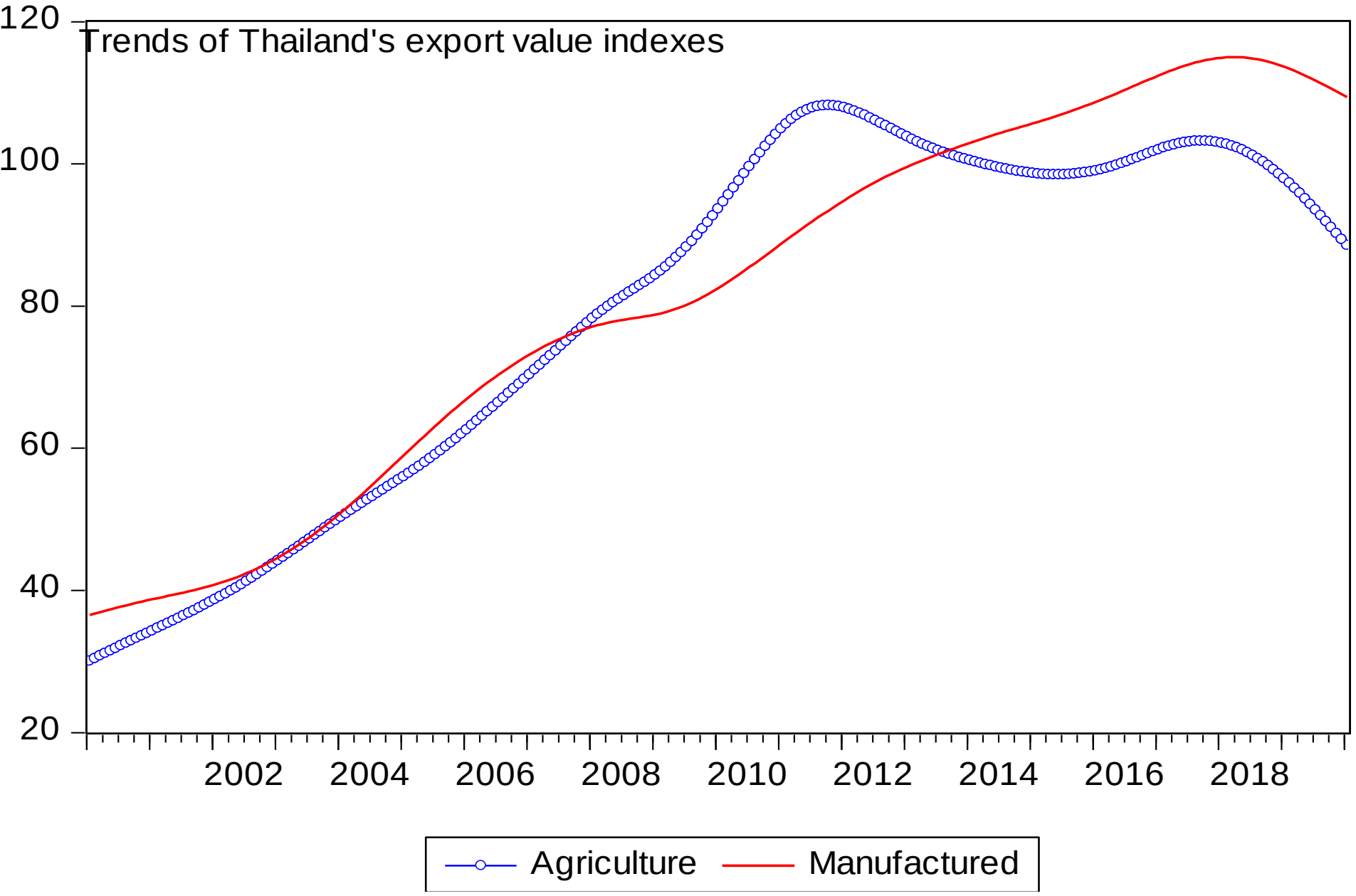
Challenges to Thailand's Industry Electronic Equipment and Electrical Appliances

Bhanupong

Lecture 16


Trends of Thailand's export value indexes
120
100
80
60
40
20
2002
2004
2006
2008
2010
2012
2014
2016
2018
Agriculture
Manufactured

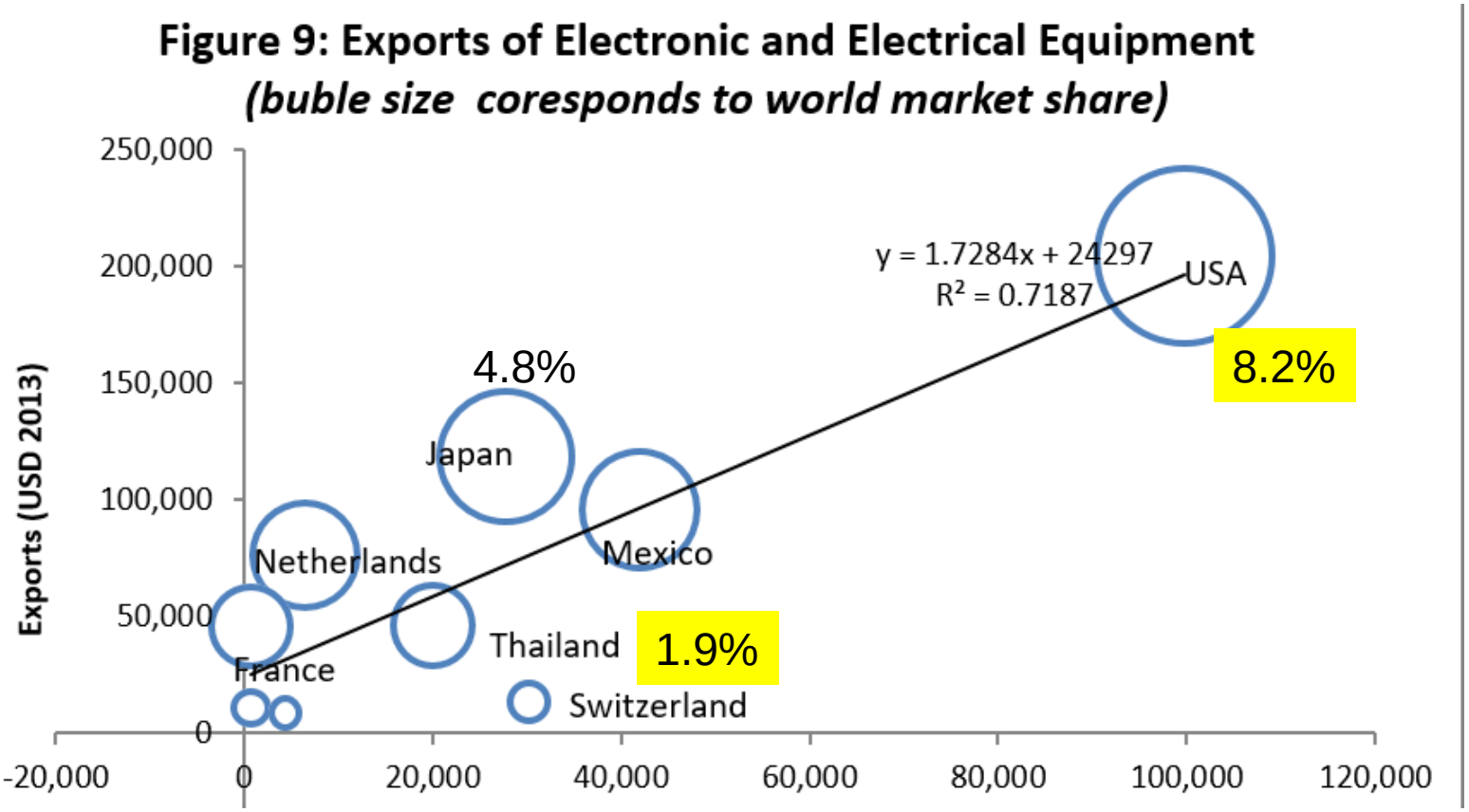
Course Syllabus
Lecture 16

- **The rise and fall of Thailand's export-oriented industries**
- We explore electronic equipment and electrical appliances industry
- While facing non-tariff barriers imposed by developed countries, these industries are still leading exports of Thailand.
- Does the success of these industries bode well for the resilience and dynamism of the EEA industry?

Key words

1. FDI and exports
2. Vulnerability, resilience, and competitiveness
3. International product fragmentation
4. Strategic industrial policy

1. Inward FDI stock and exports



Stock of Inward FDI

IT- led growth hypothesis

"Countries that invested more in Information Technology would ***achieve*** consistently higher productivity and income growth rates."

How do we verify this hypothesis?

What are the caveats of this hypothesis?

Samsung *products amounted to 15 % of Korea's GDP*

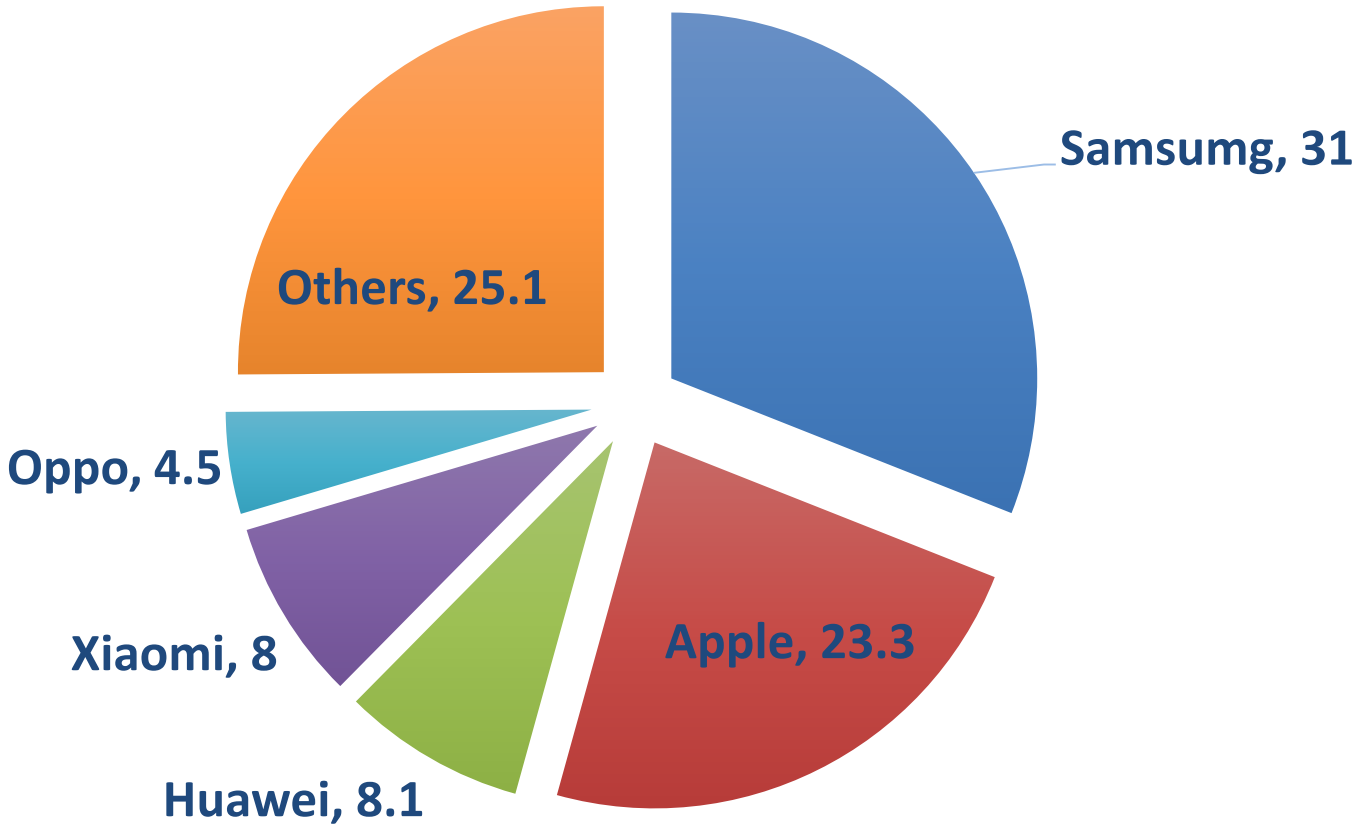
Samsung mobile phone has 22% of world market share, iPone 12% in 2016.

(caveat emptor = buyers must beware of products they are buying)

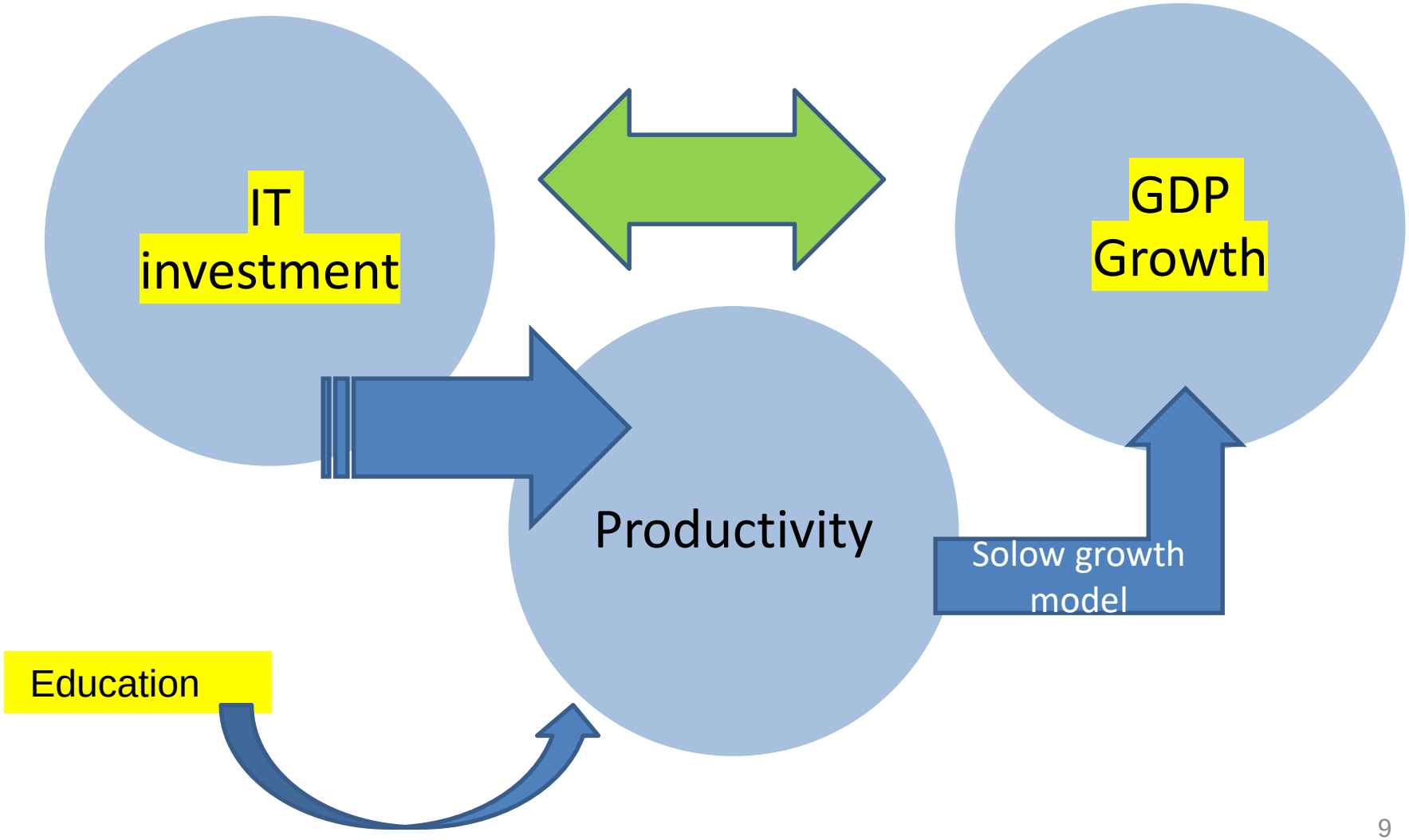
Name your smartphone

- It is becoming ever clearer that the smartphone market is in a recession. The contraction trend first became apparent in November, when analyst figures showed shipments had declined for four straight quarters.
- In 2018, China's smartphone shipments were down by a worrisome 15.5%.
- Why is the smartphone market contracting? Largely because smartphones haven't evolved much in recent years.
- Even cheap phones are powerful enough for most tasks these days, while further increases in screen resolution won't mean much to the human eye.
- There are also no new "killer apps" that require an upgrade.

Worldwide Market Share of smartphones
Feb 2019



IT-led growth paradigm

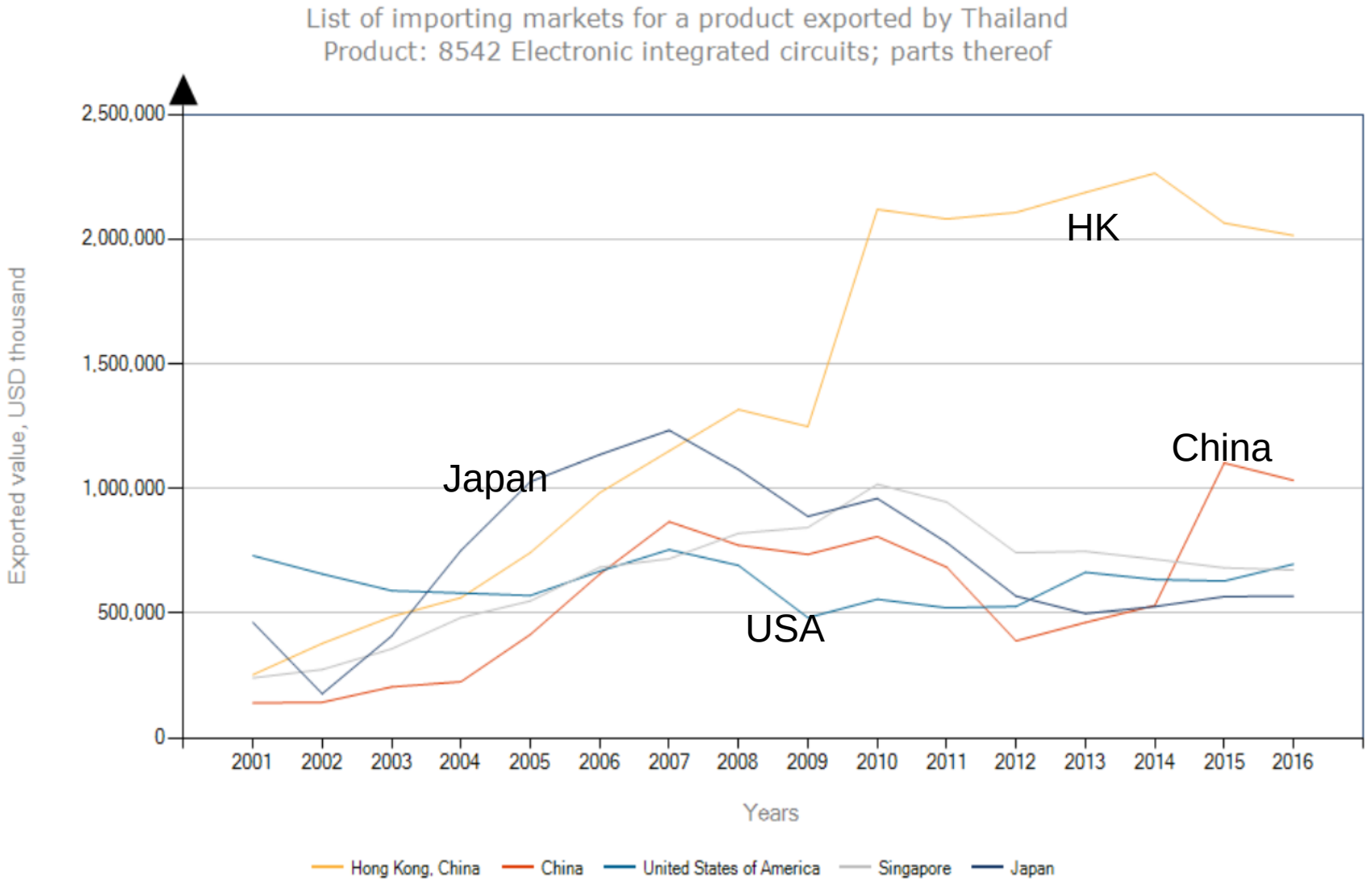


2. The EEA sector is extremely sensitive to world business cycle

- The year 2001 witnessed another poor performance of the Thai economy, when the GDP growth rate dropped to 2 %.
- The IT industry suffered the same contractionary impact of slowdown in world GDP growth
- When the economy rebounded in 2002, the growth of the industry surpassed the GDP growth.
- We observed similar situation during the global recession in 2009 and the rebound of EEEA exports in 2010.
- **There has been a rebound of EEA exports after the world economy recovered in 2018**

Thailand's exports of electronic integrated circuits (IC)

product 8542



Changing comparative advantage and changing technology

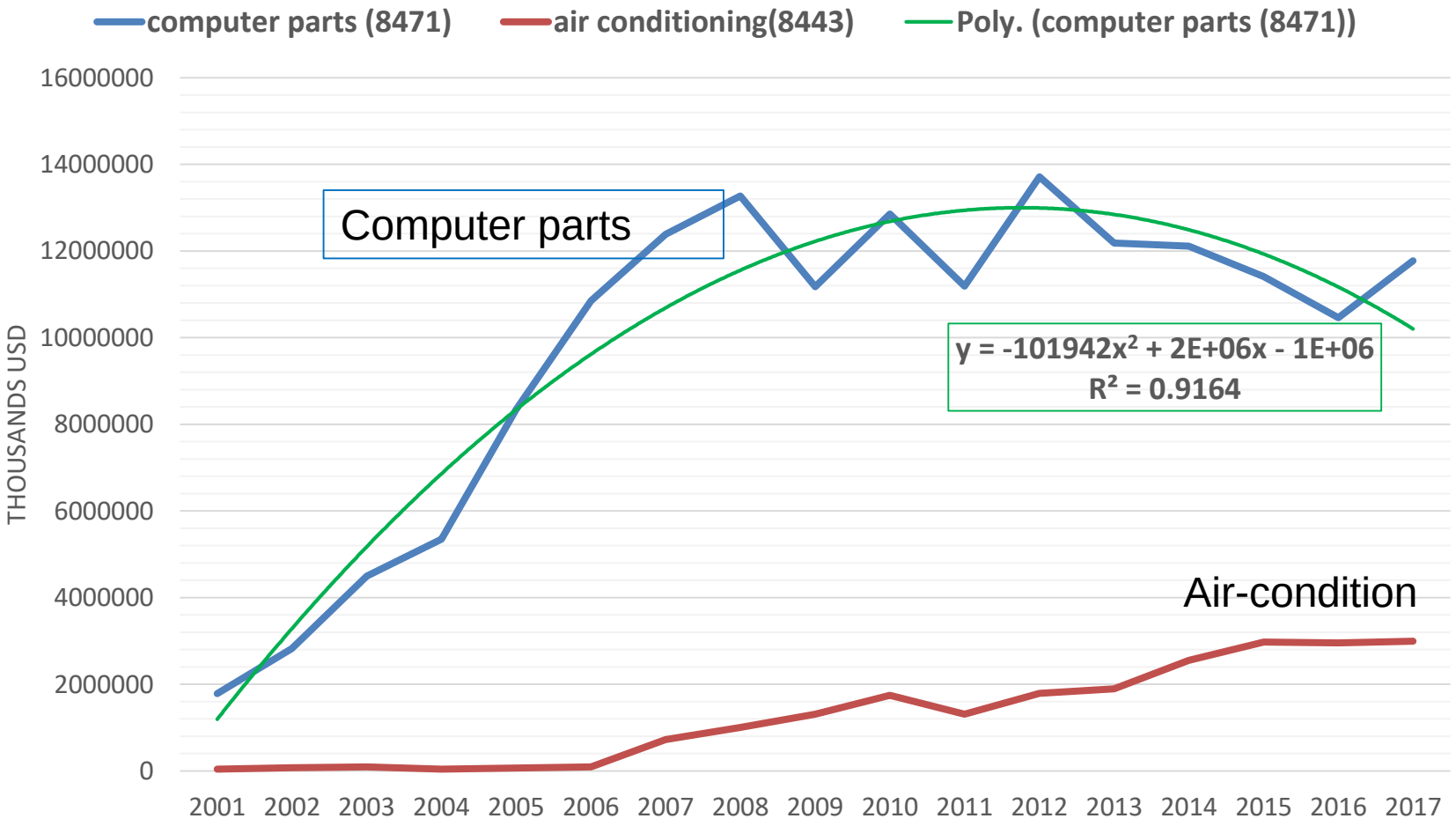
- Computer and Hard Disc Drive (HDD) *had* the most promising trend (note the past tense).
- Output of computer ***tripled within 5 years***, whereas output of HDD rose by 250 percent between 2000 and 2004.
- The output of integrated circuit has a moderate growth, while computer keyboard, printer, and monitor has been declining.
- Thailand cannot compete with cheap imports from low-cost countries.
- There is also a process of ***creative destruction (Schumpeter: A foreshadow of the Disruptive Technology)*** driven new technological innovation
- A bulky desktop will soon be replaced by an ultra-thin lap top.

Major producers of HDD in Thailand

- Hitachi Global Storage Technology
- Seagate Technology
- Western Digital Corp
- Toshiba

Major Exports of Electronic Equipment and Electrical Appliances

Product 84



HDD vs SSD

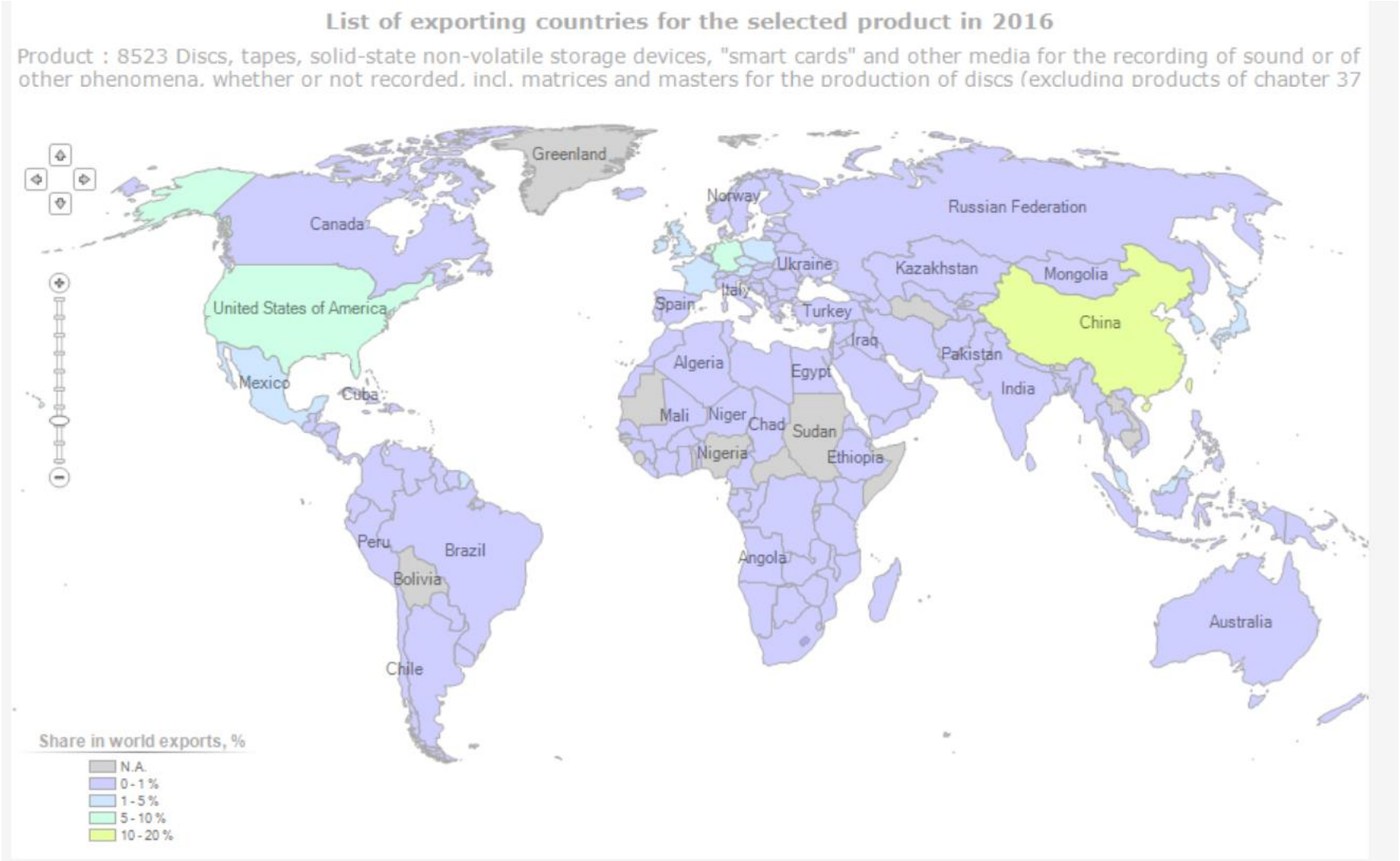
- Sales of **hard disk drives** (HDD) have been on the decline this year because of slow demand for personal computers and tough competition from S**olid-State Drives** (SSD).
- While Seagate Technology and Western Digital Corp. hope that demand of HDDs will pick up in the coming quarters, a market analyst claims that it will decline again.
- Moreover, **in the long-term, HDD makers will have to lower the price of their products because of competition.**
- ***Sales*** of SSD increase at the expense of HDD.

Sales of HDD drives dropped in 2016
Makers had to cut their prices

Do you like your storage cheap and plentiful (HDD), or fast and safe (SSD)?

Share in world exports: SSD

Product 8523



3. Product fragmentation:
Changing comparative advantage

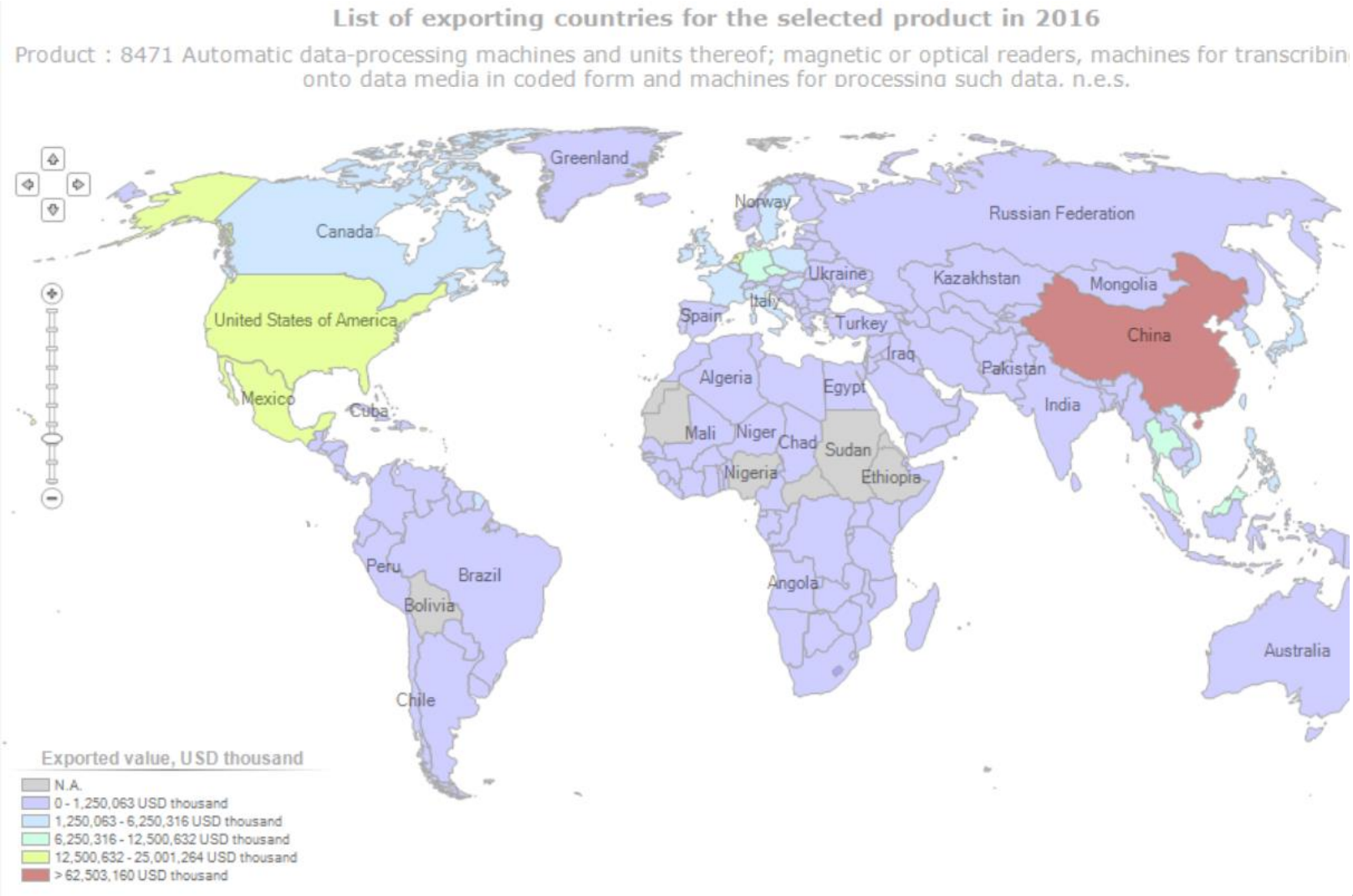
- The changing comparative advantage has made some of Thailand's EEA products become less competitive.
- **Product fragmentation** in manufacturing process generates **intra-industry trade**, where firms in different countries engaging in trading parts and components.

Vertical *infra*-industry trade

- The new trade pattern differs from the **inter-industry** trade pattern where trade of different ***final goods*** or ***intra-industry*** trade where same ***intermediate goods*** with **different attributes** are traded (e.g. garment and textile).
- Electronics and electrical machinery industries can be **fragmented** because they are manufacturing industries which the technology allows “slicing the value chain.”

Exporters of automatic data-processing machines

Product 8471



International product fragmentation creates **structural interdependence**, intensifying the ***synchronization*** of world business cycle

- Cross-border dispersion of component production within vertically integrated production process.
- **Each country specializes in *a particular stage* of production processes**.
- Rapid growth of trade in parts and components at a rate ***exceed***ing that of trade in final goods because a good crosses multiple borders while in the production process.
- ***Deepening structural interdependence*** **of the world economy intensifies the Synchronization of World Business Cycle**

Trade fragmentation (Network Trade)

Production and trade networks result from the strategies of *multinational corporations* which shifted from exports to *international production* to reduce production costs and to react quickly to market and technological changes.

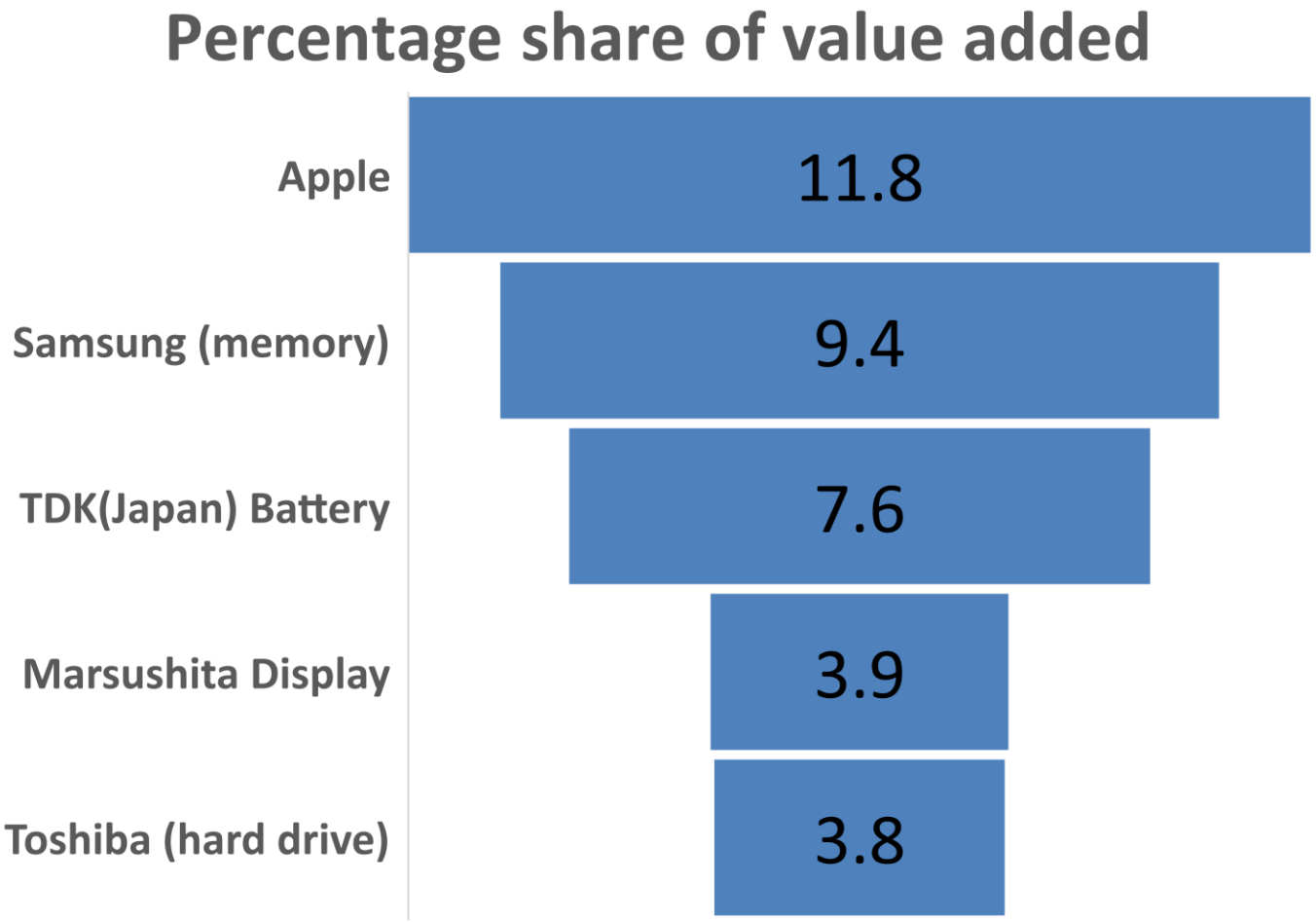
The iPhone

- Even though the retail price of iPhone 4 was $549 in 2010, the value captured through assembly in ***China was around $10 (1.8%),*** whereas the value captured by ***Apple was $312 (58.5%)***
- ***The rest goes to other companies in different countries: imported components***

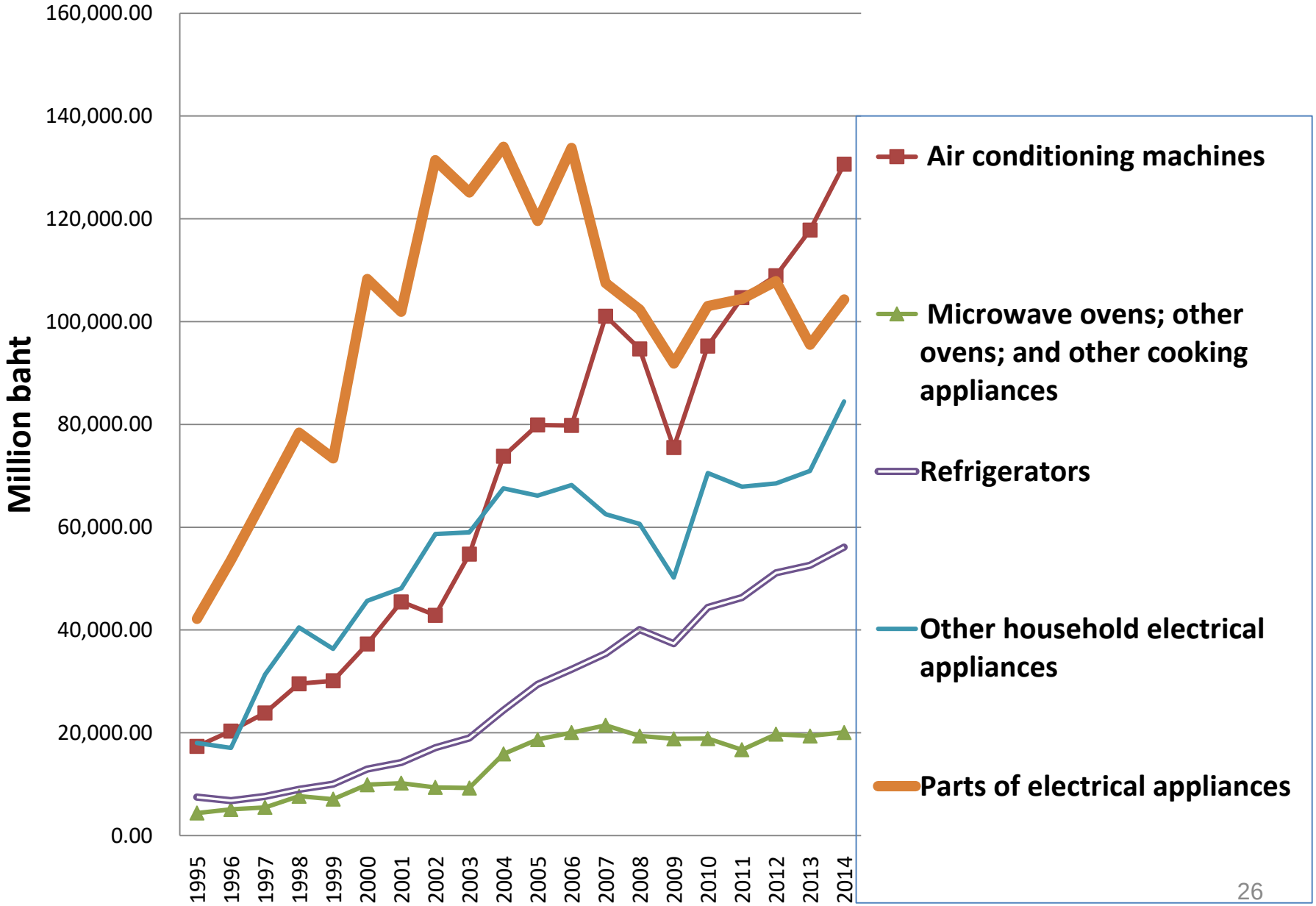
Global Value Chain (GVC)
The case of iPod

- iPod was designed by Apple in the US and *assembled* by Inventec Appliances in China, its intermediate inputs come from various countries.
- The **value added** measured by operating margin was distributed across firms in different countries.
- The large export share in the world of China ***does not mean*** that industry has a large value-added if its main production process of simple **assembly activities**, based on imported intermediate inputs.
- *The value-added* in China is very low even though iPod was assembled there.

Global Value Chain: The case of iPod



Thailand's Exports of Electrical Appliances



Changing pattern of Thailand's exports

- The share of high-tech exports rose from 45 percent in 1993 to about 60 percent of total Thailand's exports in 2000.
- The rising share in total exports of the high-tech products and the declining importance of labor intensive products demonstrate the changing pattern of comparative advantage of Thailand's industry.
- *The share of high-tech exports in 2019?*

Relatively low value added industry

- Thailand's **factor endowment** has been altered through massive FDI flows into "high-tech", rather than labor-intensive manufacturing sector.
- **Electronic products require only 13.6 percent of their input locally, resulting in heavily depending on imported raw materials.**

Higher fluctuations in global growth, higher volatility in EEA exports

- Exports of electronic products rely mainly on the strength of the world economy.
- Thailand's exports of the products fluctuate along the world trade volume.
- Thailand's export volatility is ***far greater*** than the volatility of the world trade growth.

EEA are export-orientated products

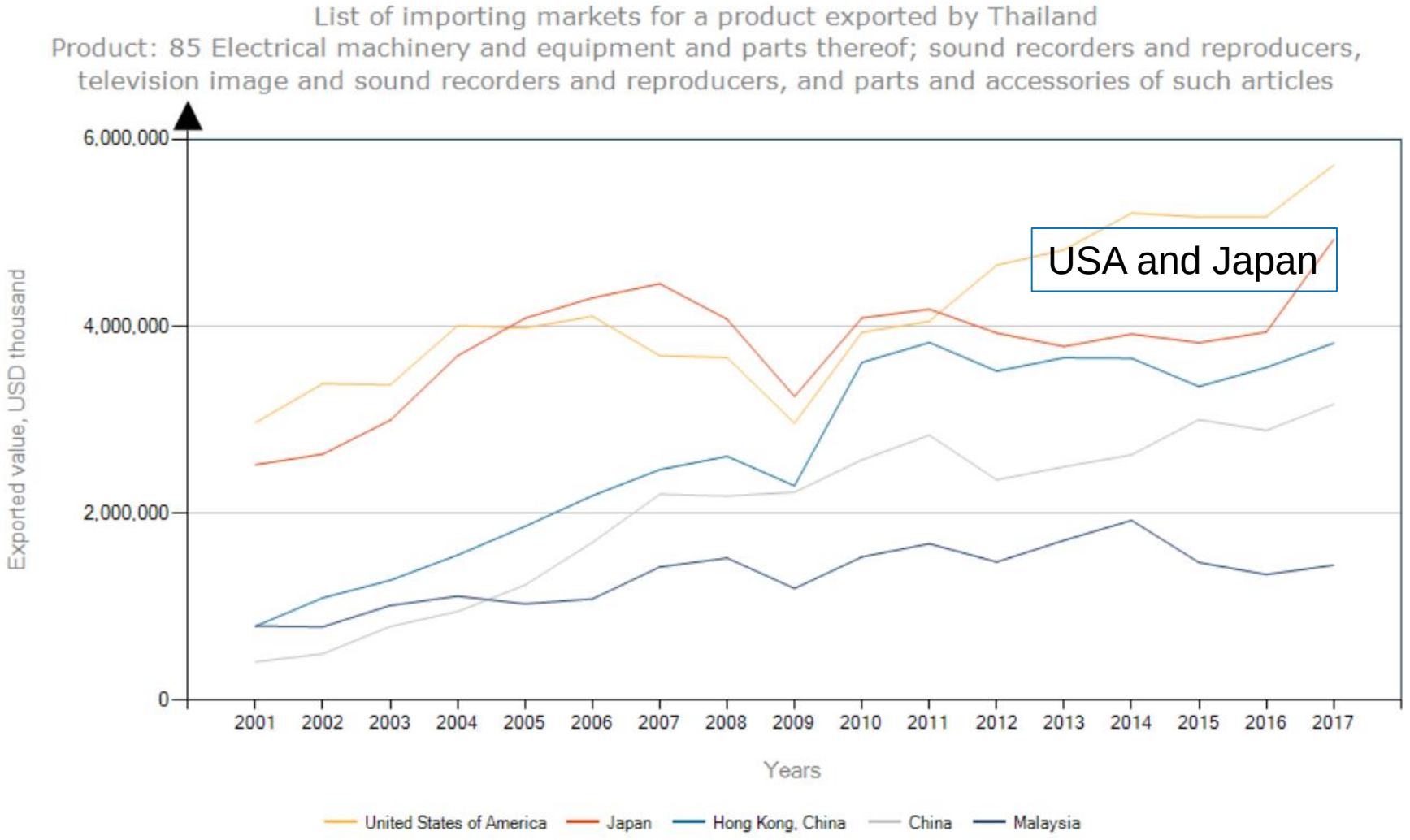
60%> X/Q> 30%

- ***Integrated Circuit (IC), Computer, Monitor, HDD, Printer***
- Canned pineapple and seafood
- Leather product
- TV, air conditioner, washing machine
- Rubber block and rubber gloves
- Wood furniture, glass sheet, leather footwear

As a price taker

- Dynamic ***supply response*** is the key to success to take the opportunity of the boom.
- Declining EEA prices would return after the world glut of EEA products.
- How to deal with ***temporary*** declining prices and excess supply?
- *Quantity adjustment and market reorientation are required*.

Thailand's exports markets of Electrical Machinery and Equipment: Product 85



Technical barriers: WEEE and ROHS

- Among the top importers of EEEA products from Thailand, the EU has the market share around 15 percent.
- The EU legislations that electronics manufacturers must comply are:

(1) Reduction of Hazardous Substances (ROHS),

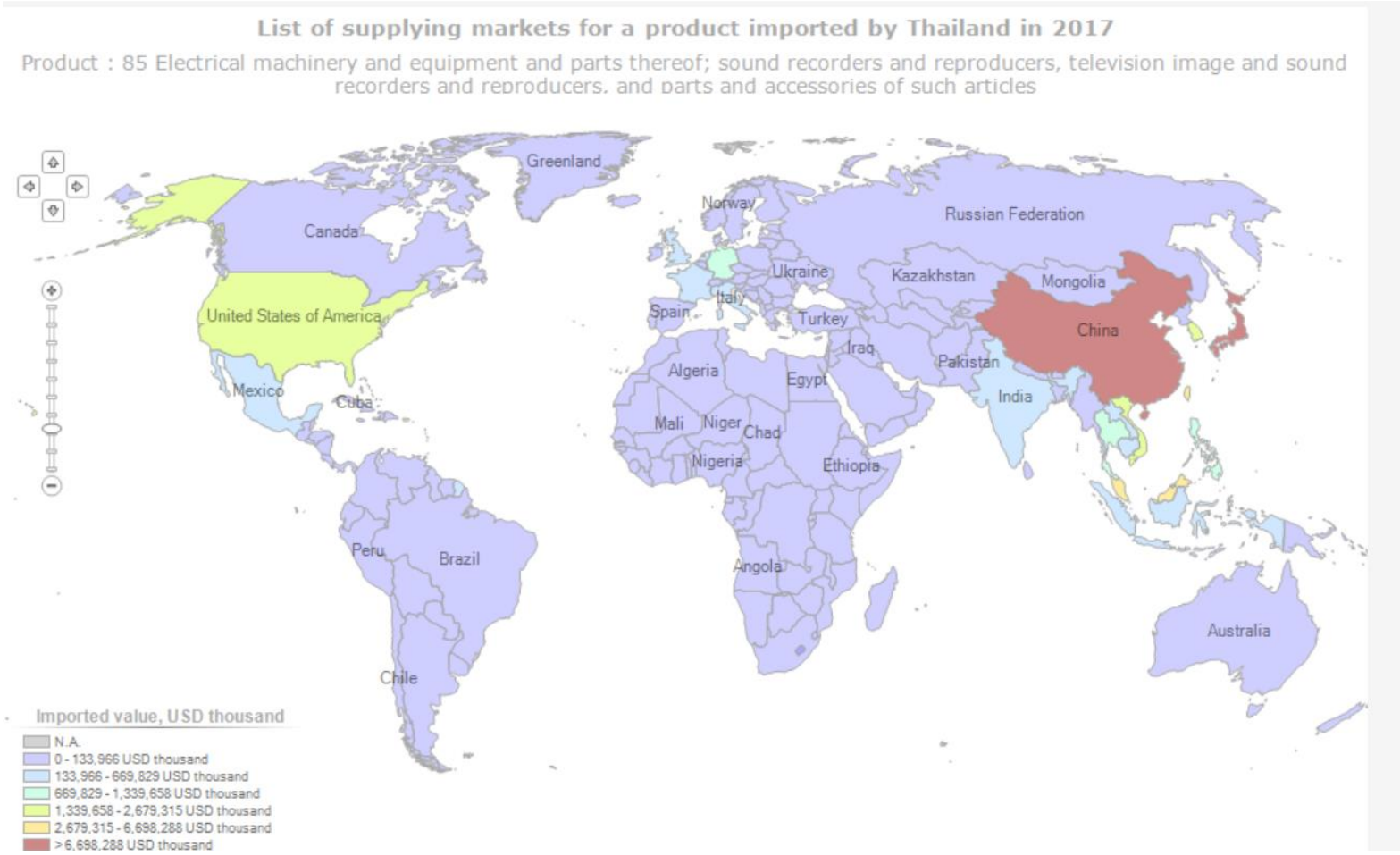
(2) Waste Electrical and Electronic Equipment (WEEE)

(3) Registration, Evaluation, Authorization and Restriction of Chemicals (REACH) since 2007

Is Thailand just an assembler?

- FDI in the electronic industry brought along imported machinery as well as imported raw materials.
- The industry produces according to the specification of the multinational corporations that have chosen Thailand as assembly plants.
- "Exports of potato chips are fine, computer chips are not." Discuss.

Thailand's imports of Electrical Machinery and Equipment: Product 85



Innovation and originality is the key

- Similar to the automobile industry, the Thai EEA industry do not have world recognized original designs that can create its own market or brand names.
- The ability to do so depends on quality of human resources and telecommunication infrastructure.
- The effectiveness of the ***government policy*** in enhancing competition in the telecommunications so that they can provide efficient infrastructure for EEE users and development.


Everything popular is wrong.
—OSCAR WILDE
Art by Kathy O'Connell

On innovation, fashion, and originality

- 'In order to be irreplaceable one must always be different.' **Coco Chanel**
- '***Fashion*** is a form of ugliness so intolerable that we have to alter it every six months.' ***Oscar Wilde***
- ***What is so unique about Samsung?***

Samsung electronic corporation's mantra

- American rationality
- Japanese precision
- Korean speed

  (The Korean four-second syndrome)

4. How far should the government support any particular industry?

- Should the government subsidize the EEA industry?
- Any room for market intervention?
- Is there any justification for such selective policy by market failures and strategic intervention?
- "The Thai government has come up with a list of the *S-curved industry* to support". Discuss the validity of this policy.

Sophisticated interventionism

- *"Industrial polices in High Asian Performing Economies are* **responsible** *for successful performance: policies that favor particular industries over others"*. Discuss.
- These policies include: ***protective tariffs, import restrictions, and export subsidies, low-interest loans, and government support for R&D***.

Skeptical views on the intervention

A wide range of successful industrial policy in the four Asian Tigers

- **Singapore**: detailed government direction
- Virtual laissez-faire in **Hong Kong**
- **South Korea**: large industrial firms
- **Taiwan**: small and family-run companies

- With different emphasis on industry, yet these economies have achieved similar high growth rates.
- There is ***no one-size-fits-all formula*** for successful industrial policy

Overrated Industrial Policy

- Actual impact of industrial policies may not have been large (The World Bank).
- *Little evidence* showing that countries with explicit industrial polices have moved into the targeted industries any faster than those which have not.
- From 1973 to 1979, *Korea* followed a policy for promoting heavy and *chemical industries*, which were proved to be costly and judged to be premature and was later abandoned.

Growth drivers:

- Successful Asian economies have very ***high saving*** rates which can be used to finance high rates of investment. (Recall Solow's growth model)
- But high saving alone won't help if it is not channeled to productive investment, which requires high quality human capital.
- Most of these countries have made great strides in **public education**. (Recall Schultz's human capital and economic development)

Growth drivers

- The combination of high investment and rapidly improving education levels explains a large part of the rapid growth in East Asia.
- Trade policy has ***permitted rapid growth***, but it is *overstating* the importance of trade policy if we say that it caused growth. (True or False?)

Selective Industrial Policy by the Thai governments

- Industrial policy was ***not*** a key driving force behind Asian success.
- ***This brings us to questioning the virtue of 10 supported industries in Thailand under the Industry 4.0 Model.***
- ***Subsidies the EV industry?***
- ***Recall the sage advice: intervene only if there is positive externality***

Quality of human capital

- Large parts of EEA workforce are in low skilled labors such as technicians, while the percentage of high-skilled computer professional is very small.
- **The average years of schooling for the Thais above 15 years old is only 7.8 years**.
- The enrolment for the tertiary education is low (35 %)compared to countries with electronics success.
- Thai government spends 5.5% of GDP on education

Science and Technology vs. Social science

- Thai universities produce only 32 percent of graduates in the filed of science and technology.
- More social science and humanities are produced because of their lower unit cost.
- The total number of electronic researchers was only 750 persons in 2001.
- *What is the corresponding figure in 2019?*

Population per patent

A proxy for innovation in science and technology

- Mexico 1,267,532
- **Thailand 340,000**
- Singapore 13,000
- Australia 18,000
- South Korea 6,000
- Japan 3,914
- USA 2,800

Source: The Economist

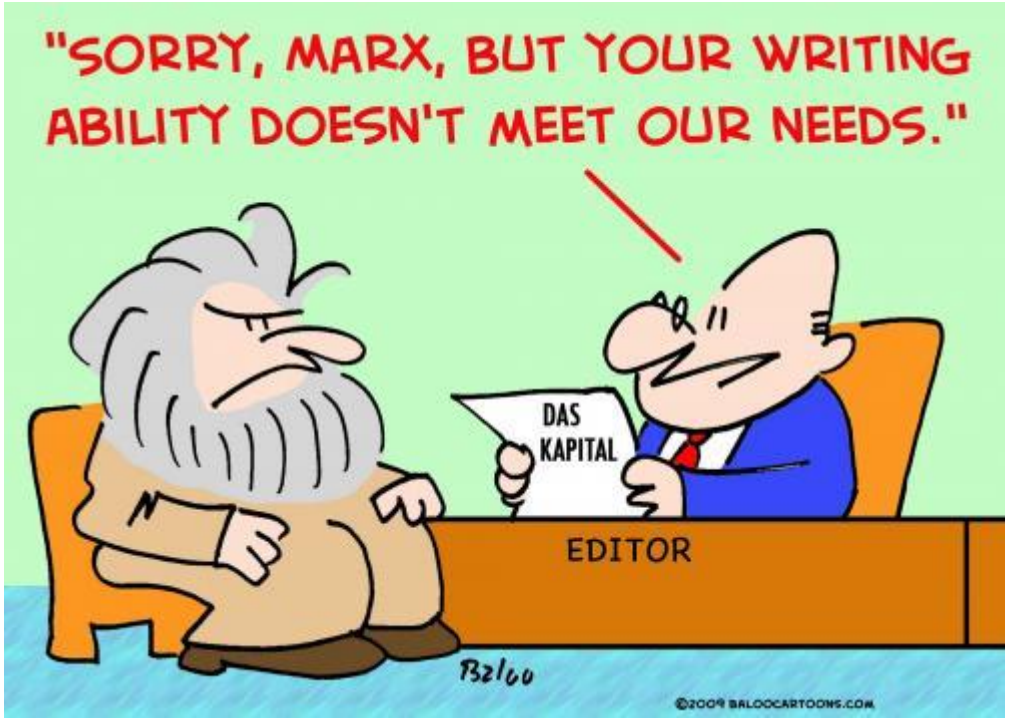
South Korea loves robots

- The world's fastest internet speeds leads to an era of interactive robots.
- South Korea switched on 5G networks nationwide in April 2019.
- The highest speeds enable companies to connect devices with vehicles, home appliances, and building.
- South Korea is the world' highest robot density.

Period	Generation	Maximum mobile network bandwidths
1980s	1G	First mobile call (14kps maximum bandwidths)
1990s	2G	Short message service (SMS)
2000s	3G	Internet, Video calls, multimedia messaging
2010s	4G	High-speed internet, HD video calls, the "internet of things"
2020s	5G	Virtual reality, holograms, autonomous vehicles (20 Gbps)

Summary of key concepts

Industry characteristics: Vulnerability and competitiveness
Product fragmentation
Network trade
Global Value Chain
Strategic industrial policy


"SORRY, MARX, BUT YOUR WRITING ABILITY DOESN'T MEET OUR NEEDS."
DAS KAPITAL
EDITOR
Bz/oo
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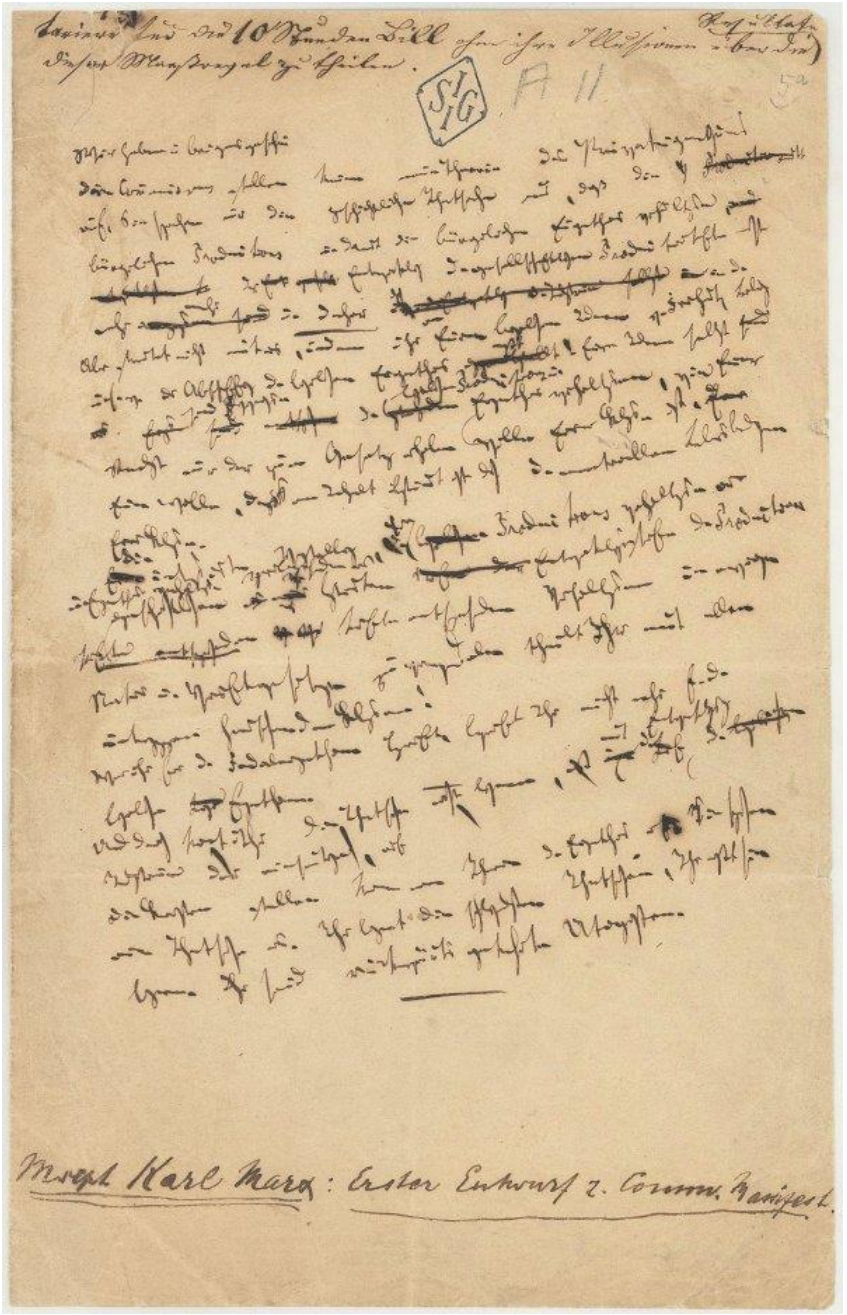

Mrxpt Karl Marx: Erster Entwurf z. Comm. Manifest.

Midterm in March 2020

1. In 2016, Thailand's per capita income was $6,000. To achieve the status of a high-income country, Thailand's per capita income must exceed $12,000. Do you think that Thailand can reach the state of the high-income nation by 2040? If so, why? If not, why not?

2. What could have been an appropriate Thailand's macroeconomic policy after 2006? Has the magic formula for Thailand's resilience gone forever after the AFC?

3. What lessons can we learn from the AFC and the GFC? Are there similarities and differences of their causes and consequences?