Challenges to Thai Automobile industry

Lecture 17

Bhanupong

Course Syllabus
Lecture 17: Automobile Industry

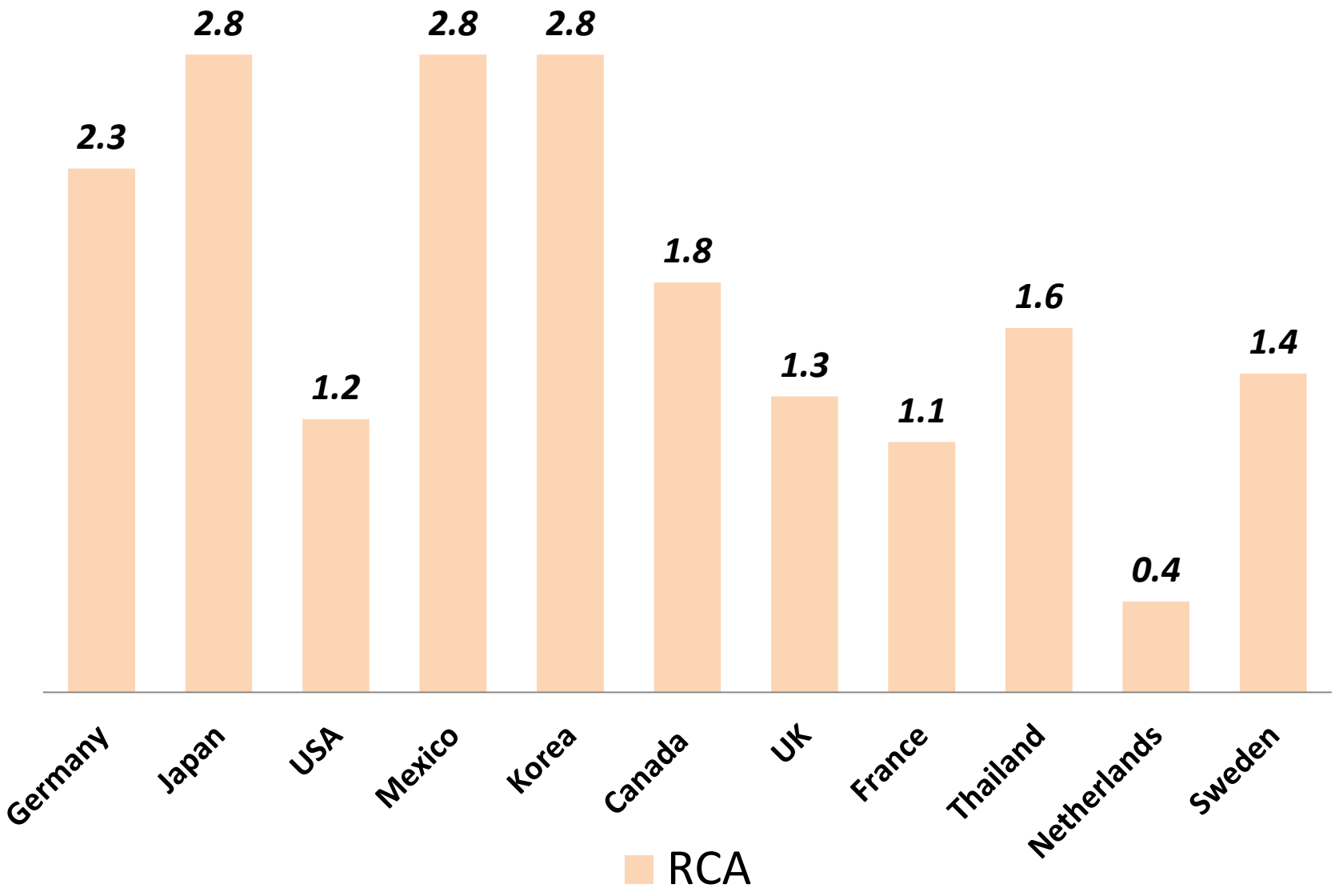
- We explore the automobile industry by highlighting the role of FDI.
- What can we learn from the success of the car industries in Thailand and China?

Outline

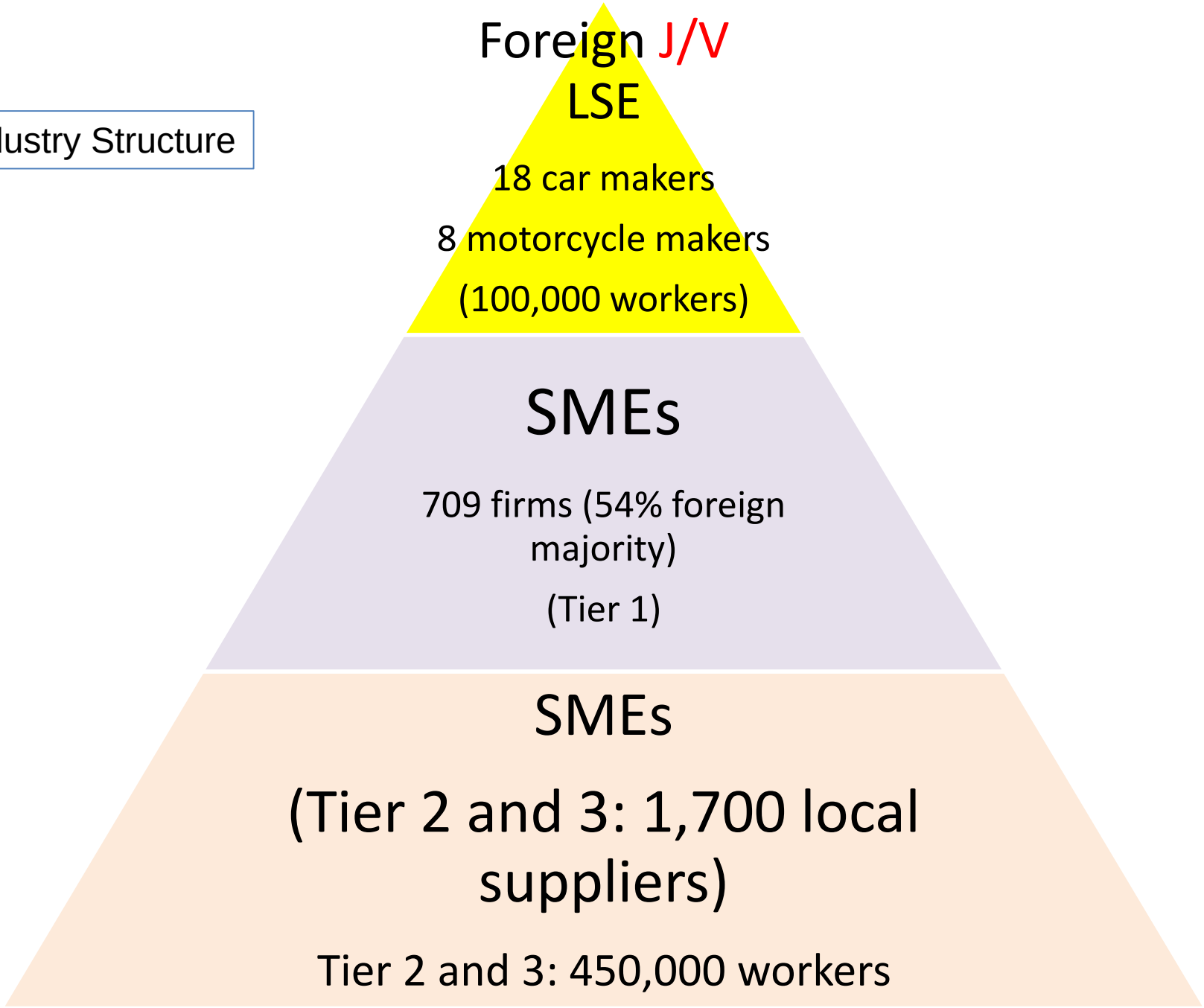
1. Industry structure
2. Historical perspective
3. The role of FDI
4. Impact of global recession and recovery
5. Eco car and ***EV*** programs


World Market Share in 2016
Thailand
2.0
Czech Republic
2.5
Italy
2.9
Belgium
3.3
France
3.4
United Kingdom
3.8
Spain
4.0
China
4.5
Korea, Republic of
4.6
Canada
4.8
Mexico
6.5
United States of America
9.2
Japan
10.5
Germany
18.1
0.0
2.0
4.0
6.0
8.0
10.0
12.0
14.0
16.0
18.0
20.0

RCA: Specialization in Automobile Production



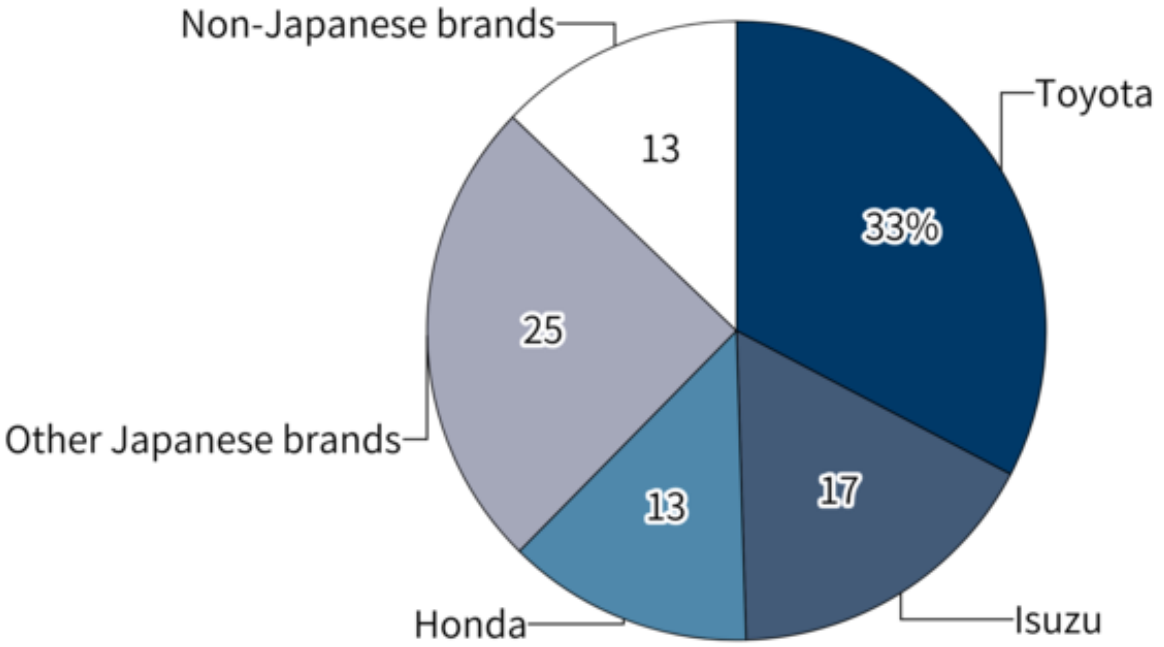
1. Industry Structure



Major multinational automotive industry leaders with presence in Thailand

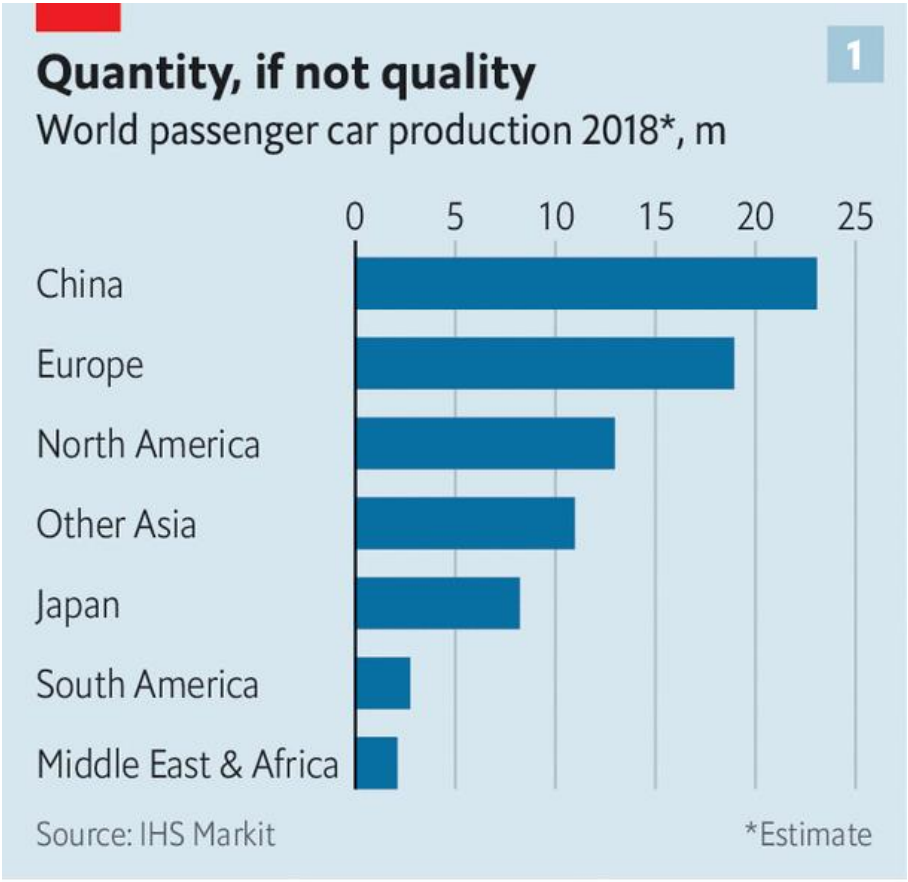
- Auto Alliance Thailand (Ford and Mazda)
- BMW, Mercedes-Benz
- General Motor,
- Honda, Isuzu, Toyota, Mitsubishi, Nissan, Suzuki
- Tata
- Volvo Car Thailand

Japanese models make up about 90% of cars sold in Thailand



Notes: Data for January-July. Figures do not add up to 100 due to rounding.

Joint-venture in China



The Economist

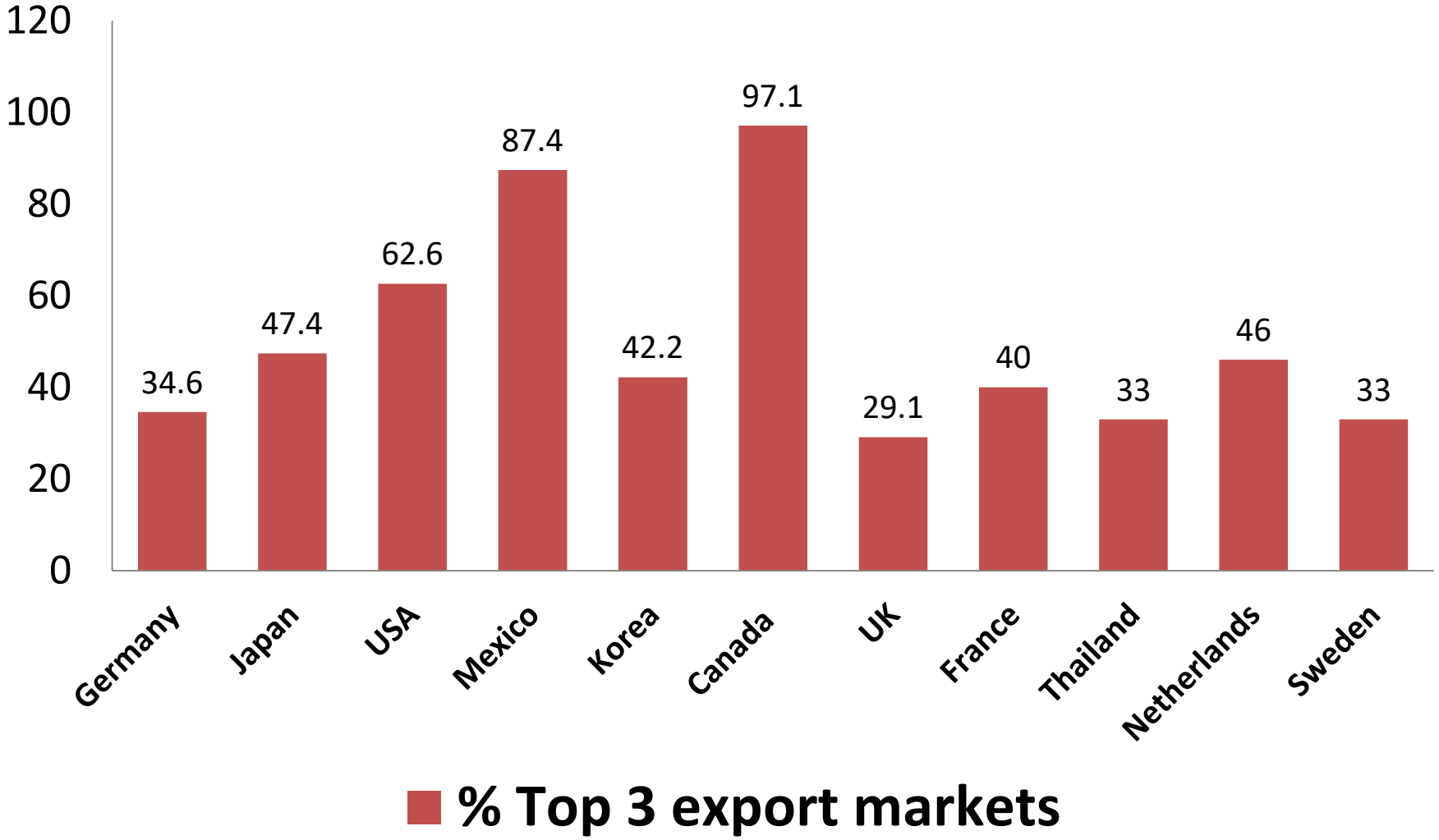
This joint-venture strategy achieved many of its aims. The cars in Beijing may carry foreign badges, but they are Chinese made.

The country produced 23m cars last year, outstripping Europe and putting America in the shade. In terms of quality, though, the results have been poorer.

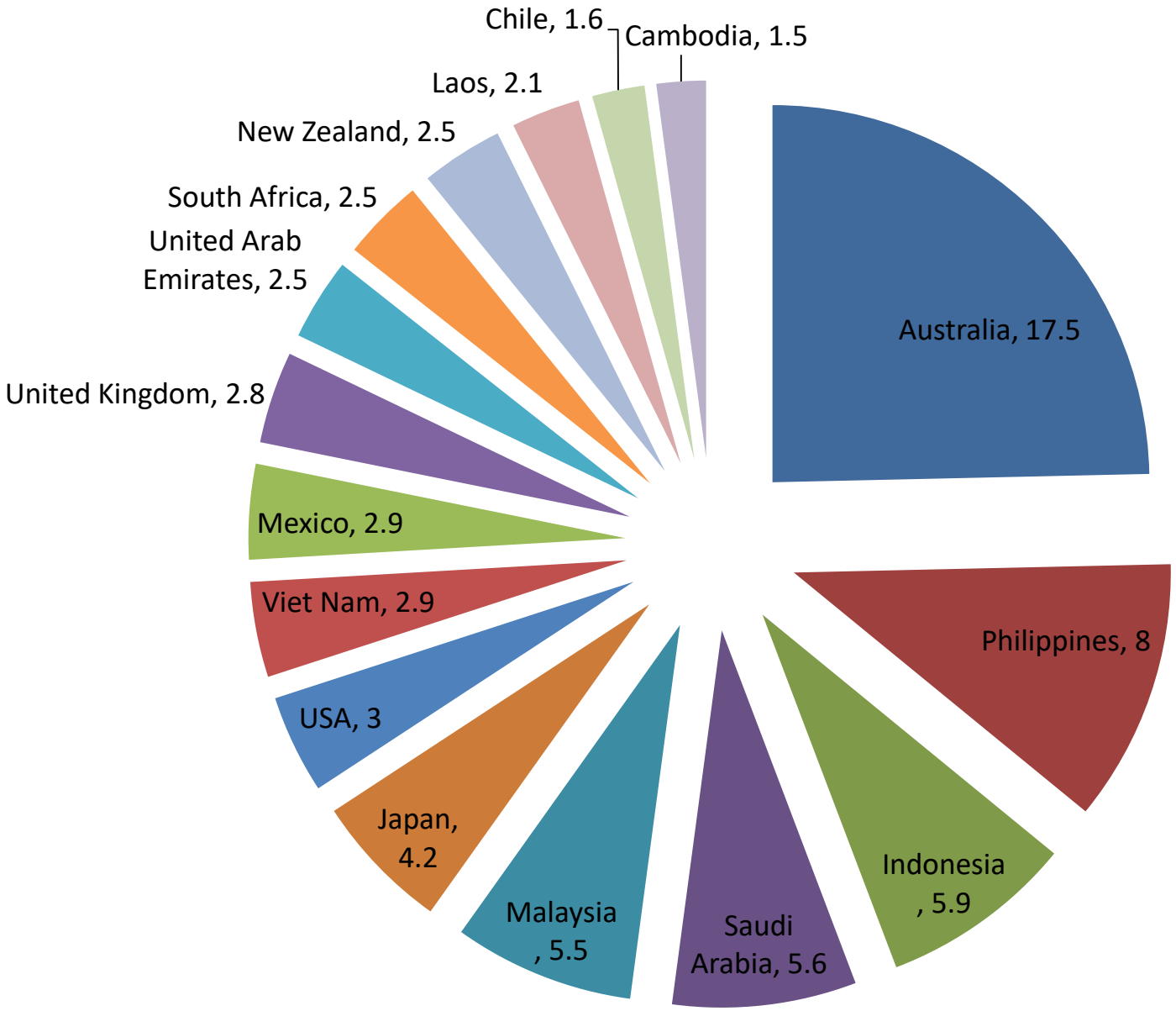
No Chinese carmaker is remotely as impressive in its sector as Huawei, say, is in telecoms.

Banners line a road leading to an event at the site of the Tesla Inc. manufacturing facility in Shanghai, China, Jan. 7, 2019.

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



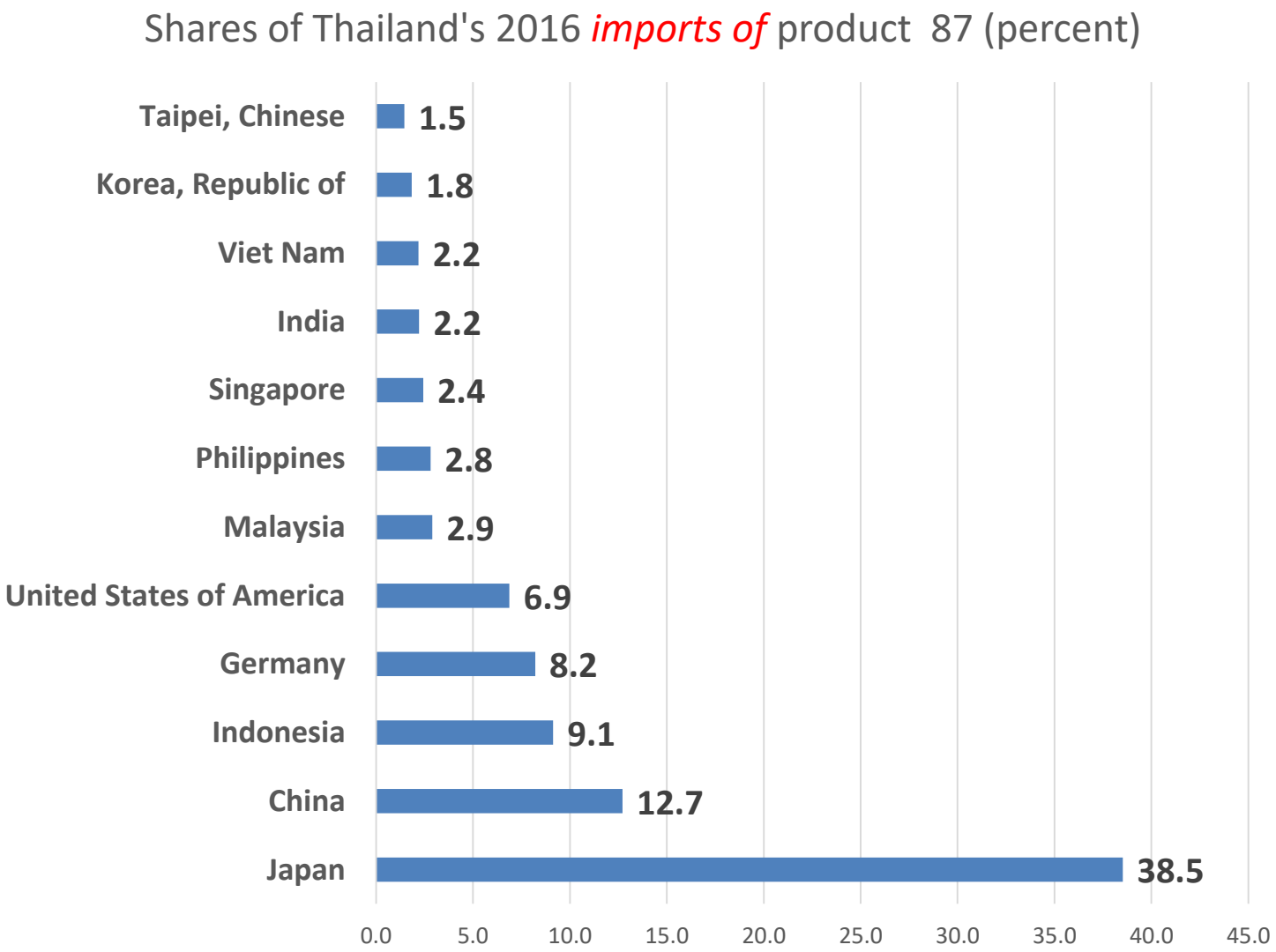
Market Diversification of Thailand exports of vehicles and parts in 2015



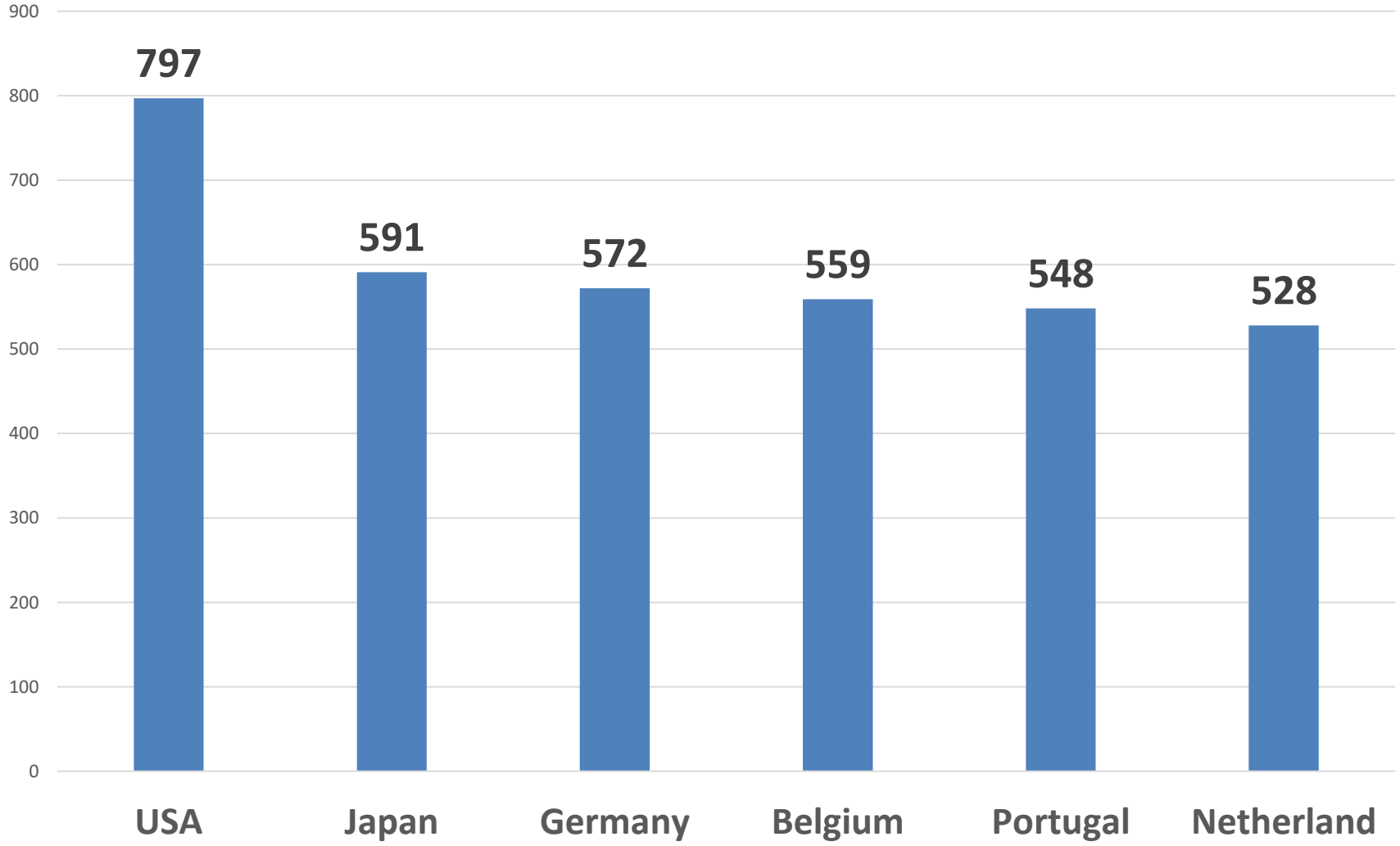
Why is Australia the top importer of Thai pickup trucks?
(No chicken tax)

- 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 (no chicken tax)

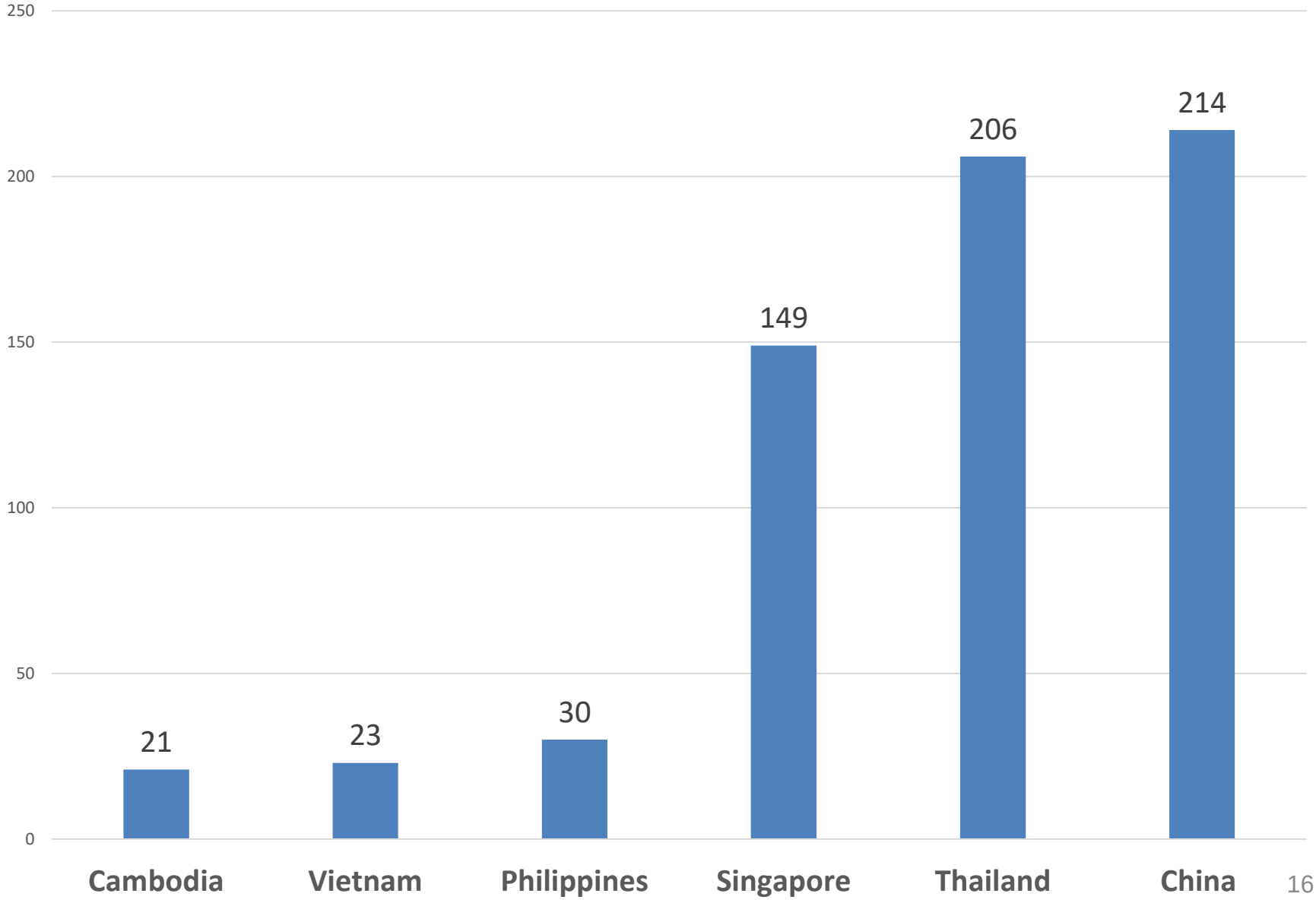
Intra-industry trade: share of Thailand's automotive imports



Motor vehicles per 1,000 people: High income countries



Abundant opportunities:
Motor vehicles per 1000 people: Asia



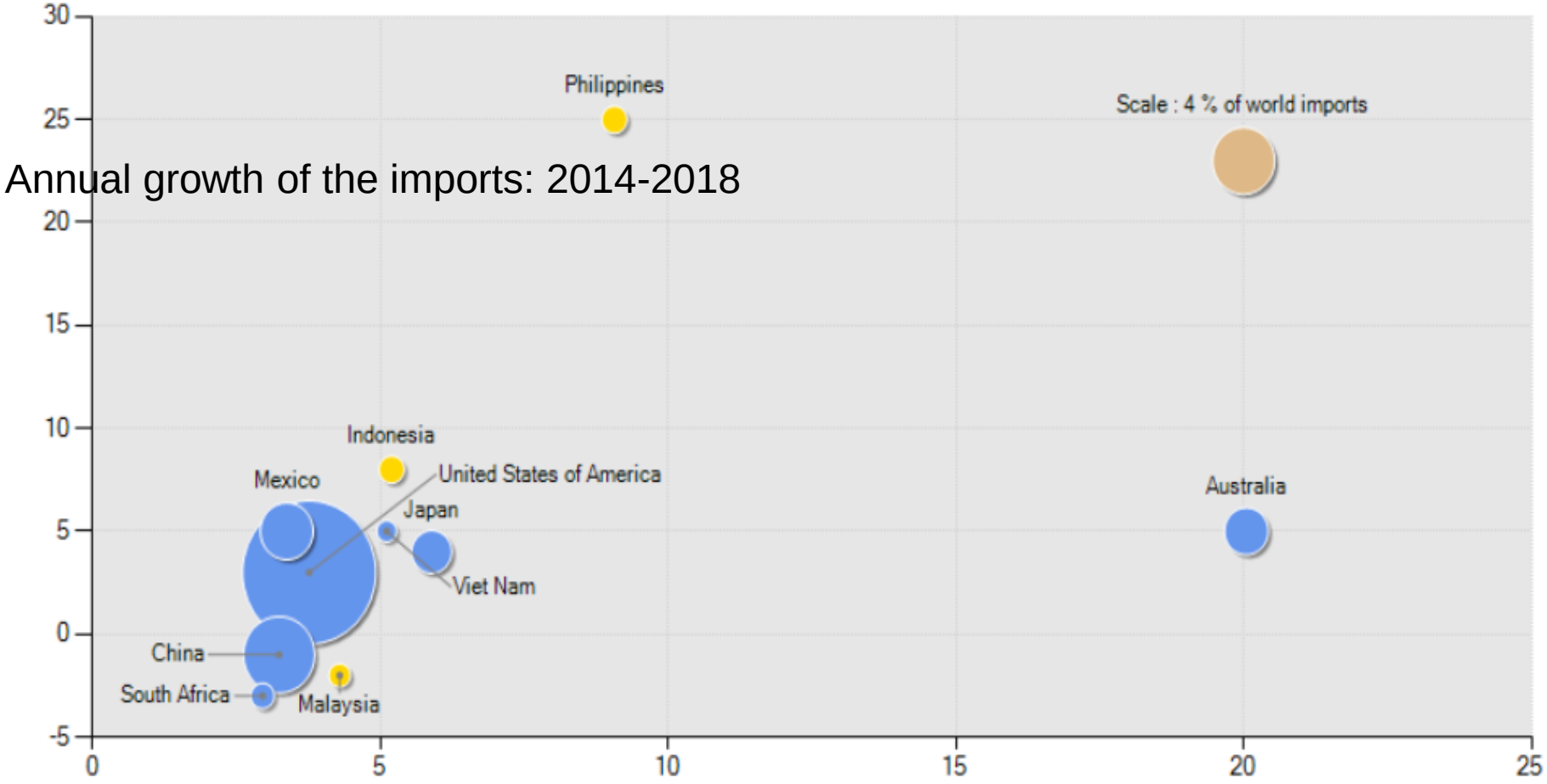
Success is not permanent

- 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.
- The country's pickup truck market is arguably 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.

Thailand's exports of vehicles and components: product 87



Share of partner countries in Thailand's exports, 2018 (%)

Blue (gaining market share)

Yellow (losing market share)

MOTORCYCLE MANUFACTURERS IN THAILAND

Capacity: Units per year

Location: **Pathum Thani**

SUZUKI 550,000 units

Location: **Bangkok**

HONDA 1,700,000 units

GPX 40,000 units

Location: **Chachoengsao, Phetchaburi**

SYM, KEEWAY, Benelli — Total 60,000 units

CFMOTO 100,000 units

Location: **Samut Prakan**

YAMAHA 600,000 units

Location: **Chon Buri**

TRIUMPH 120,000 units

20,000 units

Location: **Rayong**

Kawasaki 260,000 units

BMW 10,000 units

DUCATI 20,000 units

HARLEY-DAVIDSON MOTOR COMPANY n.a.

Source: Krungsri Research

BANGKOK POST GRAPHICS

Harley-Davison is coming to Rayong

"We expect sales of motorcycles to grow by 2-4% to 1.82-1.86 million units in 2019, then the sales volume in 2020 and 2021 will stay around 1.84-1.9 million motorcycles," Ms Wanna said.

But the growth pace is likely to slow, partly due to adjustments to motorcycle excise duties that are being revised in line with CO2 emissions, effective from early 2020.

Ms Wanna said the revision will raise motorcycle prices, while farm incomes are still slow to gain ground.

She said competition in the local motorcycle market is turning more intense with both Thai-made and imported motorcycles.

"This may increase costs for manufacturers and distributors to spend more on marketing campaigns in order to preserve their market share," Ms Wanna said.

For Thai motorcycle exports, completely built-up (CBU) units are anticipated to grow at a faster pace once Harley-Davidson starts up its assembly line in Rayong to use Thailand as an export hub for China and Southeast Asia.

"Exports should increase from 2019 onward, and Krungsri Research forecasts that 2019 exports of CBUs will rise by 2-4% to 380,000-390,000 motorcycles and shipments will grow by 3-5% in 2020 and 2021 to roughly 390,000-420,000 motorcycles," Ms Wanna said.

But Krungsri Research sees clouds on the horizon with a hike in import duties that the US is considering for its trade protectionism policy for Thai-made motorcycles under Section 232 of the 1962 Trade Expansion Act.

The big four (87%) and the big bikes

But the shipment of completely knocked-down (CKD) kits should rise steadily with increasing demand for motorcycles to be reassembled in Japan and Southeast Asia over the next three years.

Krungsri Research said Thailand is the world's fifth-largest motorcycle producer, trailing China, India, Indonesia and Vietnam.

In 2018, Thailand was home to 12 motorcycle factories that made bikes under 14 brand names. These had a total production capacity of 3.66 million units a year.

The big four Japanese producers of Honda, Yamaha, Suzuki and Kawasaki dominate the output, accounting for a combined 87% of Thailand's production capacity.

But SYM (Taiwanese), Ryuka (Chinese) and GPX (Thai), brands producing smaller motorcycles, have found space in the market.

The big-bike manufacturers consist of Benelli (Italian), Keeway (Chinese), Triumph (British), BMW (German), Ducati (Italian), Harley-Davidson (US) and CF Moto (China).

In 2018, local production of motorcycles reached 2.1 million units, edging up 0.4% from the previous year.

Motorcycle exports helped to raise production for the period: 371,000 CBU units were shipped, up 0.8%, generating income of US$1.35 billion, an increase of 2.1%.

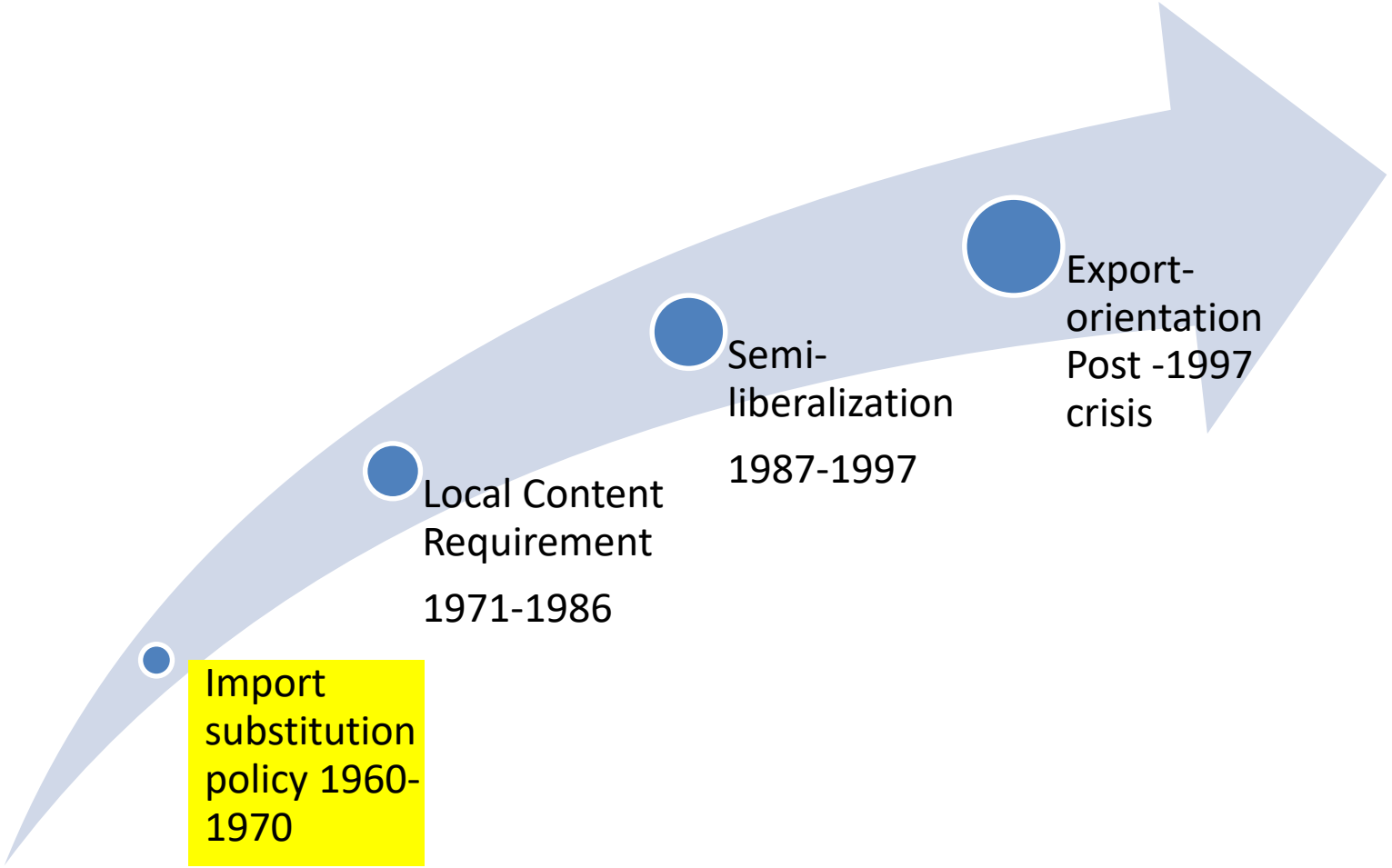
CKD shipments from Thailand last year numbered 512,000 units, up 7.2%, with an export value of $130.3 million, a decline of 27.1%.

Domestic demand shrank by 1.2% in 2018 to 1.79 million units, attributed to low crop prices and meagre incomes in the agricultural sector, pressuring overall purchasing power.

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

- 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
- 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.
- Normally, industries create both forward and backward linkages.
- Investment should be made in those industries that have the greatest number of linkages.

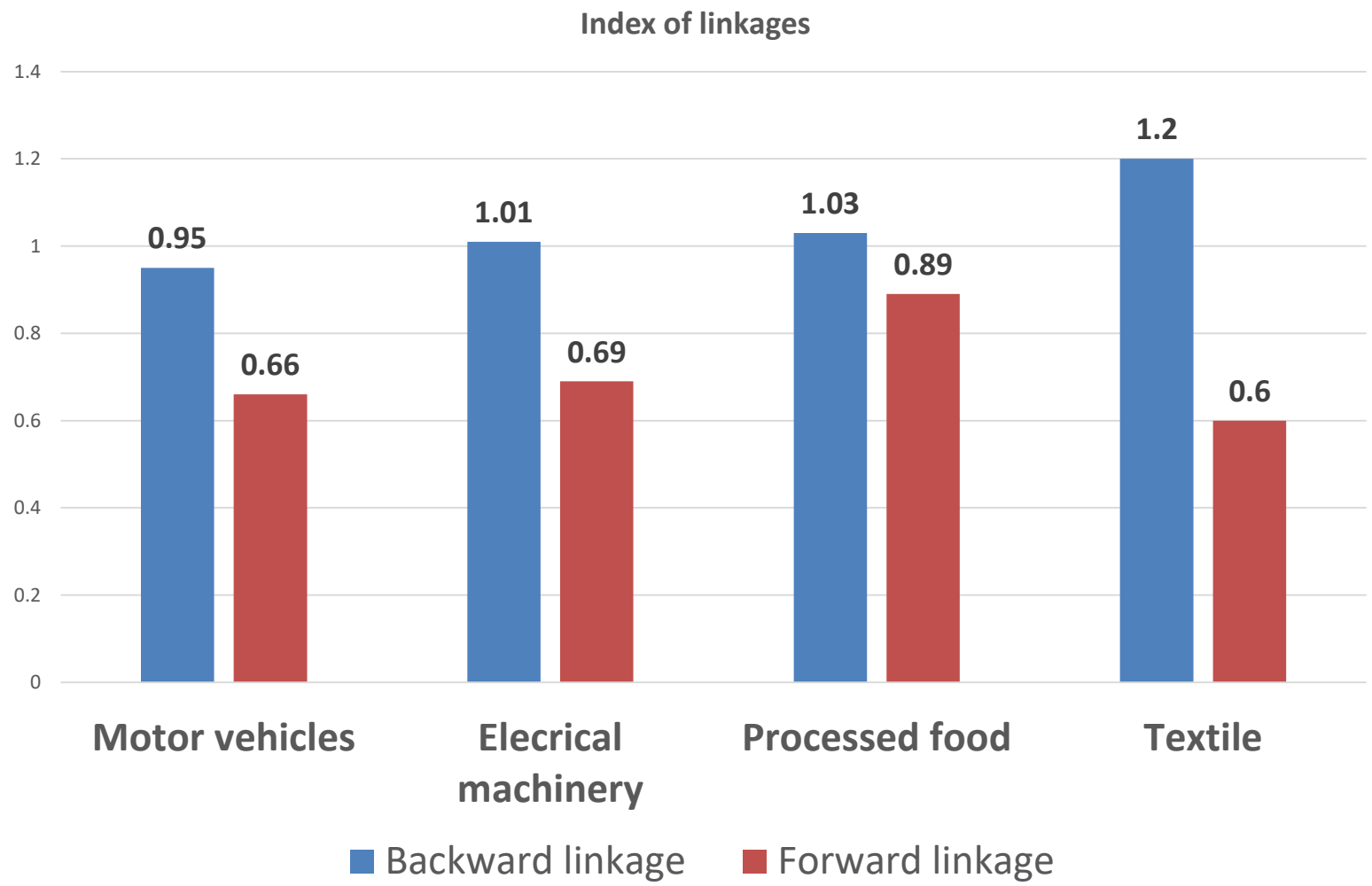
Backward Linkage

- The growth of an industry leads to the growth of the industries that ***supply inputs*** to it".
- 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.
- The **steel industry is linked to coal, iron ore** mining.
- The backward linkages of car assembling industry is the **auto-part industry**.

Forward Linkages

- 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 cement industry link to property and infrastructure development.
- Forward linkages of BTS construction is development in the real estates along the BTS routes.

Linkages in Thailand's industry
Source: The 2010 Input-Output Table (NESDB)
Higher index values indicate stronger linkages



Backward linkages in Automobile industry: parts and components

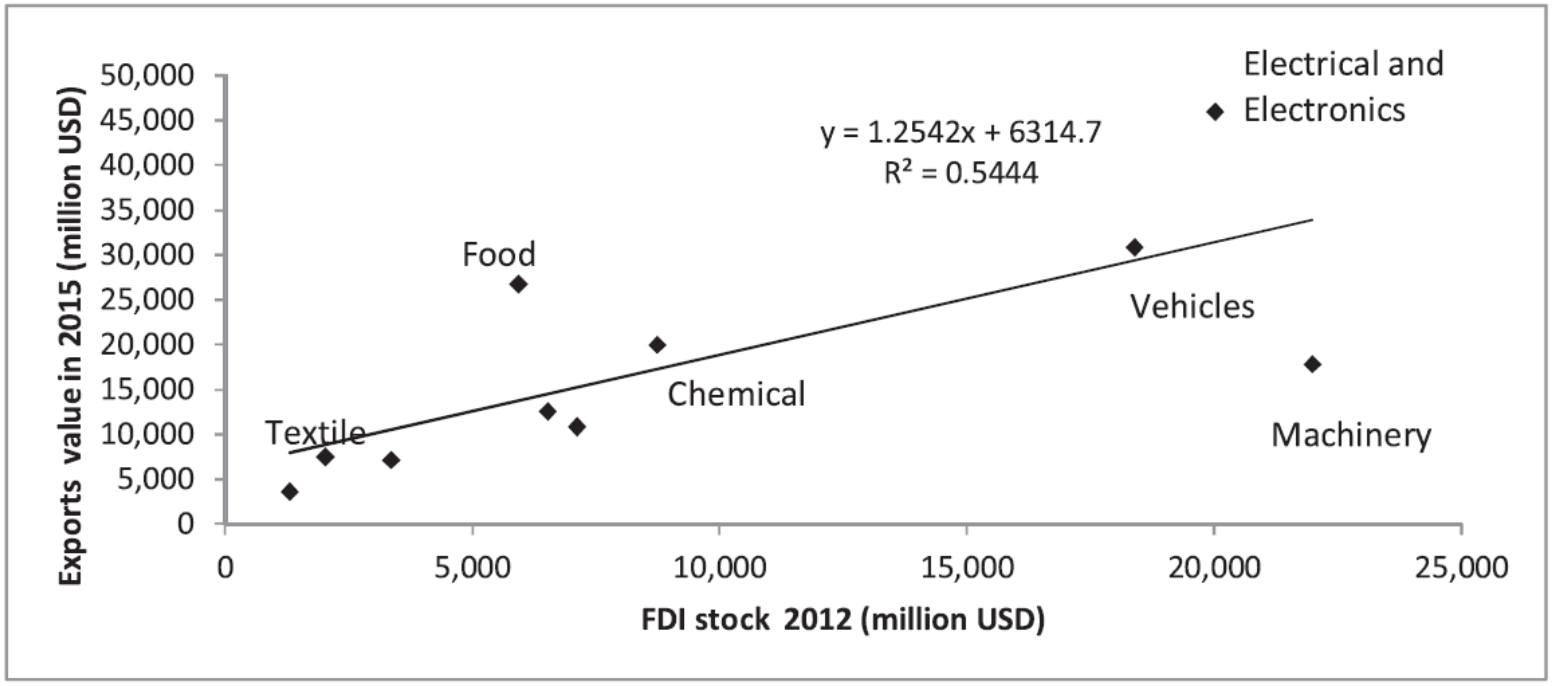
- Exports of automobiles and auto parts have continually increased since 1997, as many foreign conglomerates have moved their production bases to Thailand.
- In September 2017, the last Toyota car was produced in Australia. GM and Ford had already left Australia earlier.
- The strong auto-parts industry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

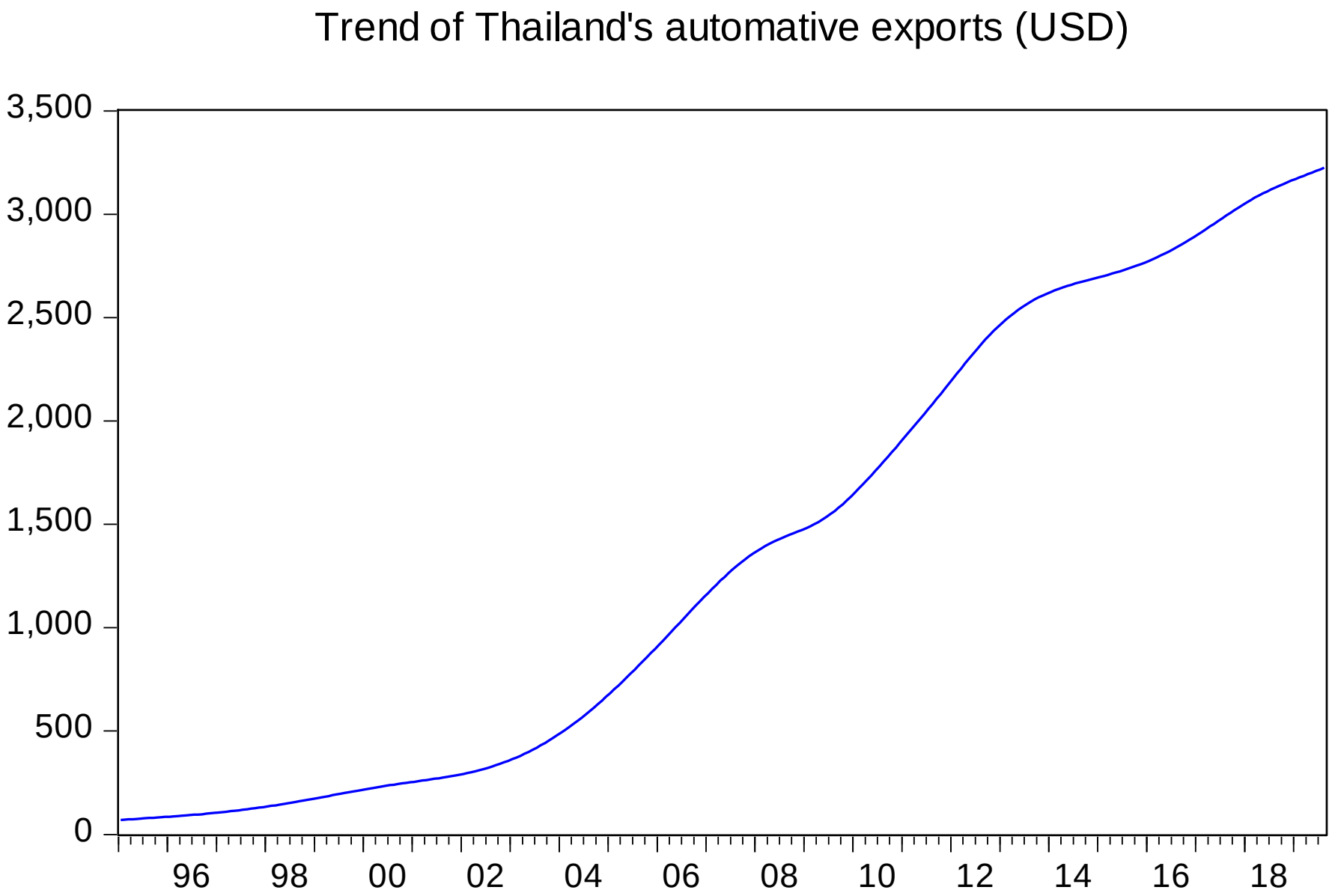
Problems with local parts suppliers

- 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




Trend of Thailand's automative exports (USD)
3,500
3,000
2,500
2,000
1,500
1,000
500
0
96
98
00
02
04
06
08
10
12
14
16
18

Automobile Hub

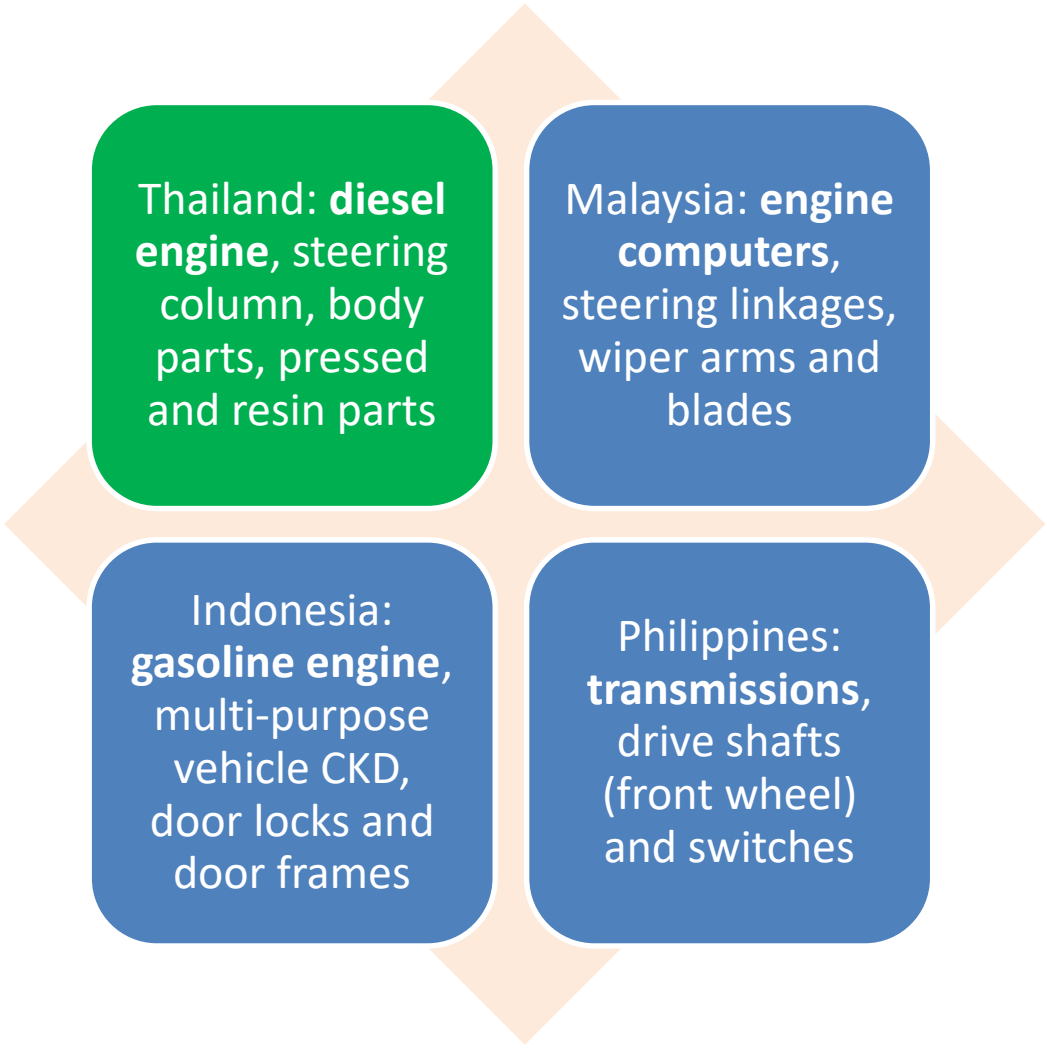
- Because of automobile assemblers' globalization strategy for production efficiency, Thailand was selected as a production hub in the region.
- Isuzu (partly owned by GM) and Toyota transferred all of their pickup production in Japan to Thailand.
- However, Japanese firms were widely criticized for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

Why did foreign firms come to Thailand?

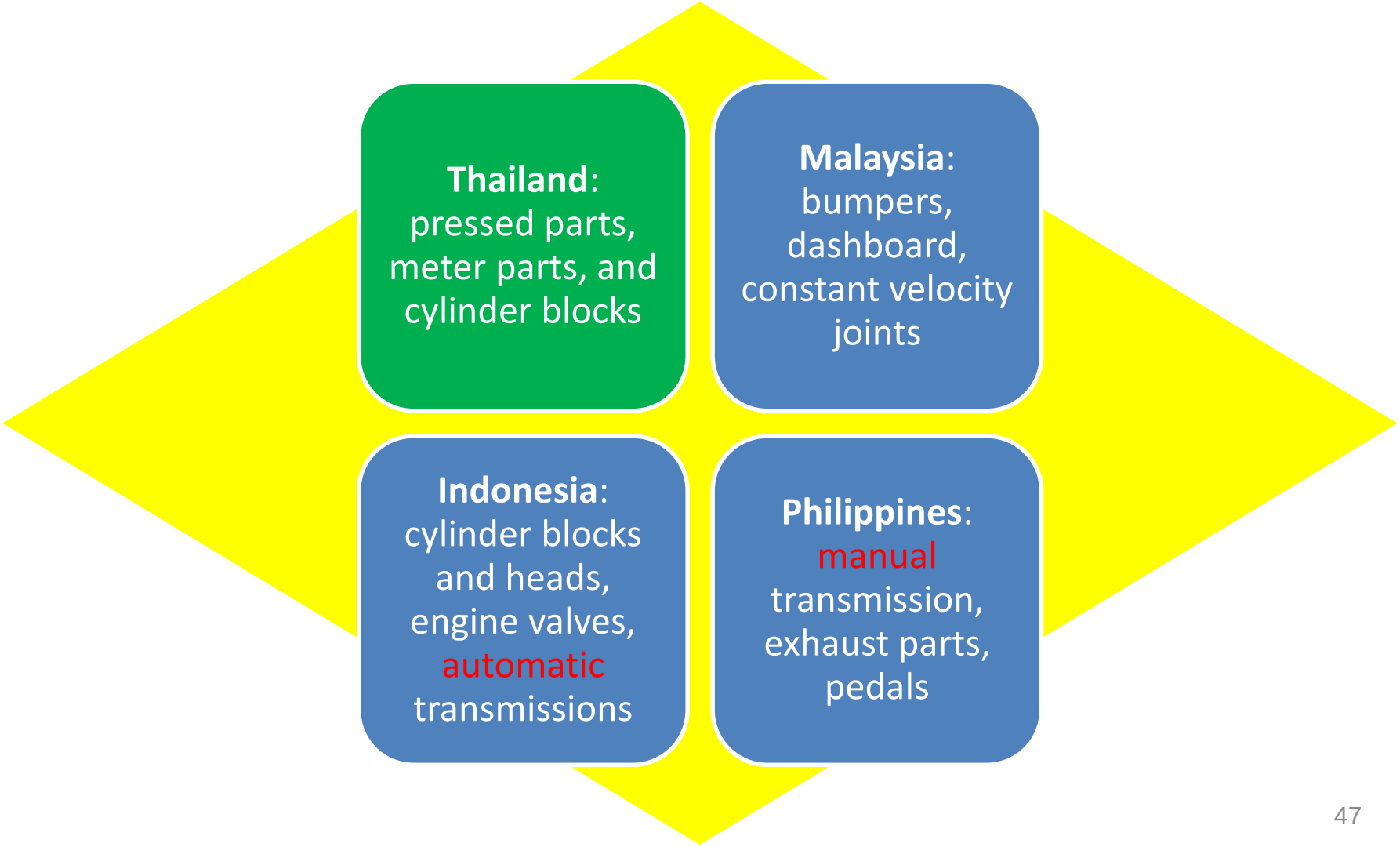
- Thailand has no ***national car*** project; thereby offering a level playing field.
- Vietnam has one: Vinfast
- **Open market policy** (lifting LCR, reducing import tariff on raw materials).
- Expanding domestic markets and establishing an export platform.
- World class suppliers of automobile parts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

Toyota's production network

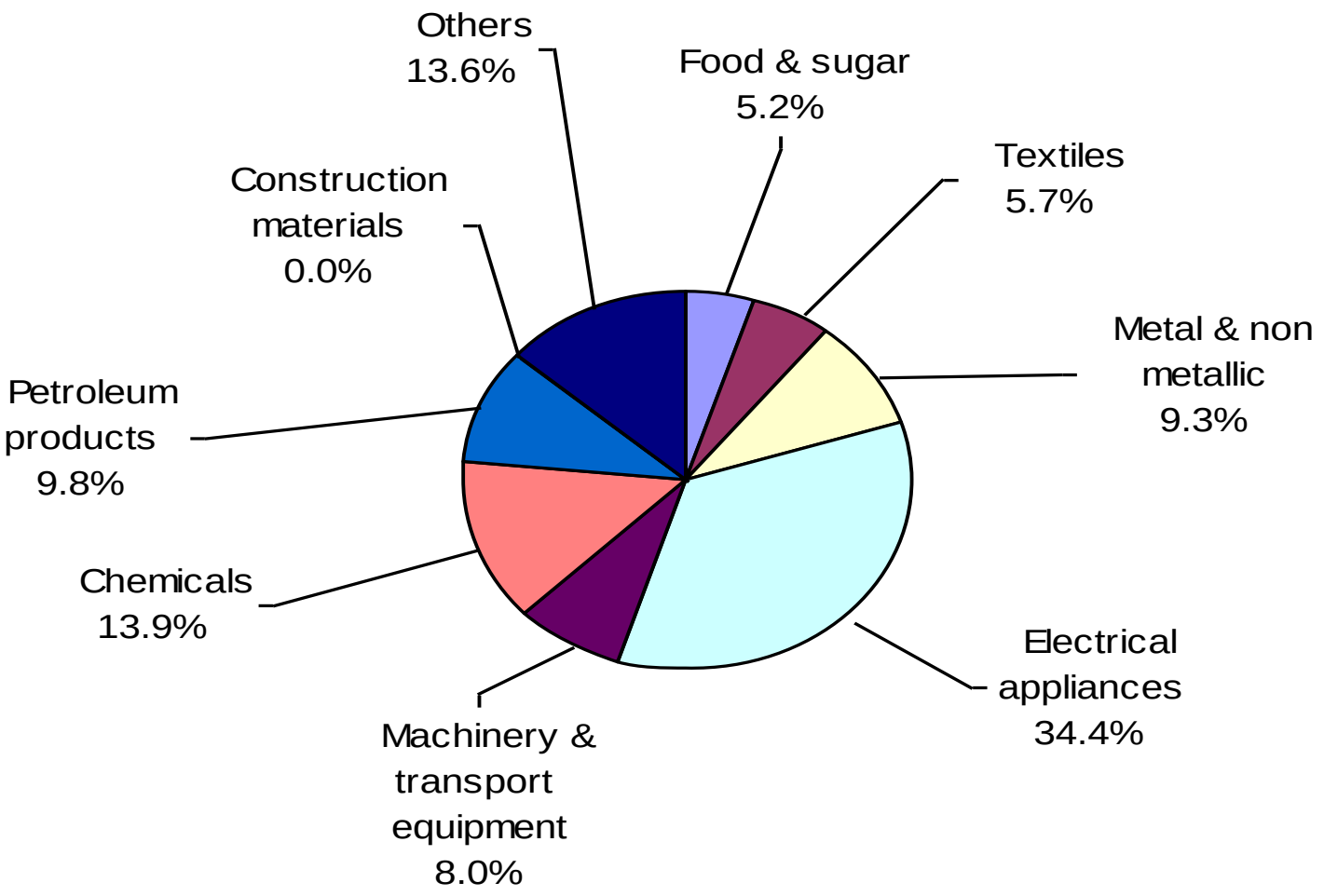
Source: JETRO and Japanese Automotive Parts Industry

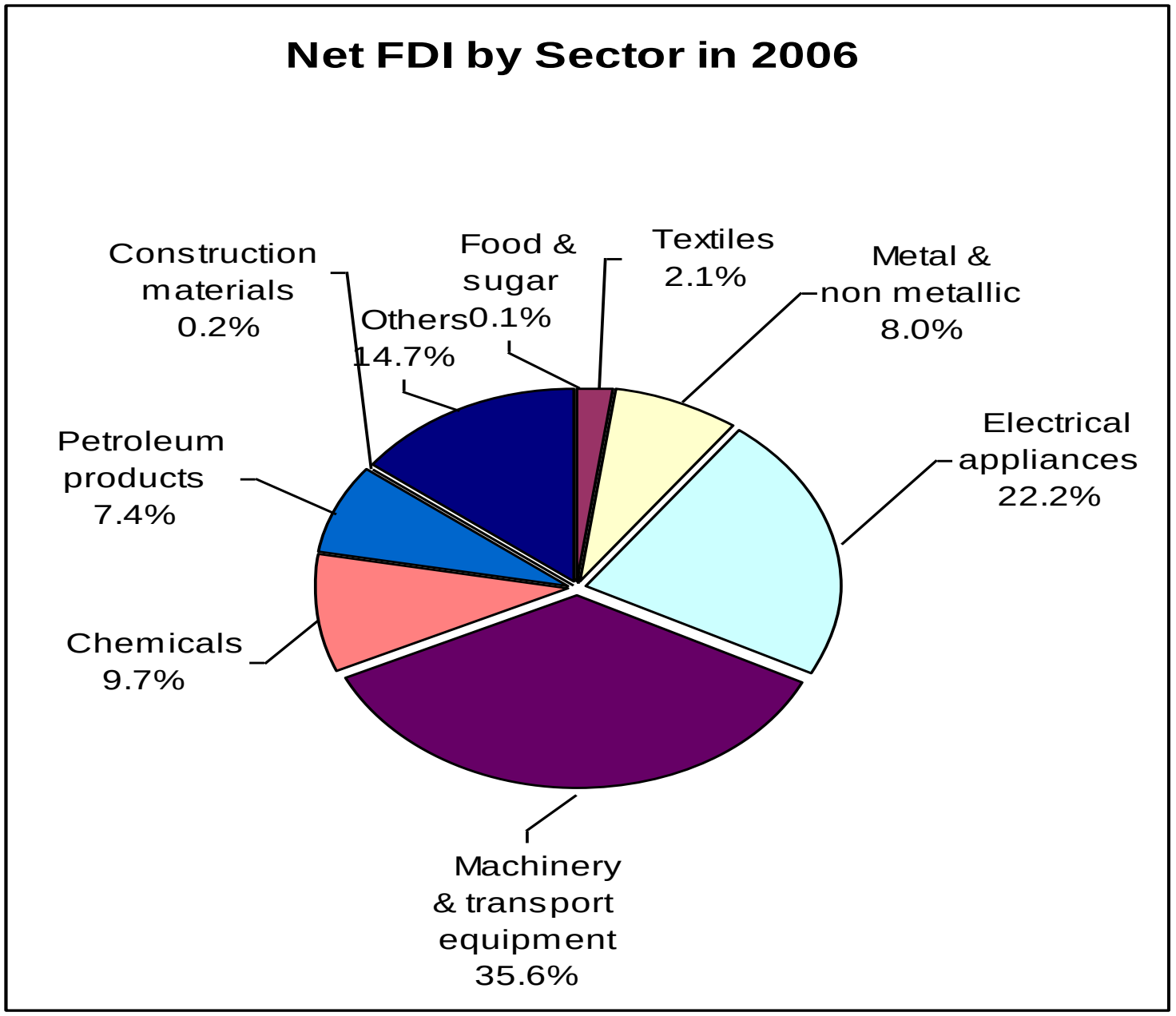


Honda's regional production network

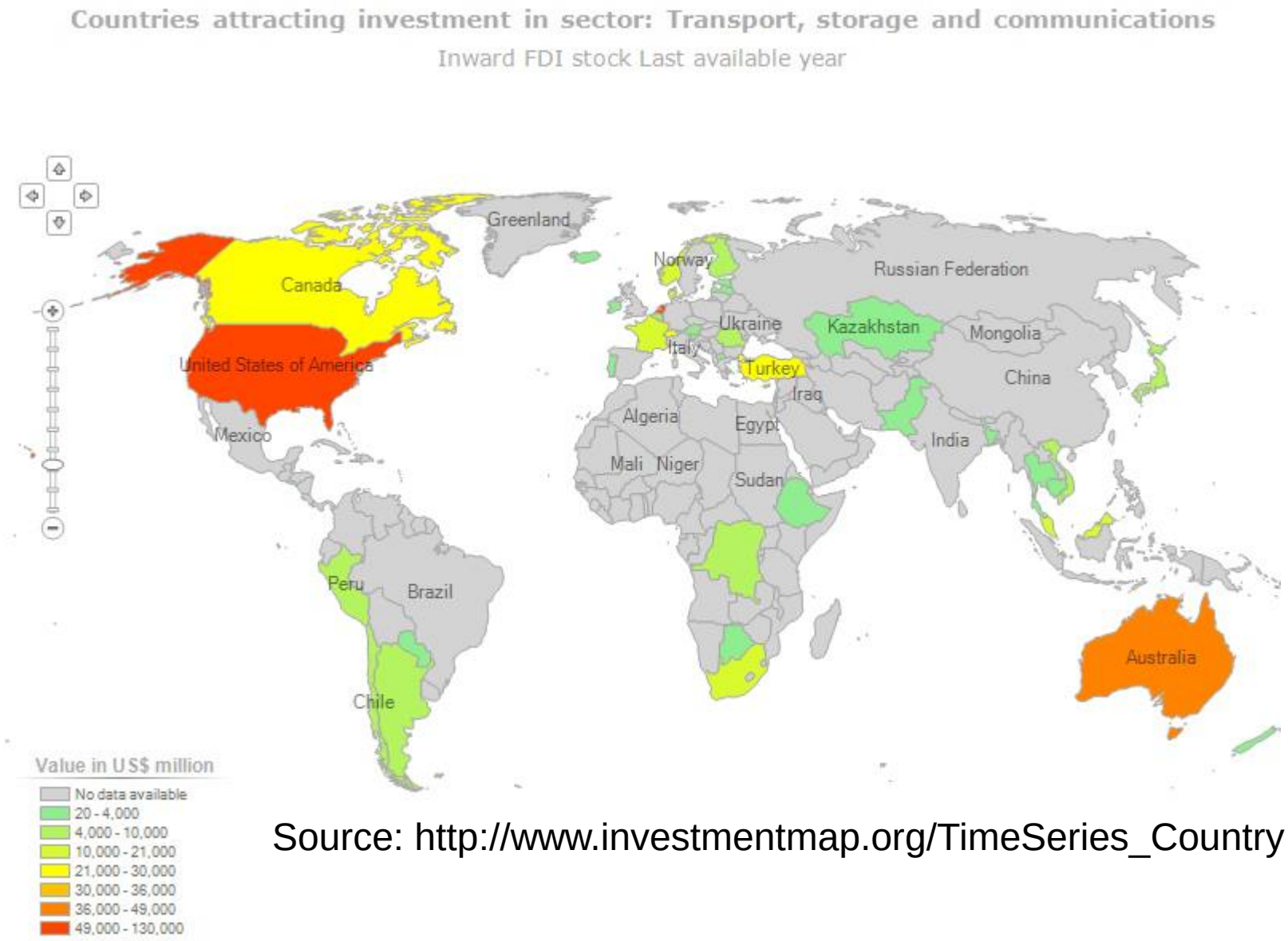


Net FDI by Sector: 1990



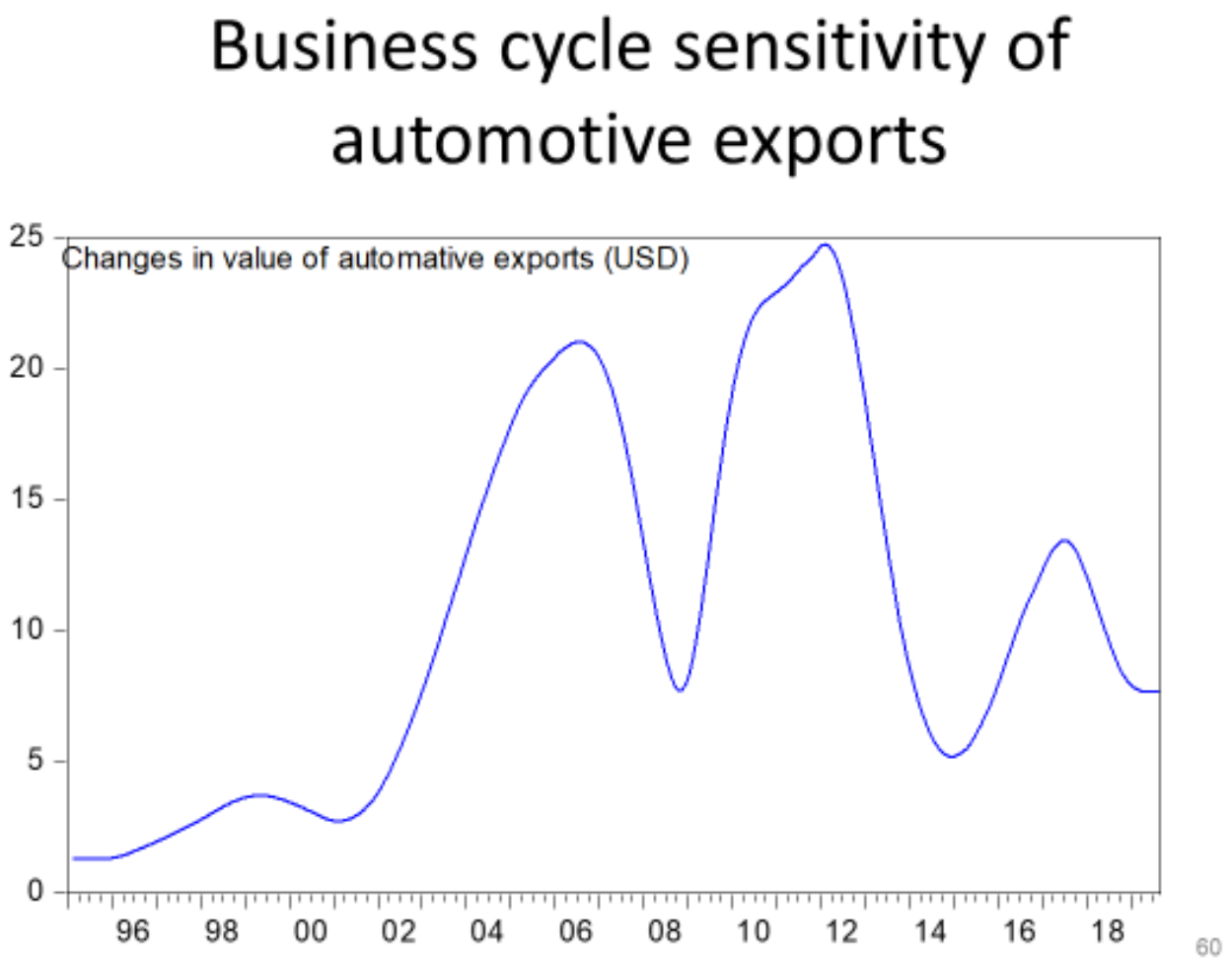

Net FDI by Sector in 2006
Construction materials 0.2%
Food & sugar 0.1%
Textiles 2.1%
Metal & non metallic 8.0%
Others 14.7%
Petroleum products 7.4%
Electrical appliances 22.2%
Chemicals 9.7%
Machinery & transport equipment 35.6%

Inward FDI stock in transport last available year



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

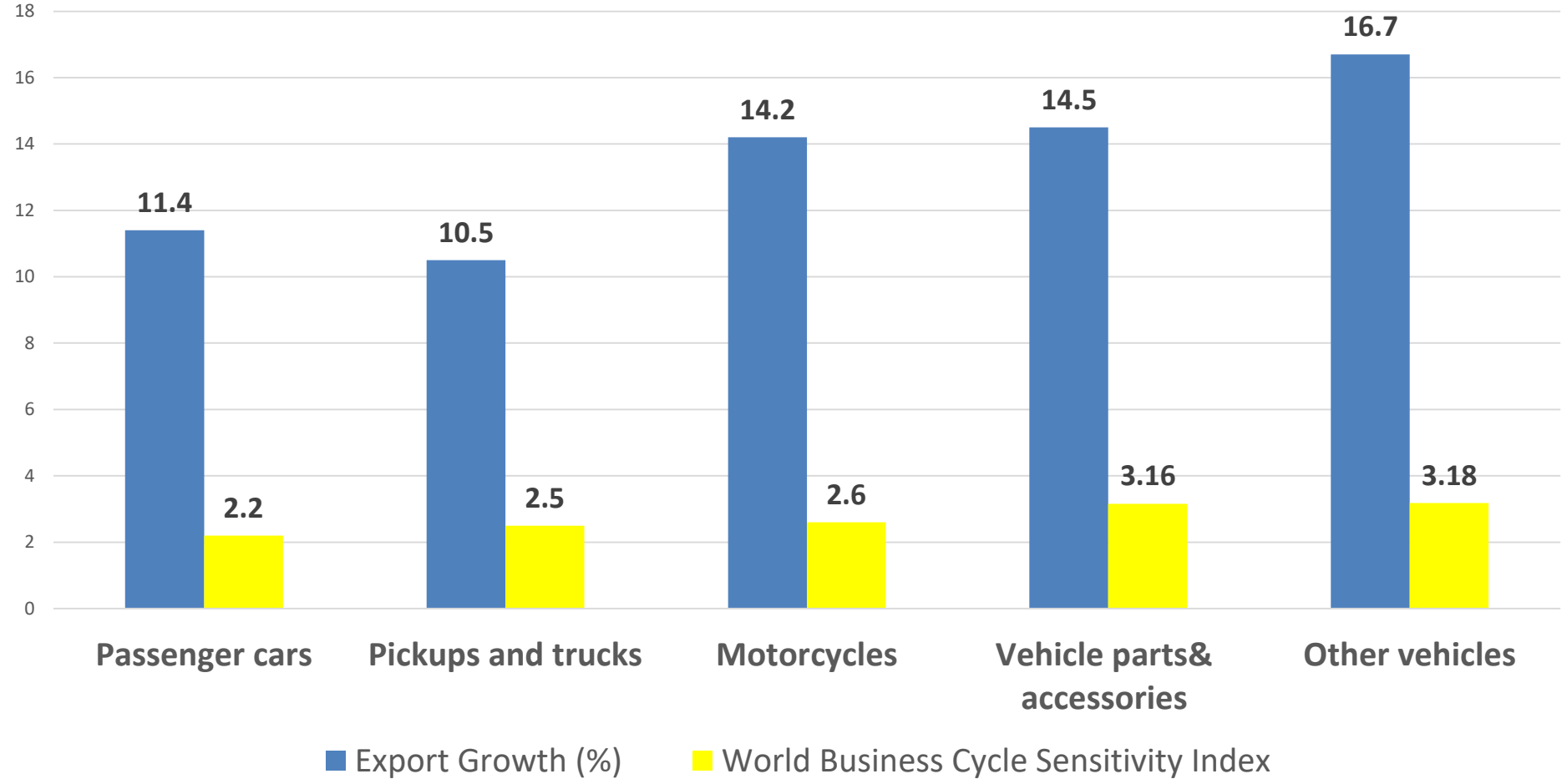
4. Impact of Global Recession and China slowdown



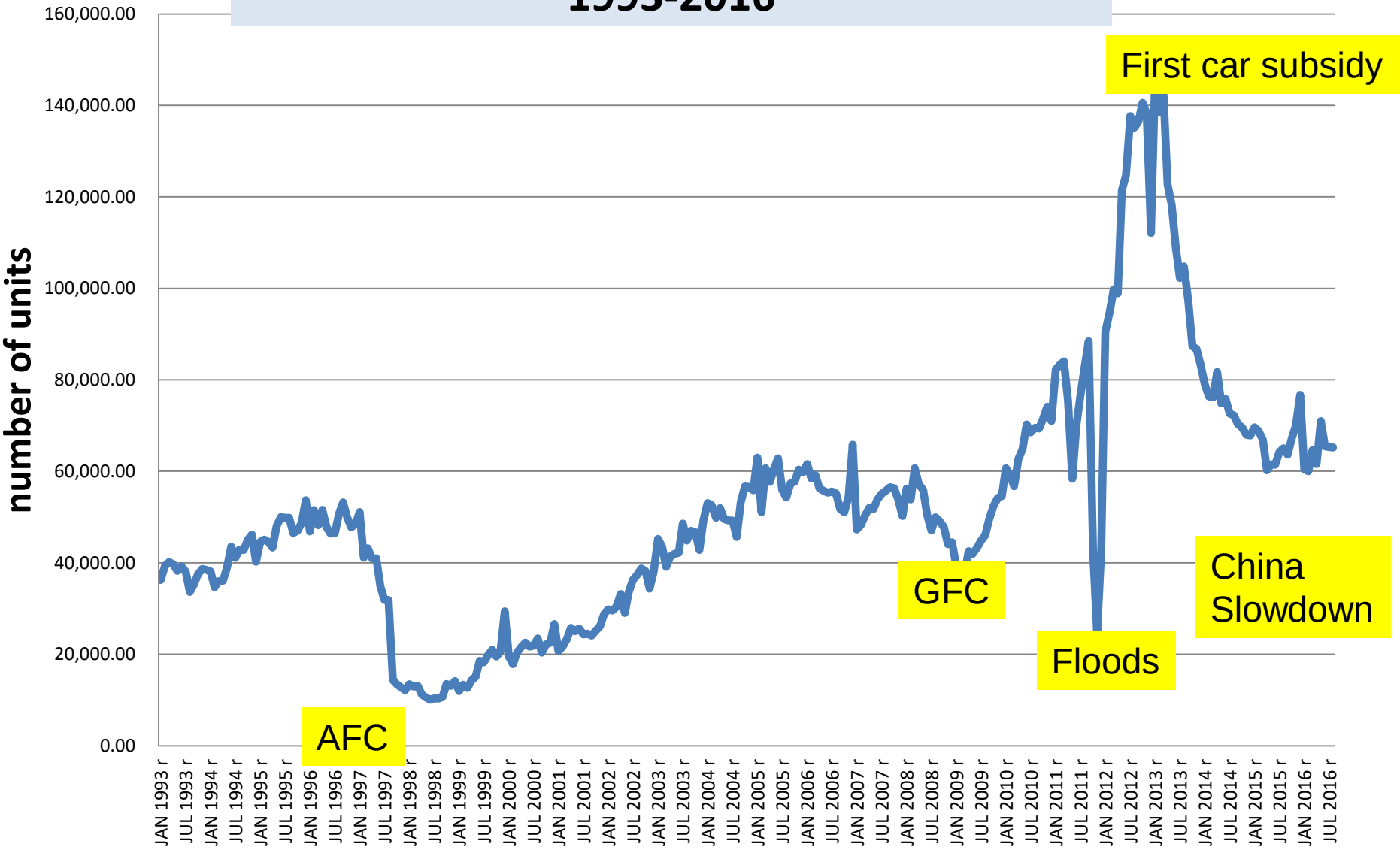
Impact of the global recession in 2009

- 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 of Thailand's exports
(Sensitivity Index)

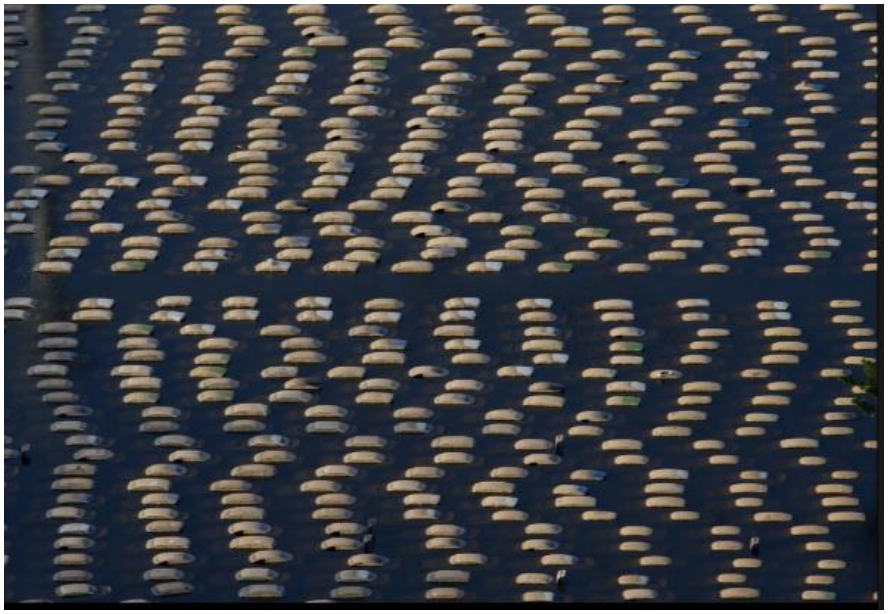


Domestic automobile sales: A roller-coaster 1993-2016



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



5. Recent strategies

6.1 Ecocar program

6.2 Electric vehicles (EV)

Can Thailand's new industry development policy sustain the past success?

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 invested most in Thailand's automobile assemblers.
- ***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, B-RV, Mitsubishi Mirage, Nissan 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 1.6 million units per year (a leapfrog effect)

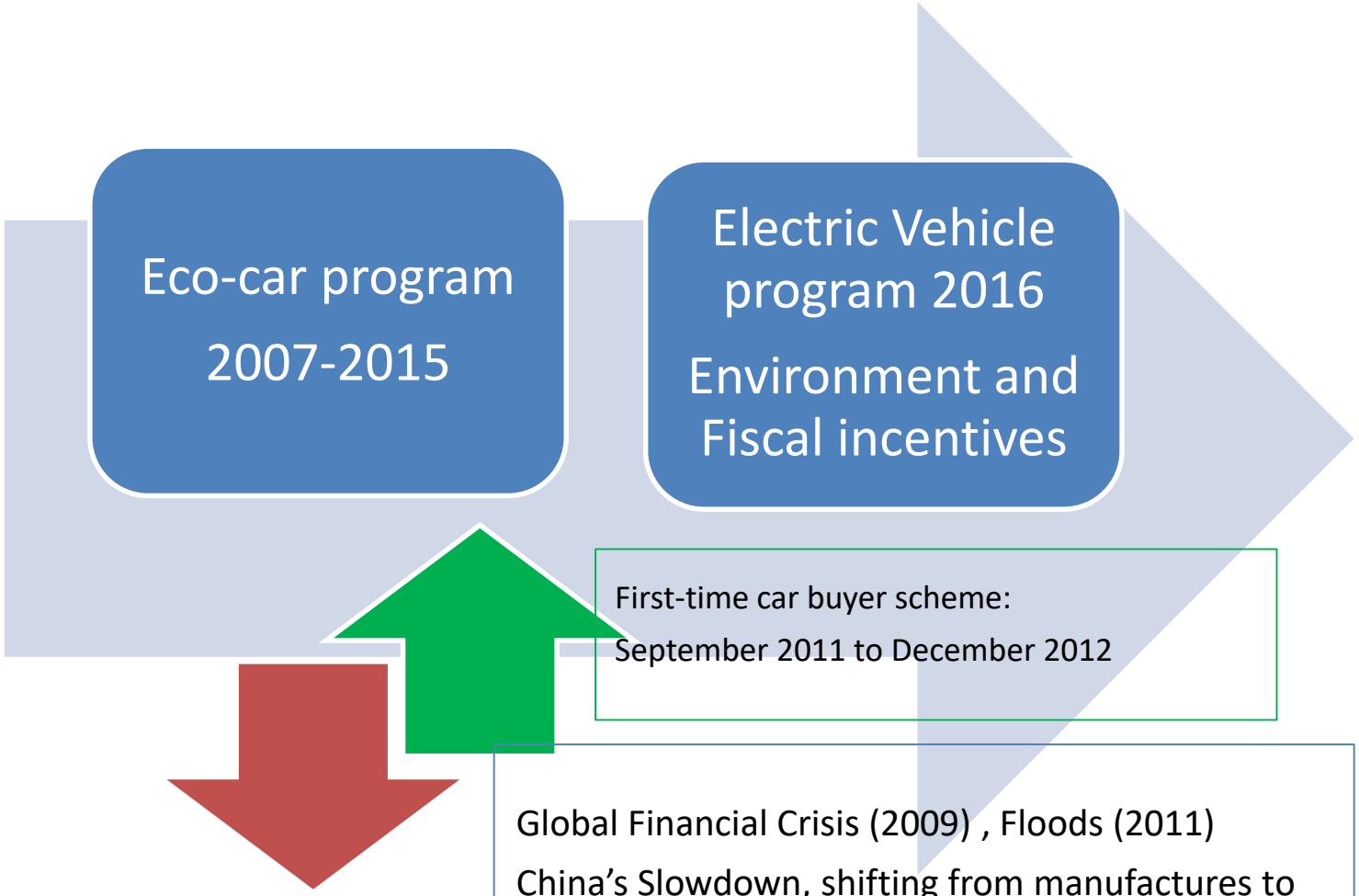
5.2 Electric Vehicles

- 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: *lower excise tax for less polluting cars*

- 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.

Recent Developments and New Policies



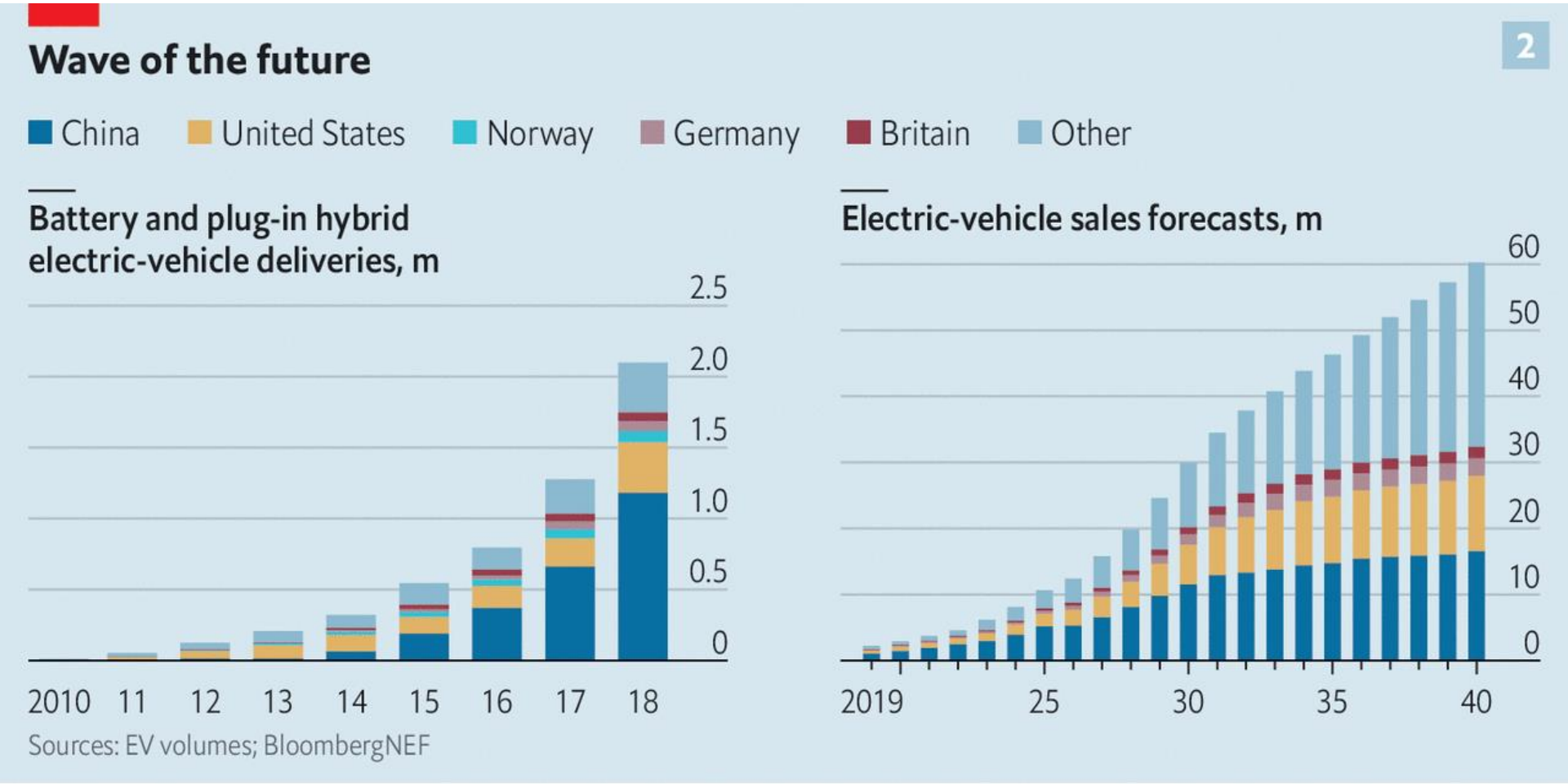
Thailand 'to be regional EV hub' in five years

- The strategies include electric vehicle use by governmental organizations and state enterprises and the introduction of electric buses and electric motorcycle taxis, the deputy prime minister Somkid said.
- "The goal is to become an Asean hub... Obstacles will be reduced. Markets will be built in relation to vehicle demand and charging stations. There will be promotional privileges for both vehicles and batteries,"

Bangkok Post: March 12, 2020

- PTT Plc and the Electricity Generating Authority of Thailand would help one another to build more charging stations, instead of competing, and the Board of Investment would work out promotional privileges for the development, he said.
- "Charging stations should be within a radius of 200 km from one another," he said.
- Industry Minister Suriya Jungrungreangkit said by 2030 the country would produce at least 750,000 electric vehicles a year, constituting 30% of its total automobile manufacturing capacity. There should be 53,000 electric motorcycle taxis in two years and 5,000 electric buses in five years.

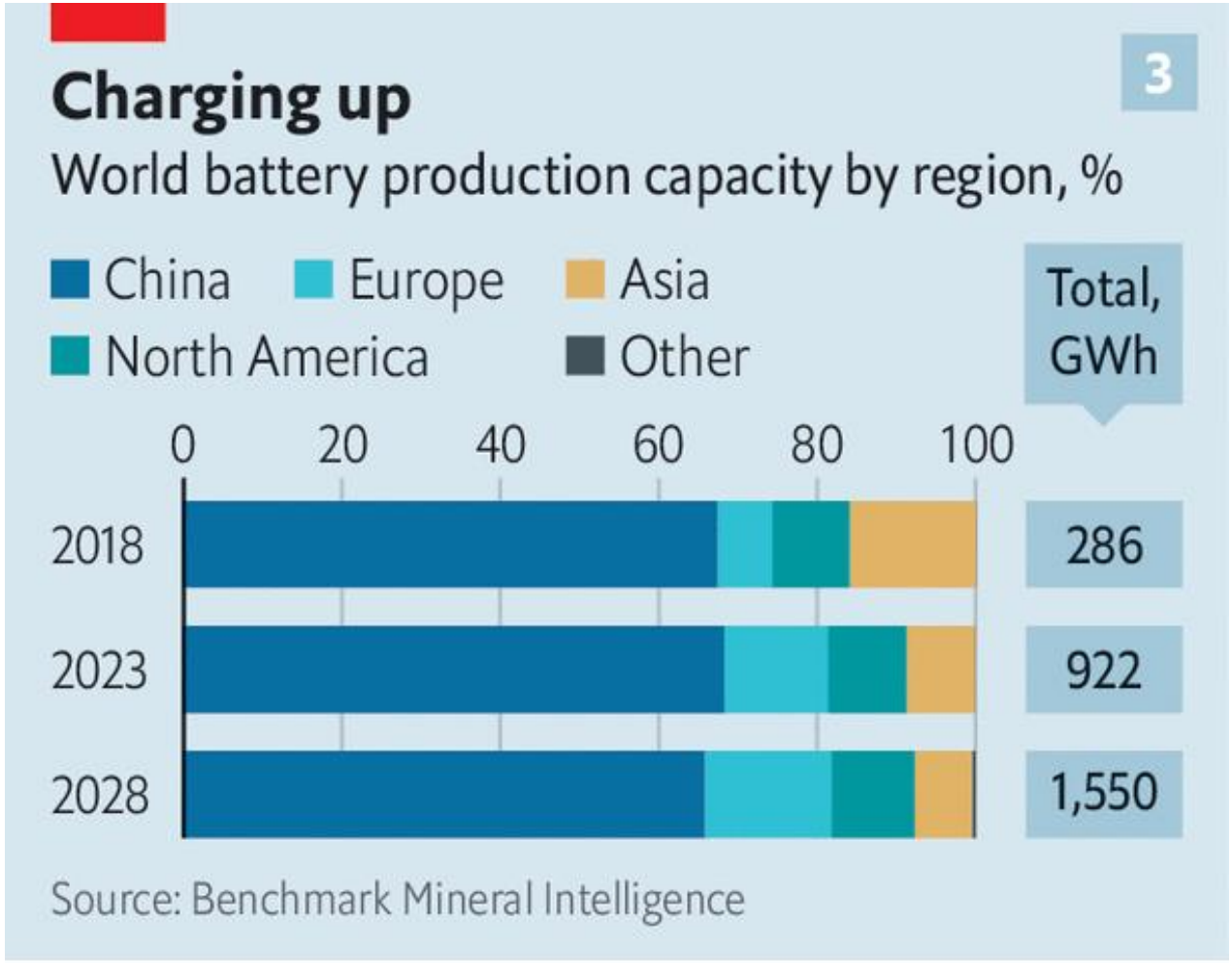
6. China's Automobile development Strategy Electric and Autonomous Vehicles



How the Chinese government supports the EVs?

- To stimulate demand, electric vehicles are generously subsidized and exempt from purchase taxes.
- They are also exempt from the **restrictions placed on the purchase of cars with internal-combustion engines** in six of the biggest cities.
- Further measures include requiring public-sector bodies to buy electric vehicles—a big boost for buses—and favoring car-sharing businesses that use them.
- The country's charging infrastructure is far ahead of the rest of the world's. Beijing has more public charging points than Germany.

Electric shock: Battery Production Capacity



The Economist

What can we learn from China's strategy?

- The strategy also fits with China's other industrial strengths.
- It is a huge producer of batteries and wants to be the biggest in the world, in the same way that it has become the dominant provider of solar panels.
- Chinese battery-makers are growing rapidly and signing deals with ***lithium*** producers around the world.

The learning curve effect

- Cumulative experience in the production of a product over time increases efficiency in the use of inputs such as labor and raw materials and thereby lowers cost per unit of output.
- K.J. Arrow, one of the pioneers in putting forward this concept calls it “Learning by doing”.

The Tesla Model Y

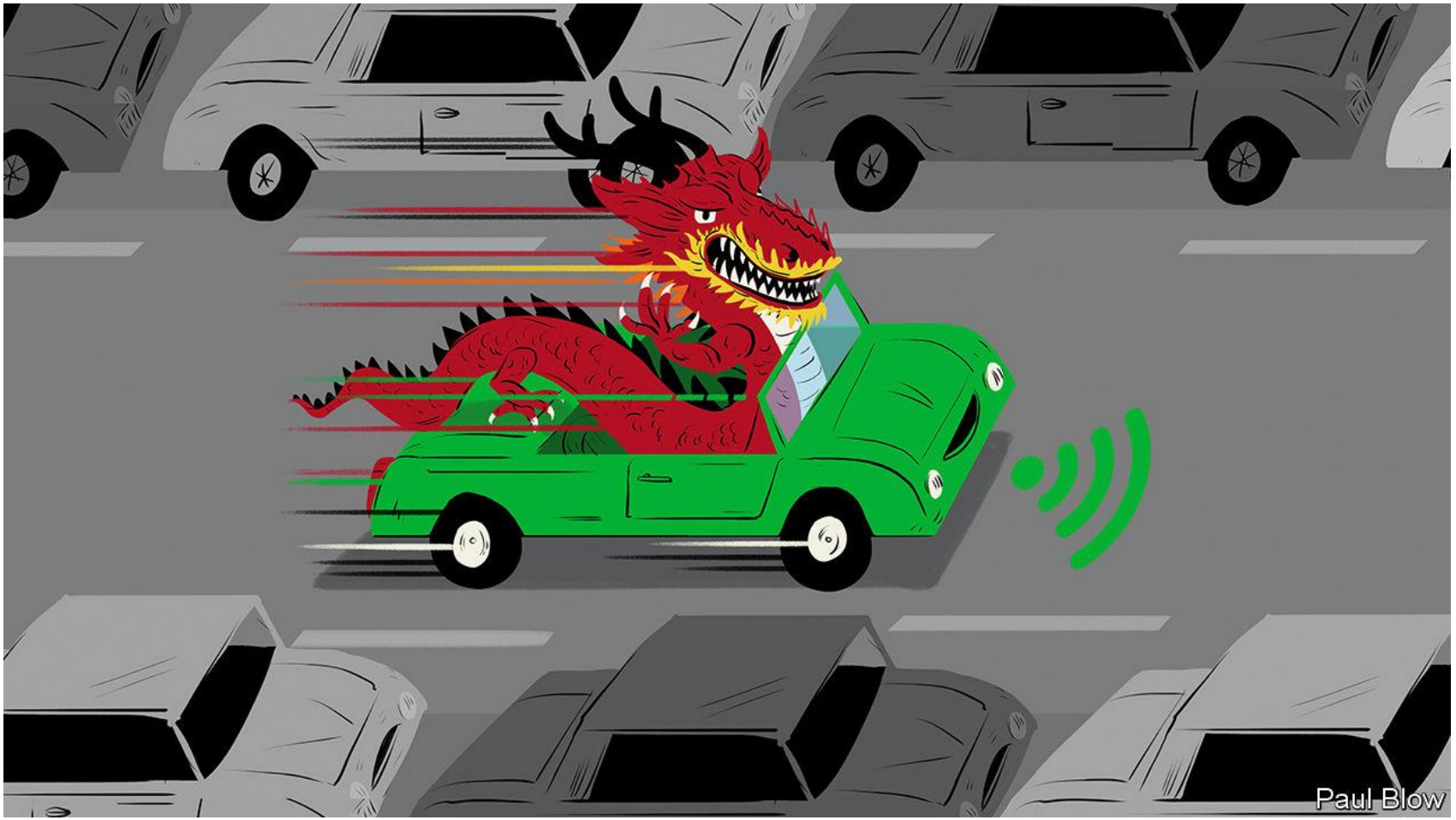
Why Tesla Model T?

- The most important reason for its success is that the Model Y is a roomy vehicle (compared to the earlier model 3)
- The second aspect for the Model Y's expected success is affordability. Most new car purchases are in the range of $35,000 to $36,000. That is more or less what a Model Y will cost.
- it is cheaper to run an EV than a combustion-engined car.
- The Shanghai Speed

Chinese companies' advantage

- Chinese AV companies have one final advantage over their Western peers: explicit support from the Chinese state.
- The government wants companies like his to succeed, and is willing to use its autocratic muscle to build infrastructure, promote new technology and rewrite policy.
- It will spend up to $220bn on 5g by 2025, according to state media, and plans to install AV infrastructure throughout the 2020s, including telecoms networks to capture data from vehicles and their surroundings, cloud-computing capacity to process these data and map services to guide the cars.

Chinese firms are taking a different route to driverless cars (Autonomous Vehicle: AV)



The leapfrog effect

- Chinese firms may prosper well before the eventual arrival of all-out AVs. They already benefit from the leapfrog effect
- Cowa Robot, one of his firm's investments, has sold autonomous street-sweeping robots to authorities in Changsha, the capital of Hunan province.
- Horizon Robotics, which is valued at $3bn, furnishes specialized av computers for companies like Cowa.

Electronic reliance on American technology

- The prospect of losing access to American technology is particularly worrisome for av companies, because the Chinese car industry relies heavily on foreign suppliers for the electronics that power modern vehicles.
- Last year Chinese imports of **integrated circuits** totaled $312bn, ten times the value of imported car parts.
- Chinese entrepreneurs eyeing the Chinese av market have founded plenty of promising startups—but many of them in Silicon Valley, subject to American law.

Capital and labor: elasticity of substitution

- It may take longer for software to become competitive with Homo sapiens in China, where labor remains relatively cheap.
- As one global car executive puts it, “If drivers are abundant but space on the road is not, the problems you should be solving first are not about taking the driver out of the car.”

China's approach to AV

- China's approach to self-driving reflects its attitude to development more broadly: **heavy on infrastructure and government oversight, lighter on cutting-edge technology and civil liberties**.
- It may one day prevail over the Western path to autonomy.
- Whether Chinese av companies will stand on their own four wheels as profitable businesses is another matter.

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.

EV is the way for the future. Thailand cannot afford to miss the new trend.

Concluding remarks

- Business sentiment and consumer confidence matters for a sustainable recovery provided that the slowing momentum of the world economy in 2020 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