Challenges to Thai Automobile industry

Lecture 17

Bhanupong

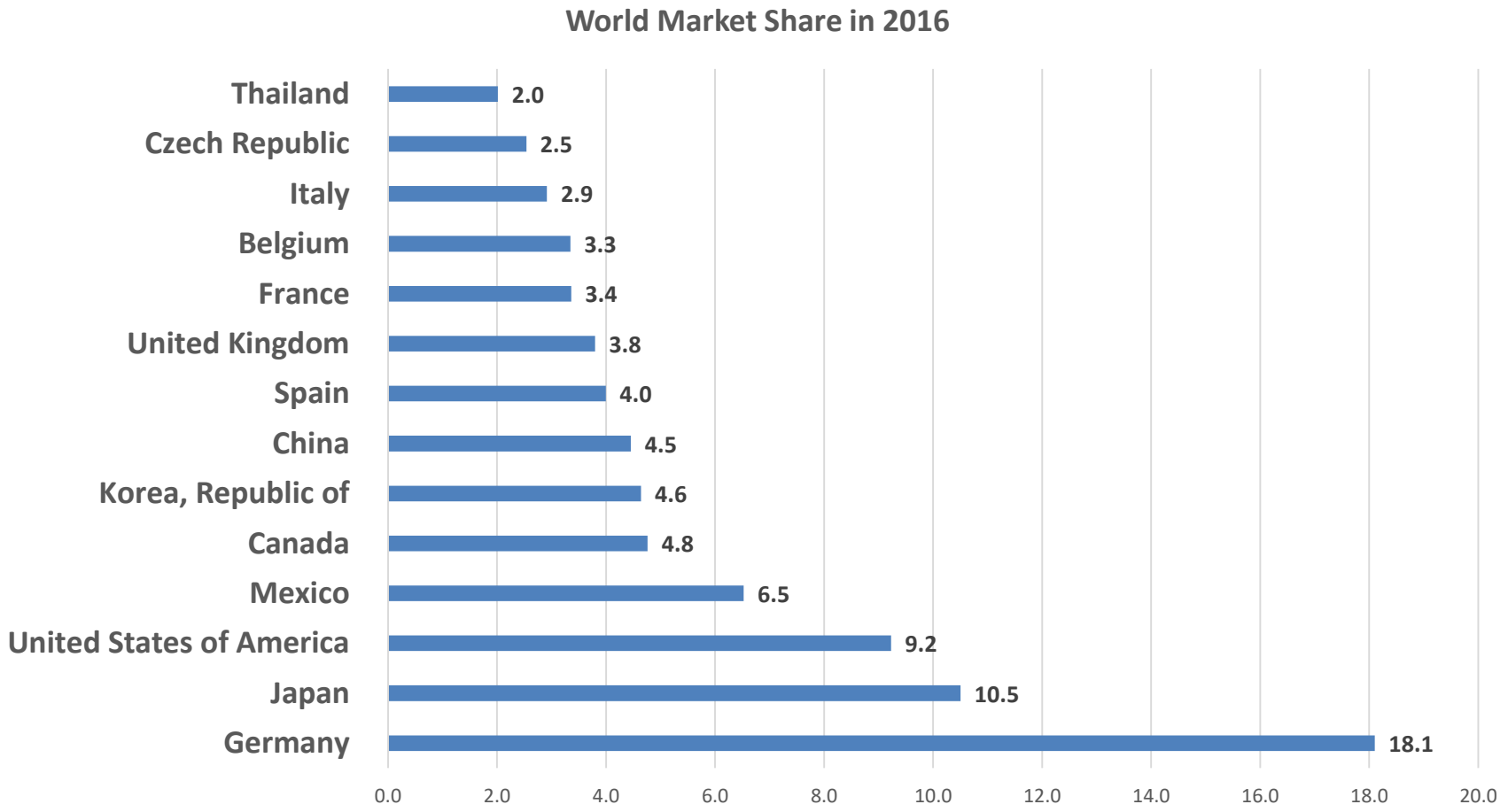
Course Syllabus
Lecture 17: Automobile Industry

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

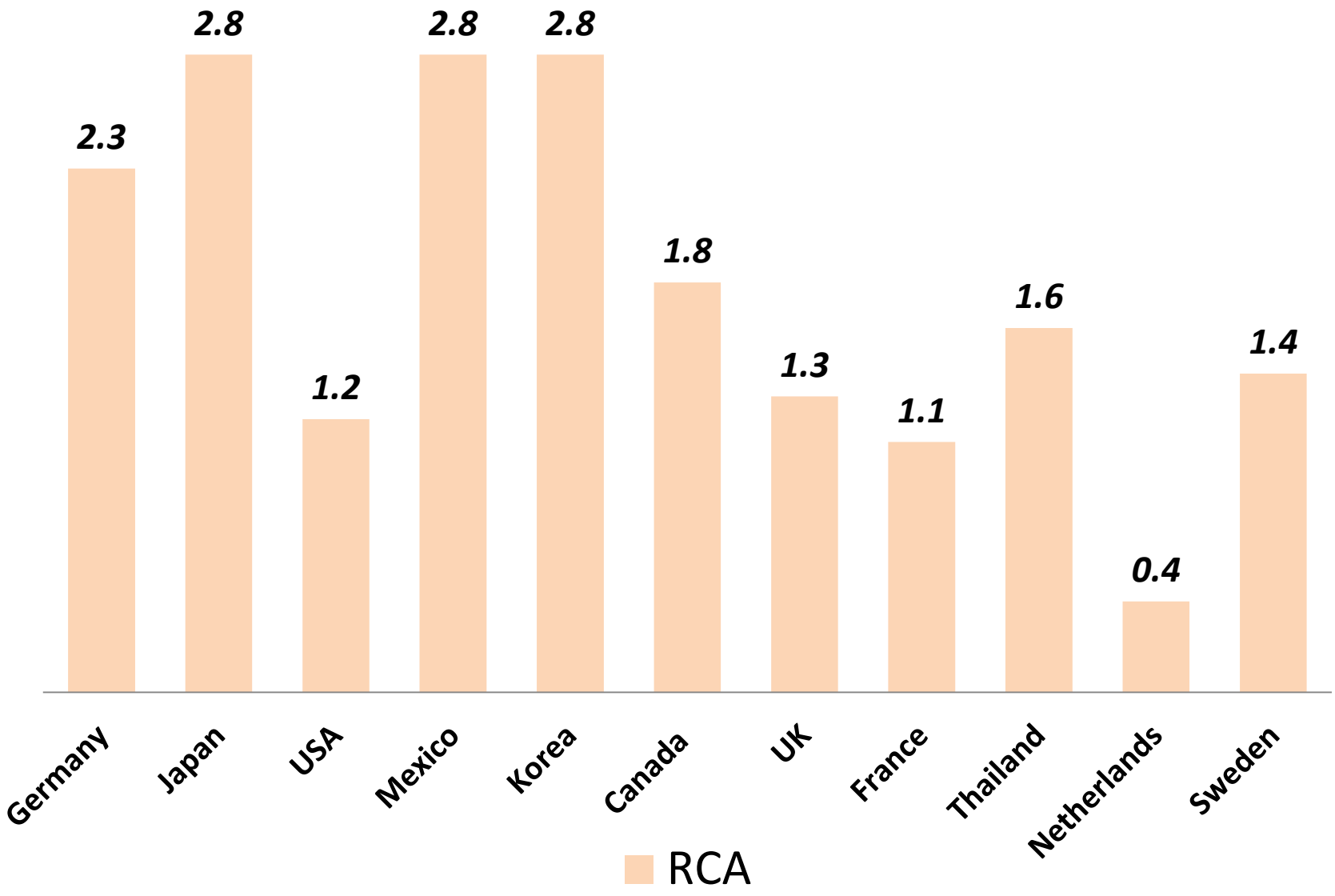
Outline

1. Industry structure
2. Historical perspective
3. The role of FDI
4. Impact of global recession and recovery
5. Recent strategy: Eco car program
6. What is going on in the rest of the world

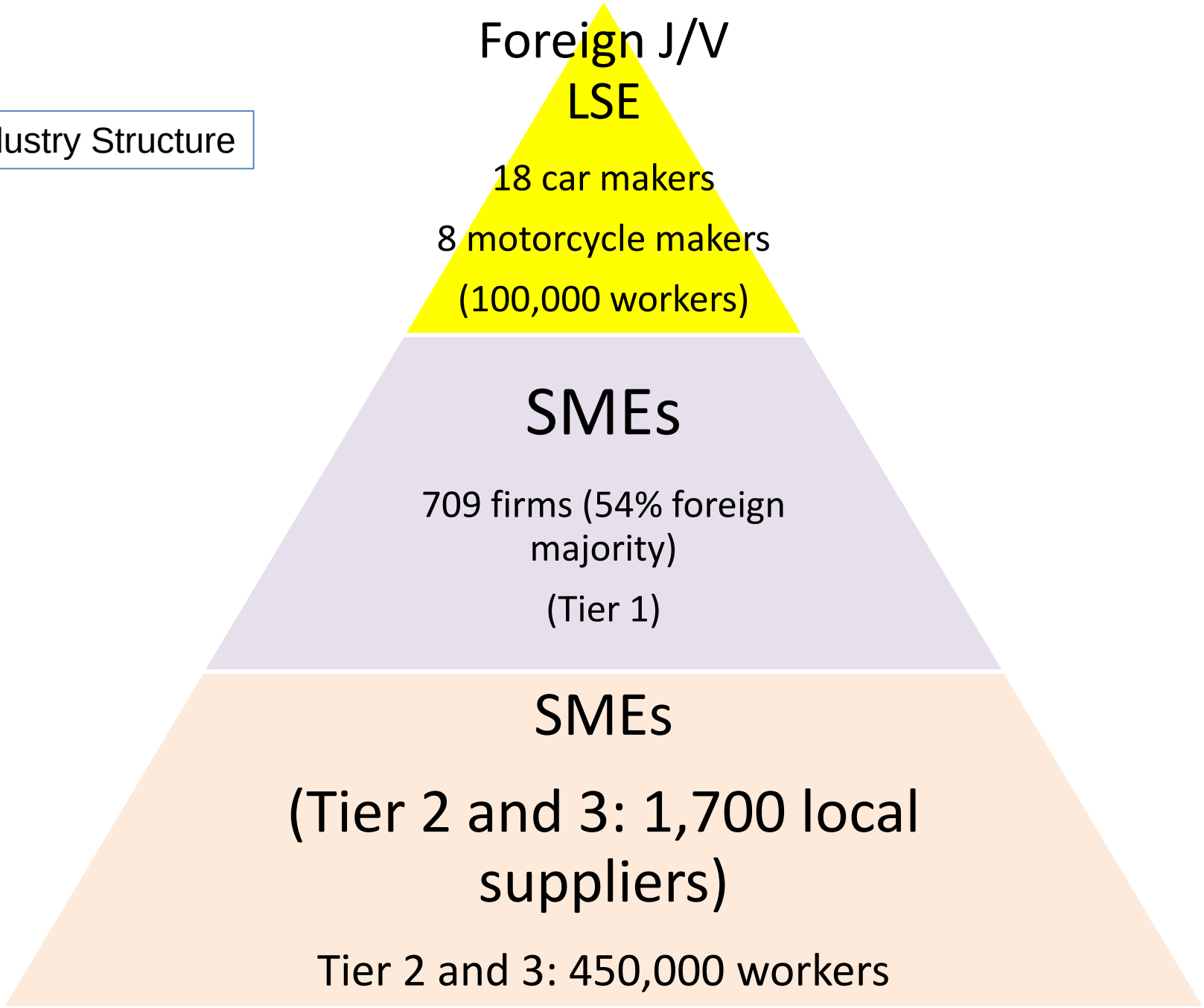
World's top vehicle exporters in 2016



RCA: Specialization in Automobile Production



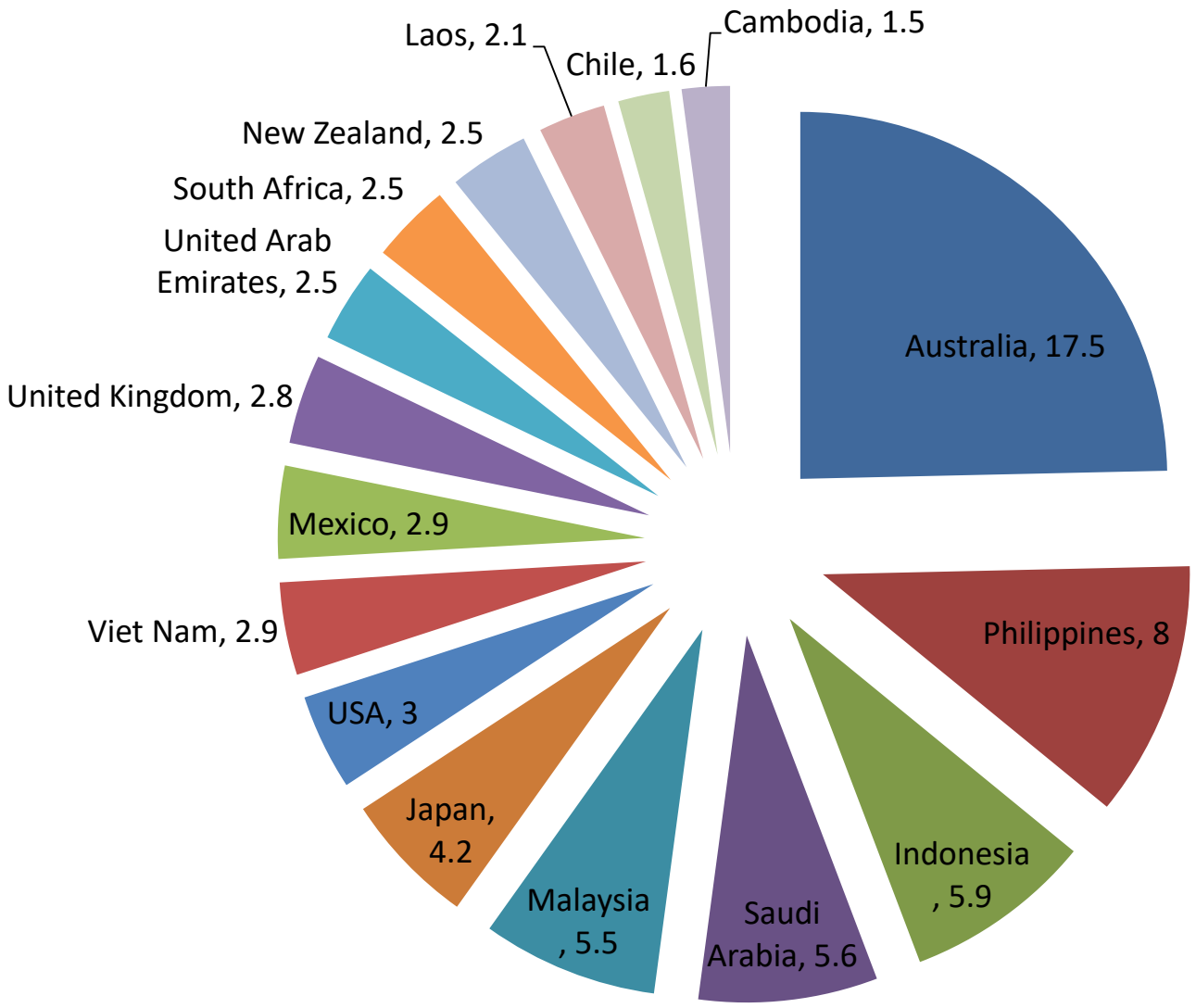
1. Industry Structure



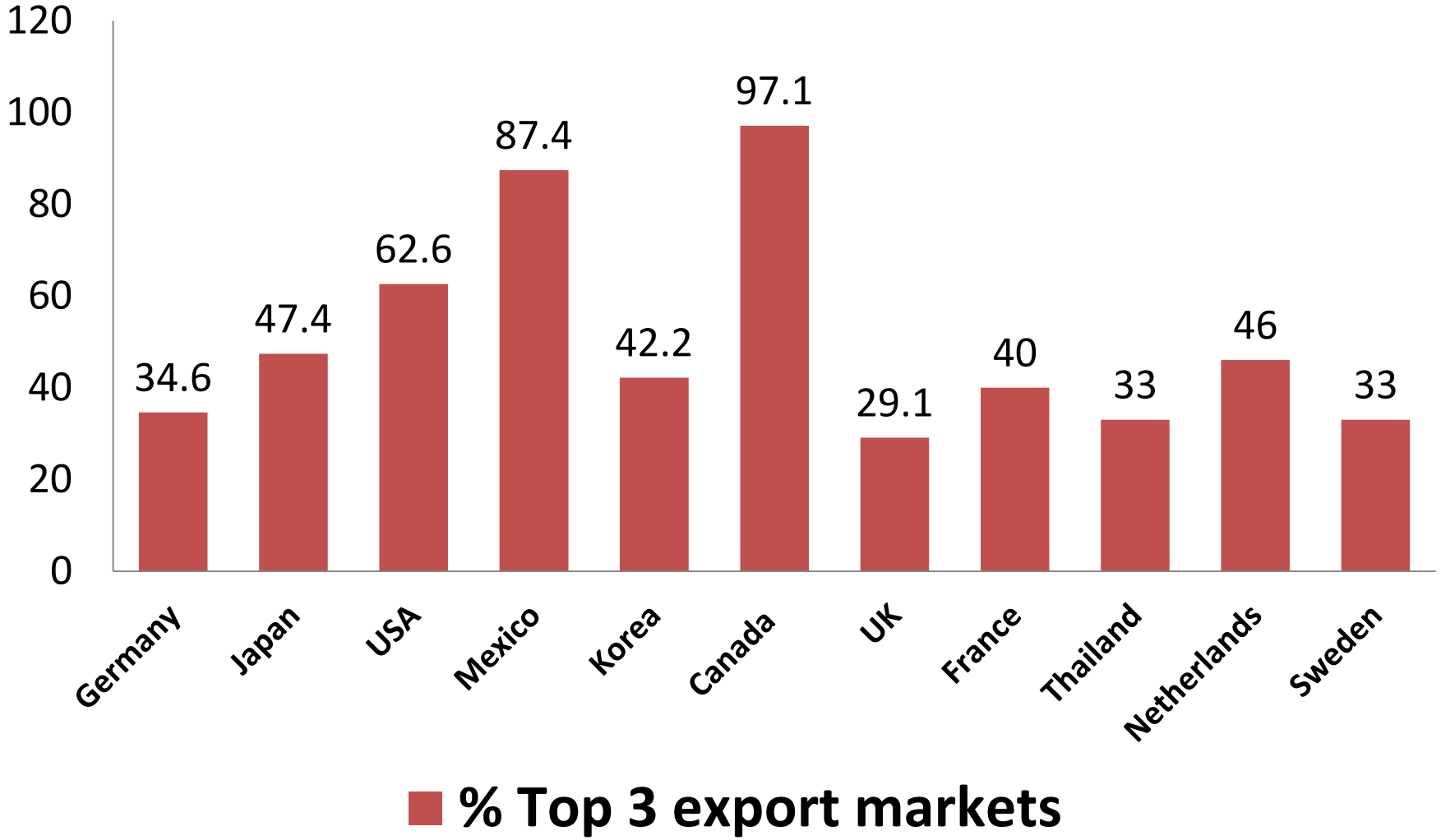
Major multinational automotive industry leaders with presence in Thailand

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

Figure 6: Market Diversification of Thailand exports of vehicles and parts in 2015



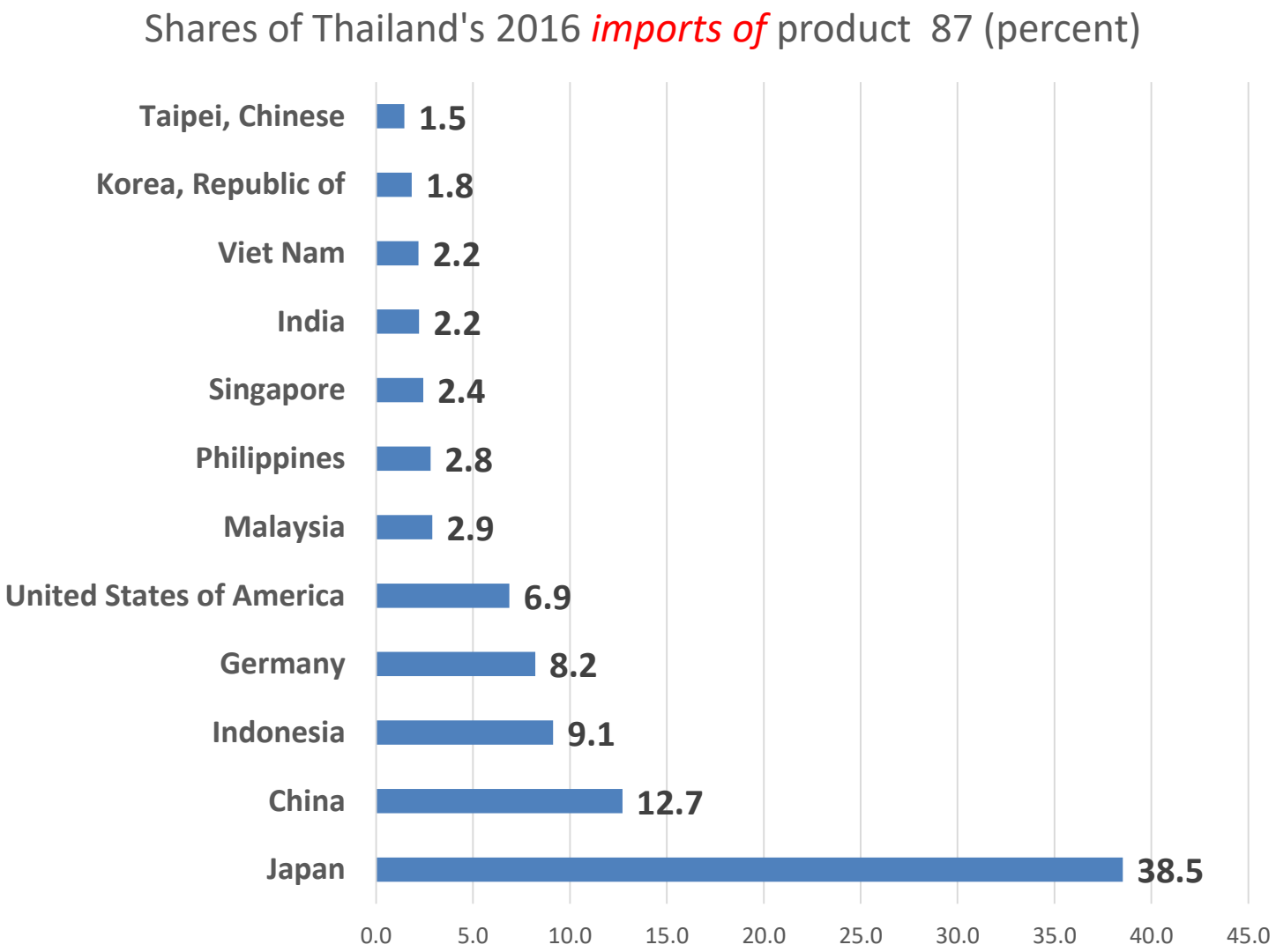
Export Market Concentration of major exporting countries *(percentage of export values of three largest importers in total exports of each country)*



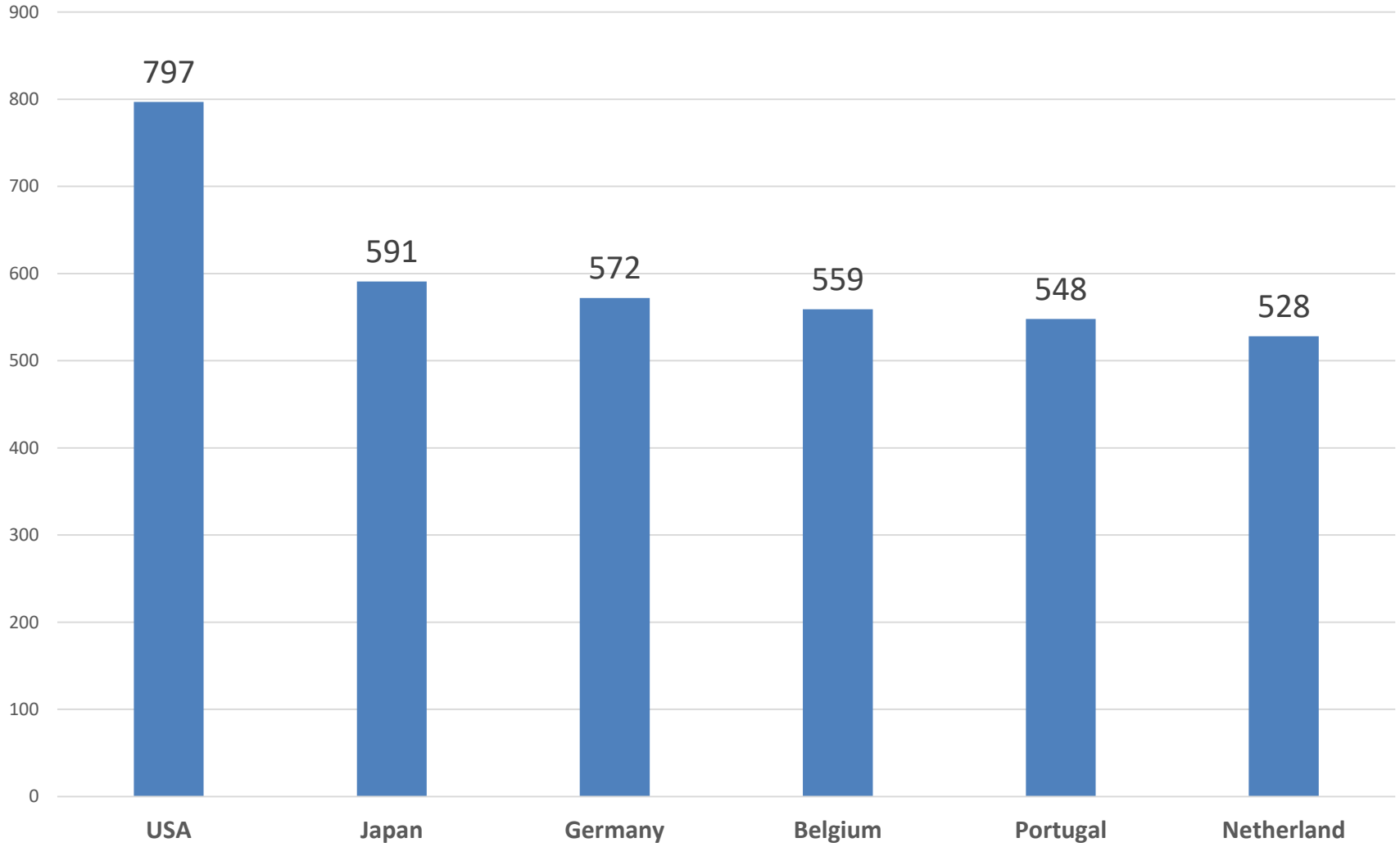
Why Australia?

- Over half of the 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 a large market in developing countries and Australia, mainly because of their bad condition of roads in the countryside, while there was only a tiny 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 helps

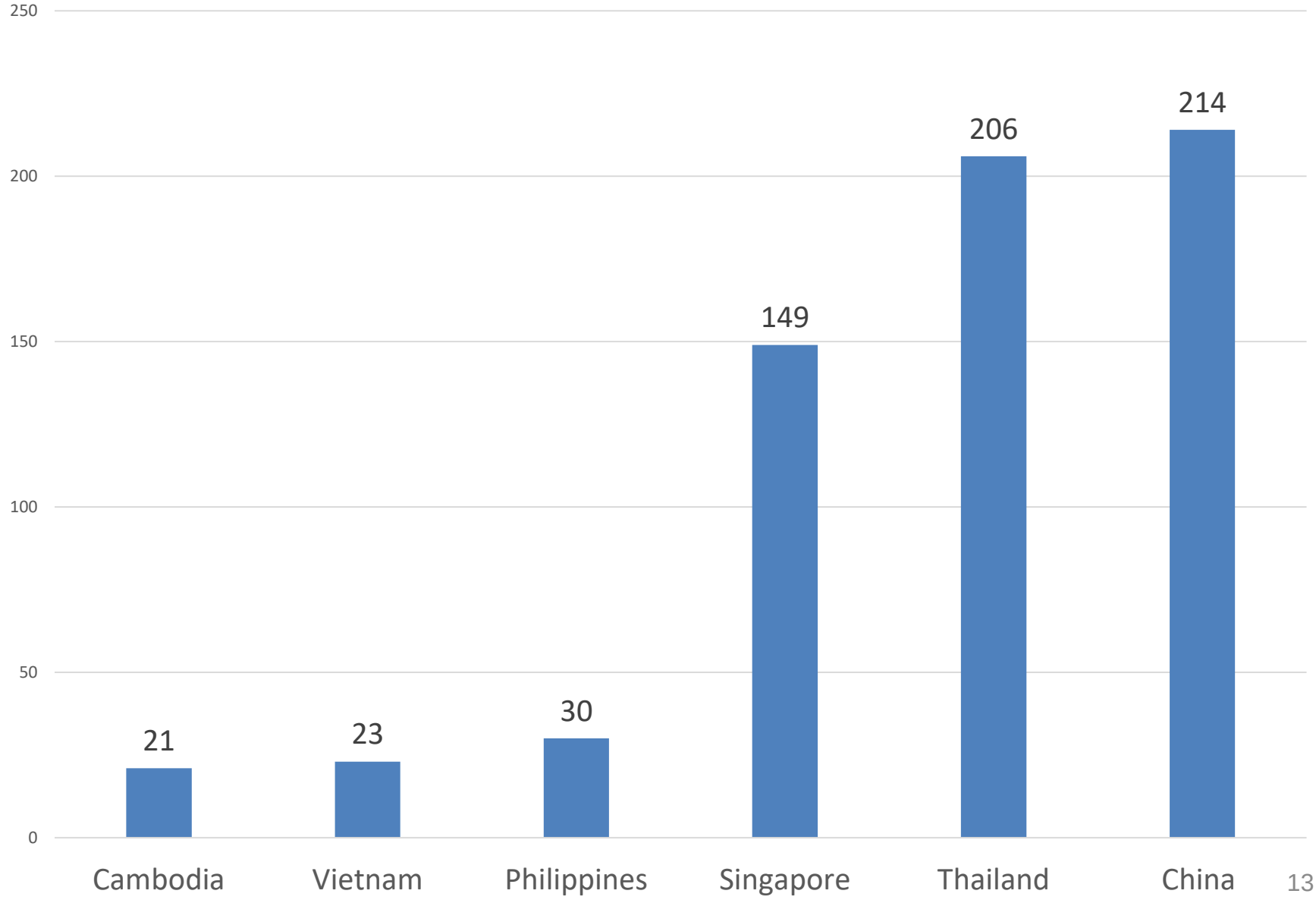
Intra-industry trade: share of imports



Motor vehicles per 1,000 people: High income countries



Abundant opportunities:
Motor vehicles per 1000 people: Asia



On the road to becoming the Detroit of 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.

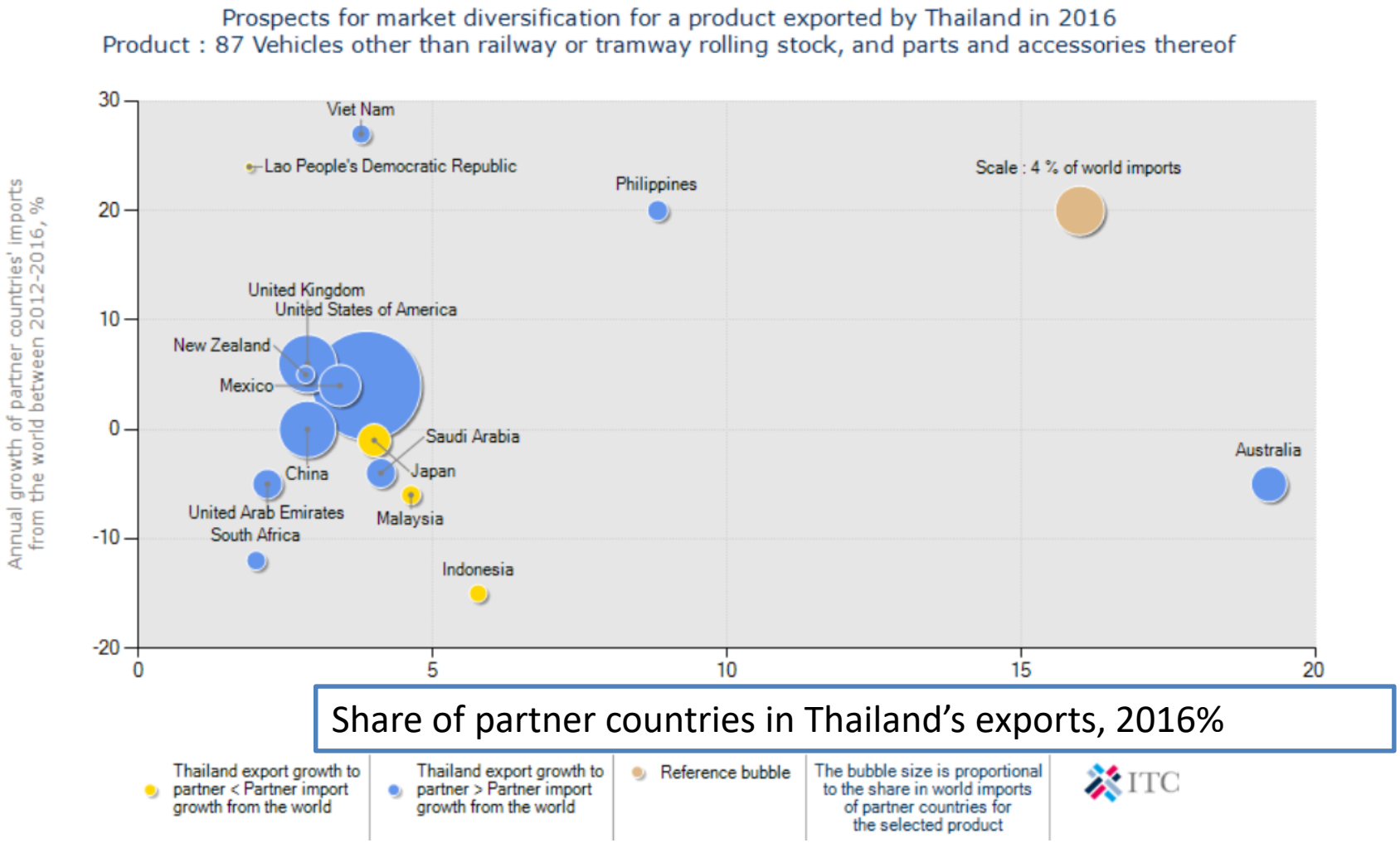
Trade Performance Index (2016)
Source: ITC

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		

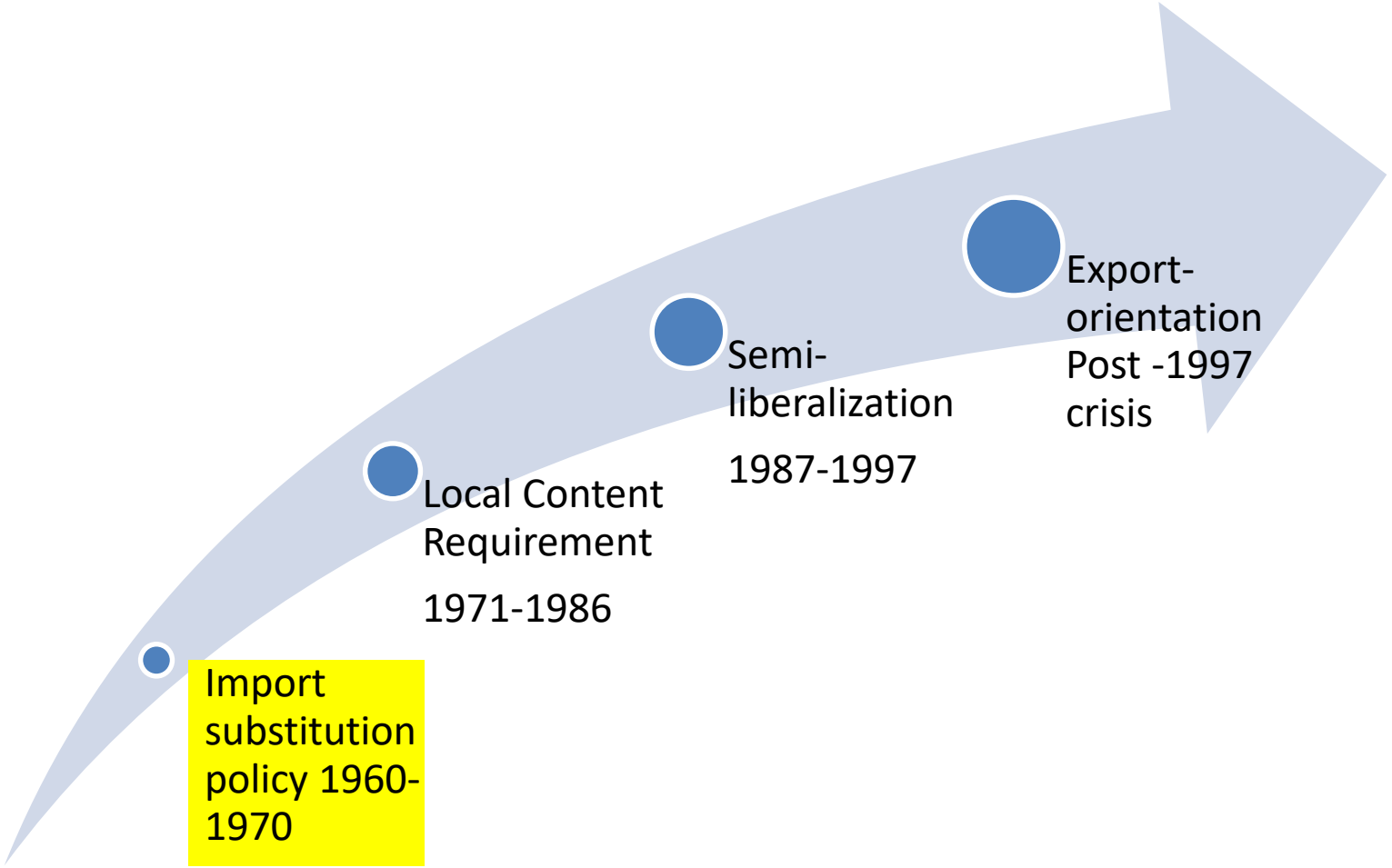
Market Diversification



2. Historical Perspective
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 a promotion from the Board Of Investment (BOI), hoping to create linkages to other industries.
- Import substitution policy involved the creation of high tariff and limitation of new assembly plants.
- The government lifted the barriers in 1993.
- Subsequently, Honda, GM, BMW, and Auto alliance (Ford and Mazda), established their assembly plants in Thailand.

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

- From 1973 to 1999, the Thai government had implemented various policies:
- A Local Content Requirement (LCR) on necessary and selective items for localization,
- High import tariffs, a ban on imported CBU as well as new assembly plants, and localization of diesel engine.
- Local component firms produced Replacement Manufacturing (REM) as well as Original Equipment Manufacturing (OEM) parts.
- There were 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 locally 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: no more ban on CBUs.
- As a result, the highly protected industry has become more competitive.
- BOI promoted three more 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 Toyota SOLUNA out of its 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 also helped during the time when the demand from 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 the 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 1998 crisis was a blessing in disguise

The fourth stage industry development

Export orientation

the post 1997 era

- By the end o 1999, the government abandoned the LCR.
- Can we establish an industry starting with export promotion policy instead of an import substitution policy?
- After 40 years of development,
- the Thai automobile industry has become externally oriented.

Exports Galore

- 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 the 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: When an industry encourages investment in facilities that enable the project to succeed.
- A forward linkage: When investment in an industry encourages investment in subsequent stages of production in another industry.

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.

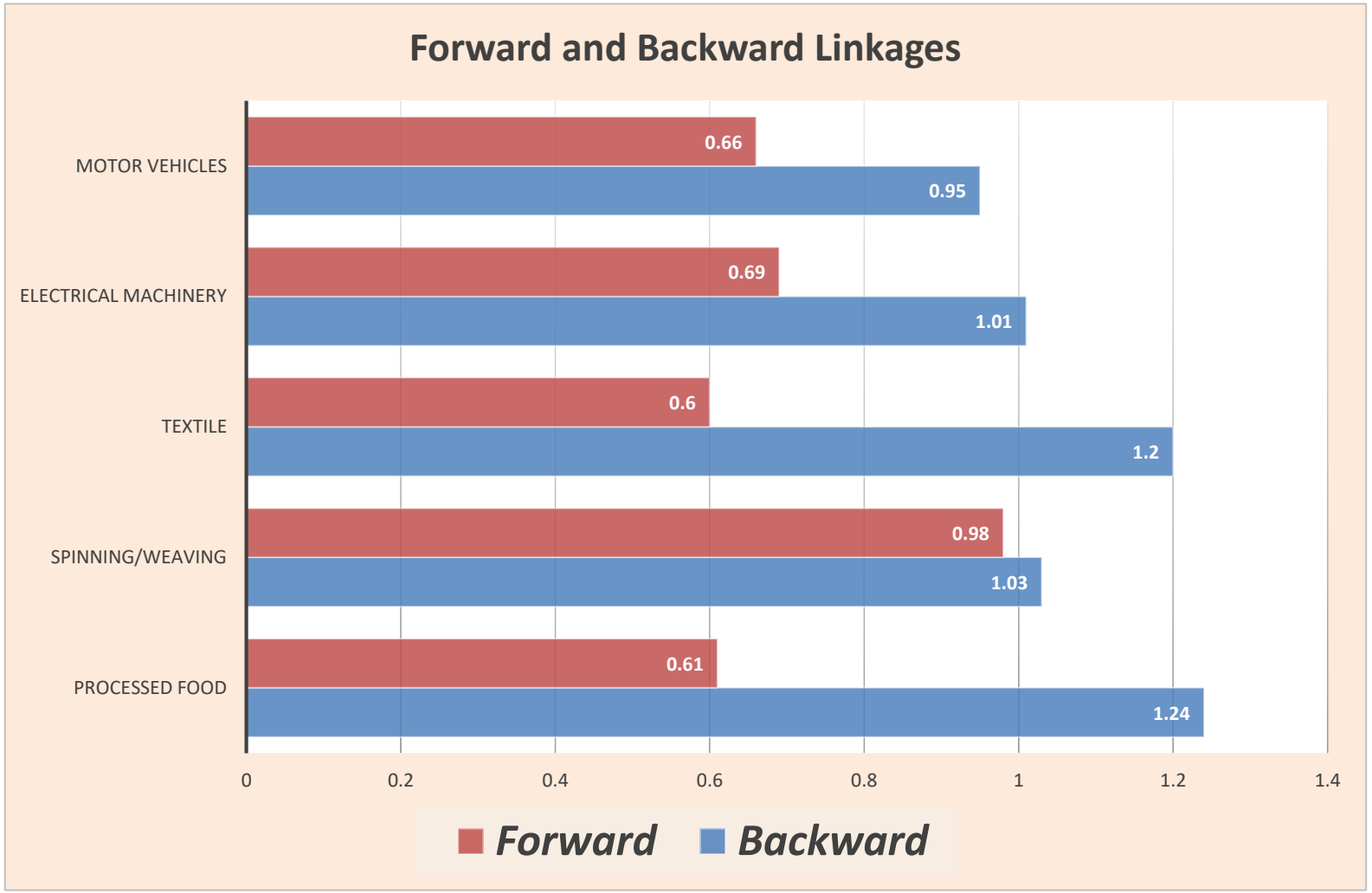
Linkages in the steel industry

- 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 the steel industry include construction, automobile industry, canned goods, and ship building.
- Forward linkages of BTS construction is development in the real estates along the BTS routes.
- 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.
- In September 2017, the last Toyota car was produced in Australia. GM and Ford had already left Australia earlier.
- The strong auto-parts industry is fundamental support for the growth of automotive production and attracts foreign companies to move their bases here.

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 were reduced by 15-30% by 2006, but Thailand was able to compete in 2017.
- Plants in Thailand have a limited role in process engineering.
- The lack of process engineering capability was because 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 and Stuttgart.

3. The Role of FDI

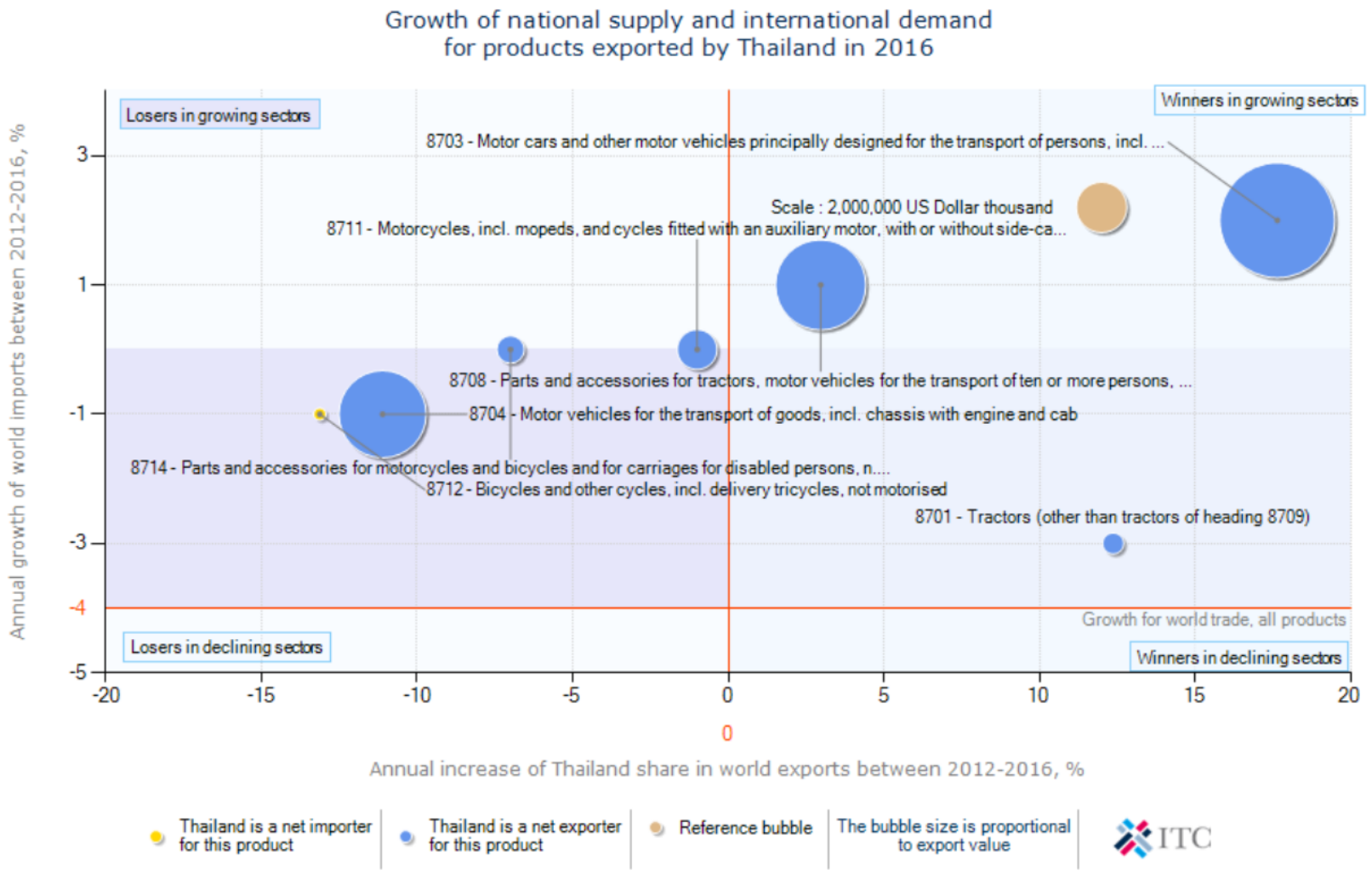
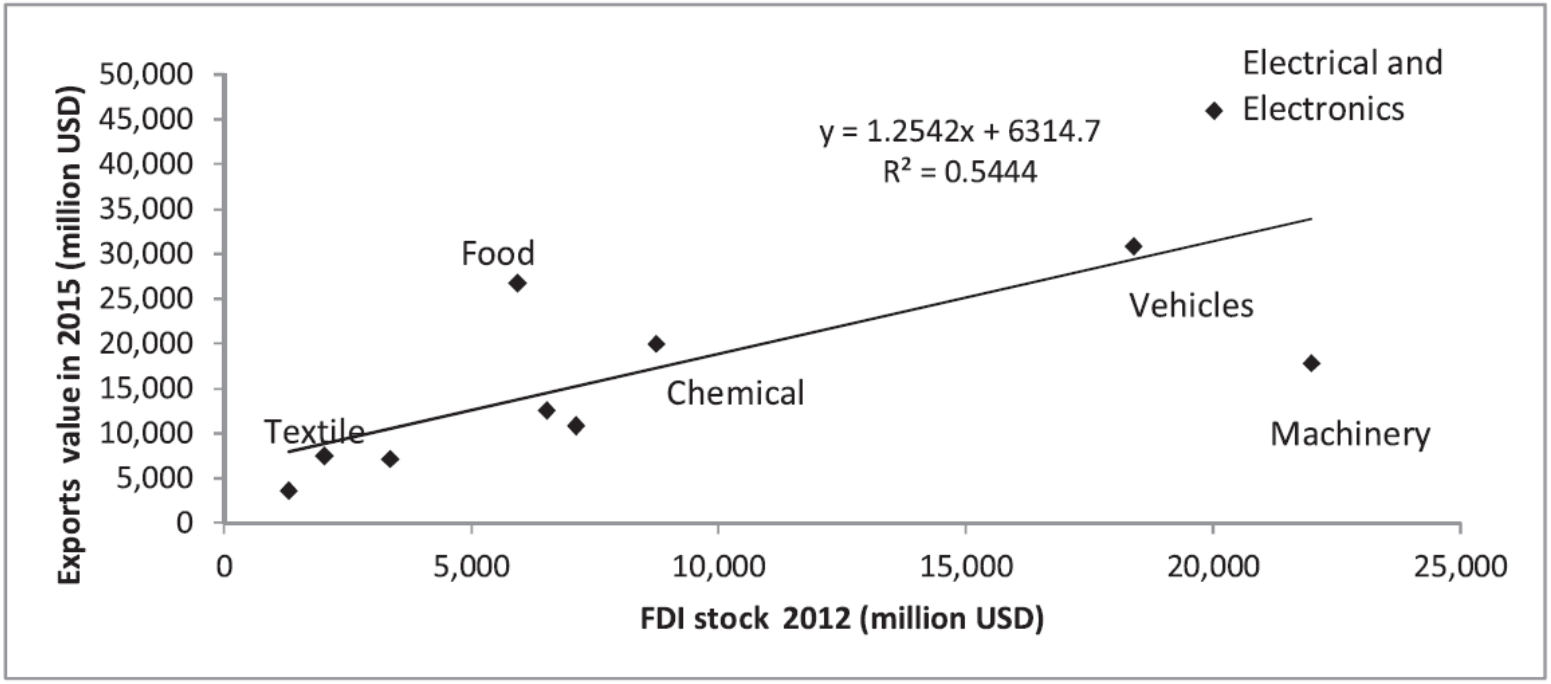


Figure 1. Sectoral FDI stock and exports



Automobile Hub

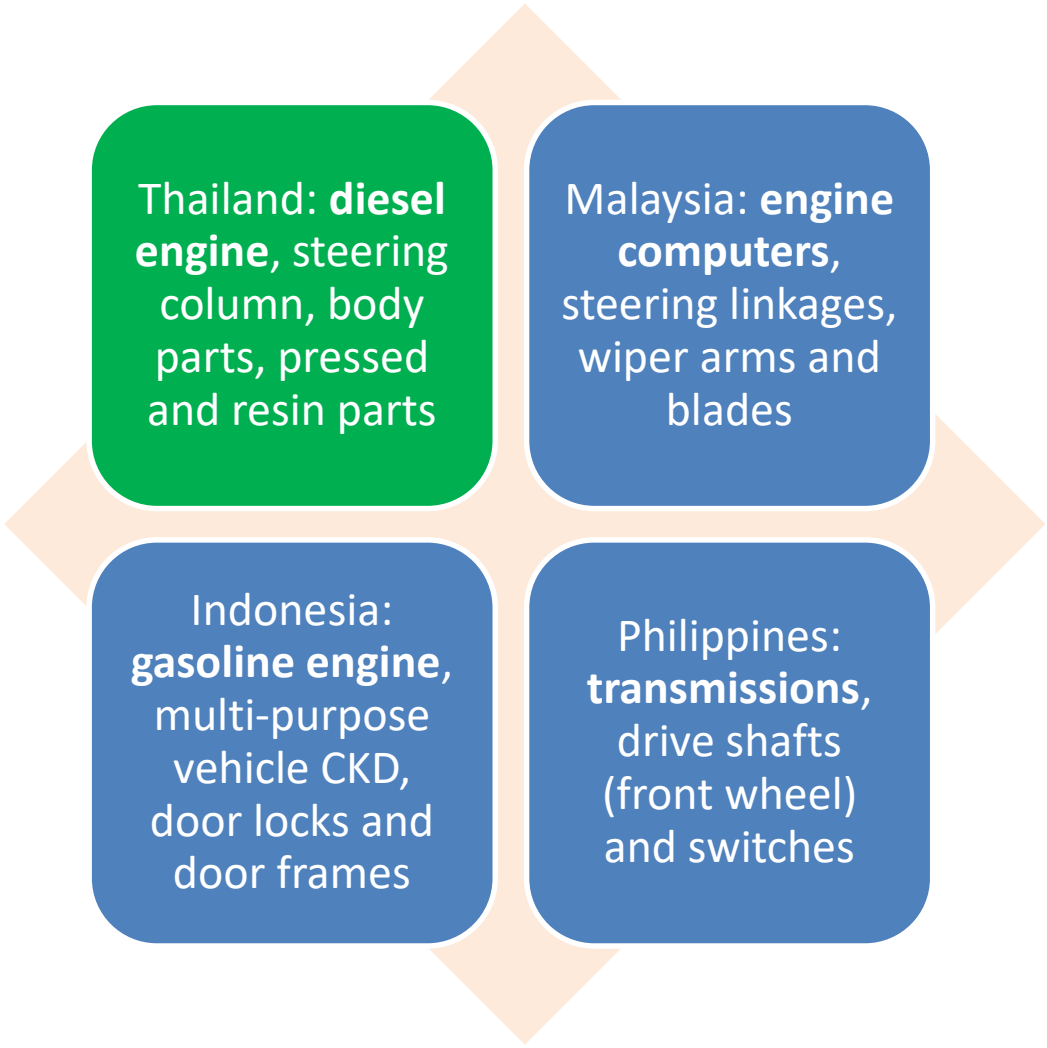
- Because of automobile assemblers' globalization strategy for production efficiency, Thailand was selected as a production hub in the region.
- Isuzu (partly owned by GM) and Toyota will transfer all of their pickup production in Japan to Thailand.
- However, Japanese firms were widely criticized for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

Why did foreign firms come to Thailand?

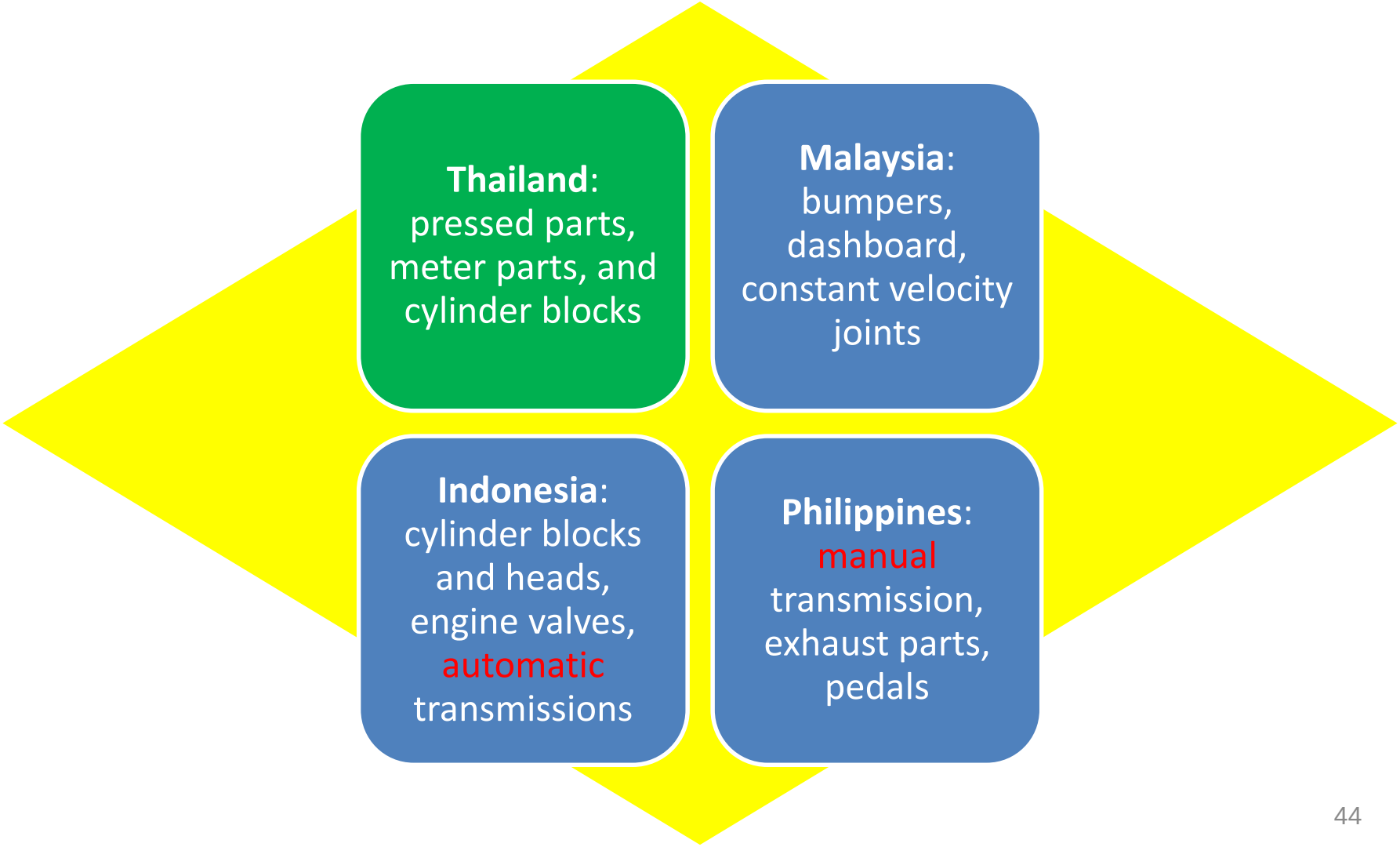
- Thailand has no ***national car*** project; thereby offering a level playing field.
- Vietnam has one: Vinfast
- **Open market policy** (lifting LCR, reducing import tariff on raw materials).
- Expanding domestic markets and establishing an export platform.
- World class suppliers of automobile parts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

Toyota's production network

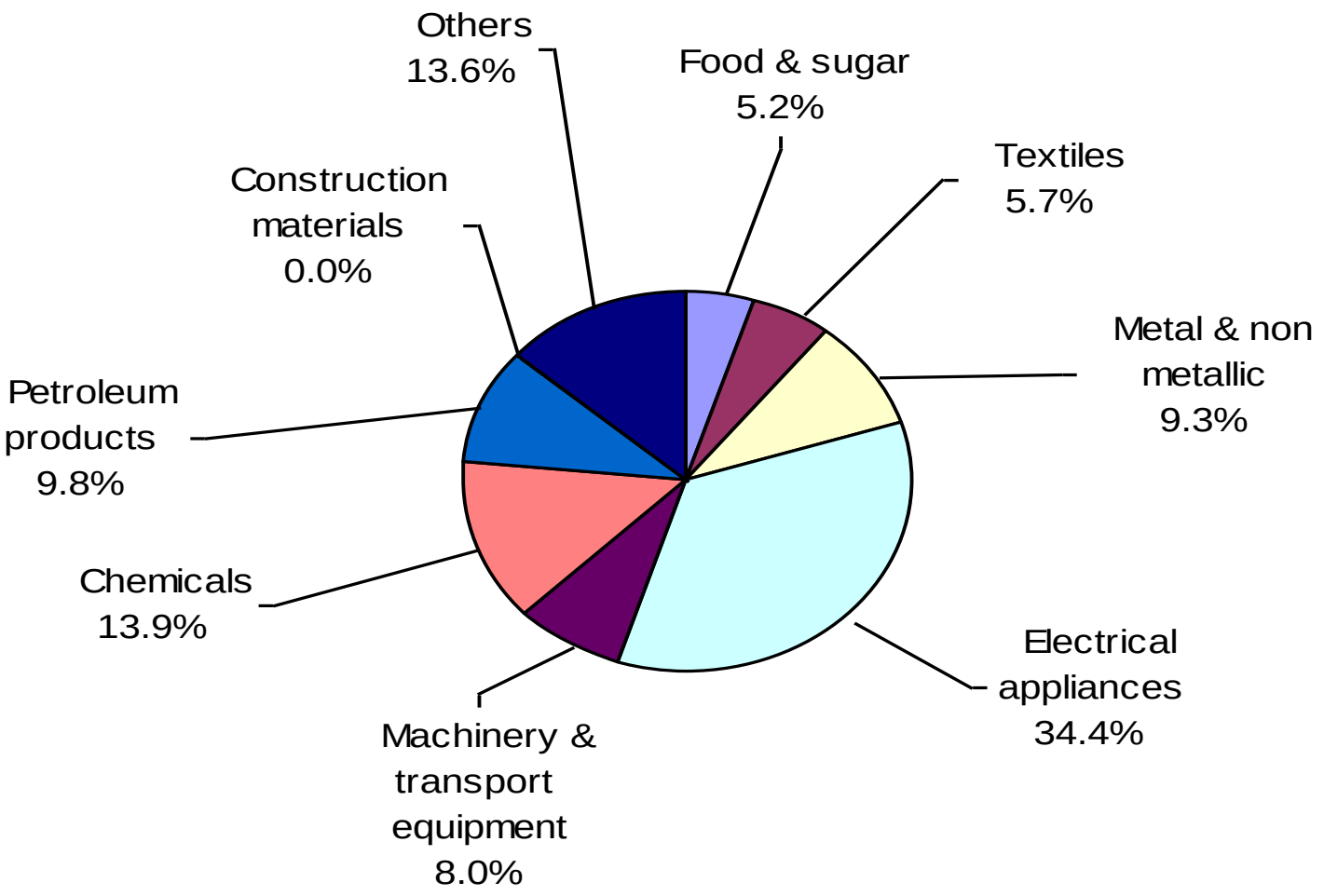
Source: JETRO and Japanese Automotive Parts Industry

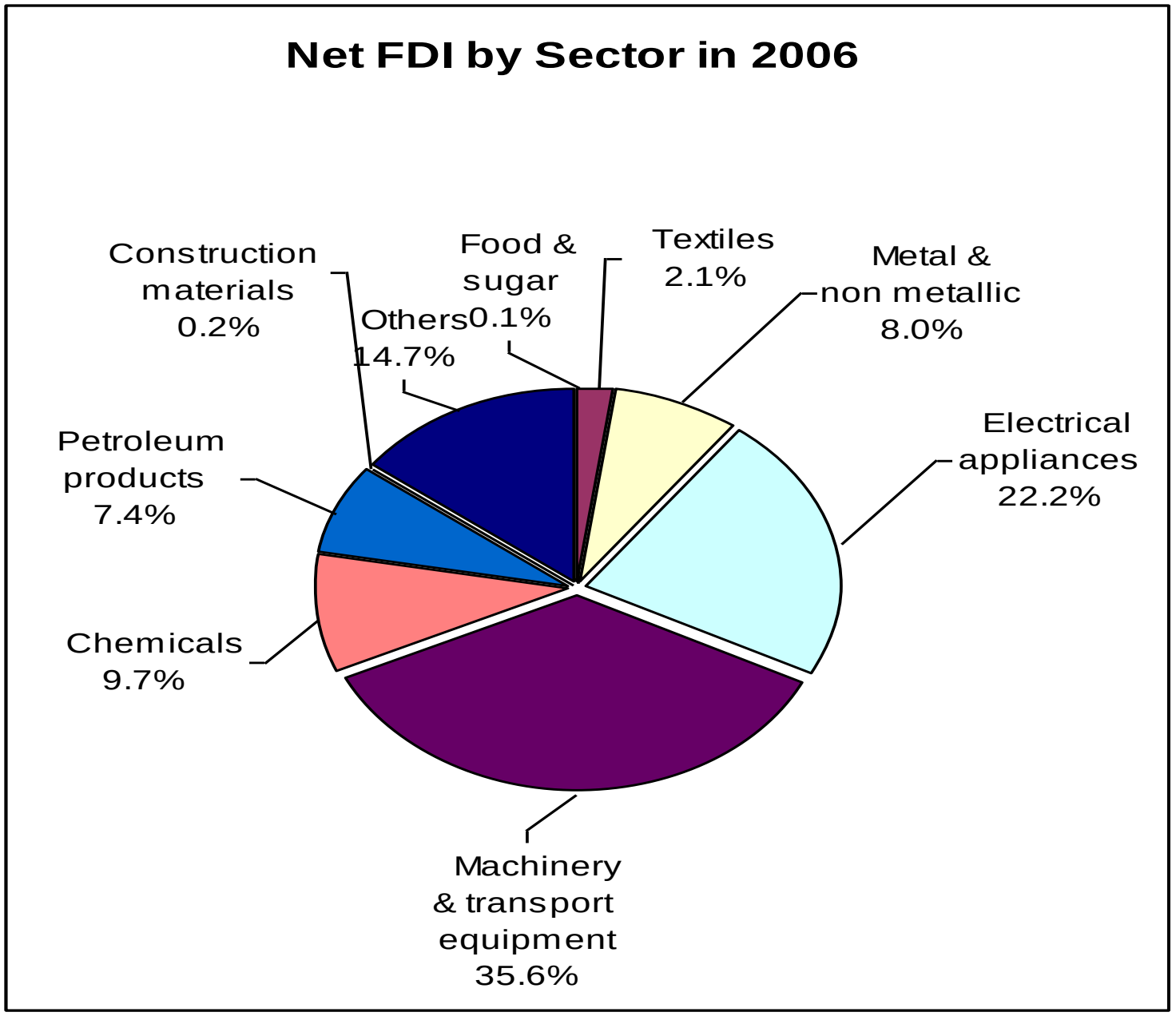


Honda's regional production network

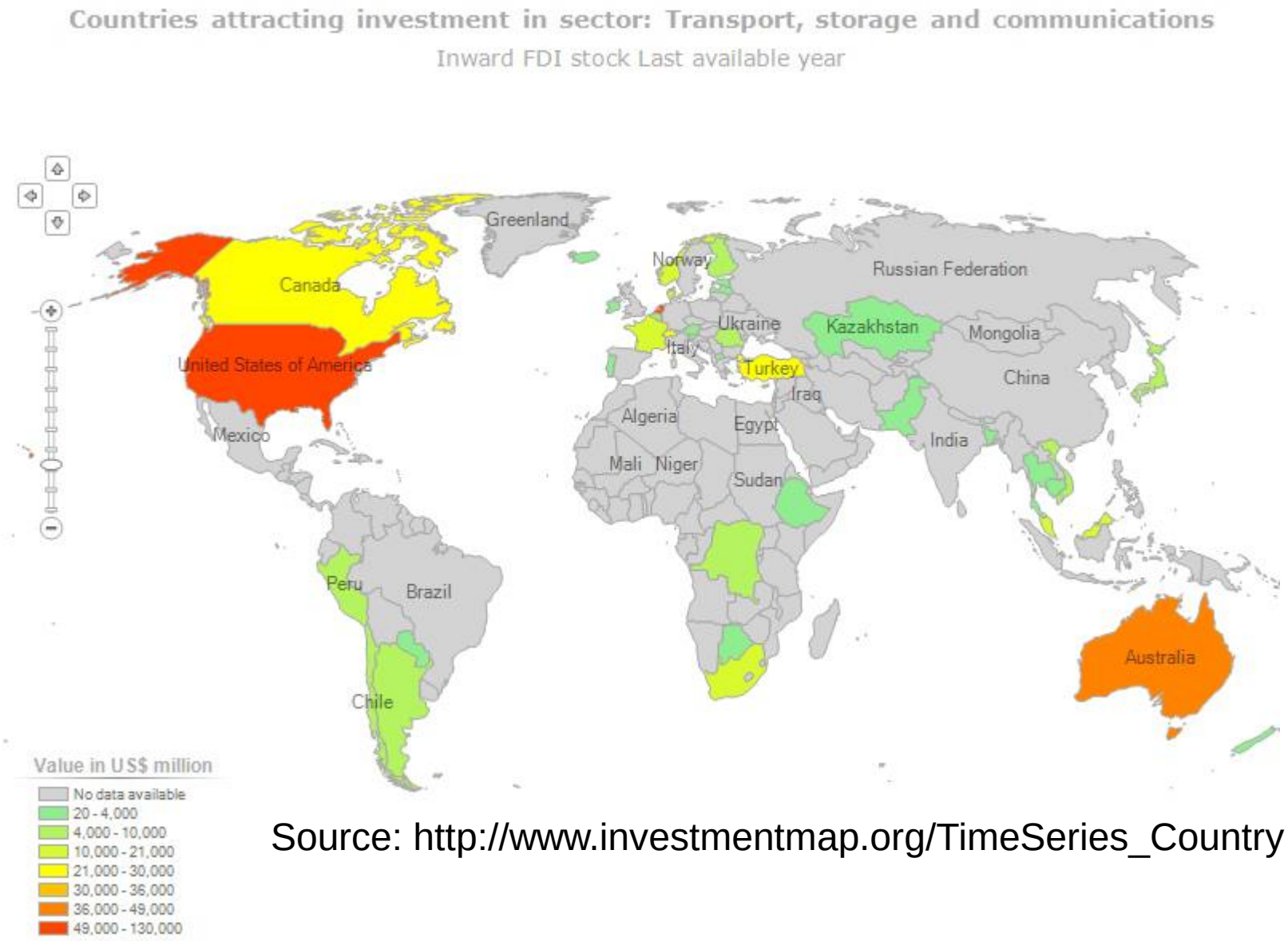


Net FDI by Sector: 1990




Net FDI by Sector in 2006
Construction materials 0.2%
Food & sugar 0.1%
Textiles 2.1%
Metal & non metallic 8.0%
Others 14.7%
Petroleum products 7.4%
Electrical appliances 22.2%
Chemicals 9.7%
Machinery & transport equipment 35.6%

Inward FDI stock in transport last available year



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

4. Impact of Global Recession and Recovery

4.1 Declining levels of domestic sales and exports in 2009 and 2011

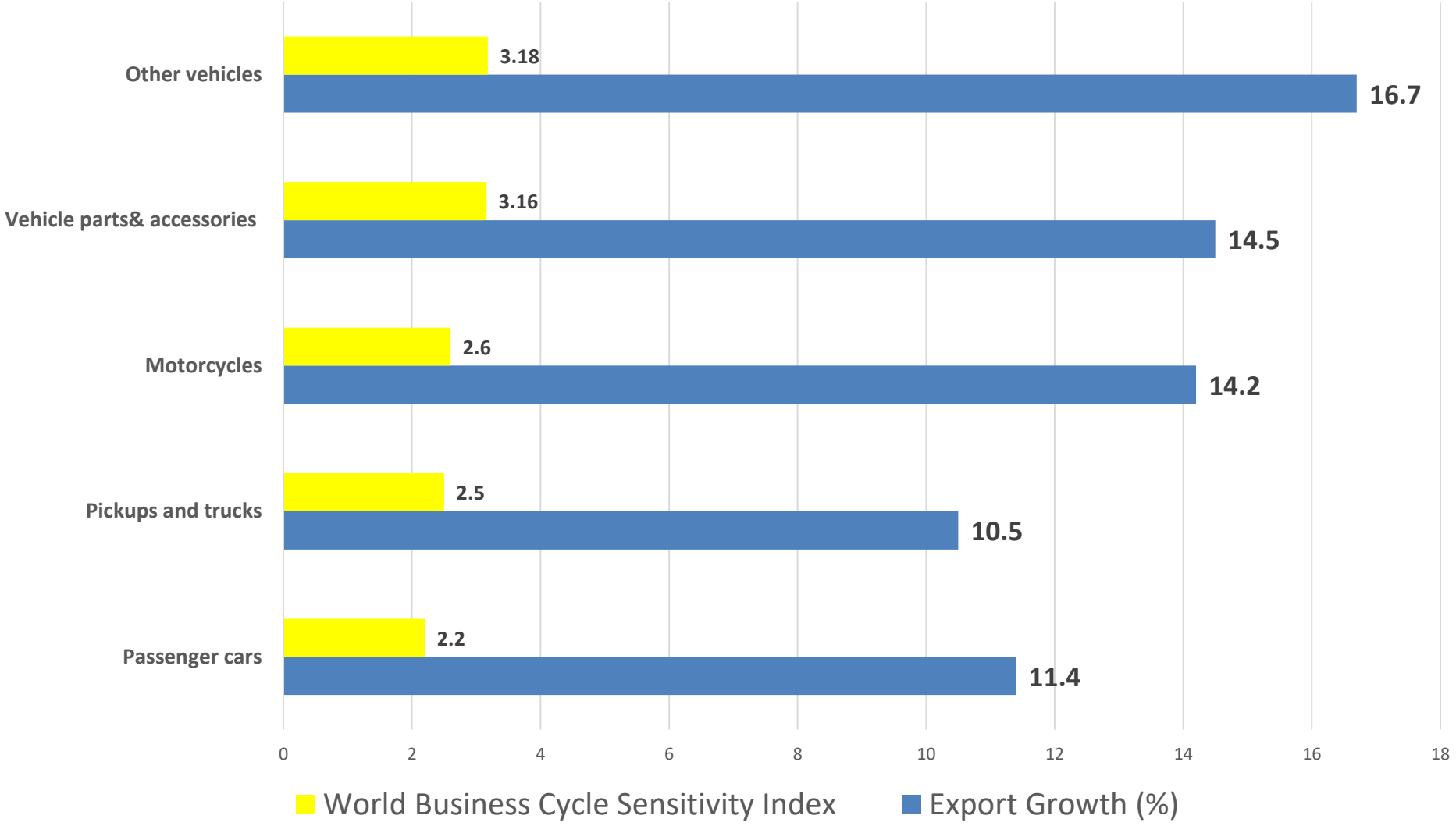
4.2 Neoclassical Theory of investment

An explanation of the upturns and downturns of the industry.

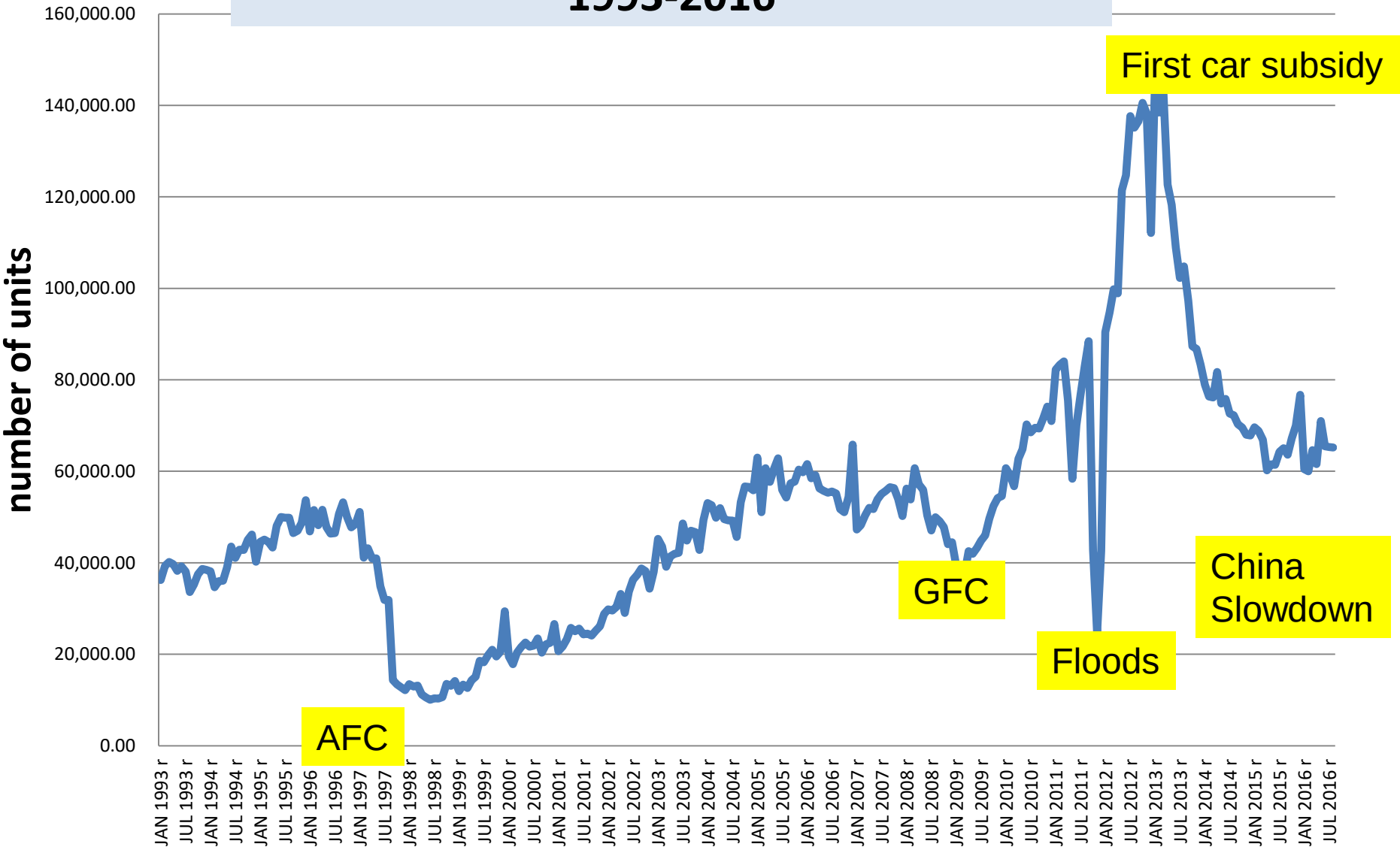
4.1 Impact of the global recession in 2009

- 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.

Thailand's automobile exports
1995-2015
Exponential growth rate and world trade elasticities

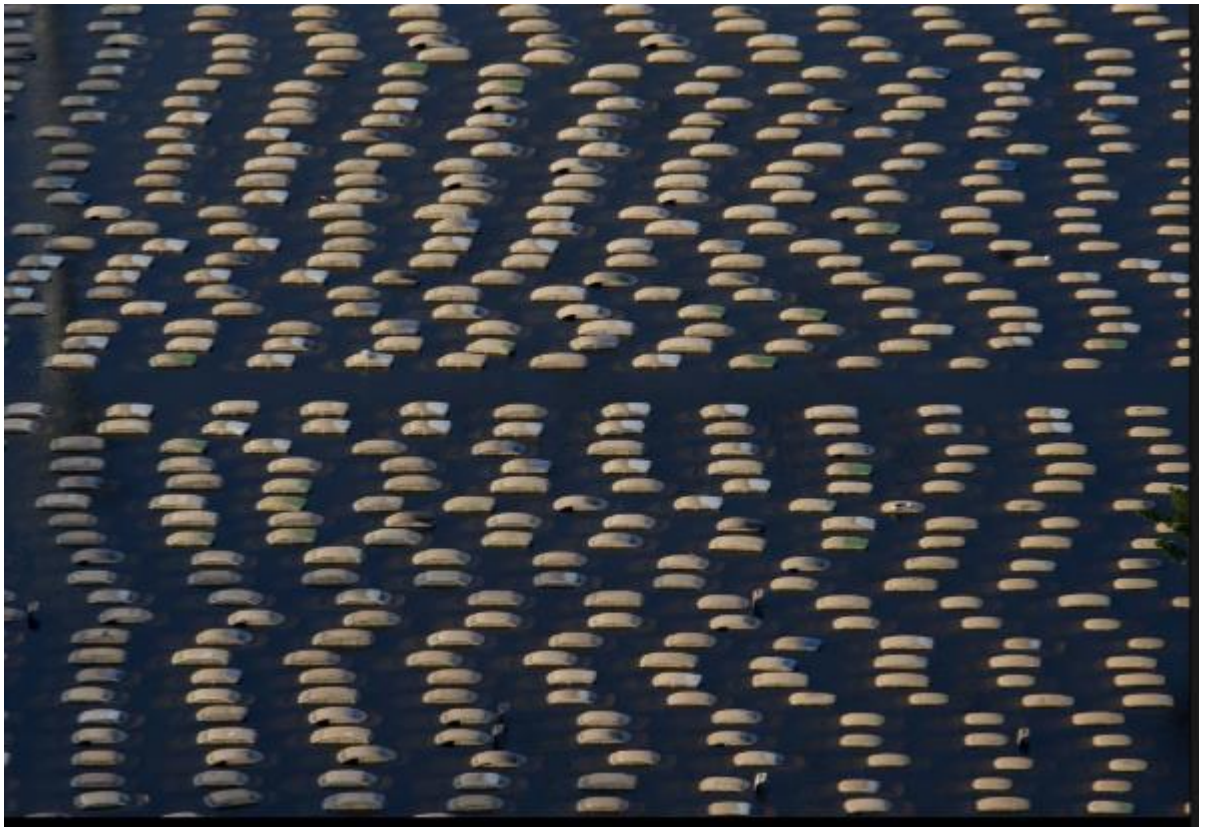


Domestic automobile sales: A roller-coaster 1993-2016



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.



After the floods, Honda scrapped 1,055 flood-damaged cars, but vowed to remain in Thailand

4.2 Determinants of the demand for durable goods

The improved economy, low interest rates, intense competition among carmakers are major positive factors contributing to expanding local markets.

Expected or permanent income

Credit availability (zero down payments?)

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)

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

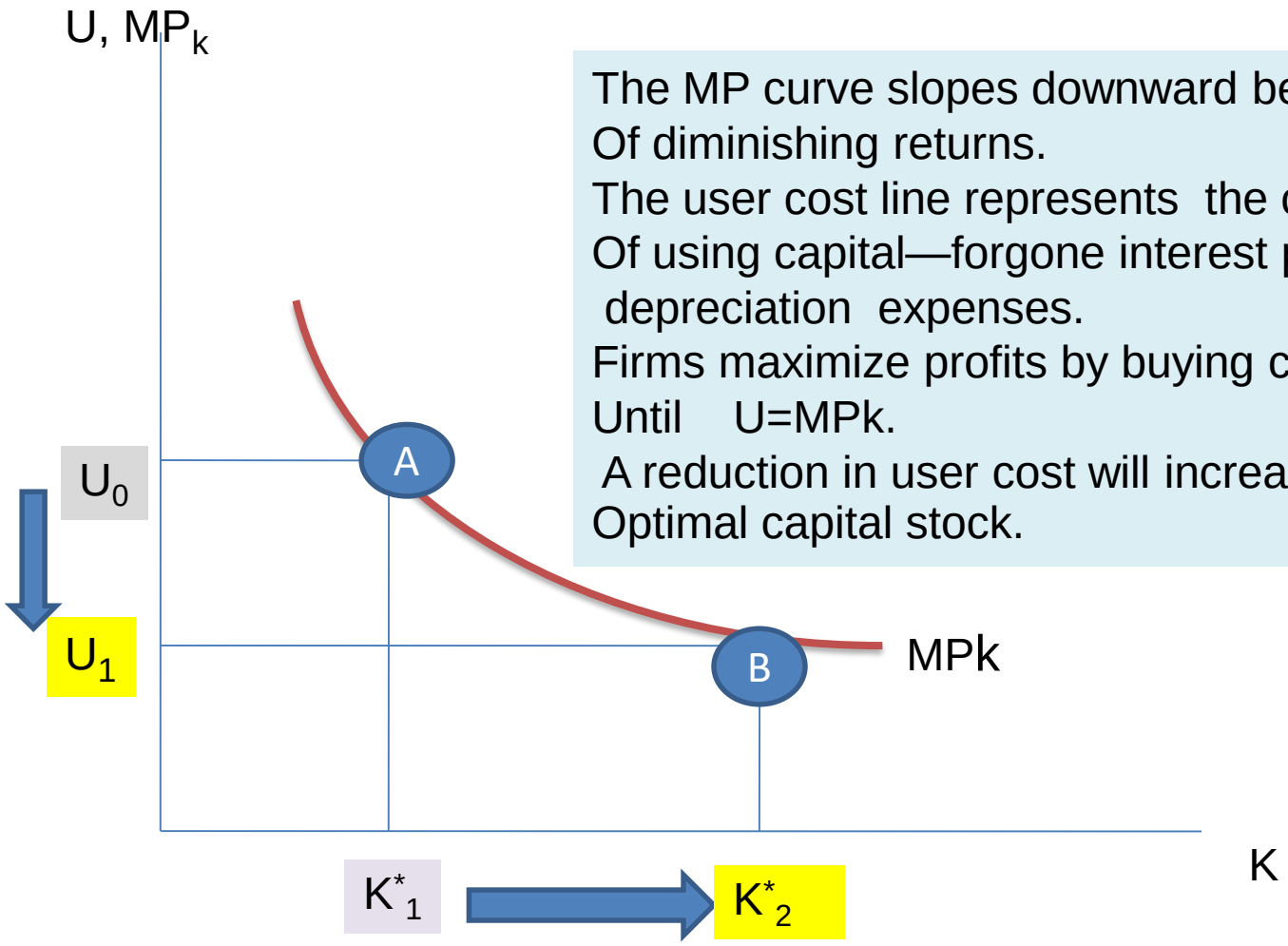
$$d = depreciation$$

$$\tau = tax\ rebate$$

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

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.

5. Recent strategy

6.1 Ecocar program

6.2 Electric vehicles (EV)

Can industrial policy shape the future of the industry?

5.1 Eco-car program: 2007

- Additional strategy was needed for further growth of automobile industry in Thailand. Thus, government implemented the so-called “eco-car program” in 2007.
- This program provided participating automobile assemblers several tax breaks to when they assembled “eco-cars” in Thailand.
- Honda, Mitsubishi, Nissan, Suzuki, Tata Motor and Toyota are main players.

Eco-car program

- Market of small passenger cars 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

- 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 included Hondas Brio, Mitsubishis Mirage, Nissans March, Toyota Yaris, and the Suzuki Swift , all of which have ***1.2 litre*** petrol engines made 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.

5.2 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.

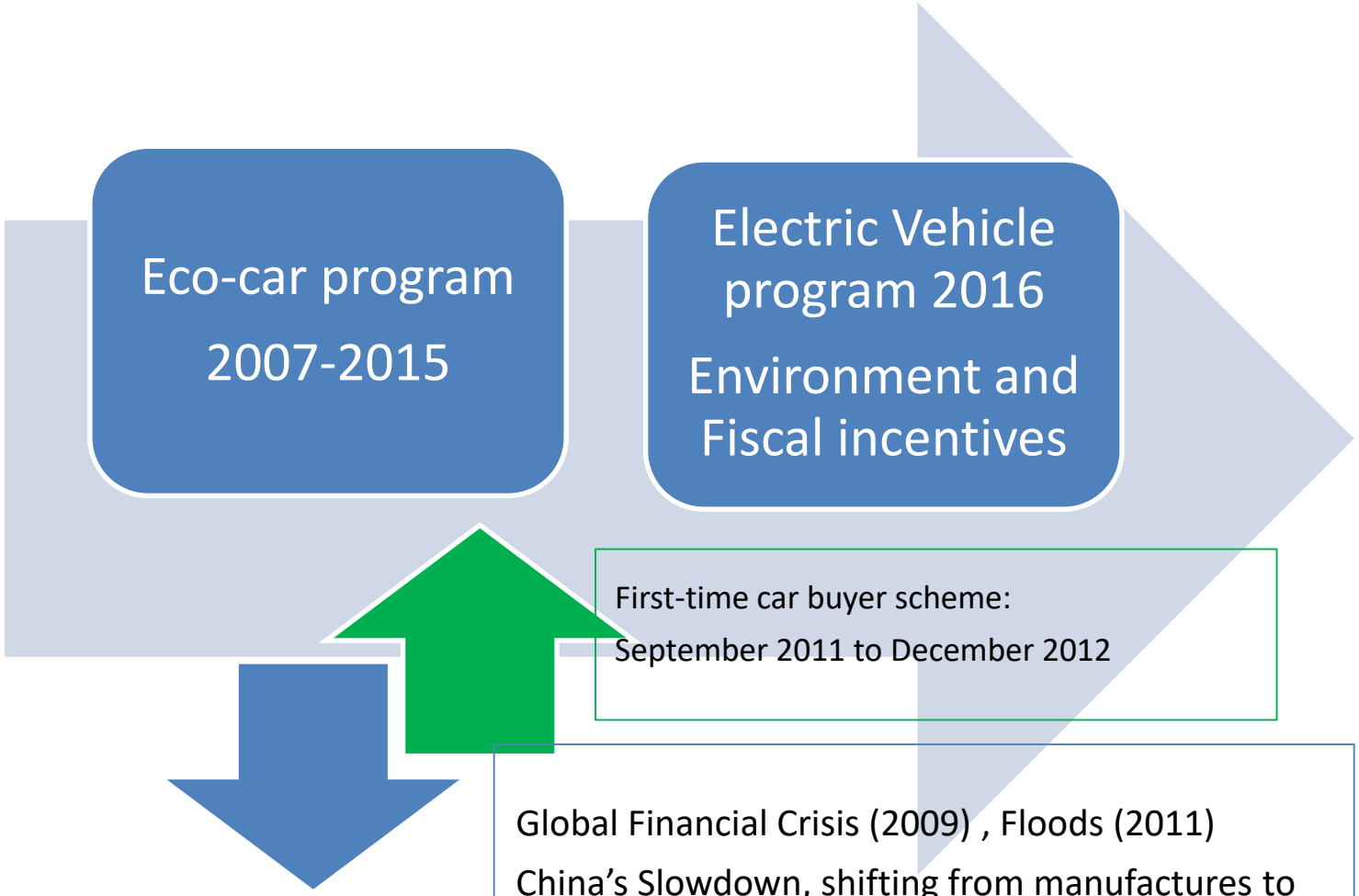
Environment and fiscal incentives

- 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 charging stations by 2036.
- Is this another elusive target for the industry?

Recent Developments and New Policies



Concluding remarks

- Business sentiment and consumer confidence matters for a sustainable recovery provided that the slowing momentum of the 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

Concluding remarks

Exploitation of economies of scale and scope through trade integration

Competitive environment induces efficiency improvement.

Macroeconomic conditions constrain the growth of the automobile industry.

6. What is going on in other parts of the world?

- Honda and GM: A new partnership in self-driving technology
- BMW's larger role in China, thanks to relaxation of foreign ownership law.
- Jaguar Land Rover in trouble: Weakening global demand and government policy.

A new challenge

Automobile technology changes every day

Honda stakes self-driving future on GM with $2.8bn investment

TOKYO -- Honda Motor will pour $2.75 billion into an autonomous-driving partnership with General Motors, aiming to parlay the U.S. carmaker's massive driving data into innovations that challenge Google and Apple.

The goal is to develop driverless taxis and eventually offer automated taxi services across the globe.

The tie-up in next-generation driving technologies suggests a new phase in auto-sector competition that shifts the focus from scale to data. It expands on the automakers' existing partnerships in fuel cell vehicles and lithium-ion batteries.

BMW's presence in China

- BMW is paying €3.6bn ($4.2bn) to take control of Brilliance Automotive, its Chinese joint venture.
- The German car firm will also spend over €3bn on its Shenyang production line.
- China, the world's biggest automotive market, is relaxing rules on foreign ownership for carmakers operating in the country.
- Previously non-Chinese firms were not permitted to own more than 50%.

Jaguar Land Rover (JLR) plans two-week closure as demand falls
October 2018

- Britain's biggest carmaker blamed weakening global demand, especially in China, and has faced falling diesel sales in recent months.
- JLR said employees at the West Midlands plant would be paid for the duration of the shutdown and no jobs would be lost.
- The Unite union called the news deeply troubling, and said government policies were to blame.
- Unite national officer Des Quinn said: "Government ministers' trashing of diesel, despite the UK making some of the cleanest engines in the world, combined with their shambolic handling of Brexit is damaging the UK car industry and the supply chain.

October 8, 2018

"Add into the mix the government's half-hearted support for the transition to electric and alternatively powered cars and you have a triple whammy facing the UK's car workers."

Fluctuating global demand

- In a statement on Monday, parent company Tata Motors said total sales at the firm fell 12.3% in September to 57,114 vehicles.
- It blamed a 46% slide in China, its biggest market, where rising competition ongoing trade tensions held back demand.
- "As part of the company's continued strategy for profitable growth, Jaguar Land Rover is focused on achieving operational efficiencies and will align supply to reflect fluctuating demand globally as required.

A very telling development from the Midlands

- "The decision to introduce a two-week shutdown period later this month at Solihull is one example of actions we are taking to achieve this.
- "Customer orders in the system will not be impacted and employees affected will be paid for the duration of the shutdown."
- The Solihull plant, where the firm makes Range Rover and Jaguar models, will close from 22 October.
- It follows a move to a three day week for 2,000 workers at the firm's Castle Bromwich plant and an announcement in April to lay off 1,000 workers across its West Midlands' plants.
- The UK car industry has been struggling in recent months, as ***diesel sales fall*** and carmakers face **tougher new emissions standards.**

Brace for the Brexit

- The number of new cars registered in the UK dived by 20.5% in September, according to industry figures, following an unusually strong August and a turbulent first eight months of the year.
- Manufacturers are also increasingly vocal about the potential risks of Brexit. They fear that an end to frictionless trade would disrupt their "just-in-time" supply chains, hurting production.
- In the last few weeks, Japanese carmakers Nissan, Toyota and Honda have warned that a no-deal Brexit could hit output and profits.
- And in September, BMW said it would have to shut the **Mini factory in Oxford** for a month after Brexit if the UK failed to secure a trade deal with the bloc.