

White Paper on International Economy and Trade 2020 [Outline]

July 2020

Trade Policy Bureau

Ministry of Economy, Trade and Industry

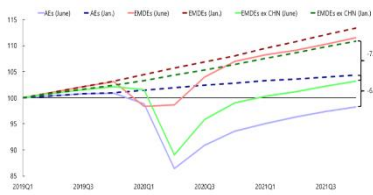
White Paper on International Economy and Trade: 2020

- The world is facing the worst economic crisis since the Great Depression. COVID-19 has limited our face-to-face interactions, creating new challenges for the global economy and international society.
- To overcome this ongoing crisis, we should achieve a resilient economic and social system to flexibly respond to shocks and ensure sustainable development.

1. The Coronavirus Pandemic Triggers a Global Economic Crisis

- ✓ The Great Lockdown recession is the worst since the Great Depression.
- ✓ Nature of COVID-19 crisis: limit on face-to-face interactions → "supply shock" + "demand shock → employment/ income shock"
- ✓ International collective actions are needed to deal with the current global crisis on infection and economy.

Quarterly World GDP (IMF)

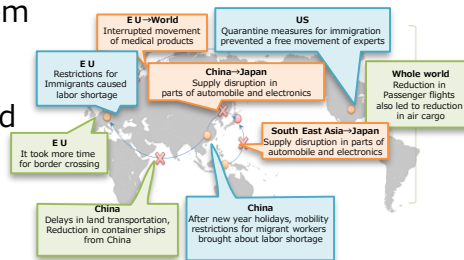


Source: IMF Blog 6/24, IMF WEO June 2020, and IMF staff calculations.

2. What Coronavirus Reveals About the Structures of Our World

- ✓ The supply chain disruption can be seen in efficient production system (inventory, cross-border production sharing), flexible logistics (land, maritime, air), and human mobility within/across borders.
- ✓ Geographic concentration of production of vital supplies.
- ✓ Shortage of medical products and emergency measures.
- ✓ Limit on face-to-face interactions show the value of digital technology.

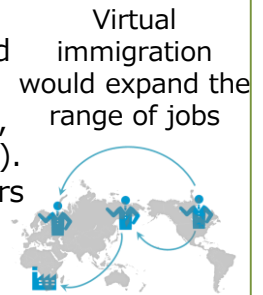
Global supply chain disruption



Source: Global Trade Alert, Japan External Trade Organization "Region/Analysis Report", Cabinet Office "Economy Watcher Survey", Siford, Baldwin "Supply chain contagion waves: Thinking ahead on manufacturing 'contagion and reinfection' from the COVID concussion"

3. Globalization Past, Present and Future

- ✓ Globalization has fostered exchange of, goods, people, money, and ideas, developing the world economy.
- ✓ Globalization lowered the cost of moving goods, moving ideas, and moving people (face-to-face).
- ✓ Both telepresence and telerobotics allow workers to perform tasks inside another nation without actually being there.
- ✓ Online communication has spread more rapidly due to COVID-19 crisis.



4. The Way Forward

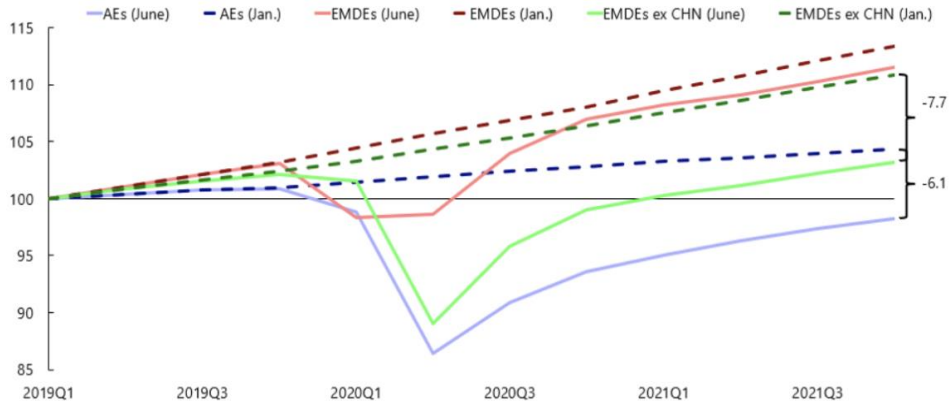
- ✓ We aim to achieve a resilient economic and social system to deal with crises flexibly and to ensure sustainable development.
- ✓ We aim to enhance global governance to prevent divisive forces and to bring unifying forces for international cooperation, to make the emergency measures temporary, and to deal with true global challenges.
- ✓ We aim to have resilient supply chains to prepare for and to deal with the next crisis.
- ✓ We aim to turn this crisis into an opportunity to promote digitalization and evolution of communication.

1. The Coronavirus Pandemic Triggers a Global Economic Crisis

1 – 1 . The Great Lockdown: the worst recession since the Great Depression

- The world experiences the worst economic crisis in a century (IMF names this crisis as “the great lockdown”).
- Supply chain disruption and business shutdown trigger outright supply shocks. There are also adverse aggregate demand shocks to face-to-face service industries and durable goods.

Quarterly World GDP



Notes: 2019 Q1=100 Source: IMFBlog 6/24, IMF WEO June 2020, and IMF staff calculations.

Business activities and disruption of supply chain

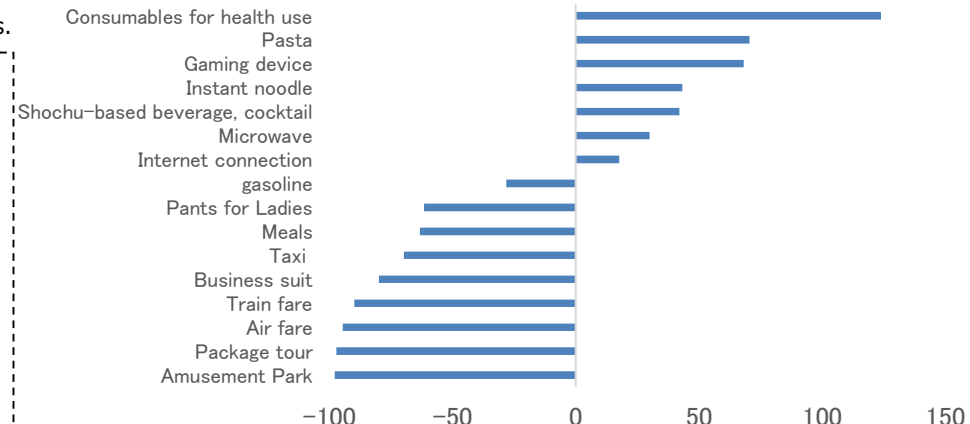
【Suspension of production】

✓ Production halted due to lockdown. (manufacturing industry)

【 Disruption of the supply chain】

✓ The parts plant has been ordered to stop production. As a result, parts were not available and our company was unable to continue our own production. (manufacturing industry)

Covid-19 and consumption (Japanese household, April 2020)

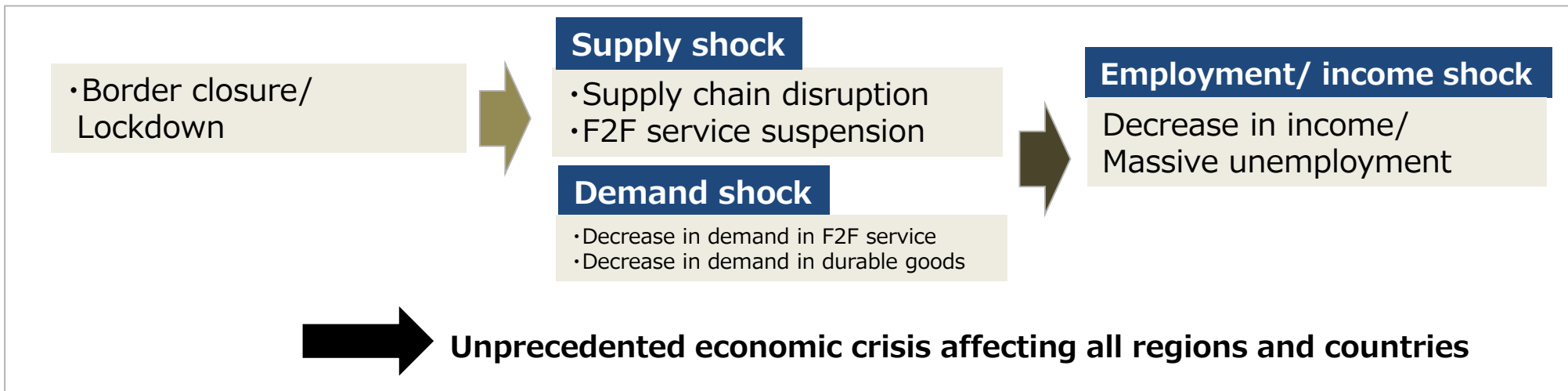


Source: Japanese Statistics Bureau “Family Income and Expenditure Survey”
Note: Japanese Consumption of April 2020, Year on Year % 4

Assumption: For economies where infections are declining,
-persistent social distancing into the second half of 2020
-greater scarring from the larger-than-anticipated hit to activity during the lockdown in the first and second quarters
-a negative impact on productivity as surviving businesses enhance workplace safety and hygiene standards
For economies still struggling to control infection rates,
-the need to continue lockdowns and social distancing will take an additional toll on activity
In the event of a second outbreak, the resulting containment measures lead to a decrease in world output of about 4.9 percent in 2021, whereas in a faster recovery from the lockdown measures implemented in the first half of 2020, global output improves by about one-half percent in 2020, relative to the baseline.

1 – 2. Economic shocks of coronavirus

- The nature of the coronavirus economic crisis: The coronavirus pandemic has limited face-to-face communication, causing both supply and demand shocks, resulting in employment and income shock.
- Traditional economic policy tools could be ineffective in combating the consequences of the coronavirus.



Types of economic crisis

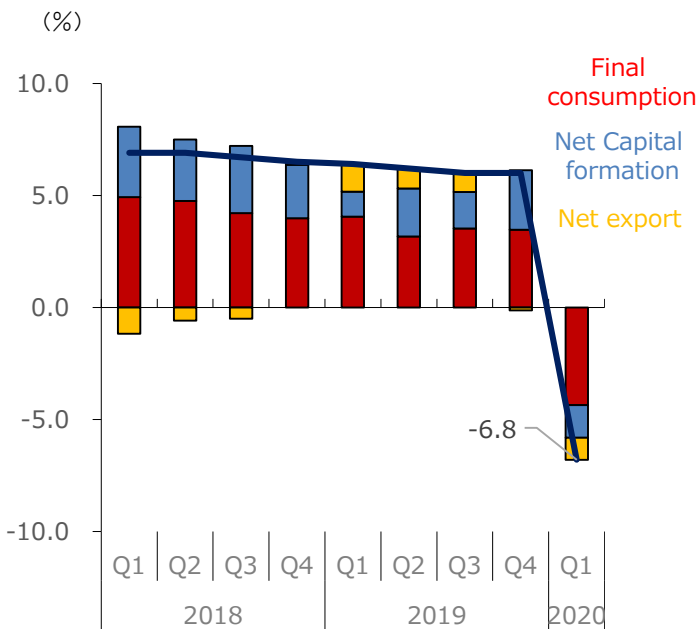
Type	Consequences	Demand shock or Supply shock	Key to Recovery
Natural disaster	Destruction of the infrastructure / production facilities	Supply shock	Reconstruction
Financial crisis	Destruction of financial system	Demand shock	Stabilizing financial system
Pandemic	Avoiding human interaction	Both supply and demand shocks	Containing the virus

- E.g. Great East Japan Earthquake
- E.g. Global Financial Crisis

1 – 3 (1) . Current situation of COVID economic crisis

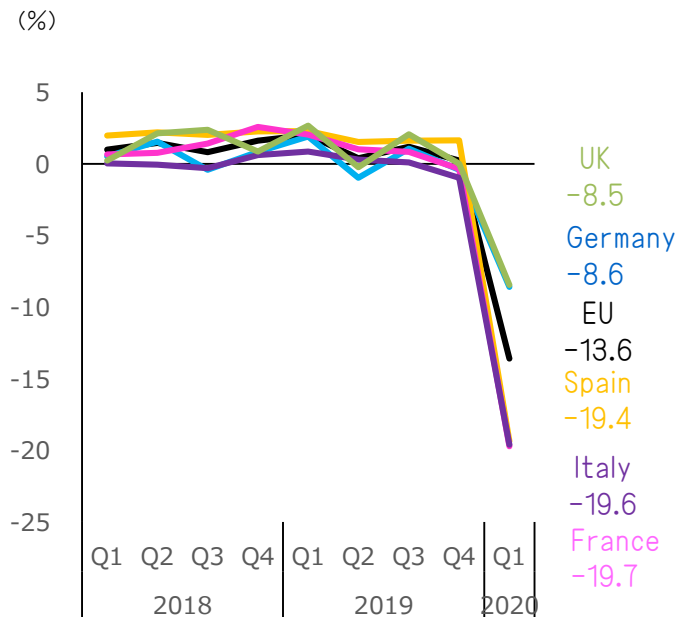
- China's economy shrank 6.8% in the first quarter, the first contraction on record. The European Union's GDP saw its sharpest decline in the last 14 years. In some countries, economies shrank by a record 20%.
- Emerging economies face a looming economic crisis from the coronavirus.
- COVID-19 economic crisis is expanding as an unprecedented crisis affecting all regions and countries.

China GDP Growth Rate



Source: NBS, CEIC database
Note: Year-over-Year comparison

Europe GDP Growth Rate



Source: Eurostat
Note: seasonal adjusted, Quarter-over-Quarter annualized rate

Emerging countries GDP Growth Rate (Mexico)

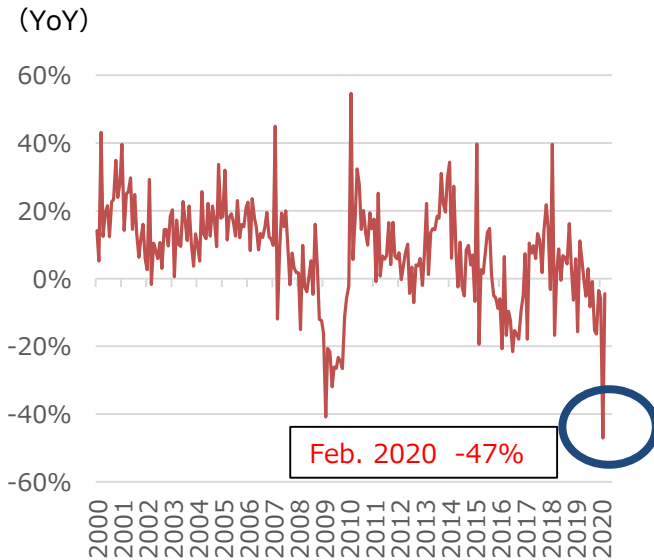


Source: INEGI, CEIC Database
Note: seasonal adjusted, Quarter-over-Quarter annualized rate

1 – 3 (2) . Supply shock and its spillovers

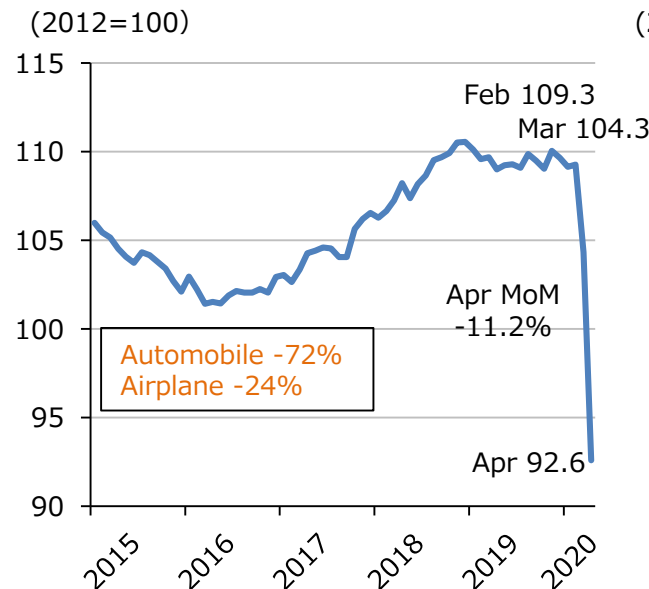
- As the global economy has become more integrated across transnational borders, global supply chains have formed. Japan's imports from China fell sharply, as the coronavirus ground factory production in China to a halt, resulting in production disruption in Japan. The spread of COVID-19 has disrupted supply chains globally.
- Lockdowns bar operations from doing businesses apart from those delivering essential services, and voluntary restraint leads to voluntary suspension of nonessential services (e.g. entertainment industry).

Japanese imports from China



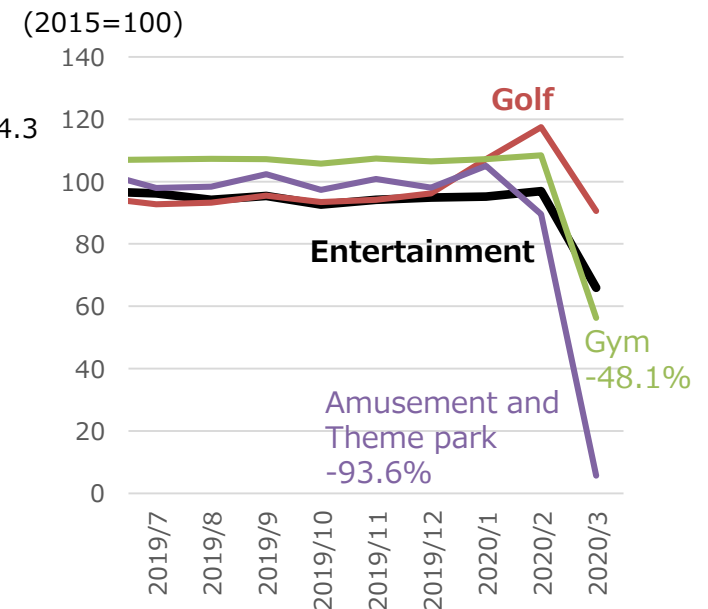
Source: Ministry of Finance
Trade Statistics of Japan

US industrial production



Source: FRB, CEIC Database

Japanese industrial activities (entertainment)

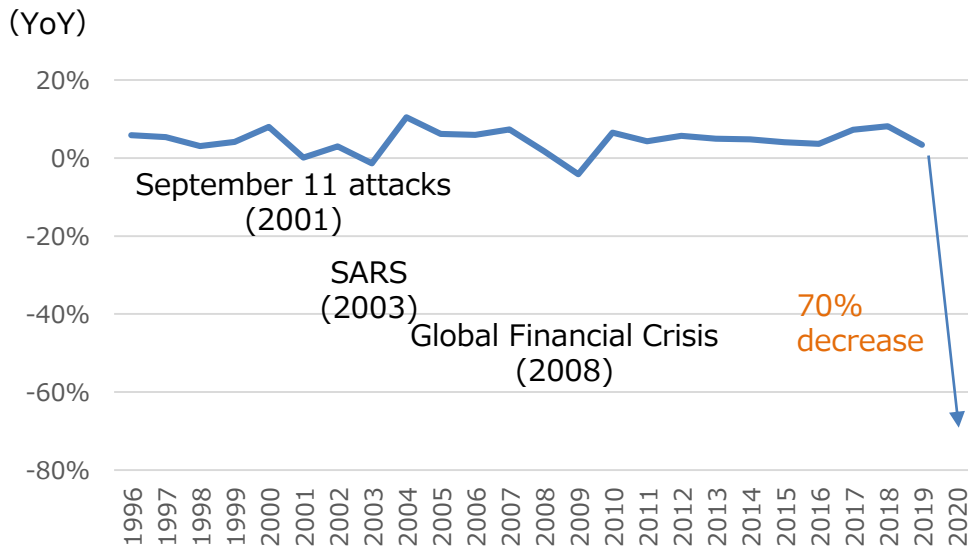


Source: Indices of Tertiary Industry Activity

1 – 3 (3) . Demand shock and its spillovers

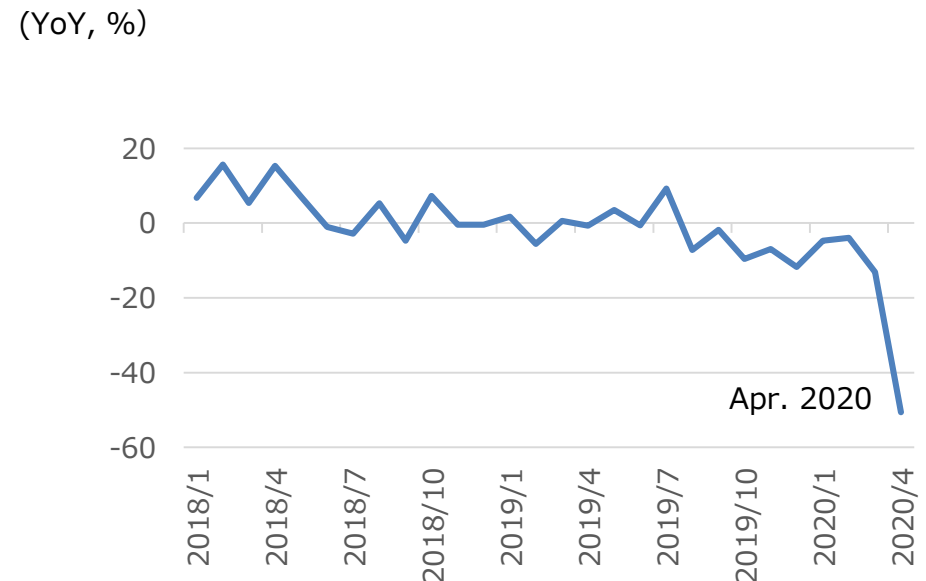
- To confine the infection, travel restrictions and other measures are introduced. Demand for face-to-face services (e.g. tourism industry) has sharply declined.
- Demand for durable goods is also disappearing. As a result, exports and production have fallen sharply. Weak demand creates weak supply, and vice versa.

International tourist arrivals



Source: Mr. Zurab Pololikashvili, Secretary-General of United Nations World Tourism Organization

Japanese auto exports

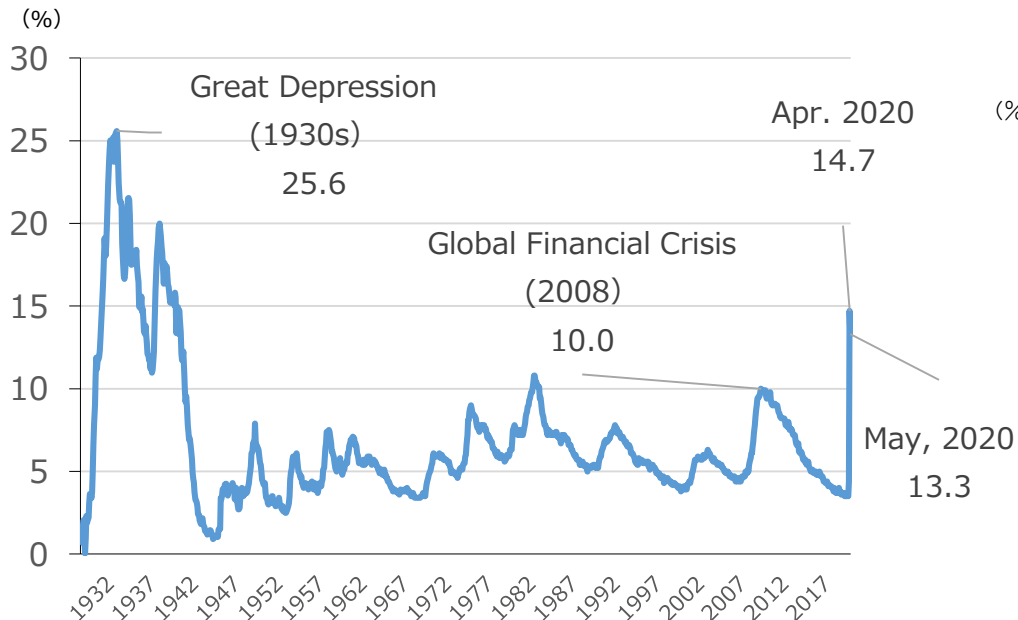


Source: Ministry of Finance, Trade Statistics of Japan

1 – 3 (4) . Employment/ income shock

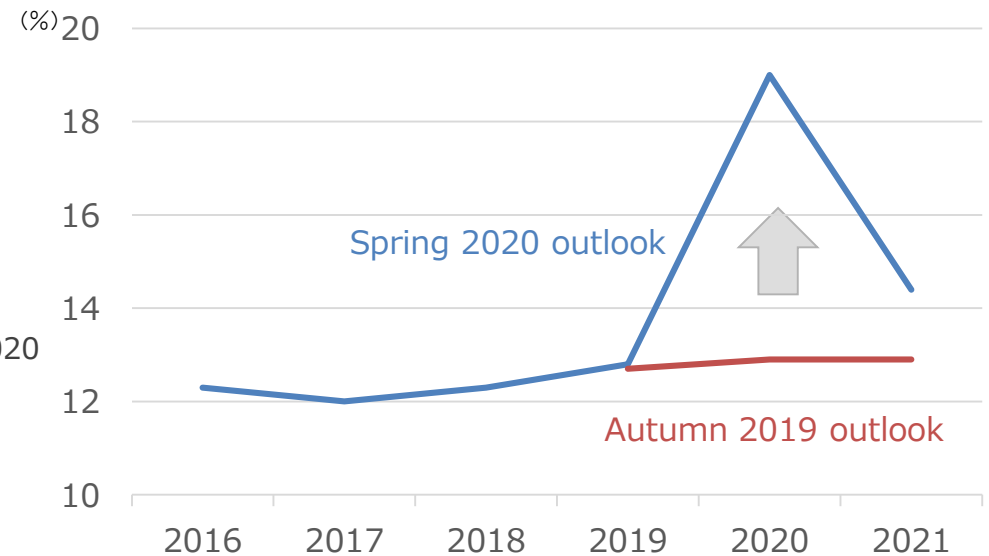
- Face-to-face service industry has been hit hard by COVID-19. The US has suffered job losses unprecedented since the Great Depression.
- Households and corporations accumulate precautionary savings due to uncertainties, unemployment, and sluggish income. Such excess savings further depress consumption and investment leading to a vicious cycle of demand and supply shocks.

US unemployment rate



Source: FRED Economic Data, National Bureau of Economic Research

Eurozone household savings rate

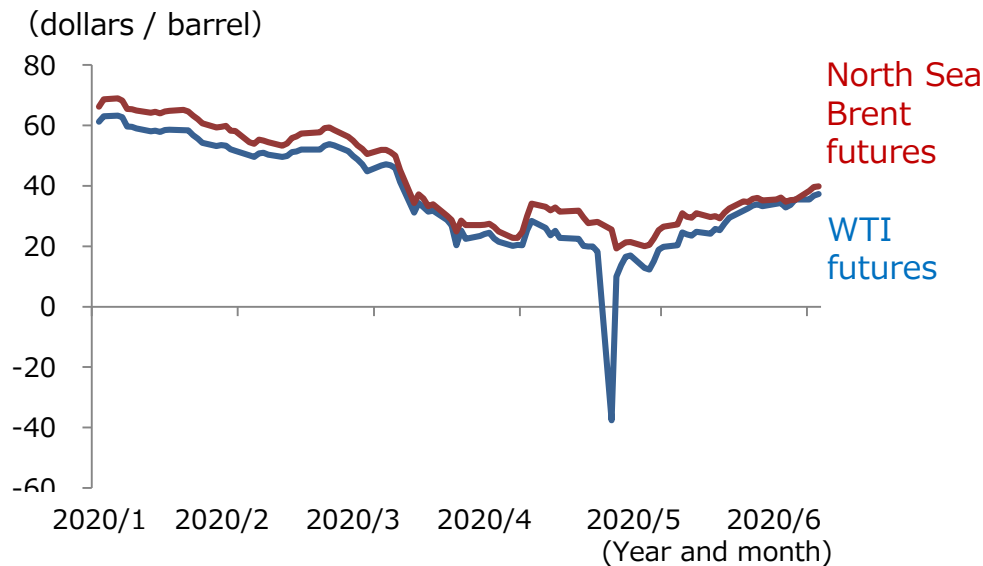


Source: European Commission

1 – 3 (5) . Commodity and financial market turmoil

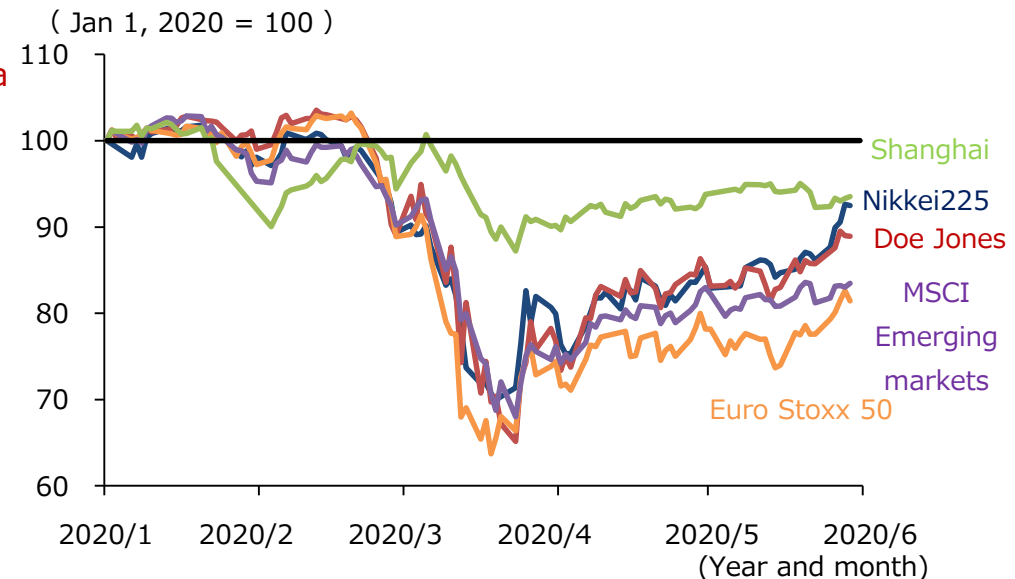
- Oil prices have plunged into negative territory due to the glut created by the COVID-19 global economic shutdown. Since May, oil prices have shown signs of recovery with the economic reopening, and its market stability is crucial to ensure energy security for both oil-producing and oil-consuming nations.
- Stock markets plunge on coronavirus fears. As the disease has been somewhat confined, economies have started to reopen and the governments and central banks implement stimulus on an unprecedented scale, financial market stabilize.

Crude oil prices



Source : Refinitiv

Stock prices

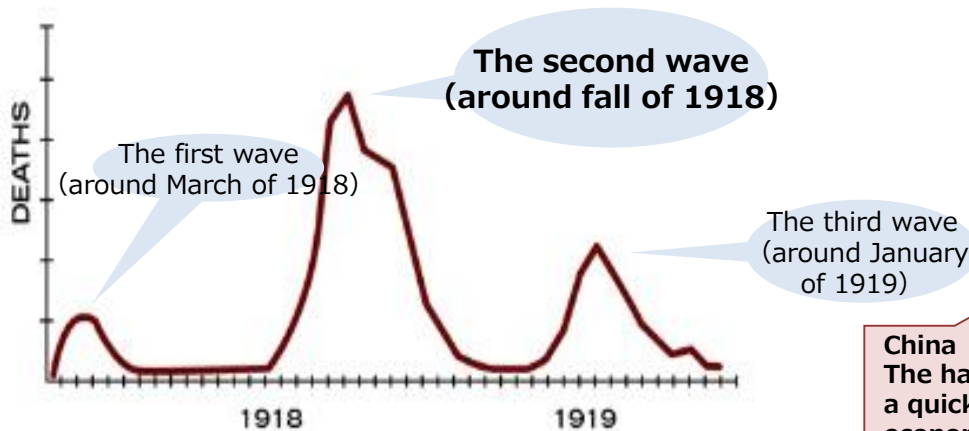


Source : Refinitiv

1 – 4. The need for international cooperation

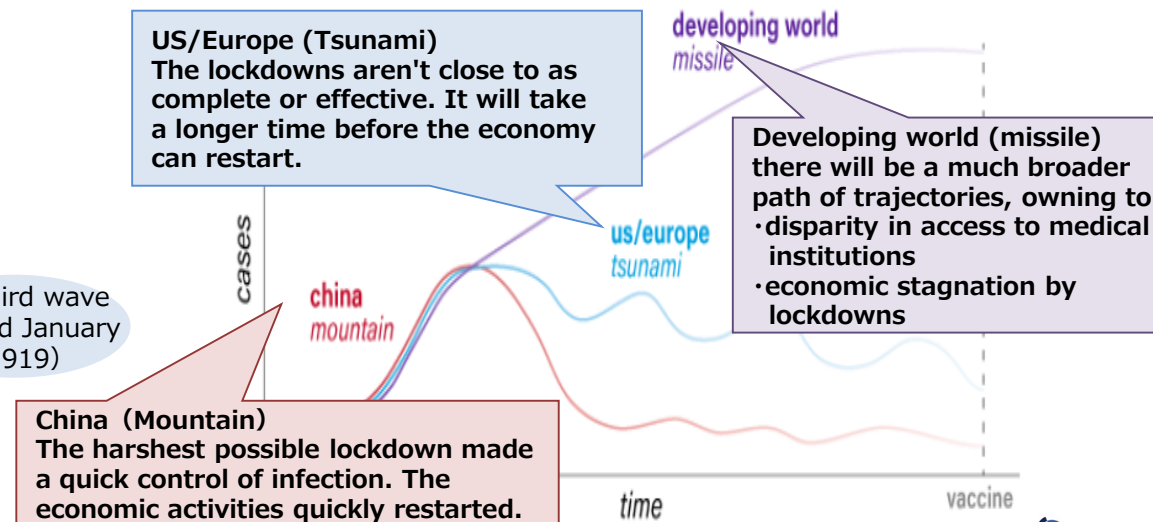
- The past pandemics did have a deadly second wave and a third wave. COVID-19 threatens to have devastating consequences in developing nations. If those nations fail to contain the virus, the world cannot overcome the coronavirus. The economic crisis will also last longer.
- This global nature of the pandemic means the coronavirus crisis cannot end without international cooperation.

Three different waves during Spanish influenza in the U.S.



Source : Centers for Disease Control and Prevention
(<https://www.cdc.gov/flu/pandemic-resources/1918-commemoration/three-waves.htm>)

Three tracks to a coronavirus vaccine (Ian Bremmer)



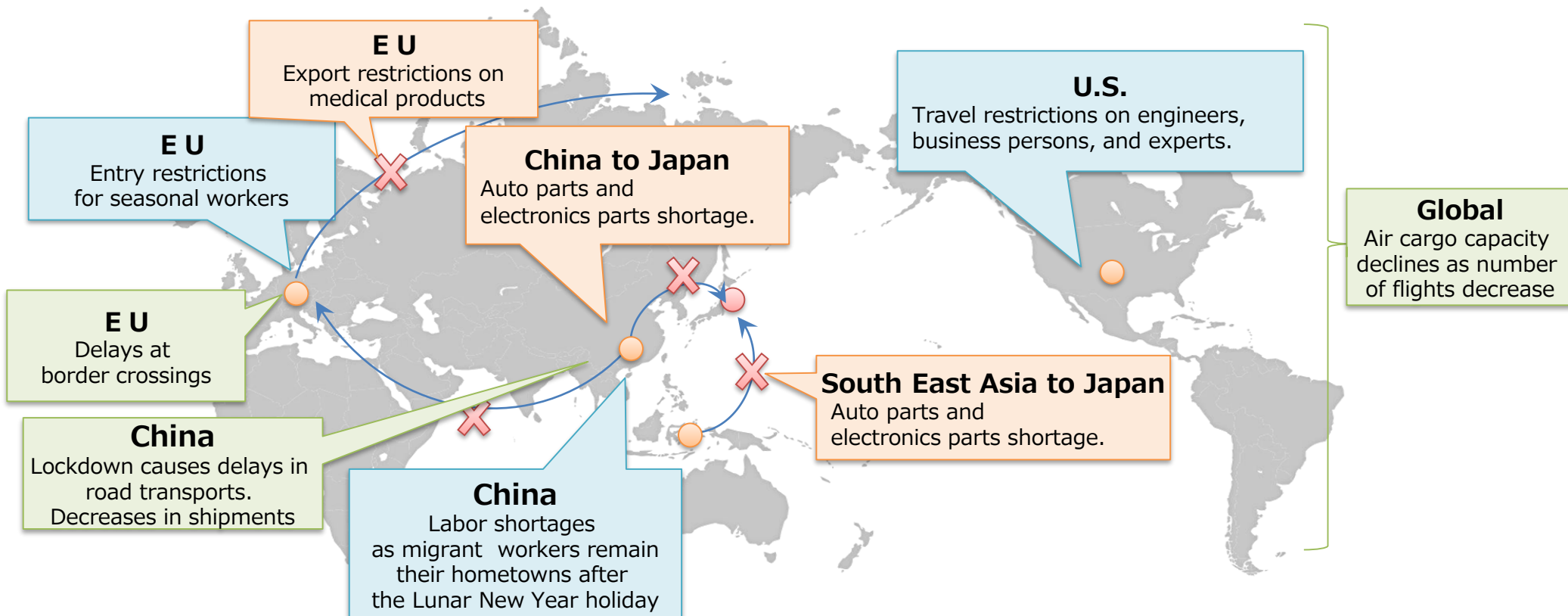
Source : Ian Bremmer, *Eurasia group*

2. What Coronavirus Reveals About the Structures of Our World

2 – 1 . Supply chain disruption

- The supply chain disruption can be seen in efficient production system (inventory, cross-border production sharing), flexible logistics (land, maritime, air), and human mobility within/across borders.

The disruption of supply chain



Source : Global Trade Alert, JETRO "Regional information and analysis", Cabinet Office "Economy watchers survey", Sixfold, Baldwin "Supply chain contagion waves: Thinking ahead on manufacturing 'contagion and reinfection' from the COVID concussion".

2 – 2. Industry characteristics and COVID crisis

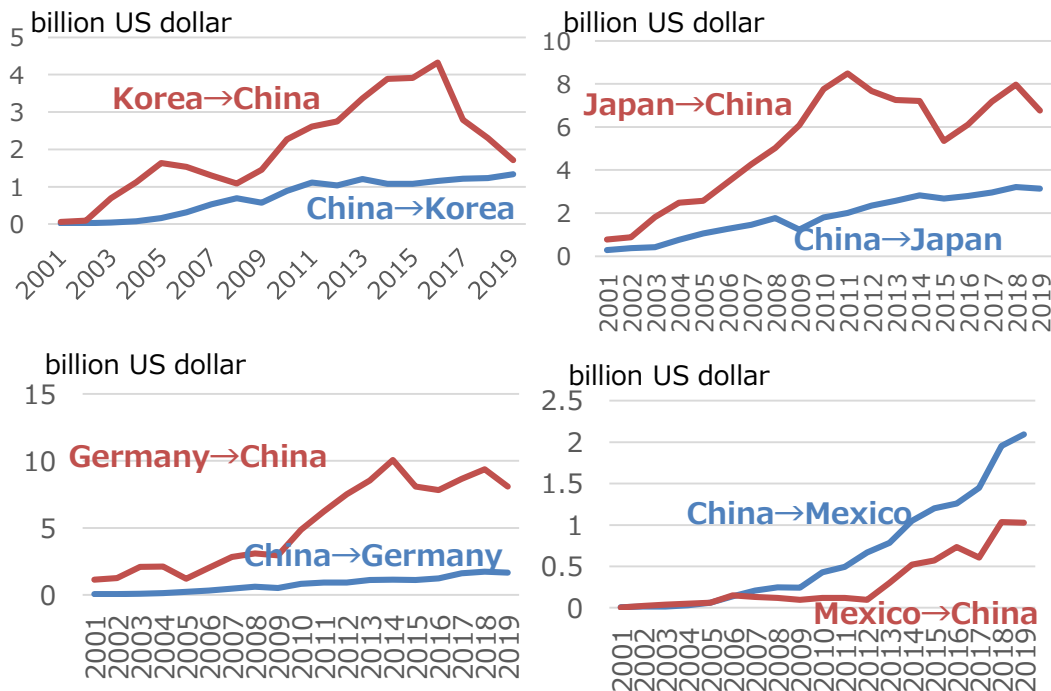
- The COVID-19 crisis have brought uneven shocks to each industry.
- Coronavirus outbreak disrupted the supply of components. Vehicle production was suspended as automobiles have many parts and its industry relies on a complex production system. Modularity has enabled the IT industry to continue production.
- As demand for medical supplies exploded, many countries imposed export restrictions on medical supplies.

	Automotive	I T Products	Medical supplies	Food
Factories	Many parts. Modular manufacturing is adopted in Electric vehicles.	Many processes from assembly to processing. Easy to be modularized.	Few Parts, Few manufacturing processes	Many operations cannot be mechanized.
Logistics	Mainly by maritime transportation	Mainly by air transportation	Air transportation (high value-added), maritime transportation (general purpose), Land transportation (general))	Air transportation (high value-added), maritime transportation (general-purpose products), and land transportation (general)
Inventory	Low inventory	Low-Much inventory	Low-Much inventory	Much inventory
Supply chain before corona crisis	Diversification through Local Production and Local Consumption Labor intensive parts tend to be geographically concentrated.	Assembly is labor-intensive. High value-added components are concentrated in locations where there are many highly skilled workers.	General purpose products are mainly made in areas with low labor costs.	Food is produced in good climate and in good soil.
The effects of corona crisis	If the supply of some parts is disrupted, the entire production process will stagnate. Also, operations were suspended due to sluggish demand	Although the spread of the infection has made it difficult to procure parts and assembly work for a period of time, many companies have continued to operate.	Demand for medical supplies surged in many countries. Export restrictions were imposed in many countries, leading to global supply shortages.	Some countries have implemented export restrictions There are delays in cross-border logistics, and in some areas there is a shortage of workers for agricultural work.

2 – 3. Production system: cross-border linkage

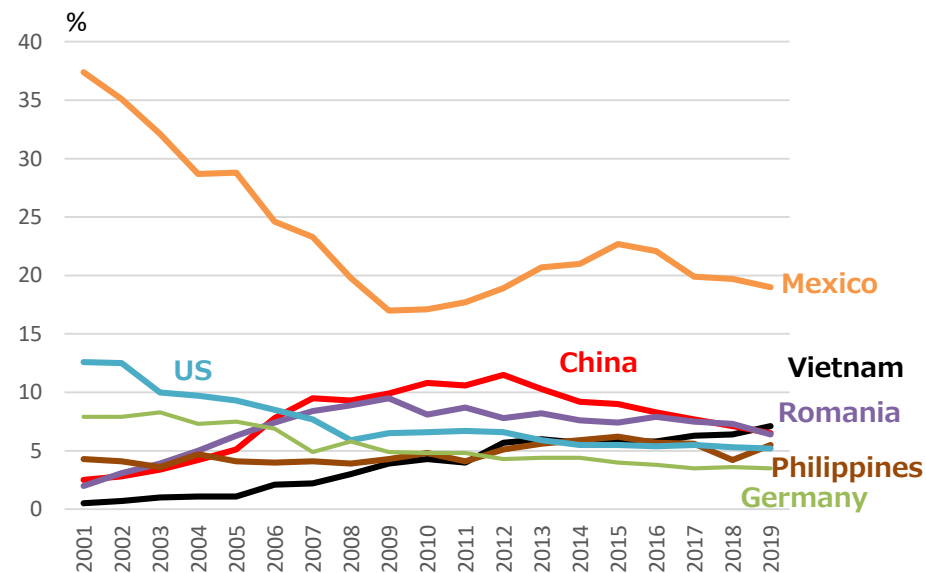
- Japanese, South Korean and European automakers have suspended production amid an increase in parts imports from China.
- Although the amount of parts imports is not large, automobile industry has complex production system and supply is concentrated, vehicle production was suspended.

Auto Parts Trade with China



Source : International Trade Centre
 Note : Auto Parts is listed as HS code 8708.

Share of wire harness exports

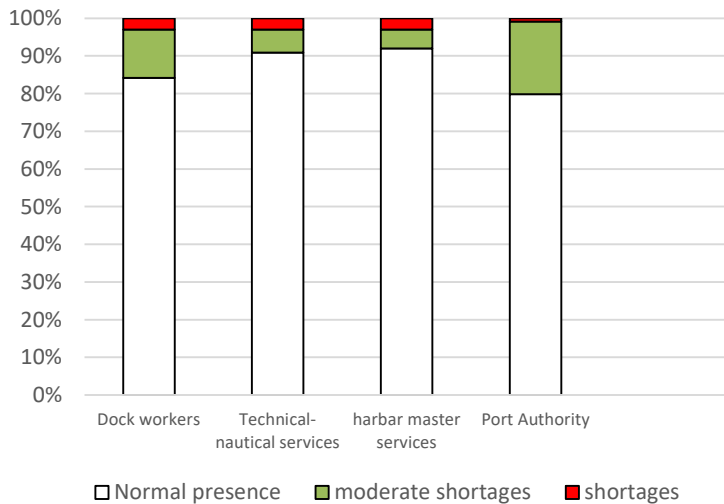


Source : International Trade Centre
 Note : Wire harness is listed as HS code 854430.

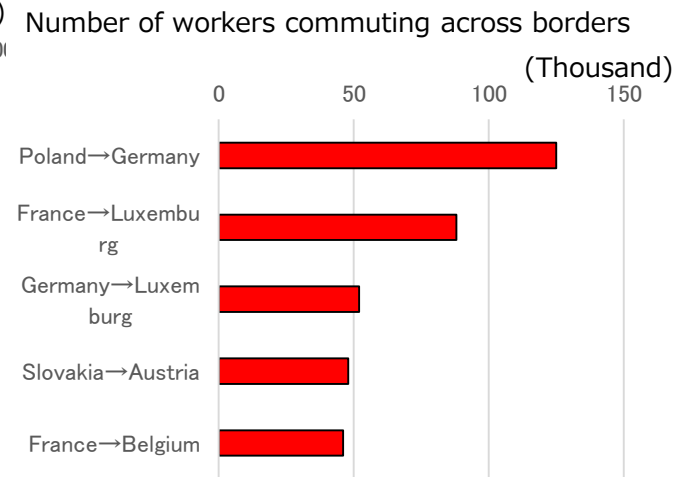
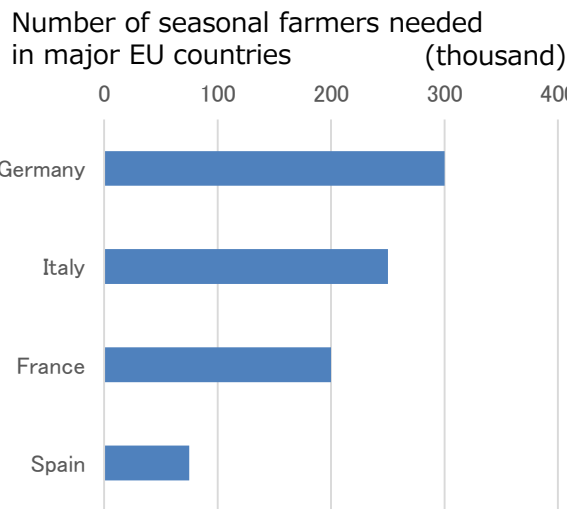
2 – 4 . Logistics and human mobility

- Tighter entry rules (e.g. quarantine, border closure) have raised international trade costs and have reduced trade activity.
- Restrictions on human mobility have negatively impacted global shipping. Global logistics were disrupted by a decline in air cargo capacity as the number of flights decrease. Also, there have been shortages of customs officials and border control personnel.
- Restrictions on human mobility also affected production. In Europe, where free movement across borders is allowed generally, cross-border commuters face border closure.

Responses on Human Shortages in Ports around the World
(Shortage of personnel in port management is reported in about 20% of ports)



The number of seasonal farmers needed in major EU countries, EU employees commuting across borders



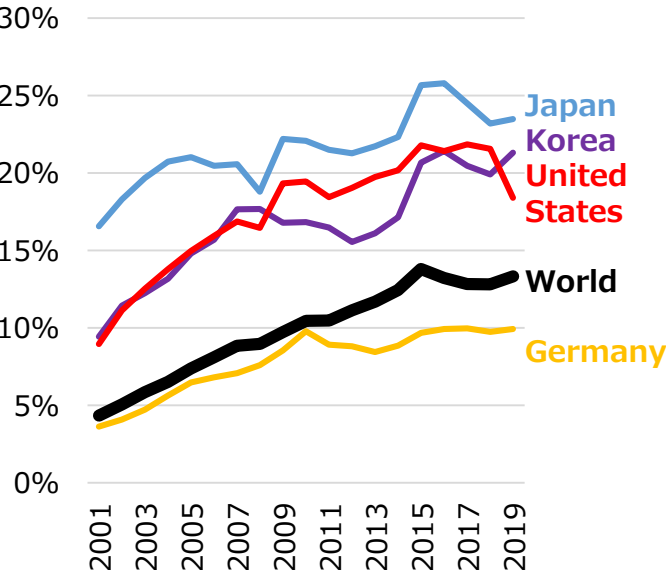
Source : IAPH, WPSP
Note: W16,2020. It covers 90 ports around the world.

Source : Eurostat

2 – 5. Concentrating production of vital supplies

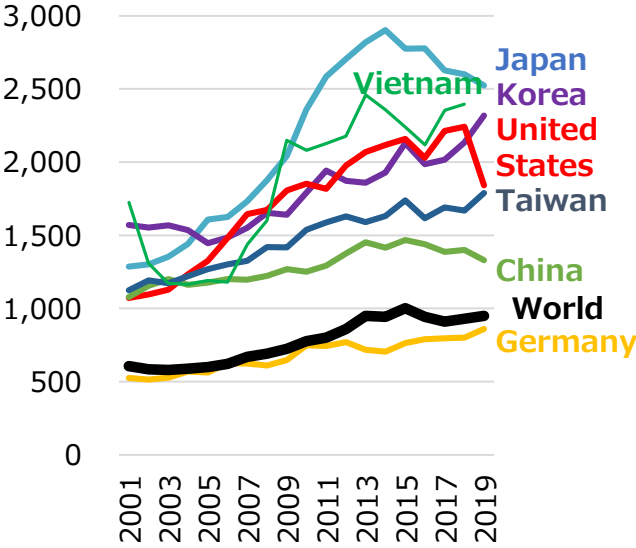
- As the international division of labor progresses, some supplies show geographical concentration of production.
- Many countries increase imports from China. Production concentration in Electric Machineries, Electronic parts has intensified, while auto parts show a diverse production base.

China's share of each country's imports

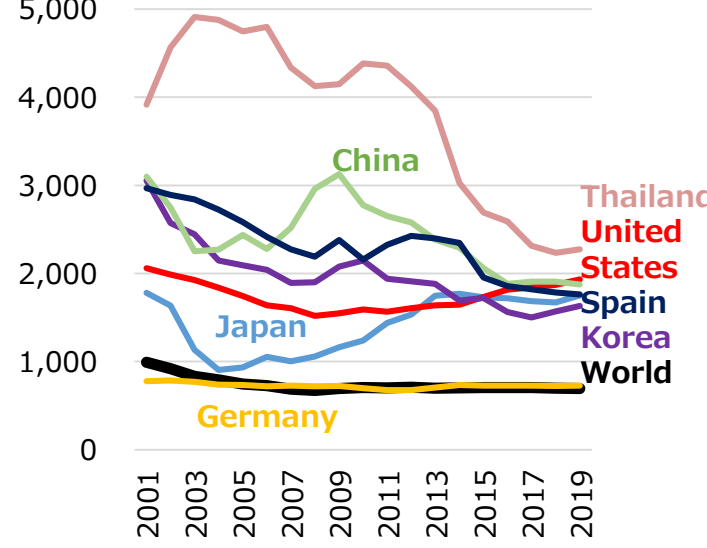


Import concentration index (HHI Index of importing countries)

Electric Machineries, Electronic parts



Auto parts



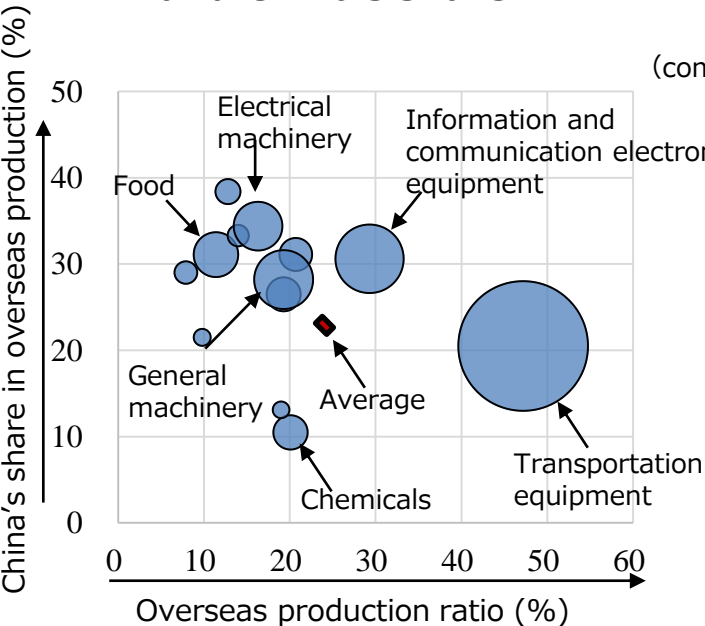
Note: HHI index is used to measure concentration of suppliers to import. Higher index shows higher concentration. If Country A imports from Country B that accounts for 50% of total import of Country A, from Country C(30%), Country D(20%), HHI index of Country A is calculated as follows: $50^2 + 30^2 + 20^2 = 3,800$. If Country A imports from only one country, the index is $100^2 = 10,000$ as the maximum. If country A is near from a major production country, HHI index of the country may be large.

Source: International Trade Centre

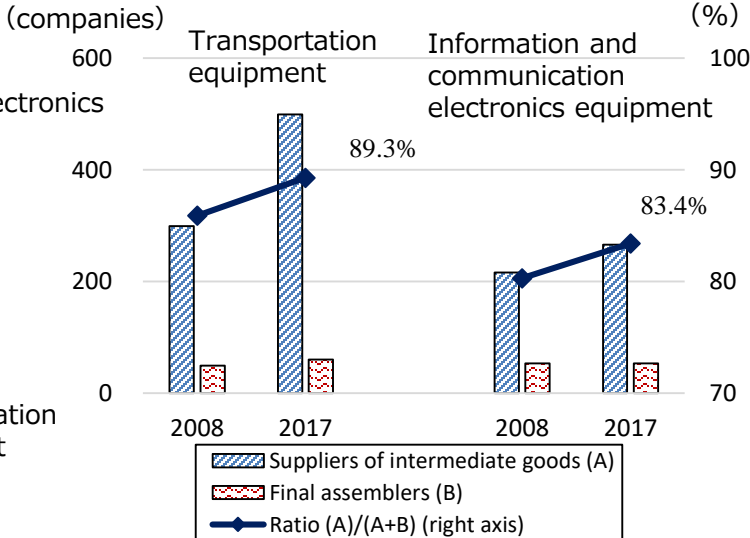
2 – 6 . Japanese manufacturing affiliates in China

- The ratios of overseas production in transportation equipment and information technology industries are high among manufacturing. Their revenues from China are also huge. The number of Japanese intermediate suppliers in China is increasing and they deepen Japanese-Chinese production linkage.
- The ratio of local procurement is high for transportation equipment sector. The ratio of procurement from Japanese parent company is high for sector of information and communication electronics equipment.

The overseas production ratio and China's share



The ratio of Japanese suppliers of intermediate goods in China



Transportation equipment

- ✓ Automobile is “integral products”, which requires coordination of various related companies for quality control such as strict safety control. **Parts-suppliers are likely to locate near the assembly plant, partly because of transportation cost of heavy components.**
- ✓ **The local procurement ratio is high.** Japanese affiliates, located in China, **procure over 75%** from suppliers in China.

Information and communication electronics equipment

- ✓ The ratio of international procurement is higher, because it has different industrial features; characterized as “modular products”, **low transportation cost due to lightness of their components.**
- ✓ Japanese affiliates in China procure over **one third** of total amount from their **parent companies** in Japan. Another just under 15% comes from the third countries. **The local procurement stays around 40%. Japanese companies, in upstream position, are easy to be influenced, when production activities are disrupted in China.**

Source : METI, “Basic Survey on Overseas Business Activities”.
 Note : The scale of circle reflects the sales value of Japanese affiliates in China.

Source : : METI, “Basic Survey on Overseas Business Activities
 Note : The question is whether your main products is intermediate goods or final ones. This question started for performance of 2008.

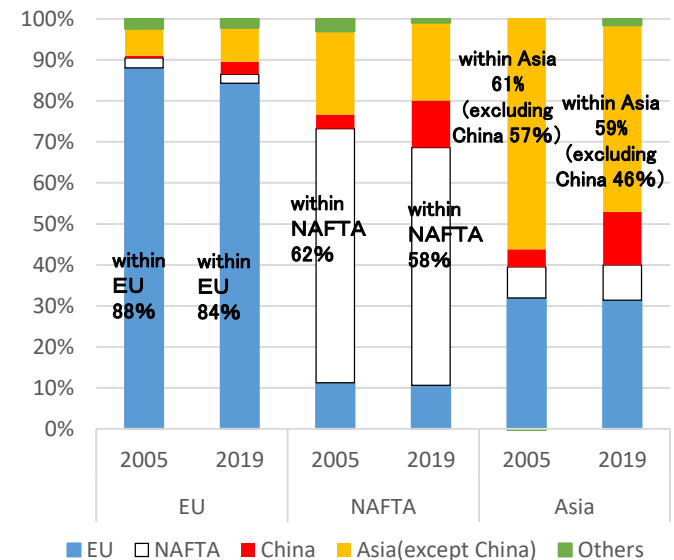
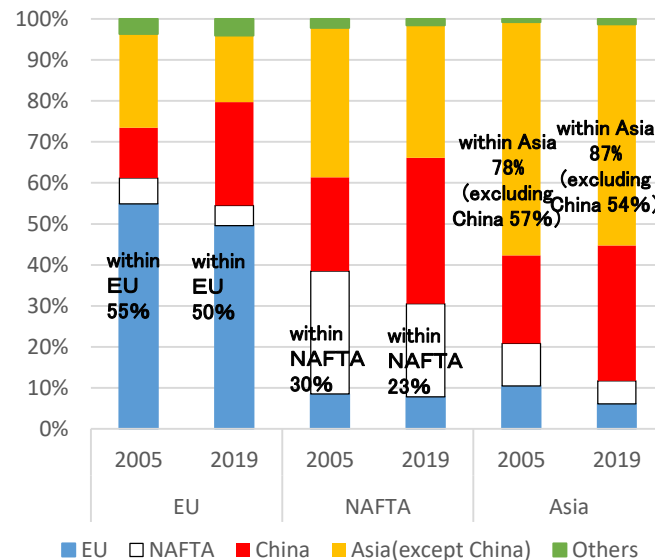
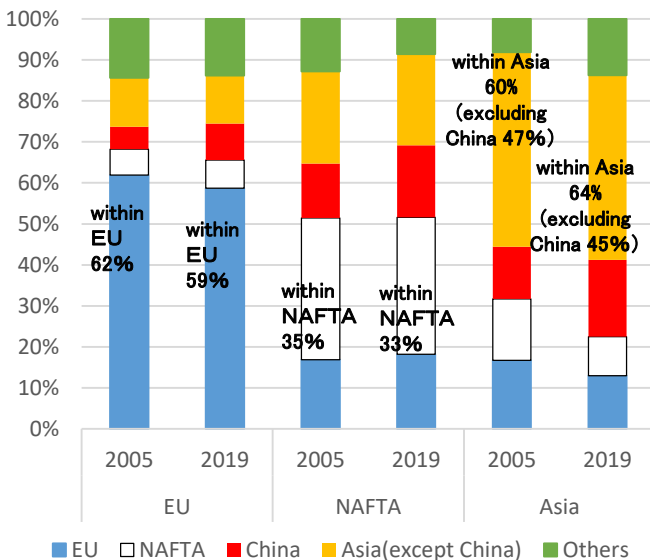
2 – 7. Regional integration

- Regional integration helps establish regional production networks. The shares of intra-regional trade has been steady across the globe.
- The nature of industrial trade patterns influences intra/inter regional trade patterns. In the electrical industry, the share of Chinese imports has increased globally. Regional integration maintains more intra-regional auto production networks.

Share of intra/inter-regional trade (total)

Share of intra/inter-regional trade (Electrical machinery and electronic parts)

Share of intra/inter-regional trade (Auto parts)



Source: Created from International Trade Centre, World Input-Output Table.
 Note: USMCA, a new trade agreement replacing NAFTA, went into effect in July 2020.

2 – 8. Role of logistics in supply chain

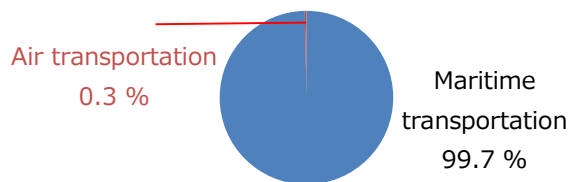
- Design of resilient supply chains requires stable logistics and alternative logistics options
- Maritime, air, and land transportations play different roles, and they complement each other. It's important to use effective transportations based on the type of goods.

Maritime transportation

In terms of **trade volume**, sea transportation accounts for **99.7%** of Japan's international trade

Overseas trade (weight basis, 2017)

Impact of each logistics route



Source: Created from the Ministry of Land, Infrastructure and Transport.

Characteristics of each logistics route

Suitable for the mass transportation of heavy goods such as mineral fuels, iron ore, and foodstuffs.

Limitation of substitutability of each logistics route

In the case of transportation between long distances, maritime transportation with a lengthy transit time is not suitable as an emergency alternative means of transportation.

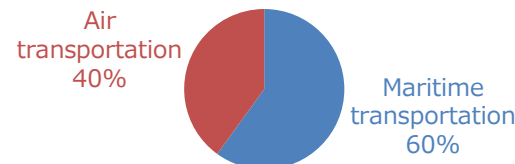
Influence of measures to prevent the spread of new coronavirus infection

Blockade of some ports

Air transportation

In terms of **trade amount of money**, air transportation accounts for **40%** of Japan's international trade.

Overseas trade (money basis, 2017)



Source: ICAO

Suitable for transporting lightweight, high value-added products. The just-in-time production system has been upgraded by the short transport time.

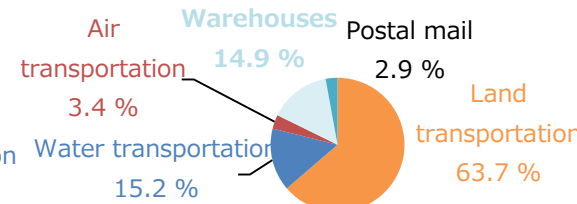
For heavy goods and mass transportation, it is difficult to replace sea transportation with air transportation.

Decline in the number of operation of passenger aircraft

Land transportation

Land transportation and warehouses account for **nearly 80%** of **Japan's overall logistics costs**

Transportation costs for agriculture, forestry, industry and manufacturing (2014)



Source: Created from the World Input-Output table.

In domestic logistics, truck transportation, which is responsible for the "last mile," accounts for more than 90% of the total by weight.

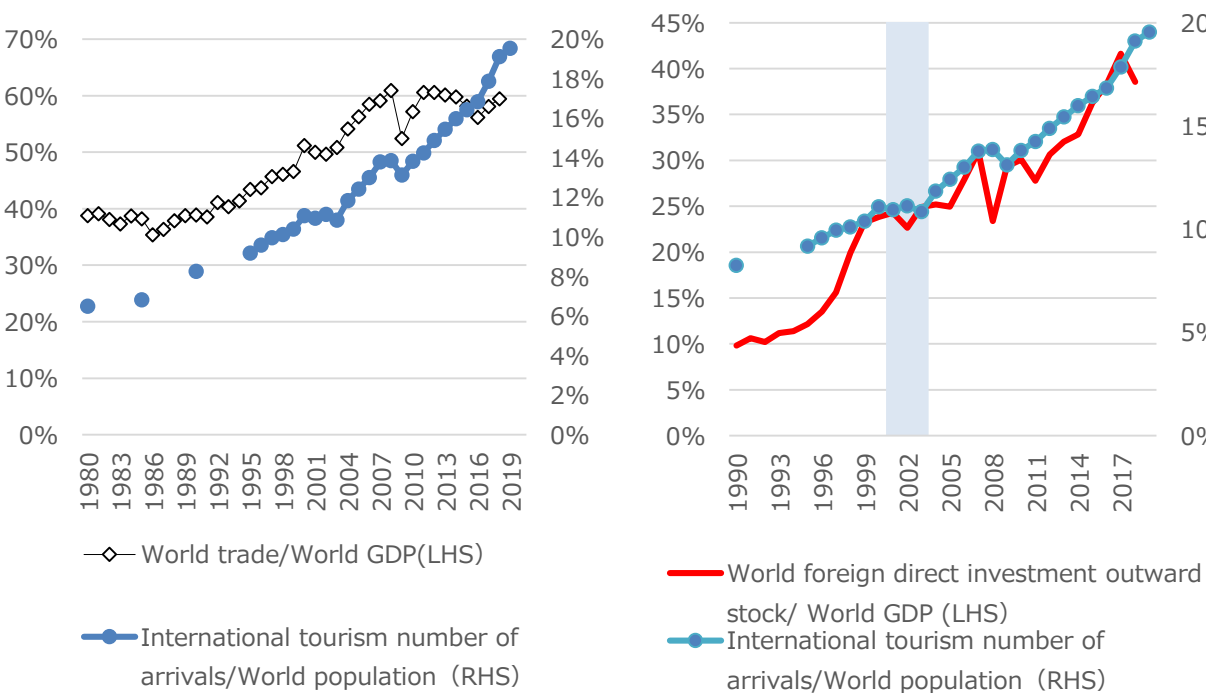
It is essential to connect before and after sea and air transportation. In international trade, it is impossible to replace sea and air transportation with land transport.

Blockade of some roads and railway tracks

2 – 9. Cross-border movement of people, trade and investment

- The movement of people across borders stimulates trade and investment. This relationship is particularly strong for emerging and developing economies.
- COVID-19 decreases human mobility, and trade costs have increased. As a result, trade and investment have stagnated significantly.

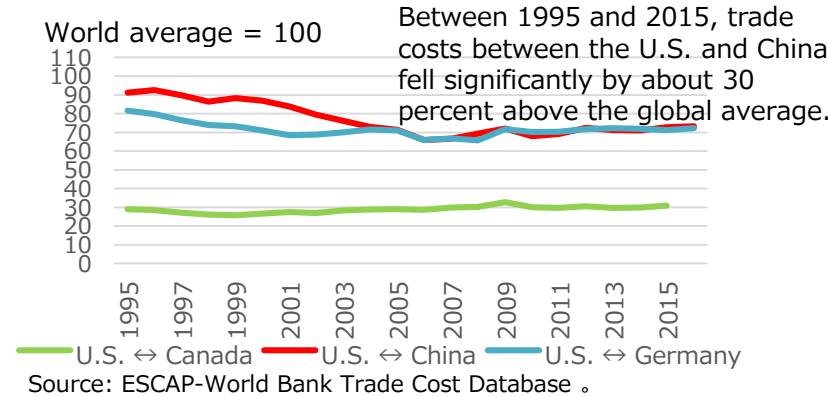
International travelers, trade (left panel) and foreign direct investment (right panel)



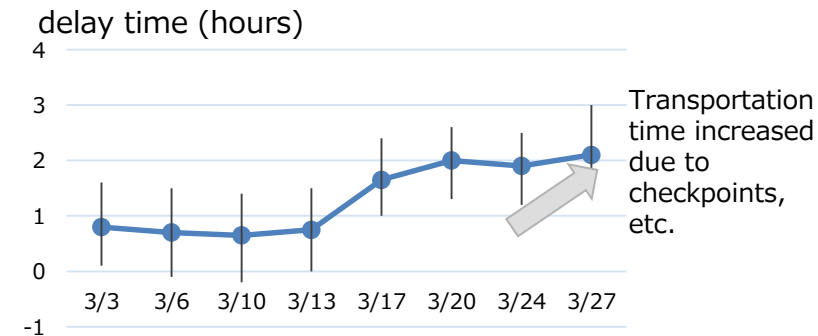
Source: IMF WEO, UNWTO, World Bank

Source: World Bank, UNCTAD

Trade costs



Border crossing delays for truck

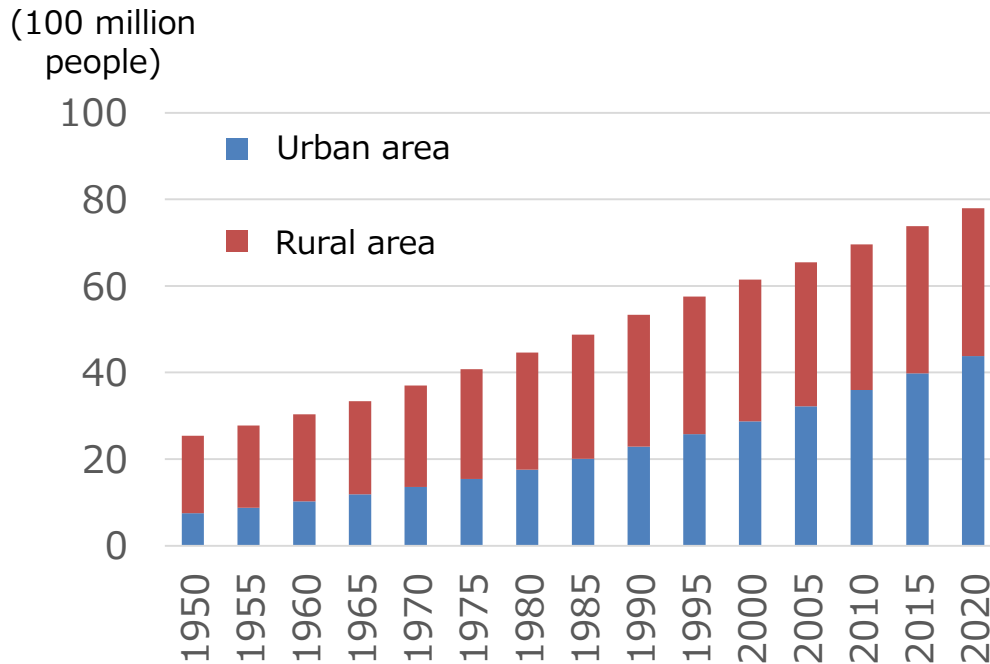


Source: Created by Sixfold, Baldwin

2 – 10. Human concentration and the spread of virus

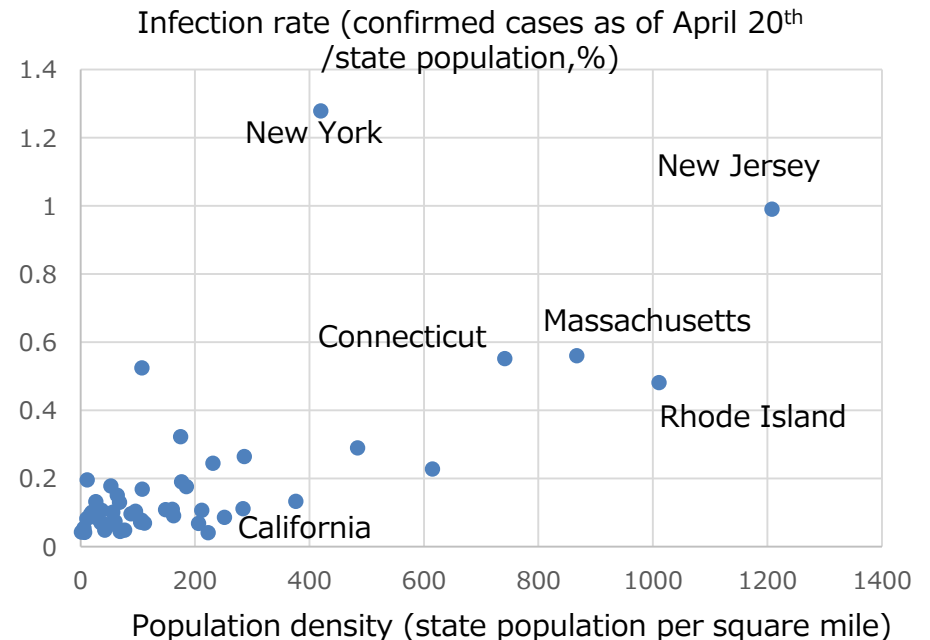
- The movement of people across borders concentrates people to cities. The exchange of diverse knowledge has led to an increase in innovation and increase in productivity.
- Service industry, which requires F2F interactions, increases dominance in urban areas. The new coronavirus infections has spread in urban areas with high population density. Face-to-face communication costs are rising since the crisis.

World population



Source: UN

New Coronavirus Infection Rates and Population Density by State in the U.S.

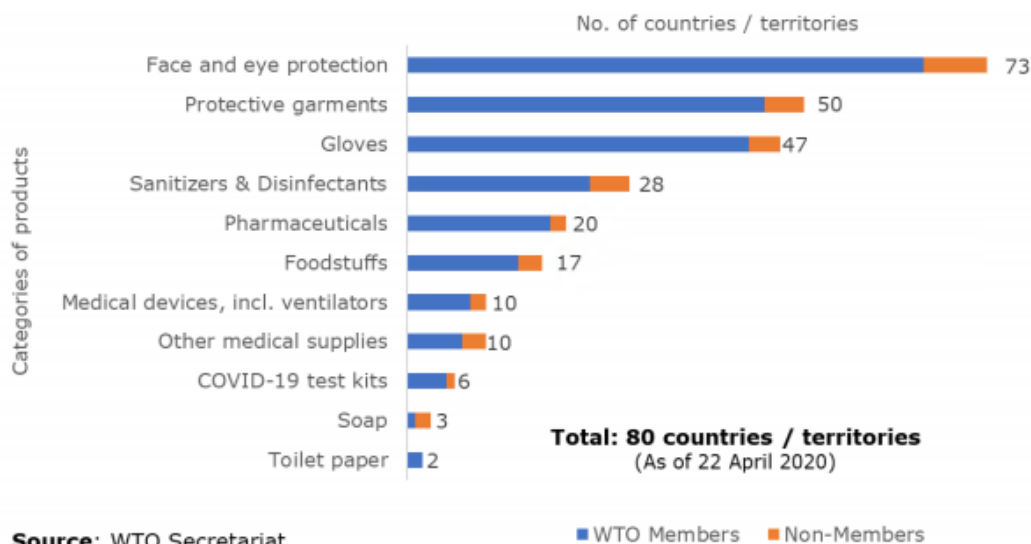


Source: 1keydata, github

2 – 1 1. Emergency measures

- Demand for personal protective equipment has exploded, and shortages of medical supplies have become serious in various regions. As a result, many authorities have adopted emergency measures.
- To ensure stable supply, it is important to prepare for crises and cooperate with other countries in emergencies. Export restrictions may put themselves at risk as complicated supply chains have been established (“paradox of export restriction”).

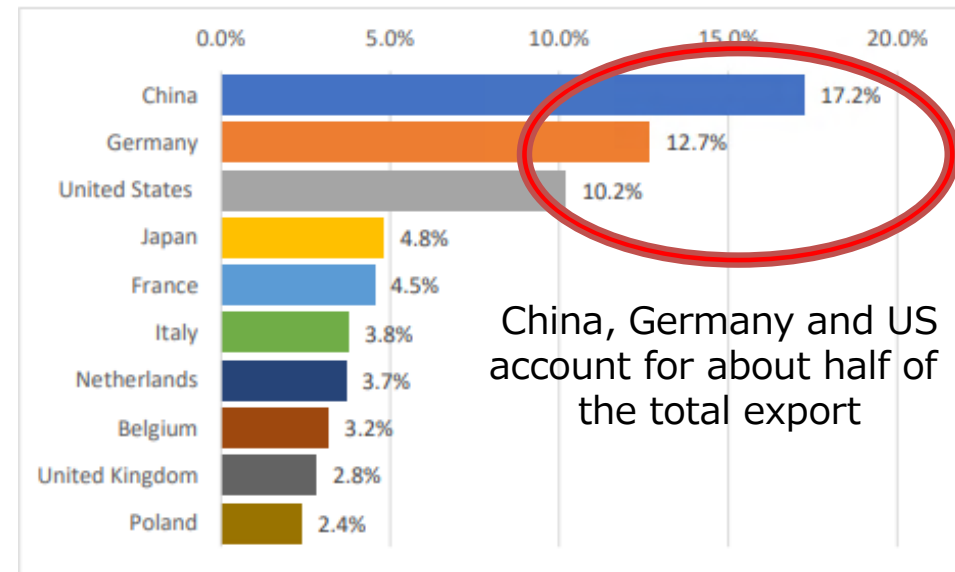
The Number of countries and separate customs territory introducing export prohibitions and restrictions as a result of COVID-19, by categories of products



Source: WTO Secretariat

Source: WTO https://www.wto.org/english/tratop_e/covid19_e/export_prohibitions_report_e.pdf
Note: As of 22 April, 2020

Exporters of personal protective equipment

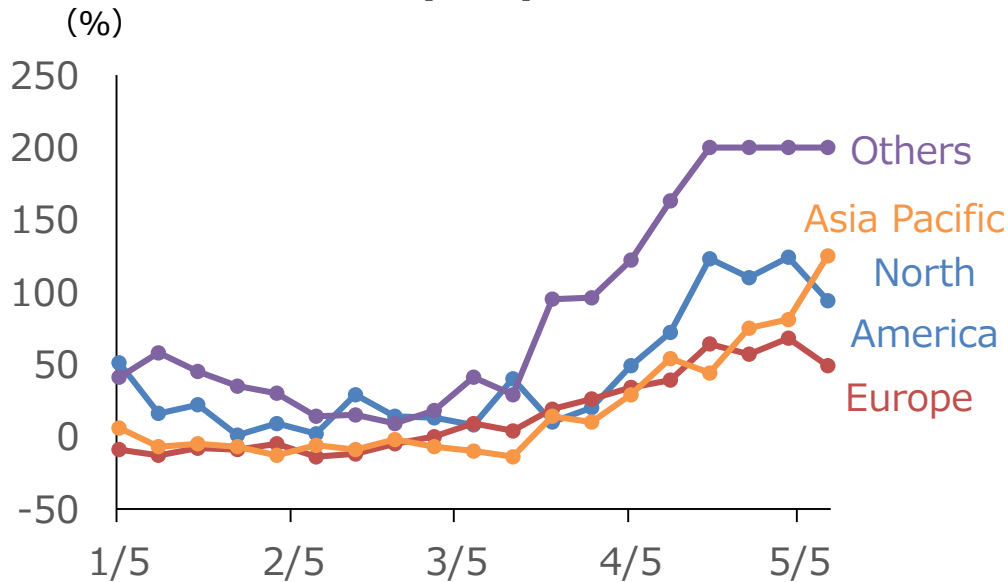


Source: WTO https://www.wto.org/english/news_e/news20_e/rese_03apr20_e.pdf
Note: Average from 2017 to 2019

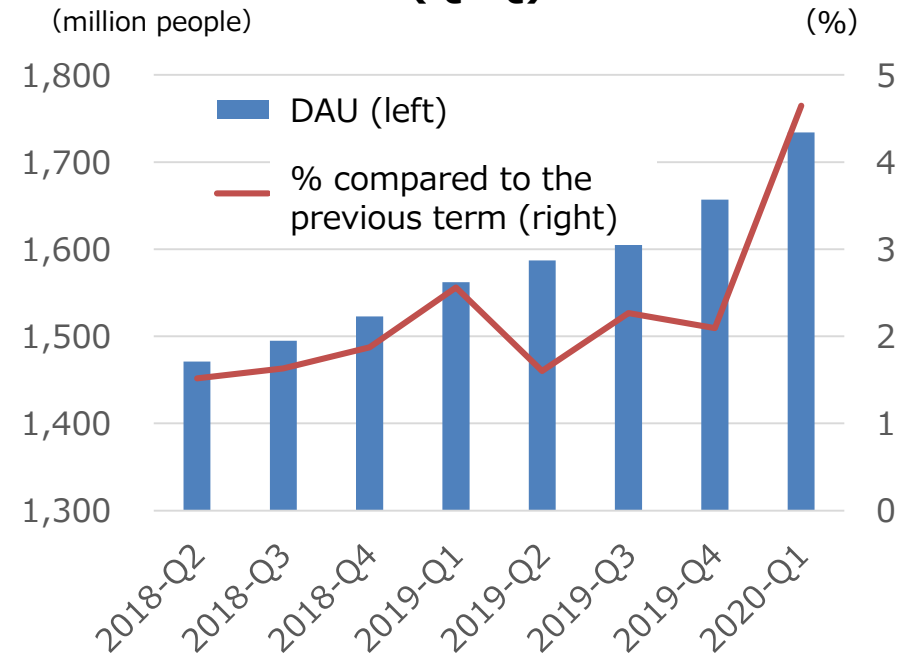
2 – 1 2. Digitalization and COVID-19 crisis

- During the COVID-19 Crisis, the digitization of the economy and society accelerated rapidly, with the spread of e-commerce and online communications.
- Social distancing and the rise of online communication remind us of the importance of digitalization.

Online retail sales growth (YoY)



Daily Active Users of Facebook (QoQ)



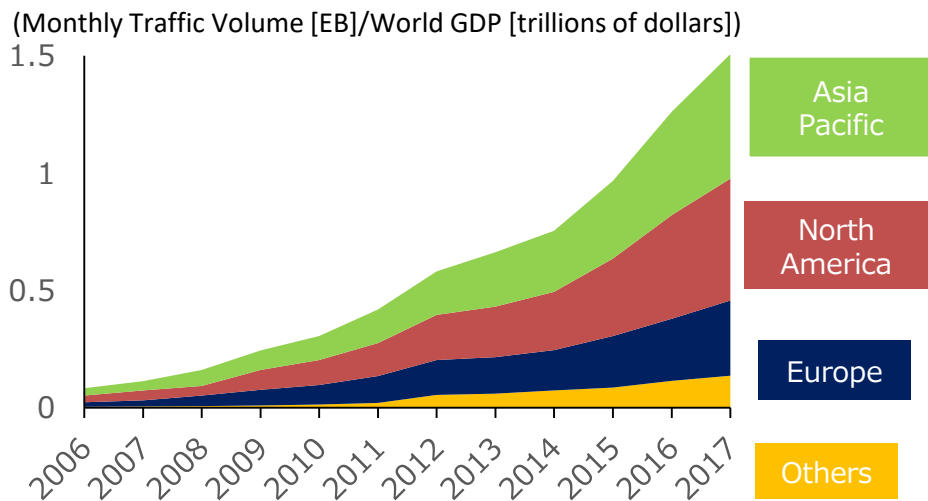
Source: Emarsys initiative, GoodData
 Note: Online sales of brands that primarily sell in stores through apps, etc.

Source: Facebook

2 – 1 3. The growing presence of mega IT firms

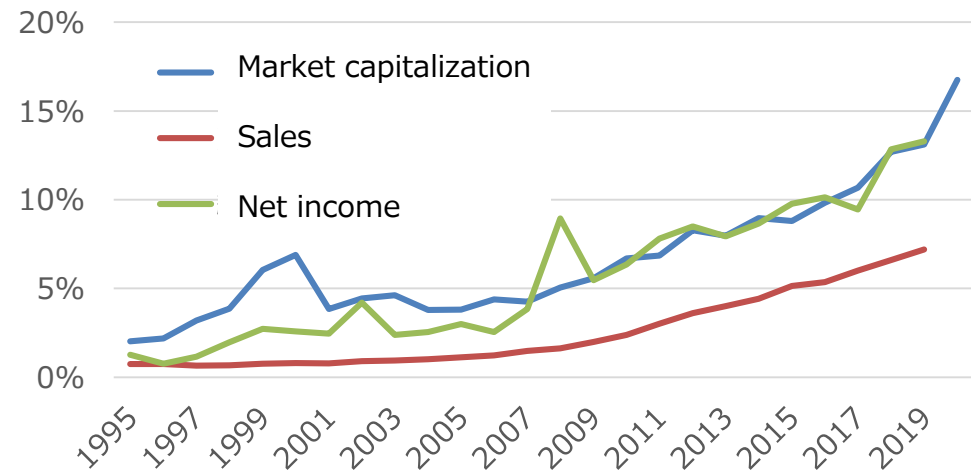
- The rapid spread of digital technologies is transforming many economic and social activities (e.g. the expansion of digital trade, cross-border e-commerce, internet of things). The amount of global data traffic is growing faster than the size of the economy.
- The progress of digitalization changes the industrial structure from “value chain model” to “layer model.” Along with this business model change, the network effect contributes to the growing presence of mega IT firms.

**Data traffic expands beyond economic scale
(Internet Traffic/Global GDP)**



Source: Cisco, IMF

**Market capitalization, sales and net income
share of the U.S. mega IT firms**



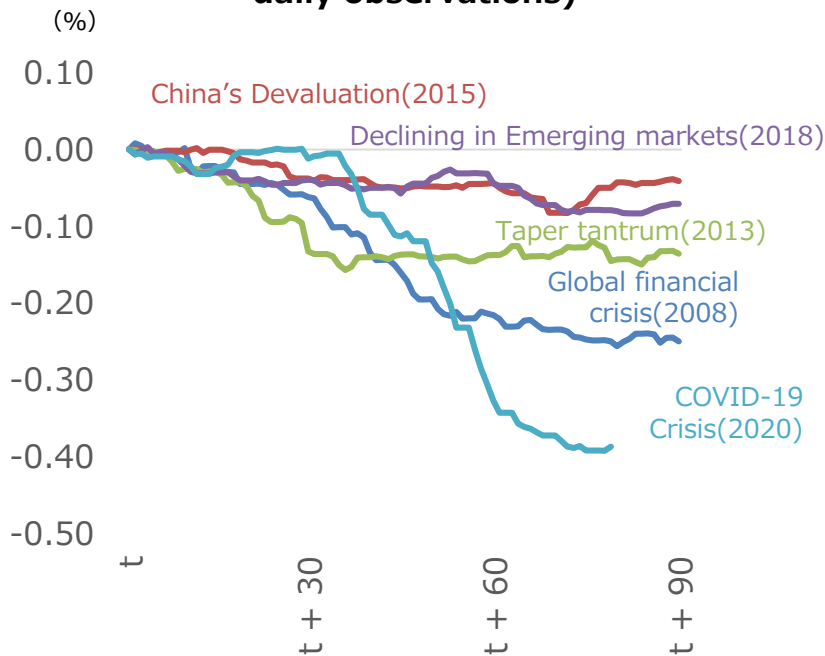
Source: Refinitiv

Note: Amazon, Alphabet, Facebook, Apple, Microsoft
Market capitalization, revenue and net income shares of the five Microsoft companies in the S&P500 as a whole

2 – 1 4. Capital outflow and supply chain

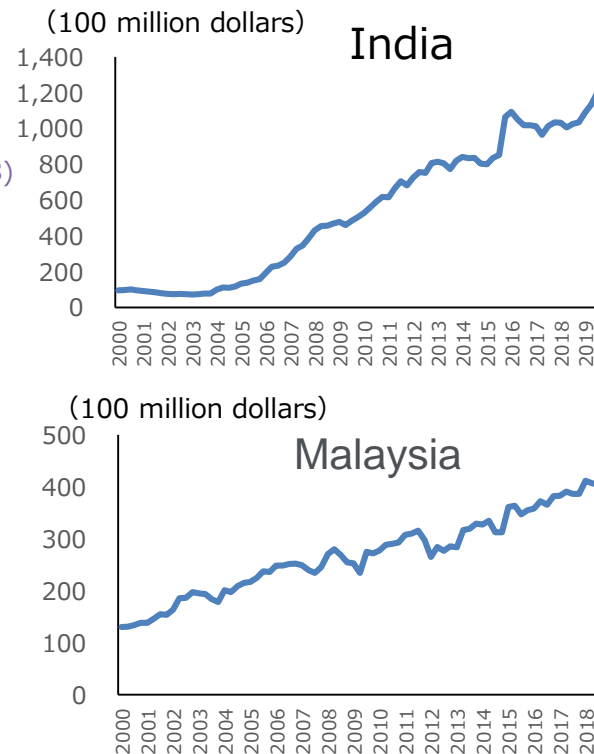
- Capital outflows from emerging and developing economies, which rely on commodity, tourism industry, and dollar funding. This is one symptom of the dollar-concentration risk.
- Emerging Asian economies are expanding their dollar credit. As the supply chain is a payment chain in reverse, if this payment risk materializes, supply chain disruption might happen.

Cumulative nonresident portfolio flows to emerging markets (percent of GDP, based on daily observations)



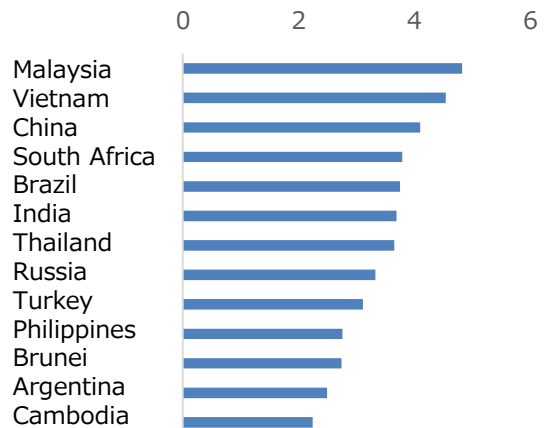
Source: IMF Global Financial Stability Report
Note: Cumulative basis. Non-resident securities investment.

Dollar credit in the emerging Asian countries



Source: BIS

Ratio of output to value added in the emerging markets



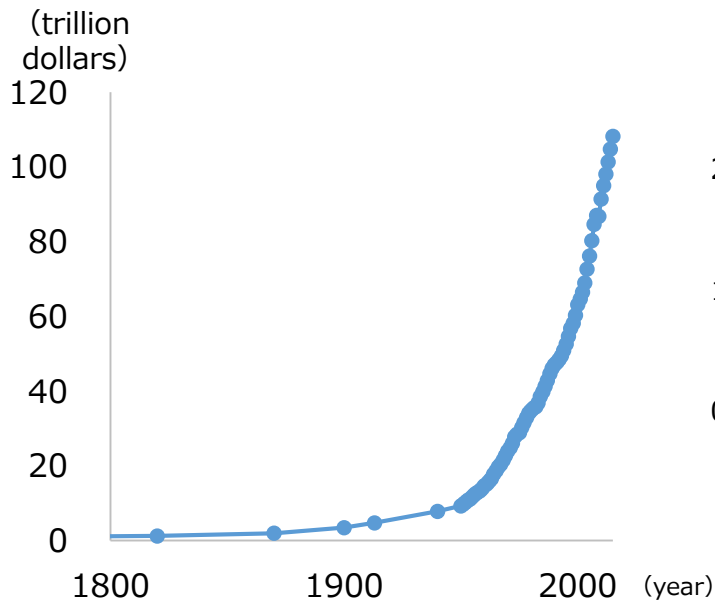
Source OECD
The larger this value is, the greater the production activity used for intermediate inputs, and the wider the supply chain.

3. Globalization: Past, Present and Future

3 – 1. Globalization and world development

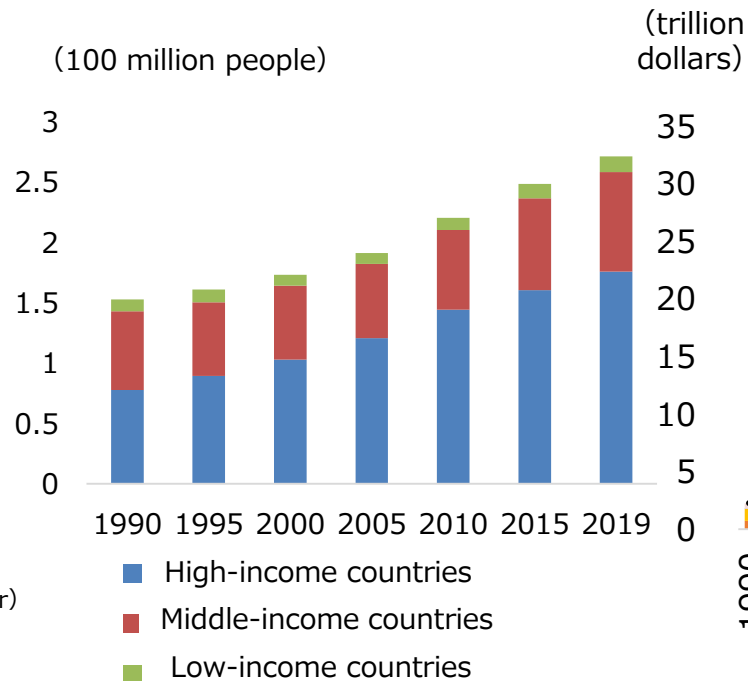
- Globalization promotes and increases interactions between different regions and populations around the globe, fostering exchange of goods, people, money, and ideas, making it a major driving force for the development of the world economy.
- Furthermore, due to the ICT revolution in recent years, factories were crossing borders, bringing the knowhow of advanced economies' firms to emerging economies, accelerating global growth.

World GDP after 1800s



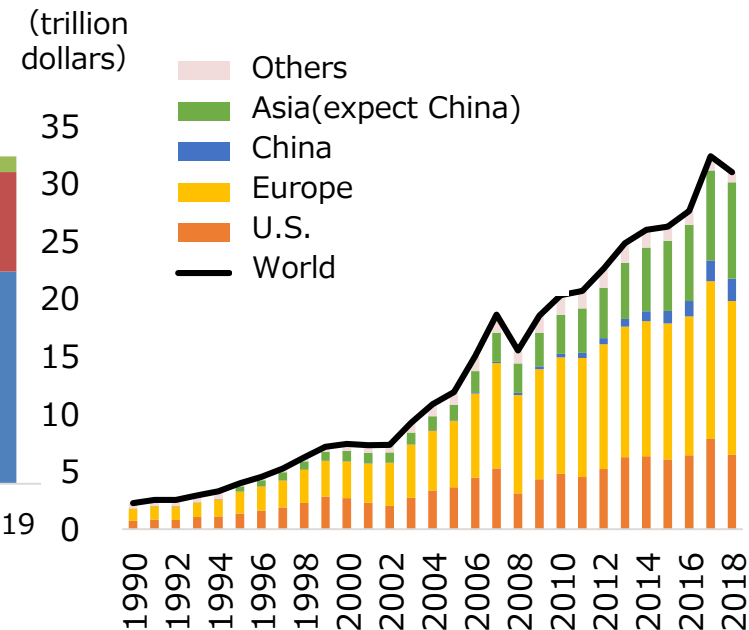
Source: Our World in Data
 Note: The units are international dollars as of 2011.

The number of immigrants (stock)



Source: UN

Foreign Direct Investment (stock)

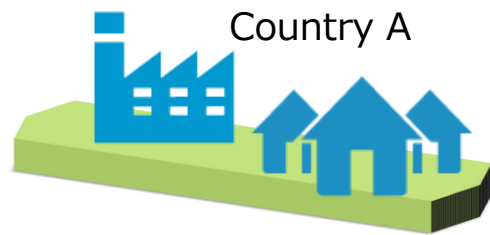


Source: UNCTAD

3 – 2 (1) . Globalization's first unbundling

- Globalization can be thought of as a progressive reversal of the forcible bundling. Three costs of distance mattered: the cost of moving goods, moving ideas, and moving people.
- In the first unbundling (from 1820 to 1990), the Industrial Revolution fostered and was fostered by transportation technology, lowering the cost of moving goods and separating of production and consumption.

The first unbundling
(Separation of production and consumption)

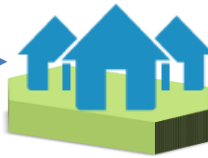
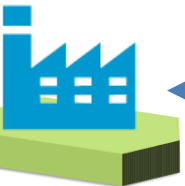


(1820~)

Country A



Country B



Source: Richard Baldwin and Fukunari Kimura.

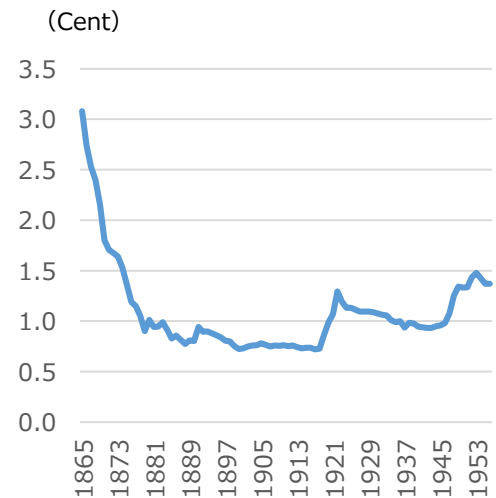
Features

- ✓ The first unbundling was all about allowing nations to better exploit their comparative advantages.
- ✓ Raw materials and final products were traded between countries.
- ✓ While shipping got cheaper, the costs of moving ideas and people fell much less.
- ✓ This unbalanced reduction of separation costs triggered a chain of causes and effects that eventually produced enormous income differences between today's developed and developing nations.

Roles of nations

- ✓ Promoting free trade and achieving a welfare state, building global governance.
(e.g.)GATT system

Transportation costs in the U.S.



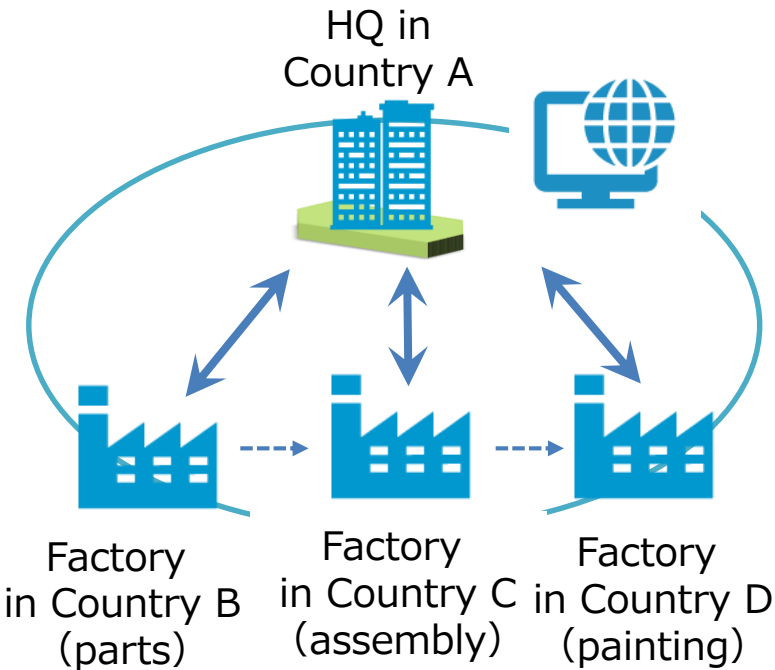
Source: Fred, Federal Reserve Bank of St. Louis

Note: This data is derived from revenue per ton-mile railroad in the United State

3 – 2 (2) . Globalization's second unbundling

- In the second unbundling (from 1990 to 2015), the information and communication technology (ICT) revolution lowered the cost of moving ideas. ICT made offshoring feasible, which promoted the development of the global supply chain.

The second unbundling (International separation of factories)



Features

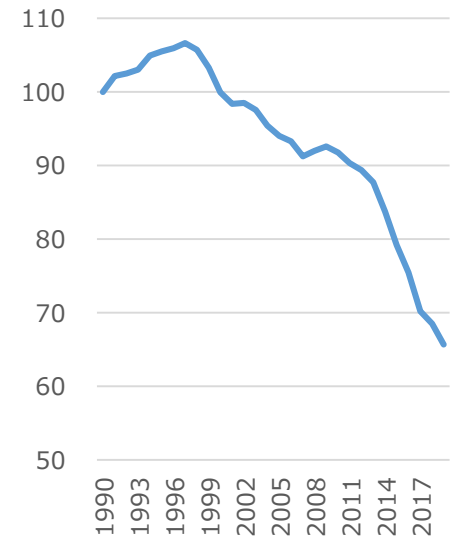
- ✓ Rich-nation firms sent their marketing, managerial, and technical know-how along with the production stages that had been moved offshore.
- ✓ As a result, the wage gap between today's developed and developing nations has shrunk.
- ✓ The international trade of intermediate goods developed, which promoted the expansion of the global supply chain.

Roles of nations

- ✓ Facilitating trade and investment environments, including rule-making in bilateral and regional frameworks (e.g.)EPAs

Communications Costs in the U.S

(1990 = 100)



Source: Fred, Federal Reserve Bank of St. Louis

Note: This data is derived from the US PCE price index of communication

Source: Richard Baldwin and Fukunari Kimura.

3-2 (3) . Globalization's third unbundling

- In the third unbundling (from 2015), face-to-face cost is plunging thanks to both telepresence and telerobotics. They allow workers from one nation to perform tasks inside another nation without actually being there. Such virtual immigration would expand the range of jobs that are directly subject to international competition.
- The world experiences COVID-19 crisis during the transition to the third unbundling. Online communication has been accelerating and accelerated by the new globalization.

The third unbundling
(Likely to allow labor services to be physically unbundled from laborers.)



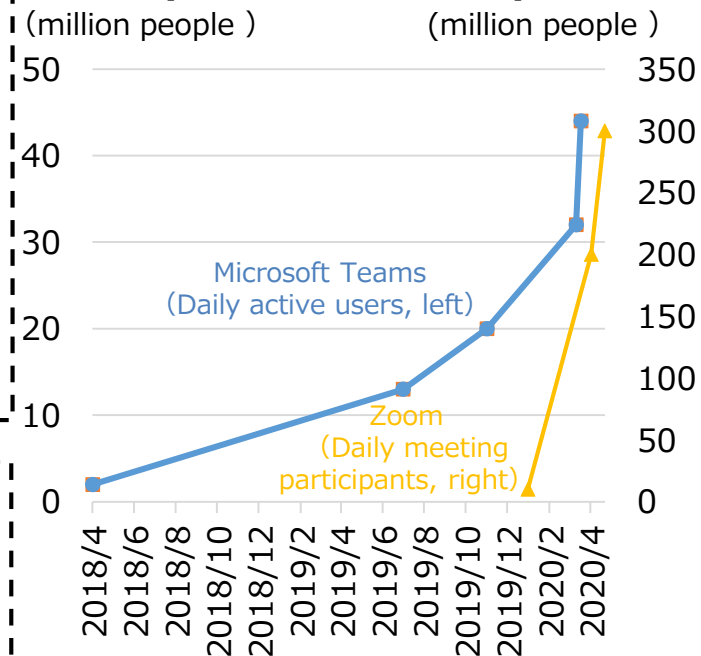
Features

- ✓ Many menial and professional tasks in developed nations could be performed remotely by workers and professionals sitting in developing nations. It would also allow developed-nation professionals to apply their talents on a much wider basis.
- ✓ For example, Japanese engineers could repair Japanese-made capital equipment in South Africa by controlling sophisticated robots from Tokyo.

Roles of nations

- ✓ Strengthening human capital, Securing person, and developing infrastructures and rules required to promote digitalization.

Online communication tool (Teams and Zoom)



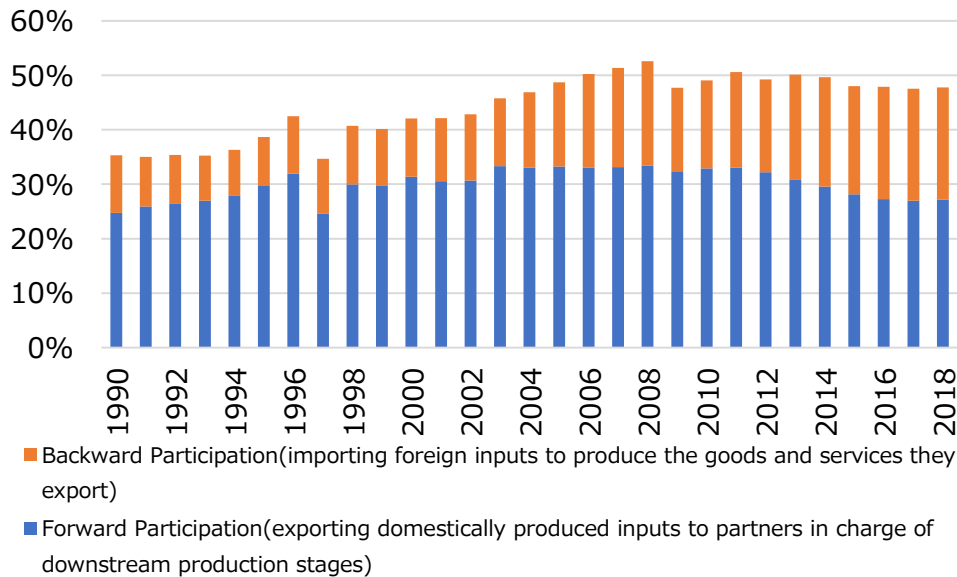
Source: Richard Baldwin and Fukunari Kimura.

Source: Microsoft, Zoom video communications

3 – 3. Globalization for Japan

- Japan has played an important role in the development of the second unbundling in East Asia. Japanese companies have extended international production networks and forming industrial agglomerations. Japanese GVC participation has shifted from forward to backward where companies provide high-value-added products with high technological capabilities in Japan.
- Japan achieved rapid economic growth as a “trade nation” after the war. While it becomes the world largest creditor along with building supply chain network, Japan has transformed itself from “trade nation” to “investment nation.” Its current account balance is now determined by investment income rather than trade surplus.

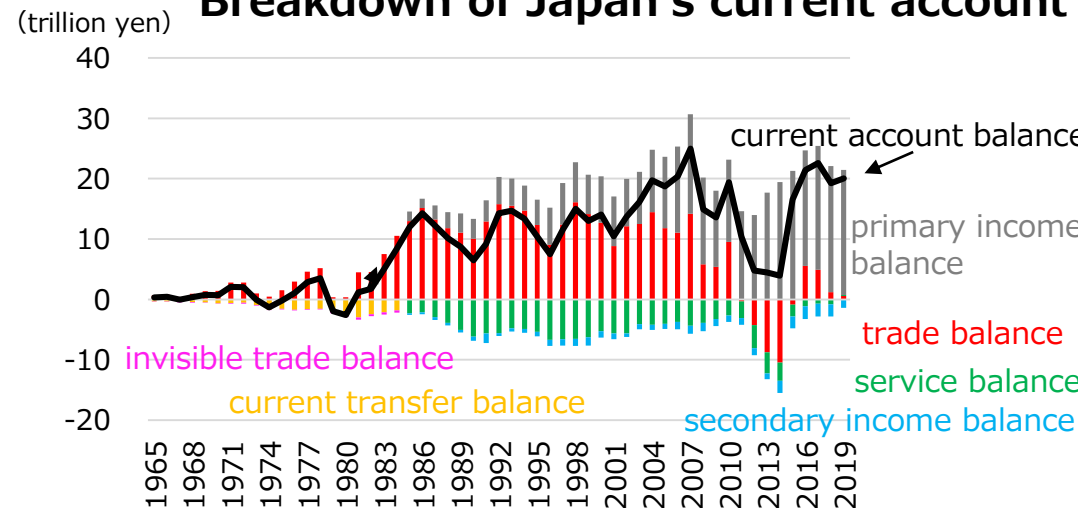
GVC participation rate in Japan



Source: OECD TIVA

Note: The GVC participation rate indicates the percentage of exports in the global value chain on a value added basis, and the higher the ratio, the more it contributes to the formation of the global value chain.

Breakdown of Japan's current account



Source: Bank of Japan, "balance of payments"; Policy Research Institute, Ministry of Finance, "Financial Statistics Monthly"

Note: The primary income balance shows interest and dividends arising from external financial claims and debts. The secondary income balance shows the balance of the provision of assets without compensation between migrants and non-migrants. In the 1980s, there was a change in the current account balance. Before that, the balance was divided into the trade balance, the non-trade balance, and the current transfer balance. The non-trade balance corresponds to the current service balance, the primary income balance, and the current transfer balance corresponds to the current secondary income balance.

3 – 4. Third unbundling in the world

- The third unbundling is driving a new industrial revolution. Infrastructure such as 5G and AI, is important for this transformation. In the world, nations take measures to develop the environment, and to establish digital related rules, such as the GDPR of Europe.
- In the wake of the COVID-19 pandemic, the Chinese government announced that it would accelerate the construction of new infrastructure.

Examples of global AI strategies

European Commission:

“AI White Paper” (February 2020)

- Europe should become a global leader in AI systems that can be used and applied safely.
- Achieving "reliability" and "superiority" for safe AI development that respects the values and rights of citizens.

China :

“Next Generation Artificial Intelligence Development Project” (July 2017)

- By 2030, China will be the world's best in theory, technology and application.
- The size of the core AI industry and related industries was expanded to 1 trillion yuan and 10 trillion yuan, respectively.
- Key development areas include AI, software, hardware, intelligent robots, autonomous driving, virtual reality (VR), augmented reality (AR), smart devices, and IoT core components.

U.S. :

Revised “National Strategic Plan for Research and Development of Artificial Intelligence” (June 2019)

- Prioritizing long-term investments in AI research to maintain U.S. leadership.
- Developing an effective method to realize collaboration between humans and AI.
- Ensuring system safety and security.
- Expanding public-private partnerships in AI.

Three areas of China's new infrastructure construction

1. Information infrastructure

(e.g.) 5G, IoT, satellite Internet, AI, cloud computing, blockchain.

2. Unified infrastructure

(e.g.) Intelligent transport system infrastructure, smart energy infrastructure, etc.

3. Innovation infrastructure

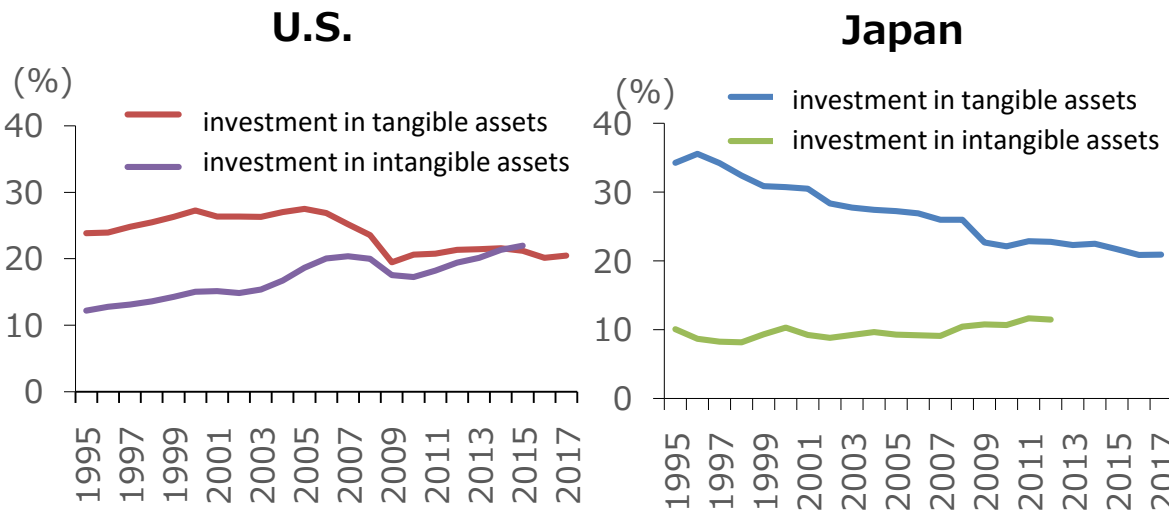
(e.g.) Critical science and technology infrastructure, science and education infrastructure, industrial technology innovation infrastructure, etc.

Source: April 20, 2020: National Development and Reform Commission
Written based on Wu Hao, Chief of Innovative Digital Department

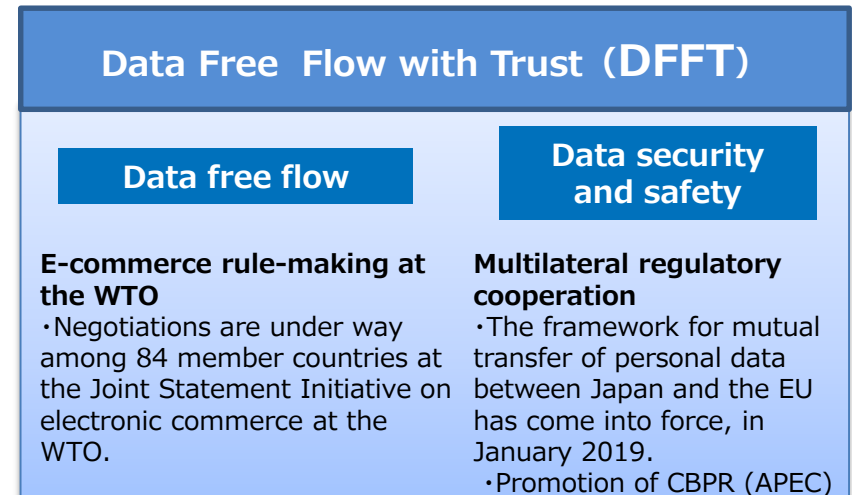
3 – 5. Japan's challenges toward the third unbundling

- Nevertheless companies in Japan have a high level of ICT utilization capabilities in general, investments on and utilization of intangible assets, including digital ones are insufficient.
- Recognizing the importance of improving the regulatory environment, Japan leads international rule-making on digital economy in order to materialize “Data-Free Flow with Trust (DFFT)” and efforts toward realizing “Governance Innovation” that promotes innovation and achieves social value.
- It is important to turn the COVID crisis into an opportunity to promote digitalization

Investments on tangible and intangible assets (ratio to GDP)



Concept of Data Free Flow with Trust (DFFT)



Source: based on INTAN-Invest, SPINTAN, JIP Database 2015, Penn World Table 9.1, etc., with reference to the Japan Center for Economic Research.

3 – 6 . Combating the coronavirus with innovative tech and social implementation

- The coronavirus outbreak has forced the society to adopt innovative technology such as contact tracing apps and online meetings to continue business activities while keeping social distance.
- As governments and companies introduce the apps in response to the Coronavirus, the balance between public health and privacy has become an issue around the world.

New innovations (examples)

Tracking and management of the infected

Use digital data such as location and payment to identify contact with infected persons. China and South Korea are trying to track close contacts, and UK and Singapore are also use tracking technology.

Unmanned operation

Automated diagnosis using AI, health check, serving in contaminated areas using robots and drones, monitoring and disinfection, etc. now widely used in China for safe and efficient control of infectious diseases.

Remote communication

Telemedicine, education, telework, etc. Some hospitals are introducing 5G and VR.

Examples of initiatives in each country

The South Korean government published apps to monitor the behavior of infected people. Anonymized attributes and travel histories are disclosed.



Source: wall street journal

Taiwan government manages sales of masks by utilizing ID numbers of health insurance cards.



China's Megvii has developed an AI system that can identify people with hyperthermia from a crowd of 15 people per second within 5m.



Source: Toyo keizai

Unmanned transporters deliver medicine and food to quarantined patients and drones go on patrol, measure body temperature, and disinfect rooms in China



PingAn GoodDoctor, a medical app, conducted 1.1 billion remote treatments during COVID. Insurance covers. They also have a 24 hour service.



Source : N H K

Alibaba provides comprehensive telework support software to 10 million companies free of charge. The number of users has reached 200 million members. Baidu and others follow.

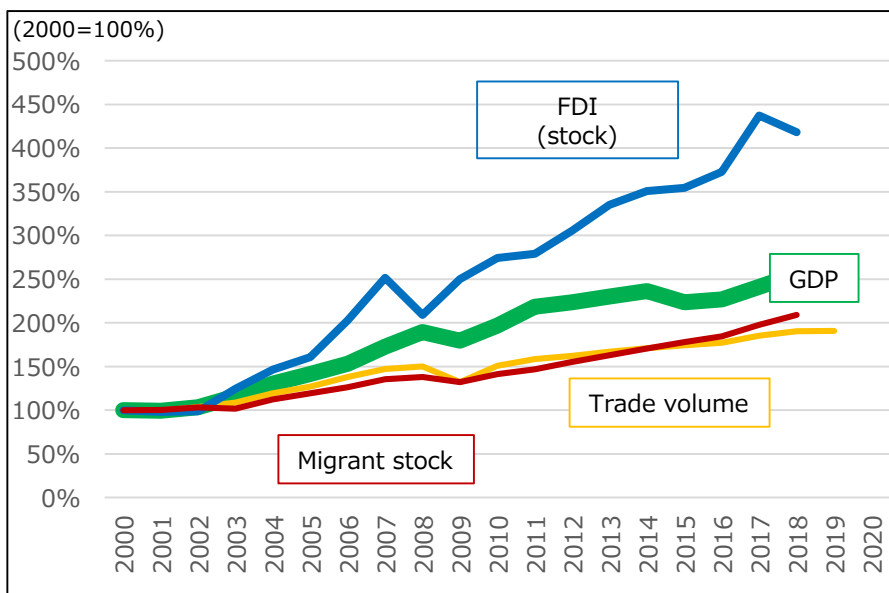


4. The Way Forward

4 – 1. Globalization trend

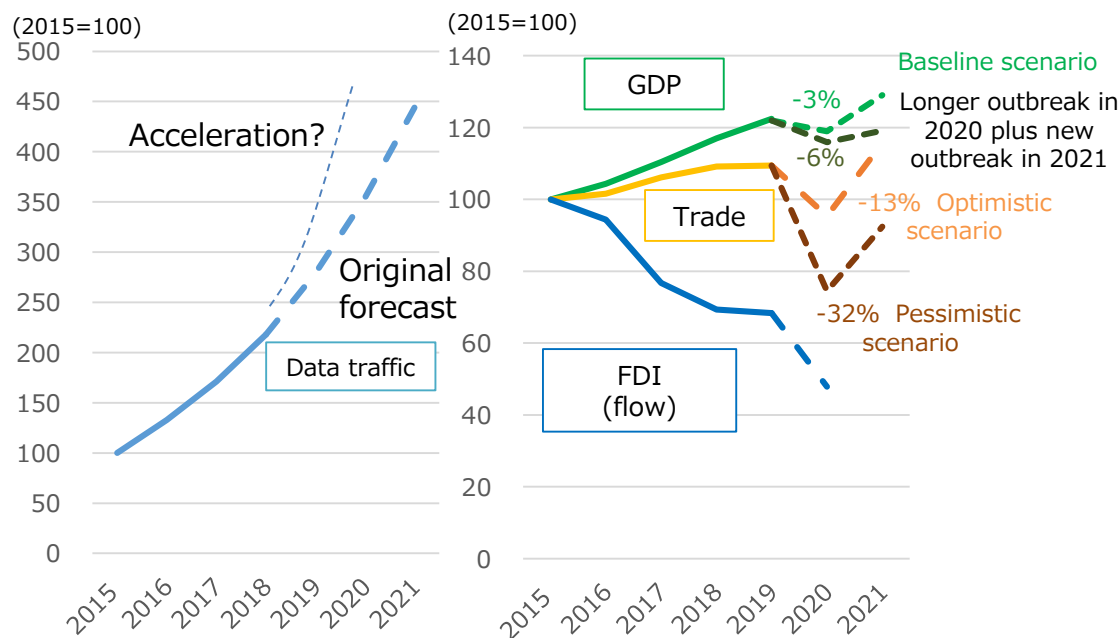
- Globalization promotes cross-border human mobility, capital flow, trade and data flow, which is the engine of economic growth and development.
- The COVID crisis happens amid the third unbundling and digitalization. This COVID crisis encourages remote communications, and rethink of global supply chain. With/after this crisis, cross-border data flow will be accelerated.

Trade, investment, human mobility



Source:UNCTAD, UN, WTO, IMF

Recent trends and projections



Source: Cisco, 2019, IMF, WTO, UNCTAD

Note: In the IMF projections of GDP, "Baseline scenario" assumes that the spread of the infection is stamped out in the second quarter of 2020 (first quarter in China). "Longer outbreak in 2020 plus new outbreak in 2021" assumes that the continuation of the spread of the infection during 2020 as well as a second wave of spread in 2021.

4 – 2. The way forward: lessons from the COVID crisis

- Based on the lessons of the COVID crisis, we should identify the risks of the global system and how the system will evolve with/after the COVID-19.
- We have to achieve an ideal global economic and social system while overcoming the current crisis.

Lessons learned from the COVID crisis

1. Global challenges and divisive forces

- Pandemic cannot be contained without international cooperation.
- Emergency measures and distrust of global agreements and institutions

2. Efficiency and Risk

- Geographical concentration of production
- Risk of supply disruption

3. Infection and Economy

- Limit on face-to-face interactions
- Acceleration of digitalization

The way forward

1. Upgrade globalization

2. Supply chain resilience

3. Evolution of human communication

We should achieve a resilient economic and social system to deal with crises flexibly and to ensure sustainable development

4 – 3 . Upgrade globalization

- Pandemic calls for international cooperation to overcome the current crisis, to make the emergency measures temporary, and to deal with true global challenges.
- Divisive forces are rampant, even before the pandemic, undermining cooperation. Global leaders are trying to bring unifying forces.

Divisive forces

■ Increasing trade restrictions

- US-China trade friction.
- Unilateral measures.
- Export restrictions on PPE etc.

■ Risks of market fragmentation

- Increased national security regulations.

■ International organizations, regional integration

- WTO reform (incl. Appellate Body).
- United States withdrawal from the Paris Agreement, cutting WHO fund.
- Doubt over European project: BREXIT etc.

Unifying forces

◎ Ministerial Statement G20 Trade and Investment (3/30)

The Ministers agree that emergency measures designated to tackle COVID-19, if deemed necessary,

- ① must be targeted, proportionate, transparent, and temporary,
- ② do not create unnecessary barriers to trade or disruption to global supply chains,
- ③ are consistent with WTO rules.

The Ministers emphasize ④our commitment to notify the WTO of any trade related measures taken.

◎ Japan-ASEAN Economic Ministers' Joint Statement on Initiatives on Economic Resilience(4/22)

ASEAN and Japan express their commitment to make utmost efforts to prevent stagnation of economic activities by ensuring the smooth flow of goods and to strengthen cooperation on building resilient supply chains. ASEAN and Japan are preparing the "ASEAN-Japan Economic Resilience Action Plan".

◎ Statement on COVID-19 and the Multilateral Trading System by Ministers Responsible for the WTO (5/5)

① We stress that trade restrictive emergency measures aimed at protecting health, if deemed necessary, shall be targeted, proportionate, transparent and temporary, not create unnecessary barriers to trade or disruption to global supplychains, and be consistent with WTO rules.

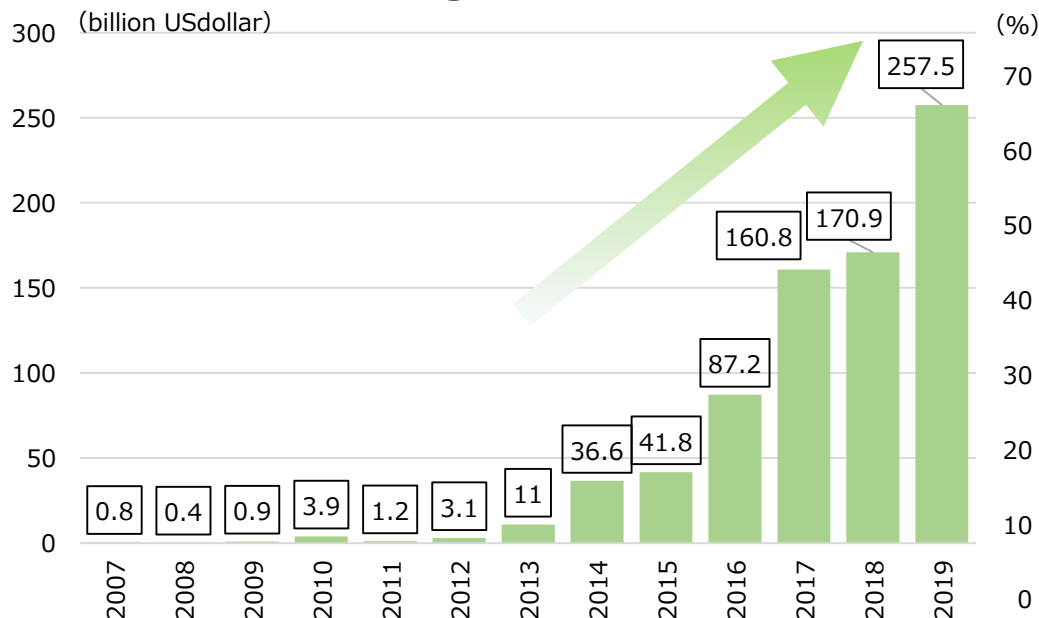
② We support the full resumption of all WTO activities as soon as feasible.

③ We will also support continued efforts to reform the WTO so that it is as effective as possible.

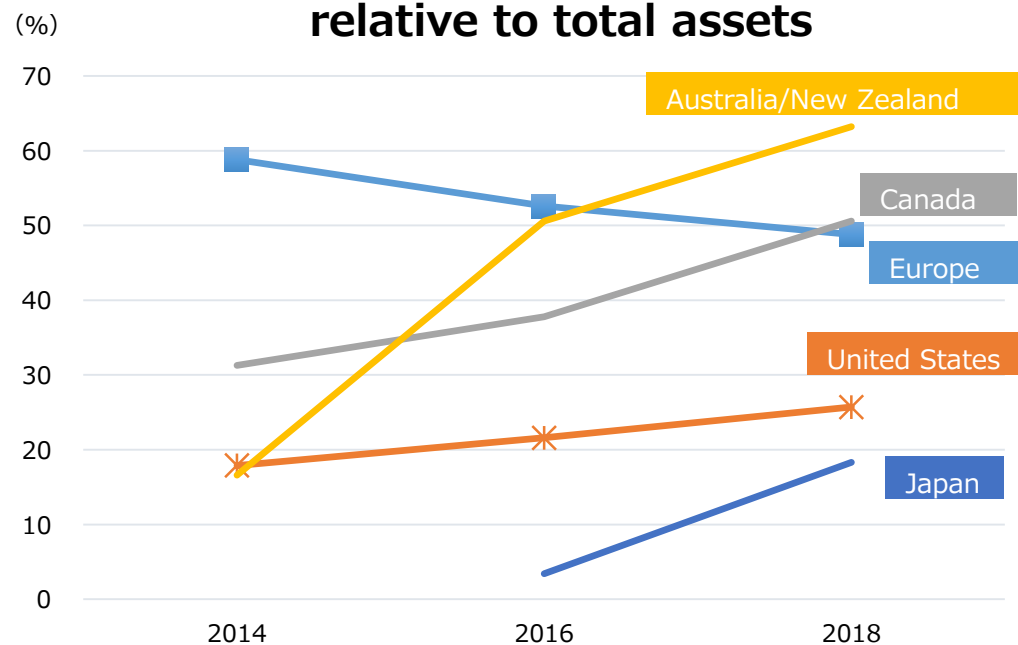
4 – 4. Toward the sustainable development goals(SDGs)

- To deal with current/future global crises and risk, such as pandemics and environmental issues, and to contribute to sustainable development, increasing social investment is urgent.
- All actors, including states, companies, NGOs, and individuals, should work together to actively invest to achieve the Sustainable Development Goals (SDGs).

The trend of green bond issuance



Proportion of sustainable investing relative to total assets

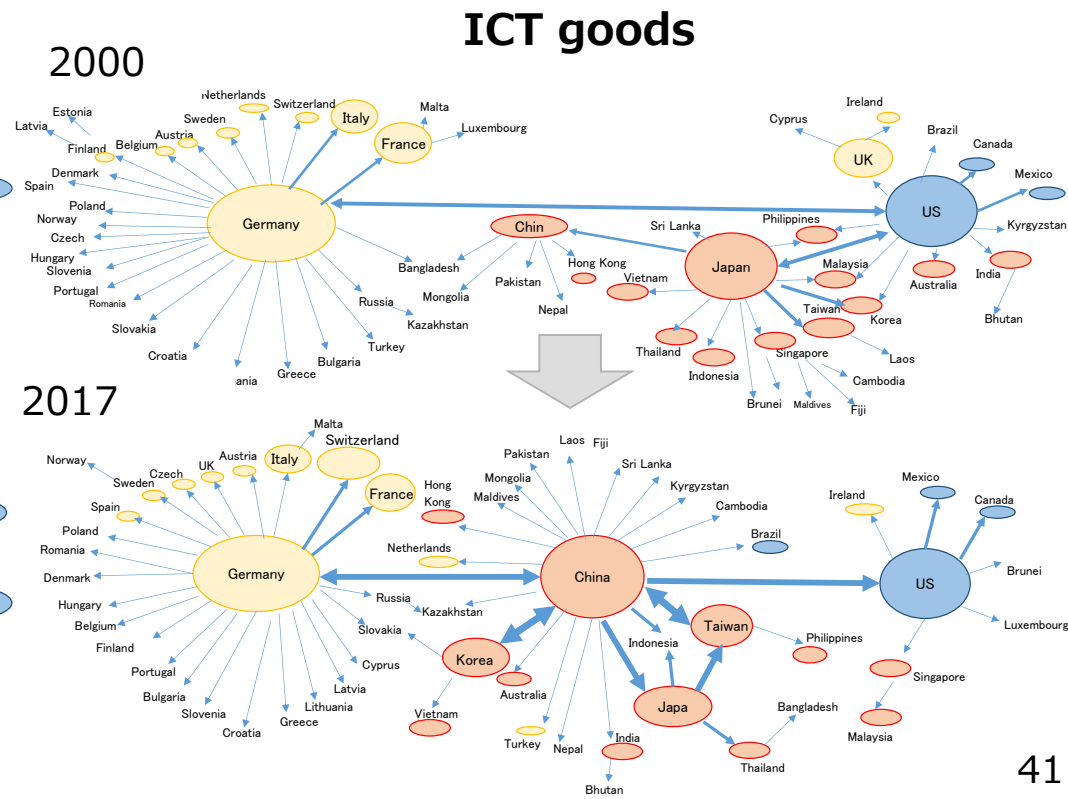
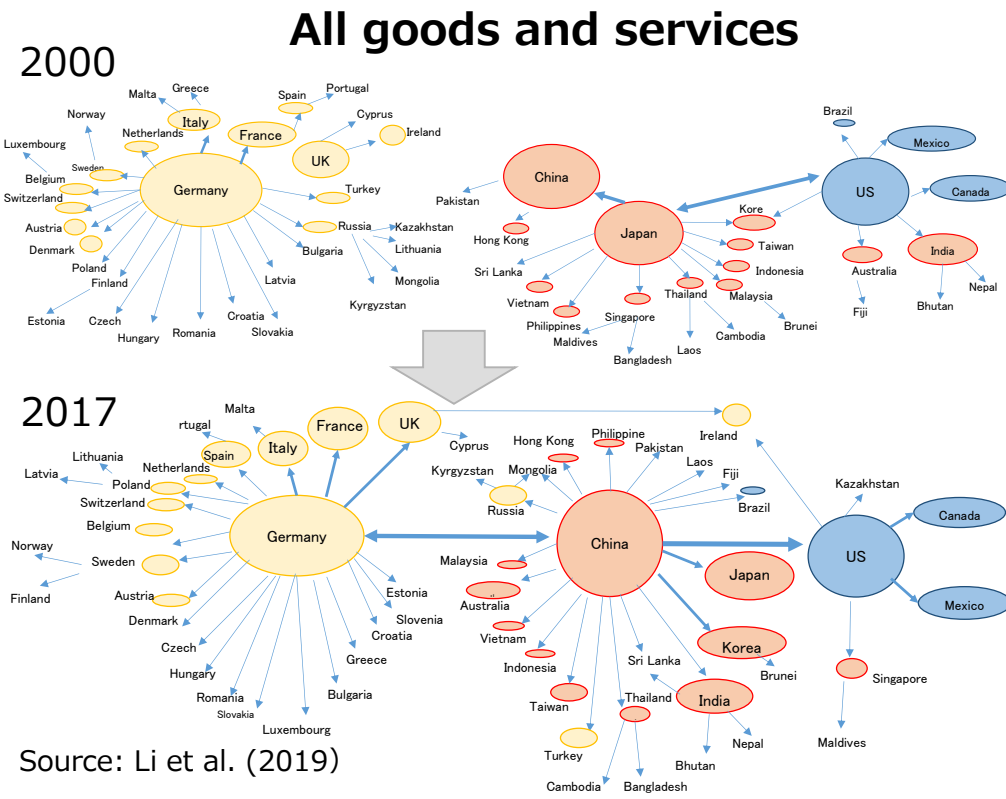


Source: The Green Bond Issuance Promotion Platform, Climate Bonds Initiative
 Note: Green bonds are bonds issued by private companies, international organizations, national and local governments to raise funds for environmental projects, such as combating global warming, pollution prevention and control, biodiversity conservation, and sustainable water resources management, with limited use.

Source: 2018 Global Sustainable investment review
 Note: In 2014, data for Japan was combined with the rest of Asia, so this information is not available.
 ESG investments take into account not only financial information, but also environmental, social and governance initiatives. Given that the SDGs are a universal goal, investors should consider the following in evaluating each company's ESG Efforts to address the SDGs can be a criterion for judgment.

4 – 5. Resilient supply chain: Comprehend supply chain

- For resilient supply chains, it is necessary to balance efficiency and risk of supply chain disruption. The first step is to fully comprehend the supply chain and its network.
- Production network has been evolving based on comparative advantages and the type of goods. While the presence of China is growing in general, Japan plays an important role in an ICT goods production network.

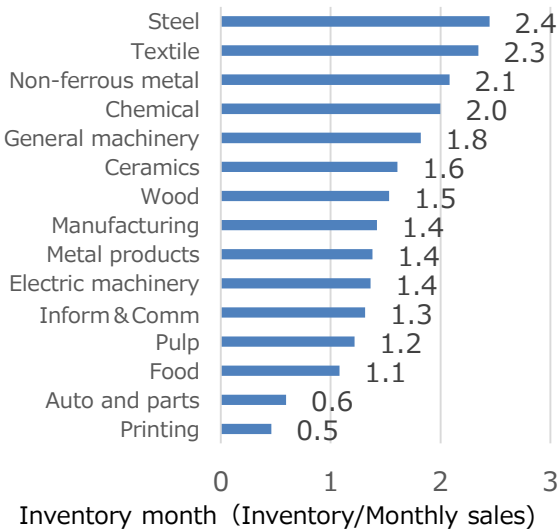


4 – 6. Resilient supply chain: procurement, inventory

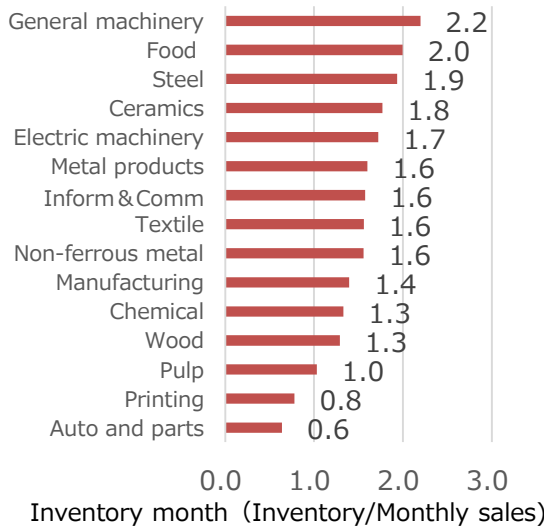
- Lean production can operate with less inventory. Each industry has a different inventory level.
- Diversification of procurement sources and optimization of inventory are effective strategies. “GLOCAL growth strategy” is also effective.
- Past crises reminded Japanese firms of the importance of diversification and optimization, but the COVID crisis showed this lesson again. Further digitalization and other measures are needed.

Note: GLOCAL means local company provides goods to global market to capture its growth.

US manufacturing (December 2019)



Japan manufacturing (2019)



Examples of diversification procurement, proper securing of inventory

- Great East Japan Earthquake (2011)**
 - Automobile manufacturers were faced with shortage of various parts such as microcomputer for engine control, which is largely imported from one factory of the specific company although it is indispensable for automobile production.
 - Reflecting on their mistakes, the manufacturers engaged in production of microcomputer for engine control, which had been struck by the earthquake, put their factories on various regions and tried to procure materials from factories of other companies six months after the disaster.
 - Japanese automakers have built a system that allows them to keep track of the inventory and operating status of the third and fourth subcontractors. And with diversification of suppliers in progress.
- Kumamoto earthquake (2016)**
 - The operation of the main factory of the image sensor of a Japanese electronics manufacturer was stopped, damaging production of digital camera.
 - From this lesson, semiconductor segment of a Japanese electronics manufacturer made an extensive BCP plan with supply chain not interrupted by similar natural disasters, including measures that production activities will continue with inventory even if it takes two months to restore the factory.

Source: US Department of Commerce.
 Note: Inventory month is inventory outstanding divided by monthly sales.

Source: MOF “Corporate Statistics”
 Note: Inventory month is inventory outstanding divided by monthly sales.

4 – 7. Supply chain and the types of goods

- Need to rebuild resilient supply chain to prepare for and to deal with another crisis.
- A path toward building resilient supply chain should be based on the types of goods as each type of goods has different bottlenecks in the crisis.

Measures based on the types of goods

Emergency goods

- Mask, protective clothing, vaccines, ventilators, tents, blankets, etc.

【Challenge】 Demand increases explosively during a crisis. It is not feasible to have and maintain full capacity for such emergency demand in peacetime.



- To construct stable supply system in case of emergency, which is not affected by international affairs.

Other goods

- Important industries supporting Japan with cross-border supply chains (auto, electronic machinery and parts, materials, etc.)

- Strategic supplies with physical constraints in domestic production (food, energy, important minerals)

- Review of supply chain from a security perspective is needed (sensible technology, emerging technology)

【Challenge】 Supply shortage occur in case of crisis. We should maintain balance between efficiency and stable supply in competitive area while the world is peace.



- Constructing a system hard to break by comprehending the choke points precisely and procuring materials from many countries.



- Enhancing the security of food and energy (supply chain diversification)

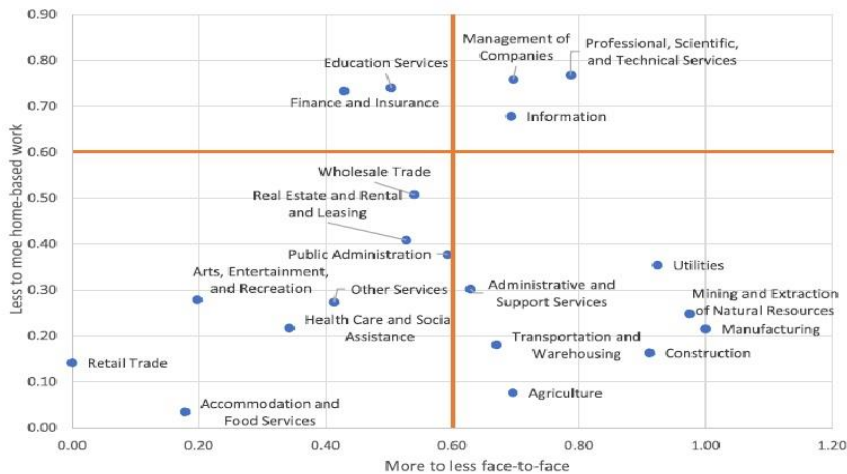


- Improving Economic Security by strengthening domestic systems and cooperating with many countries.

4 – 8 . Digitalization and evolution of communication

- The COVID crisis and the third unbundling will transform the industrial structure.
- Face-to-face interactions themselves might transform, but the value of human interactions will remain. We should relaunch the essential travels with preventive measures.
- SMEs in local areas can seize the opportunities to expand their business overseas with “GLOCAL growth strategy” as cross-border e-commerce will level the playing field for everyone.

Figure 2: Home-based work and face-to-face interactions do not always go hand-in-hand



Source: Authors' calculations based on Dingel and Neiman (2020), the O*NET database and the US Bureau of Labor Statistics.

The irreversible changes in social life and responding to them

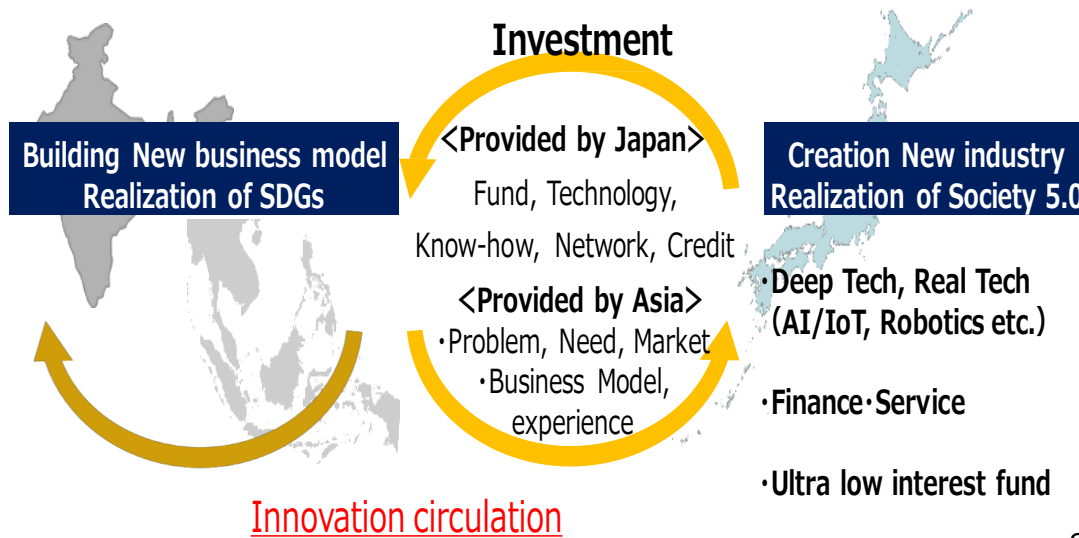
	Pre-Corona crisis	Post-Corona crisis
Communication	Communicating mainly Face-to-Face	Choosing online or offline
Business Exchange	Communicating mainly Face-to-Face	<ul style="list-style-type: none"> • Development of remote communications technology • Telework become the norm
Food services	Eating out	Take-out and delivery service, as popular options

Source: Avdiu, Besart; Nayyar, Gaurav. 2020. When Face-to-Face Interactions Become an Occupational Hazard : Jobs in the Time of COVID-19 (English). Policy Research working paper; no. WPS 9240; COVID-19 (Coronavirus). Washington, D.C. : World Bank Group.

4 – 9 . Co-creation with emerging countries in accelerating digitalization of the world

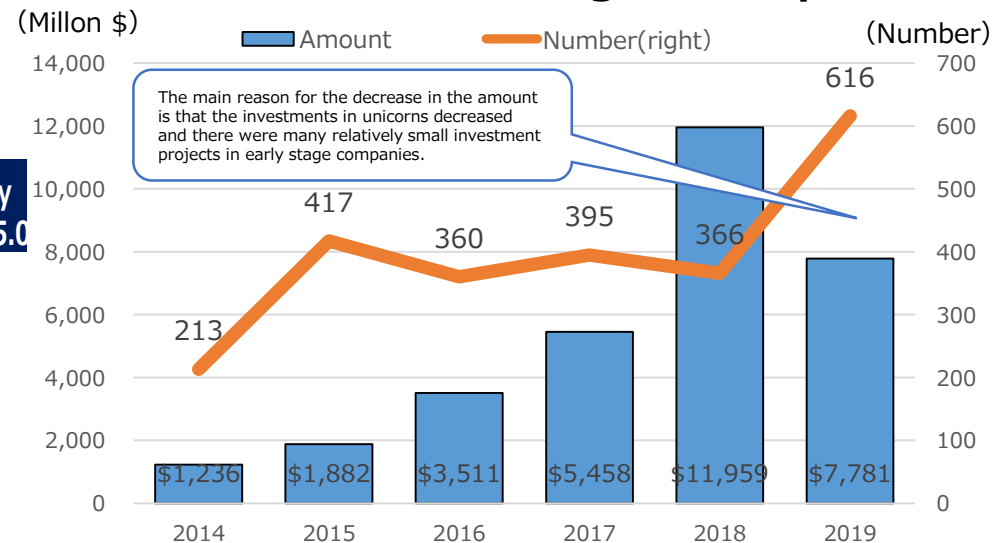
- Faced with the coronavirus pandemic, emerging countries such as ASEAN have accelerated their “leapfrog digitalization” to solve their social problems. The rapid deployment of contact tracing apps in collaboration with private companies is symbolic.
- It is vital for Japan to promote “Asia Digital Transformation”, by connecting Japanese funds, technologies, know-how and business networks with Asia’s emerging digital innovation, in reforming Japan itself and in contributing to sustainable development of the world.

Asia Digital Transformation



Source: METI

Investment in ASEAN digital companies



Source: cento "Southeast Asia Tech Investment in 2019"