

Challenges to Thai Automobile industry

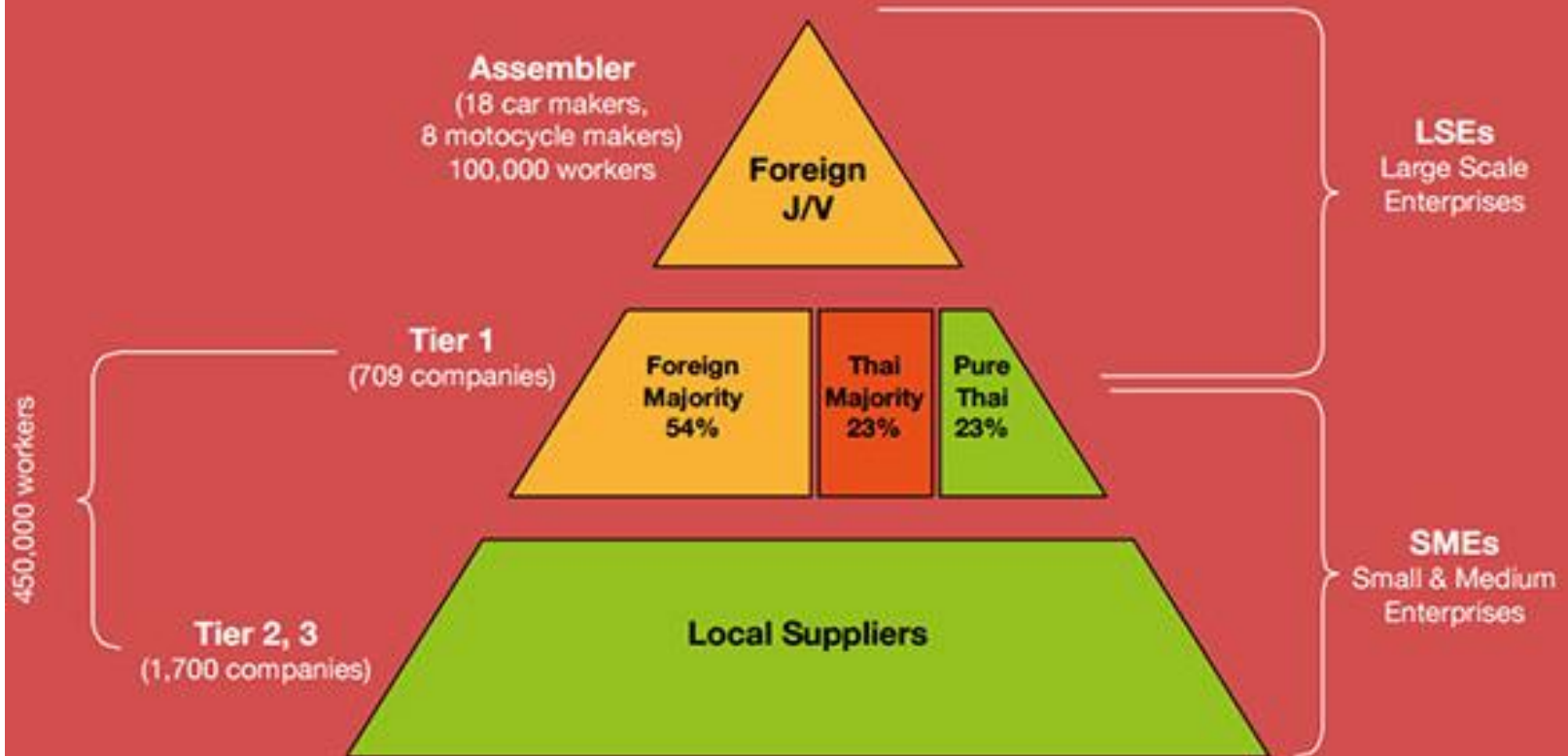
Lecture 17
Bhanupong

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. Characteristics and Structure

Structure of Thai Automotive Industry

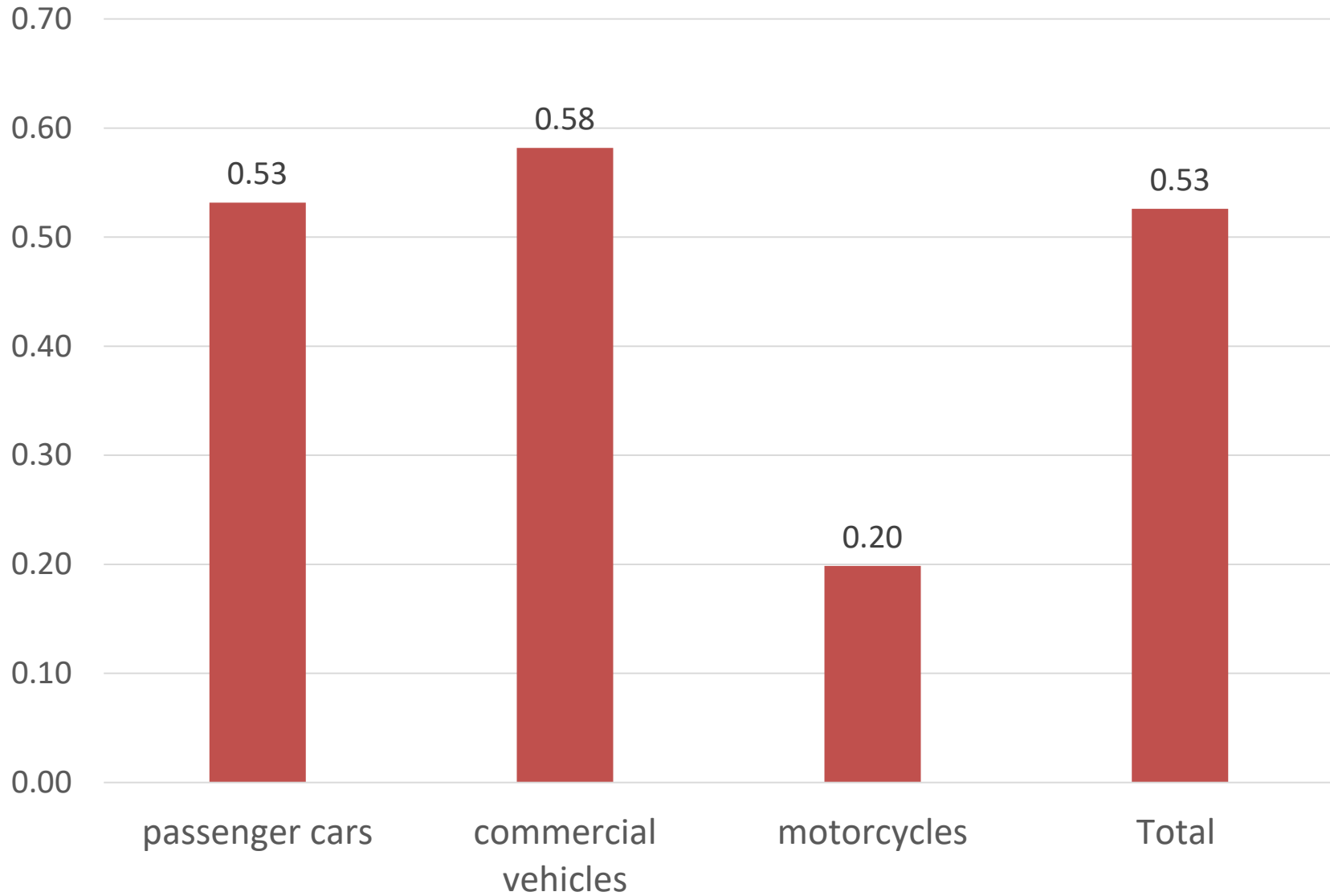


Source: Thai Autoparts Manufacturers Association, 2014

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

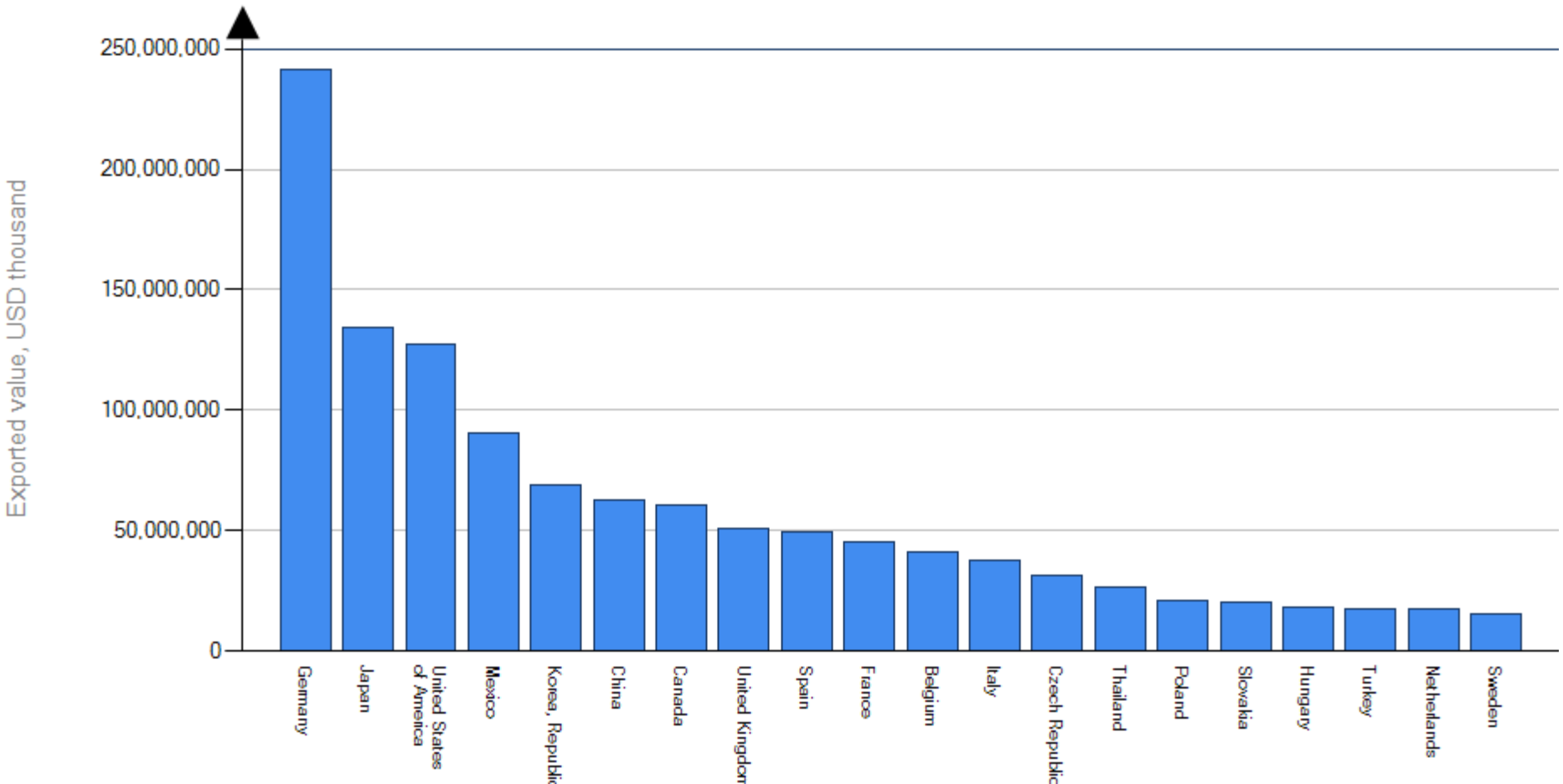
Exports (Units) in January 2017: Ratio to total production (X/Q)



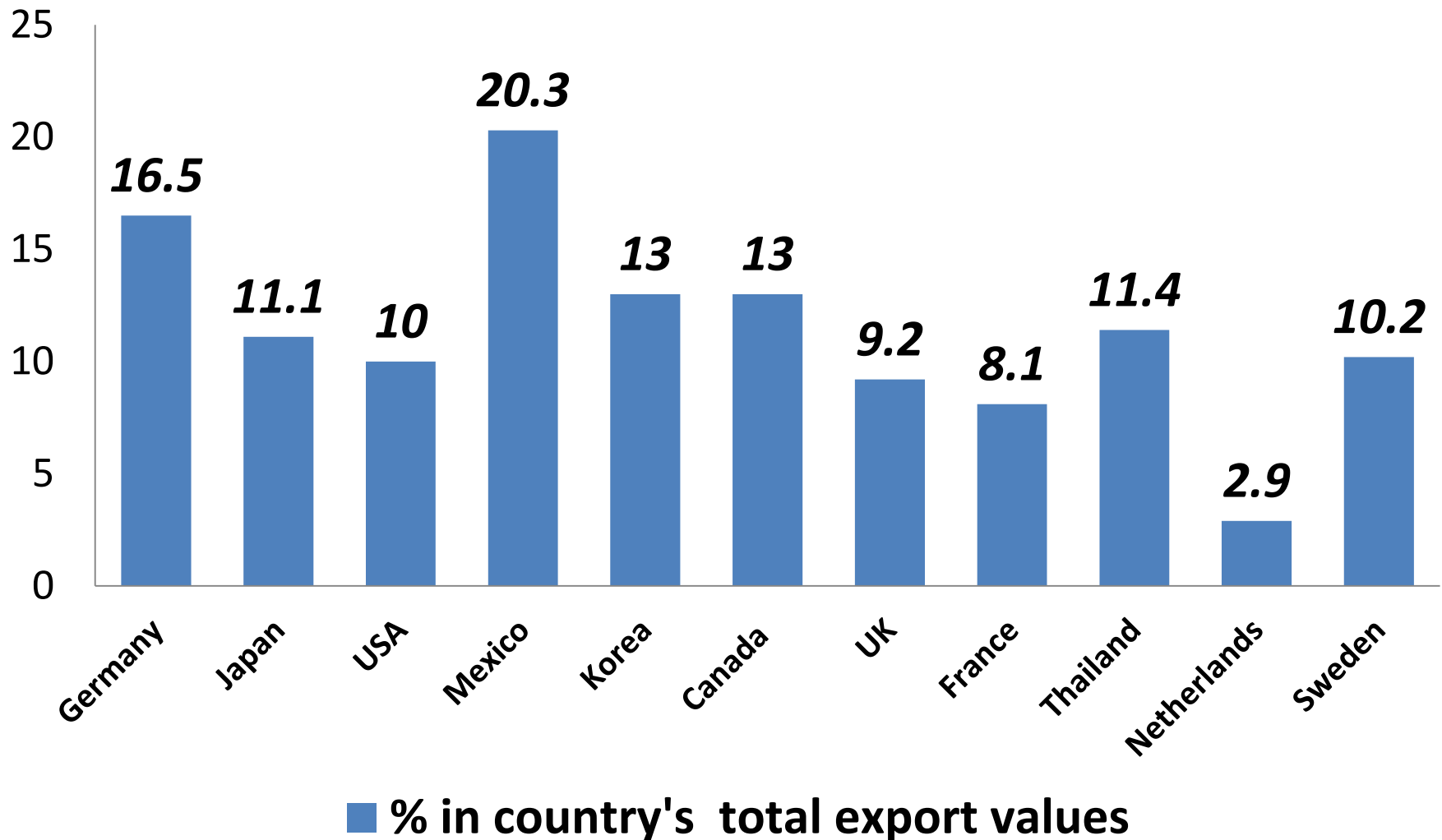
World's top vehicle exporters in 2015

List of exporters for the selected product in 2015

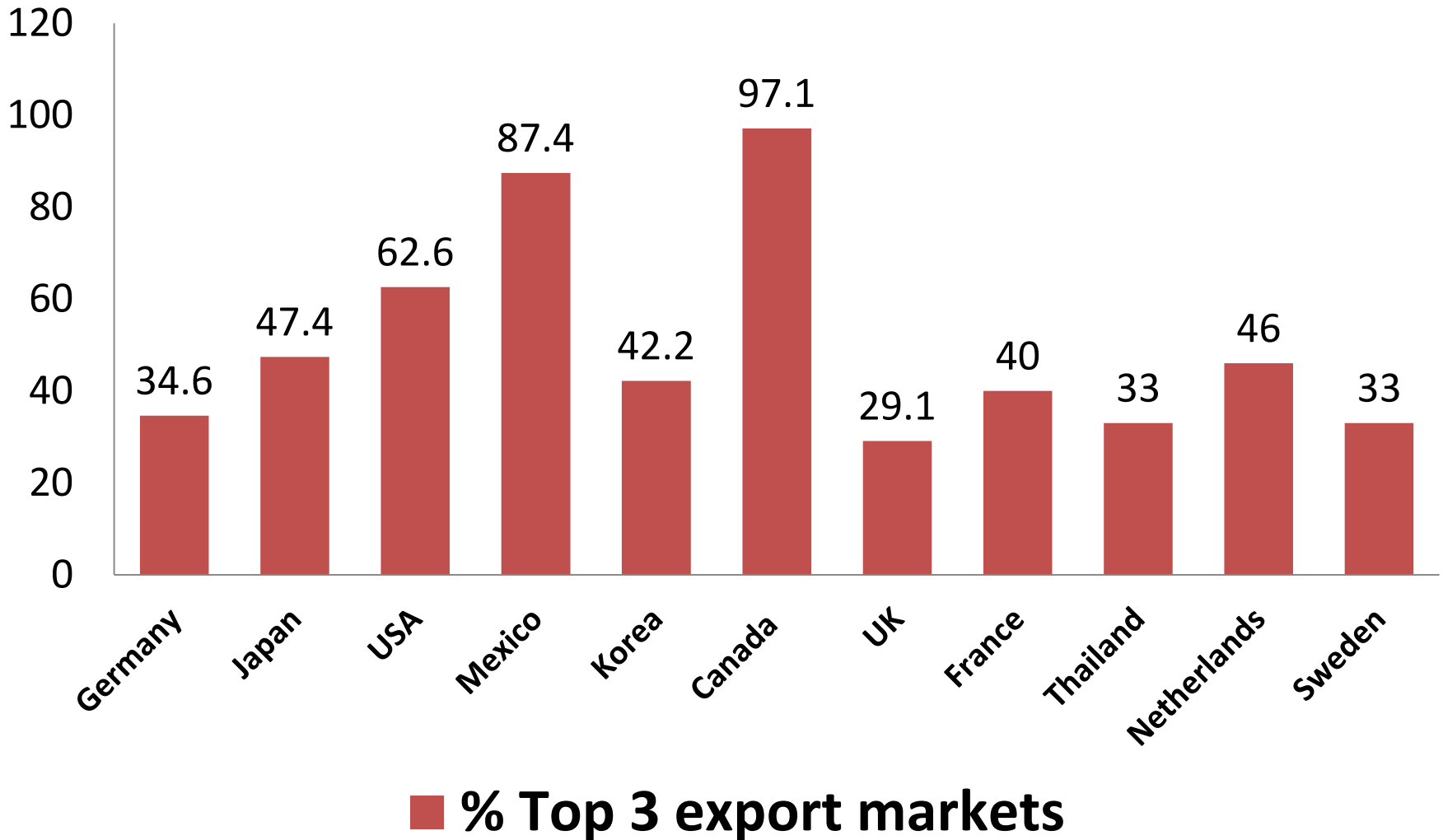
Product : 87 Vehicles other than railway or tramway rolling stock, and parts and accessories thereof



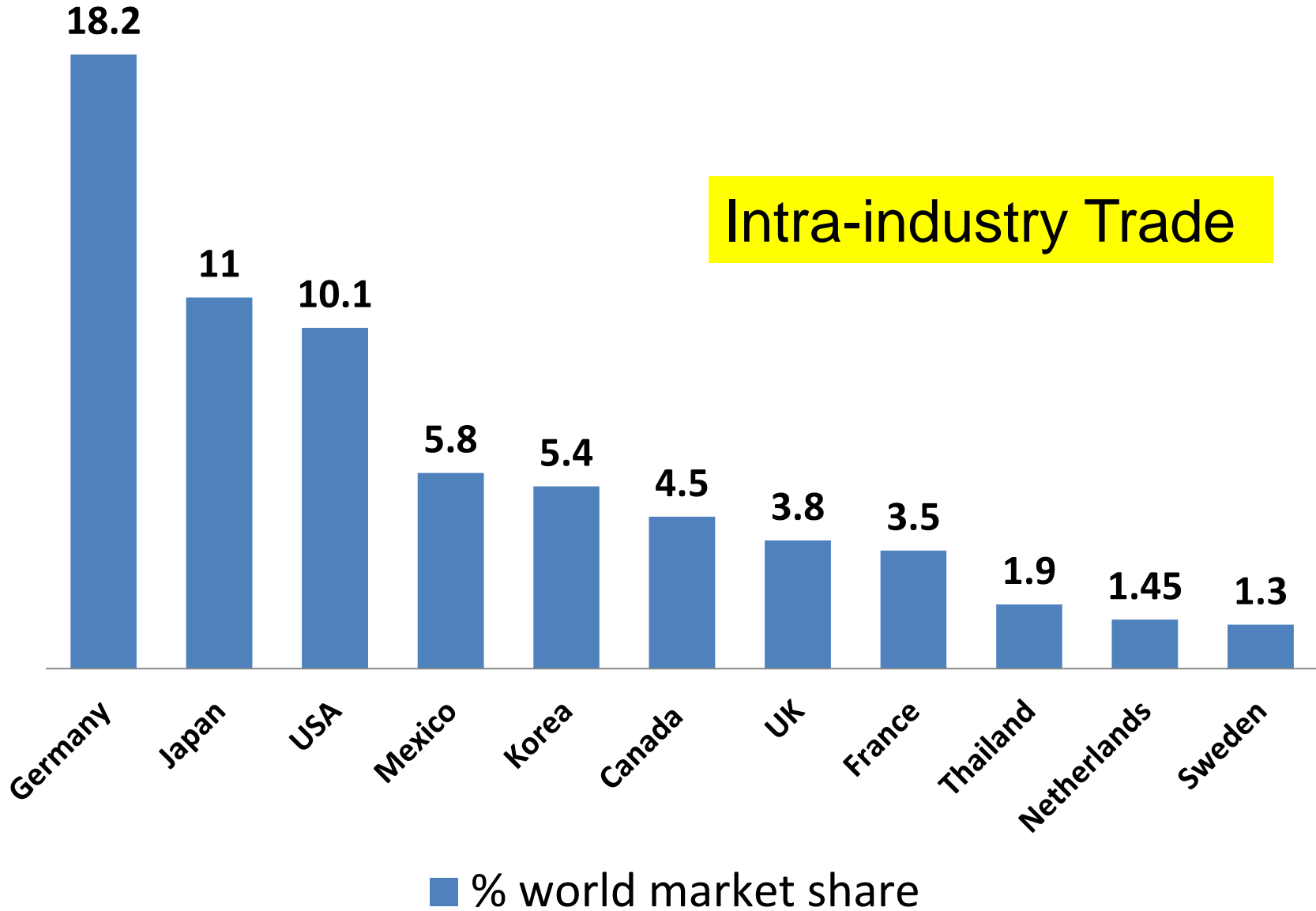
Importance of automobile industry in different countries



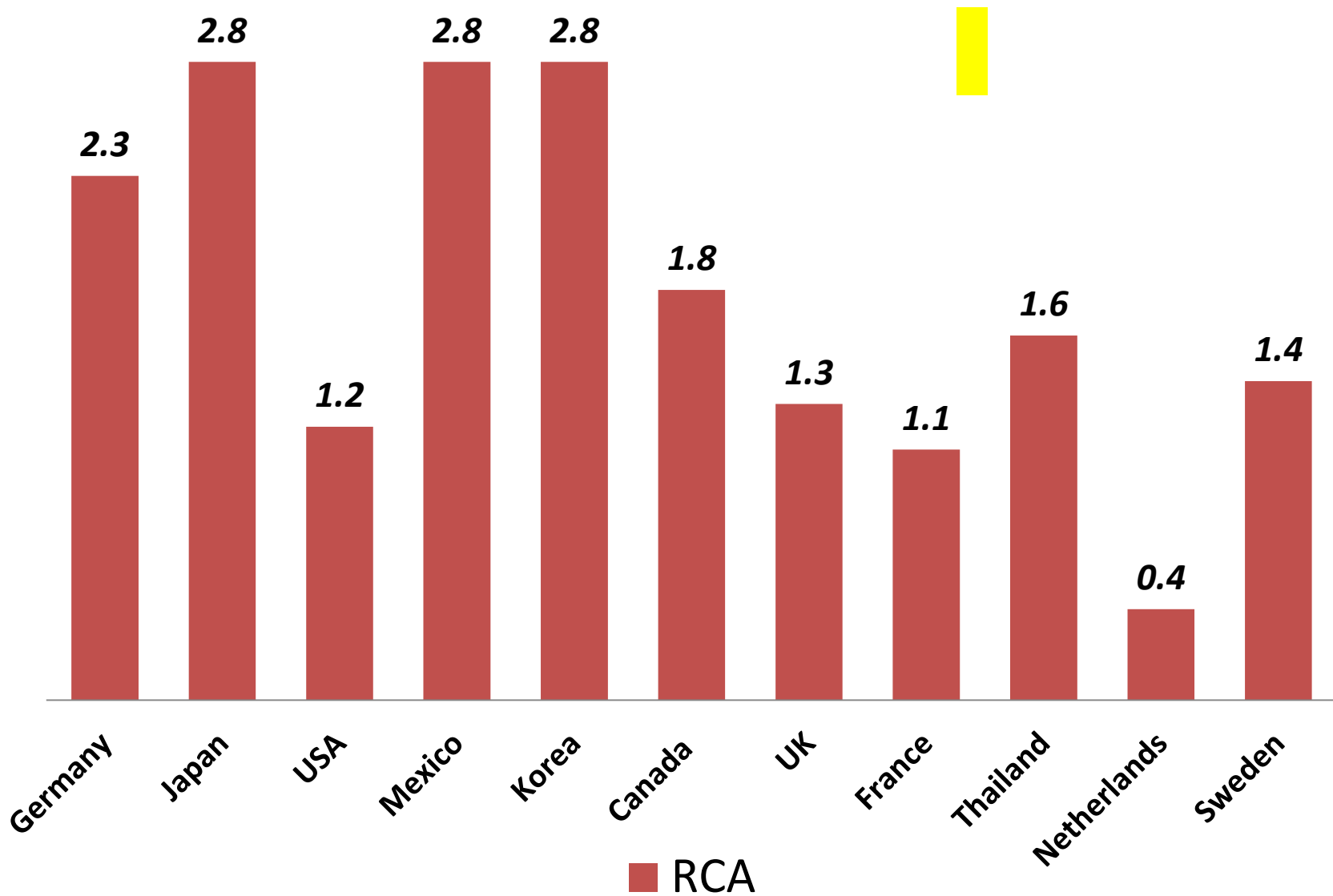
Export Market Concentration



World Market share of Automobile Exports



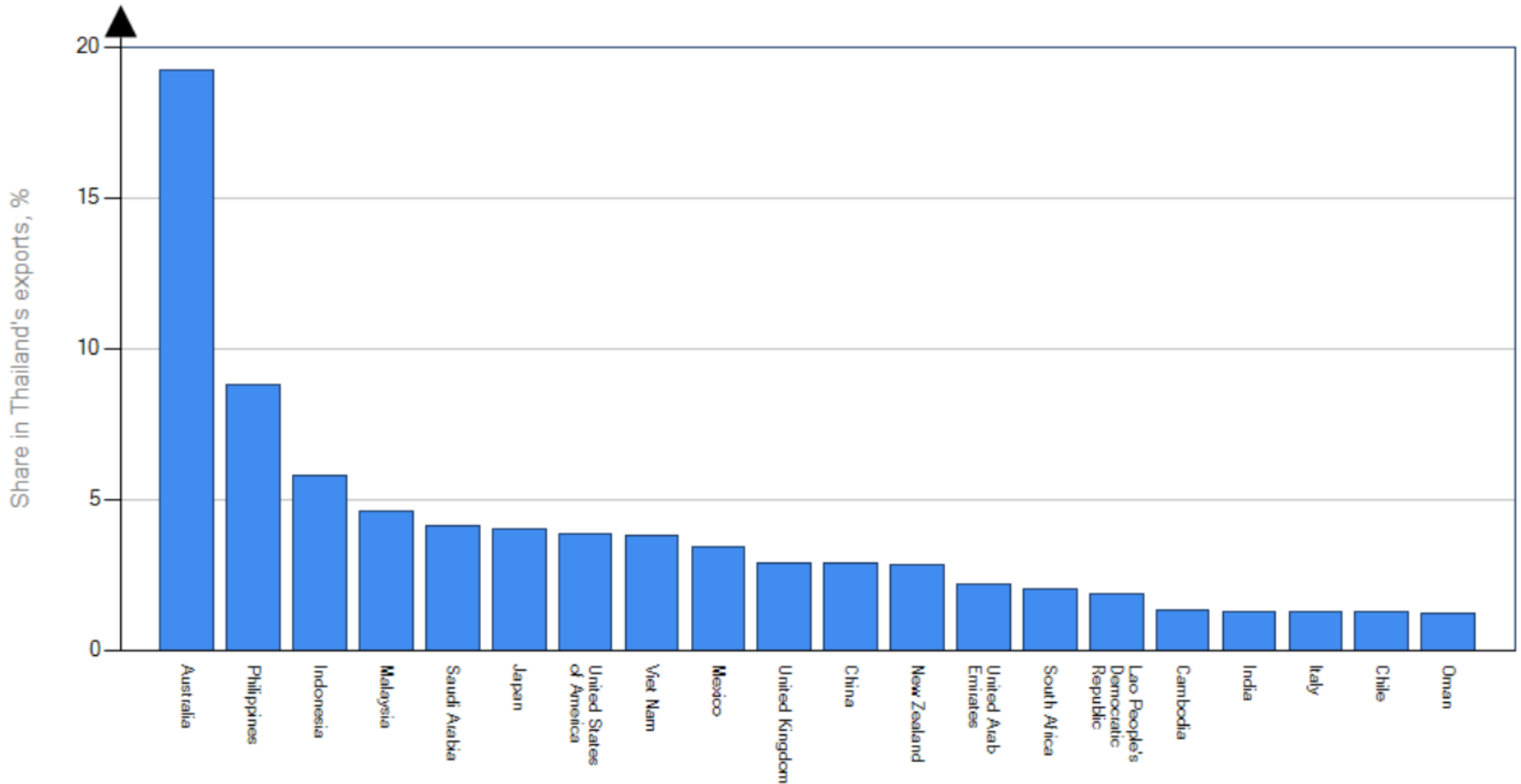
Specialization in Automobile Production



Export Market Share in 2016

List of importing markets for a product exported by Thailand in 2016

Product : 87 Vehicles other than railway or tramway rolling stock, and parts and accessories thereof



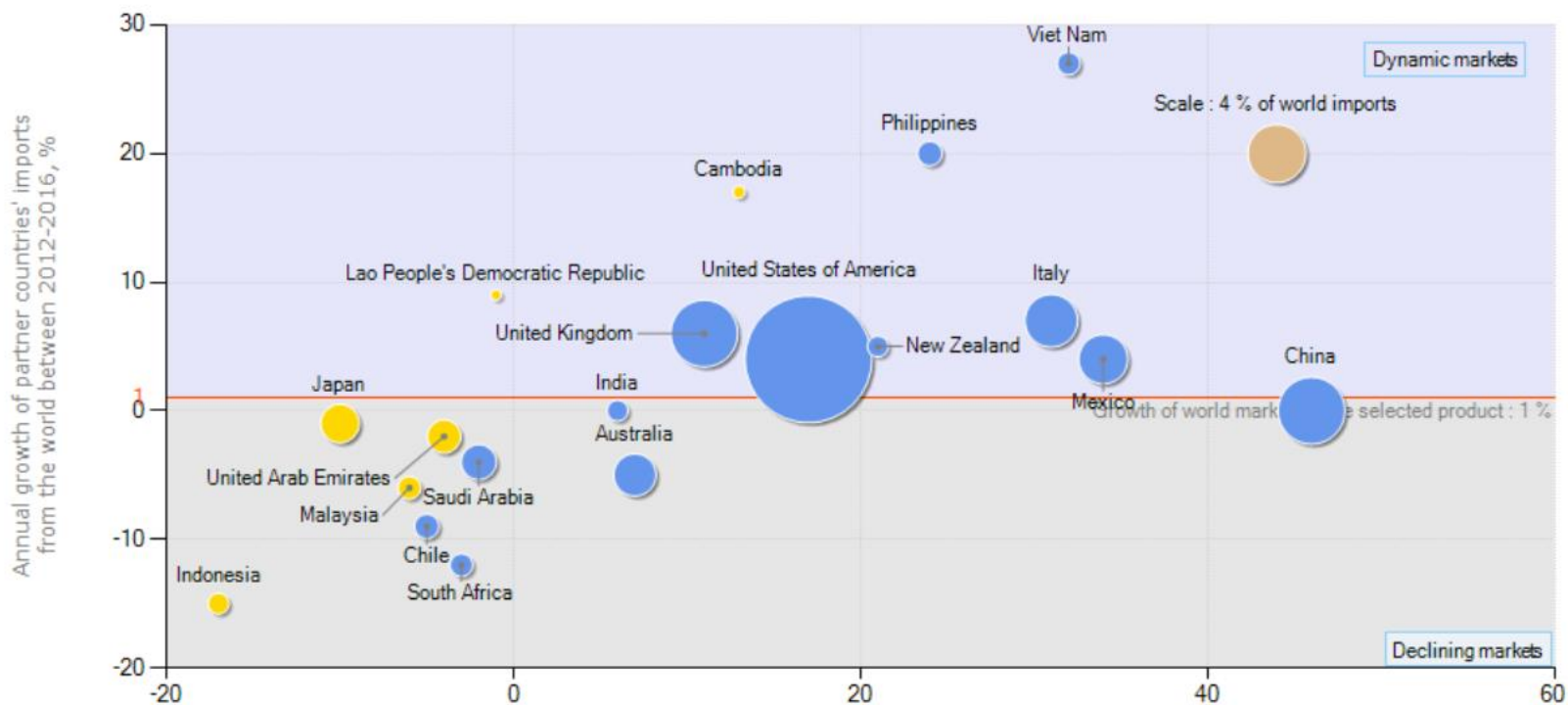
Why Australia?

- 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

Growth in demand for a product exported by Thailand in 2016

Product : 87 Vehicles other than railway or tramway rolling stock, and parts and accessories thereof



● Thailand export growth to partner < Partner import growth from the world

● Thailand export growth to partner > Partner import growth from the world

● Reference bubble
Some bubbles may not be displayed due to lack of growth rate indicators

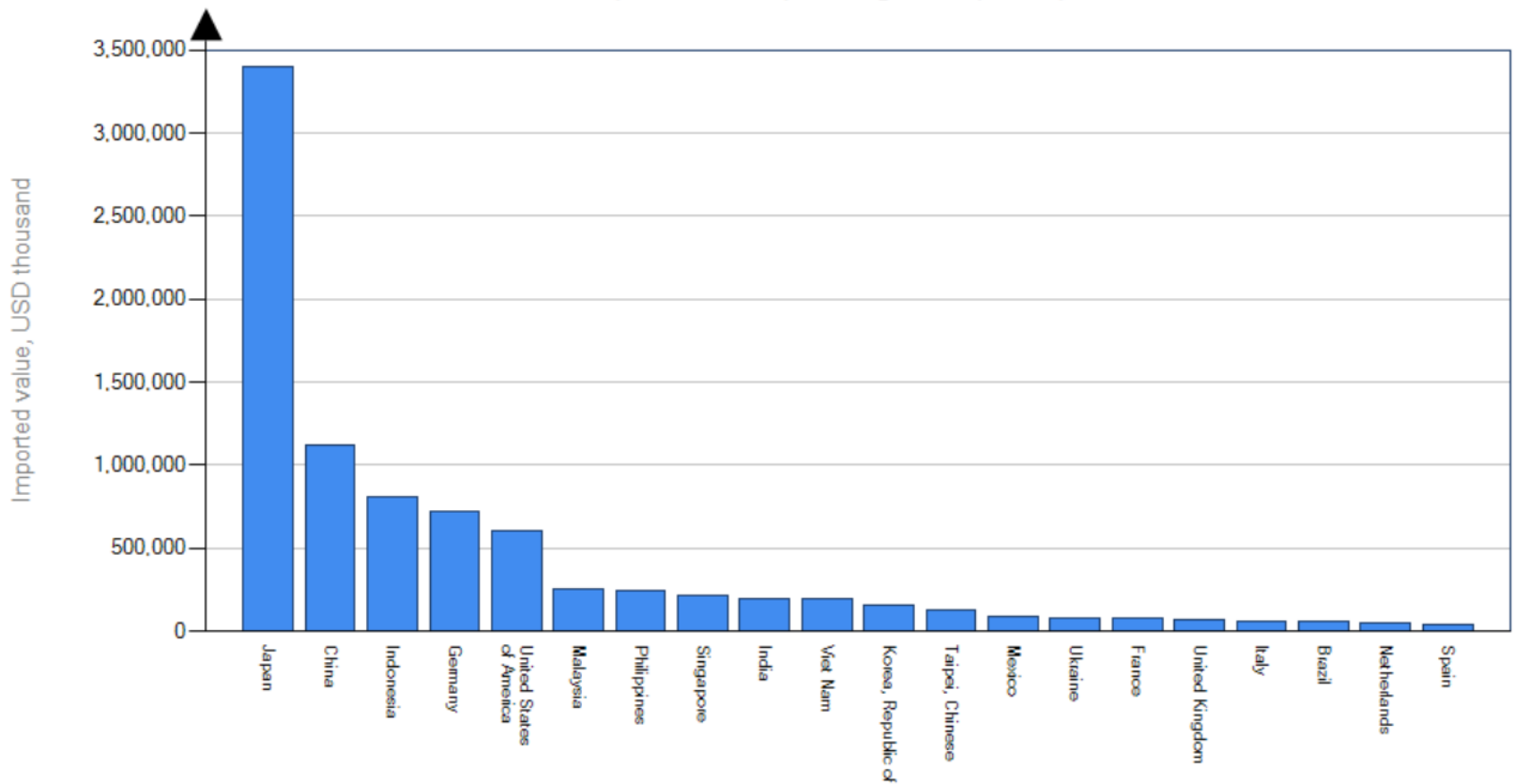
The bubble size is proportional to the share in world imports of partner countries for the selected product



Thailand's imports (intra-industry trade)

List of supplying markets for a product imported by Thailand in 2016

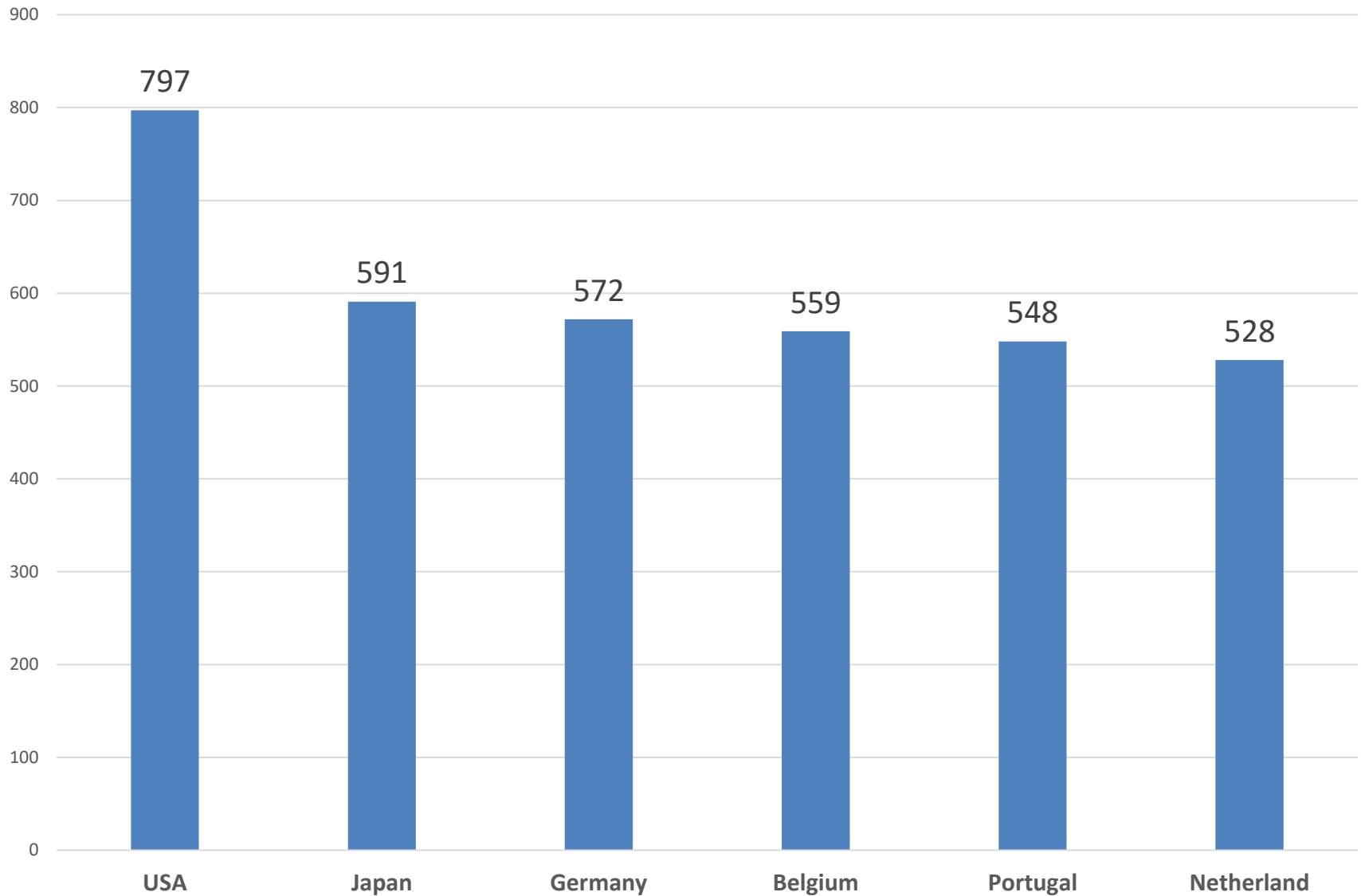
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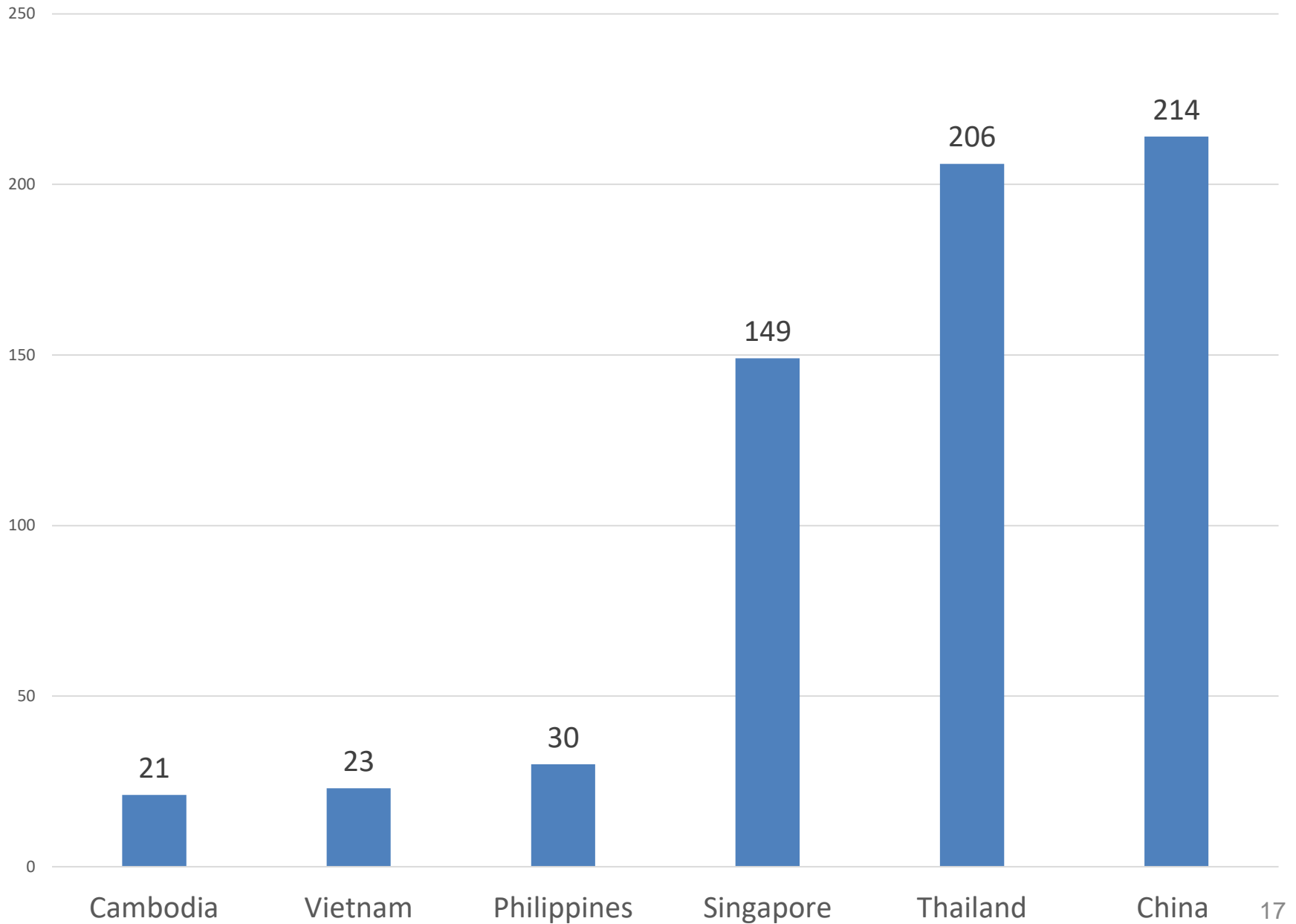
Opportunities

- 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



Motor vehicles per 1000 people



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)

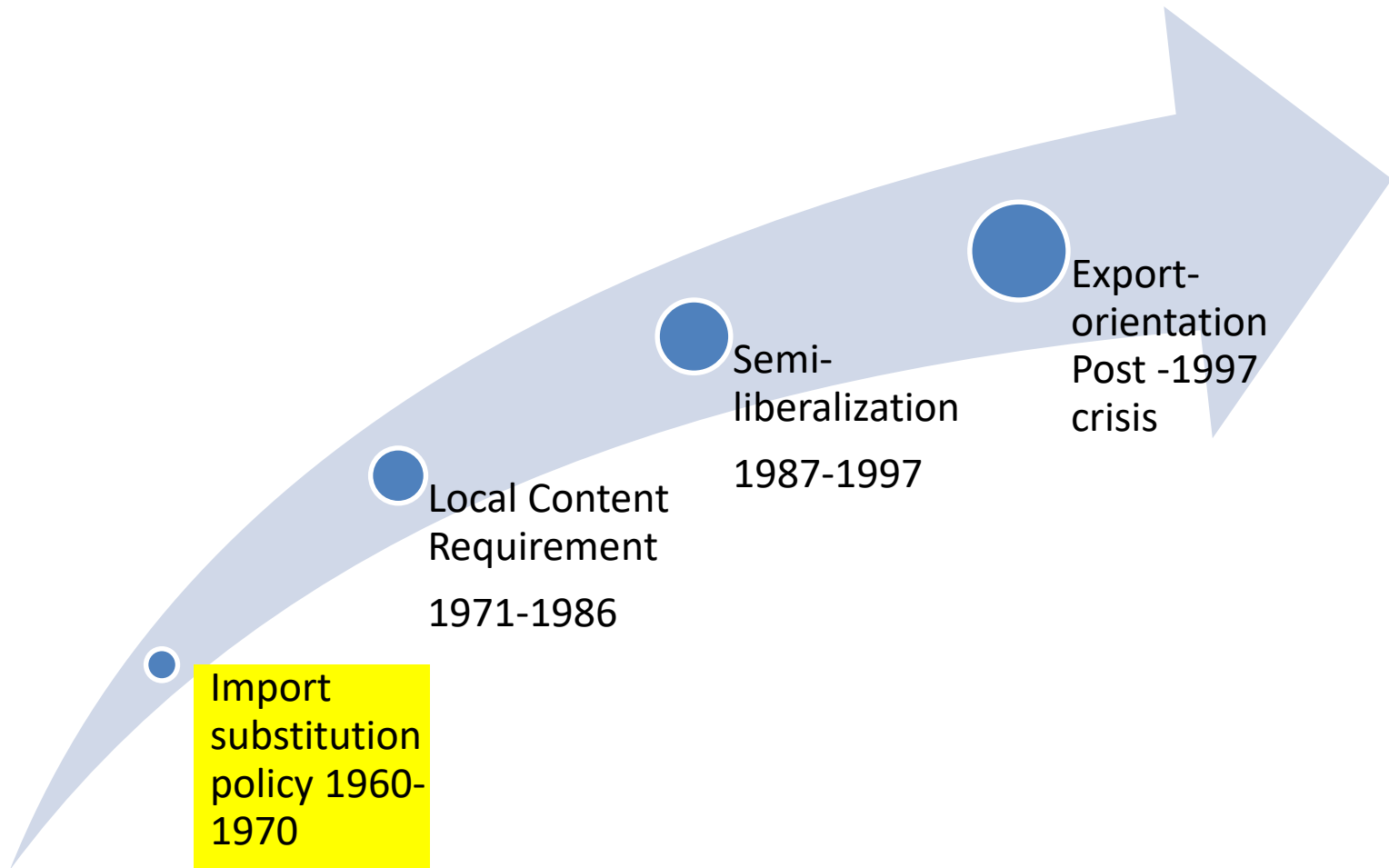
Source: ITC

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

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.

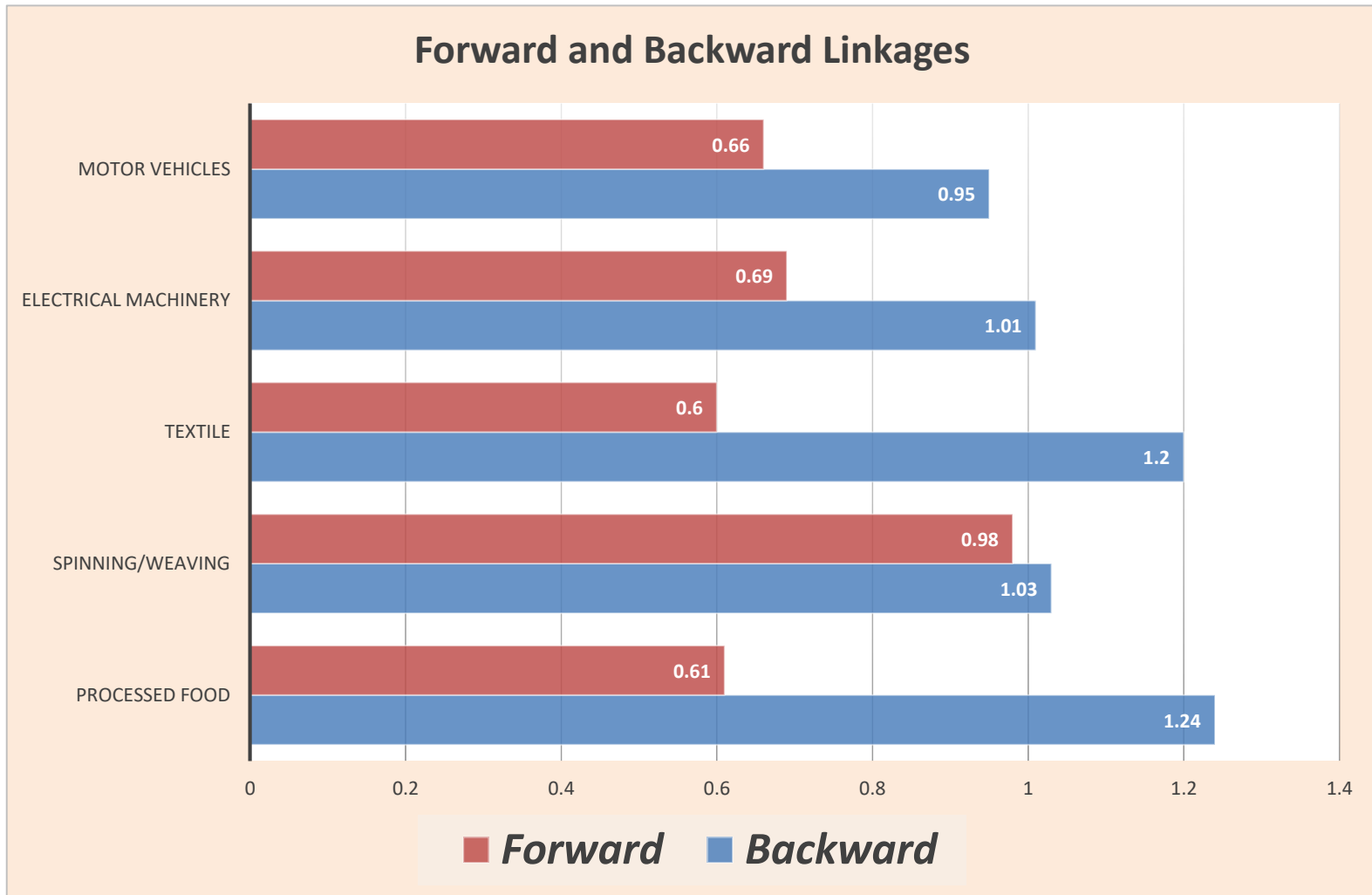
Forward linkages in steel industry

- 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

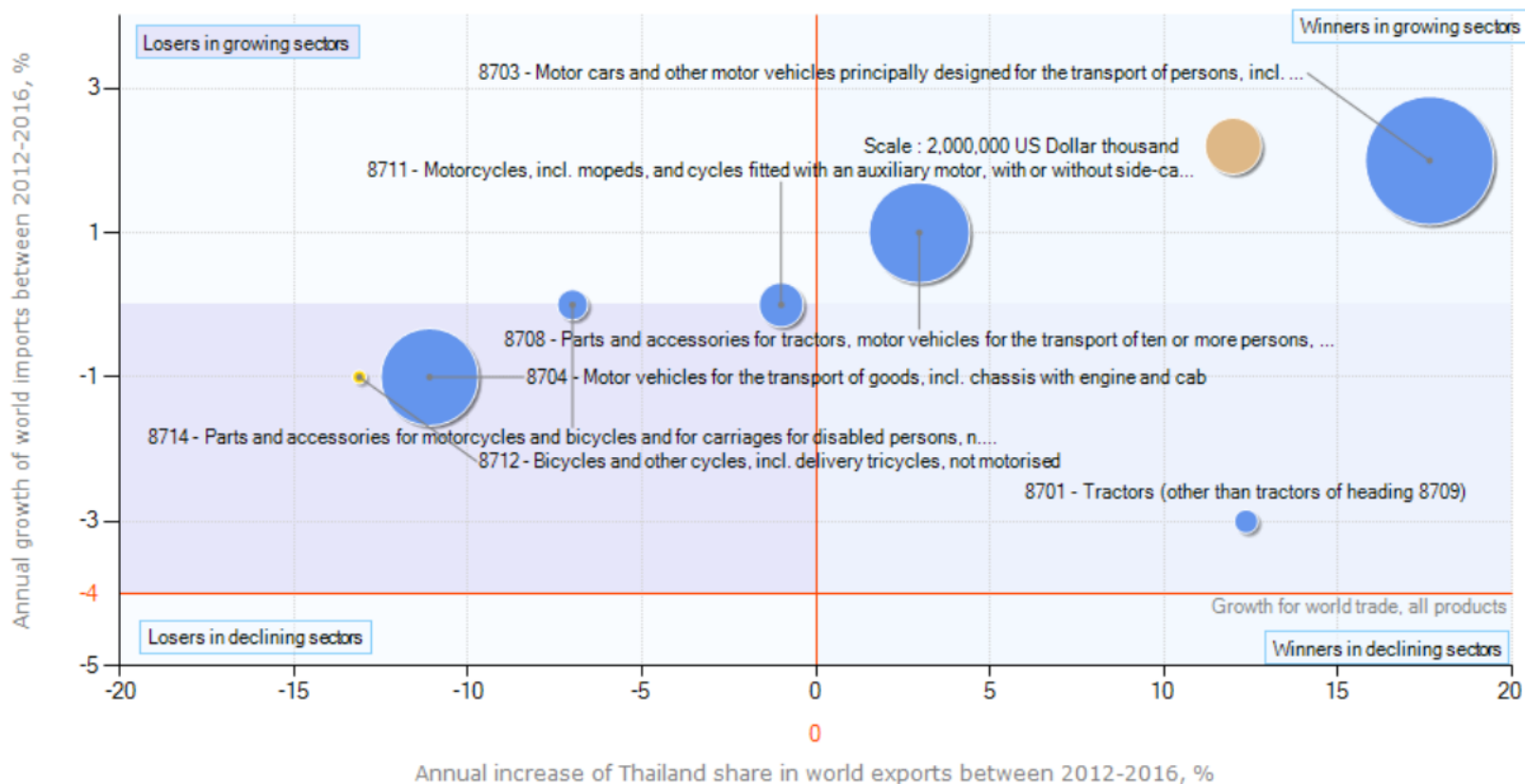
- Exports of automobiles and auto parts have continually increased since 1997, as many foreign conglomerates have moved their production bases to Thailand.
- Strong **auto-parts** industry is a fundamental support for the growth of automotive production and attracts foreign companies to move their bases 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

Growth of national supply and international demand for products exported by Thailand in 2016



● Thailand is a net importer for this product

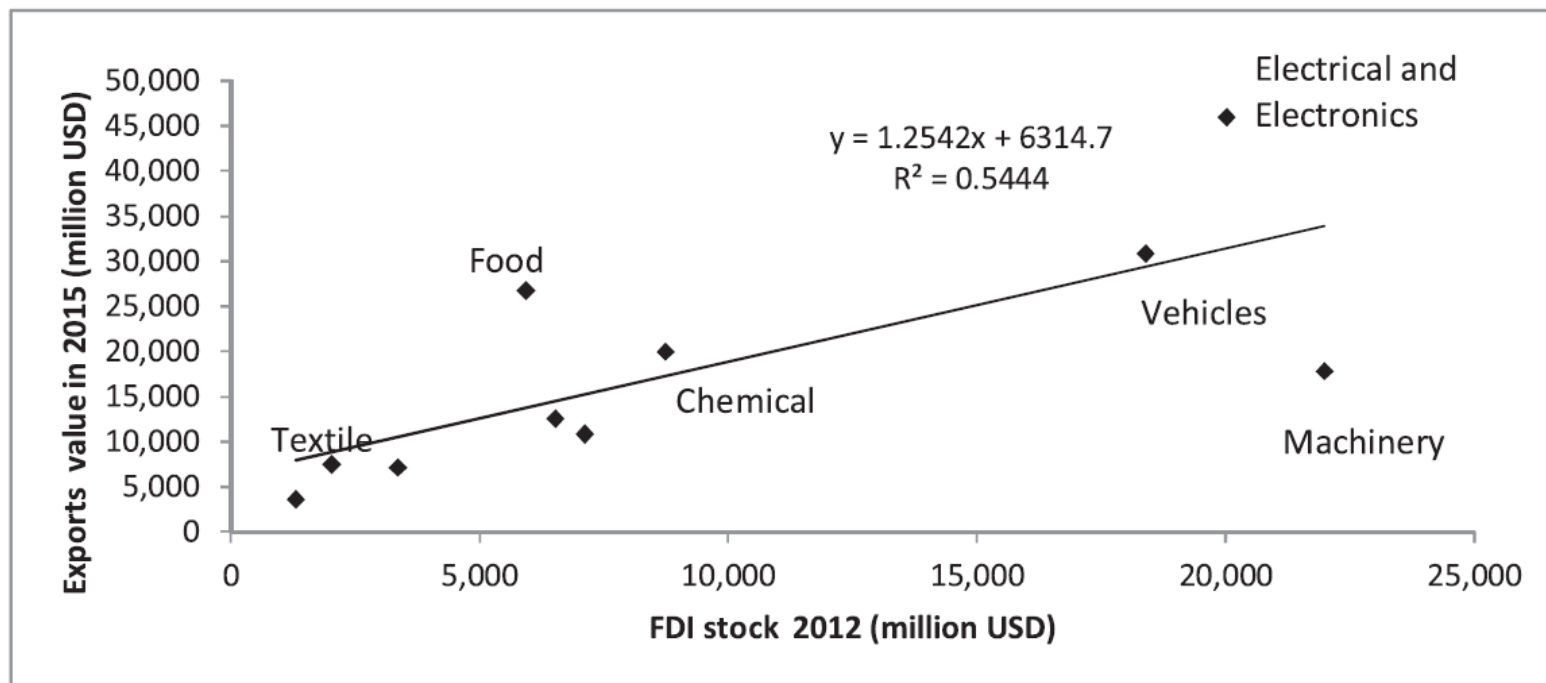
● Thailand is a net exporter for this product

● Reference bubble

The bubble size is proportional to export value



Figure 1. Sectoral FDI stock and exports



Automobile Hub

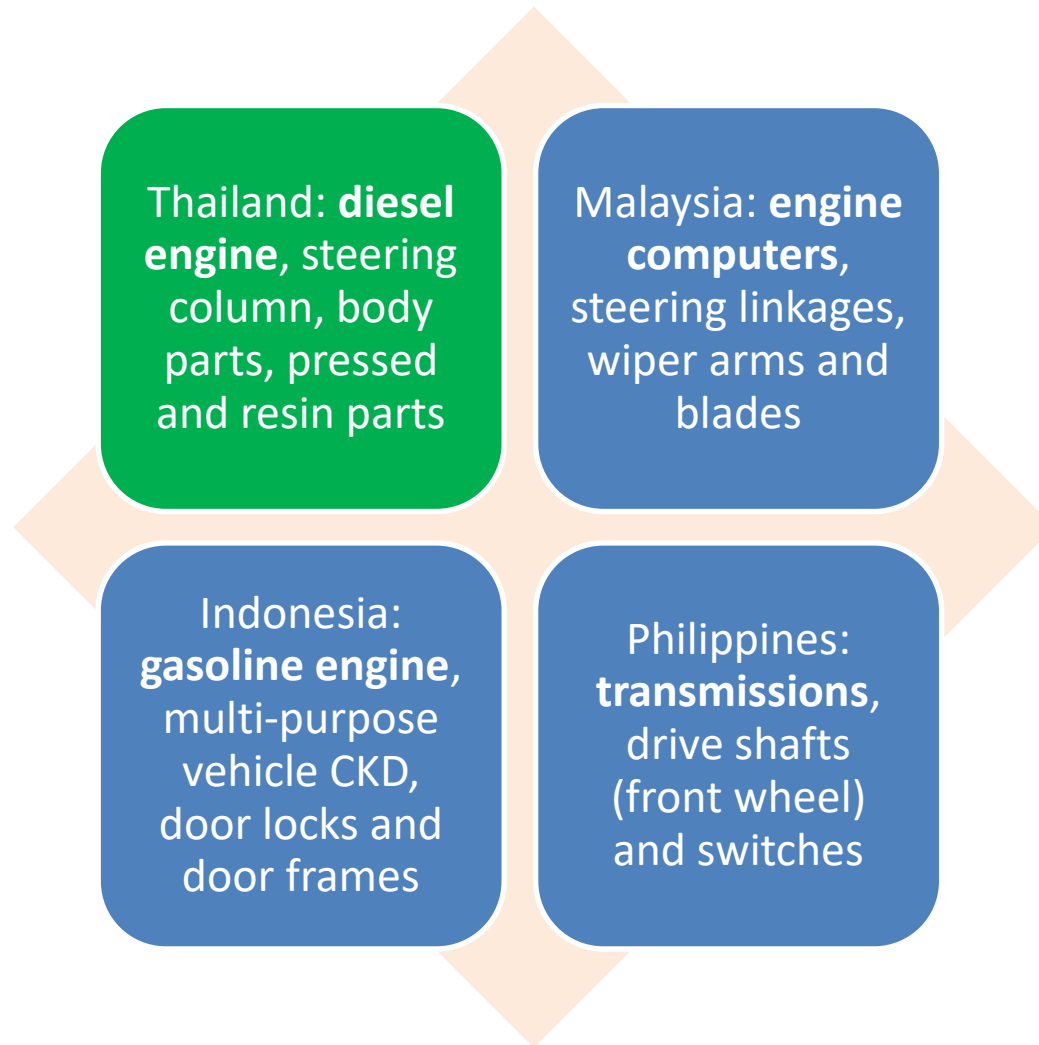
- Because of automobile assemblers' globalization strategy for production efficiency, Thailand **was selected** as a production hub in the region.
- Isuzu (partly owned by GM) and Toyota will transfer all of their pickup production in Japan to Thailand.
- However, Japanese firms were widely criticized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

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

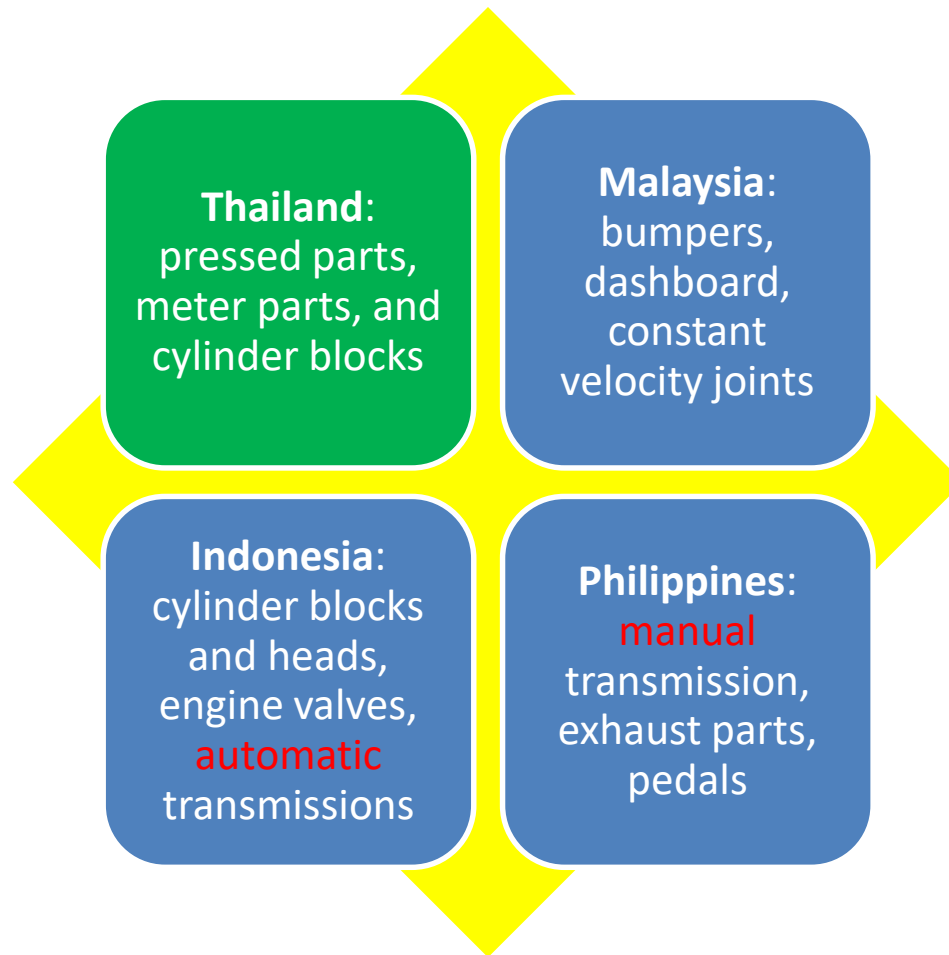
- Thailand has no ***national car*** project; thereby offering a level playing field.
- **Open market policy** (lifting LCR, reducing import tariff on raw materials).
- Expanding domestic markets and establishing export platform.
- World class suppliers of automobile parts followed GM and Ford's relocation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

Toyota's production network

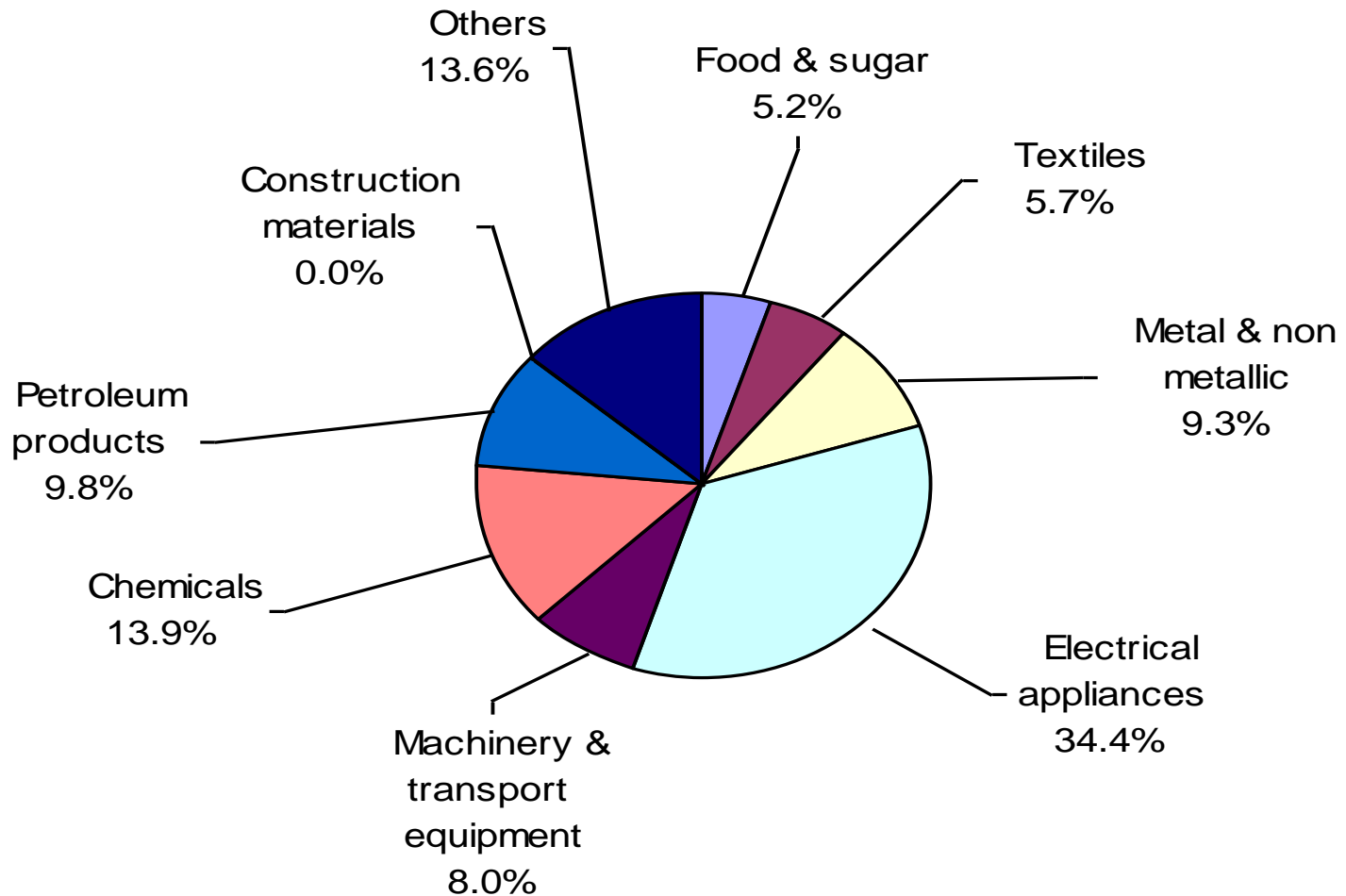
Source: JETRO and Japanese Automotive Parts Industry



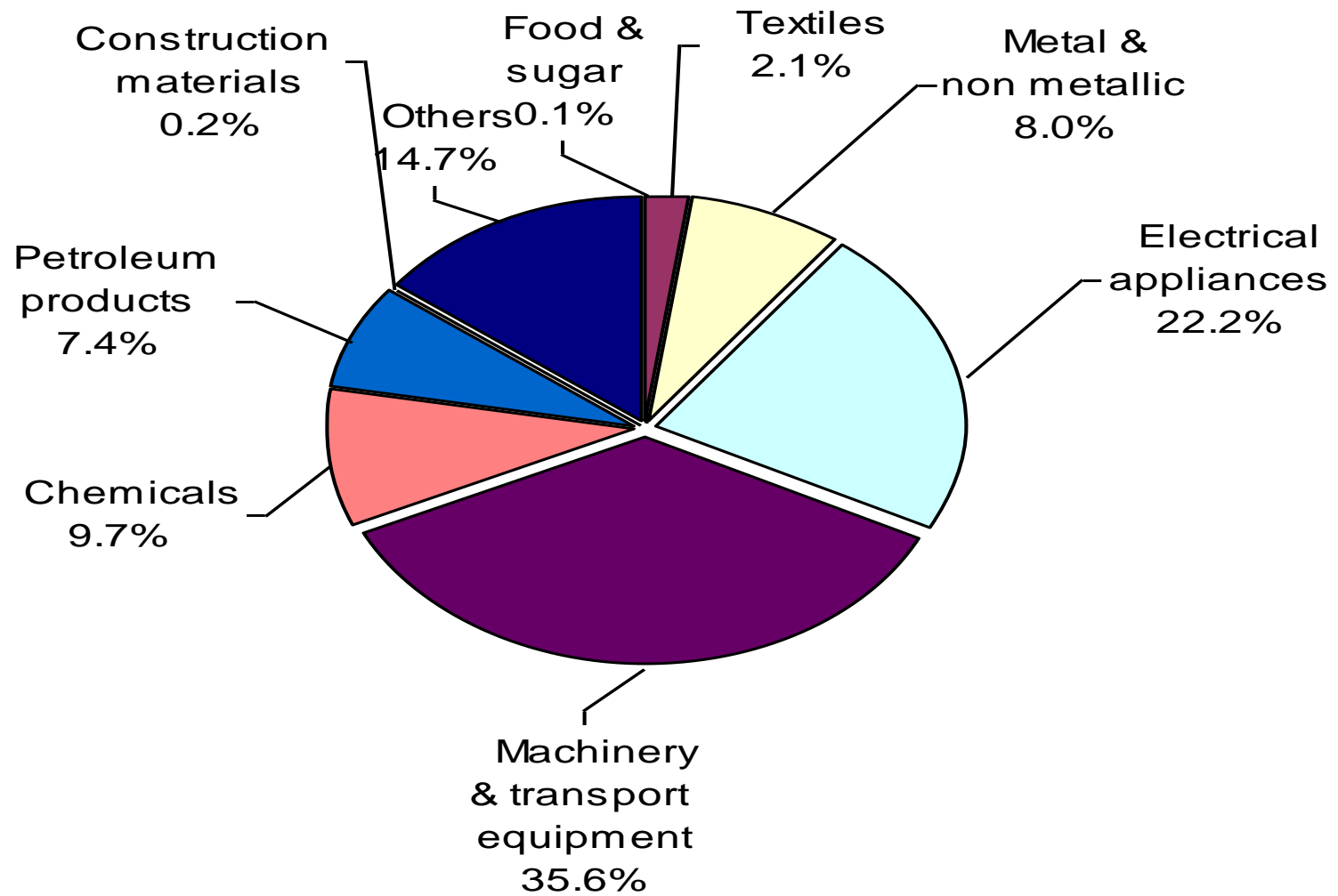
Honda's regional production network



Net FDI by Sector: 1990

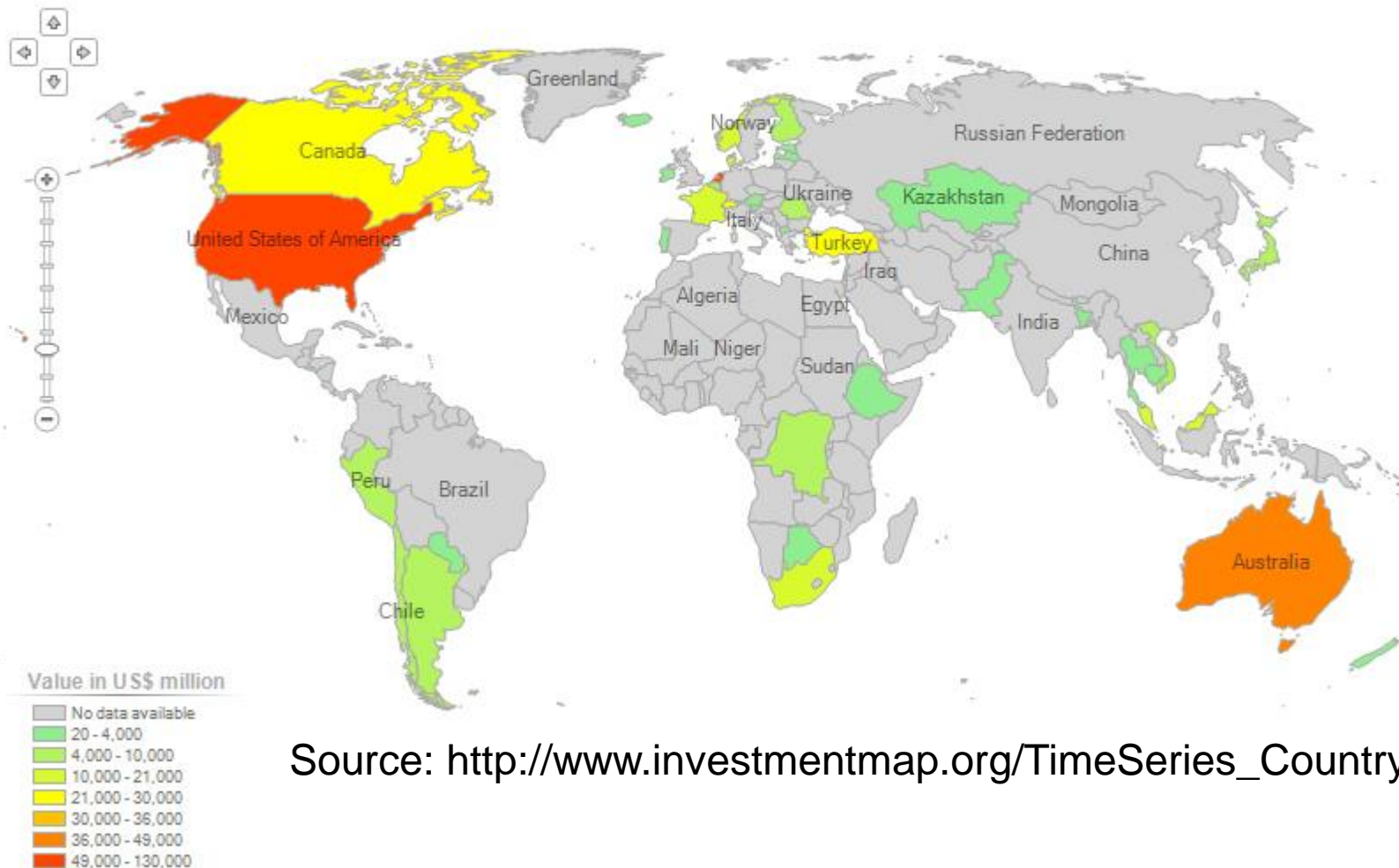


Net FDI by Sector in 2006



Inward FDI stock in transport last available year

Countries attracting investment in sector: Transport, storage and communications
Inward FDI stock Last available year



5. Impact of Global Recession and Recovery

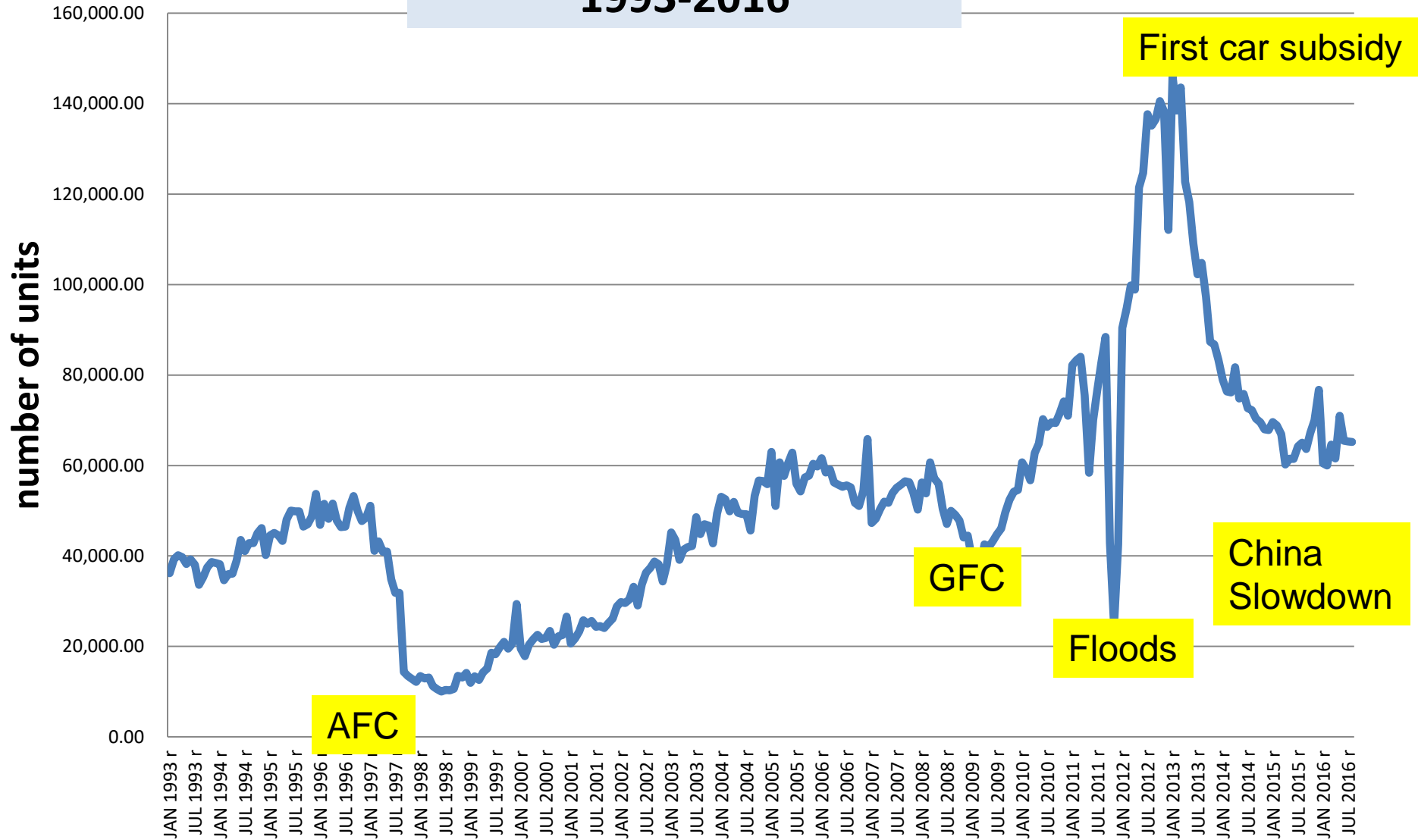
5.1 The impact

5.2 The underlying theory: Neoclassical Theory of investment demand

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 (U_c)***
- 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 (P_k)
- 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)

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

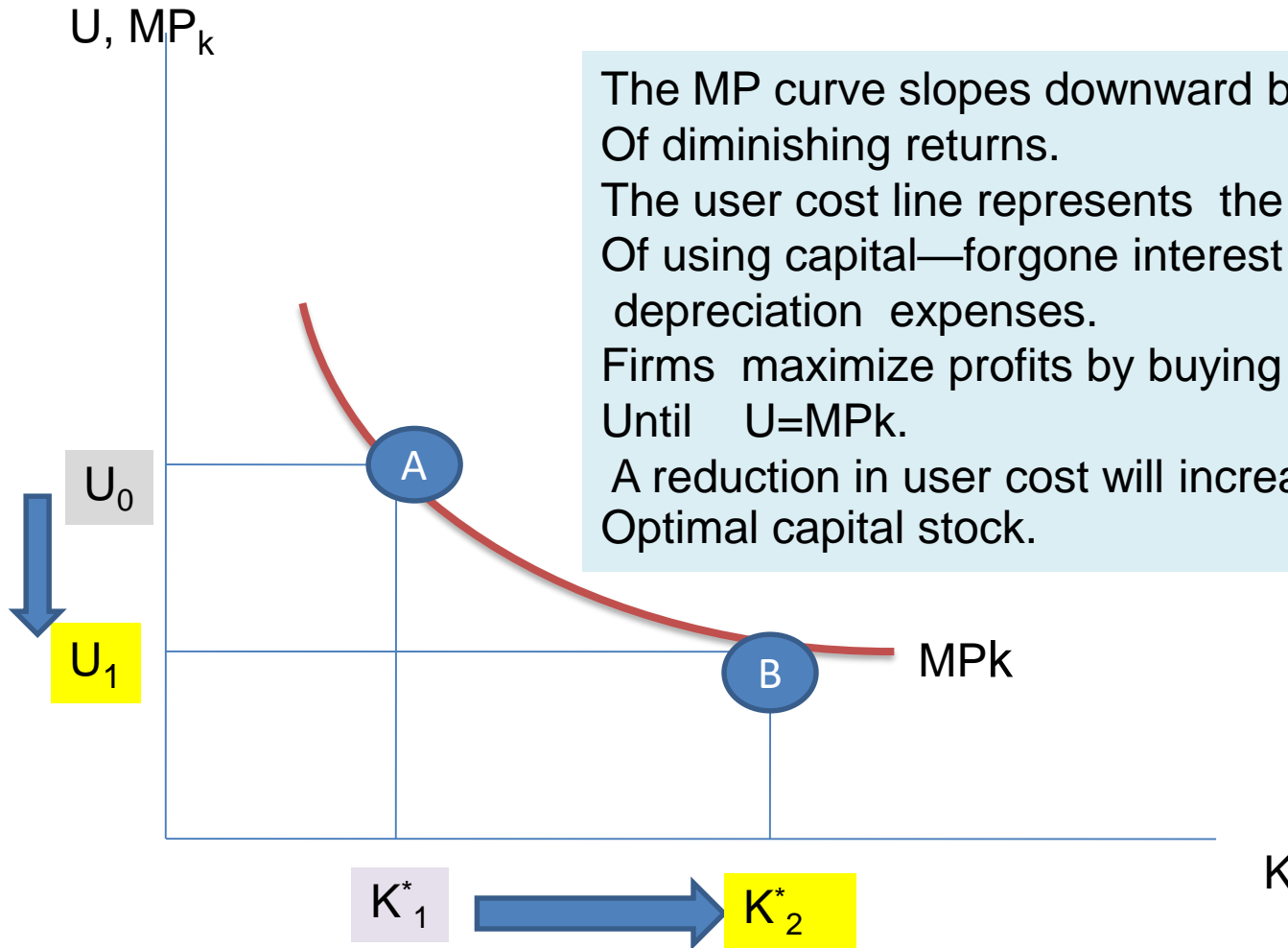
$d = depreciation$

$\tau = tax\ rebate$

$P_k^e = expected\ price$

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 $U=MP_k$. A reduction in user cost will increase the optimal capital stock.

Thailand's exports

List of importing markets for a product exported by Thailand

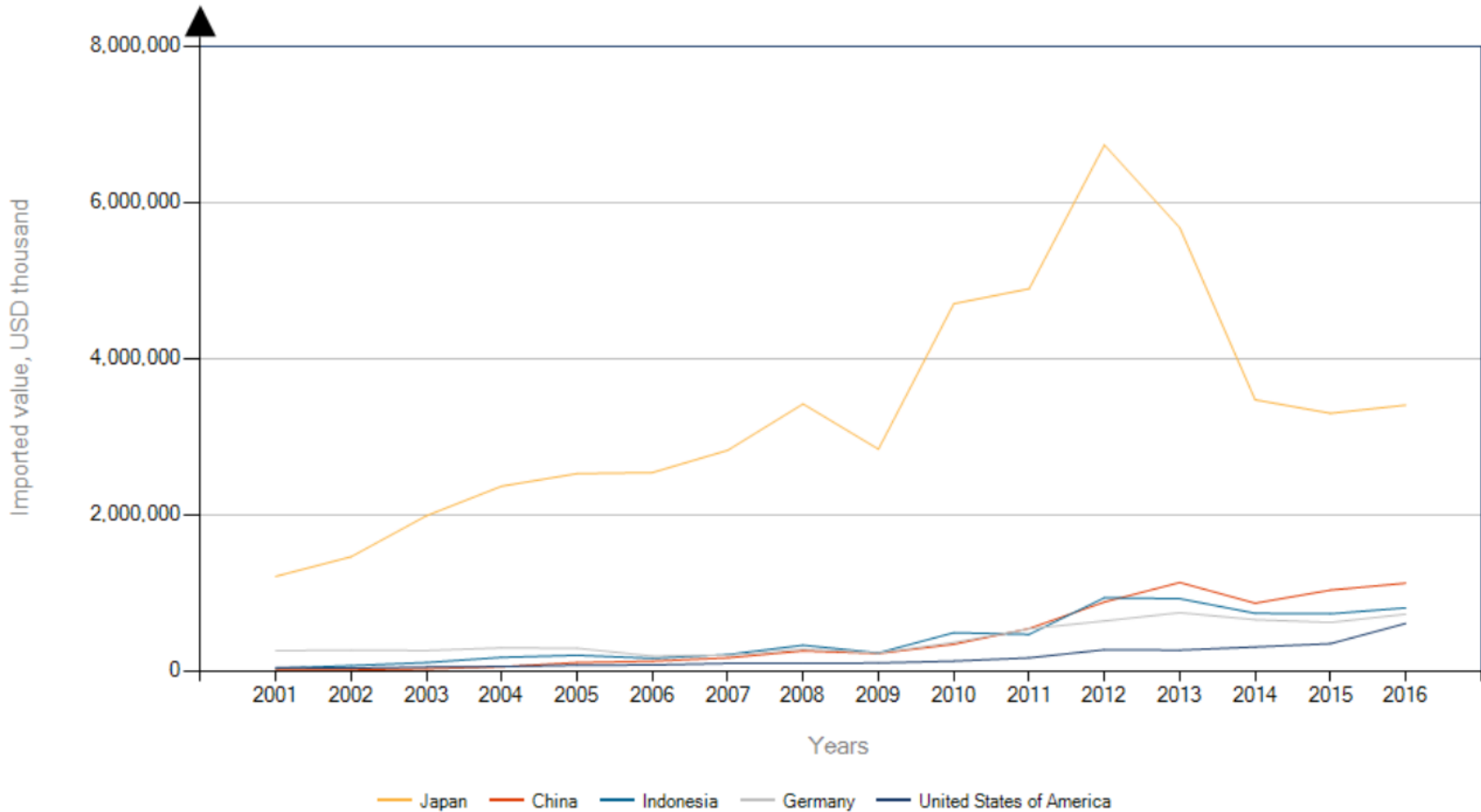
Product: 87 Vehicles other than railway or tramway rolling stock, and parts and accessories thereof



Thailand's imports

List of supplying markets for a product imported by Thailand

Product: 87 Vehicles other than railway or tramway rolling stock, and parts and accessories thereof



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, Mitsubishi's 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.

Thai Eco Car Phase 2 – 52.7 billion baht invested in total

- After all the investments have been completed, Thailand's entire Eco Car production capacity will leap to 1.58 million units per year.
- Total investment is forecasted to surpass 90 billion baht, not including those expected to be made in the parts supply chain sector.
- ***Is this view too optimistic?***

Bangkok Post: March 24, 2016

- "Every *stimulus package* offers benefits to the economy," said chief operating officer of Honda Automobile (Thailand).
- "Such measures ***might*** be able to significantly raise domestic sales to more than 1 million cars a year, but they are ***not sustainable***".

Will fiscal stimulus work?

- Thailand's vehicle market in the long term still has the potential to exceed 1 million units a year, because of strong future demand for cars in the country.
- "But ***we don't need*** any direct measures to stimulate short-term demand, such as the first-time car buyer scheme that ran from September 2011 to December 2012."

A long term plan

- President of Suzuki Motor (Thailand), said the company was poised to commence the second phase of its eco-car scheme soon with an investment of 8.43 billion baht, but noted that this also hinges on market conditions.
- Investment in the second phase of eco-car development is planned for the long term, but ***short-term factors*** should be taken into account as well."

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.

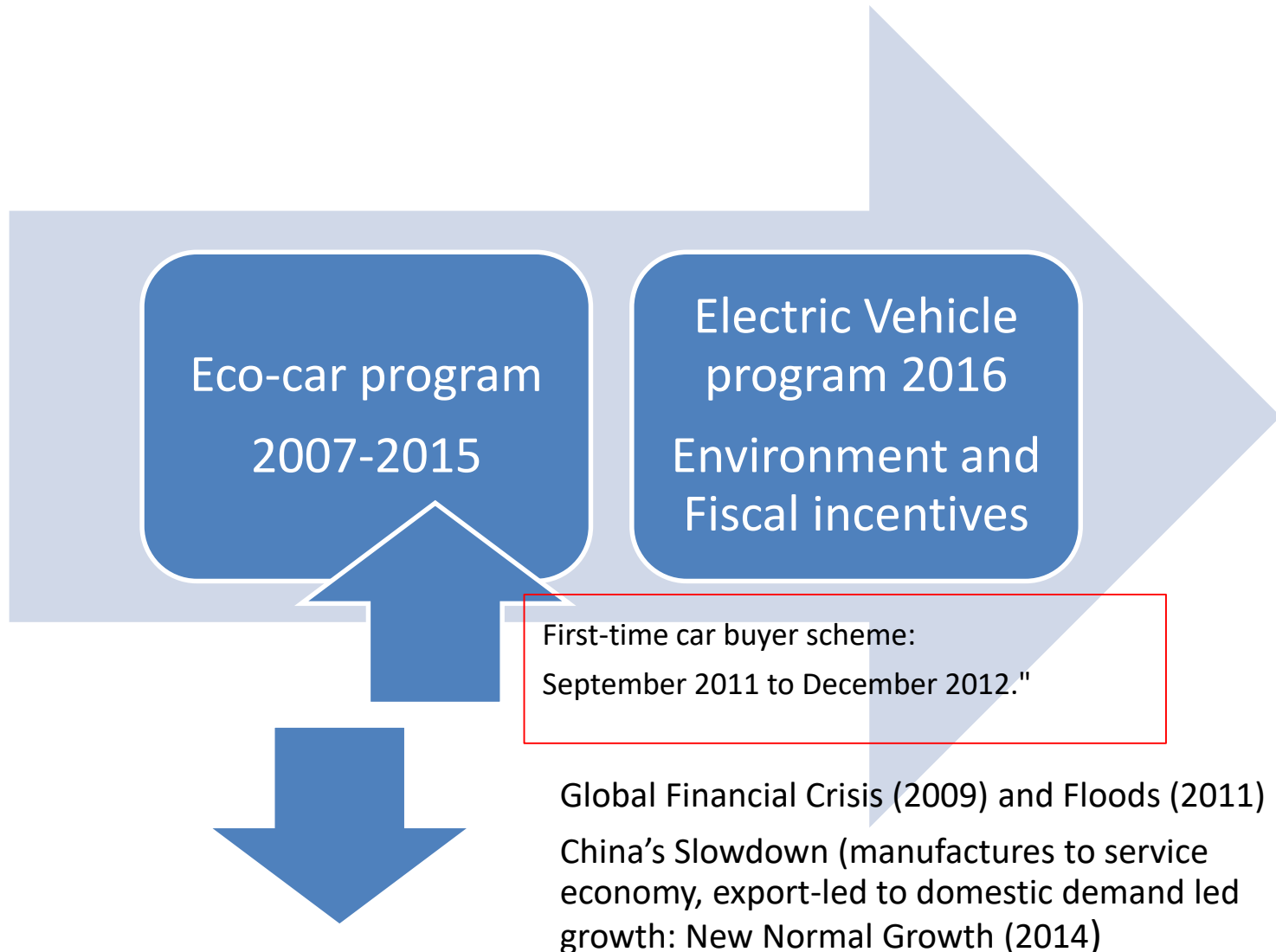
Environment and fiscal incentives

- All platforms are subject to 10% excise tax for vehicle releasing *CO₂ less than 100 grams per kilometer.*
- HEVs releases CO₂ 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



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.

Concluding remarks

- During recession, firms need to change strategy and restructure.
- In time of crisis, public subsidy is needed with conditions, similar to GM and Chrysler bailouts, Thailand's first car policy after the great deluge in 2011.
- The sharp rebound of the car industry has demonstrated its **resilience**.

Important Concepts

- 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.

Connect these dots

- Industry structure
- Historical perspective of industry development
- Export capability
- Trade competitiveness
- Impact of global recession and fragile recovery
- Eco car program: the recent strategy

Makeup Classes: November 27

- Monday: 11:00-14:00
- No class on October 13, and December 1 (Graduation Day)