

Part II Analysis: Significant shift in the global economy

Chapter 1 Expanding digital trade

Currently, the global economy is at a critical turning point as it faces three major challenges. The three challenges are: the challenge posed to the free trade system based on the WTO; the progress in the digital revolution, including expansion of digital trade; and the rise of emerging and developing economies.

Last year's edition of this white paper (White Paper on International Economy and Trade 2017) analyzed the current status of domestic inequality and the relationship between trade and inequality, which formed the backdrop for Brexit (the United Kingdom's withdrawal from the European Union) and the U.S. presidential election, with a particular focus on the first of the above three challenges. This year's edition (White Paper on International Economy and Trade 2018) will analyze trends in U.S. and European trade policies and initiatives by emerging and developing economies to strengthen regional economic partnerships, among other matters, in Part I.

In Part II, the other two challenges will be discussed. First, Chapter 1 will provide an overview of the current status of digital trade, which is expanding globally, and explain problems involved in digital trade.

Chapter 2 will show that the role of emerging and developing economies in the global economy is significantly expanding based on major macro indicators. At the same time, it will analyze the problem of excess production capacity in raw materials industries, which has arisen along with the expansion of the role of emerging and developing economies by looking at China's steel and semiconductor industries as examples.

Chapter 3 will conduct multifaceted analyses of the Chinese economy, which is achieving particularly remarkable development and is changing particularly rapidly among emerging and developing economies, including the analysis of China as a growing consumer market.

Section 1 Current status of digital trade

1. What is digital trade?

As a result of the progress of the Fourth Industrial Revolution, the volume of data trade across the world has expanded dramatically and the data processing speed has also increased markedly. As the internet and mobile phones have now spread to every corner of the world, including emerging economies, the digital market is rapidly expanding. Cyberspace has come to be recognized as an indispensable domain not only in the field of economy but in all aspects of people's lives around the world, including politics and security.

The development of global trade can be classified into three stages.¹ The first stage is the expansion of traditional trade. In this stage, it became possible to deliver manufactured goods to consuming regions across national borders thanks to the reduction of transportation cost. Goods traded

1 González and Jouanjean (2017).

in this stage were mostly final products. It became easy for consumers to obtain new products and lower-priced products.

The second stage is global value chain (GVC) trade. In this stage, it became possible for companies to divide the production of products into several processes scattered across national borders and implement each process in a region where they have an advantage because of further reduction of the transportation cost and various adjustment costs. Trade in intermediate goods increased, and GVCs extending to various regions across the world, including emerging economies, were formed.

The third stage is digital trade, which has been realized due to the drastic reduction of the cost of sharing of ideas through the transfer of data and information. As a result of the expansion of digital trade, global connectivity has been enhanced markedly, contributing to the creation of new business models and the improvement of productivity.

There is no globally unified definition of digital trade. However, the Organization for Economic Cooperation and Development (OECD), for example, has cited the idea that in principle, digital trade is premised on cross-border data transfer and includes electronic transactions related to trade in goods and services which can be either digitally or physically delivered involving consumers, firms and governments.² According to this idea, in addition to internet-based trade in goods, online hotel booking, ride sharing, and music distribution and other services provided through online platforms are included in digital trade. It should be noted that the OECD has classified examples of digital trade transactions as shown in Table II-1-1-1.³ On the other hand, the United States International Trade Commission (USITC), for example, defines digital trade as “U.S. domestic commerce and international trade in which the Internet and Internet-based technologies play a particularly significant role in ordering, producing, or delivering products and services,”⁴ a definition which appears to cover a broader area. Digital trade involves a broad range of issues, including not only those related to cross-border transactions concerning products and services conducted through electronic means but also those related to trade in digital products and services intended to realize a digital society, protection of digital-related intellectual property, investment in telecommunication infrastructure, and treatment of data concerning companies’ investment and provision of services in the domestic and foreign markets and exports of products. Therefore, when rules on digital trade are studied under individual trade agreements and international frameworks, a broad range of issues like these should be discussed.

2 Ibid.

3 OECD (2017).

4 USITC (2014).

Table II-1-1-1 Examples of digital trade by category⁵

How?			What	Who	Description
Digitally ordered?	Platform enabled?	Digitally Delivered?			
Y	N	N	Good	B2B	An enterprise in country A purchases a good online, directly at the supplier of the products located in country B, via the supplier's web-shop or EDI. For example, a component used in the production.
Y	N	N	Good	B2C	A consumer in country A purchases a good (e.g. clothes) online (for final consumption), directly at the web-shop of the supplier of this product located in country B.
Y	Y	N	Good	B2B	An enterprise in country A purchases goods, from a supplier in country B, via an online platform which may be located in country A, country B or elsewhere. For example, the ordering of office furniture via eBay.
Y	Y	N	Good	B2C	A consumer in country A purchases a good online from a supplier in country B, via an online platform, which may be located in country A, country B or elsewhere, for final consumption, for example ordering a book on Amazon.
Y	N	N	Services	B2B	An enterprise in country A purchases a service online, directly at the supplier, but the service is delivered physically (for example a transportation service).
Y	N	N	Service	B2C	A consumer in country A purchases a service online, directly at the supplier in country B, and the service is delivered physically (for example, a hotel reservation made directly at the hotel).
Y	Y	N	Service	B2B	An enterprise in country A purchases a service online from a supplier in country B, via an online platform, which may be located in country A, B or elsewhere. The service is subsequently physically delivered (for example standardised maintenance or repair services).
Y	Y	N	Service	B2C	A consumer in country A purchases a service from a supplier in country B, via an online platform; the services is subsequently physically delivered, for example, tourist ordering a ride-sharing service (Uber).
Y	N	Y	Service	B2B	An enterprise in country A purchases a service online, directly at the supplier, which is subsequently also delivered digitally (for example, standardized maintenance or repair services).
Y	N	Y	Service	B2C	A consumer in country A purchases a service online, directly at the supplier from country B, which is subsequently also delivered digitally, for example an insurance policy.

5 Abbreviations: B2C: Business to Consumer; B2B: Business to Business; C2C: Consumer to Consumer

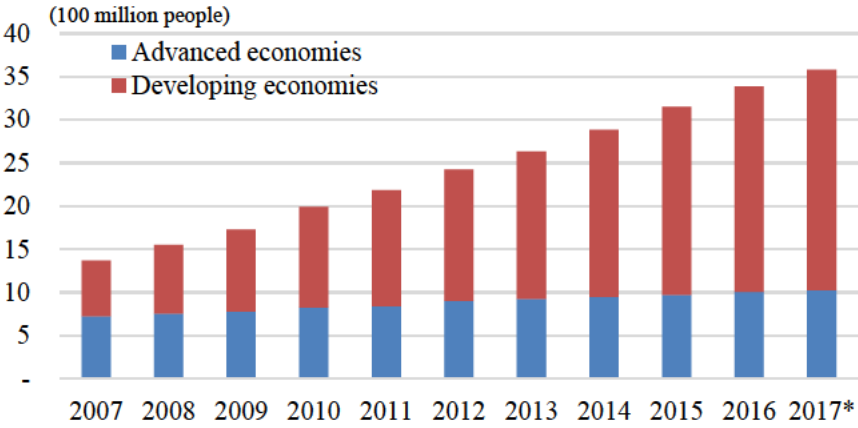
Y	Y	Y	Service	B2B	An enterprise in country A purchases a service from a supplier in country B via an online platform, which may be located in country A, B or elsewhere. The service is delivered digitally. For example, a firm orders a logo design via a platform for graphical designers.
Y	Y	Y	Service	B2C	A consumer in country A purchases a service from a supplier in country B, via an online platform, which may be located in country A, B or elsewhere. The service is delivered digitally. For example, music streaming subscriptions.
N	N	Y	Service	B2B	An enterprise in country A places an offline order for a service at a supplier in country B, the service is subsequently digitally delivered. For example bespoke consultancy services, BPO services.
N	N	Y	Service	B2C	A consumer in country A purchases a service offline at a supplier in country B, but the service is digitally delivered. For example educational services with online lectures.
Y	Y	N	Service	C2C	A consumer in country A purchases a service from another consumer in country B, via an online platform, located in country A, B or elsewhere. The service is physically delivered. For example accommodation sharing (AirBnB).
Y	Y	N	Good	C2C	A consumer in country A purchases a good from another consumer in country B, via an online platform, located in country A, B or elsewhere. For example second hand goods transactions via online market places.

2. Expansion of digital trade

Currently, there is no agreed method of measuring the scale of digital trade. First, attention will be paid to an exchange of ideas and information through the internet. The number of internet users worldwide (Figure II-1-1-2) has steadily increased, reaching approximately 3.4 billion people in 2016. The average annual growth rate between 2007 and 2016 was 10.6%. The number has increased markedly in developing economies in particular: while the annual growth rate was 3.7% for advanced economies, it was 15.6% for developing economies. According to McKinsey, the volume of cross-border data flows expanded by a factor of 45 between 2002 and 2014 and is estimated to grow further, by a factor of nine, by 2021 (Figure II-1-1-3).⁶ In line with the increase in the number of internet users worldwide, cross-border exchange of data and communication has steadily grown. In addition to the sharing of ideas and information between individuals through services such as Facebook, Twitter and Instagram, communications with overseas offices using instant messaging and other services are increasing in the business world.

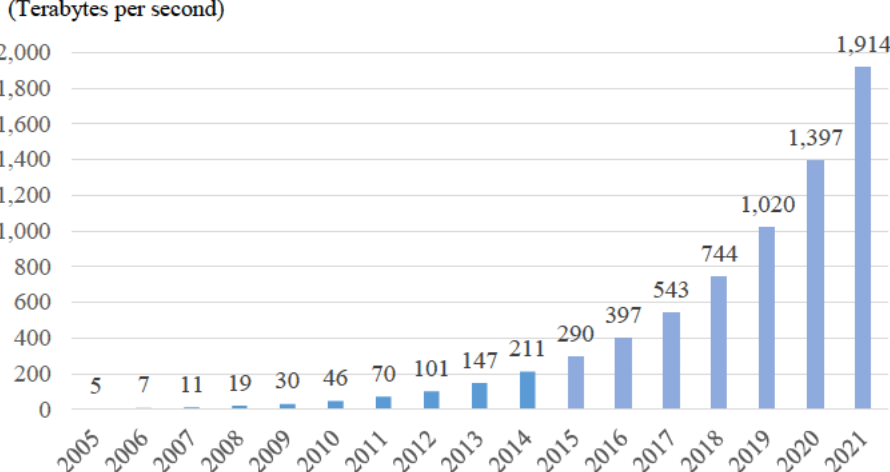
⁶ McKinsey (2016).

Figure II-1-1-2 Changes in the number of internet users worldwide



Notes: Data in 2017 are estimated values.
 Source: Compiled by METI based on data from ITU.

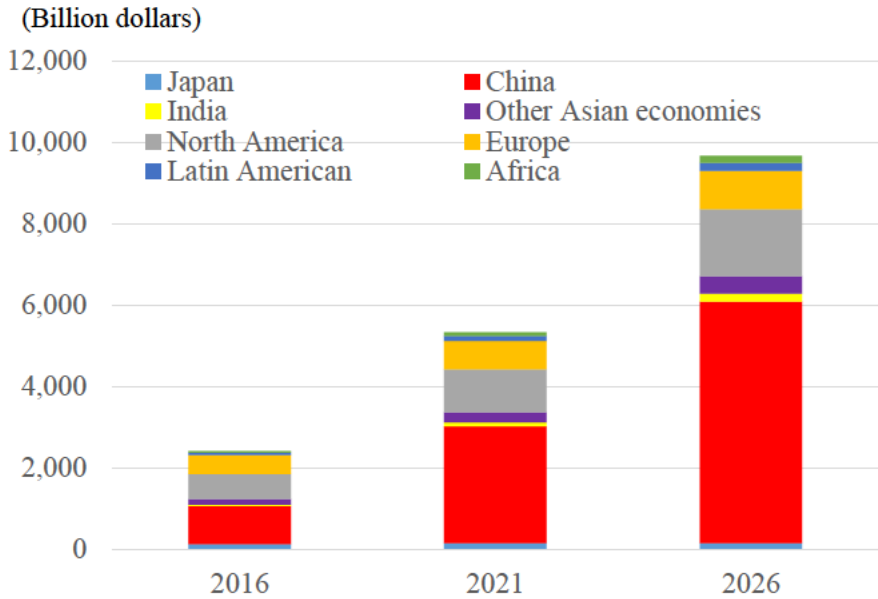
Figure II-1-1-3 Used cross-border bandwidth, global



Notes: The figures after 2015 are estimates.
 Source: *Digital Globalization: The New Era of Global Flows* (McKinsey Global Institute, 2016).

Next, we will look at the expansion of e-commerce (EC). The scale of the global market for business to consumer (B2C) EC in 2016 grew 122% from the previous year to around 2.4 trillion dollars. It is estimated to continue growing 14.9% annually on average, expanding to approximately 9.7 trillion dollars in 2026 (Figure II-1-1-4). By region, the Asia-Pacific region’s EC market is the largest in the world as of 2016. In particular, China is the largest EC market in the world, accounting for around 40% of the global market value. The growth rate for China is higher than the rate for the United States, the second-largest market, so China is expected to continue to lead the global EC market. The EC market of India, where the population is growing markedly, is also expected to grow rapidly and overtake the Japanese market in 2024, becoming the second-largest in the Asia-Pacific region and the fourth-largest in the world.

Figure II-1-1-4 Changes in scales of the global B2C EC markets



Notes: The figures in 2016 are achievements, those in 2021 are estimates by eMarketer and those in 2026 are estimates by transcosmos inc.

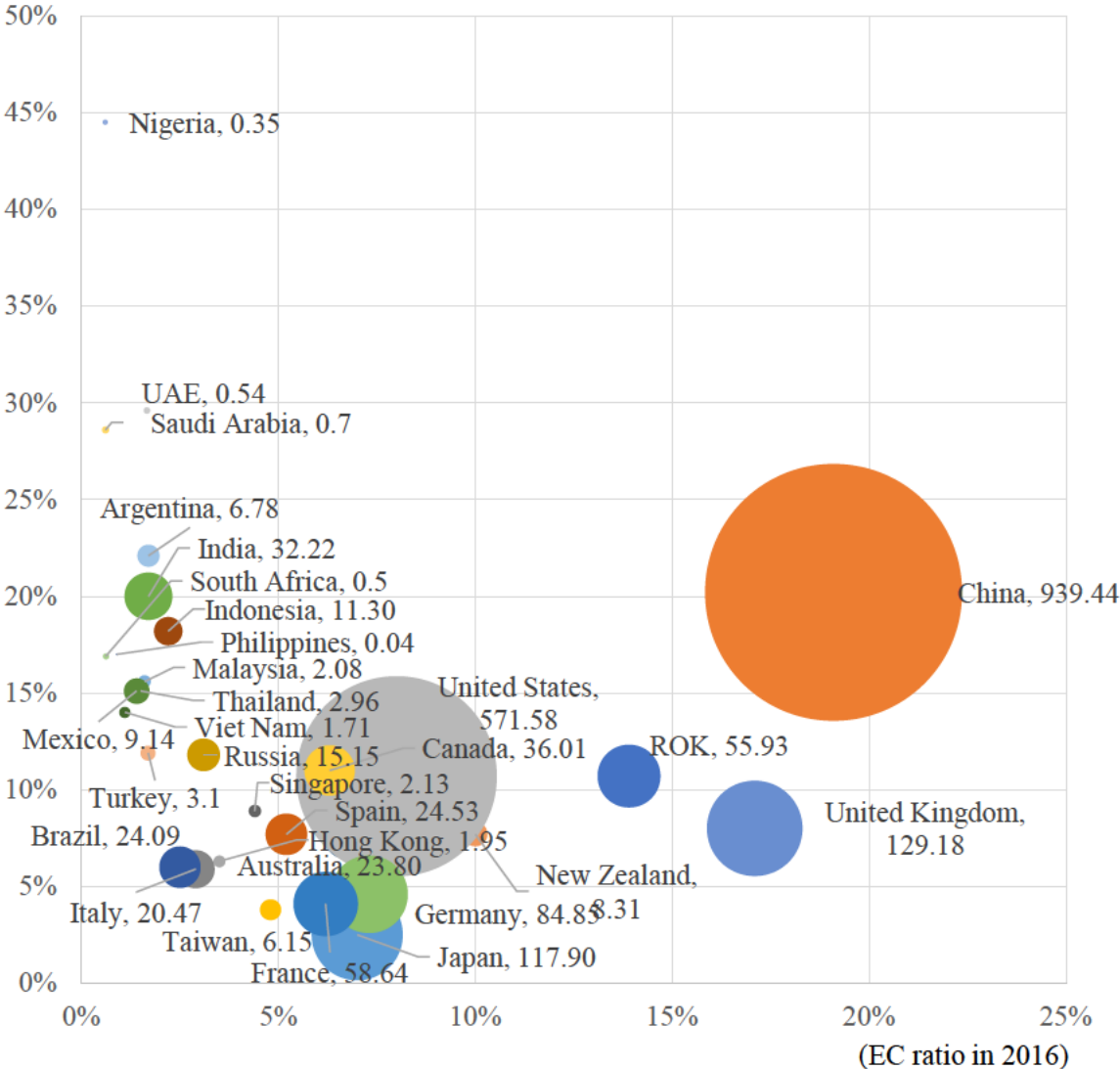
Source: eMarketer and interviews with transcosmos inc.

As for countries’ potential as EC markets, China, which is currently the largest market in the world, leads the world in terms of the EC ratio⁷ as well. The United Kingdom and the Republic of Korea (ROK) have the second- and third-highest EC ratios, respectively, and their markets are expected to grow steadily at a rate of around 10%. Other advanced economies, such as the United States, Germany and Japan, also have large market sizes and relatively high EC ratios, and their markets are expected to grow by around 5-10% on average. In addition, attention should be paid to emerging economies, whose market sizes are small but which are expected to record high growth in the future. In emerging economies, as the development of social infrastructure, including distribution and communication infrastructure, is proceeding rapidly, rapid growth is expected (Figure II-1-1-5).

⁷ The ratio of the value of the EC market to the total value of commercial transactions.

Figure II-1-1-5 Countries' potential as B2C EC markets

(Average annual growth rates between 2016 and 2026)



Notes: The size of a circle represents the scale of a B2C EC market (1 billion dollars). These figures are based on data from 2016. However, as for the Middle East and Africa regions, the figures for market scales and EC ratios are based on data in 2014 and those for average annual growth rates are based on data between 2014 and 2025.

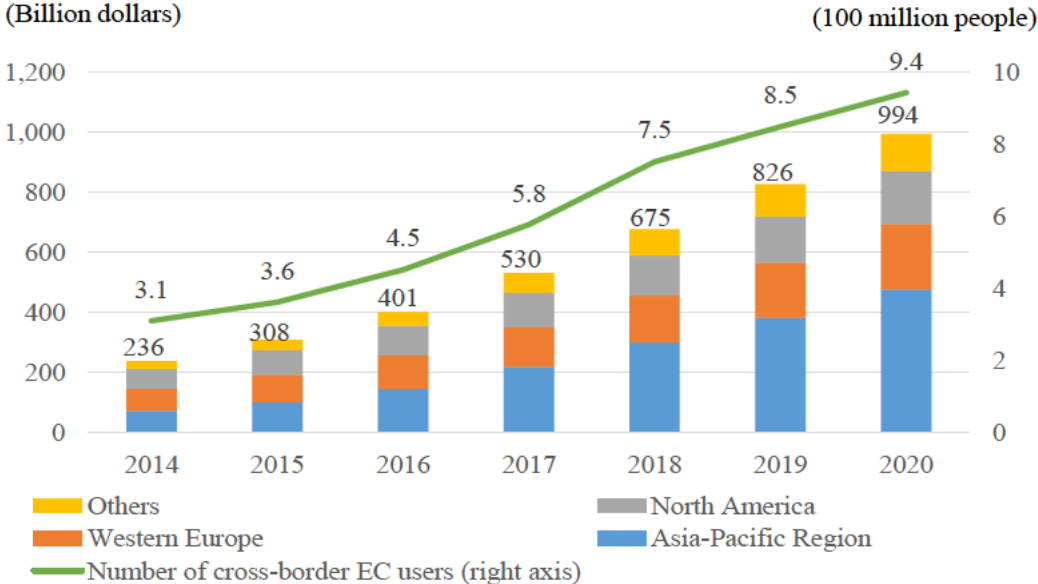
Source: eMarketer and interviews with transcosmos inc.

The scale of the cross-border EC market is also expanding in line with the growth of EC markets in individual economies. In West European countries, for example, product purchases from foreign EC sites account for 50%⁸ of overall EC purchases. In addition to EC sites within the EU region, including the United Kingdom and Germany, EC sites in China and the United States are being actively used. The scale of the global cross-border EC market, which was 236.0 billion dollars in 2014,

8 PayPal (2016).

has continued to expand since then and is expected to reach 994.0 billion dollars in 2020. The number of cross-border EC users, which was around 300 million people in 2014, is expected to approximately triple to more than 900 million people in 2020 (Figure II-1-1-6).

Figure II-1-1-6 World market scales of cross-border EC



Notes: These figures are estimates.

Source: Accenture and Alibaba Research (2015).

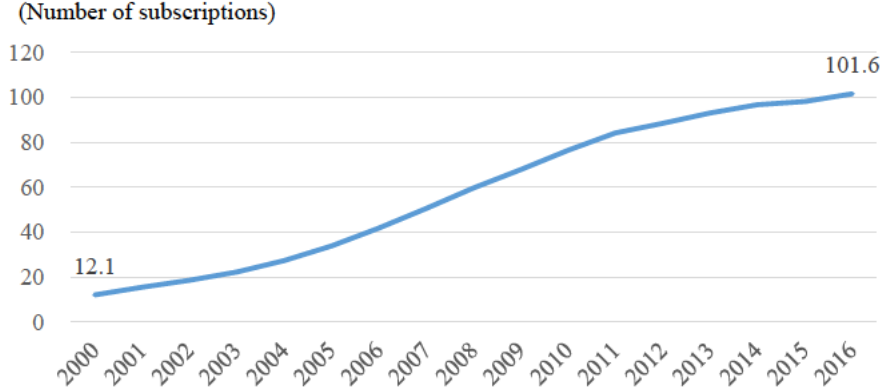
The expansion of the global EC market comes against the backdrop of the diffusion of mobile phone-based transactions in addition to existing transactions conducted through personal computers. The global number of mobile phones owned per 100 people, which was only around 12 units in 2000, rose to around 100 units in 2016 (Figure II-1-1-7). Another important background factor is the diversification of online settlement methods. In 2015, card settlements using credit and debit cards accounted for 42% of overall online settlements worldwide, but the importance of e-wallet⁹ and other settlement methods is expected to grow by 2020 (Figure II-1-1-8). In developing economies, there are many regions where the network of bank branches is underdeveloped and it is difficult for people in lower income classes to own credit cards, so the use of mobile money as a settlement method not using bank accounts is becoming popular there. In sub-Saharan Africa in particular, mobile money is becoming a typical settlement method as a result of the diffusion of mobile phones. In that region, the mobile money account ownership rate is more than four times as high as the credit card ownership rate (Table II-1-1-9). For example, in Kenya, there is M-PESA, which is typical mobile money in sub-Saharan Africa. While M-PESA enables users to make remittances and withdraw funds using a mobile phone-based short message service, it is not linked with bank accounts. Users can easily implement the usage-related procedures at agents¹⁰ for M-PESA located nationwide. Meanwhile, in

9 E-wallet refers to software and services that manage online shopping users' credit card information, e-money information, passwords, delivery address of purchased products, etc.

10 Including shops of mobile phone company Safaricom and various other shops.

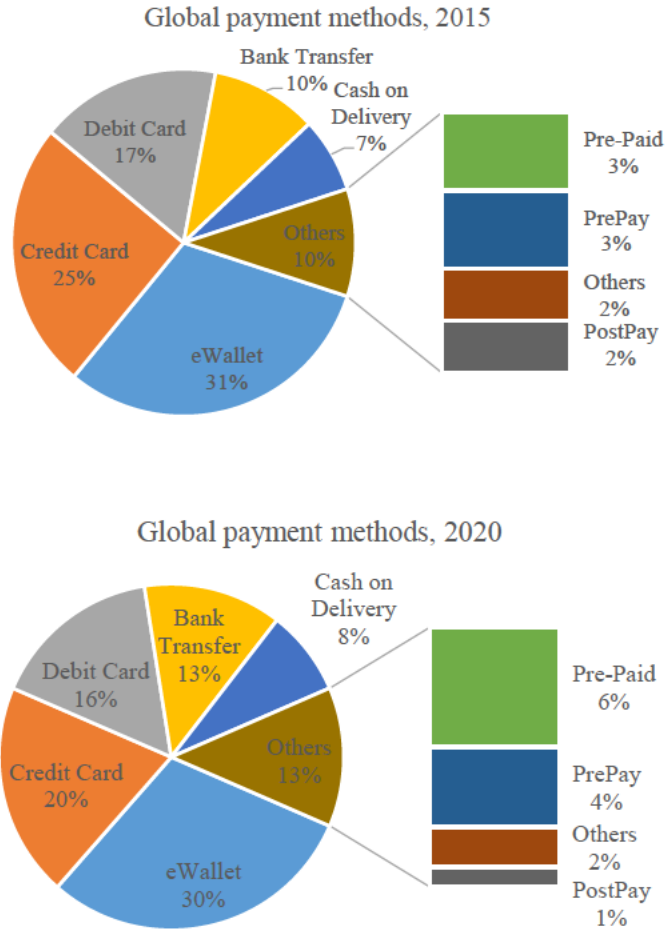
China, e-settlement methods provided by Alipay and WeChat, which enable mobile phone-based settlements by linking up mainly with existing bank accounts and credit cards, are supporting the growth of the EC market.

Figure II-1-1-7 Mobile cellular subscriptions worldwide (per 100 people)



Source: World Bank.

Figure II-1-1-8 Online payment methods by value, 2015 and forecast for 2020



Source: Worldpay (2016).

Table II-1-1-9 Different types of accounts, share of individuals, by region and development, 2014¹¹

	Mobile money account (% age 15+)	Account at a financial institution (% age 15+)	Credit card (% age 15+)
Advanced economies	-	90.6	48.9
Developing economies:	-	-	-
East Asia & Pacific	0.4	68.8	12.5
Europe & Central Asia	0.3	51.4	18.5
Latin America & Caribbean	1.7	51.1	21.6
Middle East	0.7	14	2.1
South Asia	2.6	45.5	3.3
Sub-Saharan Africa	11.5	28.9	2.7
World	2.0	60.7	17.6

Source: UNCTAD.

The United Nations Conference on Trade and Development (UNCTAD) has developed indexes that indicate the status of B2C EC in countries and regions based on the development of the EC environment there and other factors and publishes national rankings. According to the rankings, the top 10 positions are dominated by Luxembourg, which is ranked No. 1, and other high-income economies (Table II-1-1-10). Most of the top 10 economies have achieved rates of 90% or higher in terms of the share of individuals using the internet, the share of individuals with an account, the account ownership rate,¹² and the UPU postal reliability score and have 90 units or higher in terms the number of internet servers secured per 1 million people. This means that those economies have the foundation for the diffusion of EC. Indeed, high-ranked economies generally have a large share of individuals purchasing products online (Figure II-1-1-12). On the other hand, in Japan and the ROK, where there are well-developed networks of physical stores, the number of online shopping users is relatively small compared with other high-ranked economies. If the rankings are limited to developing economies, Asian economies, including the ROK, Hong Kong, Singapore, Malaysia and Thailand, dominate the top positions (Table II-1-1-11). As the diffusion rate of online shopping remains low in developing economies (Figure II-1-1-12), there are presumably some problems that must be resolved, including how to secure the reliability of transactions.

11 The numbers of mobile money accounts in Table II-1-1-9 represent the numbers of people, as tabulated by the GSM Association, who replied that in the past 12 months they had used mobile money, intended for customers who did not hold bank accounts, for the purpose of payment or receipt of money (<https://www.worldbank.org/content/dam/Worldbank/Research/GlobalFindex/PDF/Glossary.pdf>).

12 The account ownership rates in Tables II-1-1-10 and II-1-1-11 include the numbers of accounts at banks and other financial institutions and mobile money accounts.

Table II-1-1-10 Top 10 economies in the UNCTAD B2C E-commerce Index 2017

		Share of individuals using Internet (2016)	Share of individuals with an account (15+, 2014 or latest)	Secure Internet servers per 1 million people (normalized, 2016)	UPU postal reliability score (2016)
2017 Rank	Economy	%	%	Number of units	Point
1	Luxembourg	97	96	98	94
2	Switzerland	89	98	100	99
3	Norway	97	100	96	93
4	Netherlands	90	99	99	95
5	ROK	93	94	96	99
6	United Kingdom	95	99	92	95
7	Sweden	92	100	94	93
8	Japan	92	97	89	97
9	Germany	90	99	93	92
10	New Zealand	88	100	90	95

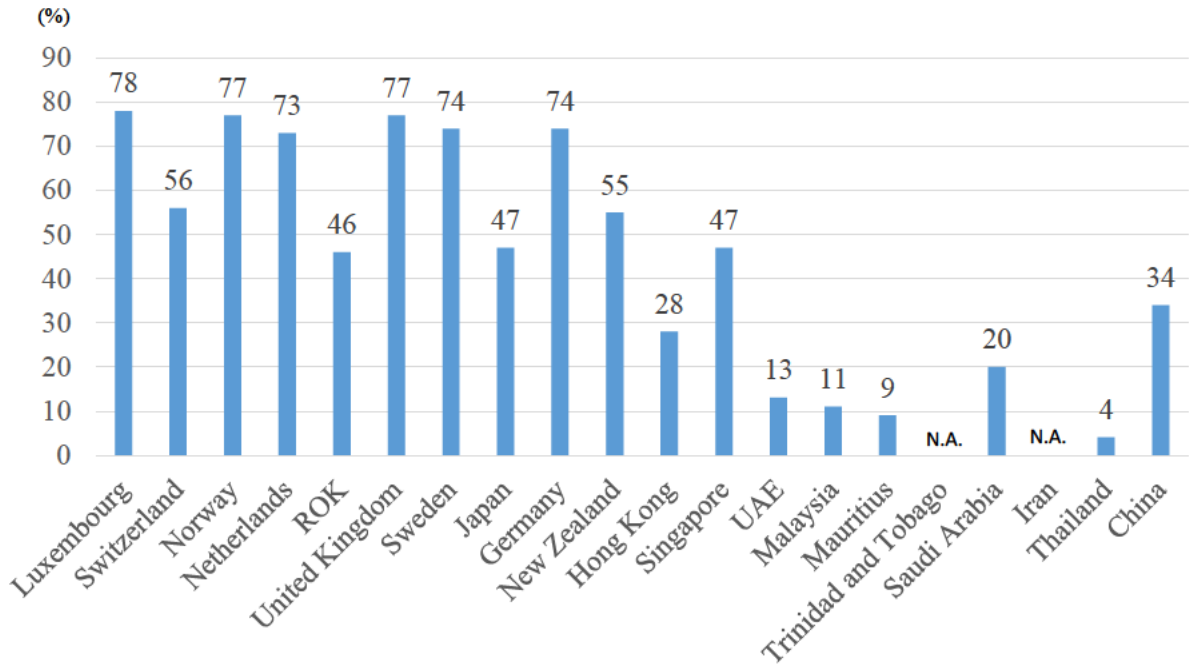
Source: UNCTAD.

Table II-1-1-11 Top 10 developing economies in the UNCTAD B2C E-commerce Index, 2017

		Share of individuals using Internet (2016)	Share of individuals with an account (15+, 2014 or latest)	Secure Internet servers per 1 million people (normalized, 2016)	UPU postal reliability score (2016)
2017 Rank	Economy	%	%	Number of units	Point
5	ROK	93	94	96	99
16	Hong Kong (China)	87	96	88	92
18	Singapore	81	96	87	97
23	UAE	91	84	79	96
38	Malaysia	79	81	66	82
39	Mauritius	53	82	71	96
42	Trinidad & Tobago	73	76	67	75
45	Saudi Arabia	74	69	59	75
46	Iran	53	92	45	86
48	Thailand	48	78	54	93
65	China	53	79	49	57

Source: UNCTAD.

Figure II-1-1-12 Share of individuals purchasing products online

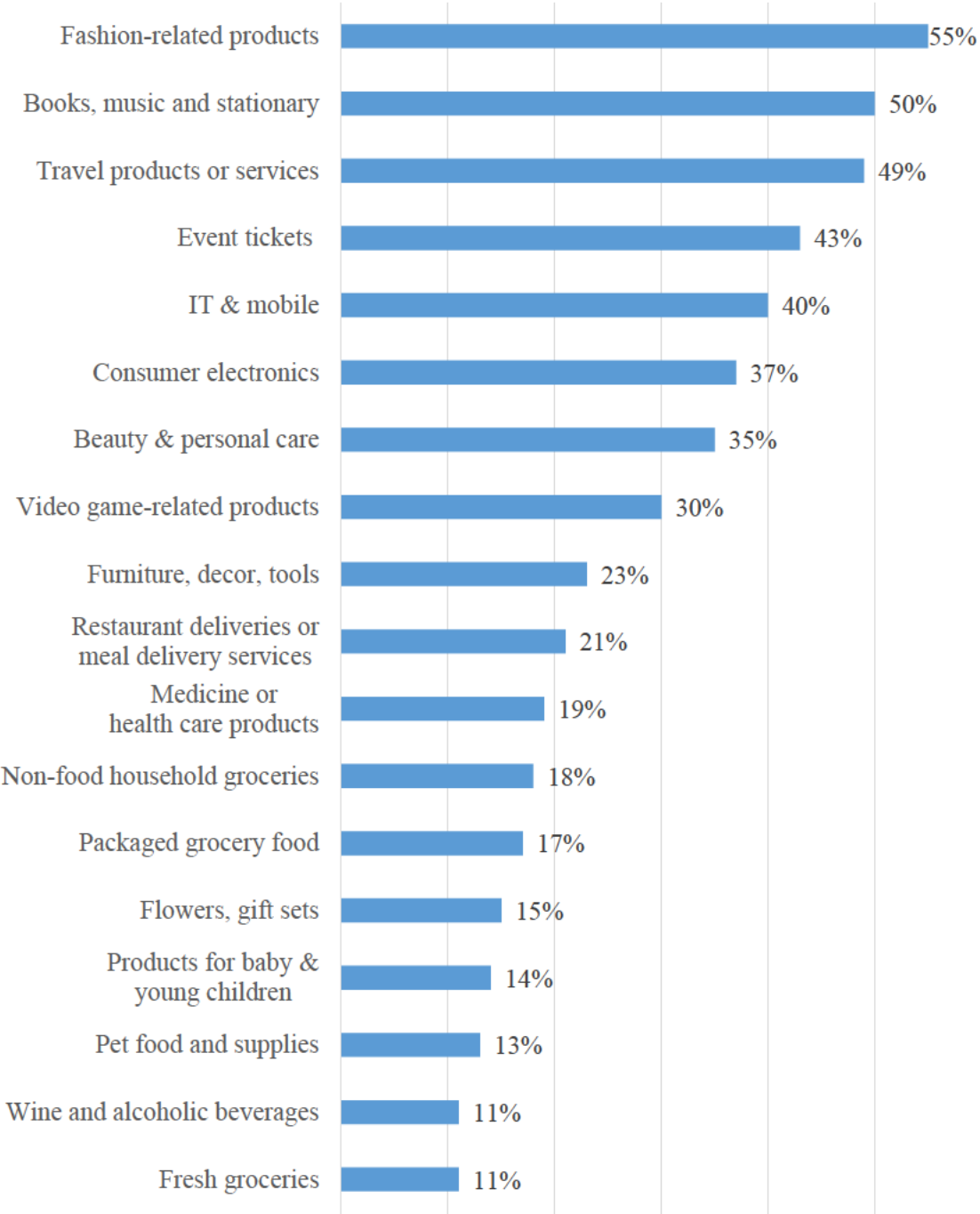


Notes: Population rate (%) in 2016.
 Source: *B2C E-commerce Index 2017* (UNCTAD).

If online shopping worldwide is classified by product category (Figure II-1-1-13), more than half (55%) of people, on the global average, replied that they have experience with online purchase of fashion-related products, including clothing. The percentage of people who have experience with online purchase is also high for books, music and stationery (50%), travel products or services (49%), and event tickets (43%). Regarding non-durable consumer goods, such as foods, consumers tend to avoid online purchase because of the short preservation periods of the goods. Even so, in the ROK and the United Kingdom, 37% replied that they have experience with online purchase of fresh groceries.¹³ Online shopping has the merit of being capable of meeting more detailed needs of individuals because of the rich diversity of products available. Therefore, it is presumed that the scale of online shopping transactions may expand also in fields where the volume of transactions is now small in line with the future maturity of the EC market.

¹³ Nielsen (2016).

Figure II-1-1-13 Global average: Percentage who have ever purchased the category online



Source: *Global Connected Commerce* (Nielsen, Jan. 2016).

3. Rise of global IT platform companies

In line with the expansion of digital trade, global companies providing IT platforms for EC and cloud computing services are increasing their presence. Among the global top 10 companies in terms of market capitalization as of January 2018 were U.S. and Chinese IT platform companies, such as Apple, Alphabet, which is the parent company of Google, Amazon, Facebook, Tencent, and Alibaba (Table II-1-1-14). A decade ago, in 2008, telecommunications companies, including China Mobile and AT&T, as well as banks, and oil and gas companies, led the rankings, as businesses providing

telecommunication infrastructure tended to be highly valued in terms of market capitalization against the backdrop of a marked rise in the diffusion rate of mobile phones. However, in recent years, online services provided through information and communication networks have risen in prominence. The number of IT platform companies included in the S&P500 index has steadily increased, reaching 14 in 2014, and is expected to rise to around 25 by 2020 (Figure II-1-1-15).¹⁴

Table II-1-1-14 Global market capitalization ranking (comparison between 2008 and 2018)

2008				
#	Company	Country	Sector	Market capitalization (million dollars)
1	PetroChina	China	Integrated Oil & Gas	723,998
2	Exxon Mobil	United States	Oil & Gas Refining and Marketing	511,887
3	General Electric Company	United States	Industrial Conglomerates	374,637
4	China Mobile	Hong Kong	Wireless Telecommunications Services	354,245
5	Industrial and Commercial Bank of China	China	Banks	339,004
6	Microsoft	United States	Software	333,054
7	Gazprom	Russia	Integrated Oil & Gas	331,964
8	Royal Dutch Shell	Netherlands	Integrated Oil & Gas	264,764
9	AT&T	United States	Wireless Telecommunications Services	252,051
10	Sinopec	China	Oil & Gas Refining and Marketing	249,659

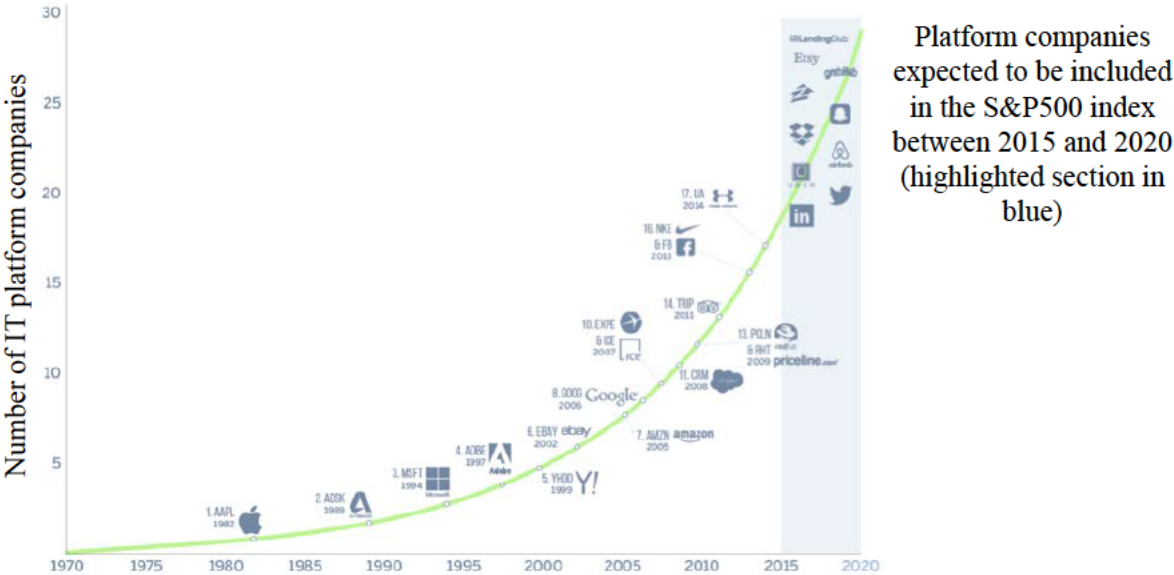
2018				
#	Company	Country	Sector	Market capitalization (million dollars)
1	Apple	United States	Computer Hardware	825,593
2	Alphabet	United States	Online Services	731,933
3	Microsoft	United States	Software	686,283
4	Amazon	United States	Department stores	671,084
5	Facebook	United States	Online services	512,471
6	Tencent	China	Online services	497,697
7	Berkshire Hathaway	United States	Property & Casualty Insurance	491,154
8	Alibaba	China	Online services	454,451
9	JPMorgan Chase	United States	Banks	387,707
10	Industrial and Commercial Bank of China	China	Banks	354,750

Notes: As of Feb. 12, 2008, and as of Jan. 1, 2018.

Source: Thomson Reuters.

14 Alley Watch (July 20, 2015), “5 Reasons Entrepreneurs Should Take Advantage of the Platform Business Model” (<http://www.alleywatch.com/2015/07/5-reasons-entrepreneurs-should-take-advantage-of-the-platform-business-model/>).

Figure II-1-1-15 Changes in the number of IT platform companies included in the S&P500 index



Source: Alley Watch.

The business model of IT platform companies is an industrial infrastructure-based one under which they exercise inter-group synergies and create a market economy area by accommodating multiple groups’ needs.¹⁵ Since the beginning of the 21st century, various types of IT platform companies have achieved successful results and have contributed to economic and social development through technological innovation and reduction of trading cost.

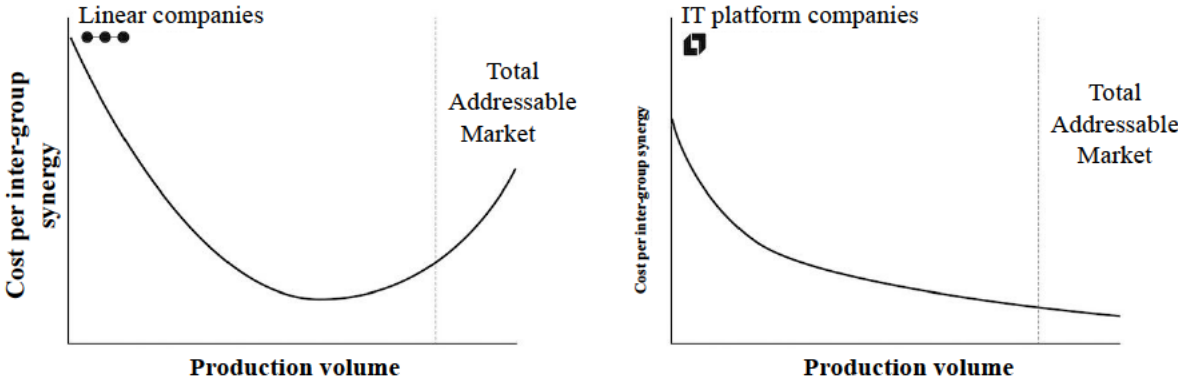
IT platform companies are considered to be classified¹⁶ by platform type broadly into two groups: the exchange-type and maker-type platforms. The exchange-type platform provides value by optimizing direct transactions between consumers and producers and it is premised on transactions between one person and another, or at most between one person and multiple persons (or a group comprised of multiple persons). For example, platforms used for exchange of goods and services, settlements and investments, and social networking service (SNS) are examples of the exchange type. The maker-type platform creates value by enabling producers wishing to provide products through the platform to display and distribute their products to a mass audience. Specifically, the provision of video sharing services and cloud services for customer relationship management (CRM) is an example of the maker type.

IT platform companies are different from traditional businesses in that they focus on the role of facilitating transactions by creating networks for transactions. At the opposite end of IT platform companies are traditional businesses called linear companies.¹⁷ The name “linear company” reflects the traditional business approach of selling products and services to someone downstream in the

15 Hirano and Hagi (2010).
 16 For the details of the characteristics of IT platform companies, see Moazed and Johnson (2018).
 17 Moazed and Johnson (2018) classifies linear companies into “product companies” and “service companies.”

supply chain. Most industries that were dominant in the 20th century, including manufacturing, retail trade, distribution and services, fall under this category. Those industries have formed vertically integrated huge organizations. Linear companies establish physical assets, such as factories and distribution centers, in order to manufacture and deliver products to consumers. For linear companies to expand business, they need to bear the commensurate cost of building up inventories and increasing personnel responsible for inventory management. On the other hand, IT platform companies have made it possible to minimize the cost by connecting companies and individuals via network. That is one reason why their growth is accelerating. For example, if a major hotel chain is to increase guestrooms, it will have to construct a new building and employ additional service staff members. However, adding new room renters to the list of hosts is all that an IT platform company providing private lodging service will have to do in order to increase available guestrooms. While the costs of linear companies tend to rise in line with business expansion, the costs of IT platform companies tend to remain flat on a logarithm basis. (Figure II-1-1-16).

Figure II-1-1-16 Average cost curve concerning linear companies and IT platform companies



Source: *Modern Monopolies: What It Takes to Dominate the 21st Century Economy* (Eiji Press, 2018).

The flow of value created by linear companies was unilateral, from producers to consumers, while value created by IT platform companies flows in multiple directions within their networks. For example, users providing products may exist anywhere within an online marketplace. In the case of linear companies, the acquisition of one new user merely means the acquisition of one additional buyer of products and services. However, for IT platform companies, the acquisition of one new customer means creating a new relationship with all users existing within the network, which means that the potential for creating new value has grown dramatically.

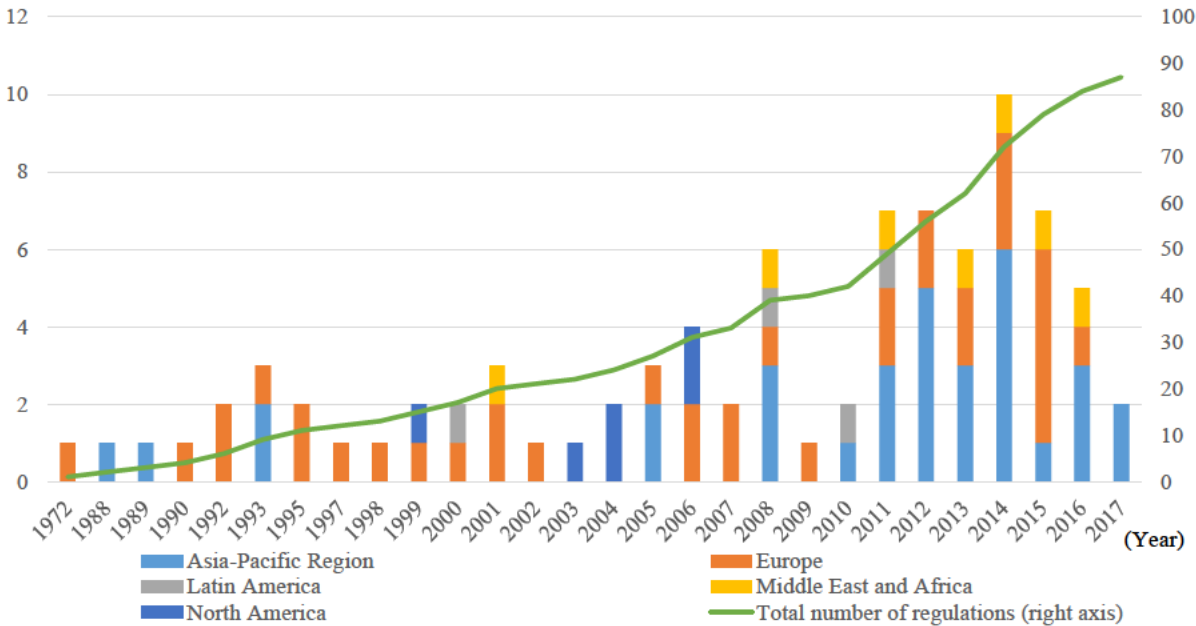
Global IT platform companies are creating a variety of new businesses. Technology brought by IT platform companies not only reduces transaction cost and resolves various bottleneck problems but also creates diverse value by collecting and connecting vast amounts of data and resources that would have no value if they remained diffused across the world. Among examples of various new businesses created by IT platform companies are search engines used with personal computers and smartphones, platforms connecting wearable terminals and health data, and platforms for connected cars and connected homes.

In developing economies where economic infrastructure and a network of physical stores are underdeveloped, the advance of IT platform companies has been even more dramatic. Companies that have captured local needs, such as Alibaba, Tencent and Baidu of China, Mercadolibre of Brazil, Flipkart of India and Jumia of Nigeria, have a large market share.

4. Challenges for digital trade

In line with the advance of digital trade, the need to develop international rules is growing. The promotion of the free flow of information is developing a favorable cycle that is creating new technical innovations and business models and is improving the quality of people’s lives. On the other hand, amid the increase in various activities in cyberspace, concerns are growing over cybersecurity risks such as the leakage of personal information and business secrets. To address those concerns, digital protectionist moves are also emerging in some countries, including imposing restrictions on the free flow of cross-border data and the installation locations of servers. National regulations related to cross-border data flows have increased rapidly over the past 20 years (Figure II-1-1-17-1)¹⁸. While Europe has gradually increased relevant regulations since the 1970s, the development of regulations has recently proceeded rapidly in the Asia-Pacific region. In terms of the cumulative number of regulations introduced between 1972 and 2017 by country/region, China was a particularly active regulator in the Asia-Pacific region, introducing a total of nine regulations during the period. What is also notable is that each of Russia and Germany introduced five regulations (Table II-1-1-17-2). In order to promote sound development of digital trade, it is essential to develop rules that strike the right balance between its positive and negative aspects.

Figure II-1-1-17-1 Changes in the number of regulations for cross-border data flows



18 Ferracane (2017). The European Centre for International Political Economy (ECIPE) compiled Digital Trade Estimates (DTE) using 87 regulations selected from among regulations introduced in 64 countries/regions.

Notes: Target years are the years when the regulations was enforced or revised. The data are based on the European Centre for International Political Economy (ECIPE) research.

Source: *Digital Trade Estimates* (ECIPE).

**Table II-1-1-17-2 Number of introduced regulations for cross-border data flows
(breakdowns by country or region)**

	Number of regulations	Share
Europe	37	42.5%
Germany	5	5.7%
Russia	5	5.7%
Asia-Pacific Region	33	37.9%
China	9	10.3%
Middle East and Africa	7	8.0%
North America	6	6.9%
Canada	5	5.7%
United States	1	1.1%
Latin America	4	4.6%
Total	87	100.0%

Notes: The figures show the number of introduced regulations as of 2017. Countries that have introduced 5 or more regulations are shown by name, except the United States.

Source: *Digital Trade Estimates* (ECIPE).

(1) Data localization regulation

Data localization refers to restrictions on cross-border transfer of data. Data localization includes such measures as restricting transfer of personal and business information to foreign countries and requiring storage of data at domestic locations through the domestic installation of servers and processing of data at domestic locations.¹⁹ Data localization regulation is diverse in terms of the specifics of regulatory requirements (e.g., requirement for the installation of hardware and the requirements that must be met when information is transferred to foreign countries), the types of information regulated (personal information²⁰ and non-personal information), and the data subjects (e.g., private-sector business operators, government organizations, both the private sector and the government, financial institutions, communication business operators, and internet business operations).²¹ For example, cross-border transfer of personal data is free in principle in the United States but requires the consent of the persons to whom the data belong in Japan. Meanwhile, in the EU, cross-border transfer of personal data to a third country is permitted only when the European

19 While there is no established definition of data localization, data localization as referred to in this white paper is a broadly defined one, including measures to restrict global data transfer and to keep data at domestic locations. Data localization as narrowly defined means the requirements for storage and processing of data at domestic locations. See Chander (2014) regarding the broad definition and Crosby (2016) regarding the narrow definition, for example.

20 It varies from country/region to country/region which sorts of personal information--financial, credit and medical information, etc.--are subject to data localization regulation.

21 "DEJITARU BOUEKI NI KANREN SURU KISEITOU NI KAKAWARU CHOUSA" (2018) (Survey commissioned by METI).

Commission recognizes that the third country ensures an adequate level of protection. In China, such data transfer is restricted in principle, and there is an obligation for storage of personal data and important data at domestic locations (the number of fields covered by the regulation is excessively high at 27)²² (Table II-1-1-18). In China, the cybersecurity law was enacted in November 2016 and was put into force in June 2017,²³ and relevant measures and guidelines have been announced in succession. These laws and regulations include the imposition of the obligation for important infrastructure operators to ensure storage of important data at domestic locations and the requirement for networking products to comply with China's mandatory national standards. In Viet Nam, a cybersecurity bill containing the obligation for foreign companies providing communication and internet services to ensure storage of personal information and important data at domestic locations was announced in June 2017. However, according to a certain estimate, these data localization regulations may have serious negative economic effects. For example, the European Center for International Political Economy (ECIPE) analyzed and calculated the negative impact of data localization and relevant regulations on GDP from the three viewpoints of (A) the impact of a rise in administrative procedure cost related to data processing on domestic prices and total factor productivity (TFP),²⁴ (B) a cost increase in each country due to the introduction of additional trade barriers such as the requirement for installation of data centers, and (C) declines in domestic and foreign investments due to regulatory restrictions on market entry (Figure II-1-1-19). According to this analysis, if a country introduces cross-sectoral data localization regulation, its GDP is estimated to suffer a negative impact ranging from minus 0.7% to minus 1.7%.²⁵ According to another analysis, countries considering introducing data localization regulation may see an increase ranging from 30% to 60% in data processing cost at the company level.²⁶ That is because although companies handling data can normally enjoy economy of scale by conducting centralized data management and processing through cloud computing and the seamless internet that extends worldwide, data localization regulation undermines this merit. Furthermore, the cost increase may pressure profits of small and medium-sized enterprises that seek to expand sales channels or achieve overseas business expansion through online transactions and it may also serve as a barrier to market entry by start-up companies. In non-economic aspects, the possibility has been pointed out that the cost increase may impede freedom

22 Albright Stone Bridge Group (2015) classified the strength of data localization regulation from the viewpoints of the presence or absence of the requirement for storage of data at domestic locations and restrictions on cross-border data transfer and the scope of sectors subject to the regulation. The group mentioned that Russia, China, Indonesia, Brunei Darussalam, Nigeria and Viet Nam have adopted the most strict data localization. According to the results of a questionnaire survey with companies conducted by the USITC (2014), more than 30% of the respondent companies said they were facing barriers to digital trade in Nigeria, Algeria, China, Bangladesh, Russia, Pakistan, Paraguay, Romania, Viet Nam and Ukraine.

23 The portion of the bill that concerns data transfer is scheduled to be put into force in January 2019.

24 Total factor productivity (TFP) is an indicator of contributions to economic growth by factors that cannot be explained by quantitative changes in capital and labor, such as technological progress and production efficiency improvement.

25 The ECIPE presented Scenario 1, which is premised on data localization regulations that had been introduced by countries by the time of the release of the report (2014) and Scenario 2, which represents a simulation assuming the imposition of data localization regulation applicable to all sectors in addition to the regulations included in Scenario 1. This white paper cited Scenario 2.

26 Leviathan Security Group (2015).

of speech, social mobility,²⁷ and citizens’ participation in political and social initiatives.²⁸

Table II-1-1-18 Current situations of cross-border transfer of personal and non-personal data

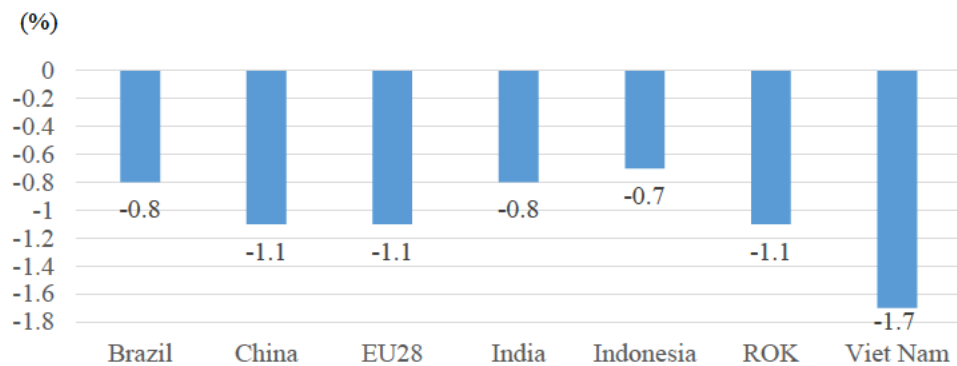
	United States	Japan	EU	China
Cross-border transfer of personal data	Free in principle	Need consent of the persons, in principle		Restricted in principle
	<p align="center"><No legal registrations in general stipulated></p> <p>* Some exceptions are stipulated in the administrative area.</p>	<p align="center"><Act on the Protection of Personal Information></p> <ul style="list-style-type: none"> • Consent of the persons is required, except the following cases where: <ul style="list-style-type: none"> - The government designates specific targets under the Ordinance for Enforcement of the Act; or - A company is subject to company-based special treatments, etc. <p>* Some exceptions are stipulated in the healthcare area.</p>	<p align="center"><General Data Protection Regulation (GDPR)></p> <ul style="list-style-type: none"> • Consent of the persons is required, except the following cases where: <ul style="list-style-type: none"> - The government certifies adequacy for targets; or - A business is subject to the Binding Corporate Rules (BCR) and the Standard Contractual Clauses (SCC). <p>* Some exceptions are stipulated in the administrative, healthcare, financial and telecommunication areas.</p>	<p align="center"><Cybersecurity Law></p> <ul style="list-style-type: none"> • A business will not be allowed to transfer data to overseas countries even though it is necessary for business purposes if: <ul style="list-style-type: none"> - No consent of the persons is reached; - Certain risks are expected in terms of politics, economy, science and technology, and national defense; or - The government considers that the given transfer should not be allowed. • Personal data and important data are required to be stored inside the country.
Cross-border transfer of industrial data	Free in principle		Free, except cases involving public safety	
	<p align="center"><No legal registrations in general stipulated></p>	<p align="center"><No legal registrations in general stipulated></p>	<p align="center"><Draft proposal for regulations over frameworks concerning free transfer of non-personal data></p> <p>* Some exceptions are stipulated in the</p>	<ul style="list-style-type: none"> • The scope of such “important data” is excessively wide, covering 27 areas and areas that the government considers as important. <p>* The term “important</p>

27 It is generally accepted that if social mobility declines, poverty becomes perpetuated across generations and the choice of vocations is undermined.

28 Ankeny (2016) (<http://www.itic.org/news-events/techwonk-blog/the-costs-of-data-localization>).

			administrative, healthcare, financial and telecommunication areas.	information-infrastructures” includes those related to: government organizations, energy, finance, transportation, water management, insurance medical care, education, social security, environmental protection, public utilities, telecommunications networks, radio, television, internet, national-defense science and technology, large-scale equipment, chemicals, food and pharmaceutical industries, scientific research and press.
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Figure II-1-1-19 Expected negative impact of data localization and relevant regulations on GDP



Notes: The figures are estimates if regulations over data localization and other data utilization are introduced into all sectors across target countries.

Source: *The Cost of Data Localization: Friendly Fire on Economic Recovery* (ECIPE).

(2) Protection of personal information

Data localization regulations currently adopted by many countries mainly cover personal information, and the principle of reciprocity is spreading. Under this principle, data transfer to a foreign country is permitted only when that country provides a comparable level of data protection to that provided in the home country. Not only have legal systems related to the protection of personal information been developed in individual countries, but also the OECD has adopted the privacy guidelines²⁹ and the Asia-Pacific Cooperation (APEC) Forum has adopted the Cross-Border Privacy Rules (CBPR).³⁰ The OECD's privacy guidelines lay down that personal information should be appropriately managed based on the following eight principles: (A) Collection Limitation Principle, (B) Data Quality Principle, (C) Purpose Specification Principle, (D) Use Limitation Principle, (E) Security Safeguards Principle, (F) Openness Principle, (G) Individual Participation Principle, and (H) Accountability Principle. The rules of the EU and APEC follow those principles.³¹

APEC formulated the APEC Privacy Framework in 2004 and recommended that APEC member economies should establish domestic systems for the protection of personal information based on that. Later, the CBPR was formulated in response to the growing needs for the protection of personal information transferred across national borders. Of the 21 APEC economies, six--the United States, Japan, Canada, Mexico, the ROK, and Singapore--have acceded to the CBPR. The CBPR certifies the compliance of activities conducted by companies within the APEC region to protect cross-border transfer of personal information with the APEC Privacy Framework. Applicant companies conduct self-examination concerning internal rules and systems concerning the protection of cross-border flows of personal information and submit the results to examination by an authorized neutral organization (called an accountability agent (AA), which may be either a private organization or a government agency) in order to obtain certification. In Japan, JIPDEC has been authorized as an AA.

In the EU, the EU General Data Protection Regulation (GDPR) was put into force on May 24, 2016.³² Under the GDPR, in principle, the transfer of personal data from within the European Economic Area (EEA: the 28 EU member countries and Norway, Iceland and Liechtenstein) to a third country is permitted only in cases where the data is processed within the EEA and where the European Commission recognizes that the third country provides an adequate level of protection. The transfer of personal information from within the EU requires the consent of the individuals concerned (data subjects), or the conclusion of the Standard Contractual Clauses (SCC) or the Binding Corporate Rules (BCR). The SCC is a legal means to provide an adequate level of protection to personal data to which a national law for the protection of personal information is applicable when the data is transferred to a country outside the EEA where it is not recognized that an adequate level of protection is not ensured.

29 OECD Guidelines on the Protection of Privacy and Transborder Flows of Personal Data (<http://www.oecd.org/sti/ieconomy/oecdguidelinesontheProtectionofPrivacyandTransborderFlowsOfPersonalData.htm>).

30 APEC Cross-Border Privacy Rules (CBPR) System (<http://www.cbprs.org/>).

31 Other multilateral frameworks include the e-commerce chapter of the Trans-Pacific Partnership (TPP) agreement and provisions of the act on the protection of personal data in the Economic Community of West African States (ECOWAS). For the details, see "EKKYOU DEETA FUROU NI KAKARU SEIDOTOU NO CHOUSAKENKYUU" (2016) (Survey commissioned by METI).

32 However, the application of the regulation accompanied by the threat of administrative penalties is scheduled to start on May 25, 2018, which is in effect the date of enforcement.

In other words, the SCC is a format of a contract for data transfer that has been determined by the European Commission. An appropriate level of protection is provided through the conclusion of a contract for data transfer between a data exporter located within the EEA and a data importer located outside the EEA based on this format, making it possible to implement legal data transfer. The BCR means personal data protection policies which are adhered to by a controller or processor established on the territory of a Member State for transfers or a set of transfers of personal data to a controller or processor in one or more third countries within a group of undertakings, or group of enterprises engaged in a joint economic activity.³³ As long as companies adhere to the BCR that has been approved by a supervisory organization, they can freely implement legal data transfer to countries outside EEA and within corporate groups.³⁴ Japan and the EU are engaging in dialogue with a view to establishing a framework for smooth mutual transfer of personal data³⁵ at an early date by 2018.

(3) Requirements for the adoption of mandatory security standards and disclosure of source code

Here, regulations other than data localization that may impede the development of digital trade will be mentioned.

First, mandatory security standards are posing a problem. Such standards are required under law to be followed in order to ensure the security of products and services imported from abroad. In particular, such standards are set with respect to telecommunication equipment, IT products and software services in some cases in order to ensure security against damage and leakage of information that may be caused by cybercrimes. The WTO Agreement on Technical Barriers to Trade (TBT), one of the international consensuses concerning mandatory security standards, does not authorize the application of discriminatory domestic standards and standards created for the purpose of impeding trade, and it recommends that standards be formulated based on international standards unless there is a legitimate reason for not doing so.

Regarding data traded across national borders, the disclosure of source code, which is equivalent to blueprints of software products, is required in some cases. For example, China, Indonesia and Brazil³⁶ have set the requirement for the disclosure of source code that is applicable to government procurement. In addition to taking legal measures, China and Russia are said to be moving to introduce de facto requirements, for the disclosure of the source code of computer software and automated teller machines (ATMs) in China's case and for the disclosure of source code of major technology companies in Russia's case.³⁷ TPP agreement and the Japan-EU Economic Partnership Agreement (EPA) contain clauses regarding the prohibition of the requirement for the disclosure of source code.

33 Article 4 (20), GDPR.

34 Among Japanese companies, the use of the SCC is proceeding. In addition, the Rakuten group obtained approval for its BCR from a data protection organization in Luxembourg (National Commission for Data Protection, or CNPD) in December 2016, becoming the first Japanese company to do so (https://corp.rakuten.co.jp/news/update/2016/1226_02.html).

35 This means that the EU will certify adequacy for the Japanese side, while Japan will designate the EEA as a foreign territory based on Article 24 of the Act on the Protection of Personal Information.

36 The cybersecurity bill that was announced in Viet Nam would presumably require certification mainly with respect to government procurement although the exact scope of application is unclear.

37 Source: Variety of the press.

As described above, there are various challenges that must be addressed with respect to digital trade, so it is an urgent task to formulate international rules that suit the needs of the time, including rules on the free flow of information.

(4) Challenges in terms of competition and consumer protection policies related to IT platform companies

In line with the rise of IT platform companies, countries have imposed regulations regarding IT platform companies, mainly in the advertising, financial, communication and broadcasting industries, from various viewpoints, including the viewpoints of ensuring an environment of fair competition with existing industries, protecting consumers, and securing safety. Among them are regulations concerning online advertising, consulting services using data, the specifics of distributed contents, and settlement (billing systems), for example. In addition, regulations concerning entry into national markets, such as restrictions imposed on the foreign investment ratio in relation to the acquisition of licenses and antitrust laws, have a significant impact on IT platform companies' business activities.

For example, the EU revised the Payment Services Directive (PSD/PSD2) and the Audiovisual Media Services Directive, put the GDPR into force and published a proposed regulation on promoting fairness and transparency for business users of online intermediation services after indicating its systematic policy concerning IT platform companies under the Digital Single Market (DSM) Strategy, which was announced in May 2015 and a policy document related to platforms published in May 2016 (Figure II-1-1-20). Moreover, as examples of the application and enforcement of the competition law by the EU Directorate-General for Competition, the EU conducted an investigation of Amazon's ebook business in relation to the most-favored nation treatment clause and notified Google of the imposition of a huge amount of fines. As an example of digital taxation, it presented a proposed change to corporate taxation rules in an e-economy.

As described above, institutional improvements are ongoing at the national and international level with respect to challenges in terms of competition and consumer protection policies related to IT platform companies, so attention should be paid to future developments.

Figure II-1-1-20 EU's systematic policy, revision of regulations, etc.

Basic principles

Digital Single Market (DSM) Strategy (May 2015)

- (i) Better access for consumers and businesses to digital goods and services across Europe;
- (ii) Creating the right conditions and a level playing field for digital networks and innovative services to flourish;
- (iii) Maximizing the growth potential of the digital economy.

Policy document related to platforms (May 2016)

Need for **setting the right environment to attract, retain and grow new online platform innovators, and a balanced regulatory framework for online platforms in the digital single market**

- **Fair competition conditions for equivalent digital services** (enhanced enforcement of regulations, etc.)
- **Responsible actions by platformers** (protection of IP rights, etc.)
- **Secure fairness, etc.** (development of new laws for **protection of consumers**, etc.)

Revision of regulations, court decisions related to them, etc.

Payment Services Directives (PSD/PSD2) (enforced in Jan. 2016)

Audiovisual Media Services Directive (reform policy) (proposed in May 2016)

General Data Protection Regulation (GDPR) (adopted in May 2018)

Decision by the European Court of Justice concerning ride sharing (ruled on Dec. 2017)

Regulation on Promoting Fairness and Transparency for Business Users of Online Intermediation Services (publicized in Apr. 2018)