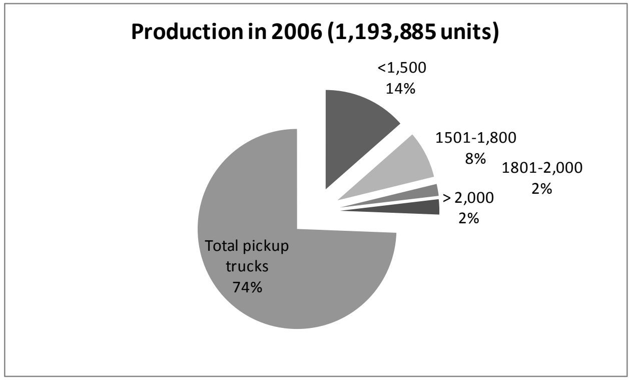
Ratio of Vehicles Produced in Thailand (1991 – 2010)

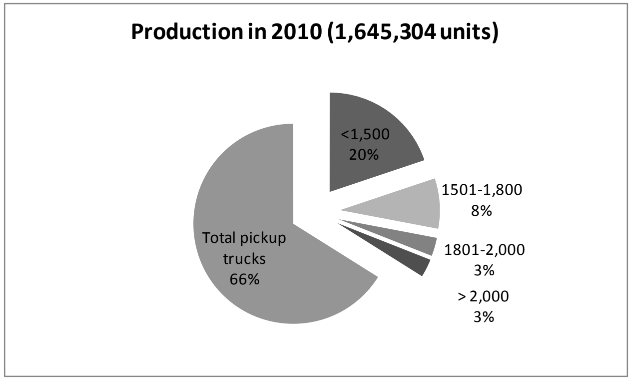
- Produced more small passenger cars, yet pickup trucks are still dominant.





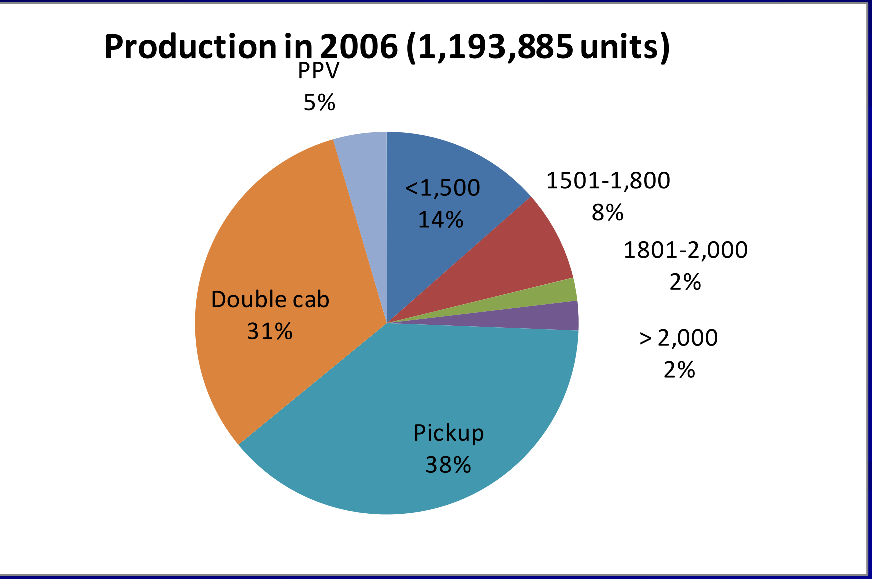


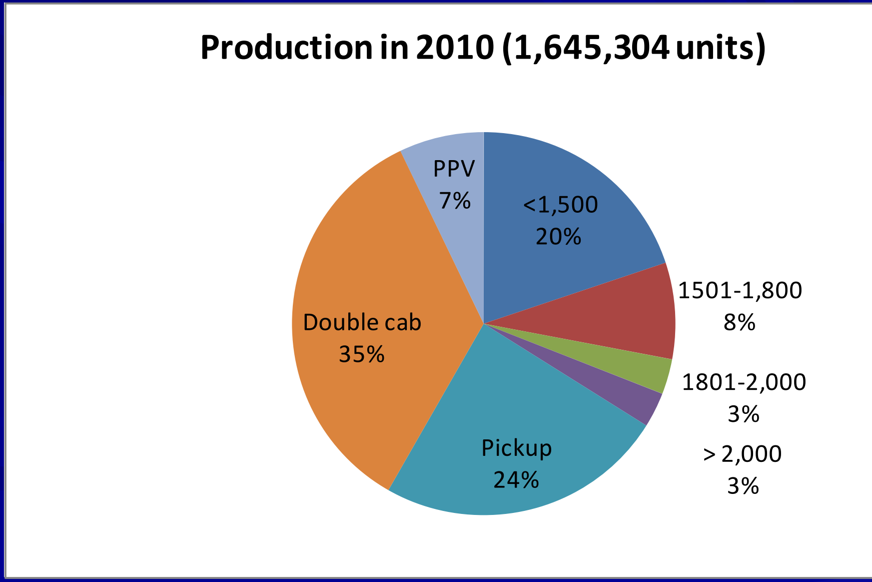




Derivatives of pickup trucks become more popular

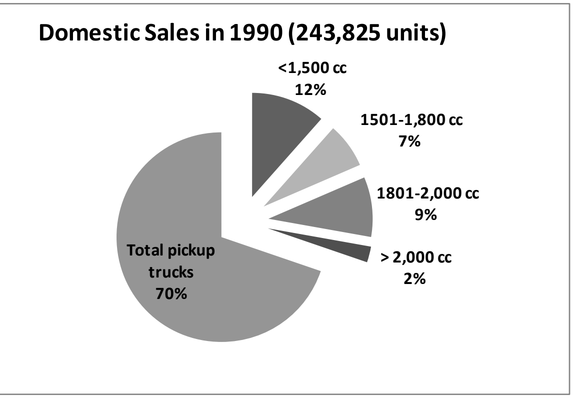
- Firms produce Double cab pickup (4 doors) and Pickup Passenger Vehicles (PPV) based on pickup chassis.

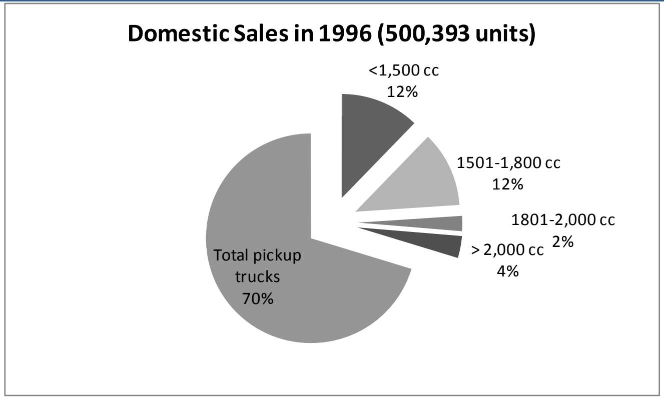


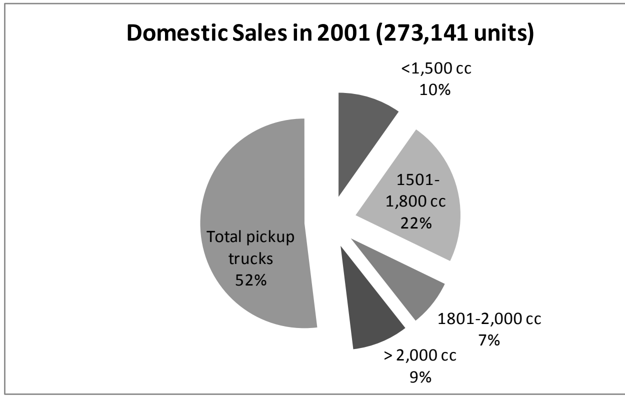


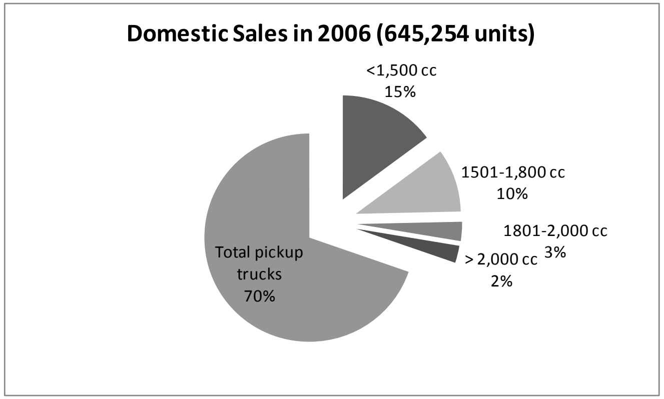
Ratio of Vehicles Sales in Thailand (1991 – 2010)

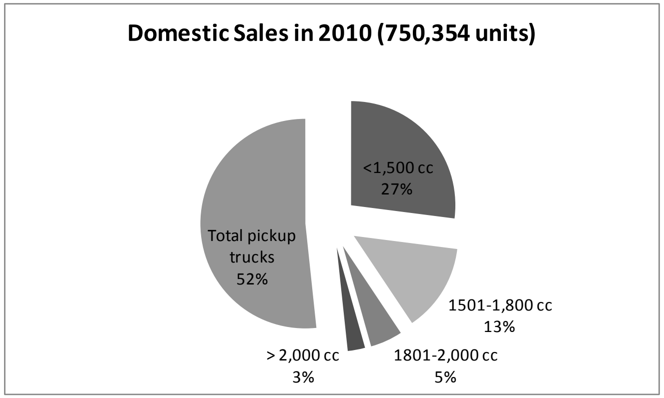
- Small passenger cars gain more share but pickup trucks still dominate.











SUV vs PPV

Structure of production and domestic demand

- Domestic demand has been shaped by domestic production and government tax scheme.
- Pickup trucks are popular in Thailand, due to lower excise tax.
- Small cars become popular because high fuel price and new investment scheme for Eco-car (small cars).
- Eco friendly vehicles also receive tax reduction but price is still high.

Public Policies towards Environmental Friendly Vehicles

- Eco-car Investment Promotion Scheme
  - Initiate in 2004 (Thaksin government)
  - June 15, 2007. Press release by BOI.
  - Accept proposal until November 30, 2007.
- In order to qualify for the tax exemptions,
  - Energy-efficient (at least 20 km/lt),
  - Environmentally friendly (Euro 4 or higher), emitting no more than 120 grams of CO_2 per km., and adhere to impact-protection standards set by the UNECE Reg.94 and Reg.95.
  - New investment at least Bt5bn (Euro112m) in their assembly line and in engine and parts production;
  - Scale: 100,000 cars per year (by the fifth year of production)
- In addition, the preferential excise tax rate requires eco-cars to have engine sizes smaller than 1,300 cc (for petrol engines) and 1,400 cc (for diesel engines).

Thai Automobile Tax Structure

Passenger cars

Duty and taxes	
Import duty	80%
CEPT (ASEAN)	0%
Excise tax	
- not exceeding 2,000 cc.	30%
- 2,001-2,500 cc.	35%
- 2,501-3,000 cc.	40%
- More than 3,000 cc.	50%
Municipal tax	10%
VAT	7%

Light Truck and derivative

Duty and taxes	
Import duty	40%
CEPT (ASEAN)	0%
Excise tax	
- Pick Up Truck	3%
- Double Cab	12%
- PPV (Pick up passenger vehicle)	20%
Municipal tax	10%
VAT	7%

***Energy Saving and Alternative Fuel Vehicles**

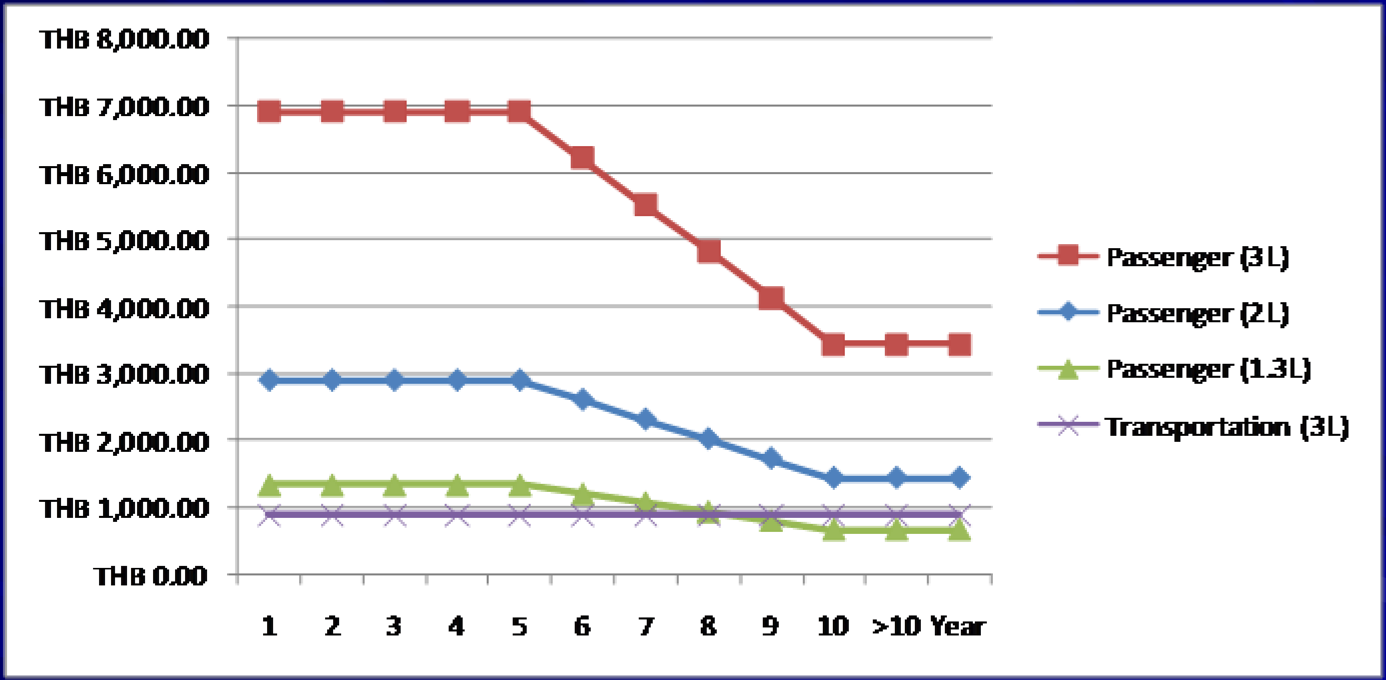
Duty and taxes	
Import duty	40-80%
CEPT (ASEAN)	0%
Excise tax	
- Hybrid, Electric, Fuel Cell	10%
- Eco car	17%
- NGV	20%
- E20**	25-45%
Municipal tax	10%
VAT	7%

*** Energy Saving and Environmental Tax Incentive**

**** E20 5% reduction from normal rate (ex**

Same price for Sedan 1.5L & Pickup 2.5L (530,000 baht or 16,800 USD)

Annual Registration Tax Ratesfor Vehicles in Thailand: An example



Thailand's Automobile Industry

- The government had specific and clear goal to promote the industry
- Reliance on foreign firms to promote supporting industries + commitment to liberalization
- Financial crisis 1997 → export-orientated
- Integrated into part of global production network of many firms

Why Thailand was chosen as production hub?

- Government Policies
  - Local content requirement (LCR) regulation
  - Industrial Estate (from 1972)
  - BOI promotion scheme
- Sound macroeconomics policies (outward-oriented policies, and trade liberalization)
  - Abolishment of LCR
- Large market (pickup trucks)
- Economic crisis aftermath

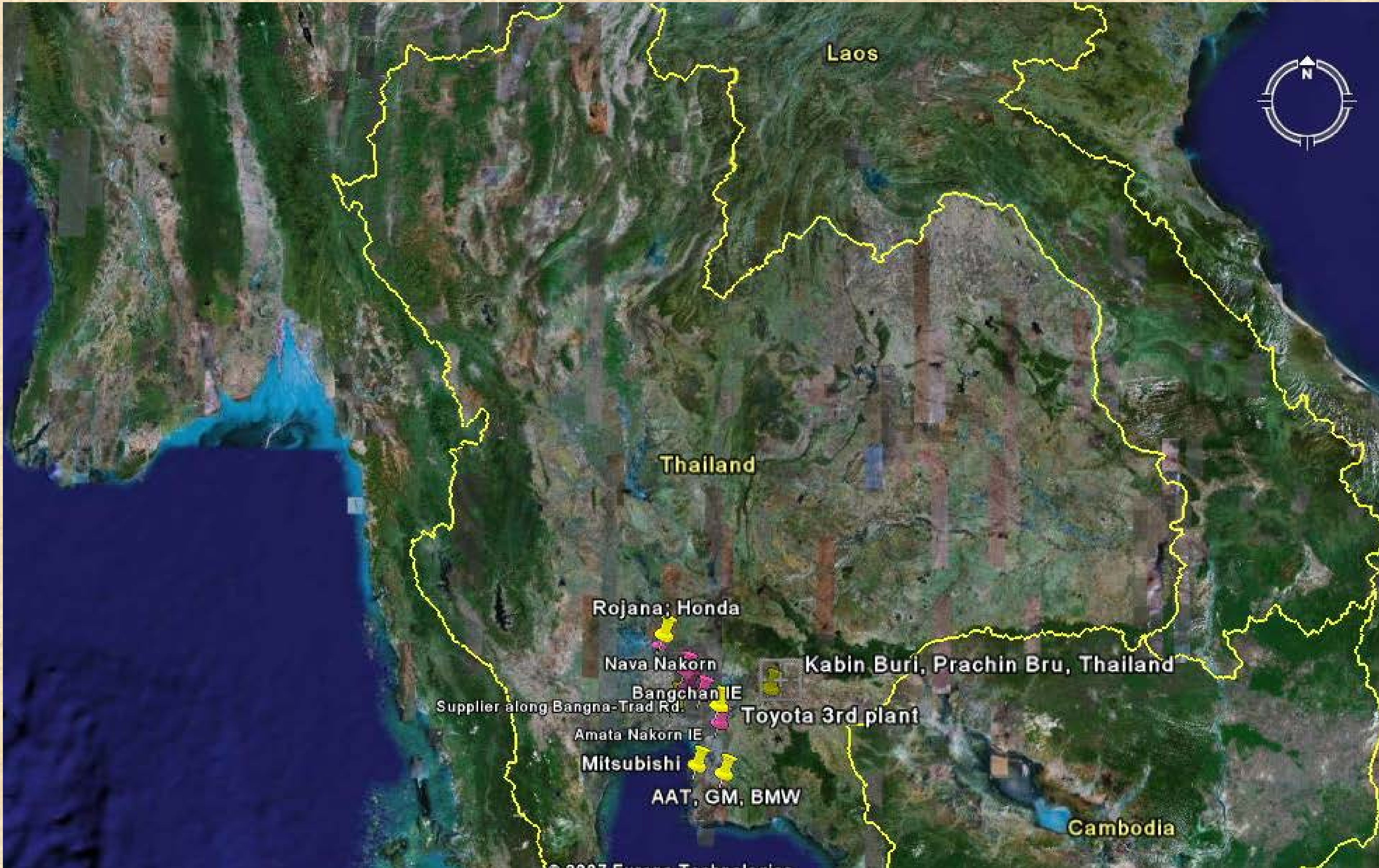
Related Government Policies

- Investment promotion and tariff protection
- Rationalization policies: Local content requirement policy (1974 – 1999)
- After 1992, Thailand have direct policies to promote supporting industries
- After economic crisis, the BOI relaxed equity condition allow foreign firms to own 100 percent in any zone => M&A
- Liberalization policy: from 2000

Cluster and Agglomeration

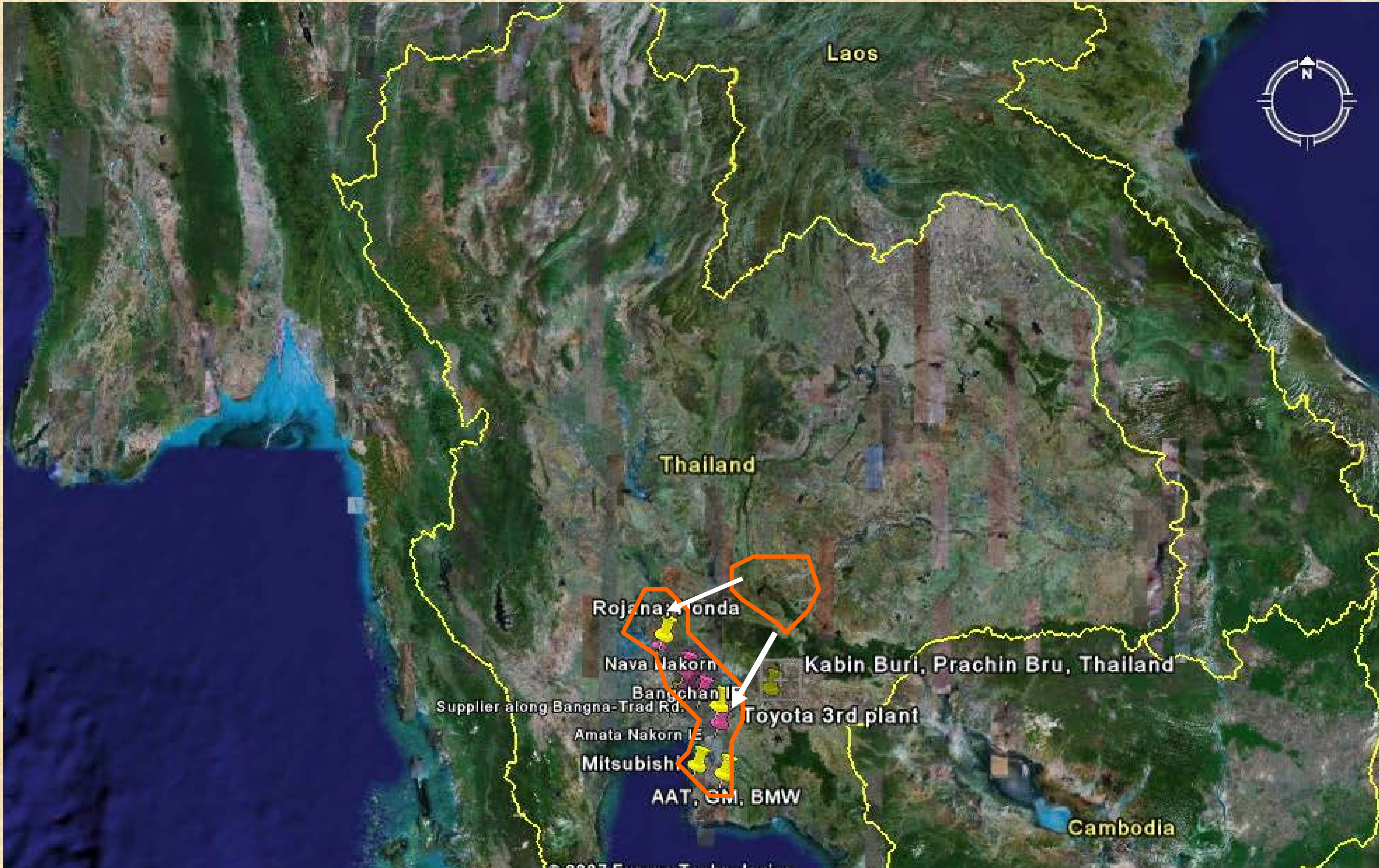
- Agglomeration of firms
  - It first appeared in 1970s around Bangkok and vicinities (Samut Prakarn, Lad Krabang, and Bang Chan.
  - In late 1980s, Eastern Seaboard Development Project, firms established around Eastern region of Thailand
- Automotive Belt in Thailand
  - Firms' locations are along Eastern region (from East of Bangkok, Bangna-Trad road, Chachoengsao, Chonburi and Rayong.
- Main reasons
  - Proximity to customer
  - Good infrastructure (road, electricity, etc.)

Automotive belt in Thailand



Automotive belt in Thailand

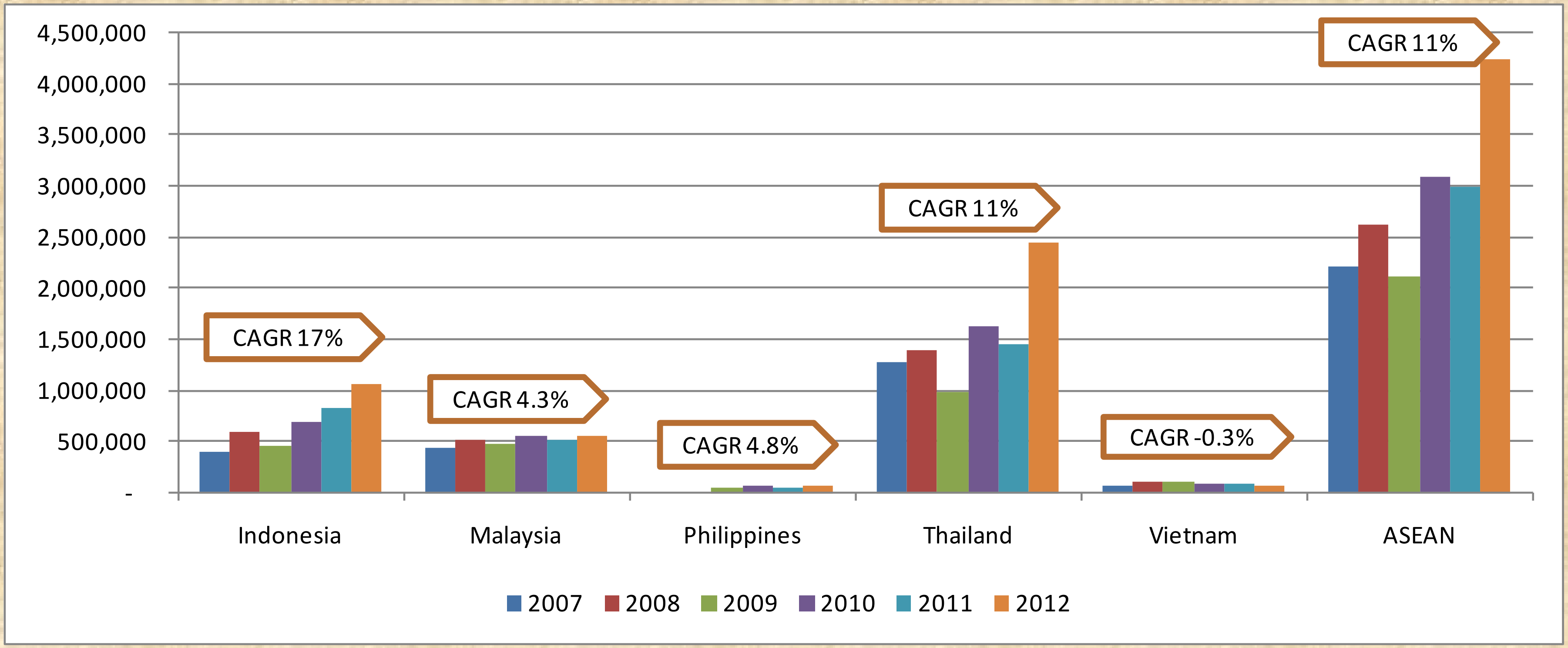
Automotive belt in Thailand



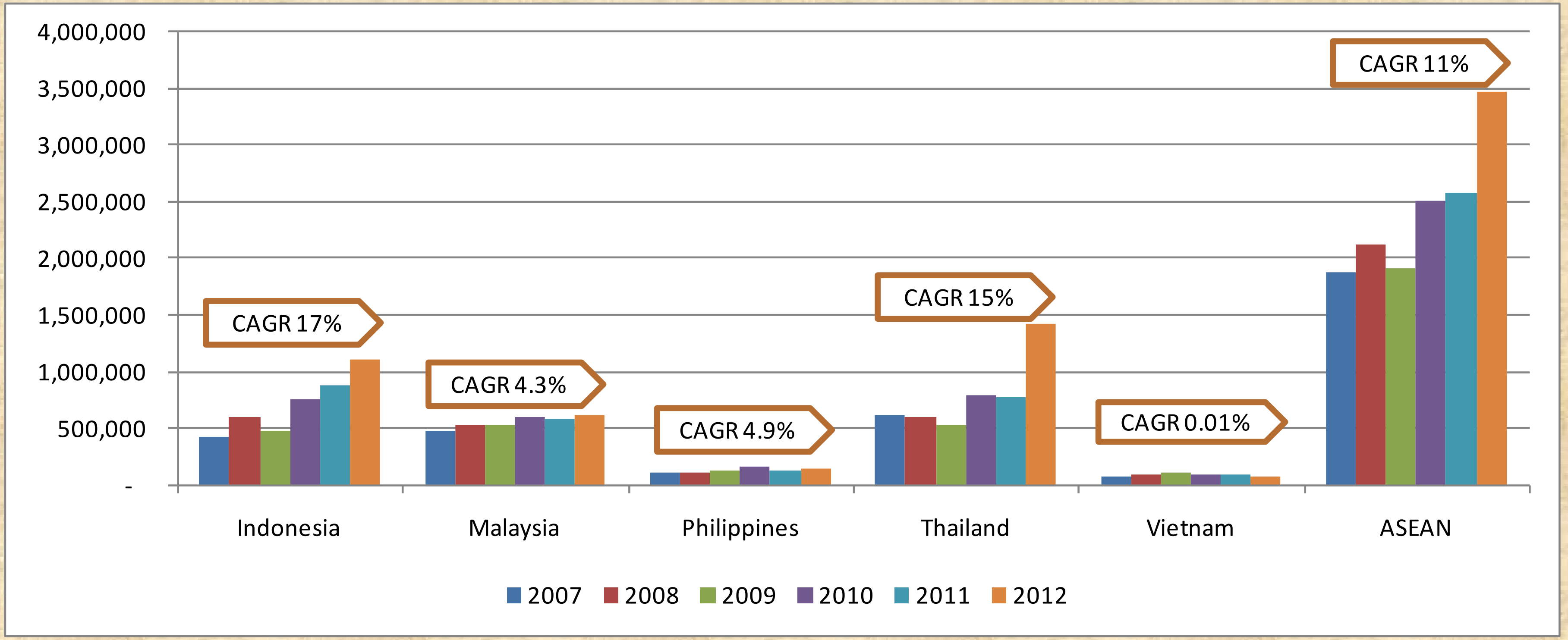
Benefits of being part of production network

- Industrial upgrading through inter-firm relationship.
  - Technical transfer and economies of scale
  - Product engineering hub for some specific model
- Trade integration with ASEAN++ and intra-industry trade
  - Division of labor
  - Coordination among different locations

Automobile Production in ASEAN 5



Automobile Sales in ASEAN 5



World Trade in Automotive Industry (1992 – 20011)

GDP share

Country/region	Exports				Imports			
	1992	1996	2002	2011	1992	1996	2002	2011
ASEAN	25,359,414	249,565,760	634,316,665	6,694,812,090	17,178,797	105,816,848	357,226,737	1,598,414,340
Indonesia	3,285,372	27,234,220	218,087,109	2,925,323,256	1,769,302	7,685,068	100,068,005	792,731,754
Malaysia	10,752,858	47,757,452	199,432,075	1,731,205,017	5,141,955	29,532,595	77,659,135	250,328,557
Philippines	5,337,714	53,828,744	108,334,948	1,053,458,116	10,262,881	68,518,102	177,867,402	447,626,983
Vietnam	5,983,470	120,745,344	108,462,533	984,825,701	4,659	81,083	1,632,195	107,727,046
ASEAN+3	85,691,855	362,933,227	1,216,529,105	9,399,304,693	2,504,598,124	4,882,960,930	2,730,515,797	10,929,899,592
Japan	55,451,799	99,507,208	520,301,107	2,260,252,889	2,426,929,200	4,638,219,151	2,275,380,027	7,934,914,606
China	1,745,554	6,142,284	39,587,883	339,310,727	11,767,391	31,045,095	58,658,186	945,044,874
Rep. of Korea	3,135,088	7,717,975	22,323,450	104,928,987	48,722,736	107,879,836	39,250,847	451,525,772
ASEAN+6	98,683,964	401,372,293	1,659,963,433	13,118,215,790	2,512,283,024	4,920,565,408	2,744,802,195	11,282,022,610
India	148,877	1,065,199	47,697,599	753,354,930	2,408,749	6,259,013	5,373,541	310,389,531
Australia	12,843,232	37,373,867	395,736,729	2,965,556,167	5,276,151	31,345,465	8,912,857	41,733,487
World	468,003,778	1,239,036,633	4,305,948,834	27,413,441,950	3,170,626,195	6,131,114,121	3,554,106,129	13,452,735,016
$ millions	468	1,239	4,306	27,413	3,171	6,131	3,554	13,453

Export share

Thailand net export with key trade partners

Country/region	Thailand net export (million USD)			
	1992	1996	2002	2011
ASEAN	8.2	143.7	277.1	5,096.4
Indonesia	1.5	19.5	118.0	2,132.6
Malaysia	5.6	18.2	121.8	1,480.9
Philippines	(4.9)	(14.7)	(69.5)	605.8
Vietnam	6.0	120.7	106.8	877.1
ASEAN+3	(2,418.9)	(4,520.0)	(1,514.0)	(1,530.6)
Japan	(2,371.5)	(4,538.7)	(1,755.1)	(5,674.7)
China	(10.0)	(24.9)	(19.1)	(605.7)
Rep. of Korea	(45.6)	(100.2)	(16.9)	(346.6)
ASEAN+6	(2,413.6)	(4,519.2)	(1,084.8)	1,836.2
India	(2.3)	(5.2)	42.3	443.0
Australia	7.6	6.0	386.8	2,923.8
World	(2,702.6)	(4,892.1)	751.8	13,960.7

Source: Compiled from UN Comtrade database.

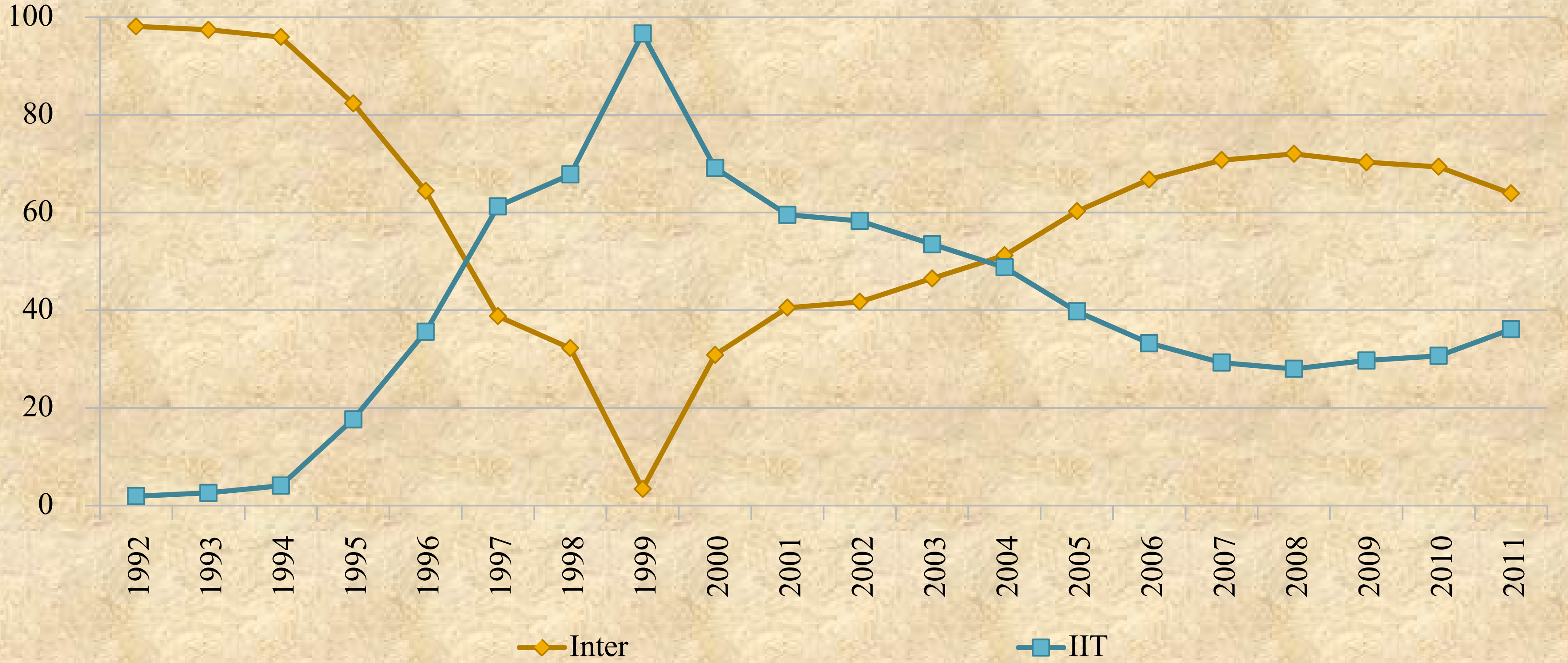
Thailand's automotive industry trade by countries (share in percent, value in millions USD), 1992-2011

Country/region	Exports				Imports			
	1992	1996	2002	2011	1992	1996	2002	2011
ASEAN	5.42	20.14	14.73	24.42	0.54	1.73	10.05	11.88
Indonesia	0.70	2.20	5.06	10.67	0.06	0.13	2.82	5.89
Malaysia	2.30	3.85	4.63	6.32	0.16	0.48	2.19	1.86
Philippines	1.14	4.34	2.52	3.84	0.32	1.12	5.00	3.33
Vietnam	1.28	9.75	2.52	3.59	0.00	0.00	0.05	0.80
ASEAN+3	18.31	29.29	28.25	34.29	78.99	79.64	76.83	81.25
Japan	11.85	8.03	12.08	8.25	76.54	75.65	64.02	58.98
China	0.37	0.50	0.92	1.24	0.37	0.51	1.65	7.02
Rep. of Korea	0.67	0.62	0.52	0.38	1.54	1.76	1.10	3.36
ASEAN+6	21.09	32.39	38.55	47.85	79.24	80.26	77.23	83.86
India	0.03	0.09	1.11	2.75	0.08	0.10	0.15	2.31
Australia	2.74	3.02	9.19	10.82	0.17	0.51	0.25	0.31
World	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
$ millions	468.00	1,239.04	4,305.95	27,413.44	3,170.63	6,131.11	3,554.11	13,452.74

Source: Authors' own calculations based on UN Comtrade database.

Development of intra-industry trade in Thailand's automotive industry-G-L index (%), 2000-2011

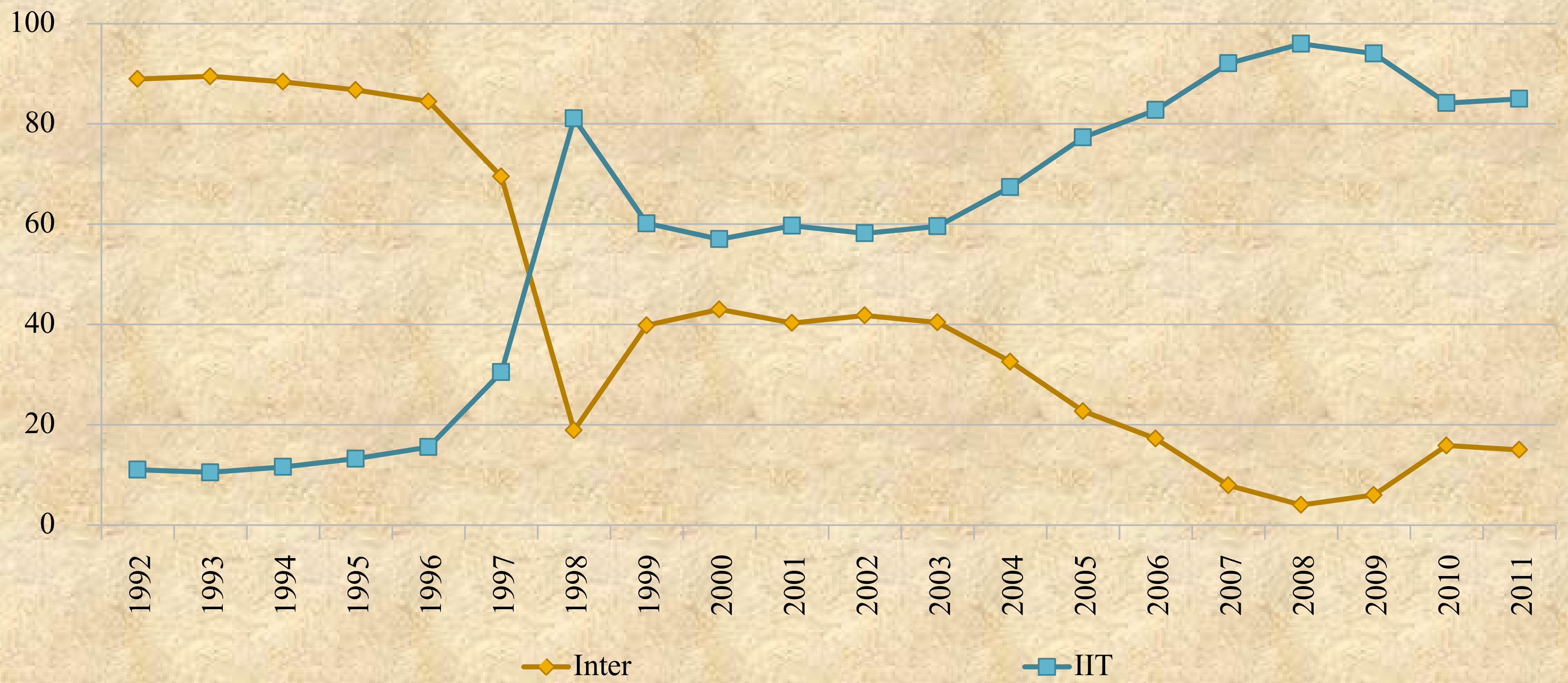
b. Automobile products



Source: Authors' own calculations

Development of intra-industry trade in Thailand's automotive industry-G-L index (%), 2000-2011

c. Auto-parts



Source: Authors' own calculations

Eco-car is the second product champion..

- Auto Alliance – Ford Fiesta and New Ranger, Mazda 2 and BT-50 Pro,
- Nissan – March, Almera (Eco-car)
- Mitsubishi – Mirage (Eco-car)
- Suzuki – Swift (Eco-car)
- Toyota – new eco-car (launch 2013)
- Eco-car is another export product apart from pickup truck.

Processes that were Transferred to Thailand (2002 – 2010)

Process Stages	Individual processes	Before 2002	2002 - 2004	2010 onwards
Product Development	Concept generation	J	J	J
	Product Planning	J	J	J
	Product Engineering	J	**J**/T	**T**/J
	Engineering change for local specification	J	T	T
Process engineering		J/T	J/T	T
Production stage	In-house production management	T	T	T
	Supplier management	T	T	T

Eco-car Phase II Investment Promotion Scheme

- Submit to the BOI by March 31, 2014
- Begin production within 2019.
- Tax exemption privileges 6 years
- In order to qualify for the tax exemptions,
  - Energy-efficient Fuel efficiency increased from 5 litres per 100km in the first phase to 4.3 litres per 100km.,
  - Environmentally friendly (Euro 5), emitting no more than 100 grams of CO_2 per km., and adhere to impact-protection standards set by the UNECE Reg.94 and Reg.95.
  - New investment at least Bt5bn of capital (excluding land) for old firms, and Bt6.5bn for new firms.
  - Scale: 100,000 cars per year (by the forth year of production)
- In addition, the preferential excise tax rate requires eco-cars to have engine sizes smaller than 1,300 cc (for petrol engines) and 1,500 cc (for diesel engines).

Conclusion

- Fifty-year history - from just a small import-substituting industry to a large and vibrant exporting one.
- Japanese production network is prominent in ASEAN
- Intra-industry trade increases significantly in parts and components, especially with China and Indonesia.
- Agglomeration of automotive cluster → production volume expansion → deepening technological capabilities → technology transfer is incremental process
- Economies of scale is a necessary condition for firms to upgrade technological capabilities in overseas affiliate.
  - Size of market → increase in R&D and engineering expenditure

Challenges

- Structural change after the AEC 2015 takes place
- Will the division of labour of Japanese production network change?
- How will road network, i.e., East-West , South Economic Corridor, Southern Coastal Sub-corridor, shape the future production location?
- Can Thailand still be the center of automotive cluster in ASEAN?

Thank you