

Challenges to Thailand's 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?

CAR AND MOTORCYCLE SALES FROM JANUARY TO JUNE



Units sold	2019	2020	Change (%)
Type			
■ Car	206,540	119,716	-42
■ Patrol car	36,160	24,481	-32.3
■ Pure pickup	225,508	149,432	-33.7
■ Pickup passenger vehicle (PPV)	32,867	16,977	-48.3
■ Truck	13,210	9,709	-26.5
■ Other	9,485	8,289	-12.6
■ Total	523,770	328,604	-37.2
■ Motorcycle	893,846	731,979	-18.1

1H of 2020

- Car production for domestic sale in the past six months fell 48.9% to 259,754 units, while manufacture for export fell 37.8% to 346,378 units.
- The FTI said car sales for export in the first half of the year decreased by 37.4% year-on-year to 350,550 units, valued at 187.9 billion baht, a drop of 34%.

Car production in the first eight months of 2020 plunged 42% year-on-year to 812,721 units, but manufacturers still have another four months to reach the target of 1.4 million units, says the Federation of Thai Industries (FTI).



CAR OUTPUT FROM JANUARY TO AUGUST

Units made	2020	2019	% change
■ Passenger car	308,140	560,897	-45.06
■ Bus	122	236	-48.31
■ Pickup truck	492,282	821,002	-40.04
■ Truck	12,177	21,018	-42.06
Total	812,721	1,403,153	-42.08

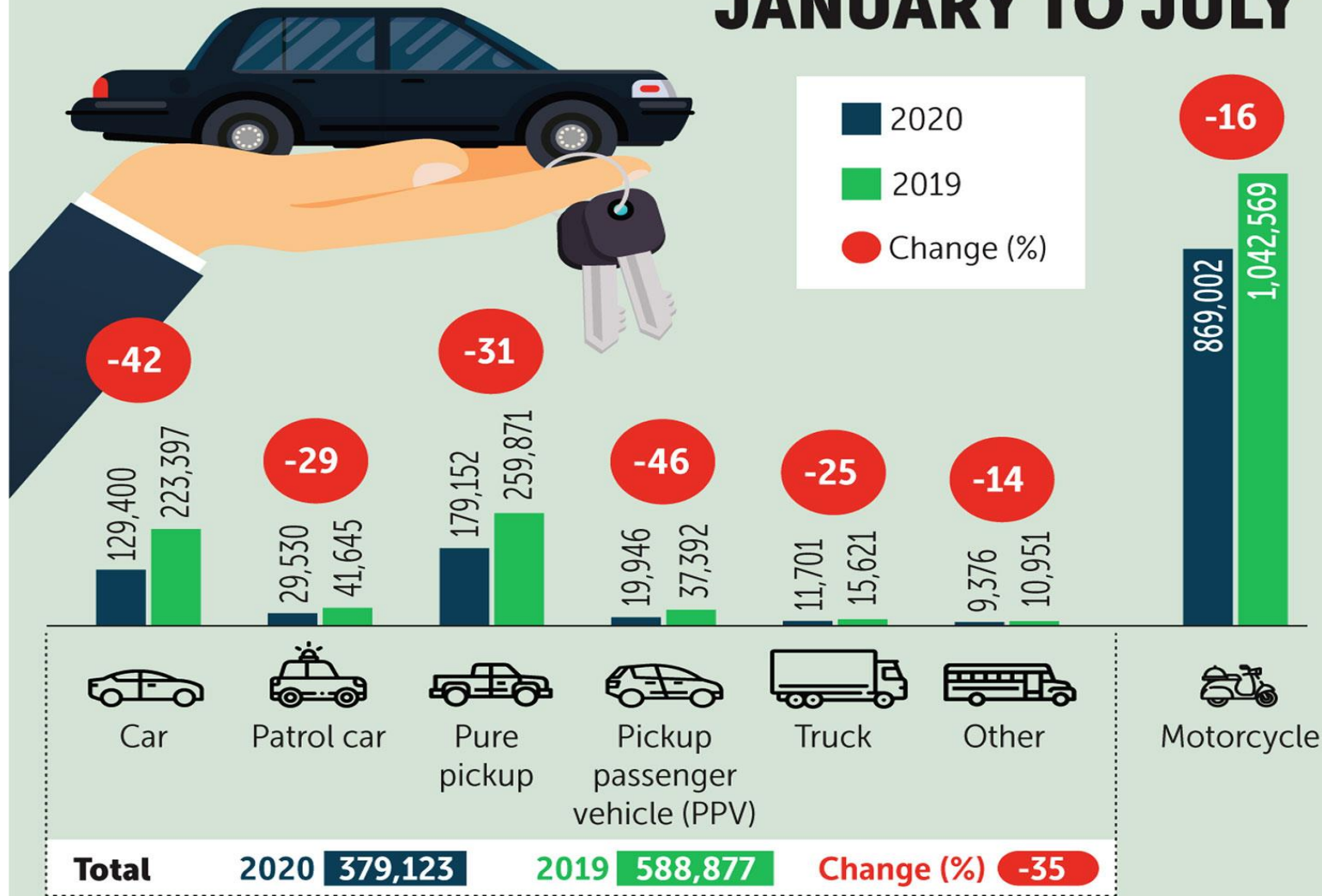
Source: Federation of Thai Industries

BANGKOK POST GRAPHICS

Bangkok Post: August 21, 2020

- "Car production will take a long time to come back to normal because Thailand has depended on exports accounting for nearly 50% of production," spokesman for the group's automotive club.
- Though Thailand has managed to successfully curb local disease transmissions, high infection rates continue in many countries, with some encountering a second round of outbreaks.
- The global economy has weakened, affecting people's purchasing power. This has reduced demand for cars domestically and overseas.
- FTI maintains its estimate for 2020 car production in Thailand of 1.3-1.4 million units because factories have reopened, following the easing of lockdown measures.

CAR AND MOTORCYCLE SALES FROM JANUARY TO JULY



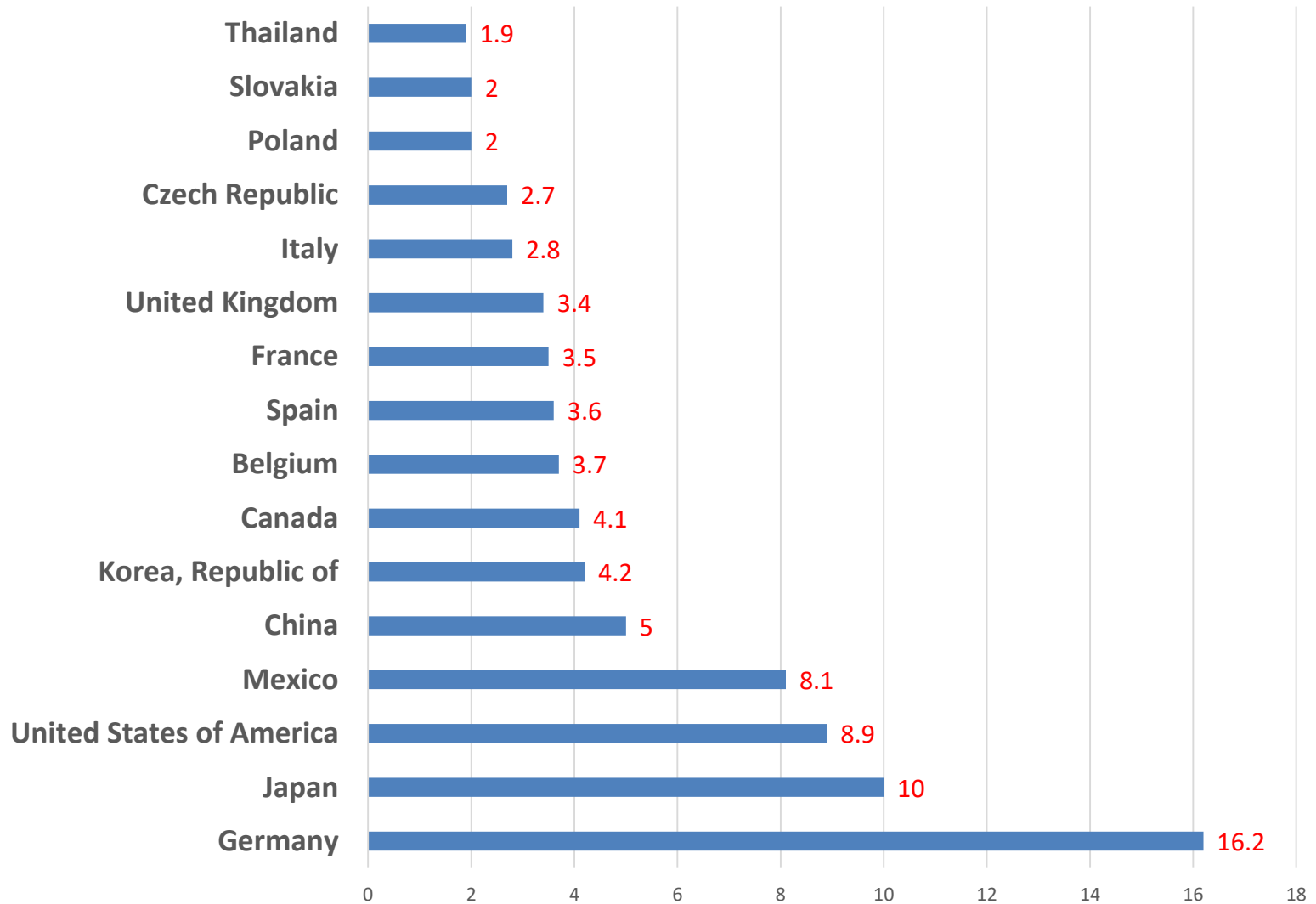
Source: Federation of Thai Industries

BANGKOK POST GRAPHICS

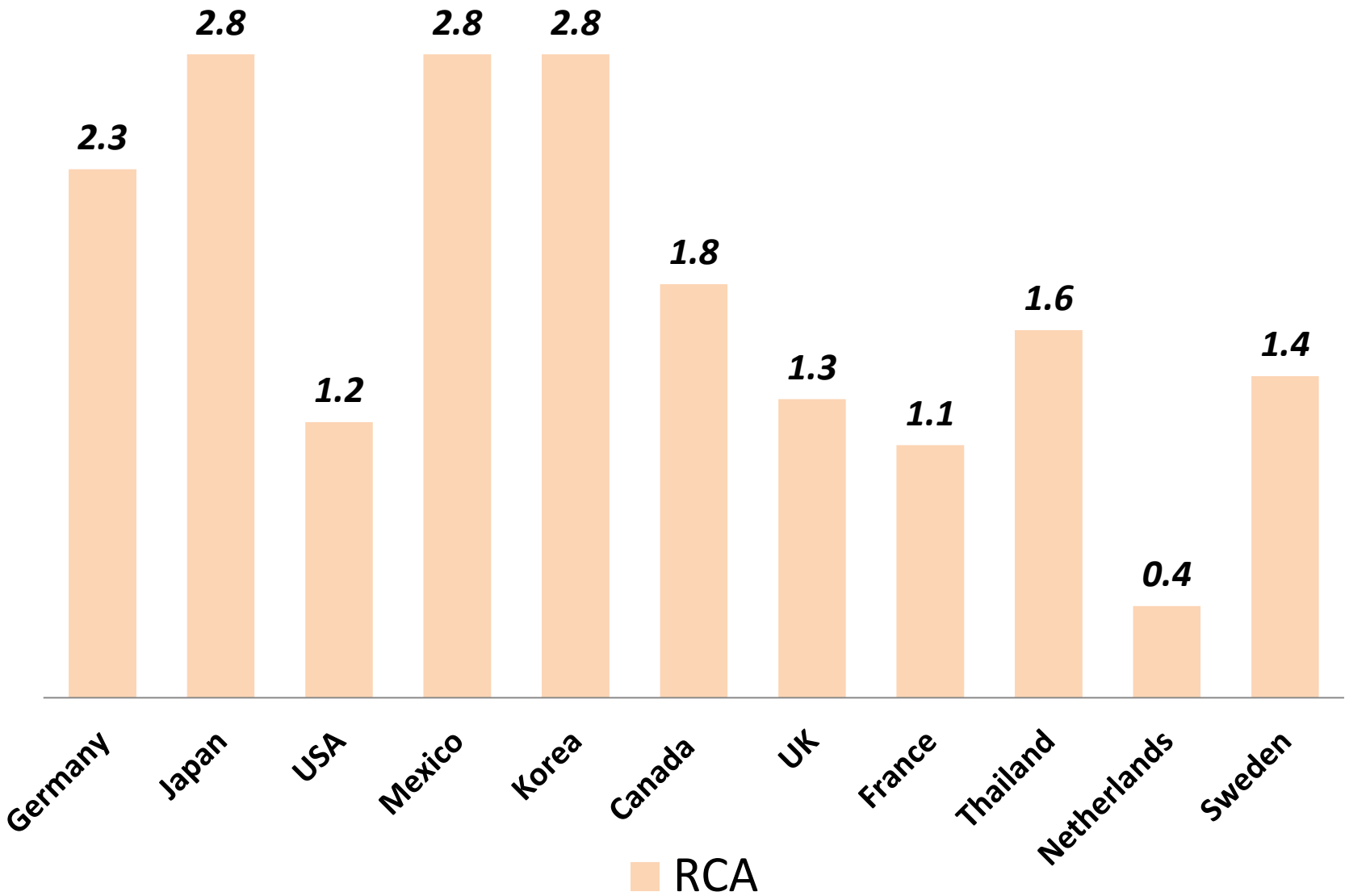
Outline

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

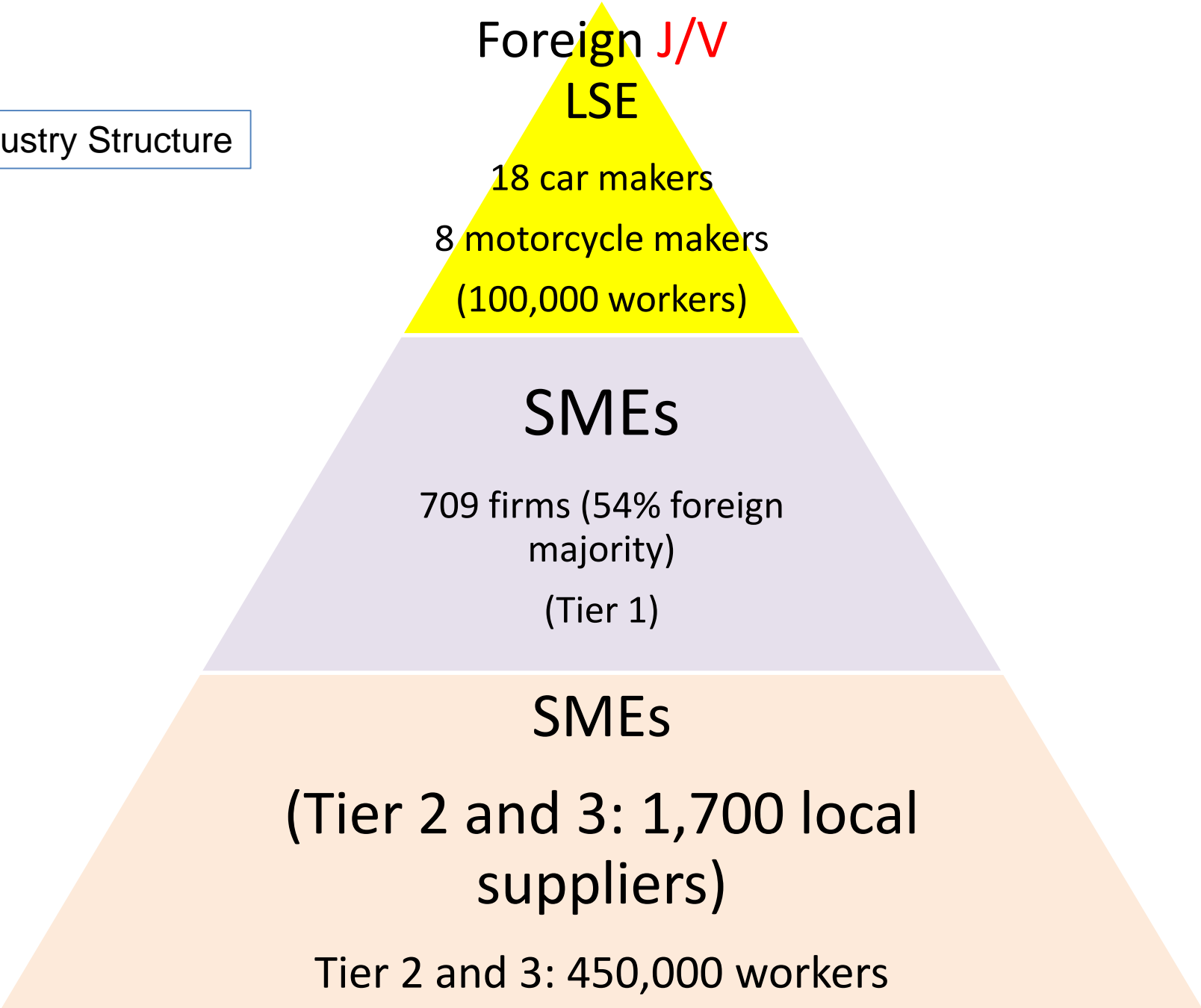
Share in world exports in 2019 (%)



Specialization in Automobile Production



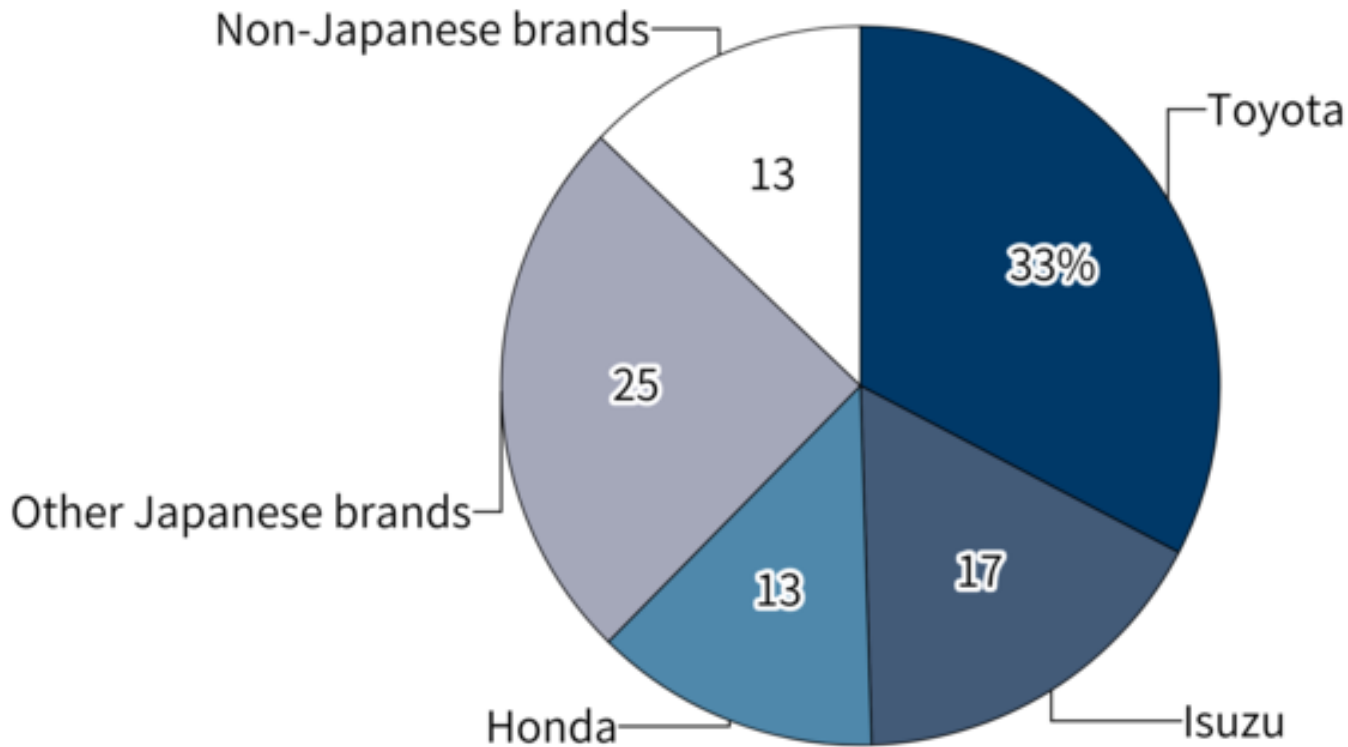
1. Industry Structure



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.

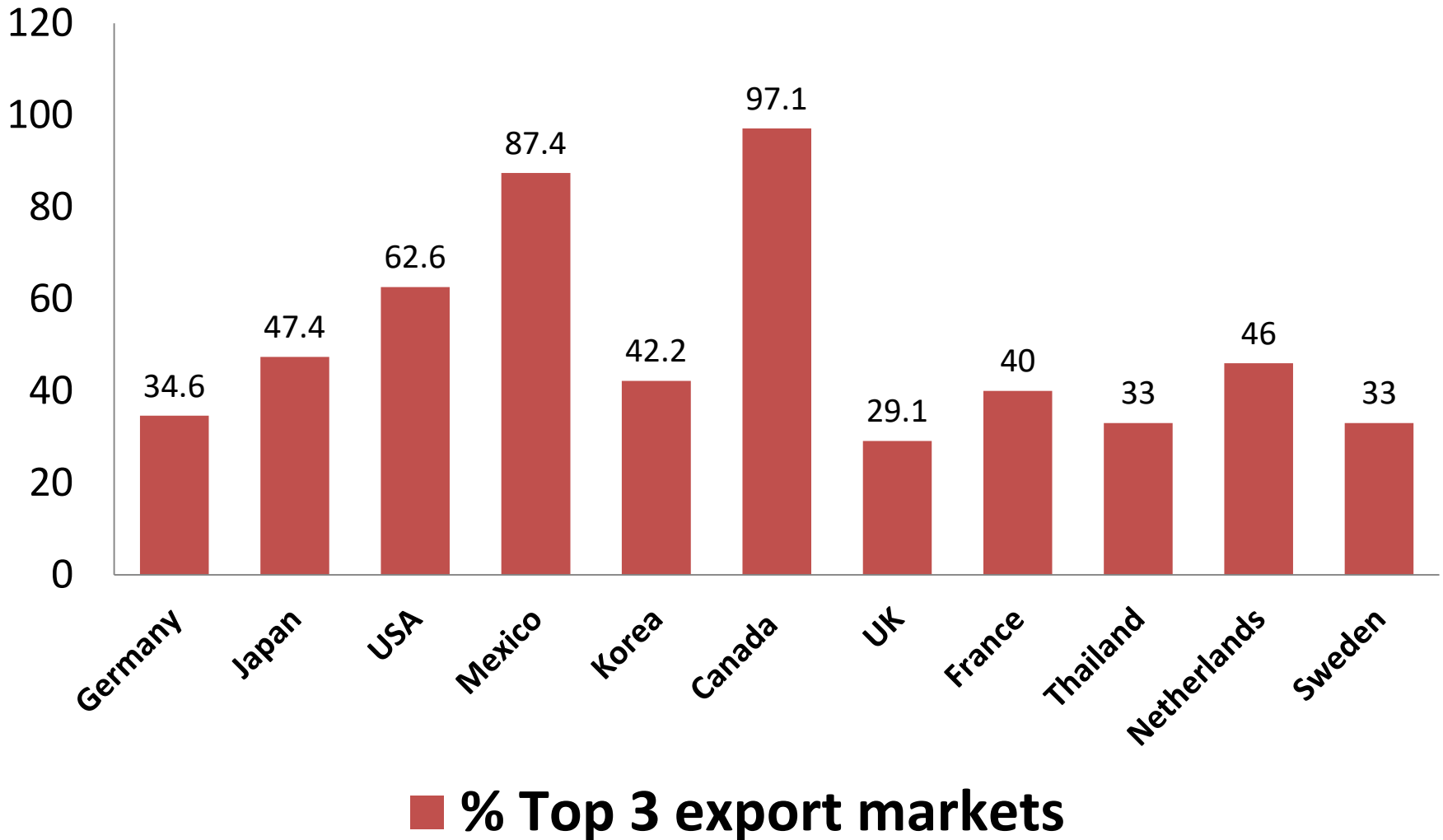
The country produced 23m cars last year, outstripping Europe and putting America in the shade. In terms of quality, though, the results have been poorer.

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

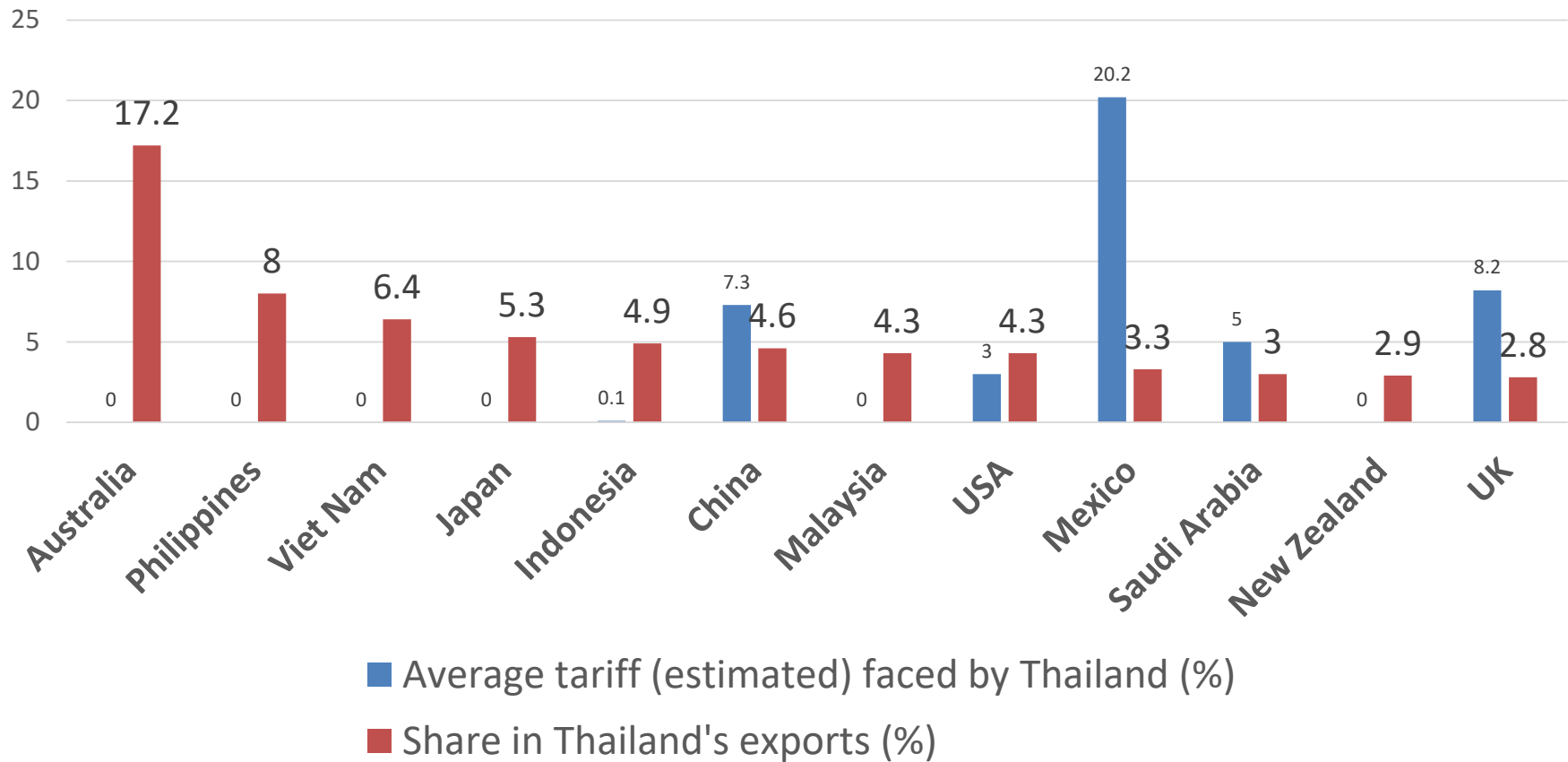
Banners line a road leading to an event at the site of the Tesla Inc. manufacturing facility in Shanghai, China, Jan. 7, 2019.



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



Share in Thailand's Exports and tariff rates

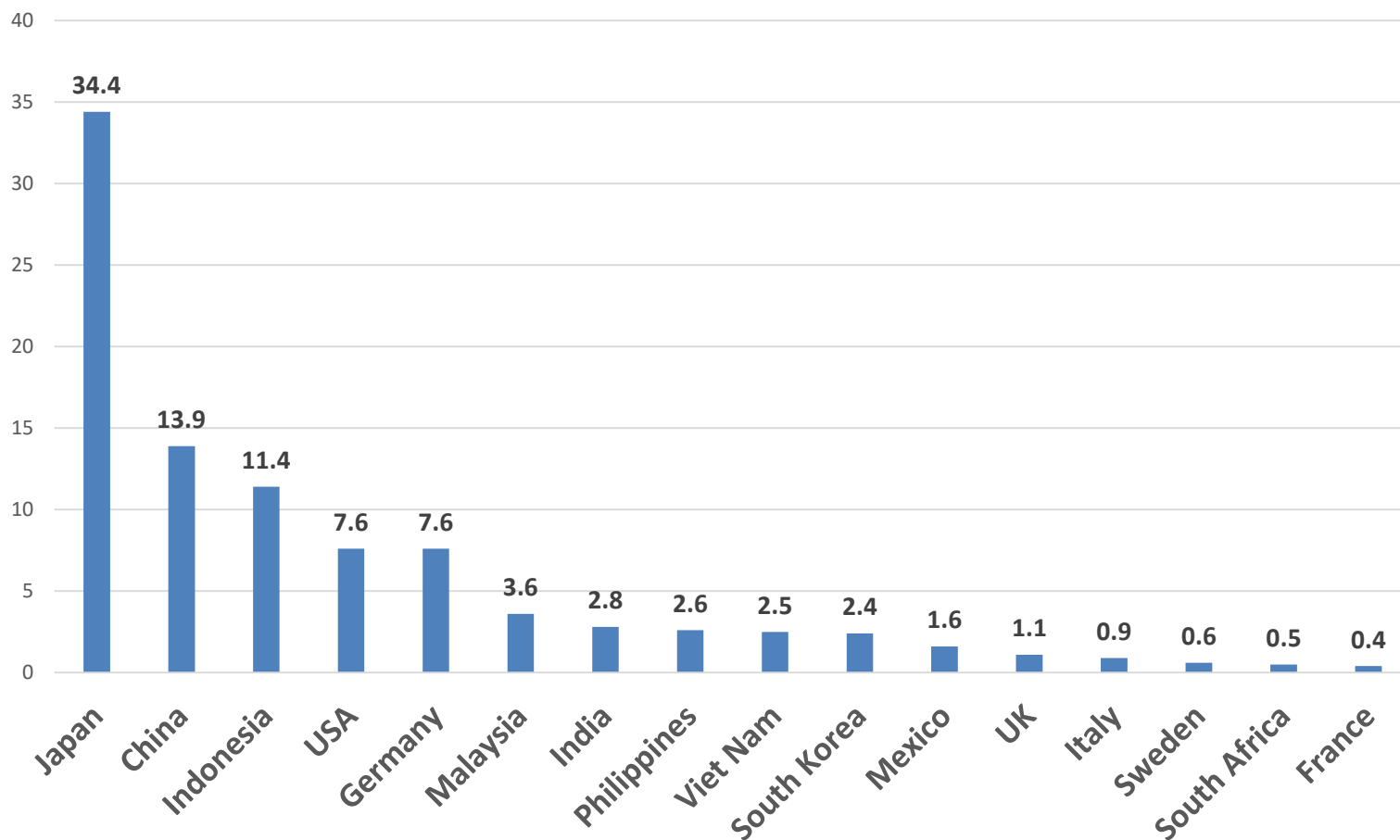


Why is Australia the top importer of Thai pickup trucks?

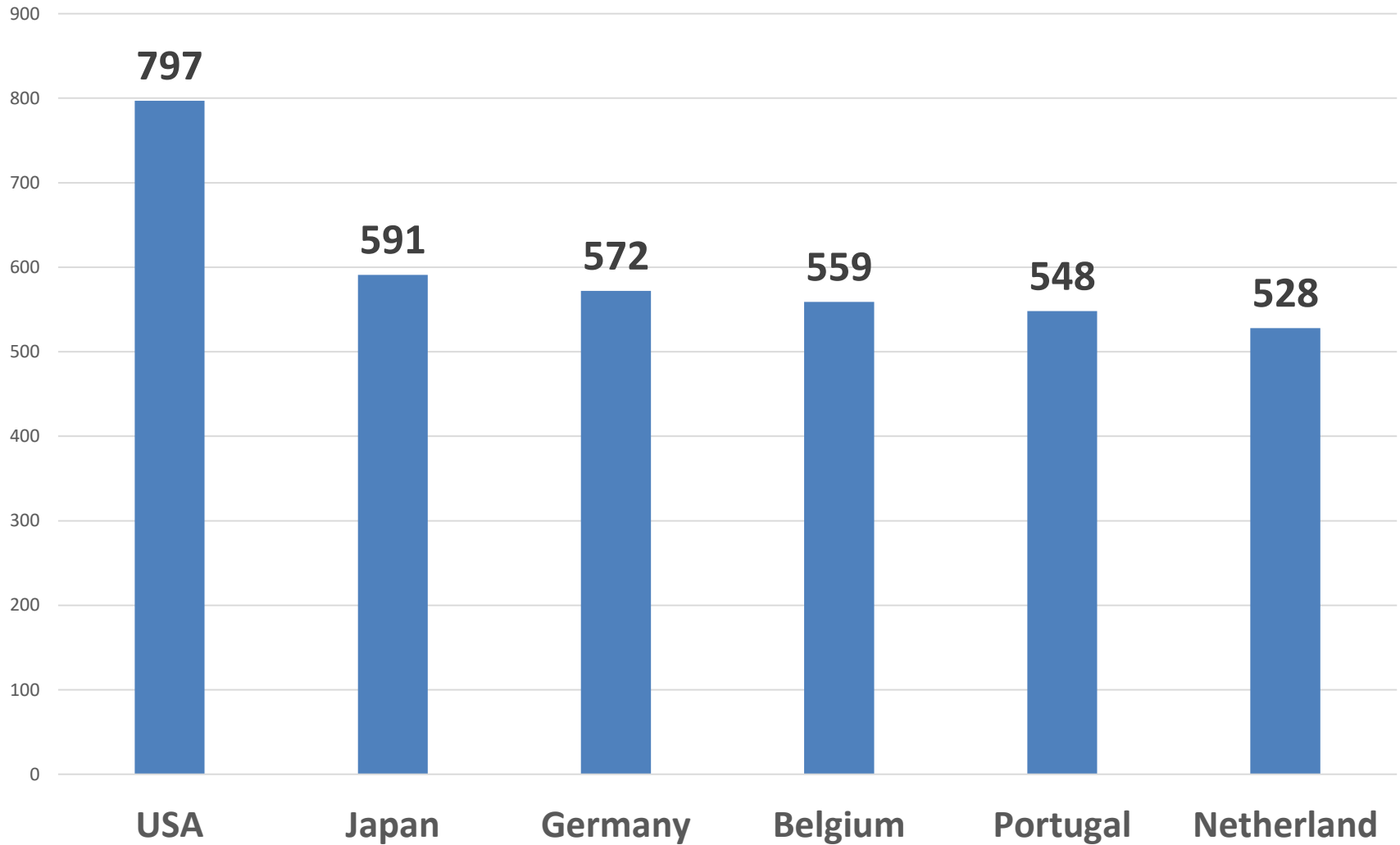
- Over half of the automobile market in Thailand has been dominated by one-ton pick-up truck and its parts and components.
- Most Japanese assemblers tried to export pick-up trucks.
- Fortunately, there were markets for one-ton pick-up truck and its components worldwide.
- There was a large market in developing 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: Australia.
- 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

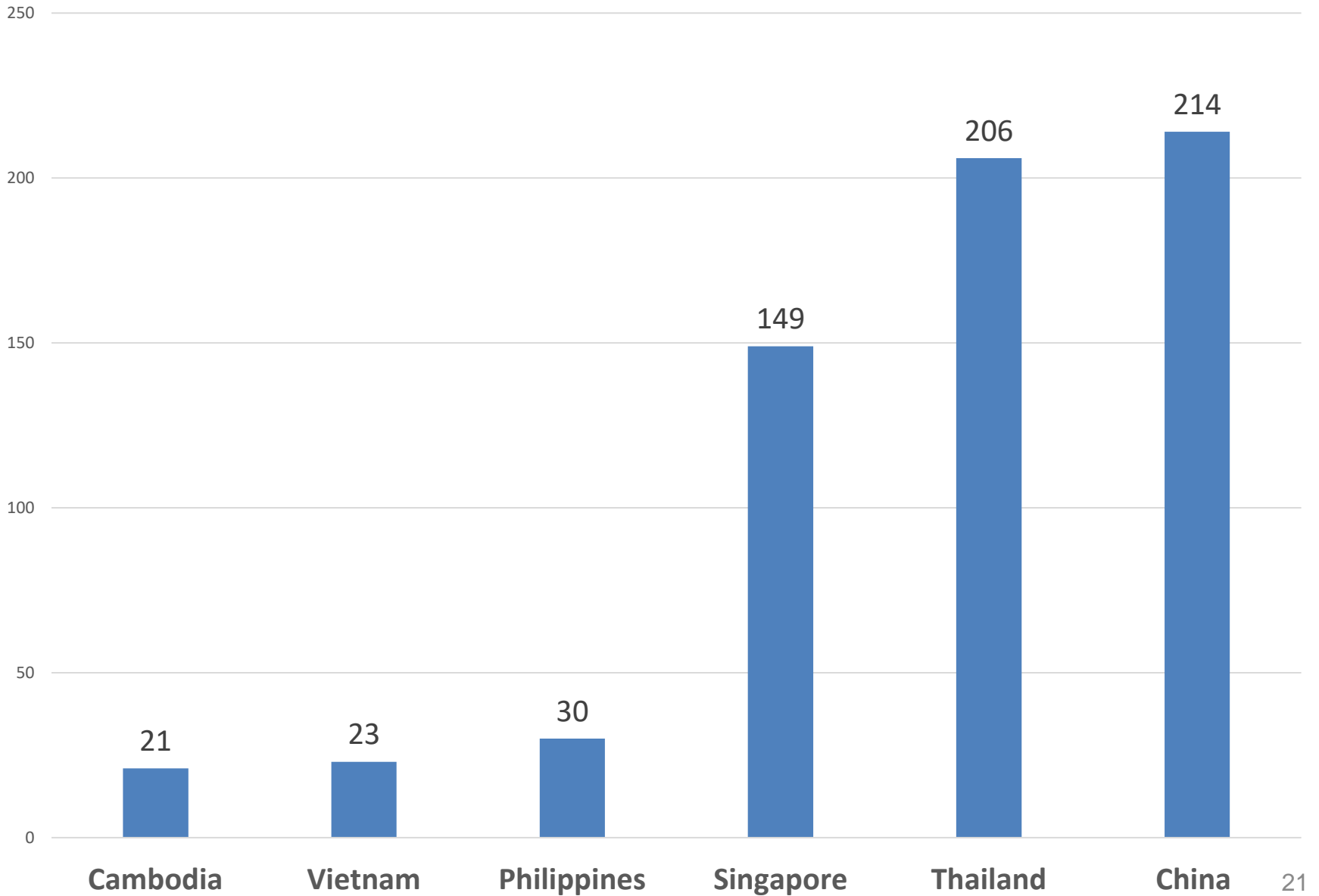
Share in Thailand's imports (%) 2019



Motor vehicles per 1,000 people: High income countries



Abundant opportunities: Motor vehicles per 1000 people: Asia



Success is not permanent

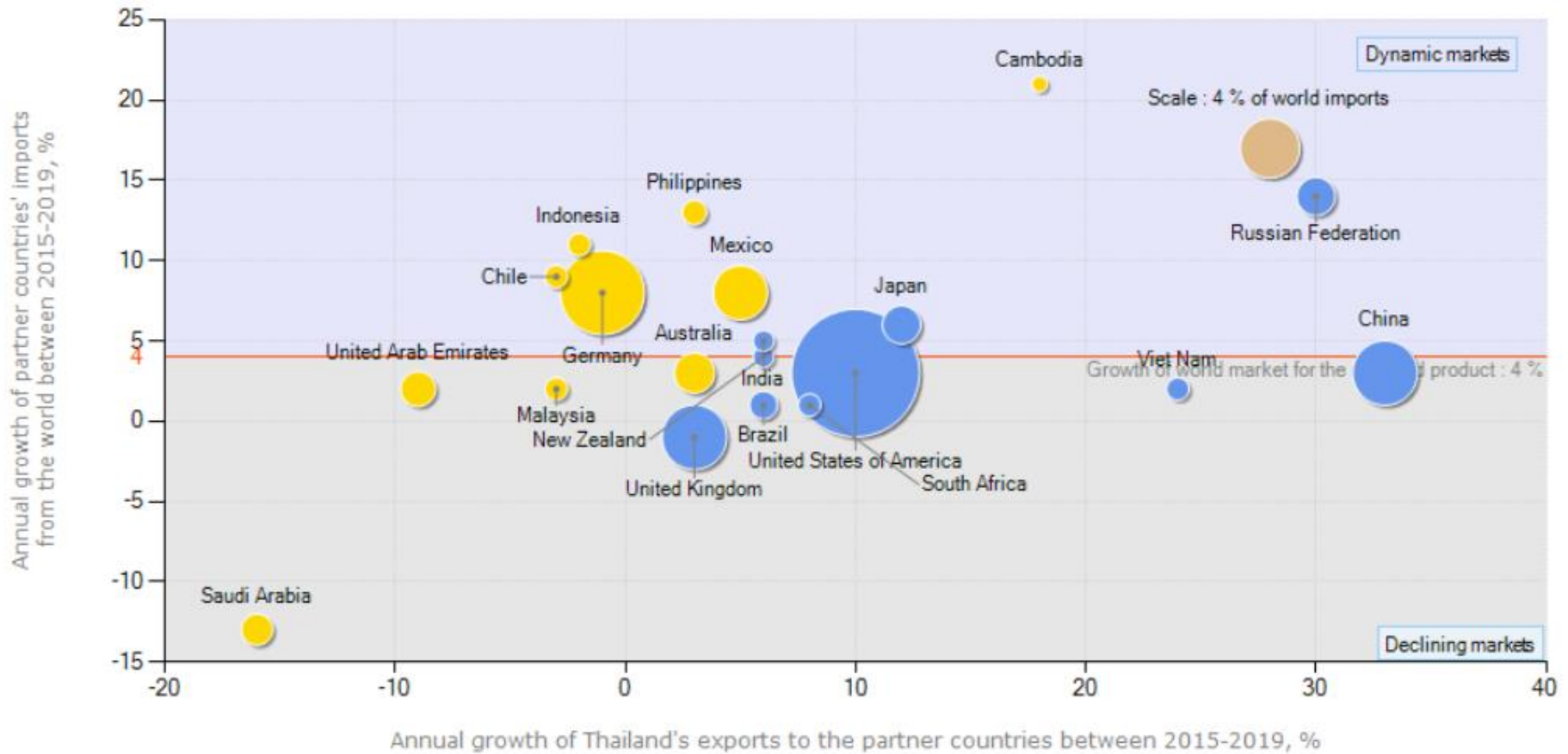
- Thailand is the largest automobile market in Southeast Asia.
- It has 1,095 **auto parts** producers, compared with 385 in Indonesia, and 232 in Malaysia.
- The country's pickup truck market is arguably the second largest in the world after the US, because of the strength of the grassroots and small-business 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.

Growth in demand for a product exported by Thailand in 2019

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

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



MOTORCYCLE MANUFACTURERS IN THAILAND

Capacity: Units per year

Location: **Pathum Thani**

 **SUZUKI** 550,000 units



Location: **Bangkok**

 **HONDA** 1,700,000 units

 **GPR** 40,000 units

Location: **Chachoengsao, Phetchaburi**

 **SYM**
 **KEEWAY**
 **Benelli**
Total 60,000 units
 **CFMOTO** 100,000 units

Location: **Chon Buri**

 **TRIUMPH** 120,000 units
 20,000 units

Location: **Samut Prakan**

 **YAMAHA** 600,000 units

Location: **Rayong**

 **Kawasaki** 260,000 units

 **BMW** 10,000 units

 **DUCATI** 20,000 units

 **HARLEY-DAVIDSON** n.a.

Harley-Davidson 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.

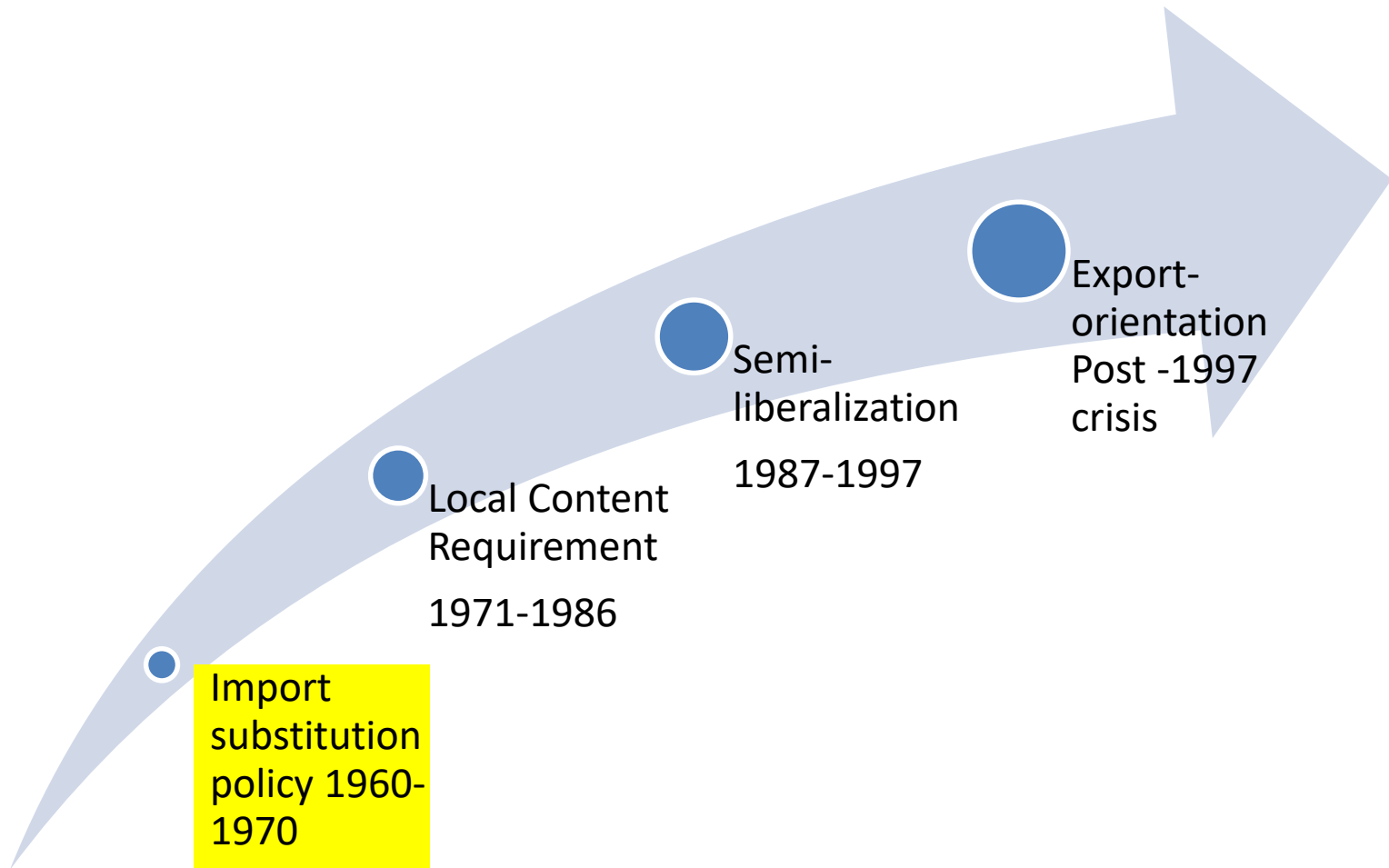
Honda,
Yamaha,
Suzuki,
Kawasaki

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,
- The minimum Local Content Requirement (LCR) was set at *54 % for passenger cars*, *70% for one-ton pickup trucks*.

The *second* stage (1971-1986)

How Thailand created the auto parts industry

- High import tariffs, a ban on imported CBU as well as new assembly plants, and localization of diesel engine.
- Assemblers of pickups must use locally manufactured engines; **imports of diesel engines were banned.**
- Because it was still an Infant industry, it needed protection from tariff walls.
- 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 Mitsubishi “Champ” to Canada.



Finally, in 1993 the ban on imported CBUs was lifted

- By 1993, the protective tariff system on automobiles and parts were lifted: no more ban on imported 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.

Then the industry was hit by 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

- 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

Export orientation

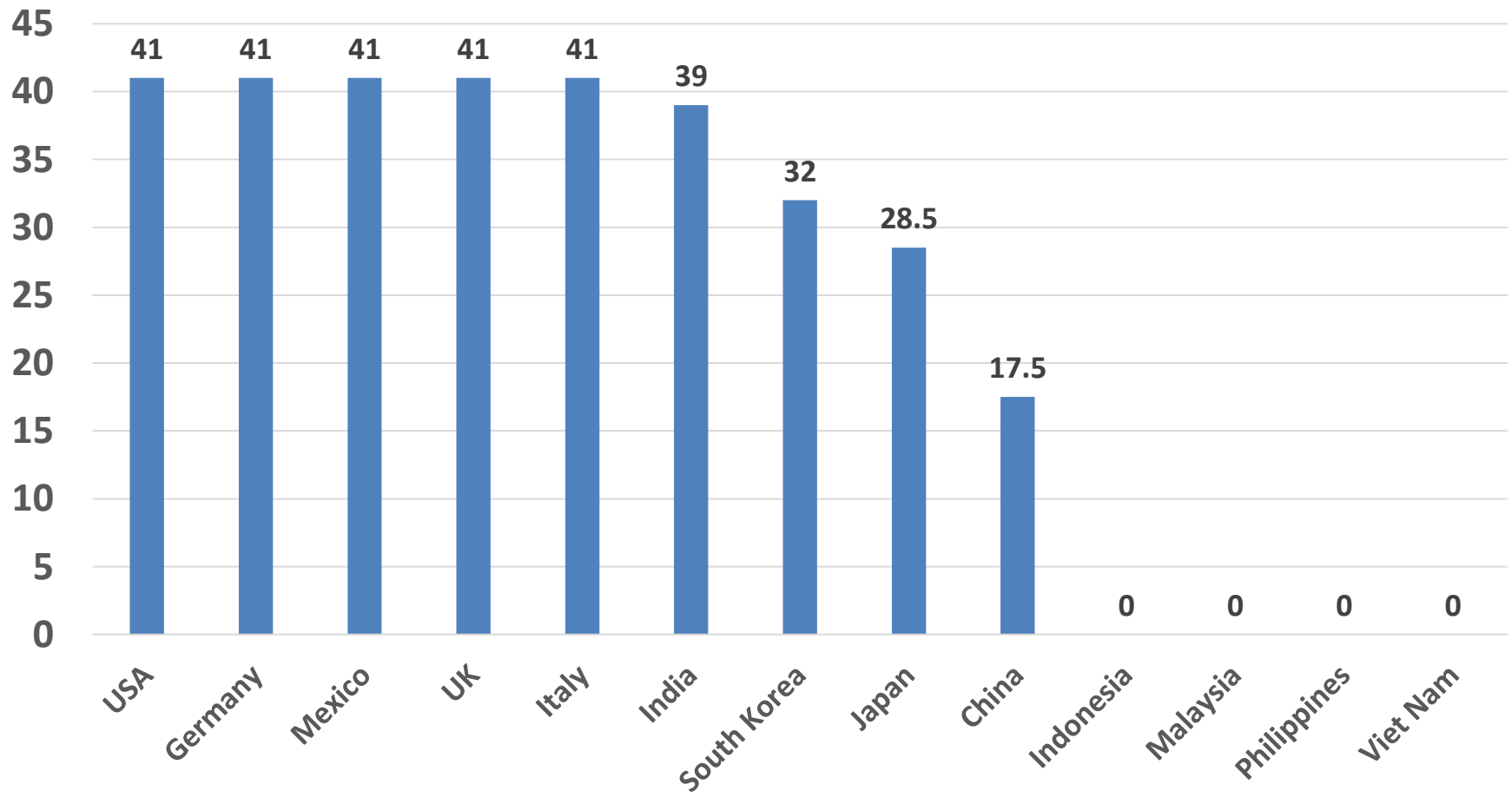
the post 1997 era: no more LCR

- By the end of 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.***
- The ***backward linkages*** of car assembling industry is the ***auto-part industry.***

The 2019 average tariff (estimated) applied by Thailand



On the relationship with 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: **investment creation**.

Backward Linkages of processed shrimp

- The growth of an industry leads to the growth of the industries that *supply inputs* to it".
- Processed shrimp industry is linked backward with shrimp farming, shrimp feed industry, soybeans, and fishing industry.
- 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.
- *The steel industry is linked to coal, iron ore mining: Booming Chinese economy is linked to Australia's exports of coal and iron ore.*

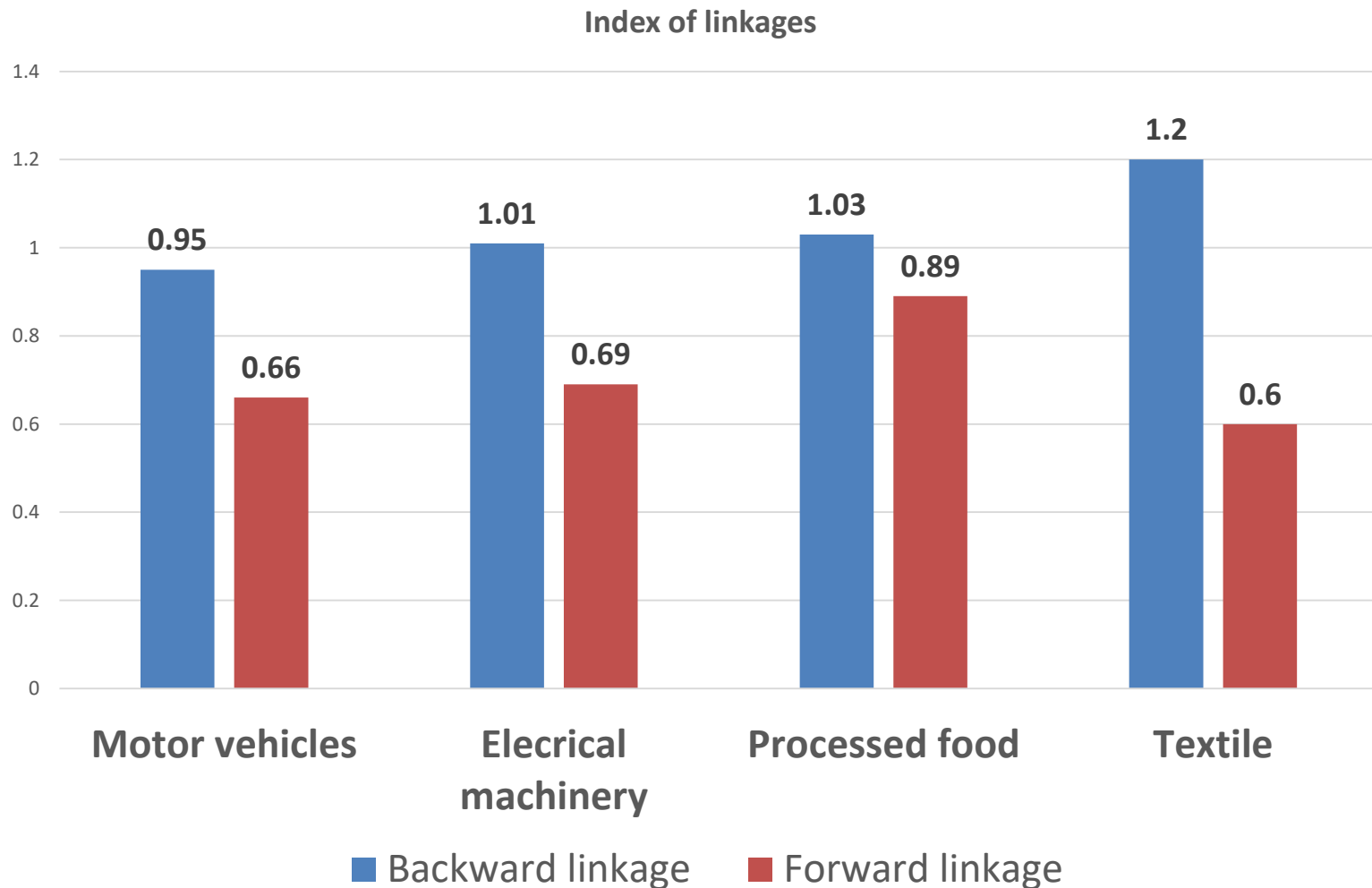
Forward Linkages of steel industry

- 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

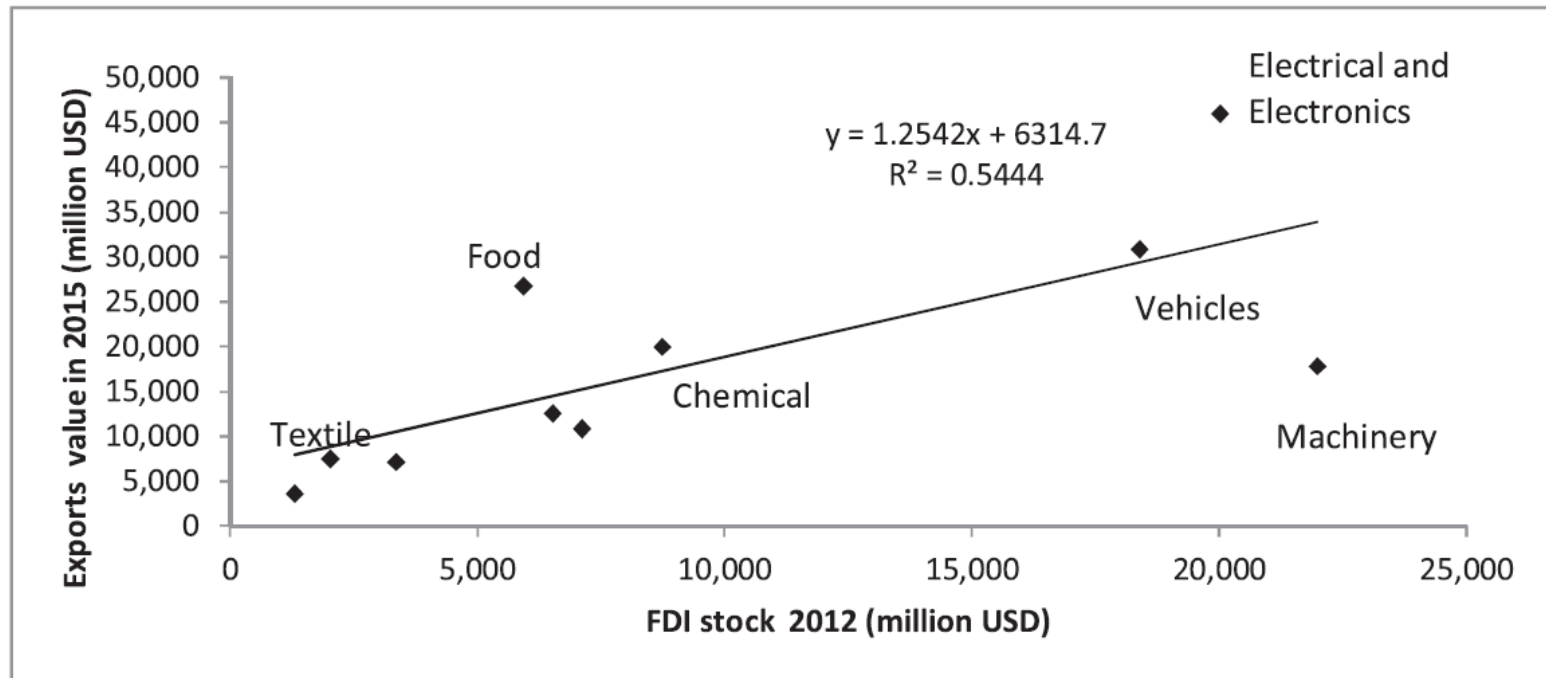
- Exports of automobiles and auto parts have continually increased since 1997, as many foreign conglomerates have moved their production bases to Thailand.
- *In September 2017, the last Toyota car was produced in Australia. GM and Ford had already left Australia earlier.*
- The strong auto-parts industry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

Lack of process engineering

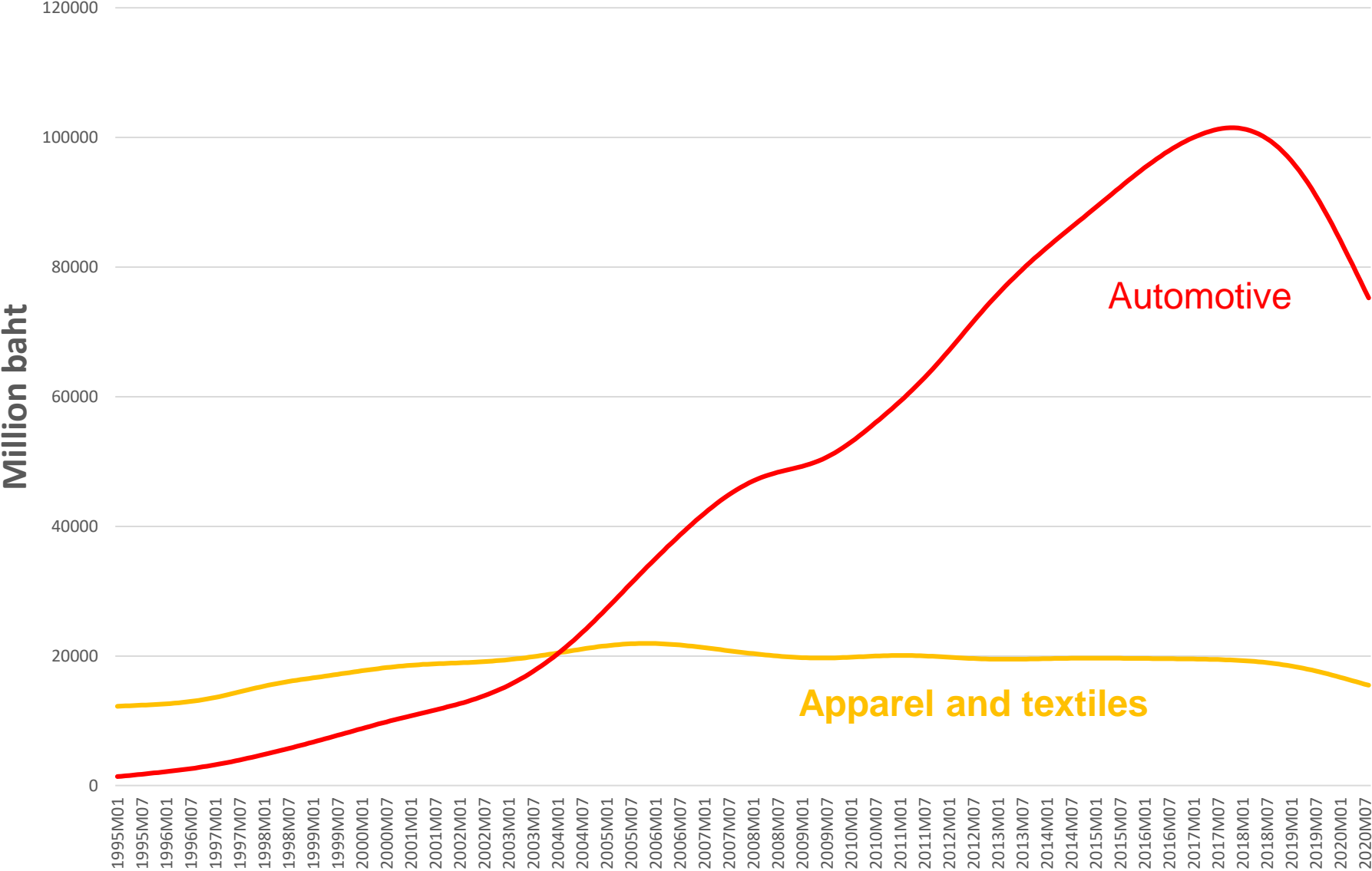
- Auto-part plants in Thailand have a *limited* role in **process engineering**, because suppliers in Thailand need not perform designing, tooling, or production process themselves.
- That decisions and tasks are determined and performed by the headquarters in Nagoya and Stuttgart.

3. The Role of FDI

Figure 1. Sectoral FDI stock and exports



Trends of Manufactured Exports: Jan 1995-Aug2020



APPAREL & TEXTILE AUTOMOTIVE

Automobile Hub

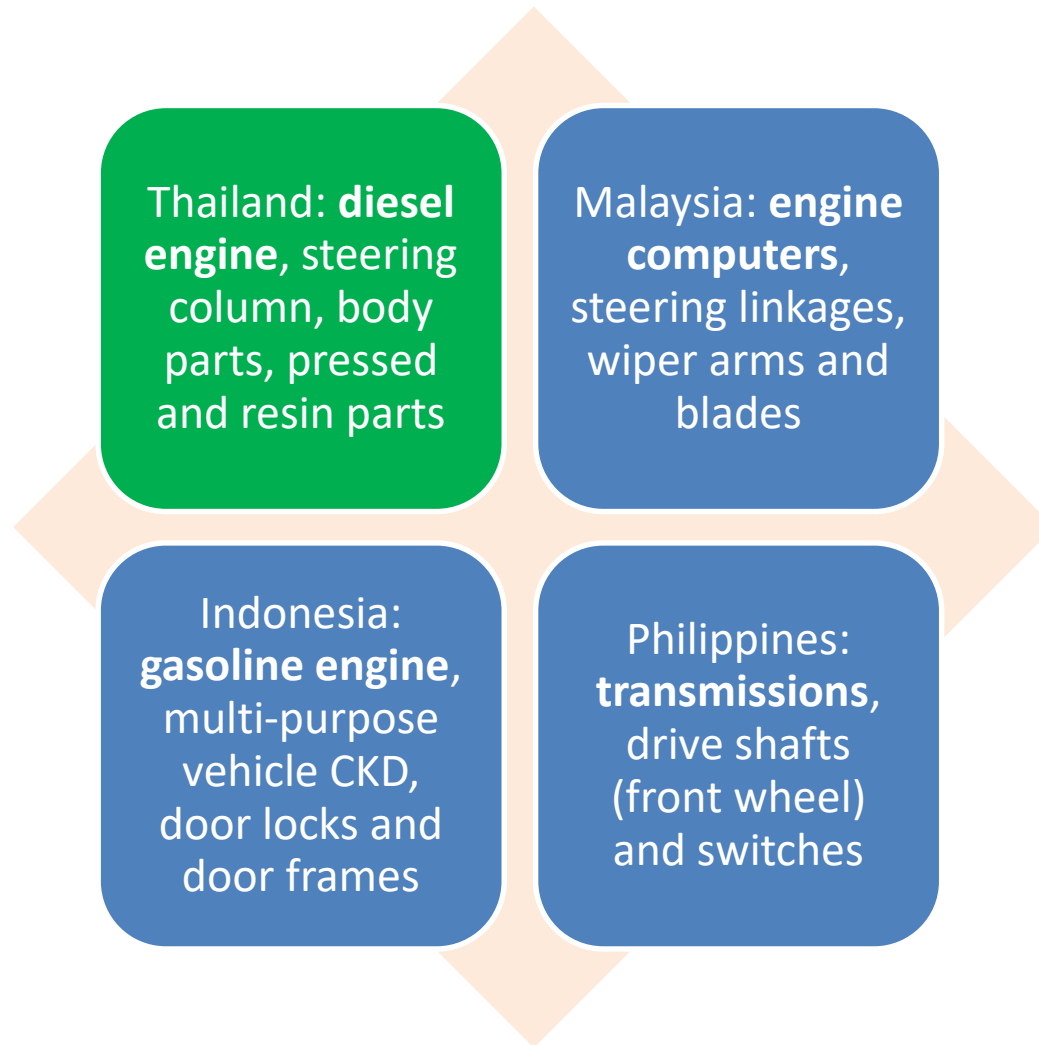
- Because of automobile assemblers' globalization strategy for production efficiency, Thailand was selected as a production hub in the region.
- Isuzu (partly owned by GM) and Toyota transferred all of their pickup production in Japan to Thailand.
- However, Japanese firms were widely criticized for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

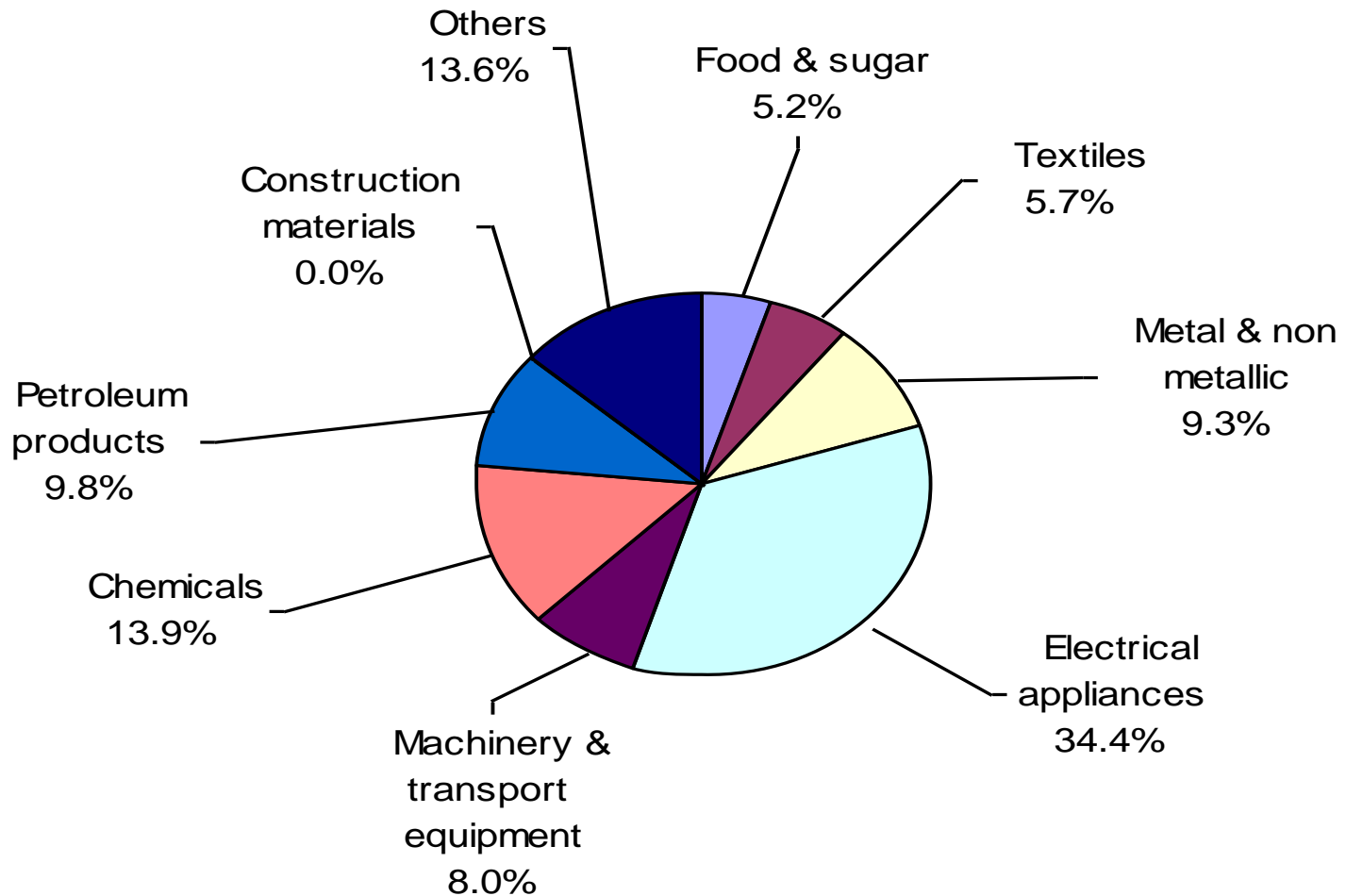
Thailand:
pressed parts,
meter parts, and
cylinder blocks

Malaysia:
bumpers,
dashboard,
constant velocity
joints

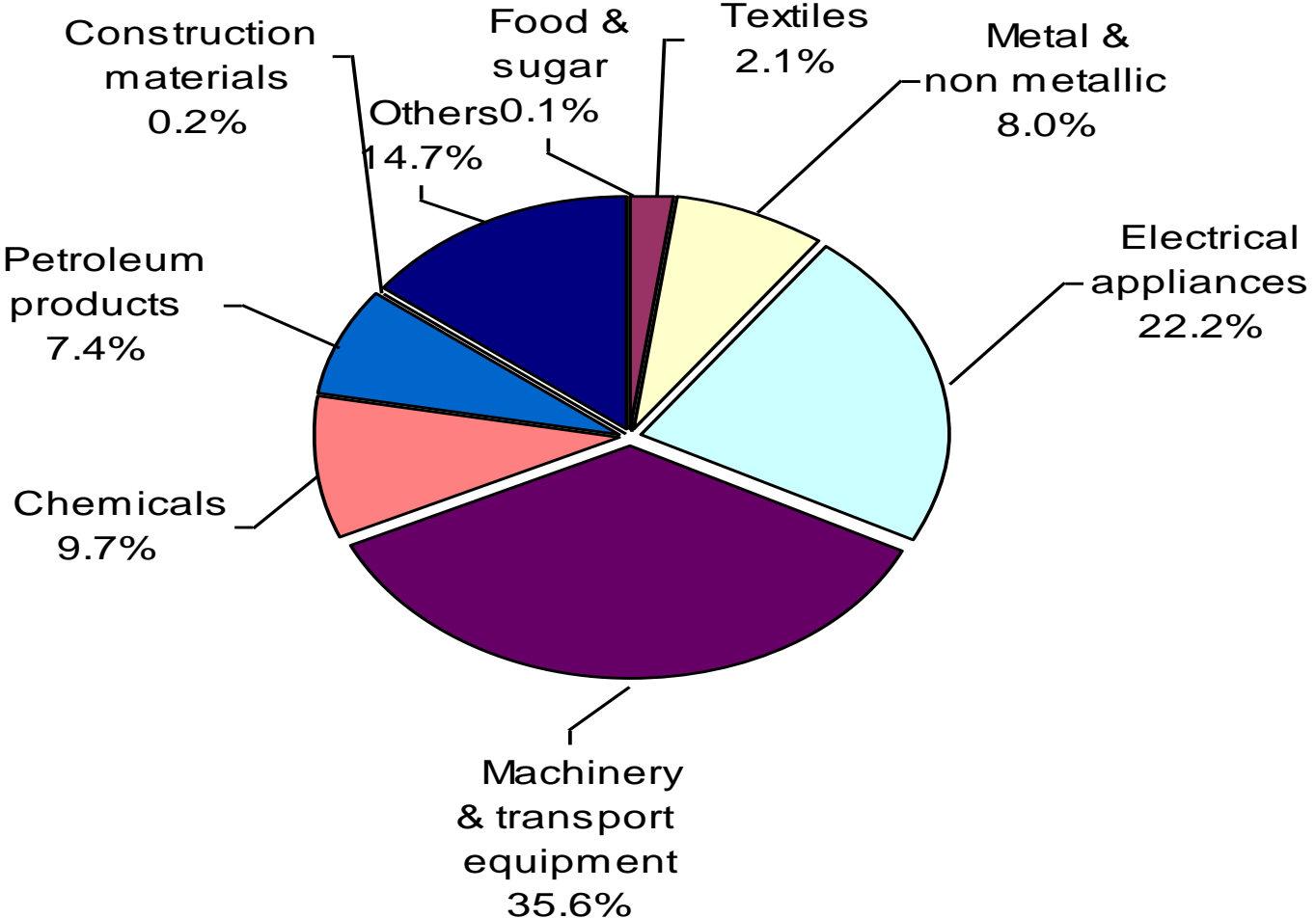
Indonesia:
cylinder blocks
and heads,
engine valves,
automatic
transmissions

Philippines:
manual
transmission,
exhaust parts,
pedals

Net FDI by Sector: 1990

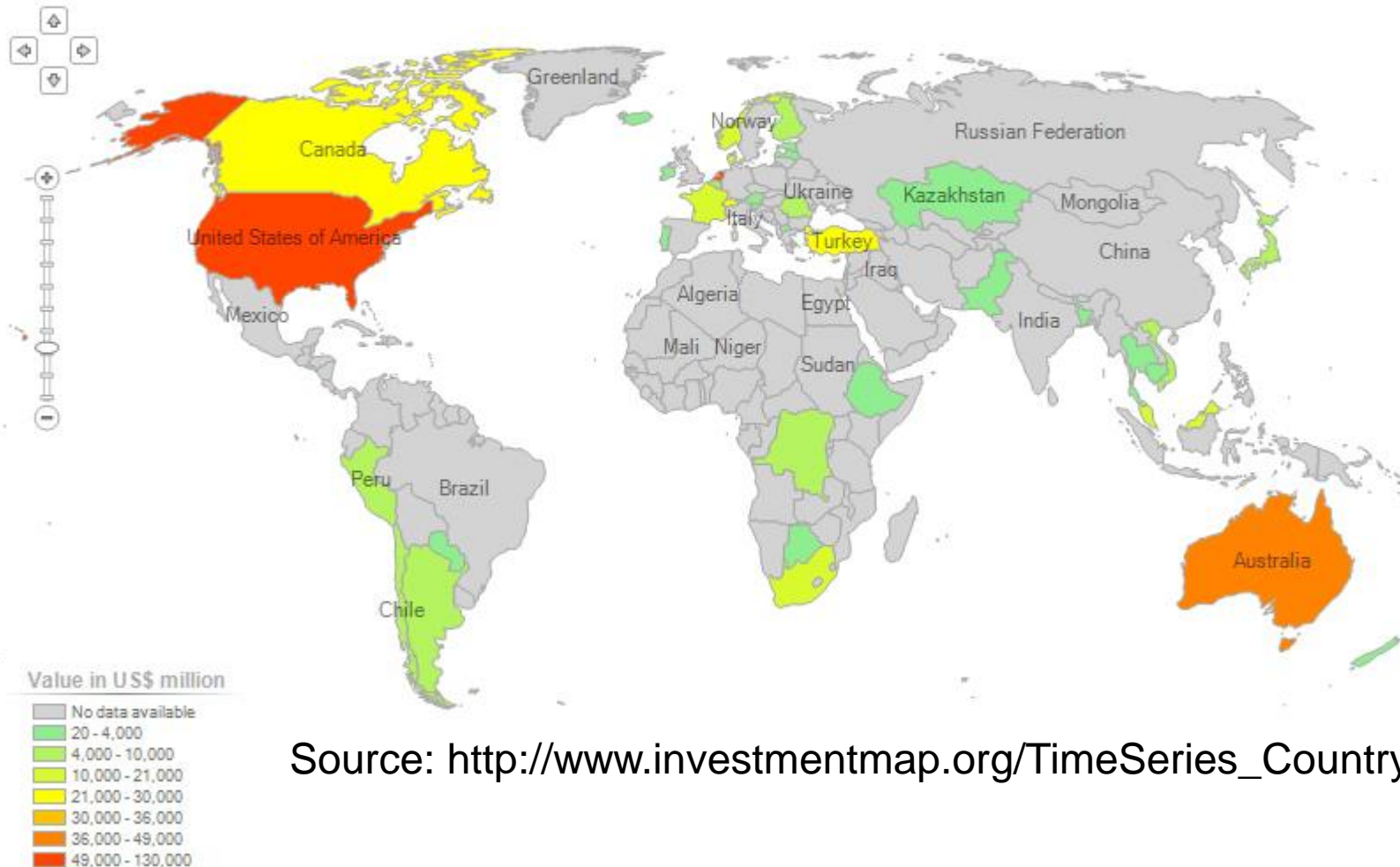


Net FDI by Sector in 2006



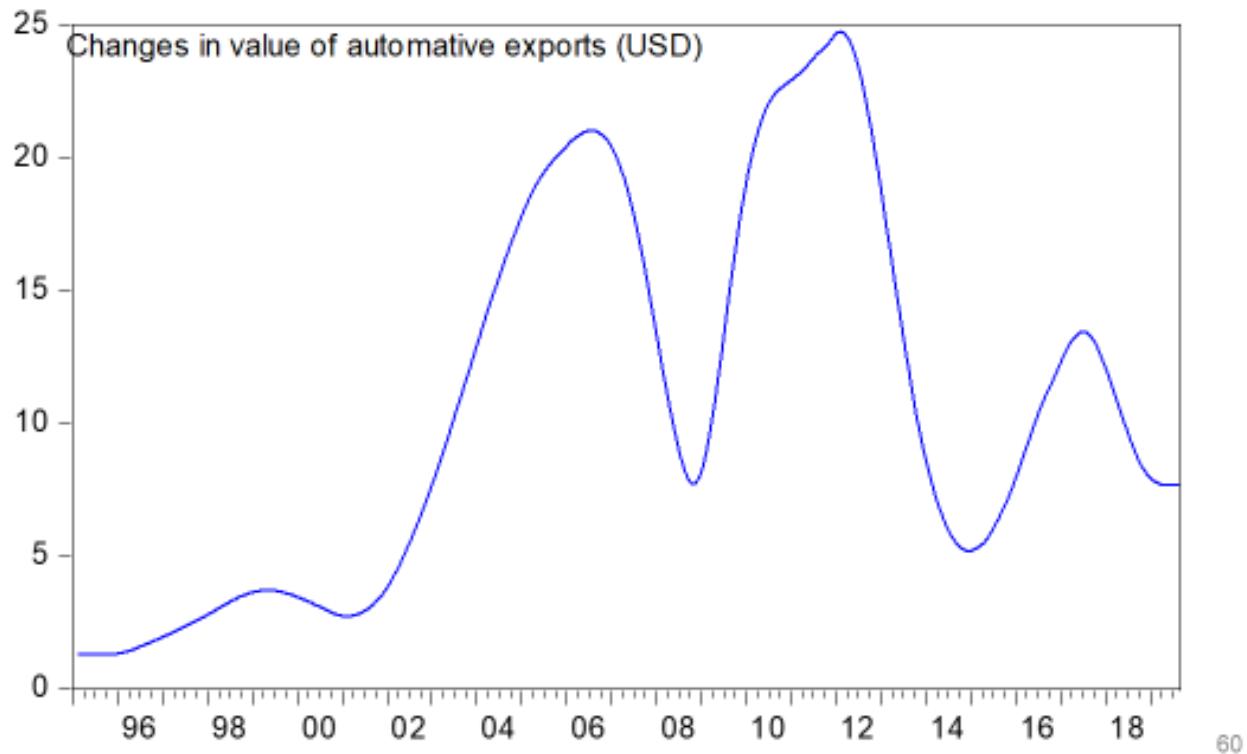
Inward FDI stock in transport latest available year

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



4. Impact of Global Recession and China slowdown

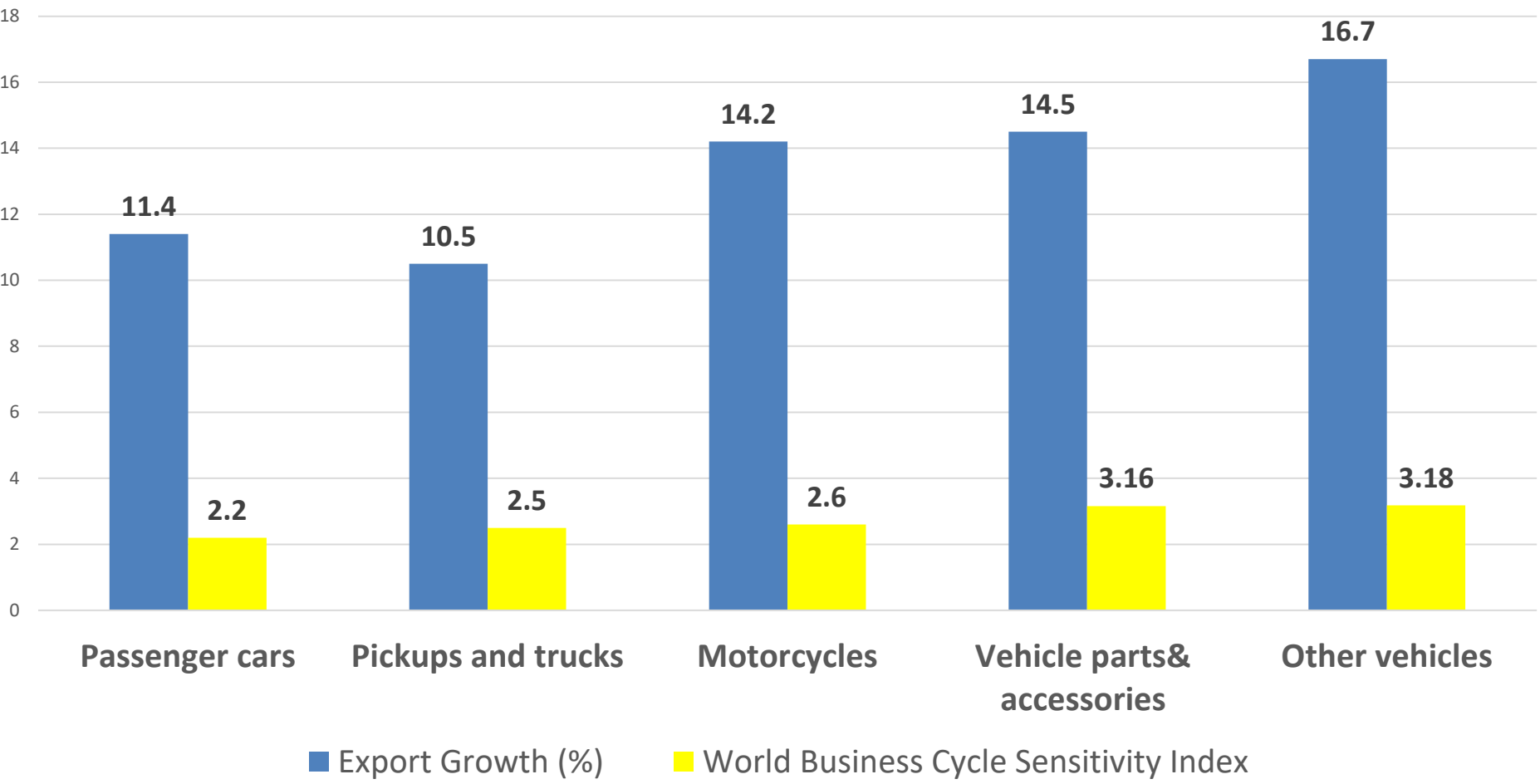
Business cycle sensitivity of automotive exports



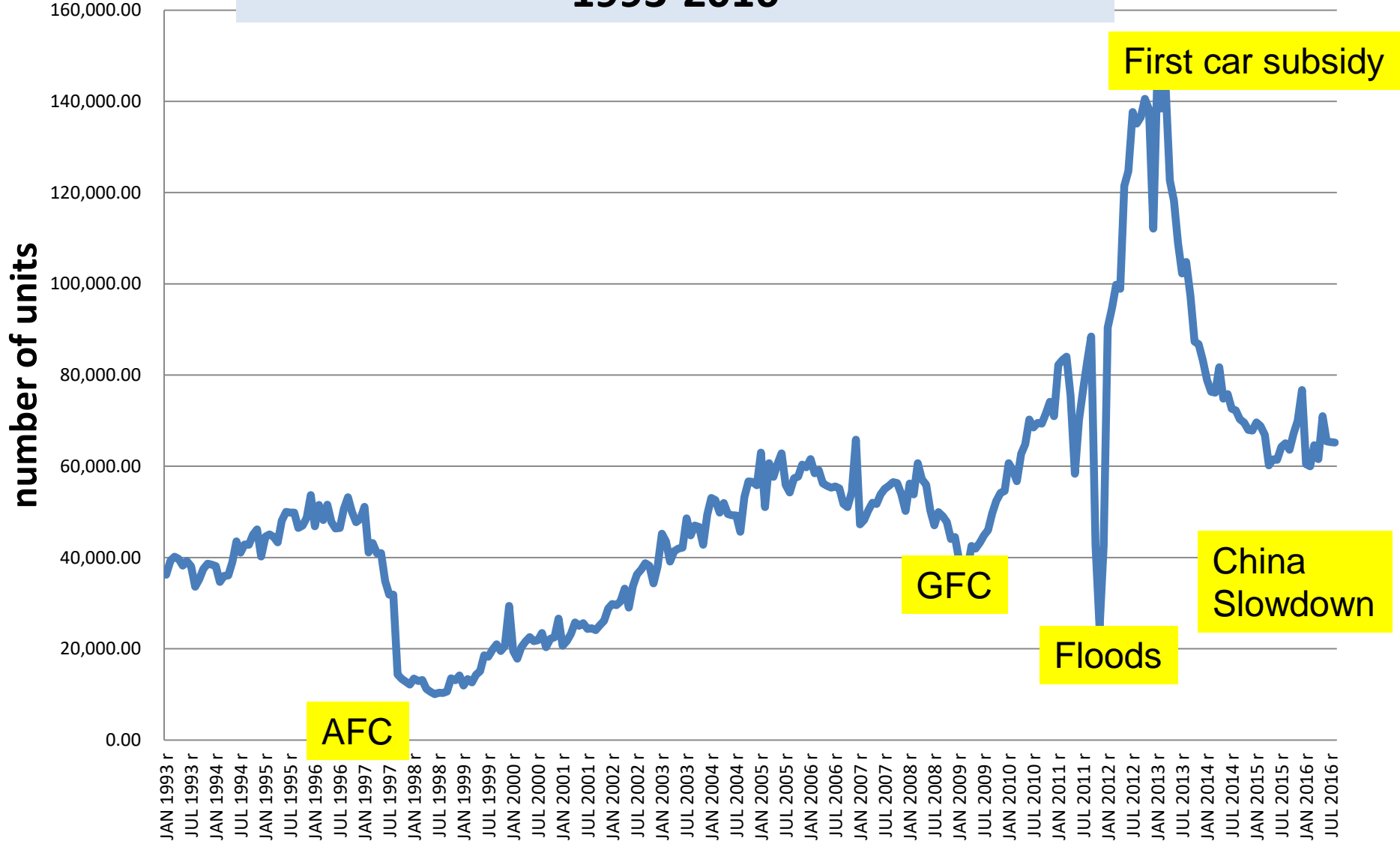
Impact of the global recession in 2009

- 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 Eco-car 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 *Honda, Brio, B-RV, Mitsubishi Mirage, Nissan March, Toyota Yaris, and Suzuki Swift*, all of which have **1200 cc** petrol engines made in Thailand.

5.2 Electric Vehicles (EV)

- 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 *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.

Recent Developments and New Policies

Eco-car program
2007-2015

Electric Vehicle
program 2016
Environment and
Fiscal incentives

First-time car buyer scheme:
September 2011 to December 2012

Global Financial Crisis (2009) , Floods (2011)
China's Slowdown, shifting from manufactures to
service economy, export-led to domestic demand
led growth: New Normal Growth (2014)

TO BE OR NOT TO BE, THAT IS THE QUESTION

- 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,"

Dare to dream: Targets in 2030

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.

Charging stations

- Up to 80 charging outlets have been built since 2016 by 11 state and private power firms, but the facilities are operated separately and serve different EV types.
- Availability of charging facilities will help the government attain its EV goal, following its announcement of an EV roadmap in March 2015 to produce up to 1.2 million EVs by 2036
- Their facilities to serve both **battery electric vehicles** (BEVs) and plug-in hybrid electric vehicles (PHEVs).

Imported BEVs

- EVAT expects the number of registered BEVs this year will grow almost 318% to 5,000 units, compared with 1,572 units registered last year.
- However, none of them were made in Thailand.
- Officials are keen to make Thailand a regional **hub of EV production**, putting it among the country's 12 targeted S-curve industries.

BMW's plug-in hybrid vehicle assembly line at the manufacturing plant in Amata City Industrial Estate, Rayong.



Electric BMW models

Bangkok Post

August 13, 2020

- BMW Group Manufacturing Thailand, the local unit of the German luxury car maker, produces **717 models** of BMWs at its Rayong plant, including the BMW 3 Series, 5 Series and 7 Series.
- The group also assembles **four BMW plug-in hybrid** models: 330e, 530e, X5 xDrive45e and 745Le xDrive.
- There are **nine electric BMW models** available in Thailand.
- The imported cars carry a hefty price tag thanks to an 80% import tax, making an electric model like the **BMW i3s cost 3.73 million baht.**

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.

Core Hybrid System is offered for the first time to a foreign company

Toyota to provide China's GAC with hybrid system

TOKYO/NAGOYA -- Toyota Motor will provide its gasoline-electric hybrid system to China's Guangzhou Automobile Group, Nikkei has learned. This is the first time Toyota will offer its core hybrid system to a foreign company.

Thailand's approach to EV

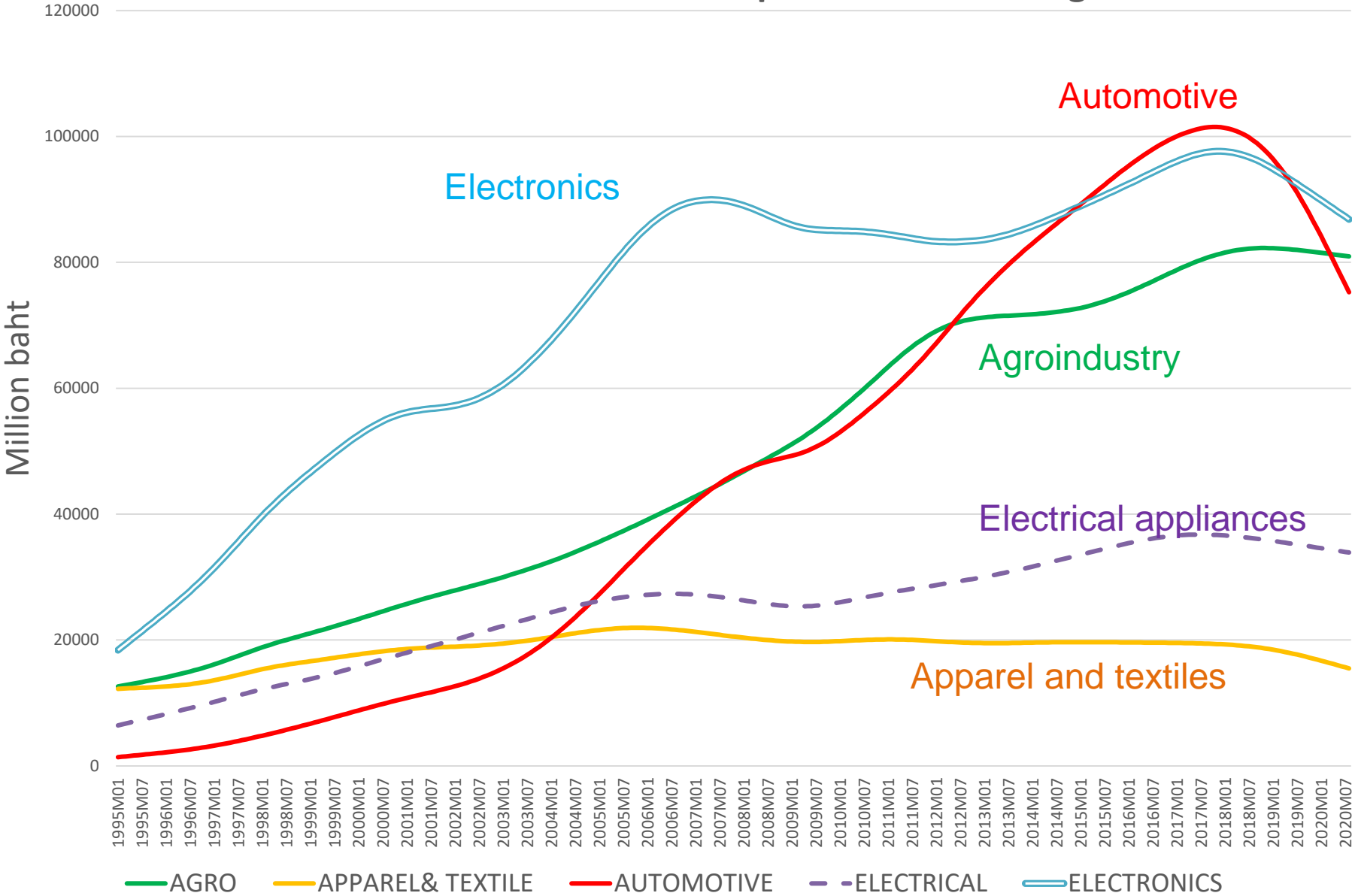
- In 2017, the government kicked off promotional privileges for car and auto part makers covering three types of EVs: hybrid EVs, plug-in hybrid EVs and battery EVs.
- The privileges include tax holidays of 5-8 years and import duty exemptions for cars and machinery.
- The Board of Investment granted an incentive program for EV production, with capacity of 125,000 units a year and investment value of 15.6 billion baht.

Competitive EV pricing targeted

7 OCT 2020

- The Industry Ministry is pushing ahead with its ambitious plan to bring prices of electric vehicles (EVs) closer to those of traditional fuel-powered cars by **reducing the import duty on auto parts used to assemble EVs in Thailand.**
- Industry Minister expects the taxation measure to help increase demand in Thailand for EVs, which are still costly, and at the same time support state measures to curb hazardous PM2.5 dust emitted by old car engines (**positive externality**)
- "The government believes tax reductions will make EVs inexpensive, adding that the current tax rate stands at 80% of auto part prices".
- Other factors taken into consideration include the state plan to increase the number of EVs in the country and **affordable EV** prices for buyers, which may range from **700,000 to 800,000 baht.**

Trends of Manufactured Exports: Jan 1995-Aug2020



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