Challenges to Thai Automobile industry

Lecture 17

Bhanupong

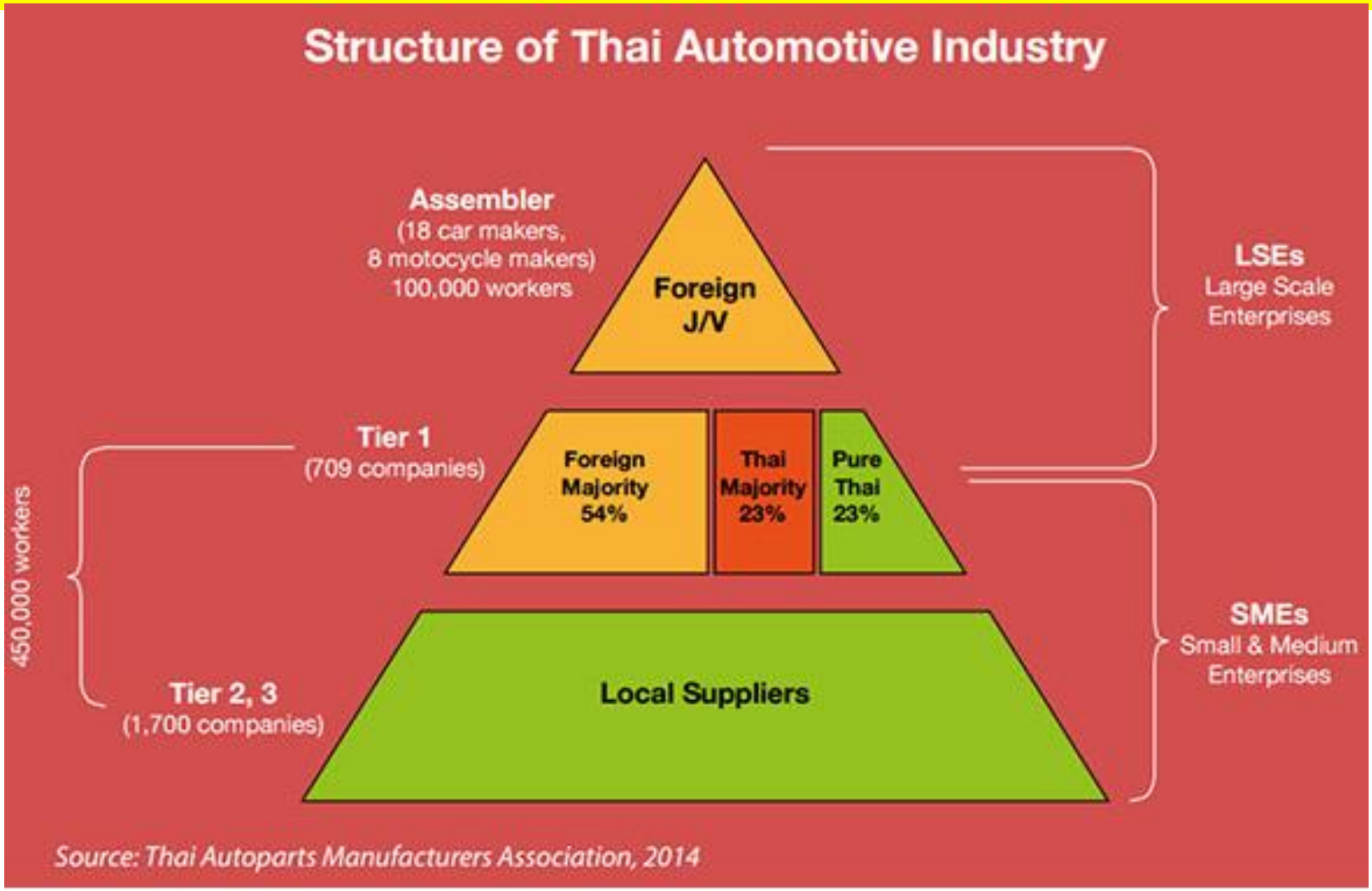
Course Syllabus
Lecture 17: Automobile Industry

- We explore the automobile industry by pointing out the role of FDI.
- Does the success of this industry bode well for the resilience and dynamism of the Thai manufacturing sector?

Outline

1. Industry structure
2. Historical perspective
3. The role of FDI
4. Impact of global recession and recovery
5. Recent strategy: Eco car program

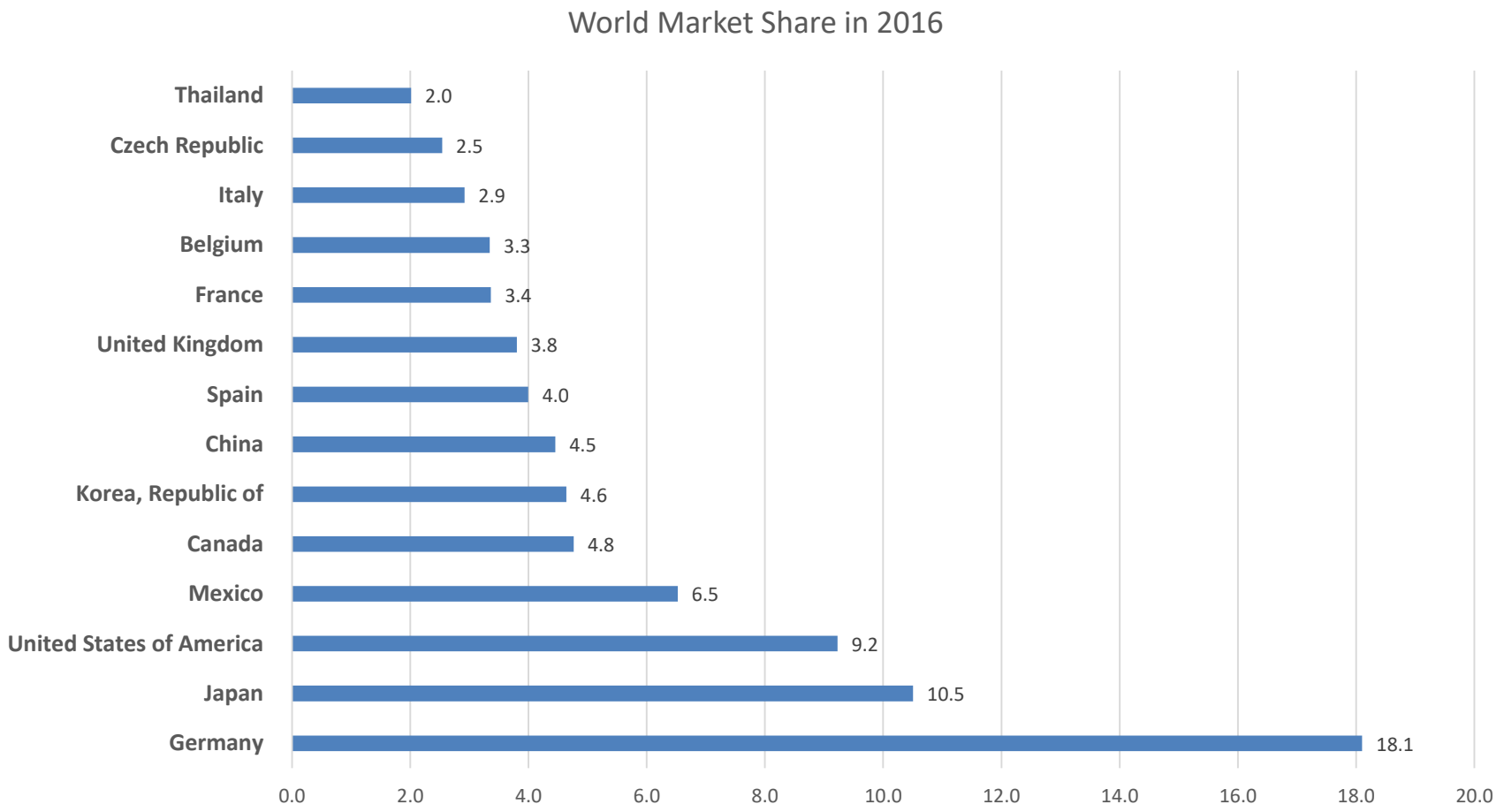
1. Industry Structure



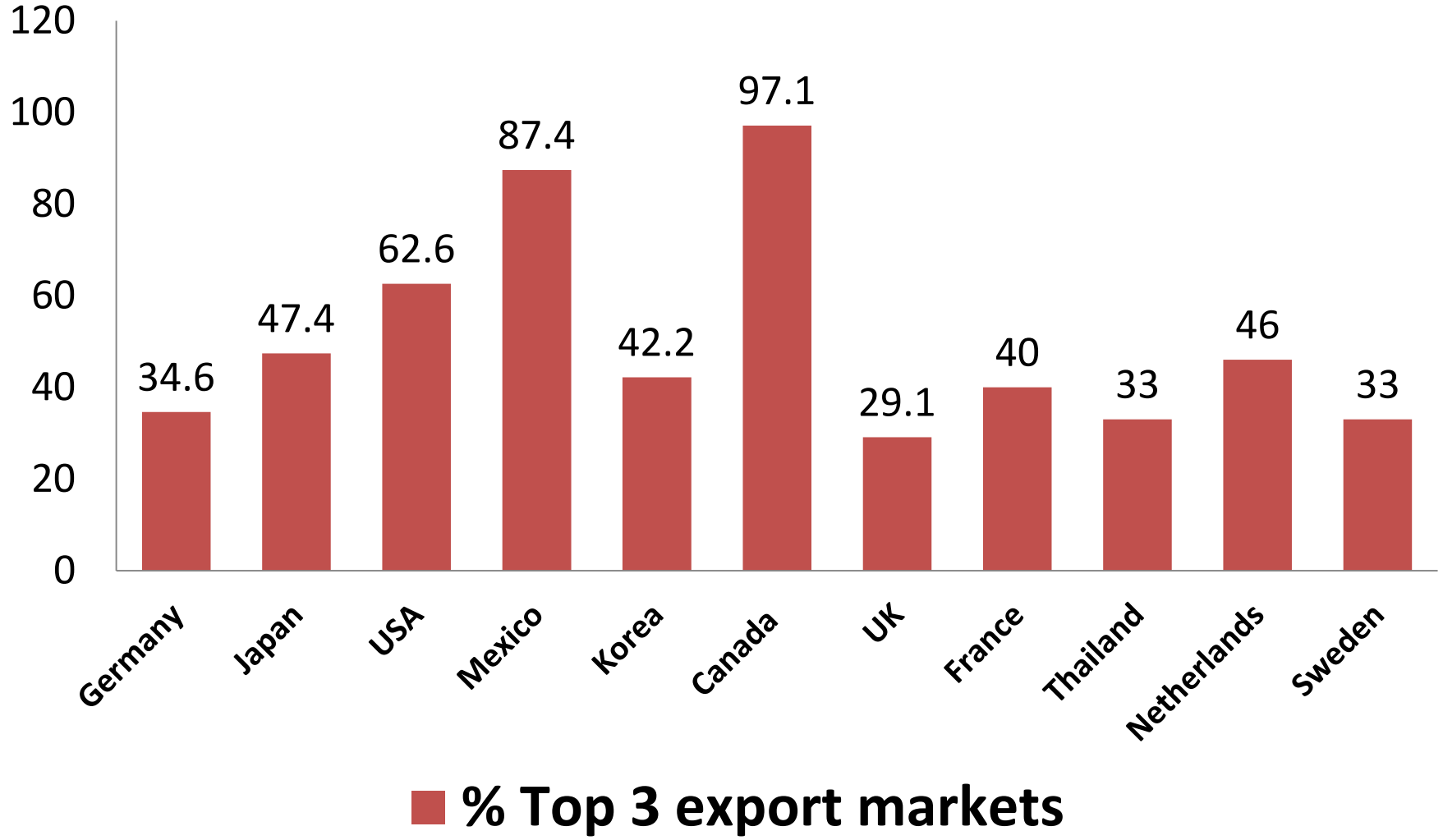
Major multinational automotive industry leaders with presence in Thailand

- Auto Alliance Thailand (Ford and Mazda)
- BMW, Mercedes-Benz
- General Motor,
- Honda, Isuzu, Toyota, Mitsubishi, Nissan, Suzuki
- Tata
- Volvo Car Thailand

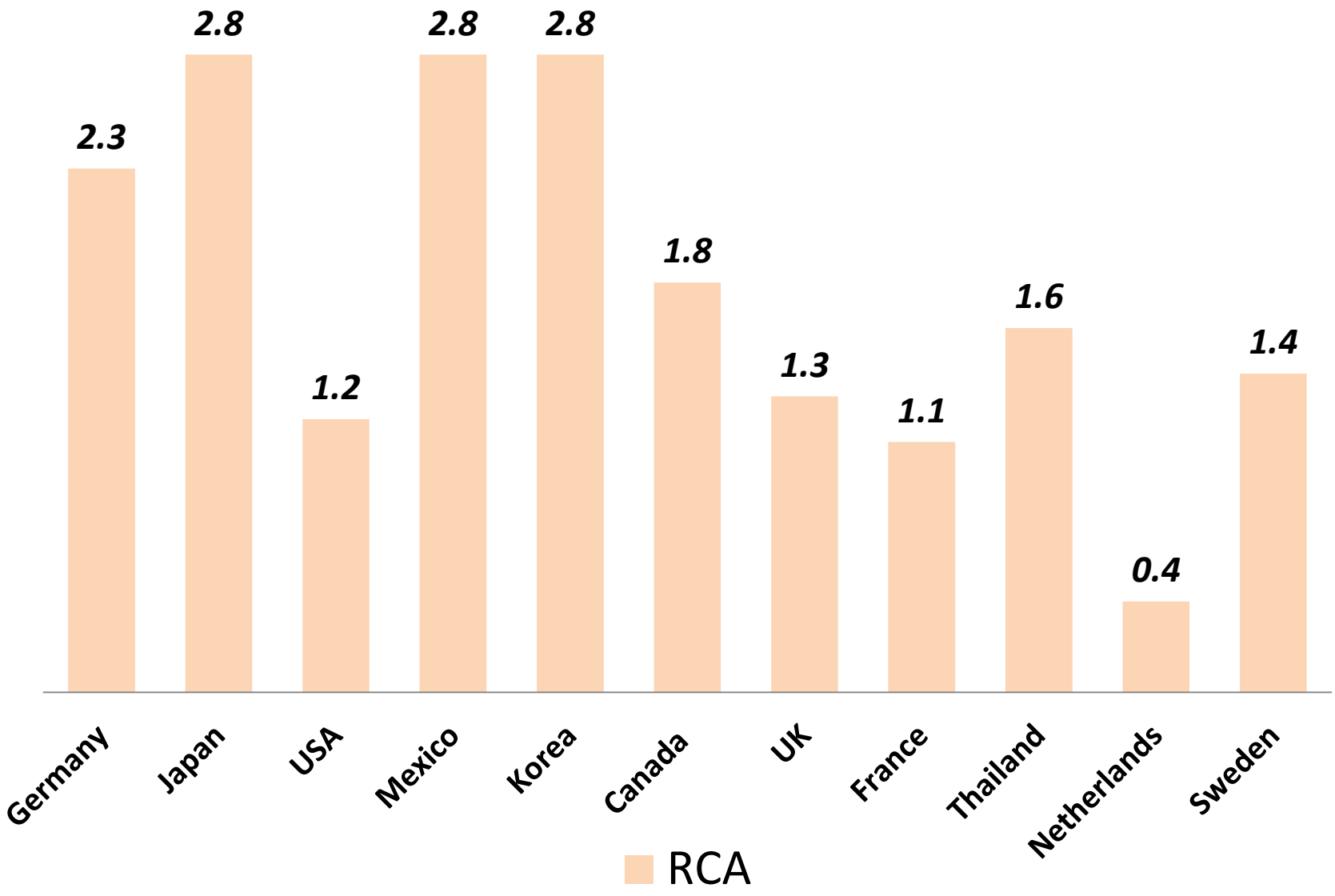
World's top vehicle exporters in 2016



Export Market Concentration of major exporting countries



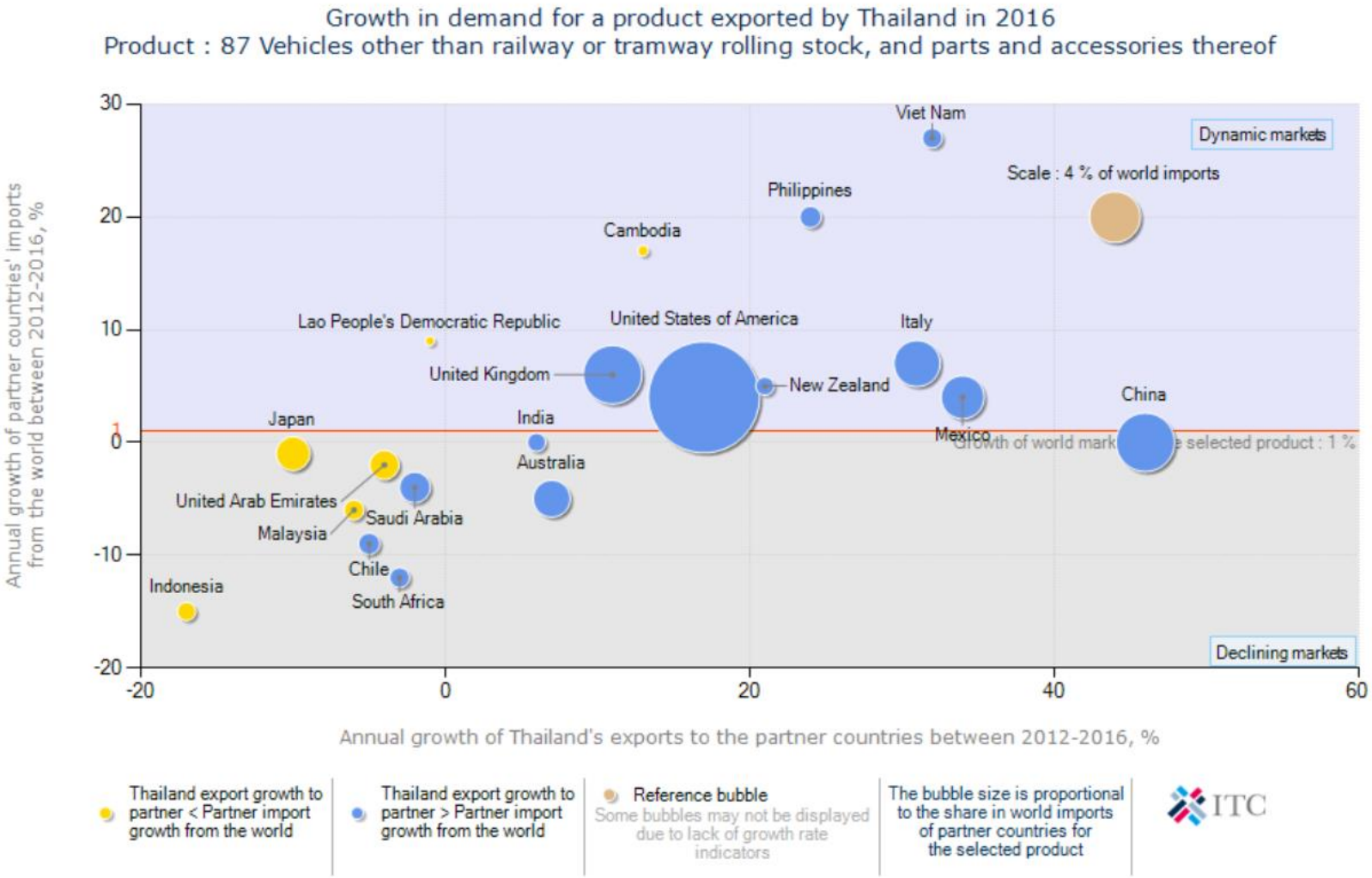
RCA: Specialization in Automobile Production



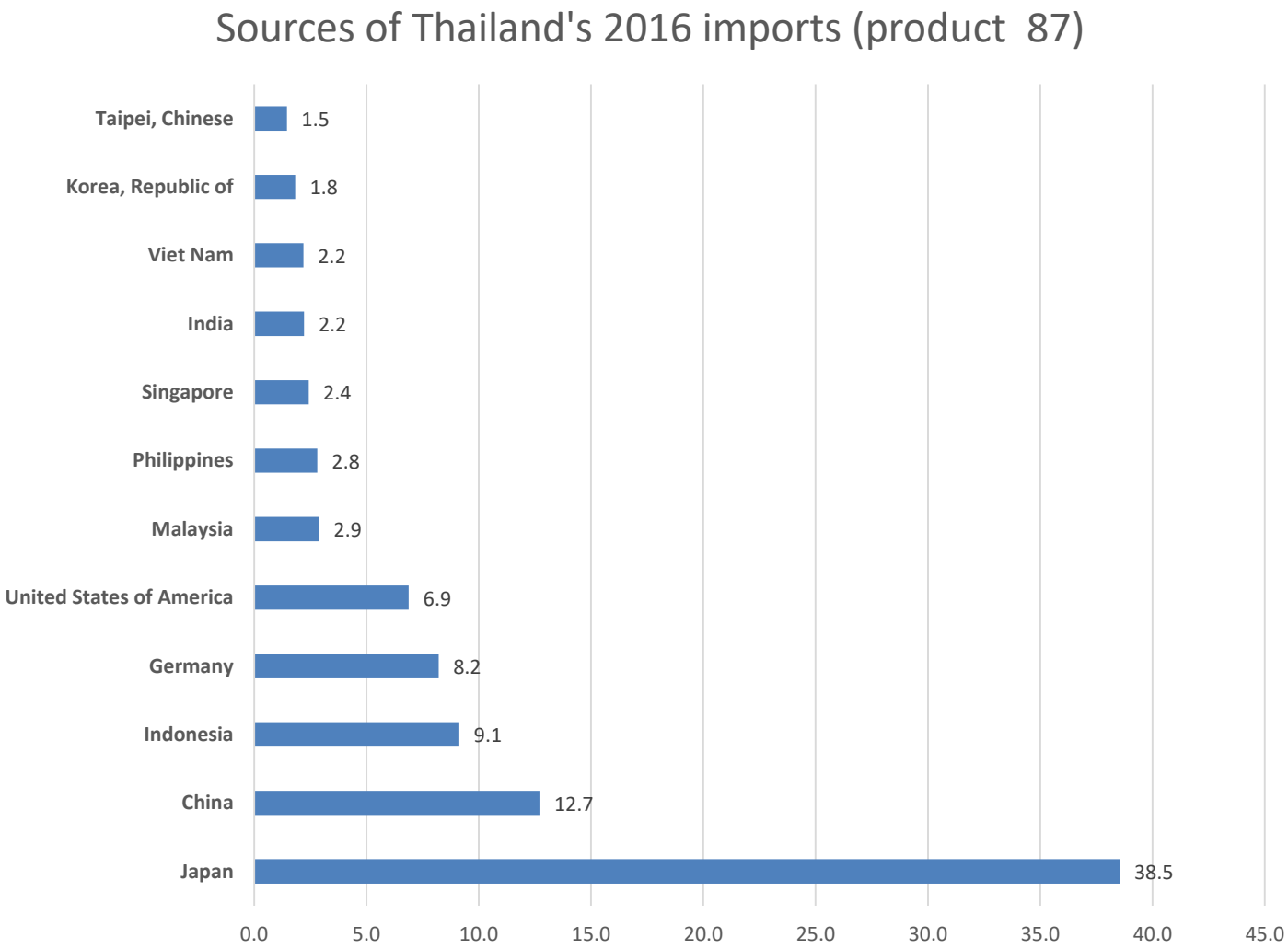
Why Australia?

- Over half of automobile market in Thailand has been dominated by one-ton pick-up truck and its parts and components,
- Most Japanese assemblers tried to export such vehicles.
- Fortunately, there was certain amount of market for one-ton pick-up truck and its components worldwide.
- There was large market in developing countries and Australia, mainly because of their bad condition of roads in countryside, while there was only very small market for one-ton pick-up trucks in developed countries.
- Thus, this strategy turned out to be a great success.
- Free Trade Agreement between Thailand and Australia

Dynamic vs declining markets



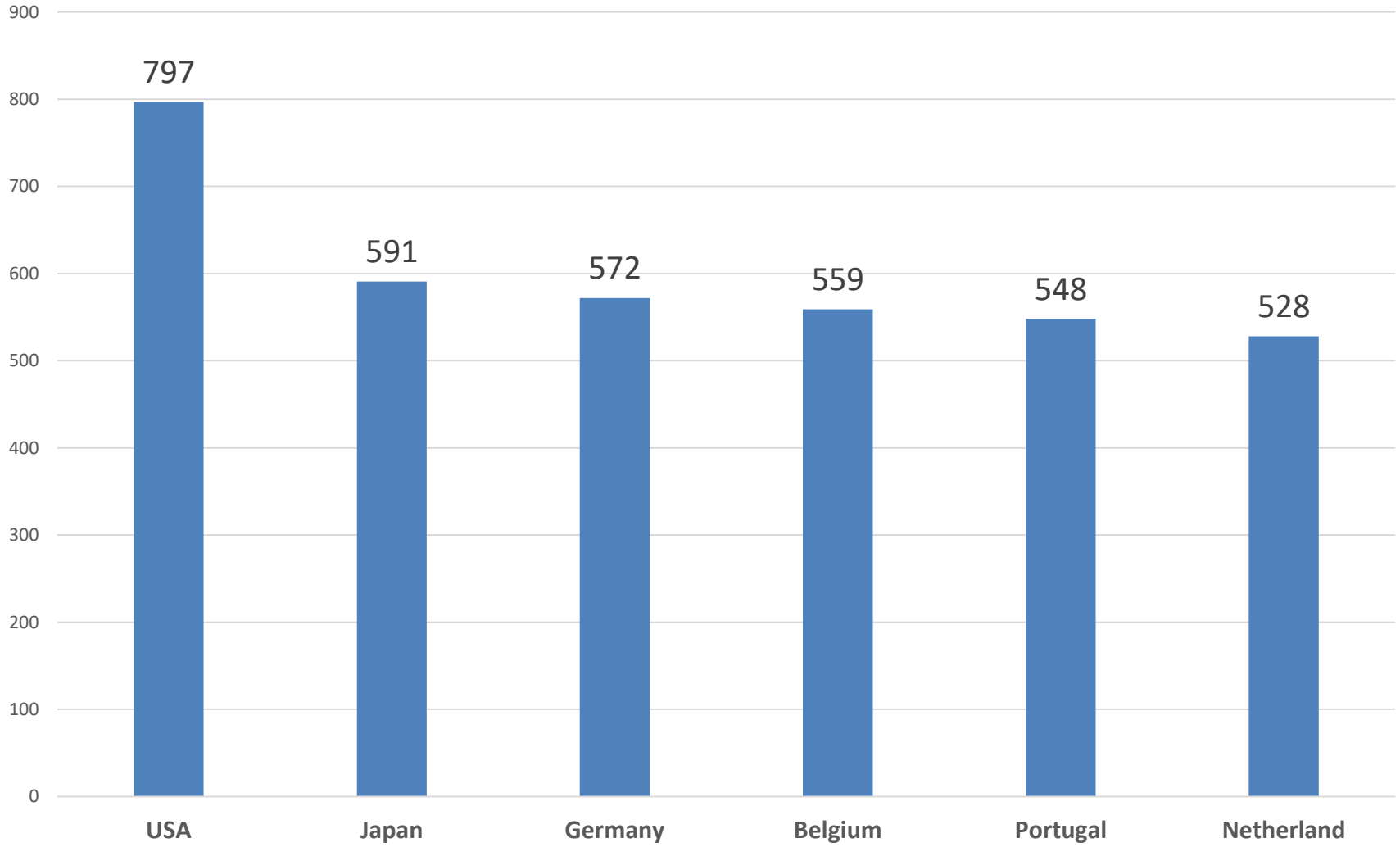
Intra-industry Trade

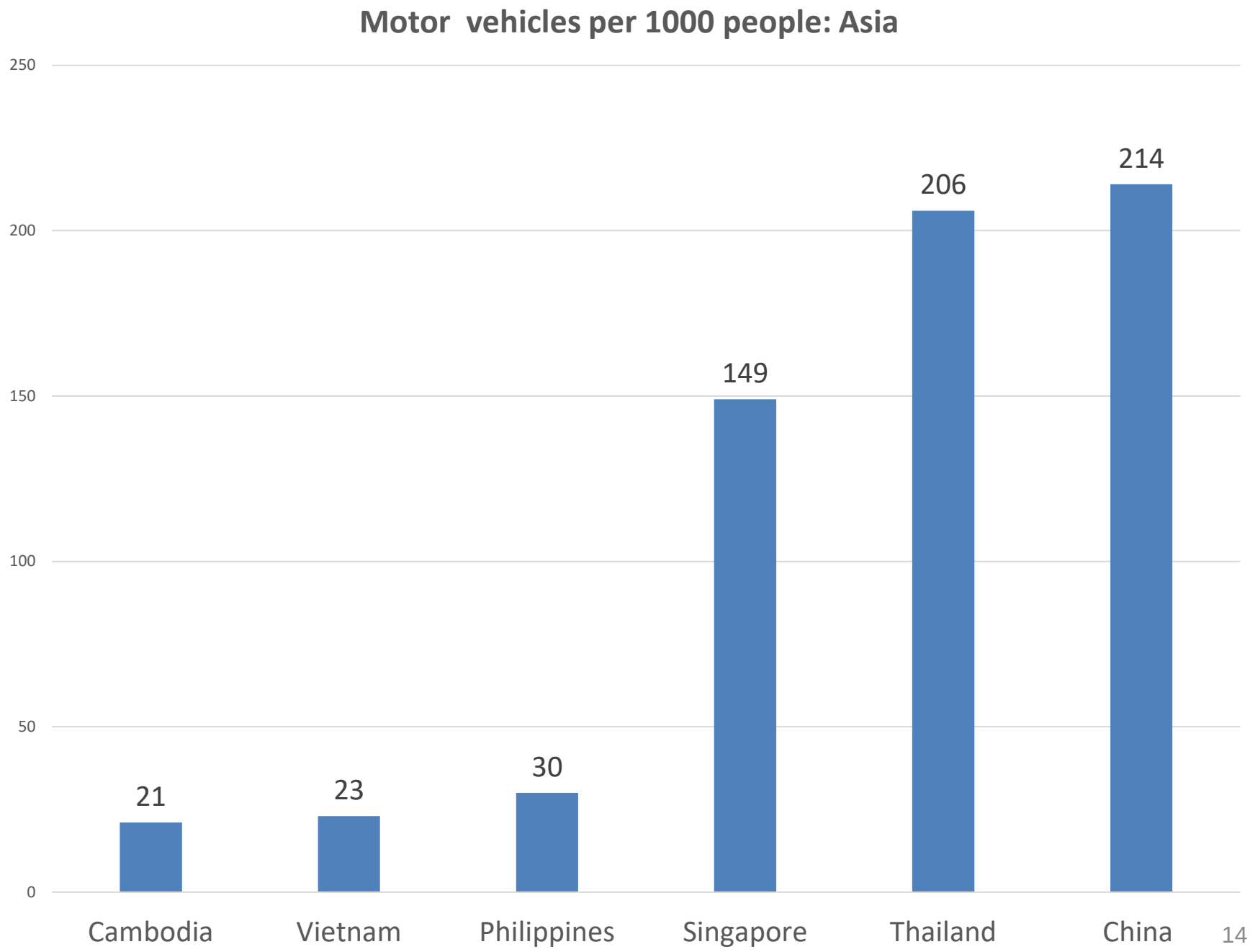


Opportunities

- Car ownership in Thailand is 4.8 people per unit, much less than 1.2 in the United States and 1.7 in Japan.
- Vietnam: 43.5
- Cambodia: 47.6

Motor vehicles per 1,000 people: High income countries




Motor vehicles per 1000 people: Asia
250
200
150
100
50
0
21
23
30
149
206
214
Cambodia
Vietnam
Philippines
Singapore
Thailand
China

On the road to becoming the Detroit of the Asia?

- Thailand is the largest automobile market in Southeast Asia.
- It has 1,095 **auto parts** producers, compared with 385 in Indonesia, and 232 in Malaysia.
- Thailand ***hoped*** that BMW would locate a design center in Thailand (the third after similar operations in Germany and California)
- The country's pickup truck market is also said to be the second largest in the world after the US, because of the strength of the grassroots and small-business economy.

Challenges

- Thailand is facing competition from many Asian countries, especially China and India, to attract foreign investment from carmakers and auto parts suppliers to their homelands.

- The auto industry, which is the ***highest*** paid manufacturing sector, is facing a shortage of skilled labor.
- Salary increases are about **5.6%** per year on average and **labor unions** are very influential when compared to those in other sectors .

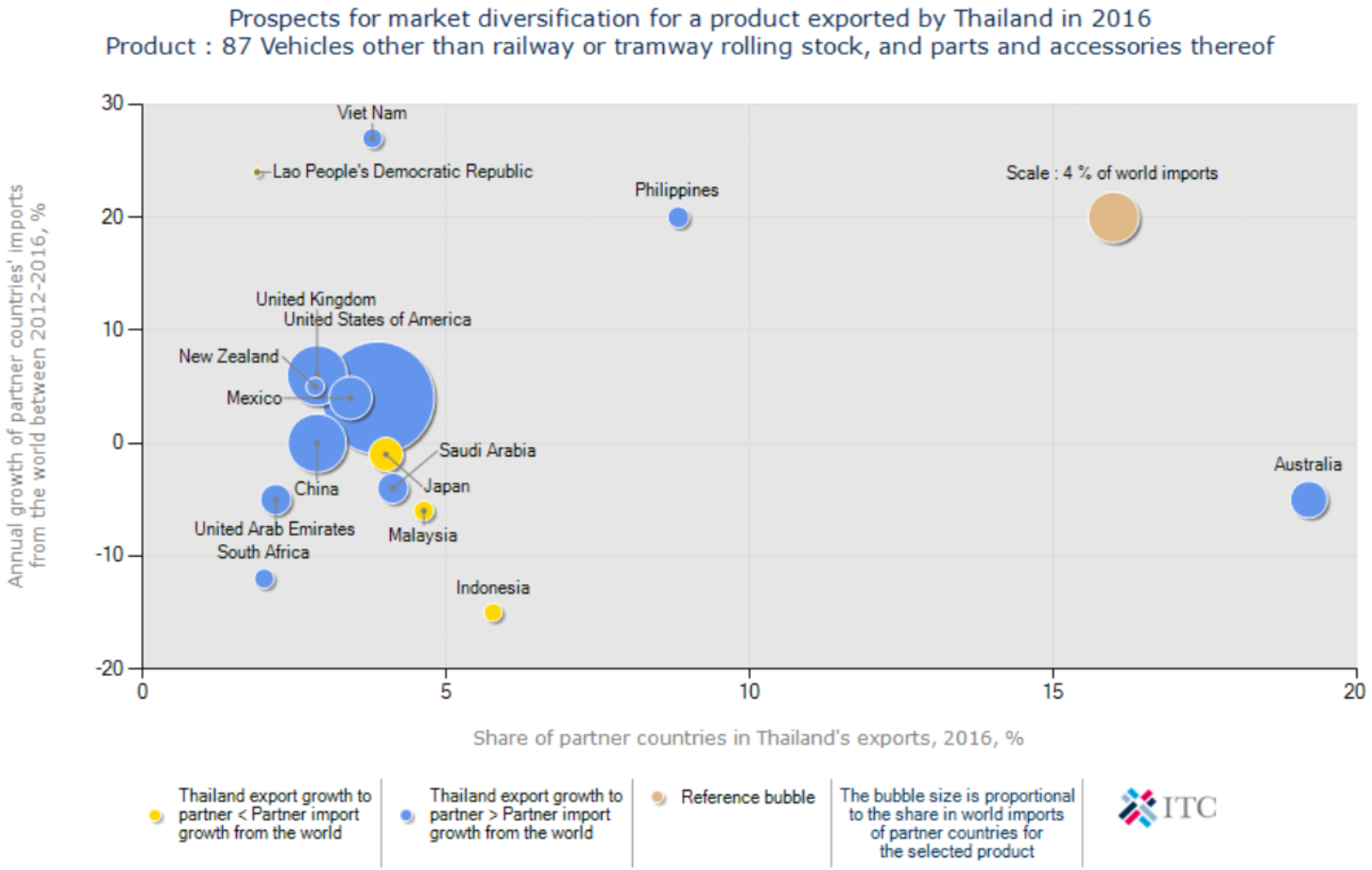
Trade Performance Index (2016)
Source: ITC

Indicator's Description	Transport equipment (Value)	Transport equipment (Rank)
Number of exporting countries for the ranking in the sector	150	
Value of exports (in thousand US$)	29,617,358	
Export growth in value, p.a. (%)	2%	52
Share in national exports (%)	13%	
Share in national imports (%)	6%	
Relative trade balance (%)	39%	
Relative unit value (world average = 1)	0.9	
Net exports (in thousand US$)	16,847,105	6
Per capita exports US$/inhabitant)	430.1	33
Share in world market (%)	1.77%	14

Trade Performance Index (2016) Source: ITC

	Number	Rank	
Product Diversification	11	31/150	
Market Diversification	17	51/150	
Change of world market share (pa %)	1.65		

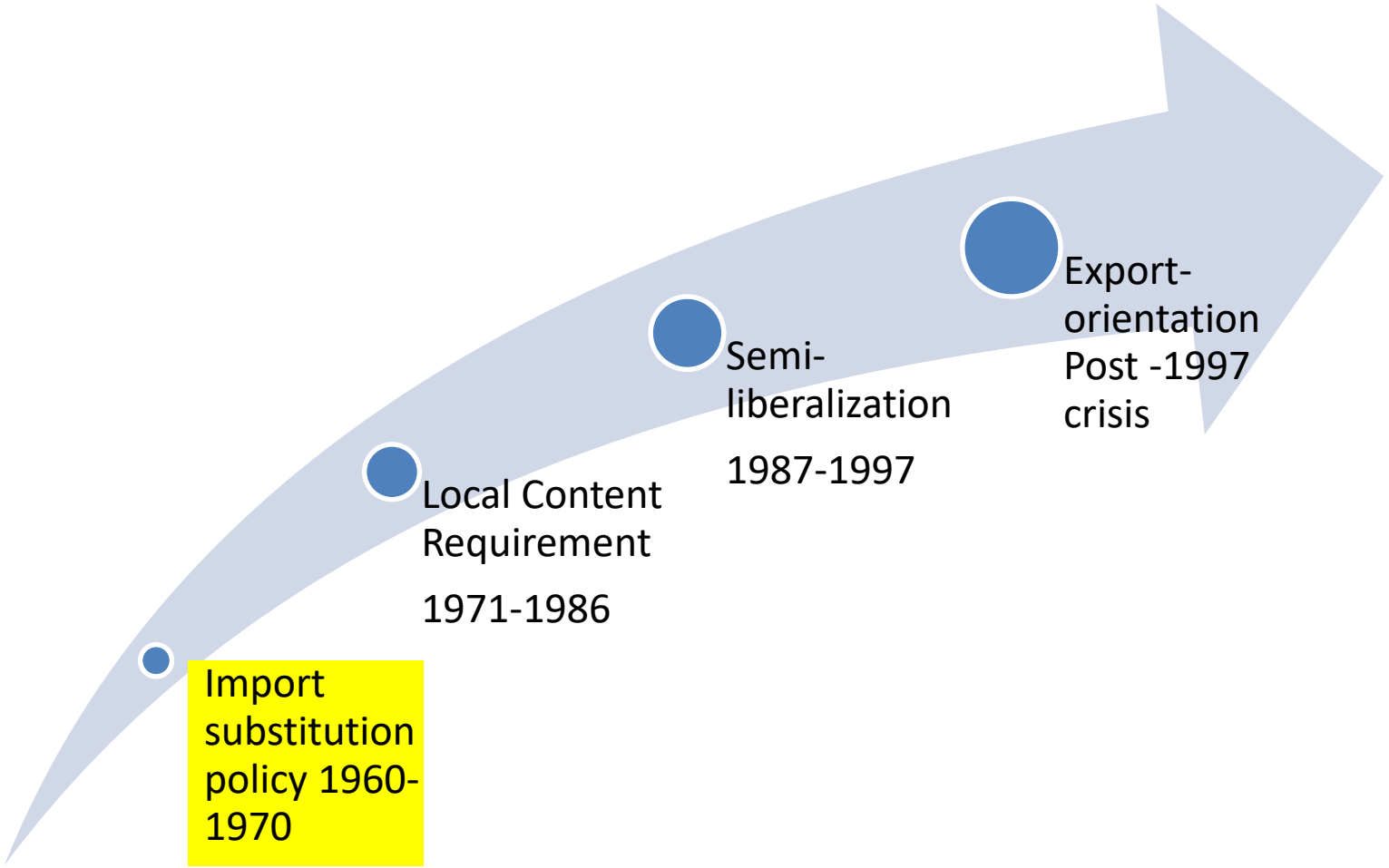
Market Diversification



2. Stages of Industrial Development

1. Import substitution policy: (1960-1970)
2. Local content requirement: (1971-1986)
3. Semi-liberalization: (1987-1997)
4. Post-1997 crisis: Export-orientation strategy

Historical Development



The ***first*** stage of automobile industry development (1960-1970)

The auto industry was among the first to receive ***promotion*** from the Board Of Investment (BOI), hoping to create ***linkages*** to other industries.

Import substitution was created through high tariff and limitation of new assembly plants until it was lifted in 1993.

Four new assemblers had been established: Honda, GM, BMW, and Auto alliance (Ford and Mazda).

The ***second*** stage (1971-1986)
How was the auto parts industry created?

- From 1973 to 1999, the Thai government had implemented various policies: a ***Local Content Requirement*** (LCR), mandatory and selective items for localization, high import tariffs, a ban on imported CBU, a ban on new assembly plants, and ***localization of diesel engine***.
- Local component firms produced Replacement Manufacturing (REM) as well as Original Equipment Manufacturing (OEM) parts.
- There are 200 OEM firms-Japanese owned or joint ventures.

The *third* stage
Semi-liberalization period: 1987-1997

- By the end of 1987, Siam Motors, Nissan and MMC Sittipol (Mitsubishi) started exporting "Champ" to Canada.
- The minimum Local Content Requirement (LCR) was set at 54 % for passenger cars, 70% for one-ton pickup trucks.
- Assemblers of pickups must use local manufactured engines; **imports of engines were banned.**
- ***It was still an Infant industry: Need protection***

Mitsubishi Champ
1987

The ban on imports of Completely Built Unit (CBU) was lifted in 1993

- The protective tariff system on automobiles and parts were restructured.
- The highly protected industry has become more competitive.
- ***BOI*** *promoted three Japanese joint ventures (Toyota, Nissan, and Isuzu) which began producing* ***diesel and gasoline engines*** *in Thailand.*

Impact of the 1997 crisis

- Domestic sale declined sharply by 38 % in 1997 and 60 % in 1998.
- The capacity utilization was at the lowest level of 17% in 1998.
- Firms reduced production, temporary stopped production, reducing numbers of workers.
- Was Toyota factory about to be shut down in 1998?

Who drove that light blue Toyota Soluna (sub-compact model) out of the Toyota factory during the severe economic slump in 1998?

Impact of the 1997 crisis: Changing strategy

- Toyota and Honda which previously concentrated on only domestic market began **shifting** the focus to export markets by trying to utilize excess capacity.
- Baht depreciation helped during the time when the rest of the world was growing
- *The slower we change, the faster we die*.

The fourth stage industry development

Export orientation

the post 1997 era

- Before 1997, most production went to domestic market where local people had high purchasing power—only a small amount was exported.
- After the crisis hit and domestic demand collapsed, producers aimed more at the export markets.
- The crisis was a blessing in disguise.
- **The LCR was abandoned by the end of 1999**
- *Can we establish an industry starting with export promotion policy instead of import substitution policy?*
- After 40 years of development,
  Thai automobile industry has become externally oriented.

Exports Galore, until..

- Exports of automobiles increased sharply after the crisis, from 14,020 units in 1996 to 42,218 in 1997, to 67,857 in 1998, and 125,702 units in 1999.

- Some part and component firms succeed in penetrating export markets of some products: ***safety glass, ignition coils, wiring harnesses, air and oil filters***.

On relationship with economic concept in other courses

- Development theory: Backward and forward linkages
- International trade theory: intra-industry trade
- Industrial Economics: The role of FDI
- Macroeconomic Theory: Neoclassical Theory of Investment

Albert Hirschman's Strategy of Economic Development (1958)

- Hirschman introduces the concept of backward and forward linkages.
- A backward linkage is created when an industry encourages investment in facilities that enable the project to succeed.
- A forward linkage is created when investment in an industry encourages investment in **subsequent stages** of production in another industries.
- Think of BTS stations and investment in real estates.

Backward Linkage

- As in the case of **cotton** industry, growth of the **textile** industry may support the growth of the cotton industry, which will lead to higher incomes for cotton farmers and will create a greater demand for goods and services in the countryside.
- Processed shrimp industry is linked backward with shrimp farming, shrimp feed industry, soybeans, and fishing industry.
- Normally, industries create both forward and backward linkages.
- Investment should be made in those industries that have the greatest total number of linkages.

Backward linkages in steel and textile industry

- Backward linkages in the **steel industry** include **coal and iron ore** mining.
- Backward linkages can be defined as "the growth of an industry leads to the growth of the industries that supply inputs to it".
- The steel industry produces hot rolled and cold rolled steel sheets.

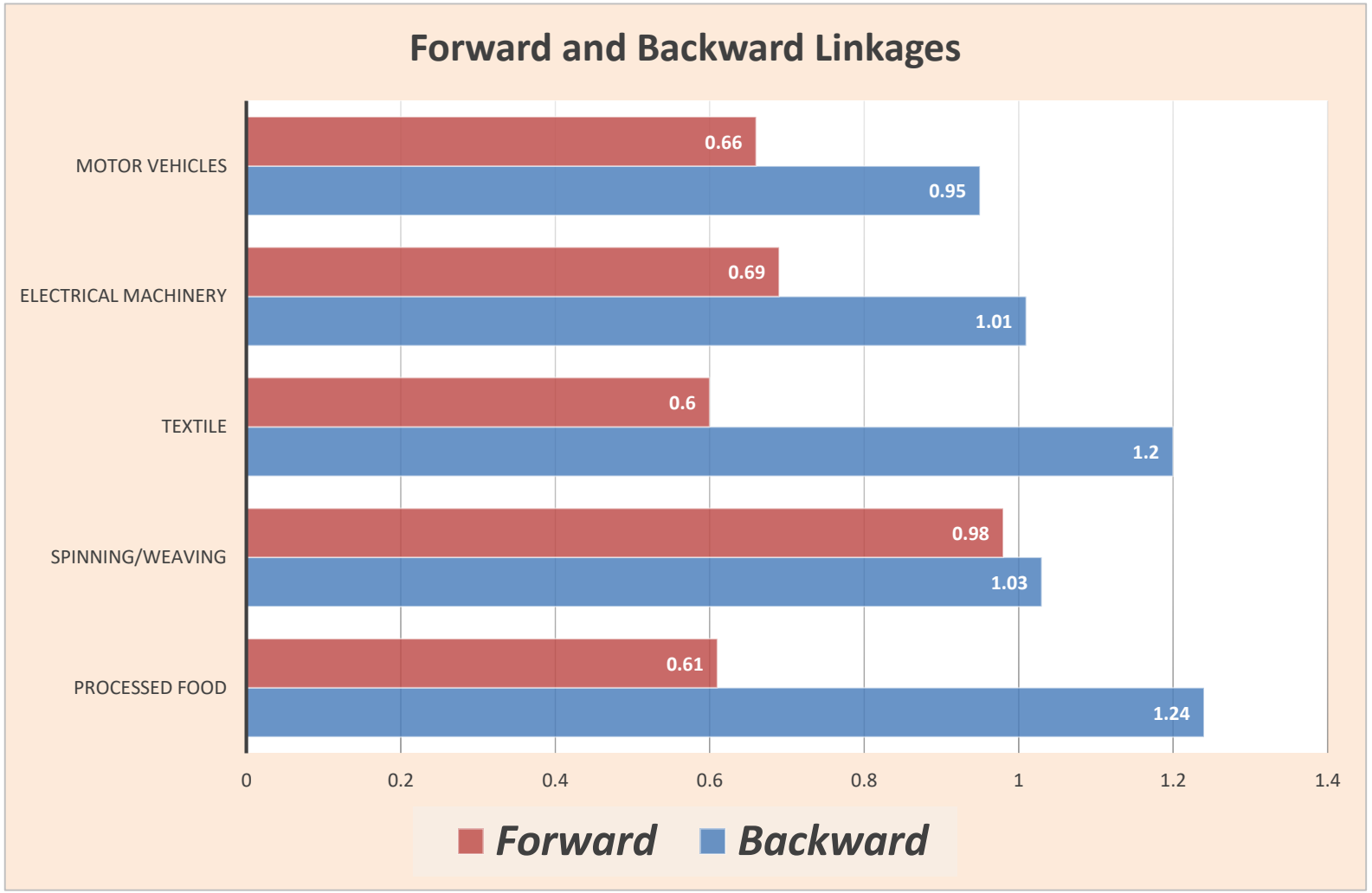
Forward linkages in steel industry

- Forward linkages in the steel industry include items such as construction, automobile industry, canned goods, and ship building.
- Forward linkages exist when the growth of an industry leads to the growth of other industries that uses its output as input.
- The backward linkages of car assembling industry is the auto-part industry.

Thailand's industry in 2010

Source: Input-Output Table (NESDB)

The index which is greater than unity is preferable



Backward linkages in Automobile industry: Importance of parts and components

- Exports of automobiles and auto parts have continually increased since 1997, as many foreign conglomerates have moved their production bases to Thailand.
- Strong **auto-parts** industry is a fundamental support for the growth of automotive production and attracts foreign companies to move their bases here.
- In September 2017, the last Toyota car was produced in Australia. GM and Ford had already left Australia earlier.
- The wage rate there was higher than Austria.

Problems with local parts suppliers

- Buyers' requirements: They need to meet international standard on Quality, Cost, and timely Delivery (QCD)
- Costs of parts and raw materials was reduced by 15-30% by 2006, but Thailand was able to compete in 2017.
- Plants in Thailand have limited role in **process engineering.**
- The lack of process engineering capability was due to the fact that suppliers in Thailand ***need not*** perform designing, tooling, or production process themselves.
- That decisions and tasks are determined and performed by the headquarters in Nagoya.

3. The Role of FDI

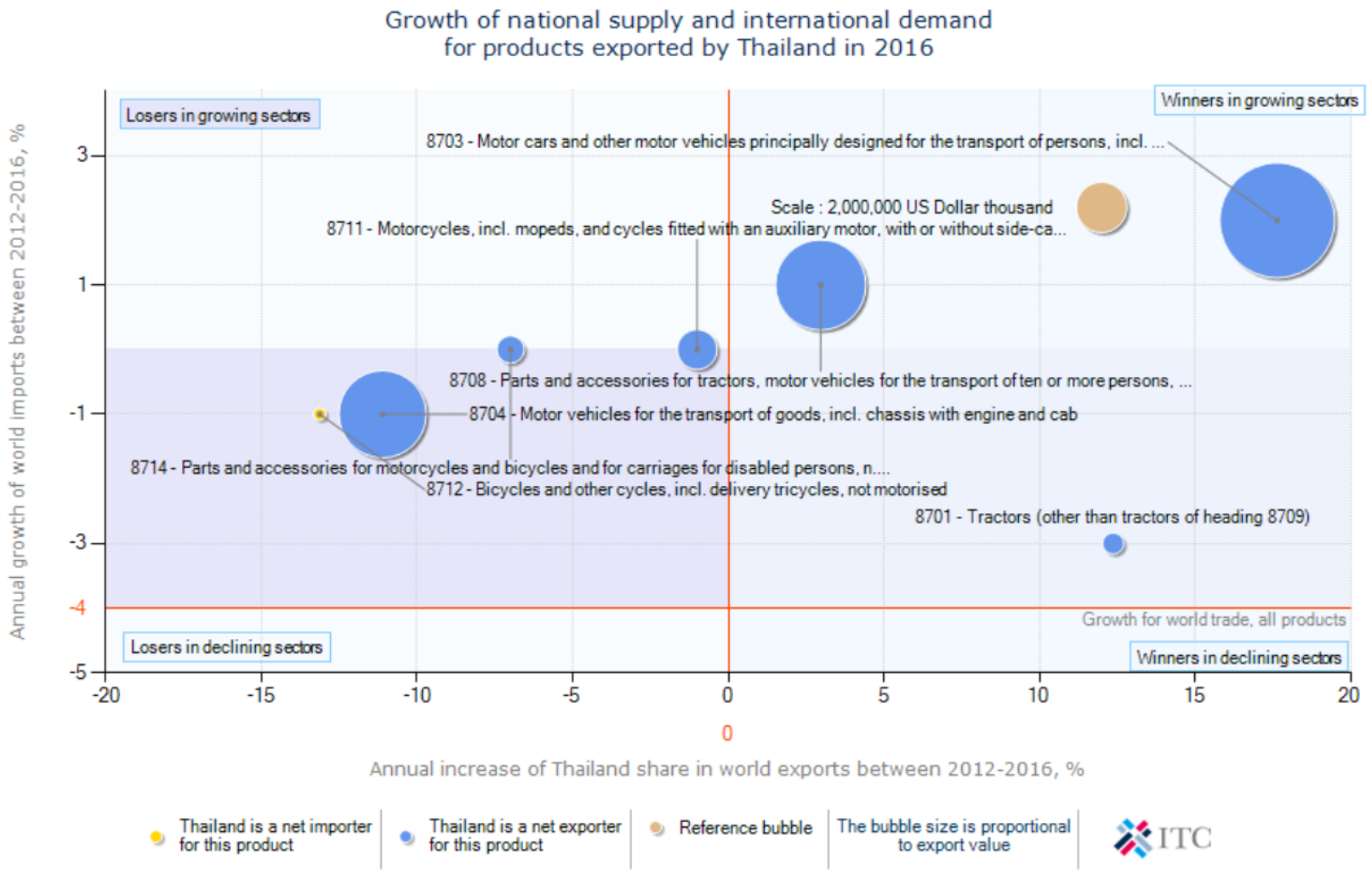
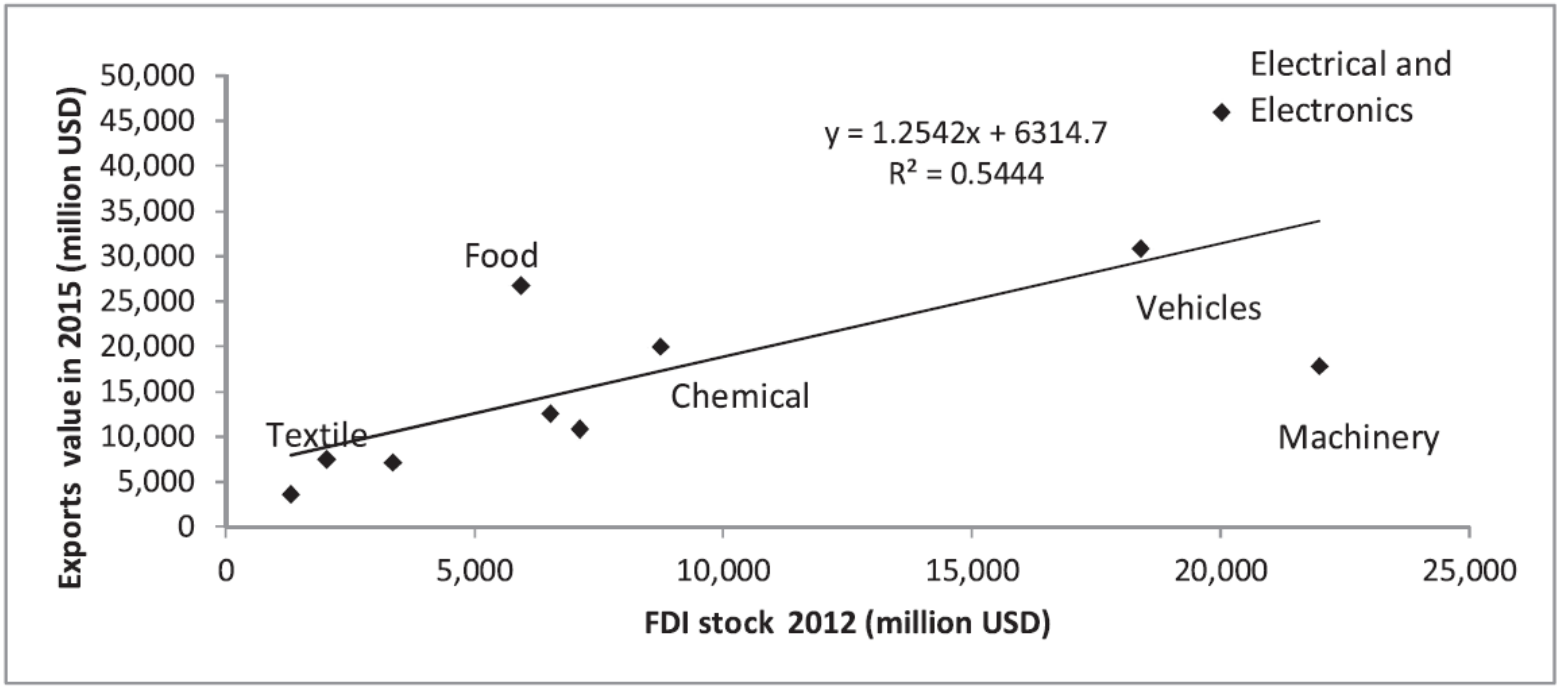


Figure 1. Sectoral FDI stock and exports



Automobile Hub

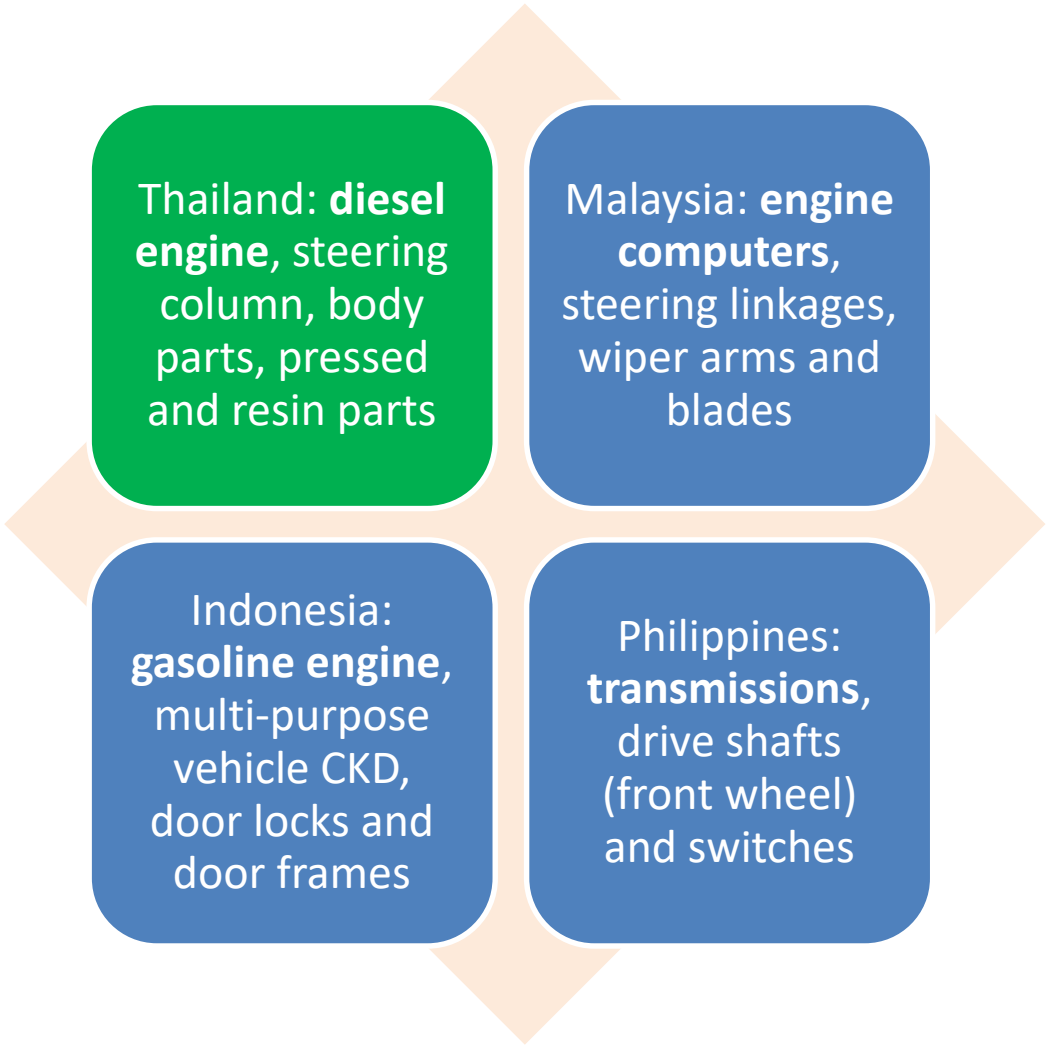
- Because of automobile assemblers' globalization strategy for production efficiency, Thailand **was selected** as a production hub in the region.
- Isuzu (partly owned by GM) and Toyota will transfer all of their pickup production in Japan to Thailand.
- However, Japanese firms were widely criticized for their hesitancy in transferring technology.

Why did foreign firms invest in Thailand's automobile sector?

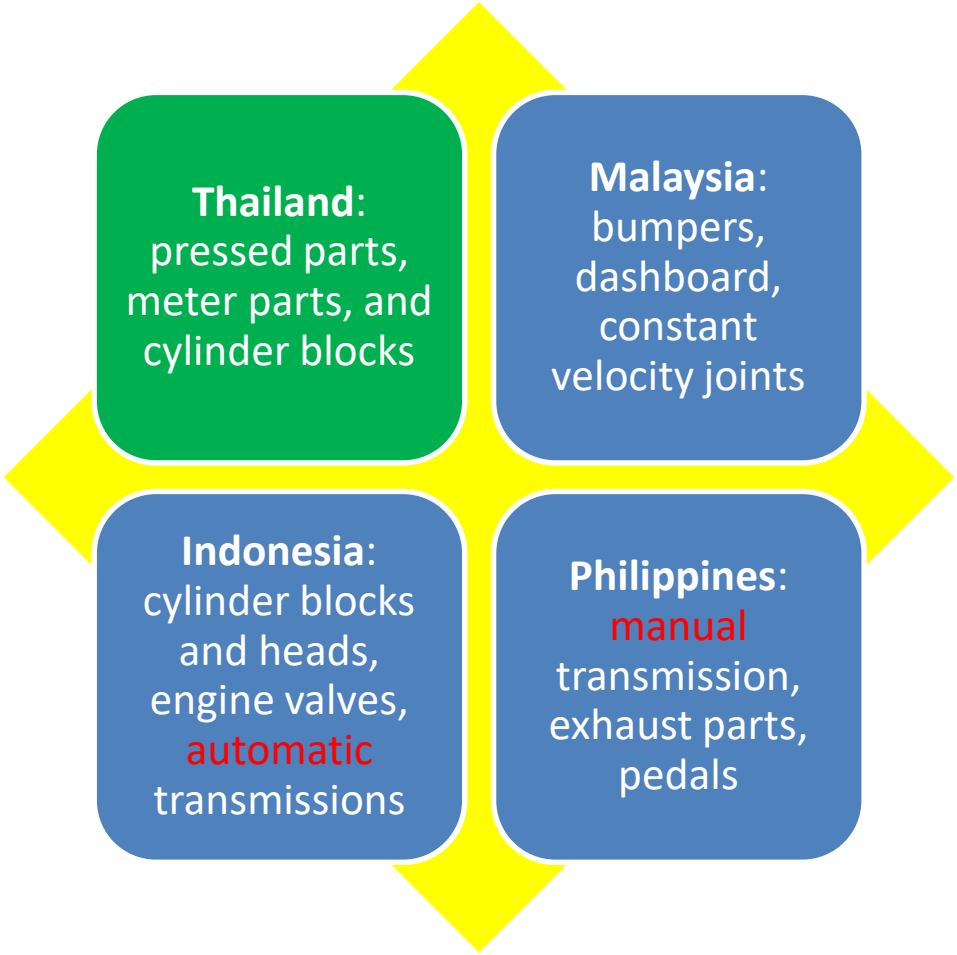
- Thailand has no ***national car*** project; thereby offering a level playing field.
- **Open market policy** (lifting LCR, reducing import tariff on raw materials).
- Expanding domestic markets and establishing export platform.
- World class suppliers of automobile parts followed GM and Ford's relocation to Thailand.

Toyota's production network

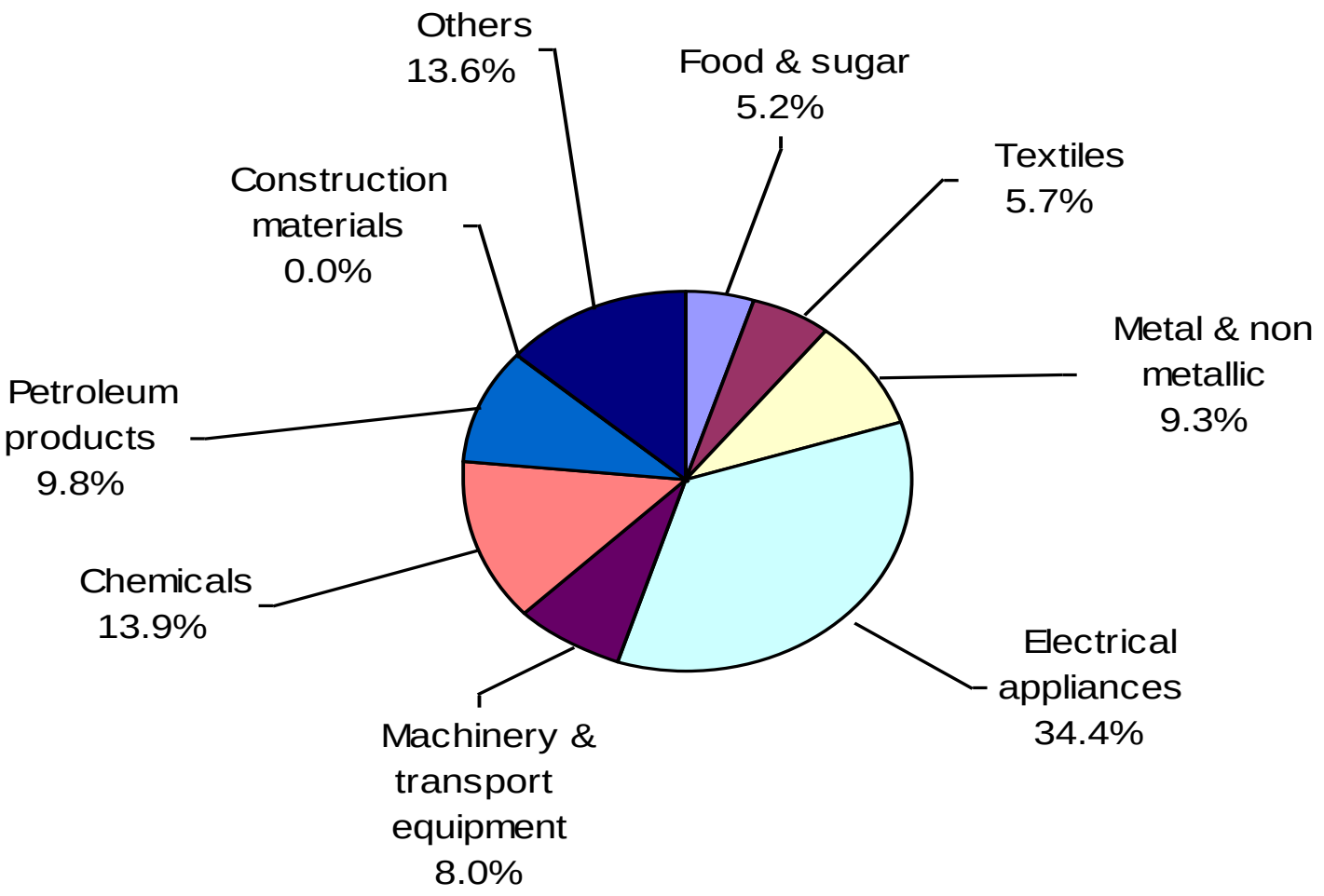
Source: JETRO and Japanese Automotive Parts Industry



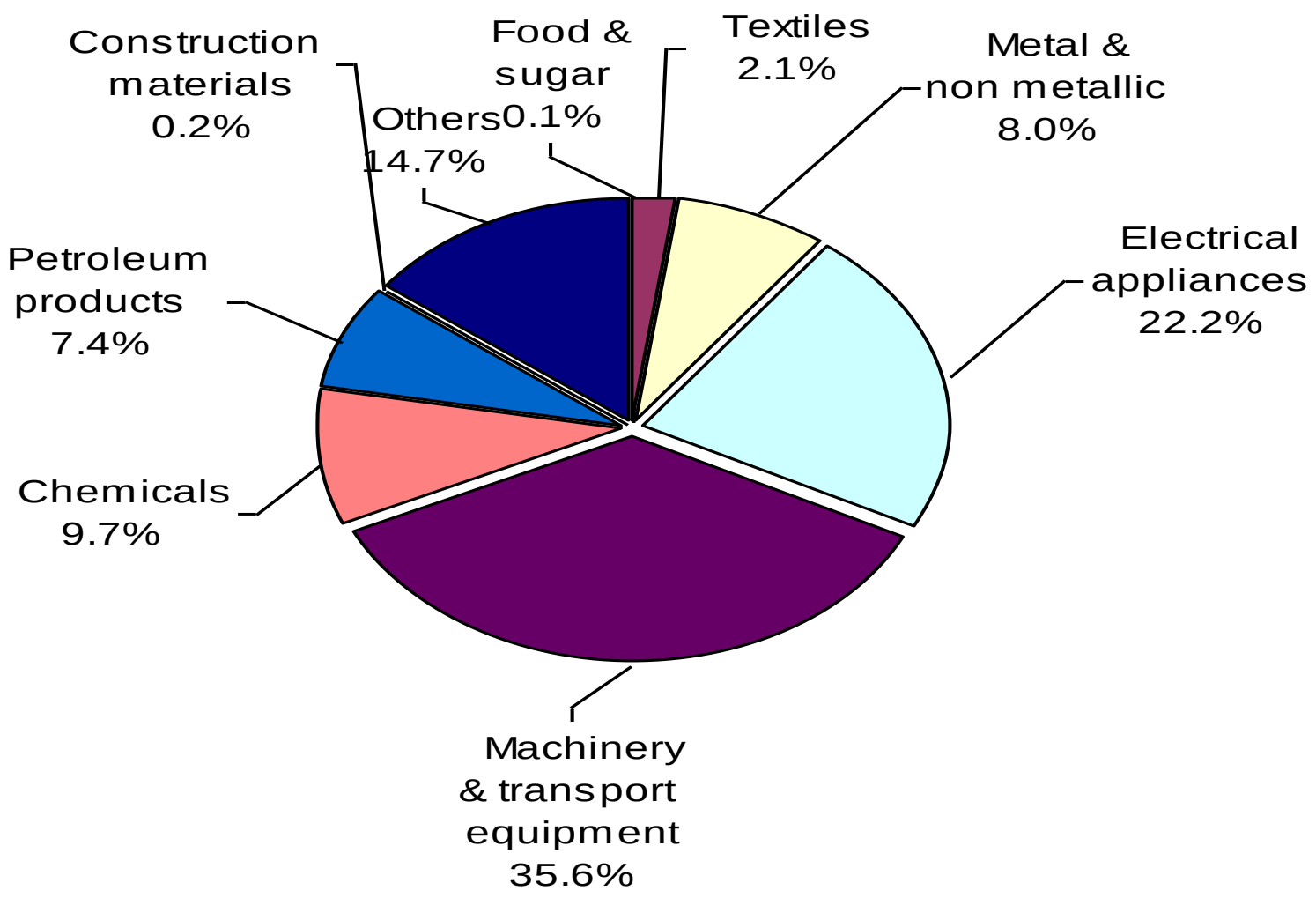
Honda's regional production network



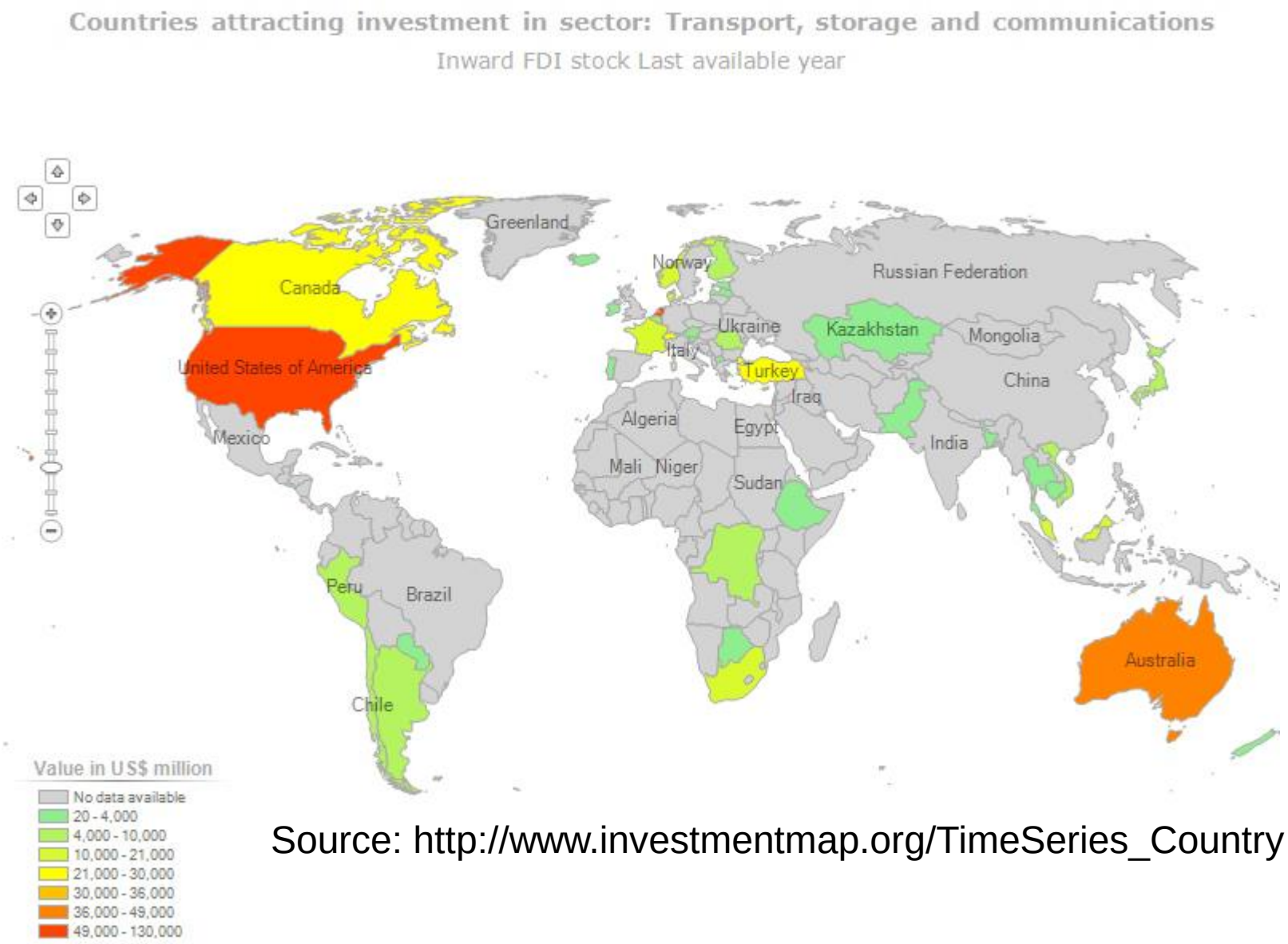
Net FDI by Sector: 1990



Net FDI by Sector in 2006



Inward FDI stock in transport last available year



Source: http://www.investmentmap.org/TimeSeries_Country

5. Impact of Global Recession and Recovery

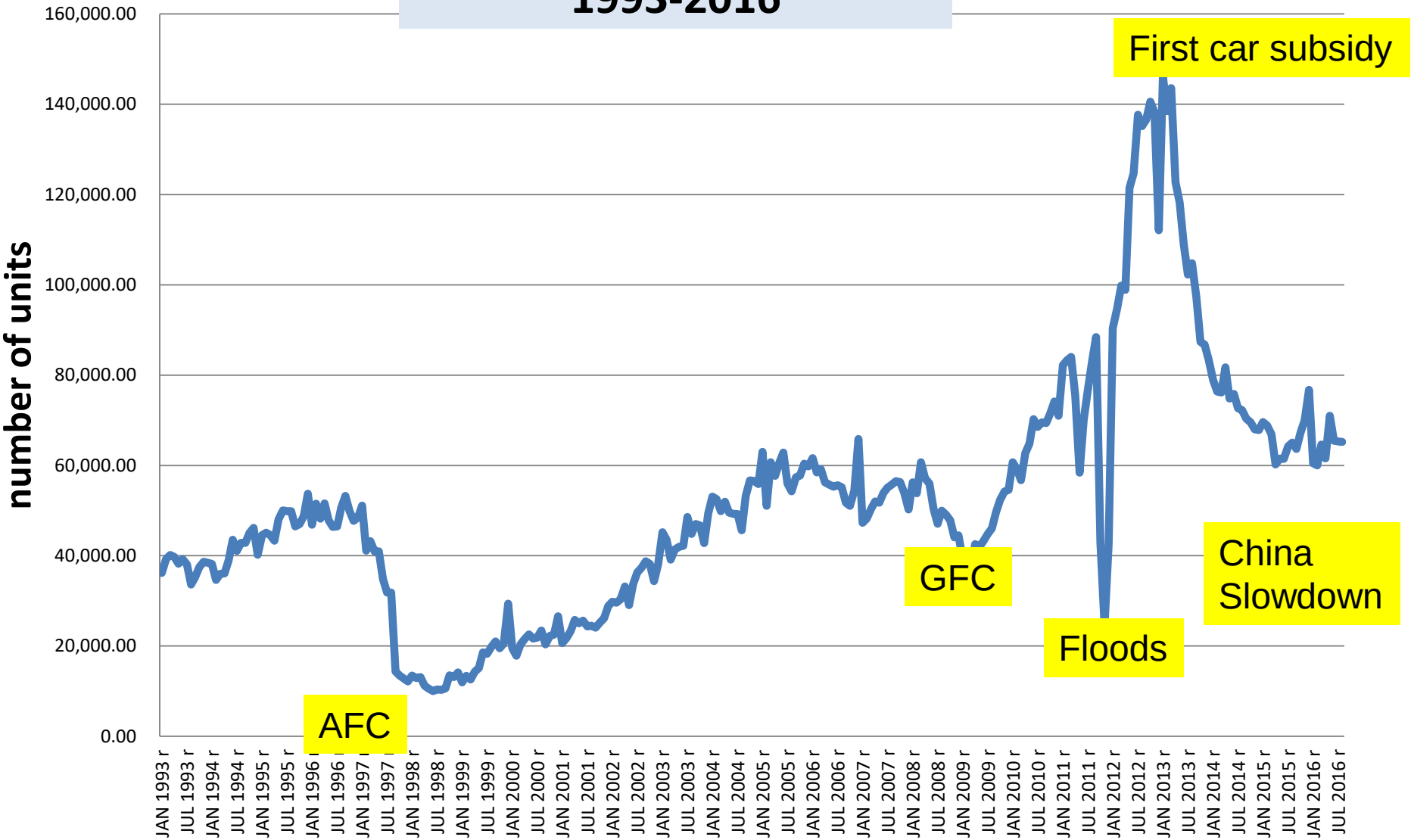
Declining levels of domestic sales and exports

Neoclassical Theory of investment demand can explain the upturns and downturns of the industry.

5.1 Impact of the global recession in 2009

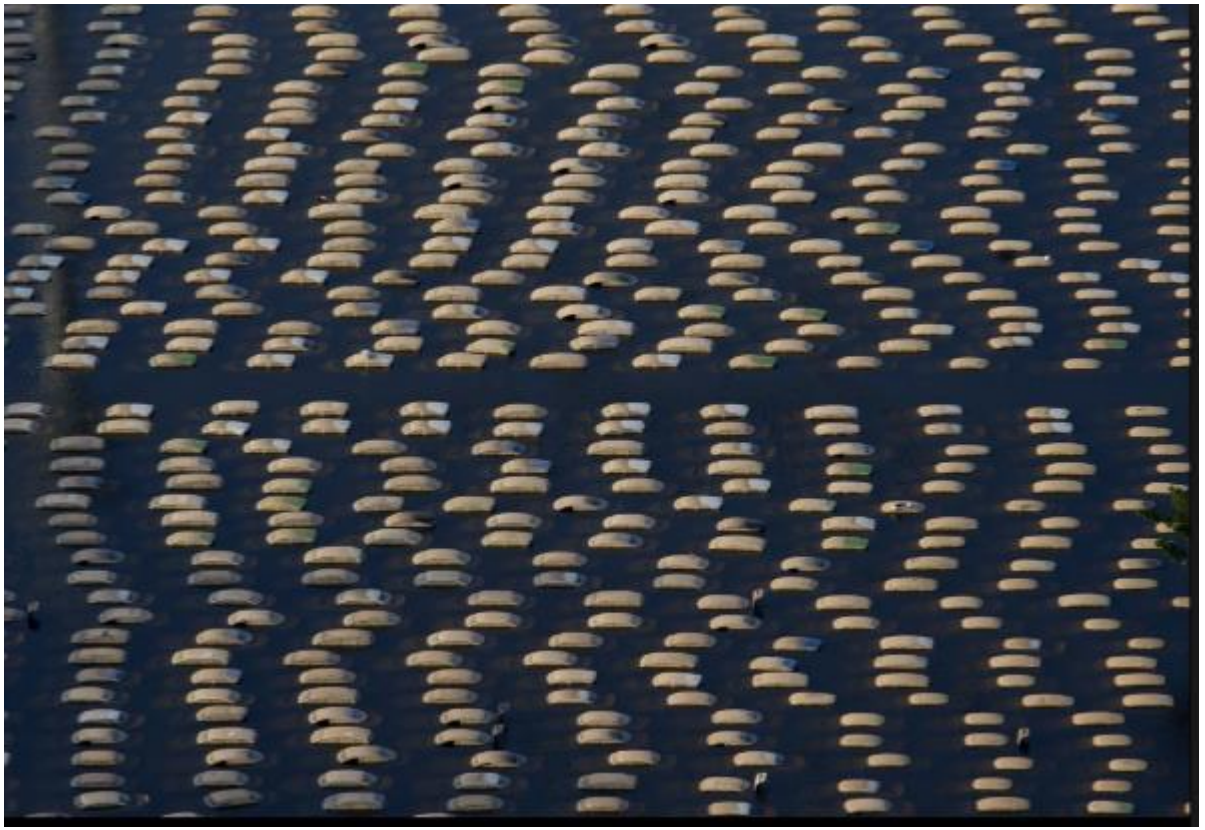
- Vehicle exports to Australia, Thailand's major export market, was the hardest hit, Honda and Toyota saw their exports drop by 20-30%.
- But the impact on exports to other markets such as ASEAN, Europe, the Middle East and Latin America will be smaller.
- Exports were 56.2% of the total produced in 2008 (export-oriented industry).
- Total passenger car production in 2008 climbed 27.3% year-on-year to 401,474 units while pickup truck production slightly increased 2.8% year-on-year to 974,775 units.

Domestic automobile sales 1993-2016



A Honda factory is seen in an aerial view in flood affected Thailand on November 14, 2011

An aerial view of Honda vehicles at the flooded Honda factory in the Rojana Industrial district on November 14, 2011 in Ayutthaya.



Honda scrapped 1,055 flood-damaged cars, vowed to remain in Thailand

5.2 Underlying Theory
Determinants of the demand for durable goods, including car and houses

- The improved economy, low interest rates, strong competition among carmakers are major positive factors contributing to expanding local markets.
- Expected or permanent income
- Credit availability
- ***User cost of capital (Uc)***
- Expectations of future prices
- The depreciation rate

What is the user cost of capital?

- The price for employing or obtaining one unit of capital services. The user cost of capital is also referred to as the "rental price" of a capital good.
- Price of the capital goods (Pk)
- Interest rate (r)
- Depreciation rate (d)
- Expected increase in the price of the capital goods
- *Tax rebate* and allowances (τ)

User cost of capital (***Uc***)

(The Uc is reduced by a tax rebate for first time owner of a sub-compact car)

$$Uc = (r + d - \tau - P_k^e)$$

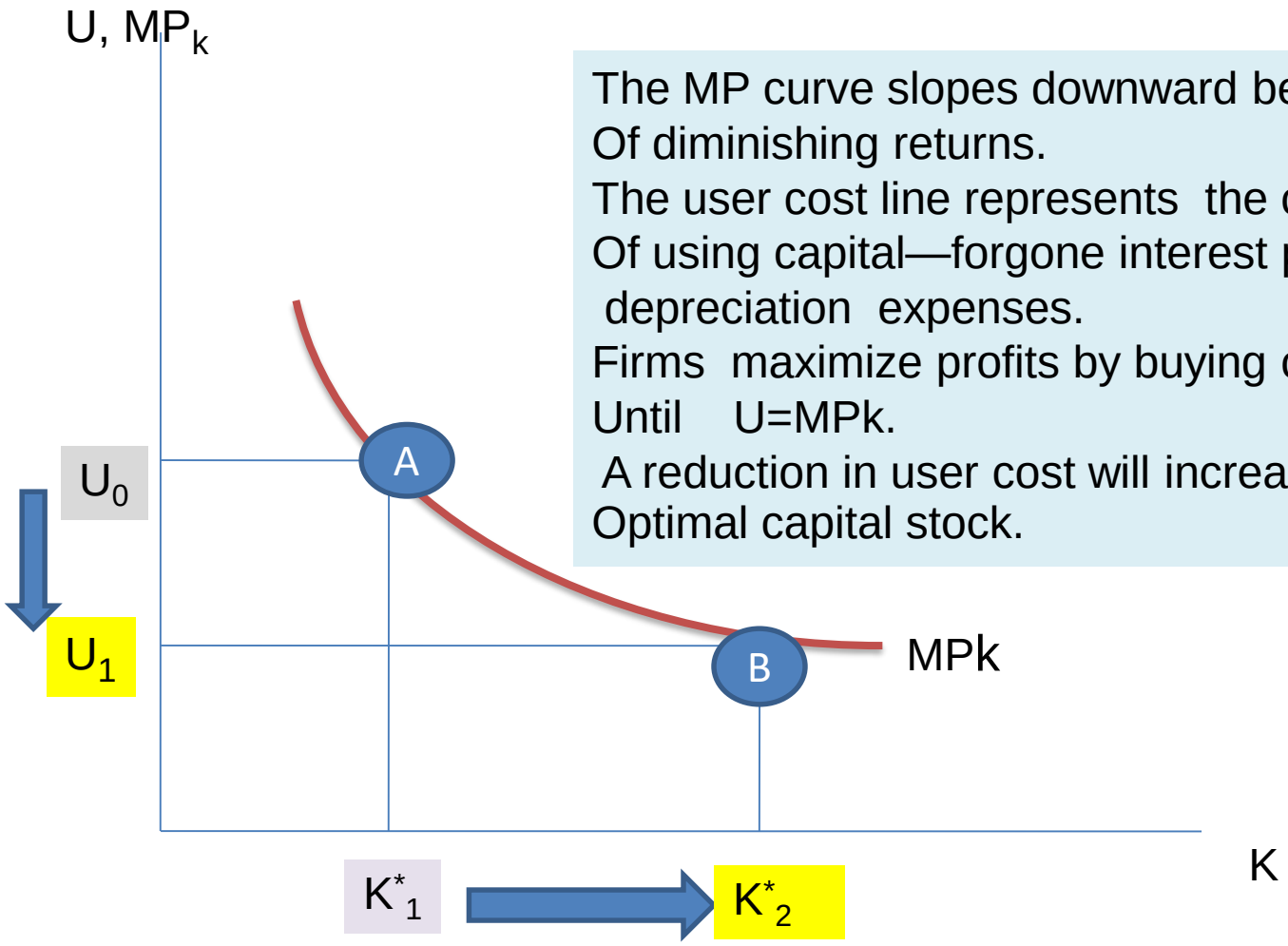
$$d = depreciation$$

$$\tau = tax\ rebate$$

$$P_k^e = \text{expected price}$$

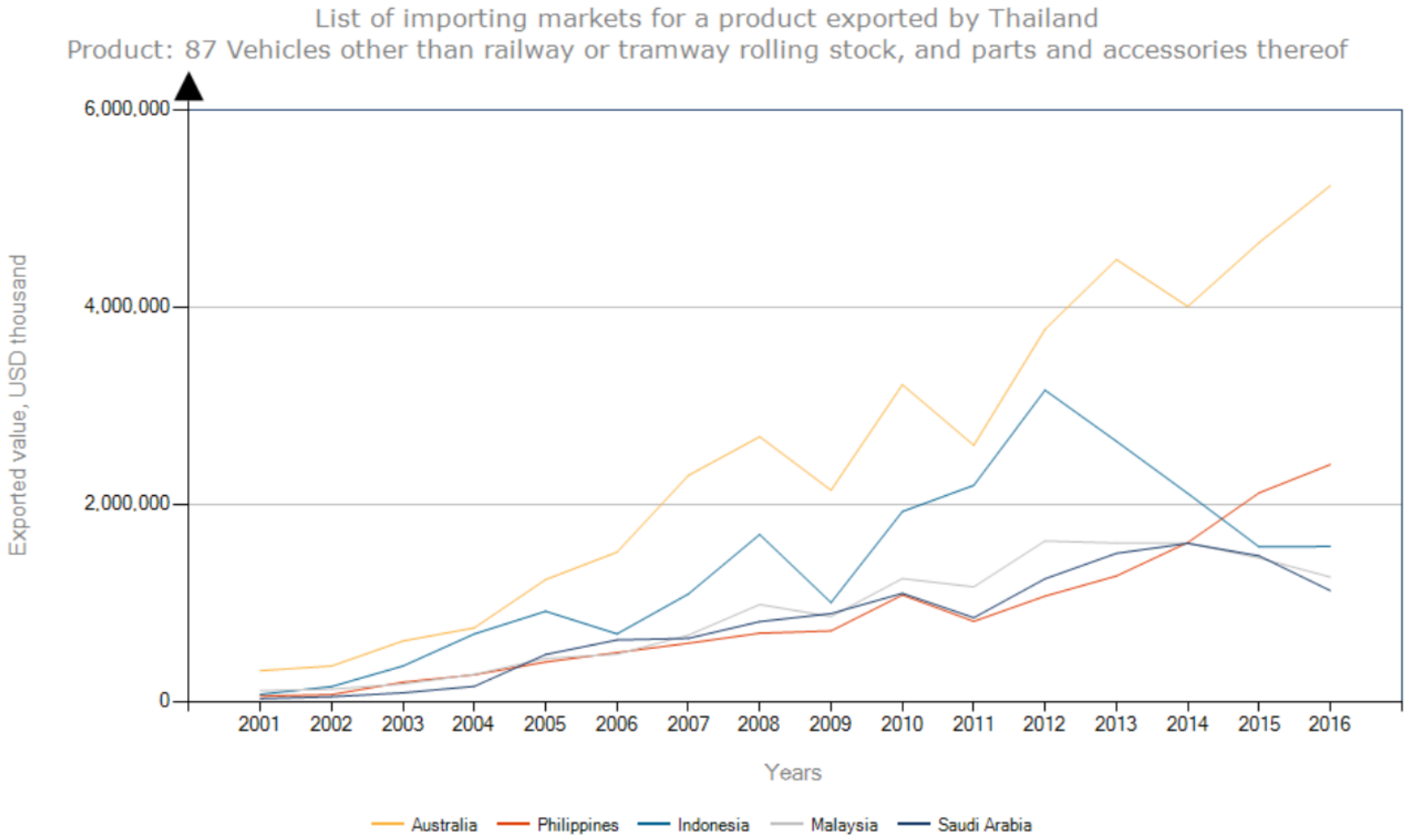
How can fiscal and monetary policy affect car sales? By reducing the interest rate (r) the user cost is reduce, stimulating the demand.

The user cost and the optimal capital stock

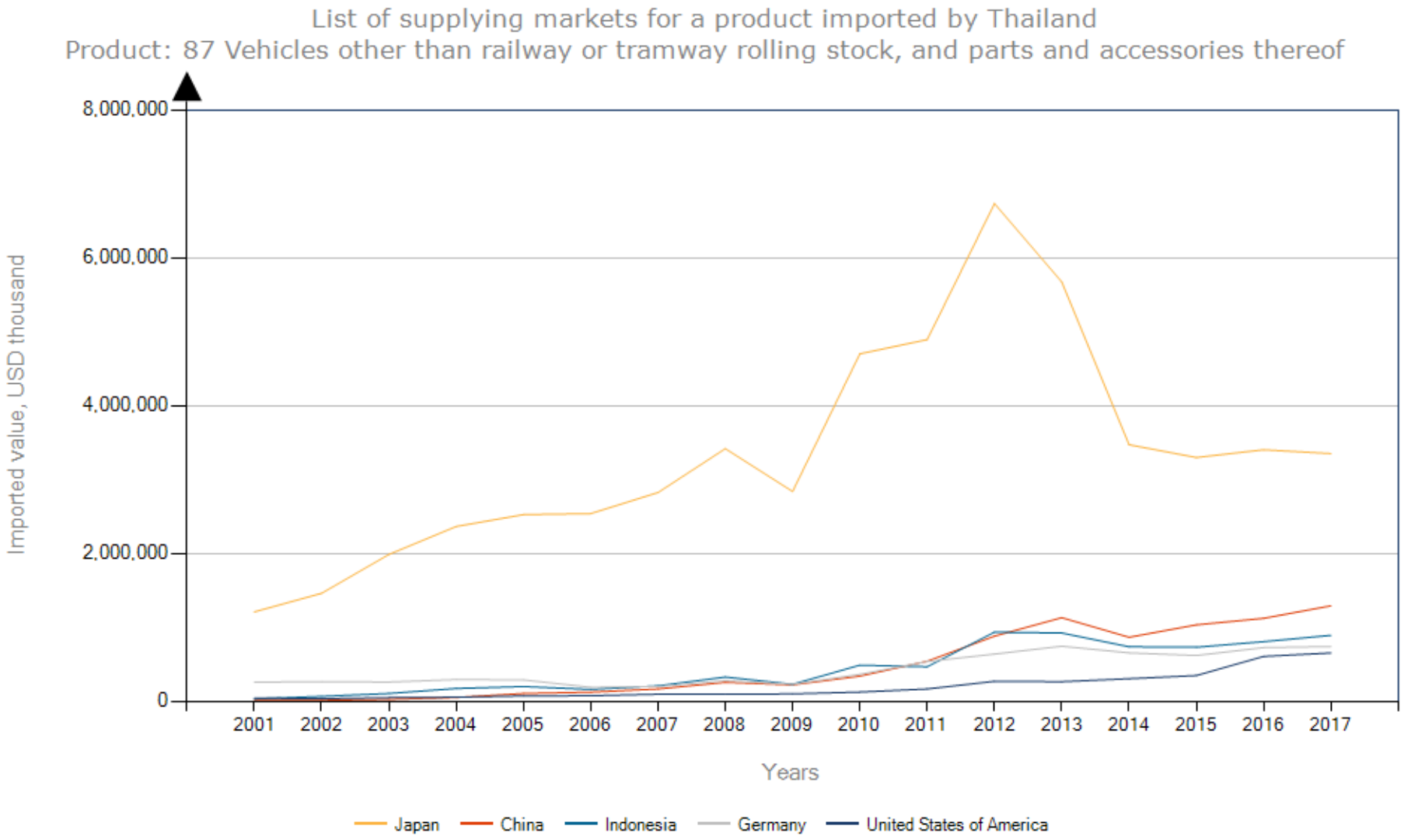


The MP curve slopes downward because
Of diminishing returns.
The user cost line represents the cost
Of using capital—forgone interest plus
depreciation expenses.
Firms maximize profits by buying capital
Until U=MPk.
A reduction in user cost will increase the
Optimal capital stock.

Thailand's exports



Thailand’s imports



6. Recent strategy

6.1 Ecocar program

6.2 Electric vehicles (EV)

Can industrial policy shape the future of the industry?

6.1 Eco-car program: 2007

- Additional strategy was needed for further growth of automobile industry in Thailand. Thus, government of Thailand has implemented so-called “eco-car program” in 2007.
- This program provides participating automobile assemblers several tax breaks to, if they assemble “small passenger cars (eco-cars)” in Thailand and invest a significant amount in their plant.
- Honda, Mitsubishi, Nissan, Suzuki, Tata Motor and Toyota have already applied and approved to this program.

Eco-car program

- Market of small passenger cars is expected to grow rapidly not only in emerging economies but also in developed countries, following recent hikes in the price of crude oil.
- Thus naturally, they are manufactured worldwide including Japan, which is most Thai automobile assemblers' home country.
- ***As automotive industry in Thailand is completely dependent on foreign assemblers***, local assemblers will not always move as government of Thailand desire.

Eco car program: Phrase 1

- Almost 24 billion baht up on the combined investment in Phase 1, which was launched in 2007 and involved five carmakers, all Japanese.
- Phase 1 Eco Cars include Hondas Brio, Mitsubishis Mirage, Nissans March, Toyota Yaris, and the Suzuki Swift , all of which have ***1.2 litre*** petrol engines in Thailand.
- After all the investments have been completed, Thailand's entire Eco Car production capacity will leap to 1.58 million units per year.

Thailand Eco Car
Lineup 2014

Toyota Yaris

thai

Eco car program: Phase 2

- Total investment is forecasted to surpass 90 billion baht, excluding those expected to be made in the parts supply chain sector.
- The requirements in Phase 2 of Thailand's Eco Car program include a fuel economy under **4.3 litres per 100 km**, **CO2 emissions under 100 grams per km**, engines displacing 1.3 litres and under (petrol) or 1.5 litres and under (diesel), along with **Euro 5 (environment standard), R94 and R95 (front and side crash protection) compliance**.
- A minimum investment of 6.5 billion baht and a minimum production of 100,000 units per year by the fourth year of operation, and ***the excise duty incentive given is 14%*** (normally 30%); dropping to 12% if the engine is E85-compatible.

6.2 Electric Vehicles

- Vehicle technology is changing every day
- Hybrid Electric Vehicles (HEVs) and Plug-in Hybrid Electric Vehicles (PHEVs) were developed with electricity/petro and electricity/diesel.
- Battery Electric Vehicles (BEVs) were later developed, fueled by pure electricity.
- The government offers tax incentives for investment only in PHEVs and BEVs.

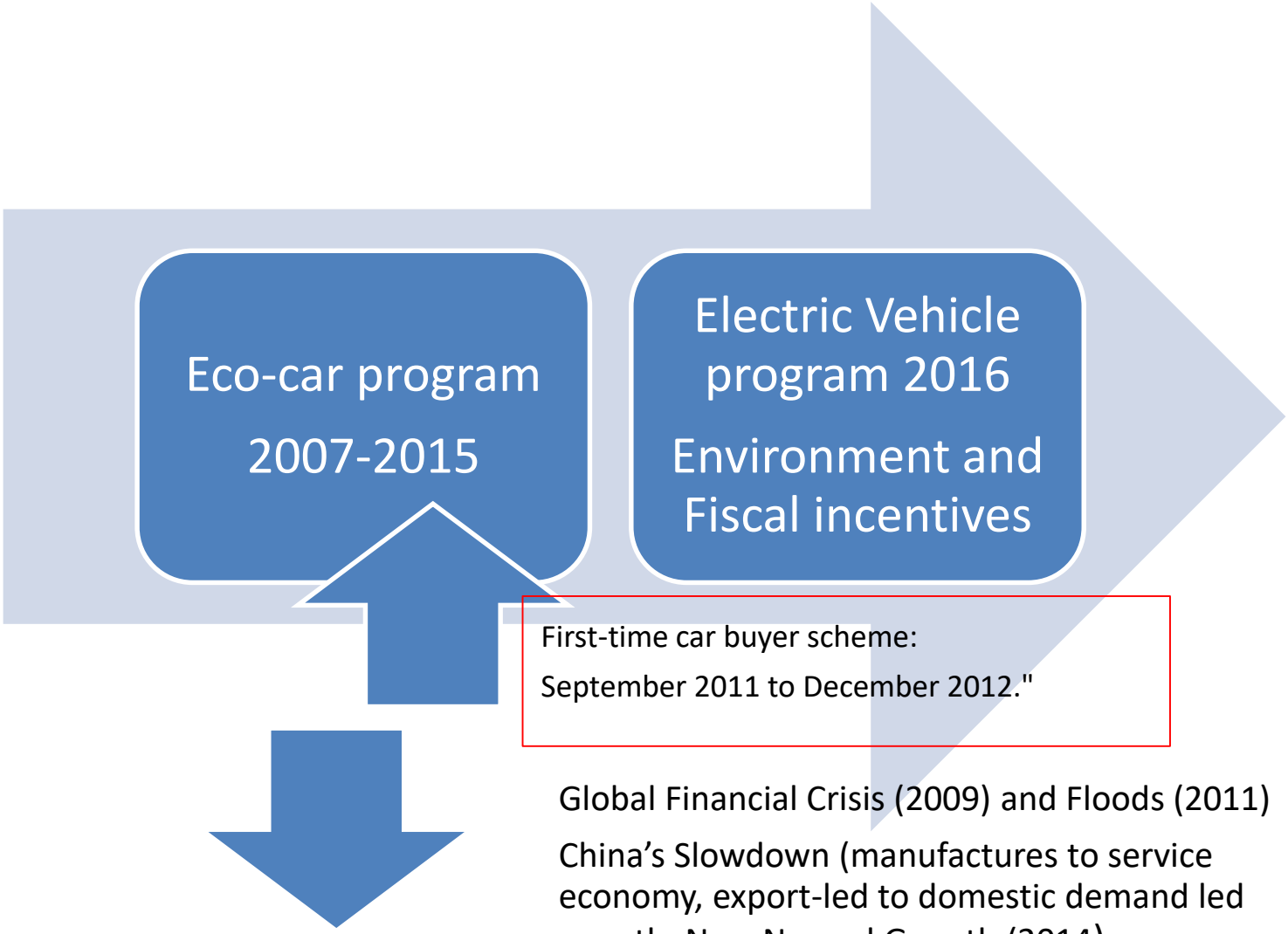
Environment and fiscal incentives

- All platforms are subject to 10% excise tax for vehicle releasing *CO_2 less than 100 grams per kilometer.*
- HEVs releases CO_2 over 100g/km will be taxed as high as 20-30%.
- Battery for EVs do not support long-distance driving in Thailand because of the heat, which requires air-conditioning at all times.

EV Production Incentives

- No applications for the Board of Investment's Electric Vehicle (EV) production in Thailand, despite the government's ambitious policy to support the EV program.
- The investment incentives cover vehicle production, battery and motor manufacturing and charging infrastructure.
- The government aims for 1.2 million EV units and 690 stations by 2036.
- Another elusive targets for the industry.

Recent Developments and New Industrial Policy



Global Financial Crisis (2009) and Floods (2011)

China's Slowdown (manufactures to service economy, export-led to domestic demand led growth: New Normal Growth (2014)

Concluding remarks

- Business sentiment and consumer confidence matters for sustainable recovery, provided that the slowing momentum of world economy in 2016 is not too pronounced and prolonged.
- Permanent or expected income, in addition to the user cost of capital, determines automobile sales.
- Credit availability may not be the silver bullet to save the industry.
- Intra-industry trade: network trade

Exploitation of economies of scale and scope through trade integration

Competitive environment induces efficiency improvement.

Macroeconomic conditions constrain the growth of the automobile industry.

Makeup Classes: April 9, 2018

- Monday: 16:00-17:30
- No class on March 30