



World Economic Trends I
<The 2021 Spring/Summer Report>
— Towards the Post-Coronavirus World —
(Summary)

August 2021

Cabinet Office, Government of Japan

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1 Policies of Different Countries Related to COVID-19 and Their Effects

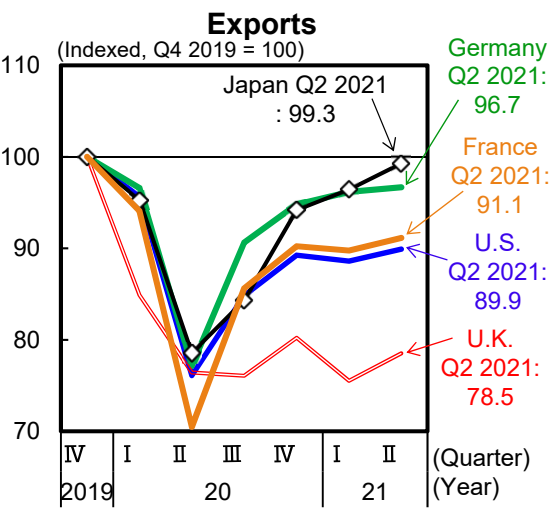
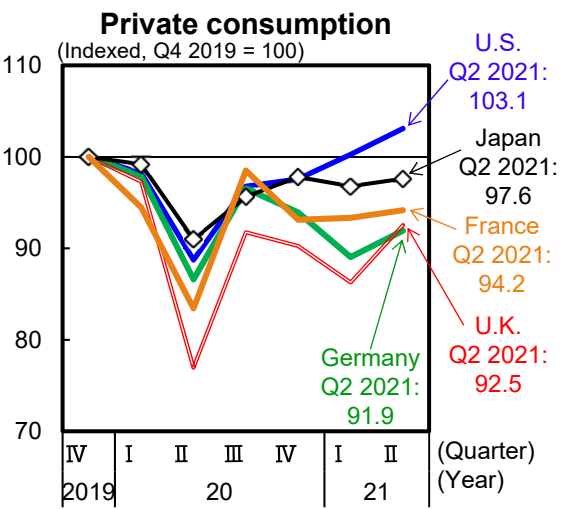
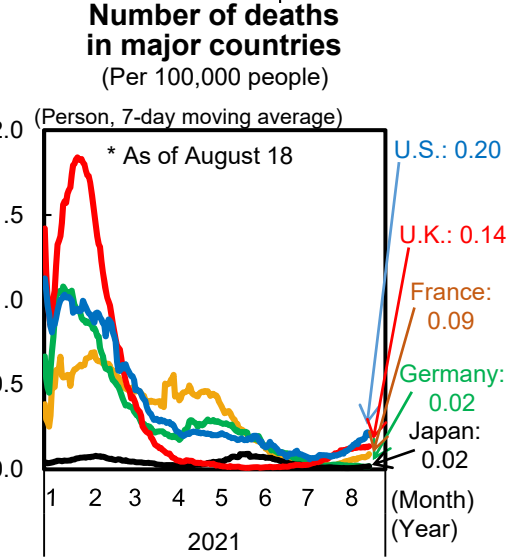
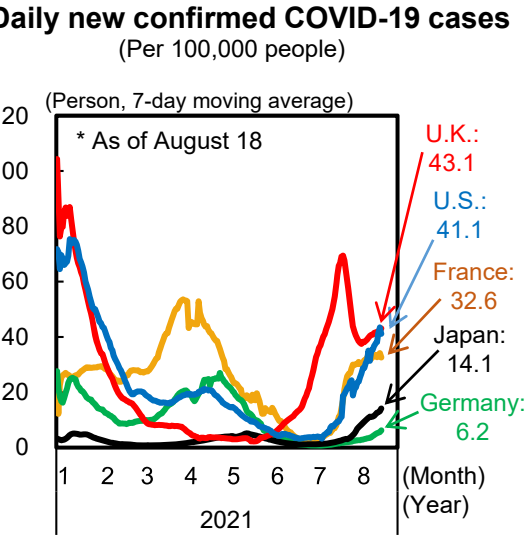
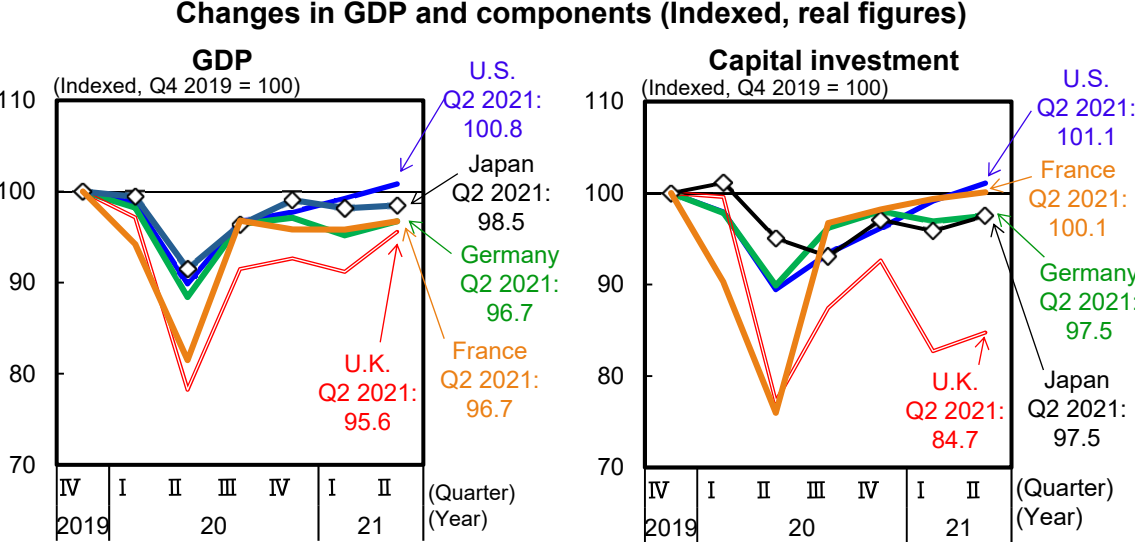
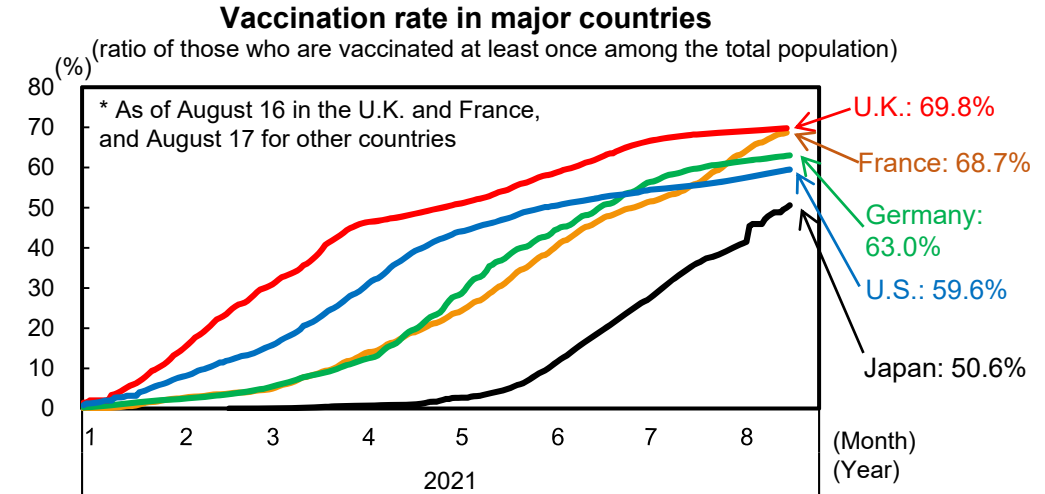
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1 Policies of Different Countries Related to COVID-19 and Their Effects: Infection Trend and GDP of Each Country (Outline)

- Progress is being made with vaccination in major Western countries. Although the number of newly infected people has been increasing in some countries since June and July 2021, the rise in the number of deaths is being curbed.
- While the GDP of major countries dropped largely when the infection was spreading in 2020, it picked up rapidly thereafter, partly due to various policy responses. Further, with the progress of vaccination and the resumption of economic activities, and also in **the U.S.** with the added effect of economic policies, the level of GDP exceeded that of before the pandemic from the second quarter of 2021. Although the level of GDP is still lower than that before the pandemic in **European countries**, there is a movement toward picking up, mainly in terms of consumption. In **Japan**, the drop in 2020 was smaller compared to Western countries, and the second quarter of 2021 experienced a positive growth rate with an increase in consumption and capital investment.



(Note) 1. Adapted from Our World in Data, WHO, CEIC, "National Accounts of Japan" by Cabinet Office, U.S. Department of Commerce, Federal Statistical Office, National Institute of Statistics and Economic Studies (INSEE), and Office for National Statistics.
 2. As for the capital investment in the top right chart, public investment is included for Germany.

1 Policies of Different Countries Related to COVID-19 and Their Effects: Business Size

	U.S.	Germany	France	U.K.	Japan
Total amount of business size (accumulated from Spring 2020)	<u>About \$6.0 trillion</u> (about ¥640 trillion, 29% of GDP)	<u>About €1.3 trillion</u> (about ¥164 trillion, 40% of GDP)	<u>About €613.6 billion</u> (about ¥75 trillion, 27% of GDP)	<u>About £702.9 billion</u> (about ¥96 trillion, 33% of GDP)	<u>About ¥293 trillion</u> (54% of GDP)

(Note) Adapted from various materials (same for pages hereafter). Percentage of GDP is the comparison to 2020.

1 Policies of Different Countries Related to COVID-19 and Their Effects: Content of Major Employment Support Measures (1)

- A system to compensate for the part of the wages for employees who are under temporary retirement*¹ was newly established or expanded in **Germany, France, the U.K., and Japan**. The system was used by many business operators. In **the U.S.** where no corresponding system exists, a prompt reaction was taken on a large scale through a system where personnel expenses are financed by private financial institutions by setting the maintenance of employment as one of the requirements for **repayment exemption**.*² (1: Measures shown in red in the bottom table, 2: Measures shown in blue in the same)
- In **Germany**, the increase in personnel expenses is partly subsidized for business operators who let employees who were under temporary retirement back to work since July 2021.
- In **Germany, France, and the U.K.**, where the unemployment rate is high among **the youth**, measures such as **vocational training and support for providing job opportunities** for them are expanded. Also in **Japan**, special measures are expanded with subsidies for employment adjustment subsidies on education and training to support employment maintenance through temporary retirement and education/training.
- Since the autumn of 2021, some countries in **Europe** are scheduling to contract employment support measures. Accordingly, it is becoming important to support the facilitation of job transfer for workers who are unable to return to their previous work.

(Various employment support measures in major developed countries) : Measures reviewed according to the state of resumption of economic activities

	U.S.	Germany	France	U.K.	Japan
Employment support (maintenance of employment relationship + creation of job opportunities) (1)	Paycheck Protection Program (PPP) (\$961.6 billion (about ¥103 trillion)) - First Draw application: Financing 2.5 months' personnel expenses (up to \$10 million (about ¥1 billion), repayment exempted with employment maintenance) [From April 2020, application terminated on August 8, 2020, and usage up to December 2020. Application restart from January to May 2021] - Second Draw application: Financing 2.5 months' personnel expenses, and 3.5 months' personnel expenses for restaurant/accommodation business (up to \$2 million (about ¥200 million), repayment exempted with maintenance of employment) [From January 2021, deadline of application in May 2021] <u>The First Draw covers business operators with no more than 500 employees, and the Second Draw covers business operators with no more than 300 employees. While the cap for the loan was lowered for the Second Draw, a financeable amount is raised for some categories of business.</u>	Expanding short-time work allowance (*) <Expansion> - Requirements for granting are lowered from "one third of the employees" to "10%" or more when applying the short-time work. - Period of granting is extended from 12 months to 24 months at maximum (up to the end of 2021 at maximum) - Increasing the amount of allowance (70% of wage cut contingent upon short-time work after receiving the allowance for four months, and 80% after seven months, is compensated by the government) [From March 2020 to the end of 2021] * Previously, 60% of wage cut contingent upon short-time work was compensated when an employer shortened the work time of employees as a replacement for dismissal.	Expanding allowance for absence from work (*) <Expansion> (€37.4 billion (about ¥4.6 trillion), also including the existing system) - Increasing the amount of government compensation, etc. (business compensation of 70% and government compensation of 70% of the face value of salary at the time of introducing the expansion measures), up to 4.5 times the amount of statutory minimum wage [From March 2020] * Previously, compensation from companies to employees was 70% of the face value of salary, and compensation from the government was €7.74/hour (less than 250 employees, about ¥940) or €7.23/hour (250 or more employees, about ¥880). - Additionally covering temporary workers. <u>Compensation ratio is lowered in a phased manner</u> , with 60% of the face value of salary compensated by the company and 36% by the government from July 2021 (except for some of the business categories where damage is especially large). - Parents (only one per family) who are unable to work due to school closing are also covered by the allowance [From September 2020]	Coronavirus Job Retention Scheme (CJRS) (£59.8 billion (about ¥8.2 trillion)) - Personnel expenses of furloughed employees partly compensated - Compensation rate by the government is initially 80% of the personnel expenses (up to £2,500/month (about ¥340,000)) [From March 2020 to September 2021] Since September 2020, <u>the government compensation rate is lowered in a phased manner</u> (70% from September 2020, 60% from October, 80% from November, 70% from July 2021, 60% from August) - Employees who cannot work because of the need to care for children staying at home due to the closure of schools and childcare facilities are also covered.	Special measures on subsidies for employment adjustment <Expansion> (about ¥3.9 trillion (*), also including the existing system) * Excluding diversion - ¥15,000/day at maximum, with aid rate 10/10 at maximum, paid to both SMEs and large-sized businesses who cooperated with the request to shorten business hours, etc. in regions where a declaration of emergency situation was issued, and who are under severe business conditions, regardless of the category of business or region. [Maximum amount per day and aid rate raised from June 2020. Current measures are implemented from May 2021.] The support fund and allowance for the leave forced to be taken under the COVID-19 outbreak (about ¥639.2 billion) - Basically 80% of the wage before taking the leave, ¥330,000/month at maximum [From October 2020 to July 2021 for SMEs, and from April to June 2020 and from January 2021 for those who work in shifts in large-sized businesses]

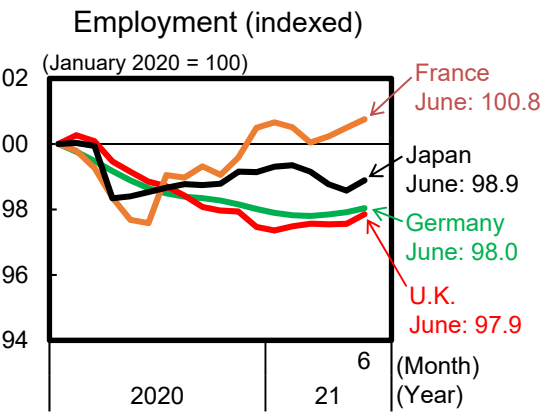
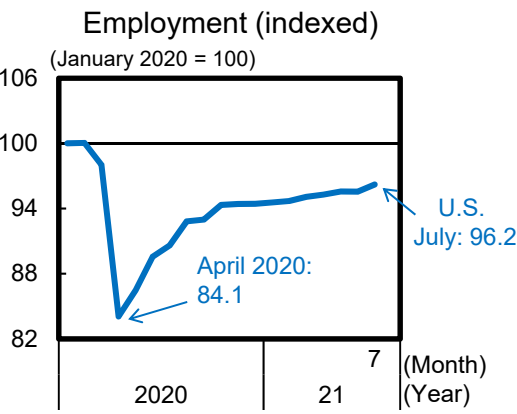
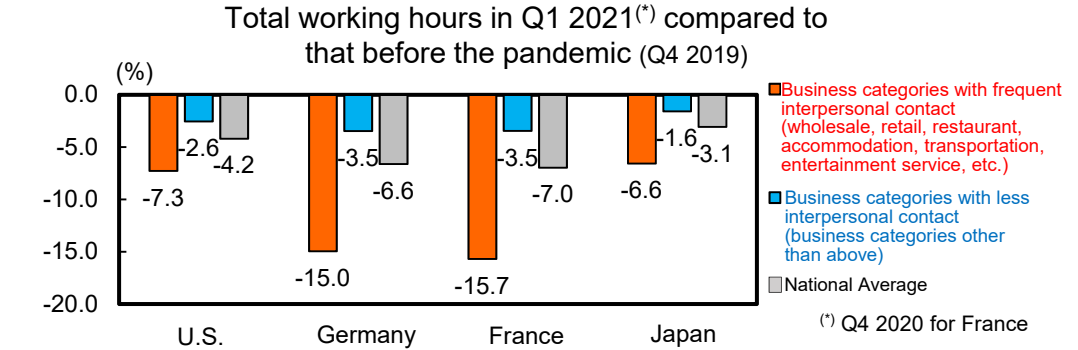
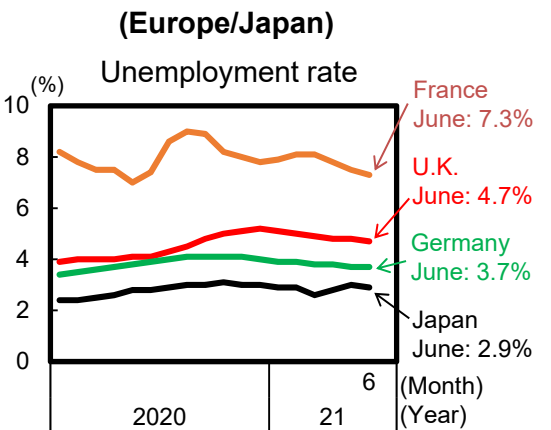
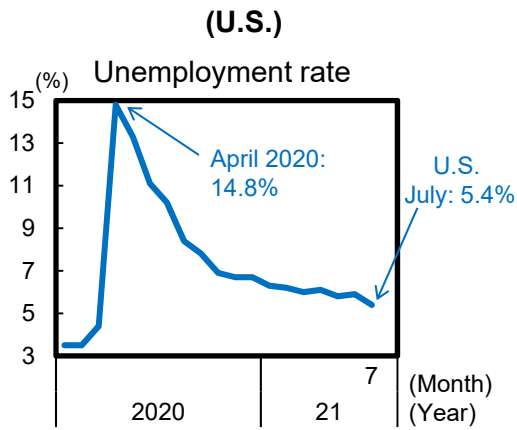
Note: Amounts shown in parentheses after the name of the measures are the budget amount for each measure (project size in the case of loans). Measures with budget amount unknown or undisclosed are shown without amounts (same for pages hereafter). 5

1 Policies of Different Countries Related to COVID-19 and Their Effects: Content of Major Employment Support Measures (2)

	U.S.	Germany	France	U.K.	Japan
Employment support (maintenance of employment relationship + creation of job opportunities) (2)	Some of the grants related to paid leave for workers - As for companies with no more than 500 employees, employers are required to pay a certain percentage of wage to employees who took leave due to childcare, etc., and the company's tax is exempted for such amount (up to \$2,000 (about ¥210,000) in the case of childcare). * In addition to the above, cases where the employee is infected or takes leave due to the care of those infected are also covered. [From April 2020 to September 2021]	Personnel expenses support for SMEs (included in the support for SMEs explained later in p.10) - Among companies with annual sales of no more than €750 million (about ¥92 billion), those who increased employment in the course of resuming economic activities or having employees return to work from short-time work are eligible to be paid a part of the increased personnel expenses. [From July 2021 to September 2021]	Subsidies for allowance for long-term absence from work (about €4.2 billion (about ¥514 billion)) - Government compensation for the allowance paid by companies facing long-term scale-back of activities to employees who are under temporary retirement (up to 4.5 times the amount of statutory minimum wage and 60% of hourly pay (applicable for up to 24 months in the period of 36 months) [From July 2020]		Subsidies and support grants for elementary school closures, etc. (about ¥171.9 billion) - Supporting parents who take leave due to the temporary closure of elementary schools, etc. ¥8,330/day (¥15,000 for leave taken on April 1, 2020, and after) (¥4,100/day for freelance (¥7,500 for April 1, 2020, and after) (fixed amount)) [From February 2020 to March 2021]
		Employment support for youth (€500 million (about ¥61 billion)) - Affected SMEs who maintain or increase the level of occupational training for youth are eligible to receive subsidies according to the number of trainees (€2,000/person (about ¥240,000) in the case of continuation, and €3,000/person (¥370,000) in the case of upgrading) [From June 2020]	Employment support for youth (€2 billion (about ¥243.7 billion)) - Business establishments that employed youth are eligible to receive subsidies according to the age and employment contract (up to €8,000/year (about ¥980,000) per person) [From July 2020 to December 2021]	Employment support for youth (1) (€2.1 billion (about ¥0.3 trillion)) - Salaries, etc. equivalent to the statutory minimum wage for 25 hours per week are paid for 6 months, provided that youth aged from 16 to 24 are employed for at least 25 hours a week and for 6 months. [From September 2020 to December 2021]	Employment support for youth (2) (Only England) (€2.1 billion (about ¥0.3 trillion)) - £1,000/person (about ¥140,000) is paid up to 10 persons to companies providing work experience to youth aged from 16 to 24 [From September 2020 to July 2021]
					Special expansion of subsidies for employment adjustment (on education and training) <Expansion> - Subsidy rate and amount added are raised for implementing education and training. (Aid rate up to 9/10 and ¥2,400/day added for SMEs; Aid rate up to 3/4 and ¥1,800/day added for large-scale businesses) - Scope of education and training covered is enlarged. (For example, the style of learning at home is included) [From April 2020 to September 2021]

1 Policies of Different Countries Related to COVID-19 and Their Effects: Effects of Employment Support Measures (1) (Trend of Unemployment and Employment)

- In **the U.S.**, unemployment due to layoff increased rapidly and the number of those employed dropped sharply in the spring of 2020. Although the situation is improving thereafter, it is yet to recover to the level before the pandemic. As for factors thereof, delay of returning to work due to childcare burden and concerns for infection, as well as decrease in working incentive due to the expansion measures for unemployment allowance are being pointed out.
- In **Europe**, increase in unemployment was curbed even with the implementation of lockdown measures. It can be pointed out that in addition to the shoring-up effect of the (extension of) employment support measures and financing support, the trend of economic activities recovery from the severe drop contributed as well. While the signs for recovery can be seen in the number of those employed since the beginning of 2021, the level is below that seen before the pandemic in Germany and the U.K. It is said that job searching was difficult under restrictions on economic activities, and there were also concerns of infection, expectations for returning to work among those who are temporary unemployed, and the increase of childcare burden due to school closure.
- As for the working hours in **the U.S. and in Europe** recovery is delayed, especially in business categories where interpersonal contact is frequent.



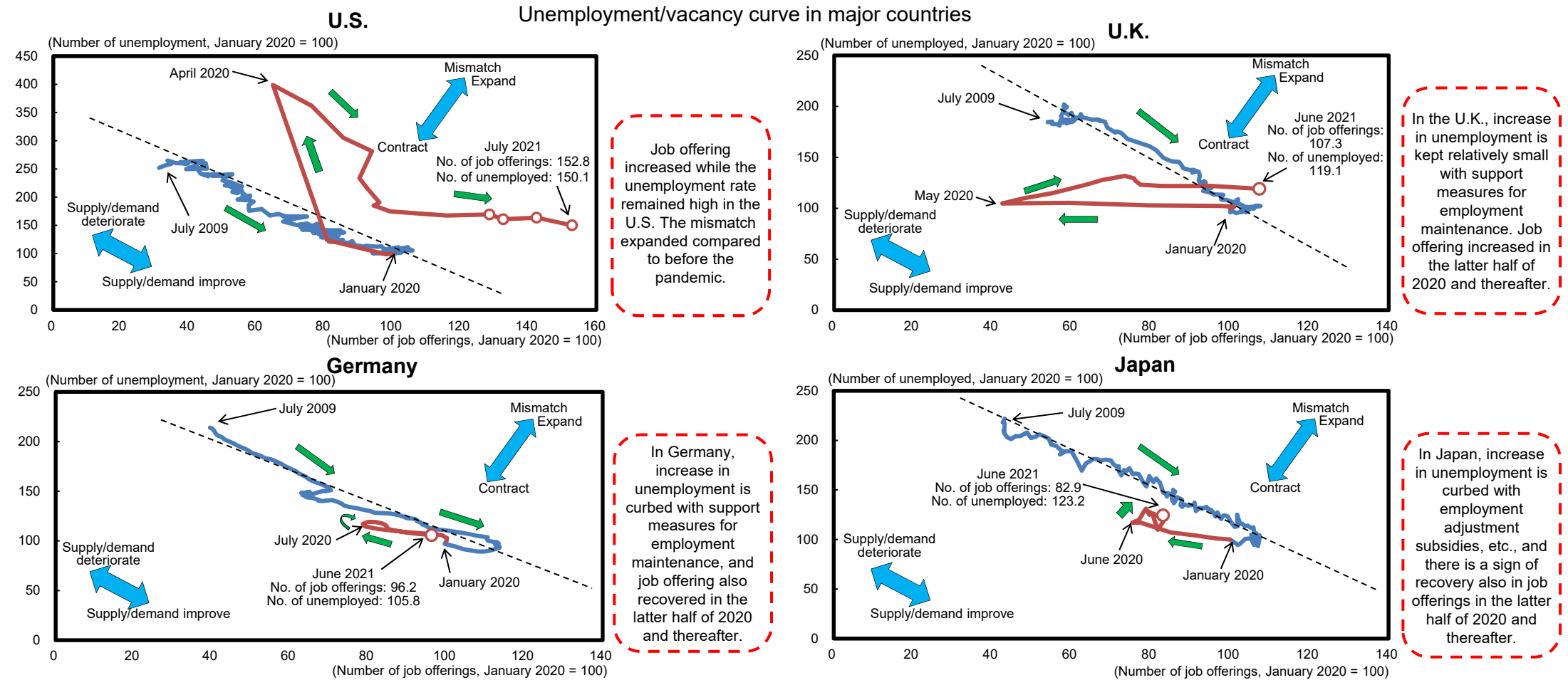
	Employment	Unemployment
U.S.	From February to April 2020: -25.36 million From April 2020 to July 2021: +19.28 million	From February to April 2020: +17.39 million From April 2020 to July 2021: -14.41 million
Germany	From February 2020 to June 2021: -0.73 million	From February 2020 to June 2021: +0.05 million
France	From February to May 2020: -0.57 million From May 2020 to June 2021: +0.26 million	From February to May 2020: -0.30 million From May 2020 to June 2021: +0.12 million
U.K.	From February 2020 to June 2021: -0.80 million	From February 2020 to June 2021: +0.24 million
Japan	From February 2020 to June 2021: -0.77 million	From February 2020 to June 2021: +0.36 million

	Non-labor force population
U.S.	From February to April 2020: +8.24 million From April 2020 to July 2021: -3.30 million
U.K.	From February 2020 to June 2021: +0.66 million
Japan	From February 2020 to June 2021: -0.10 million

(Note) Adapted from "Labor Force Survey" by the Ministry of Internal Affairs and Communications (MIC), U.S. Department of Labor, Eurostat, Federal Statistical Office, Office for National Statistics, and "Economic Outlook (May 2021)" by OECD. Moving average for the latter three months for the data of the U.K.

1 Policies of Different Countries Related to COVID-19 and Their Effects: Effects of Employment Support Measures (2) (Trend of Unemployment and Employment)

- In **the U.S.**, the increase in job offerings continued while there is a delay in employment recovery due to giving up job search or the expansion of unemployment allowance, and the mismatch has enlarged since April 2020. In **Europe**, the rapid increase in unemployment is being curbed with support measures for employment maintenance, and the number of job offerings has also recovered with the resumption of economic activities.
- Labor shortage in restaurant and accommodation businesses is pointed out both in **Europe and the U.S.** In **the U.S.**, there is a report that a rapid increase in pent-up demand in restaurant/accommodation business is unable to be met because of a labor shortage.
- However, if the continuation of employment maintenance support measures implemented in **Europe** is prolonged, the creation of new employment and the relocation of workers may be hindered. In order to cope with such issues, measures such as vocational training during the period of temporary unemployment are considered as being effective.



(Note) Adapted from OECD.stat, "Labor Force Survey" by MIC, "Report on Employment Service" by the Ministry of Health, Labour and Welfare (MHLW), and U.S. Department of Labor.
Number of job offerings in the U.K. is the moving average for the latter three months.
As for Japan, number of job offerings = active job openings – persons who found employment; number of unemployed = unemployed job seekers.

1 Policies of Different Countries Related to COVID-19 and Their Effects: Content of Grants and Loans for Businesses (1)

- In Germany, France, the U.K., and the U.S., granting according to the amount of sales decrease and the size of fixed expenses is implemented to SMEs and business operators for which business shutdown measures are applied. In Europe measures were taken along with lockdown with business shutdown measures applied widely (in spring and autumn in 2020 and up to spring in 2021). In the spring of 2020, payment was made widely to small-scale business operators, etc. However, the content of grants changed since summer, according to the period during which activities are restricted and the scope of restriction (for example, in Germany, granting was expanded and the requirements were relaxed in a phased manner from the summer of 2020).
- While the design of the system varies, many of the grants are aimed at compensating for a part of fixed expenses (as in the U.S., Germany, and France), while there are also grants to mitigate the burden of financing by paying or offering loans before the fixed expenses are generated (as in the U.S. and Germany).
- In Japan, support measures, such as sustainability grants and rent payment support grants, are offered to businesses where sales have decreased. In autumn 2020, a category for the promotion of support requests was created in the temporary grant for regional revitalization, in order to support flexible measures such as request for shortening business hours. As for cooperation subsidies for restaurants following the request for shortening of operating hours, support according to business size and quick payment treatment are introduced.
- In addition to the above, measures such as support for self-employed businesses (in Germany and the U.K.), postponement of tax payment, loans, and credit guarantee are implemented in major countries. Large-scale loans and credit guarantee had profound effects, and the number of bankruptcies is kept at a lower level compared to that of before the pandemic in many countries, including Japan.

(Grants for businesses in major developed countries)

: Measures reviewed according to the state of resumption of economic activities

	U.S.	Germany	France	U.K.	Japan
Grants for businesses (1)	Paycheck Protection Program (PPP) (forecited)	Grant to small business operators (€18 billion (about ¥2.2 trillion)) - Up to €9,000 (about ¥1.1 million) for three months to business operators with no more than 5 employees (€15,000 (about ¥1.8 million) to business operators with no more than 10 employees) [From March to May 2020]	Solidarity fund (grant) (€34.9 billion (about ¥4.3 trillion)) - Up to 100% of the sales decrease from the previous year (up to €10,000 (about ¥1.2 million)), or up to 20% of the sales in the same quarter of the previous year (up to €200,000/month (about ¥24.4 million)) to business operators to which business shutdown measures are applied or business operators whose sales decreased by a certain level or more. [From March 2020] <u>Business categories covered, requirements for grants, and the maximum amount of grants are reviewed as needed according to the situation of the introduction of restriction measures.</u>	Grants for retail, hospitality, and leisure industries - £10,000 (about ¥1.37 million) or £25,000 (about ¥3.43 million), depending on the assessed valuation [April 2020]	Sustainability grant (about ¥5.7 trillion) - Up to ¥2 million for SMEs with sales decreasing by 50% or more for a given month from January to December 2020 compared to the same month of the previous year (up to ¥1 million for a sole proprietor) [Application period from May 2020 to February 2021]

1 Policies of Different Countries Related to COVID-19 and Their Effects: Content of Grants and Loans for Businesses (2)

: Measures reviewed according to the state of resumption of economic activities

	U.S.	Germany	France	U.K.	Japan
Grants for businesses (2)	<p>Grants for restaurants (\$28.6 billion (about ¥3 trillion))</p> <ul style="list-style-type: none"> - Difference between total revenues in 2019 and 2020 (up to \$10 million/company (about ¥1.1 billion) and up to \$5 million/store (about ¥500 million)) is paid to restaurants, bars, etc. (excluding listed companies and companies with 21 or more stores), <u>for the payment of personnel expenses, rent, and housing loans</u> [Application start from May 2021] <p>Grant for facility management business operators (\$16.2 billion (about ¥2 trillion))</p> <ul style="list-style-type: none"> - 45% of total revenues in 2019 (up to \$10 million (about ¥1.1 billion)) is paid to operators of live performance sites, museums, cinemas, etc. (excluding companies with 500 or more employees) <u>for the payment of personnel expenses, rent, and housing loans</u> [Application start from April 2021] 	<p>Grant for SMEs (€90 billion (about ¥11 trillion))</p> <ul style="list-style-type: none"> - <u>Certain ratio of fixed expenses is paid</u> to business operators with annual sales not more than €750 million (about ¥92 billion) and those experiencing sales decrease of a certain rate or more [From June 2020 to September 2021] Payment requirements relaxed, content of payment expanded, and payment cap raised in a phased manner <p>From June to August 2020</p> <ul style="list-style-type: none"> Up to 80% of the fixed expenses are paid to companies whose average sales decreased by 60% or more compared to 2019. Up to €50,000/month (about ¥6.1 million) <p>From September to December 2020</p> <ul style="list-style-type: none"> Up to 90% of the fixed expenses are paid to companies whose average sales decreased by 30% or more compared to 2019. Up to €50,000/month (about ¥6.1 million) <p>From November 2020 to June 2021</p> <ul style="list-style-type: none"> Up to 100% of the fixed expenses are paid to companies whose sales decreased by 30% or more compared to 2019. Up to €1.5 million/month (about ¥180 million) (* Announced to be raised to €10 million/month (about ¥1.2 billion) on June 9, 2021) <p>From July to September 2021</p> <ul style="list-style-type: none"> Up to 100% of the fixed expenses are paid to companies whose sales decreased by 30% or more compared to 2019. Up to €10 million/month (about ¥1.2 billion) <p>Grant for companies (€33 billion (about ¥4 trillion))</p> <ul style="list-style-type: none"> - Up to 75% of the sales of the same month of the previous year is paid to business operators to which business shutdown measures are applied during the lockdown period [From November to December 2020] 	<p>Compensation of fixed expenses</p> <ul style="list-style-type: none"> - Business operators to which solidarity fund support is applied, to which business shutdown measures are applied and experiencing sales decrease of a certain level: Up to 70% of <u>fixed expenses</u> including rent (up to 90% for companies with less than 50 employees) is <u>compensated</u> (up to €10 million (about ¥120 million) annually for FY2021) [From January to June 2021] <p>Rent-related support (€20 billion (about ¥2.4 trillion))</p> <ul style="list-style-type: none"> - When a lender abandons the rent of business operators to which business shutdown measures are applied, tax equivalent to 50% of the rent (up to 2/3 of the rent in the case of businesses with 250 or more and less than 5,000 employees) is exempted [November 2020] <p>Exemption of social insurance premium payments</p> <ul style="list-style-type: none"> - Payment of social insurance premiums is exempted for restaurant/accommodation businesses with less than 250 employees who are temporary closing or experiencing sales decrease by 50% or more and business operators with less than 50 employees to which business shutdown measures are applied [From September 2020] 	<p>Support for business operators to which business shutdown measures are applied</p> <ul style="list-style-type: none"> - Up to about £107/day (about ¥16,000) is paid to business operators to which regional business shutdown measures or business shutdown measures in England are applied, depending on the assessed valuation of real property for business [From November 2020 to March 2021] - Up to £9,000 (about ¥1.32 million) is paid to business operators to which business shutdown measures in England are applied, depending on the assessed valuation of real property for business [From January to March 2021] - Up to £6,000 (about ¥820,000) is paid to non-essential retail businesses and providers of services for individuals, depending on the assessed valuation [From April to June 2021] 	<p>Rent payment support grant (about ¥1.1 trillion)</p> <ul style="list-style-type: none"> - Amount equivalent to 6 months' <u>rent is paid</u> to medium enterprises and SMEs experiencing sales decrease by 50% or more from the same month of the previous year in a given month from May to December 2020, or by 30% or more year on year for three consecutive months (up to ¥6 million (medium enterprises and SMEs), and up to ¥3 million (sole proprietor)) [Application period from July 2020 to February 2021] <p>Cooperation subsidies (about ¥3.6 trillion)</p> <ul style="list-style-type: none"> - Up to ¥200,000/day per store depending on the business size [Current measures from April 2021] (Large-sized facilities, etc.) - ¥200,000/day per 1,000 square meters per facility depending on the business size [Current measures from May 2021] <p>Temporary support grants / monthly support grants (about ¥697.9 billion)</p> <ul style="list-style-type: none"> - Up to ¥600,000 for SMEs with sales decreasing by 50% or more for a given month from January to March 2021 compared to the same month of the previous year or two years ago (up to ¥300,000 for a sole proprietor) [Application period from March to June 2021] - Up to ¥200,000/month for SMEs with sales decreasing by 50% or more for a given month from April to September 2021 compared to the same month of the previous year or two years ago (up to ¥100,000/month for a sole proprietor) [Application period from June 2021]

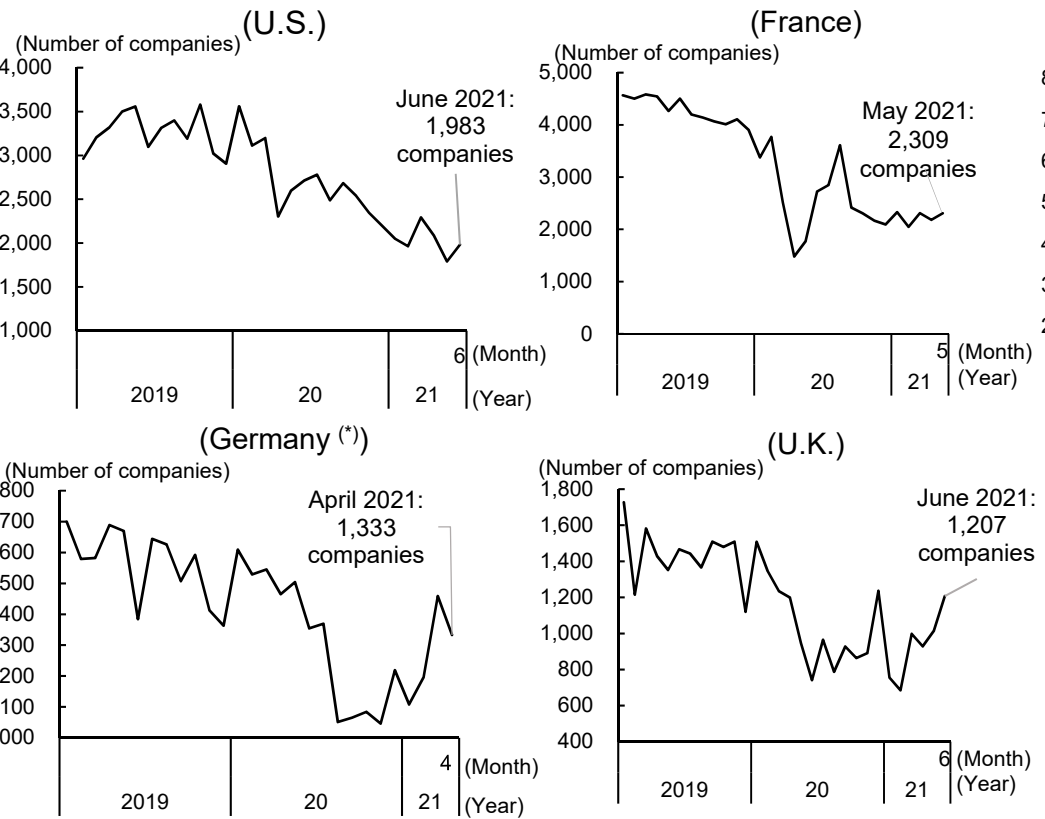
1 Policies of Different Countries Related to COVID-19 and Their Effects: Content of Grants and Loans for Businesses (3)

	U.S.	Germany	France	U.K.	Japan
Grants for businesses (3)		Support for self-employed businesses (New Start Assistance, New Start Assistance Plus) <ul style="list-style-type: none"> - For self-employed businesses whose sales during the funding period decreased by 10% or more compared to "average monthly sales in 2019 x months," - Up to €7,500 (about ¥920,000) is paid in advance [From January to June 2021] - Up to €4,500 (about ¥550,000) is paid in advance [From July to September 2021] 		Self-Employment Income Support Scheme (SEISS) (£31.5 billion (about ¥4.3 trillion)) <ul style="list-style-type: none"> - For self-employed business with operating income no more than £50,000/year (about ¥6.9 million) and whose sales decreased due to the pandemic, 80% of the average operating income (up to £2,500/month (about ¥340,000)) is paid <ul style="list-style-type: none"> → 70% for applications from August, 80% for applications from November, and 80% or 30% depending on the sales decrease rate for applications from July 2021 	
Loans / credit guarantees	Stabilization fund (\$500 billion (about ¥55 trillion, 2.3% of GDP)) [March 2020] <ul style="list-style-type: none"> - Contribution to FRB Facility (credit guarantees / loans) (\$454 billion) - Loans to passenger air travel (\$25 billion) - Loans to cargo air carriers (\$4 billion), etc. 	Economic Stabilization Fund (€600 billion (about ¥73 billion, 18% of GDP)) [March 2020] <ul style="list-style-type: none"> - Credit guarantee, contribution, additional loan for companies in financial difficulties, etc. Expansion of government guarantee limit of the KfW (€357 billion (about ¥43.7 trillion, 11% of GDP)) [March 2020]	Government guaranteed loan (€300 billion (about ¥37 trillion, 13% of GDP)) <ul style="list-style-type: none"> - Government guarantee is granted to new loans made through public investment banks <ul style="list-style-type: none"> Upper limit of the loan: 3 months' sales in 2019 - Guaranteed ratio is from 70% to 90%, depending on the size [Application period from March 2020 to December 2021] Special loan by the government (€1 billion (about ¥121.8 billion, 0.04% of GDP)) <ul style="list-style-type: none"> - Government directly provides loans to companies that were unable to get a government guaranteed loan <ul style="list-style-type: none"> Up to €10,000 to €50,000, etc. (about ¥1.2 million to ¥6.1 million) [From October to December 2020] Support for strategic companies (€20 billion (about ¥2.4 trillion, 0.9% of GDP)) <ul style="list-style-type: none"> - Government guaranteed loan for airlines and automobile manufacturers 	Emergency loan for large-sized companies (Covid Corporate Financing Facility (CCFF)) <ul style="list-style-type: none"> - Purchase of commercial paper (CP) with the maximum maturity of 1 year Emergency loan for medium-sized and larger companies (Coronavirus Large Business Interruption Loan Scheme (CLBILS)) <ul style="list-style-type: none"> - Loans by government-affiliated financial institutions, credit guarantee (80%), with no collateral for loan amount under a certain level <ul style="list-style-type: none"> Up to £200 million [Application period from March 2020 to March 2021] Emergency loan for SMEs (Coronavirus Business Interruption Loan Scheme (CBILS)) (£330 billion (about ¥45 trillion, 16% of GDP)) <ul style="list-style-type: none"> - Loans and credit guaranteed by government-affiliated financial institutions <ul style="list-style-type: none"> Up to £5 million [Application period from March 2020 to March 2021] Special loan for SMEs (Bounce Back Loan Scheme (BBLs)) <ul style="list-style-type: none"> - Government guarantees 100% to the private financial institutions [Application period from May 2020 to March 2021] 	Essentially interest-free, uncollateralized loan by public and private sectors (about ¥110 trillion, 20% of GDP) <ul style="list-style-type: none"> - Credit line <ul style="list-style-type: none"> JFC (Micro Business and Individual Unit), etc., private sector: ¥80 million JFC (SME Unit), etc., Shoko Chukin Bank: ¥600 million - Upper limit for essentially interest-free loan [Application scheduled to terminate at the end of 2021 for JFC, etc. For private financial institutions, application terminated in March 2021. Credit guarantee (80-100%) is continued.] [From January 2021] <ul style="list-style-type: none"> JFC (Micro Business and Individual Unit), etc., private sector: ¥40 million → ¥60 million JFC (SME Unit), etc., Shoko Chukin Bank: ¥200 million → ¥300 million Subordinated capital loan (about ¥6 trillion, 1.1% of GDP) [From June 2020] <ul style="list-style-type: none"> - Up to ¥1 billion for SMEs, with interest rate of 0.5% for the first three years - For medium-sized companies, interest for the first three years is lowered by 2.0% - For large-sized companies (restaurant/accommodation), interest rate for the first three years is lowered by 1.5% [From March 2021] Crisis response loan (senior loan) [From March 2020] <ul style="list-style-type: none"> - Up to ¥600 million for SMEs, interest rate for the first three years is lowered by 0.9% - For medium-sized companies, interest for the first three years is lowered by 1.0% (*) - For large-sized companies (restaurant/accommodation), interest rate for the first three years is lowered by 0.5% (*)

1 Policies of Different Countries Related to COVID-19 and Their Effects: Effects of Grants and Loans for Businesses (Trend of Bankruptcy and Corporate Debt)

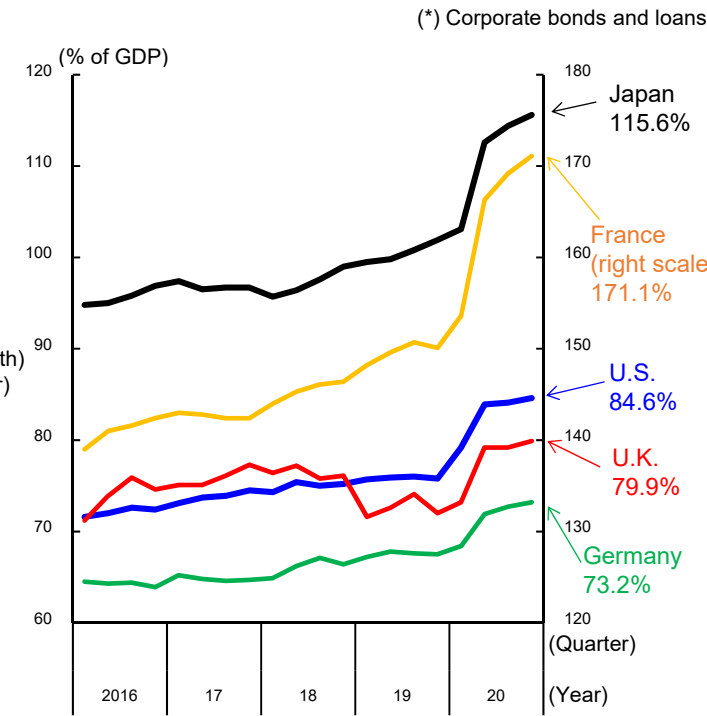
- The number of bankruptcies is kept at a lower level compared to that of before the pandemic in each country. It can be pointed out that the shoring-up effect of financing support measures and the (extension of) employment support measures had a certain effect in each country.
 - ✓ According to the estimates by the OECD, about 30% of companies should have faced a liquidity deficit (a state of being unable to cover operating expenses, pay taxes, and pay interest for existing debt) in the three months under the pandemic if it were not for government support measures in 14 European countries.
 - ✓ In France, financing DI in July 2021 marked the highest since 2005.
- Even if economic activities further resumed from now on, some companies may be unable to restore their business activities to the level before the pandemic due to factors such as changes in demand structure. If support measures are contracted in such context, it is considered that some companies will accumulate bad loans, or may face difficulty in continuing to exist. Transfer of production factor according to changes in demand, and in turn, promotion of growth strategies for supporting post-coronavirus recovery over a medium term are the issues to be considered.

(1) Corporate bankruptcies in major countries



(*) In Germany, companies for which payment is suspended due to insolvency, etc., are obliged to apply for insolvency generally within three weeks. However, in light of the spread of infection, a measure was taken to temporarily suspend the obligation of making the application for the period from March to December 2020, if the reason is an infectious disease and there is a prospect of being able to avoid insolvency in the future.

(2) Debt balance of non-finance corporation in private sector (*)



(Note) Adapted from American Bankruptcy Institute, Deutsche Bundesbank, INSEE, U.K. government, "Monthly Report on corporate bankruptcy" by Tokyo Shoko Research, and BIS.

1 Policies of Different Countries Related to COVID-19 and Their Effects: Content of Grants for Individuals (1)

- While cash was paid widely to individuals in **the U.S.**, support implemented in **Germany, France, and the U.K.** was limited to households raising children, lower-income households, and students who are affected more by the pandemic and have stronger needs. In **Japan**, in addition to a uniform grant, focused support for **lower-income households raising children and single-parent households** who are especially affected was implemented. In addition, in **the U.S., Germany, the U.K., and Japan**, **grants for the unemployed were also expanded**. Unemployed households are supported in many countries, especially in **the U.S.** where the number of unemployed rose sharply.
- Support for sole proprietors, whose income fluctuation is usually large, was also reinforced in each country. While there are cases where new grant measures for self-employed businesses who experienced sales decrease have been introduced (**Germany, the U.K.***), in **the U.S.** unemployment insurance was expanded to newly cover sole proprietors (self-employed, freelance, etc.), who are usually not eligible for unemployment insurance payment. (*Refer to the "Grants and Loans for SMEs and Business Operators to Which Business Shutdown Measures are Applied.")
- In **Germany and the U.K.**, a reduction of **value-added tax for food and drink services**, etc., which experienced a large decrease in consumption due to lockdown measures, is continuing to be implemented.

(Various measures, including grants for individuals in major developed countries)

	U.S.	Germany	France	U.K.	Japan
Grants for individuals	Cash benefit (implemented three times) (about \$867.1 billion (about ¥93 trillion)) <ul style="list-style-type: none"> - Up to \$1,200 (about ¥130,000), \$500 (about ¥54,000) for children [March 2020] - Up to \$600 (about ¥65,000), same amount for children [December 2020] - Up to \$1,400 (about ¥150,000), same amount for children [March 2021] 	Grant for households raising children (€4.3 billion (about ¥520 billion)) <ul style="list-style-type: none"> - €300/child (about ¥37,000) [From September 2020] - €150/child (about ¥18,000) [From May 2021] 			Special cash payments (about ¥12.7 trillion) <ul style="list-style-type: none"> - ¥100,000/person [From April 2020 to April 2021]
Support for impoverished households, etc.	Rent payment support (\$46.6 billion (about ¥5 trillion)) <ul style="list-style-type: none"> - A grant for up to 18 months' rent and utility rates is provided for the unemployed and low-income individuals [Coverage period from March 2020] 		Grant for low-income households (€900 million (about ¥109.7 billion)) <ul style="list-style-type: none"> - €150 (about ¥18,000)/household for households receiving public assistance, (an additional €100/child (about ¥12,000)), €100/child (about ¥12,000) for households receiving a housing benefit for low-income households (households without children are ineligible) [May and November 2020] 	Support for low-income individuals, job seekers, and full-times students <Expansion> <ul style="list-style-type: none"> - Increase in the amount of existing grants for low-income individuals Ordinary amount of grant (£20/week added to £344/month (about ¥47,000) at minimum) [From April 2020 to September 2021] 	Special loans, including emergency small amount fund / general support fund (about ¥1.7 trillion) <ul style="list-style-type: none"> - Loan of up to ¥2 million for households with 2 or more persons, and up to ¥1.55 million for single-person households [From March 2020] * As for new applications in the period from April to August 2021, up to ¥1.4 million for households with 2 or more persons, and up to ¥1.1 million for single-person households, and for new applications in September 2021 and thereafter, up to ¥0.8 million for households with 2 or more persons, and up to ¥0.65 million for single-person households

1 Policies of Different Countries Related to COVID-19 and Their Effects: Content of Grants for Individuals (2)

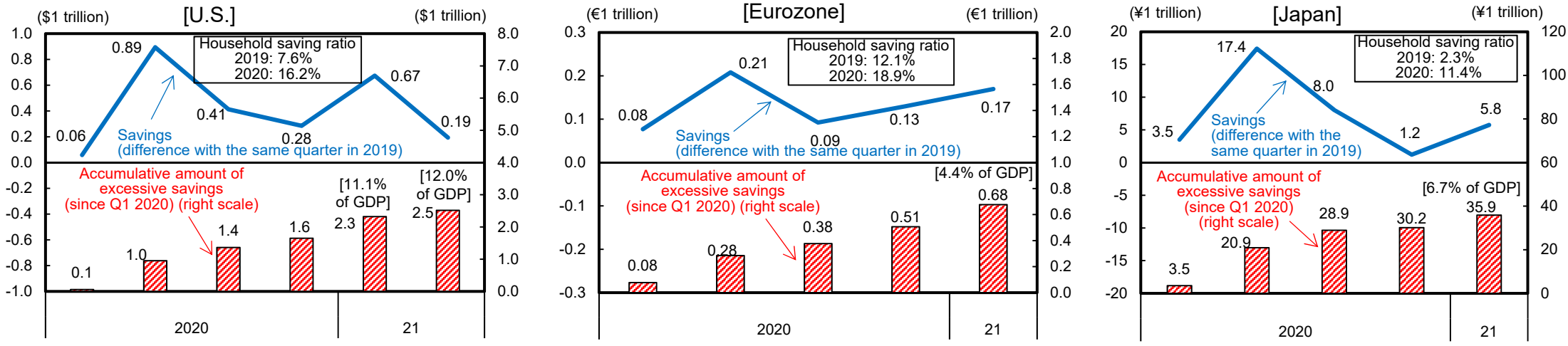
	U.S.	Germany	France	U.K.	Japan
Support for impoverished households, etc. (cont.)			Grant for workers under irregular employment contract (€1.1 billion (about ¥134 billion)) - €900/month (about ¥110,000) [From November 2020 to February 2021]		Temporary special grant for low-income single-parent households (about ¥210.2 billion) - First round: Payment of ¥50,000/household with an additional ¥30,000 for second child and thereafter; Second round: Payment of ¥50,000/household [From June 2020 to March 2021]
Support for students	Moratorium on student loan repayment - Moratorium on the repayment of federal government student loans. [Announced in August 2020 (grace period extended from the end of December 2020 → End of January 2022)]	Support for students - Payment of €100 to €500 (about ¥12,000 to ¥61,000) for university students facing financial difficulty - Interest-free student loan Providing student loans free of interest for a certain period, up to €650/month (about ¥80,000) (Application start from May 2020, and interest payment exemption period until the end of December 2021)	Grants for youth (€2 billion (about ¥243.7 billion)) - €150 for non-students aged 25 or under receiving housing benefit for low-income households and students receiving scholarships [November 2020]		Special grant for the life support of households raising children provided to low-income households raising children (about ¥217.5 billion) - Uniform payment of ¥50,000/child [From April 2021] COVID-19 self-reliance support benefit for impoverished individuals (about ¥58.9 billion) - Up to ¥300,000 paid to certain impoverished households, such as when the special loan reaches the amount limit [From June 2021] Emergency student support handout (about ¥53.1 billion) - ¥200,000/person for university students, junior college students, students of colleges of technology, students of professional training colleges, etc. (households excluded from inhabitants tax), ¥100,000/person (other than above) [From May 2020 to March 2021] New system for supporting advanced education attendance <Expansion> (¥520.8 billion *including amount paid by local governments) - Operation of system to exempt tuition for households excluded from inhabitants tax and grant-type scholarship programs are expanded so that they cover the cases where there was a sudden change in family income due to the pandemic [From April 2021] Emergency special interest-free loan-type scholarship - New establishment of emergency special interest-free loan-type scholarship offering interest-free loans up to ¥120,000/month for cases such as decrease in part-time job income due to the pandemic [From June 2020]
Expansion of grants for the unemployed	Enhancing unemployment benefits <Expansion> (\$593 billion (about ¥63 trillion)) - Adding \$600/week (about ¥60,000) [From April to July 2020] - Adding \$300/week (about ¥30,000) [From August 2020, application terminated in September 2020] - Adding \$300/week (about ¥30,000) [From December 2020 to September 2021] - Additionally covering freelance work, etc.	Extension of period for unemployment benefit <Expansion> (€2 billion (about ¥240 billion)) - Extension of period for 3 months for those whose benefit period ends between May 1 and December 31, 2020 [From May to December 2020]	—	Support for low-income individuals and job seekers <Expansion> (forecited)	Extension of period for unemployment benefit (basic benefit) <Expansion> (Included in the budget of about ¥3 trillion (total of unemployment benefit expenses in the second supplementary budget for FY2020 and in the initial budget for FY2021)) [From June 2020] - Extension of benefit period for up to 60 days
Reduction of value added tax	—	Lowering value added tax rates - Tax rate: 19% → 16%, reduced tax rate: 7% → 5% [From July to December 2020] - Tax rate: 19%, reduced tax rate: 7% [From January 2021] - Food and drink services to be covered by reduced tax rate [From July 2020 to December 2022]	—	Lowering value added tax rates (€4.1 billion (about ¥0.6 trillion)) - Hospitality, holiday accommodation, attractions 20% → 5% [From July 2020 to September 2021] →12.5% [From October 2021 to March 2022] →20% [From April 2022] Scheduled to be raised in a phased manner	—

1 Policies of Different Countries Related to COVID-19 and Their Effects: Trend of Excessive Savings (Breaking Down into Income Factors and Consumption Factors)

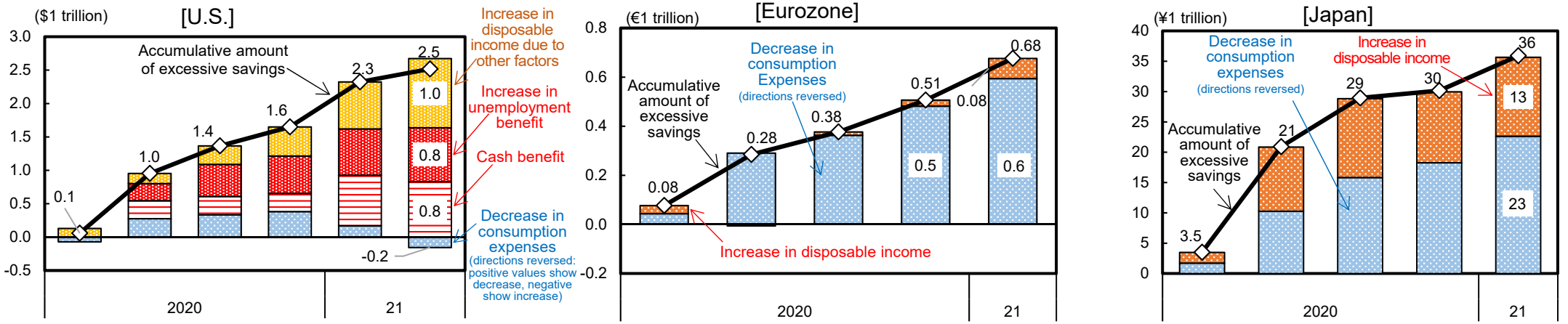
As for the household income environment, accumulative savings increased largely in all regions, namely **the Americas, Eurozone and Japan**, and show a favorable trend in general.

In **the U.S.**, the major factor for increase in savings is increase in disposable income due to repeated **benefits for individuals** and **increased unemployment benefit**. On the other hand, the increase in savings in **the Eurozone** is mostly due to the **decrease in consumption expenses**, and the increase in savings accelerated during the lockdown in spring 2020 and in autumn 2020 and thereafter. In **Japan**, both the increase in income and decrease in consumption contributed.

(1) Macro increase in household savings (flow)



(2) Breakdown of macro excessive savings into factors [Accumulative amount since Q1 2020]

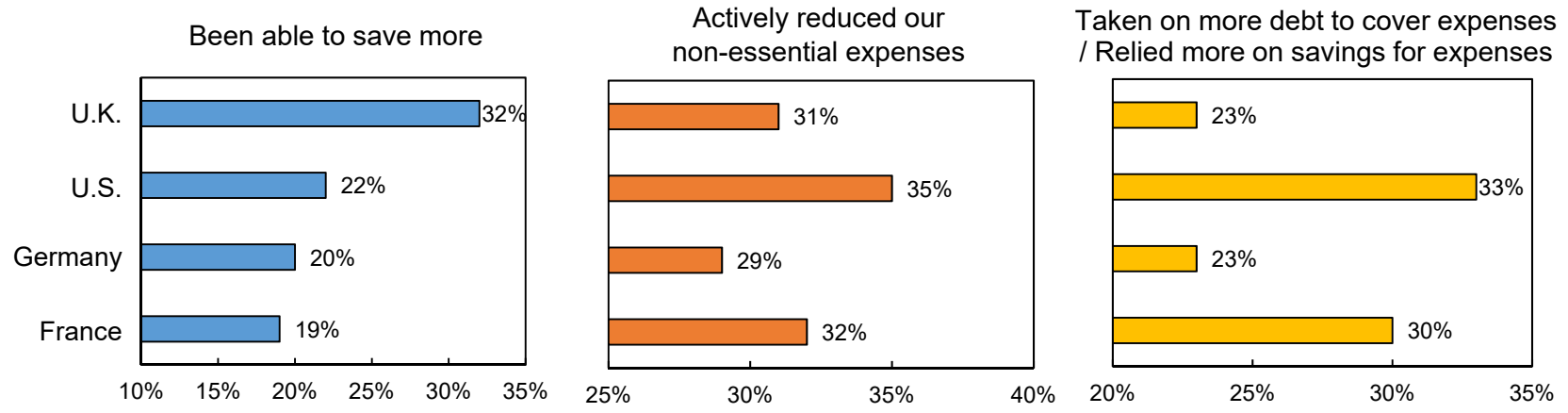


(Note) "National Accounts of Japan" by Cabinet Office, U.S. Department of Commerce, and Eurostat. Data for Japan is prepared based on the "Quarterly Estimates of Household Disposable Income and Household Saving Ratio" for the second quarter of 2021.

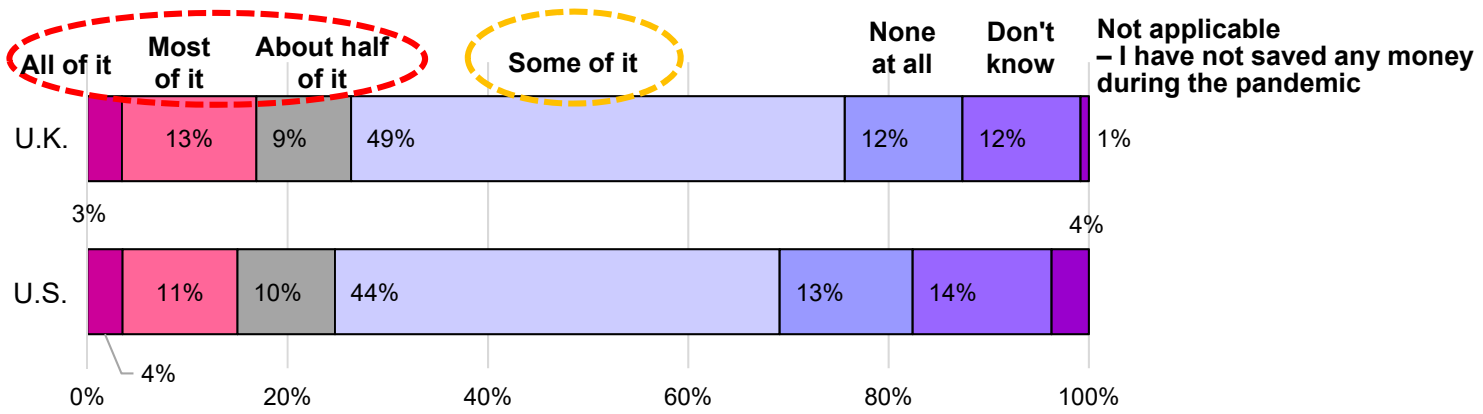
1 Policies of Different Countries Related to COVID-19 and Their Effects: Trend of Excessive Savings (Results of Surveys in Western Countries)

- According to the results of surveys on households in major countries, savings increased in about 20% to 30% of households during the COVID-19 pandemic in **major Western countries**. Households that reduced non-essential expenditure also accounted for about 30%. Also in **the U.K.** and **the U.S.**, about a quarter of total households answered that they spend at least 50% of savings increased during the pandemic by the end of this year, and about a half answered that they spend less than 50%.
- Considering the results of the survey, it is expected that a certain ratio of excessive savings accumulated in **major Western countries** will be spent for consumption during the second half of 2021.

**Household consumption and savings behavior during the pandemic
(Ratio of corresponding households (multiple answers allowed), results of questionnaire, May 2021)**



How much of the money you've saved during the pandemic do you think you'll spend before the end of the year?



Source: YouGov, multiple answers allowed for charts on the upper row

1 Policies of Different Countries Related to COVID-19 and Their Effects: Relaxation of Restrictions on Economic Activities and Trends of the Flow of People and Consumption

Progress is being made with resuming economic activities in major Western countries since the spring of 2021, including the relaxation of restrictions on the business hours of retail stores and restaurants and the relaxation of restrictions on outings. However, since August, there are also movements towards making proof of vaccination mandatory for entering a restaurant in **the U.S. (New York City)**, **Germany**, **France**, etc.

Major relaxation of economic activity restrictions in major countries

	February	March	April	May	June	From July	
U.S. (New York City)	2/12 Resuming indoor eating and drinking, occupancy rate up to 25%	3/19 Relaxing the occupancy rate for indoor eating and drinking: up to 50%		5/19 Elimination of restrictions on the occupancy rate of restaurants 5/7 for outdoor and 5/31 for indoor Elimination of restrictions on the business hours of restaurants		8/17 Making proof of vaccination mandatory for entering indoor restaurants / indoor entertainment facilities (*1)	
U.K. (England)		3/29 Elimination of restrictions on outings	4/12 Reopening of stores and resuming outdoor eating and drinking	5/17 Resuming indoor eating and drinking and most indoor entertainment facilities (*2)		7/19 Reopening of indoor entertainment facilities (*3)	
Germany		3/8 Relaxing restrictions on store opening (*4)	4/19 Shift to regional restrictions (*5)			8/23 Making the presentation of a health passport for entering indoor restaurants (*6)	
France				5/19 Reopening of stores, resuming outdoor eating and drinking, and reopening most indoor entertainment facilities (*7)	6/9 Resuming indoor eating and drinking	6/20 Elimination of restrictions on outings	8/9 Making the presentation of a health passport for entering large-scale retail stores, indoor restaurants

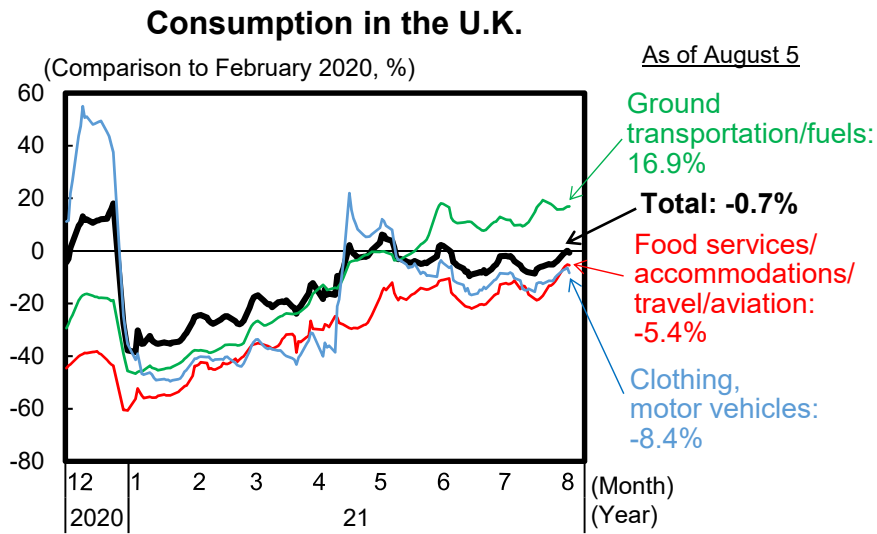
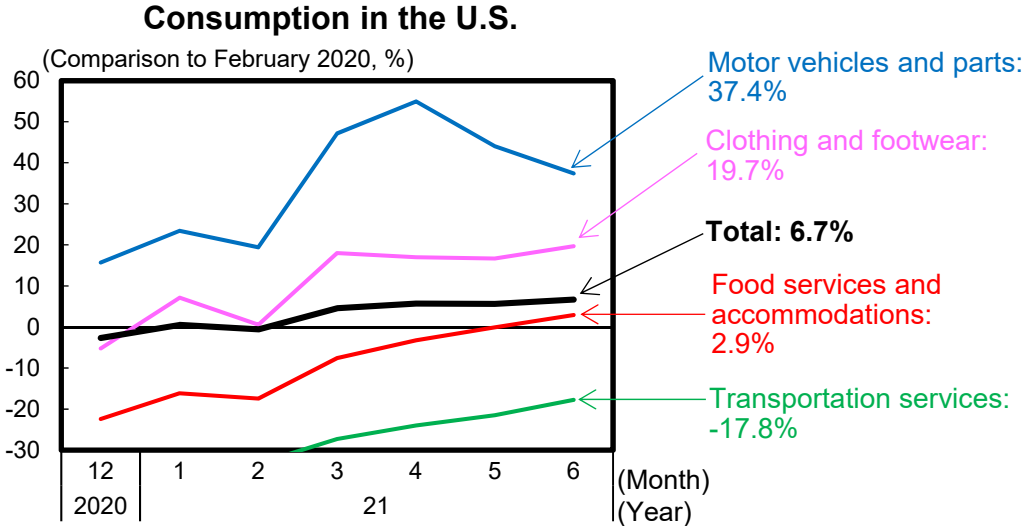
Legend) : Relaxation of outing restrictions, : Relaxation of restrictions on retail store business, : Relaxation of restrictions on restaurant business, : Relaxation of restrictions on entertainment facility business (, , and show the tightening of restrictions in each facility)

(*1) (U.S.) Scheduled to implement fines for violation from September 13.
 (*2) (U.K.) Most indoor entertainment facilities, including cinemas and museum, reopened from May 17.
 (*3) (U.K.) Night clubs reopened from July 19.
 (*4) (Germany) Retail stores are allowed to reopen only for picking up from the store from March 8.
 (*5) (Germany) Uniform restriction measures taken by the Federal government for regions with a large number of infected individuals from April 23 (closure of retail stores, restaurants, entertainment/cultural facilities) are applied.
 (*6) (Germany) The restrictions can be eliminated or partly suspended for states where the seven-day incidence is kept lower than a certain level.
 (*7) (France) Many indoor entertainment facilities, including cinemas and museums, reopened from May 19. Night clubs were closed until July 8.

(Note) Adapted from various materials.

1 Policies of Different Countries Related to COVID-19 and Their Effects: Relaxation of Restrictions on Economic Activities and Trends of the Flow of People and Consumption

- Flow of people is also increasing with the relaxation of restrictions on economic activities.
- Regarding the consumption in the U.S. and the U.K., where progress is being made with vaccination, a recovery trend can be observed also for services in addition to goods. However, the delta variant, with stronger infectivity is spreading in different countries, so it is necessary to securely determine the impact of the variant on economic activities.



(Note) 1. Adapted from Google Mobility, U.S. Department of Commerce, and Office for National Statistics.
 2. Shows the degree of changes in visiting and staying hours in each facility by comparing with the median for the same day of the week in the period from January 3 to February 6, 2020.
 3. In the bottom charts, figures for the U.S. represent the nominal consumer spending compared with the February 2020 seasonally adjusted value. Figures for the U.K. represent the record of using credit cards and debit cards, compared with February 2020, not seasonally adjusted, moving average for 7 days.
 Weights for the U.S. (2020) are: Motor vehicles and parts: 3.8; clothing: 2.5; food services and accommodations: 5.6; transportation services: 2.6. Weights for the U.K. (Q3 2019) are: Clothing and motor vehicles: 37.2; food services/accommodations/travel/aviation: 25.0; ground transportation/fuels: 6.2.

1 Policies of Different Countries Related to COVID-19 and Their Effects: Content of the Promotion of R&D and Innovation

(Support measures for R&D investment in major developed countries and the EU)

	U.S.	Germany	France	U.K.	Japan
Promotion of R&D and innovation	<p>Enhancing R&D investment * Those included in the American Jobs Plan. Yet to be passed. (\$180 billion (about ¥20 trillion)) * Not included in the total amount.</p> <ul style="list-style-type: none"> - Investment in areas such as semiconductors, advanced computing, advanced communications technology, advanced energy technologies, and biotechnology, and regional innovation - Investment for job creation and upgrading research infrastructure throughout the country - Clean energy technology, investment in research on climate change - Eradication of inequality among races and genders in the area of R&D [Announced in March 2021] 	<p>Additional investment on advanced technologies</p> <ul style="list-style-type: none"> - Raising the upper limit for tax exemption for R&D investment by companies from €2 million (about ¥240 million) to €4 million (about ¥490 million) [From July 2020 to June 2026] (€1 billion (about ¥122 billion)) - Financial support for research institutions (€1 billion (about ¥122 billion)) - Support for innovation in the automobile industry (€2 billion (about ¥245 billion)) - Increasing investment for AI development (€2 billion (about ¥245 billion)) - Promotion of the development of quantum technology (€2 billion (about ¥245 billion)) - Support for 5G network technologies (€5 billion (about ¥612 billion)) - Supporting new technology towards 6G (€2 billion (about ¥245 billion)) - Promotion of digitalization (DX) in the public administration (€1 billion (about ¥122 billion)) 	<p>Enhancing R&D investment, etc. (€13.5 billion (about ¥1.6 trillion))</p> <ul style="list-style-type: none"> - Support for the development of green technologies (hydrogen, recycling, biofuels, etc.) (€3.4 billion (about ¥414 billion)) - R&D support for digitalization and improving environmental-friendliness of aircraft/automobile sectors (€2.6 billion (about ¥317 billion)) - Support for advanced technology (cyber, cloud, quantum, edtech, AI, etc.) (€2.6 billion (about ¥317 billion)) - Innovation support in strategic industries (€1.95 billion (about ¥238 billion)) - Enhancing collaboration of advanced education institution / research institution, reinforcing research infrastructure (€2.55 billion (about ¥311 billion)) - Reinforcement of the function of the Agence Nationale de la Recherche (national research agency) (€0.4 billion (about ¥49 billion)) [Announced in September 2020] 	<p>R&D taxation</p> <ul style="list-style-type: none"> - Expansion of tax exemption (12% → 13% of invested amount) [Announced in March 2020] <p>Support for R&D in SMEs (£0.75 billion (about ¥100 billion))</p> <ul style="list-style-type: none"> - Grants and loans [Announced in April 2020] <p>Enhancing R&D investment (£14.6 billion (¥2 trillion))</p> <ul style="list-style-type: none"> - Enhancing R&D investment in FY2021 [Announced in November 2020] <p>(£0.8 billion (¥110 billion))</p> <ul style="list-style-type: none"> - Establishment of the Advanced Research & Invention Agency (ARIA) supporting investment in high-risk high-return R&D 	<p>Green Innovation Fund (¥2 trillion)</p> <ul style="list-style-type: none"> - Consistent support from R&D to the social implementation of innovative technologies to companies showing commitment in specific goals and efforts towards their achievement [From March 2021] <p>The University Endowment Fund (¥4.5 trillion (*)) * Including the fiscal investment and loan program of ¥4 trillion</p> <ul style="list-style-type: none"> - Implement long-term and stable investment in the research infrastructure of universities in the future utilizing the investment profit [Starting the operation of the fund by around the end of this fiscal year] <p>Project for Research and Development of Enhanced Infrastructures for Post 5G Information Communication Systems / project on promoting Beyond 5G R&D (¥140 billion in total)</p> <ul style="list-style-type: none"> - Development of post-5G information communication system and relevant technologies, as well as the development of technologies to produce advanced semiconductors [The 4th round of open recruitment is from February to April 2021, and the 5th round from June to August 2021] - Fund promoting the R&D of Beyond 5G is established, and shared facilities are developed [From January 2021] <p>R&D taxation</p> <ul style="list-style-type: none"> - Raising the upper limit of exemption to 50% of corporation tax amount, and reviewing the tax deduction rate [From April 2021]
EU					
Promotion of R&D and innovation	<p>➤ Setting the following goals regarding the R&D investment (for the period from 2021 to 2030, announced in September 2020)</p> <ul style="list-style-type: none"> - Raising the percentage of R&D investment of member states to 3% of GDP - Raising the percentage of public R&D investment of member states to 1.25% of GDP, etc. <p>Horizon Europe 2021-27 (research and innovation program in a multi-year fiscal framework) (€95.5 billion (about ¥11.5 trillion) in 7 years)</p> <p>In June 2021, research subsidy of €14.7 billion was decided among the above. Among them,</p> <ul style="list-style-type: none"> - €5.8 billion allocated to research on the European Green Deal (clean energy, agricultural/food technologies conforming to the recycling economy) - €4 billion utilized for the promotion of digitalization (research and innovation generation utilizing the data in different industries, such as healthcare, media, etc.) 				

(Contents)

1 Policies of Different Countries Related to COVID-19 and Their Effects

- Outline of Employment Support Measures in Different Countries and Their Effects
- Outline of Grants and Loans for Businesses in Different Countries and Their Effects
- Outline of Grants for Individuals in Different Countries and Their Effects
- Outline of Measures to Promote R&D and Innovation and Their Effects

2 Trends of R&D Investments in Major Industries (Digital/Non-Digital)

- Relevance of R&D Investment and Sales (Analysis at the Levels of Industry and Business)
- Relevance of R&D Investment and Productivity (Analysis at the National Level)
- Case Examples of R&D Investment Support Measures in European Countries and Policy Agreements with Japan

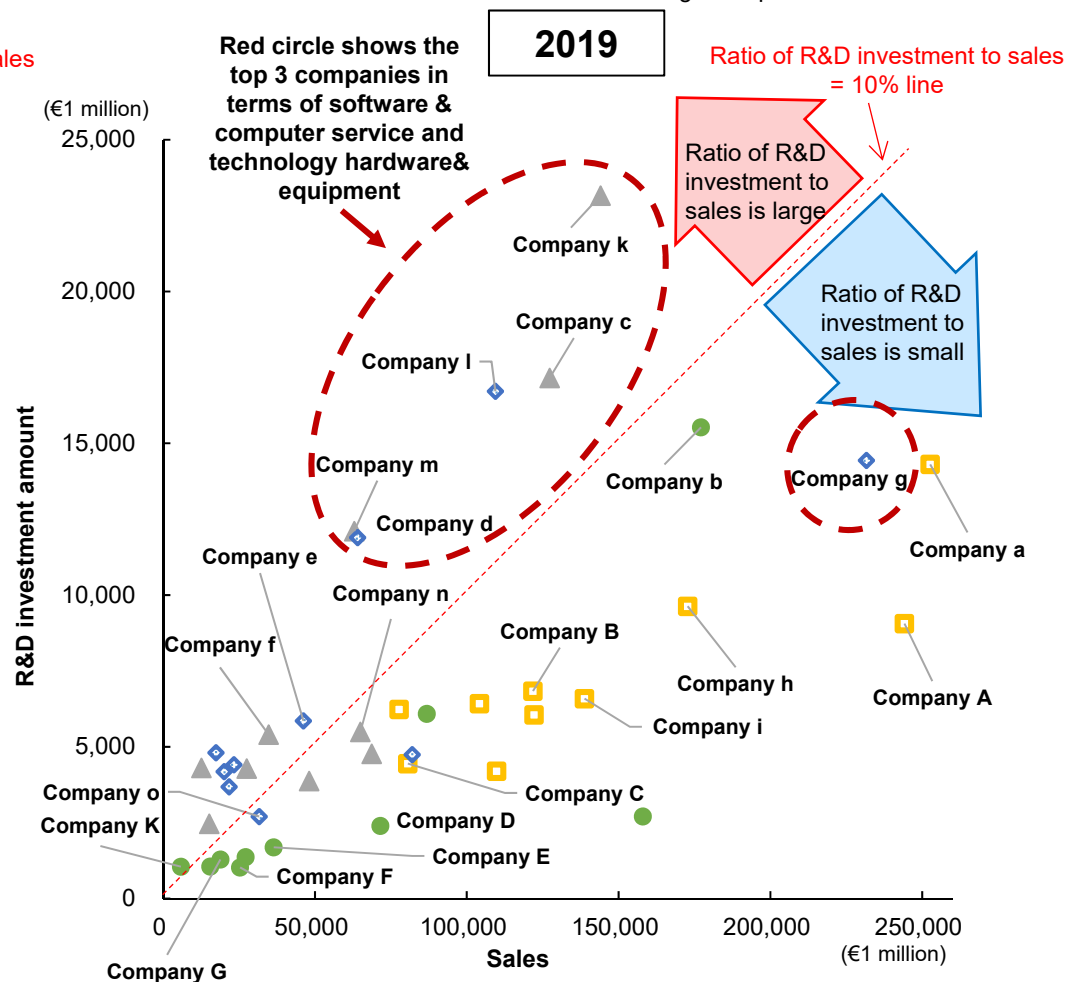
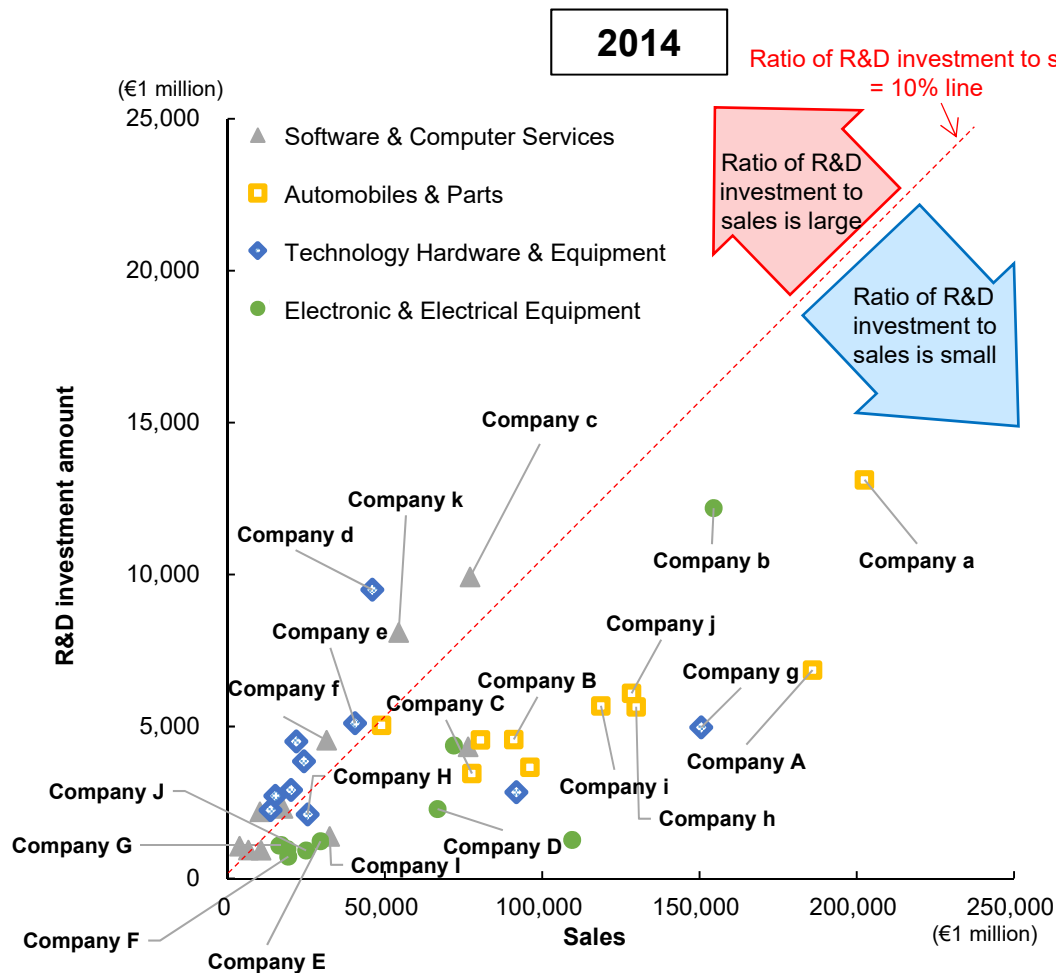
2

Trends of R&D Investments in Major Industries: Relevance of R&D Investment and Sales (Analysis at the Levels of Industry and Business)

- By looking at the trend of the top 10 companies in terms of R&D investment amount in different industries, both the R&D investment amount and sales of the top 3 companies are prominently high for software & computer services and technology hardware & equipment in 2019, showing the notable trend of some companies in the U.S. and other countries growing enormously.
- In Japan, many of the companies ranking within the top 10 as of 2014 in the areas of electronic & electrical equipment and automobiles & parts remained within the top 10 in 2019, showing relatively good performance of large-scale companies.

**Relevance of R&D investment and sales
(top 10 companies in terms of R&D investment in each industry)**

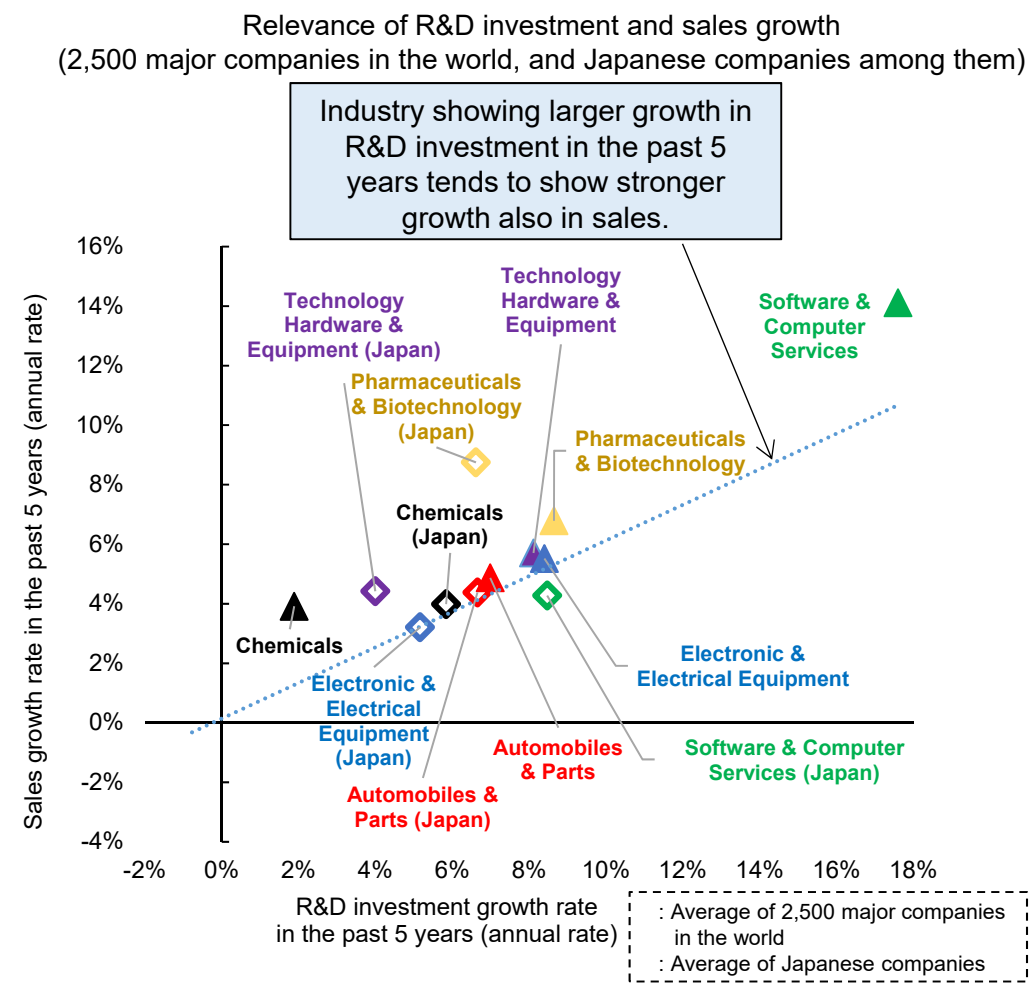
* From Company A to Company K are Japanese companies, and from Company a to Company o are foreign companies.



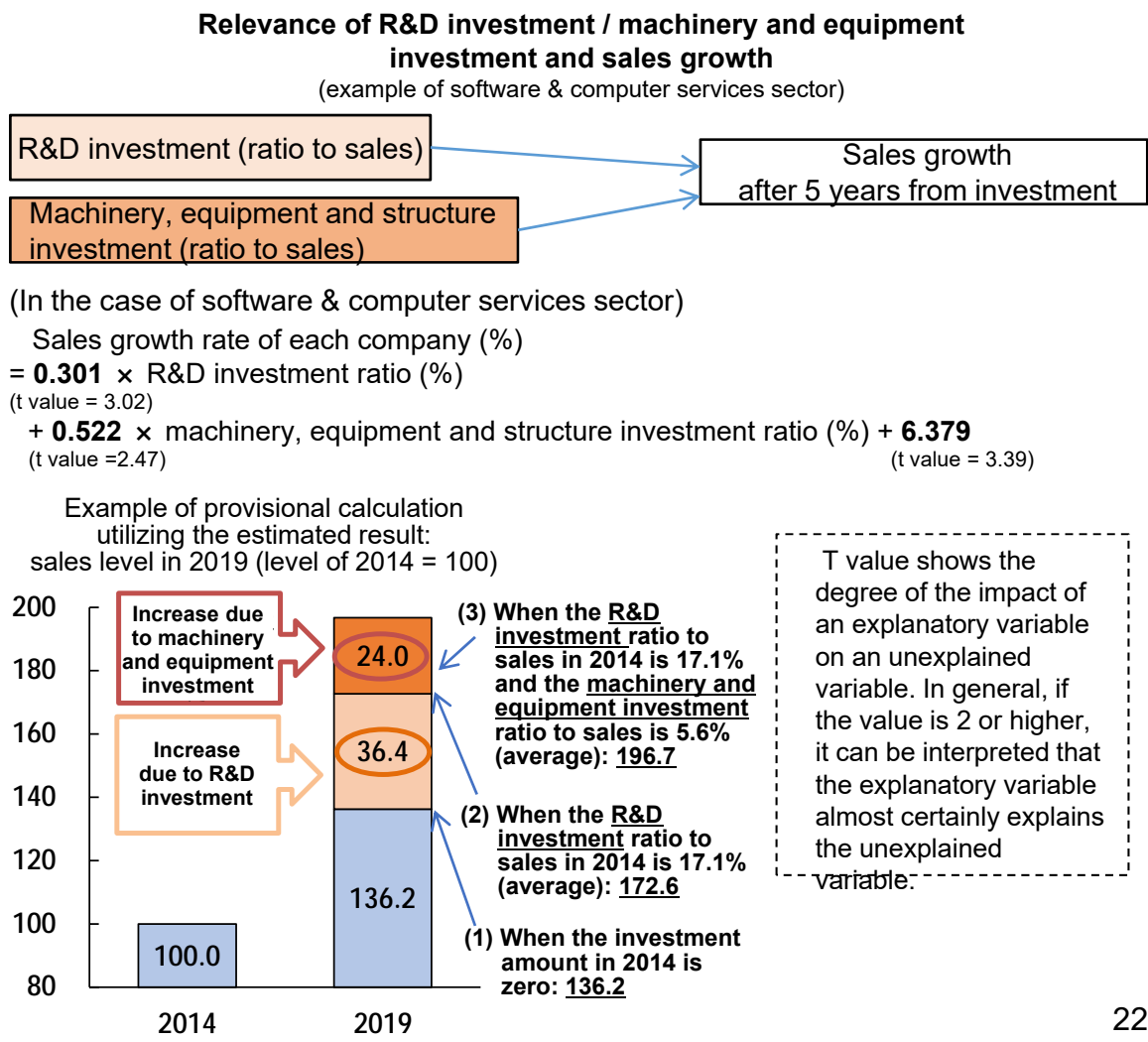
(Note) Adapted from the 2015 and 2020 EU Industrial R&D Investment Scoreboard.

2 Trends of R&D Investments in Major Industries: Relevance of R&D Investment or Machinery and Equipment Investment and Sales

- The trend shows that industries showing larger growth in R&D investment in the past 5 years also show stronger growth in sales. Focusing on **Japanese companies**, growth in both R&D investment and sales has reached the international level in **the automobiles & parts sector**. In **the chemicals sector**, investment growth is strong and the growth of sales is also at the international level. On the other hand, **electronic & electrical equipment**, conventionally with a large ratio to sales, shows weak growth in both R&D investment and sales.
- Looking at the relationship between the ratio of R&D investment to sales and machinery and equipment investment to sales 5 years ago and the growth rate of sales for 5 years since then, both R&D investment and machinery and equipment investment have a positive impact on sales growth (a 1 percentage point increase in R&D investment ratio to sales results in a 0.3 percentage point growth in sales, and a 1 percentage point increase in machinery and equipment investment ratio to sales results in a 0.5 percentage point growth in sales).



(Note) Adapted from the 2015 and 2020 EU Industrial R&D Investment Scoreboard.

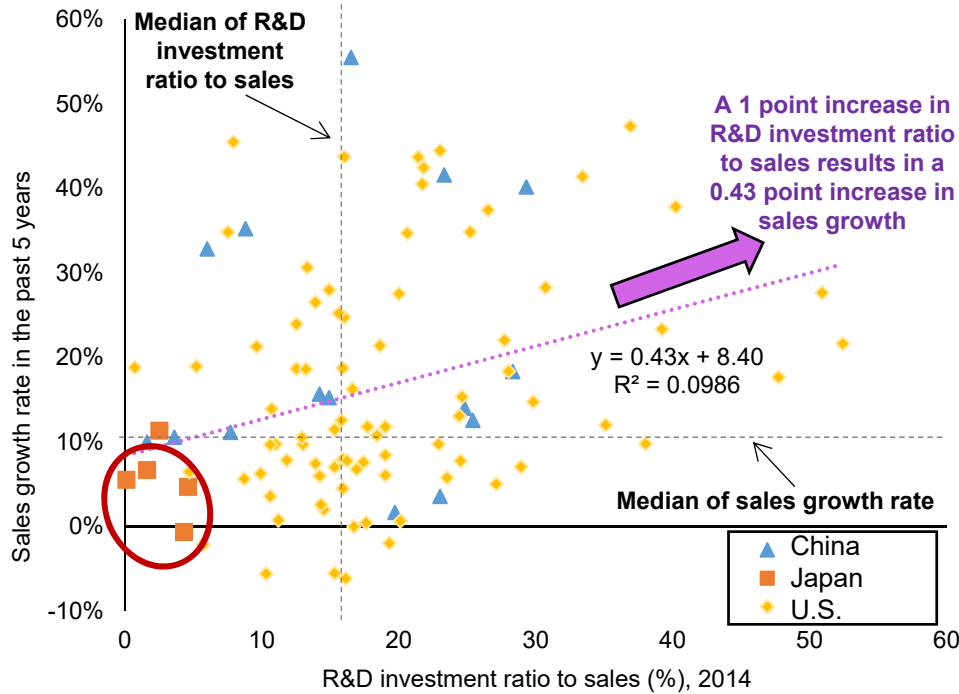


2 Trends of R&D Investments in Major Industries: Performance of Japanese Companies (1)

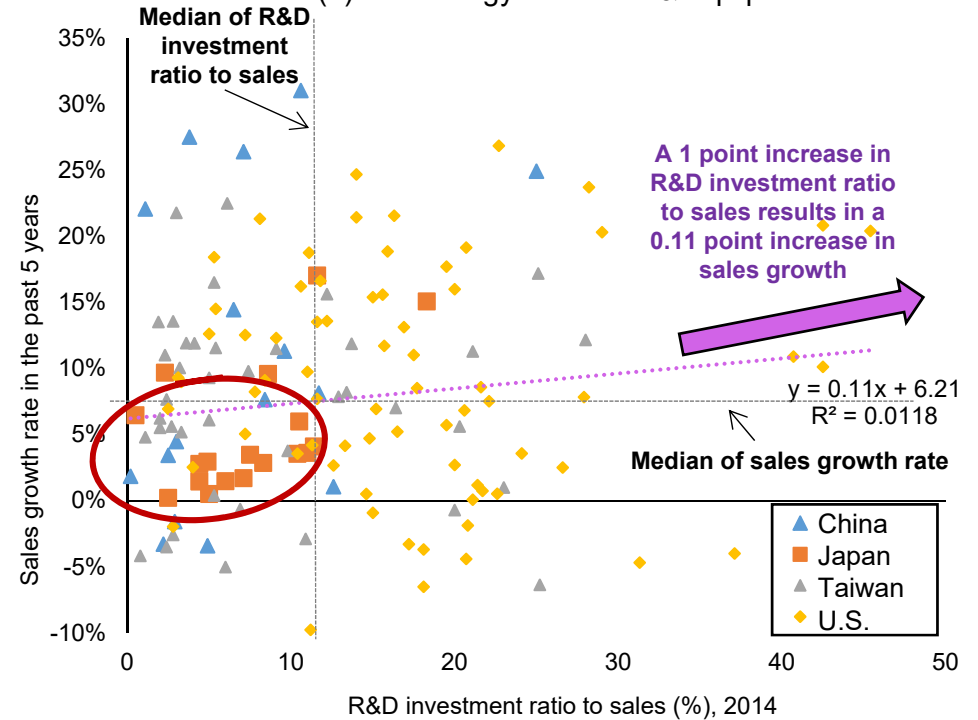
- Looking at the R&D investment ratio of companies in each country in different industries 5 years ago and the growth of sales thereafter, both the R&D investment ratio and sales growth of most Japanese companies are relatively low compared to major companies around the world in the software & computer services sector and technology hardware & equipment sector among the ICT industry.

Relevance of R&D investment and sales growth (by industry)

(1) Software & Computer Services



(2) Technology Hardware & Equipment



	R&D investment ratio to sales: low	R&D investment ratio to sales: high
Sales growth: high	33 companies, among which 1 is Japanese company	39 companies, among which 0 is Japanese company
Sales growth: low	45 companies, among which 4 are Japanese companies	27 companies, among which 0 is a Japanese company

	R&D investment ratio to sales: low	R&D investment ratio to sales: high
Sales growth: high	40 companies, among which 2 are Japanese companies	50 companies, among which 2 are Japanese companies
Sales growth: low	52 companies, among which 14 are Japanese companies	39 companies, among which 0 is a Japanese company

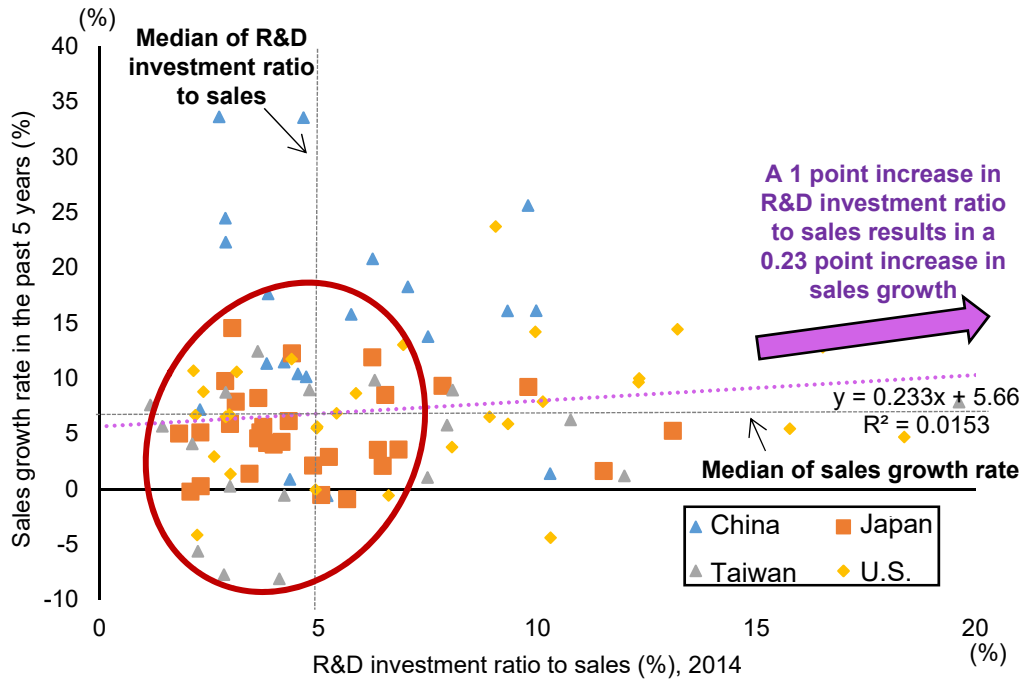
(Note) Adapted from the 2015 and 2020 EU Industrial R&D Investment Scoreboard.

2 Trends of R&D Investments in Major Industries: Performance of Japanese Companies (2)

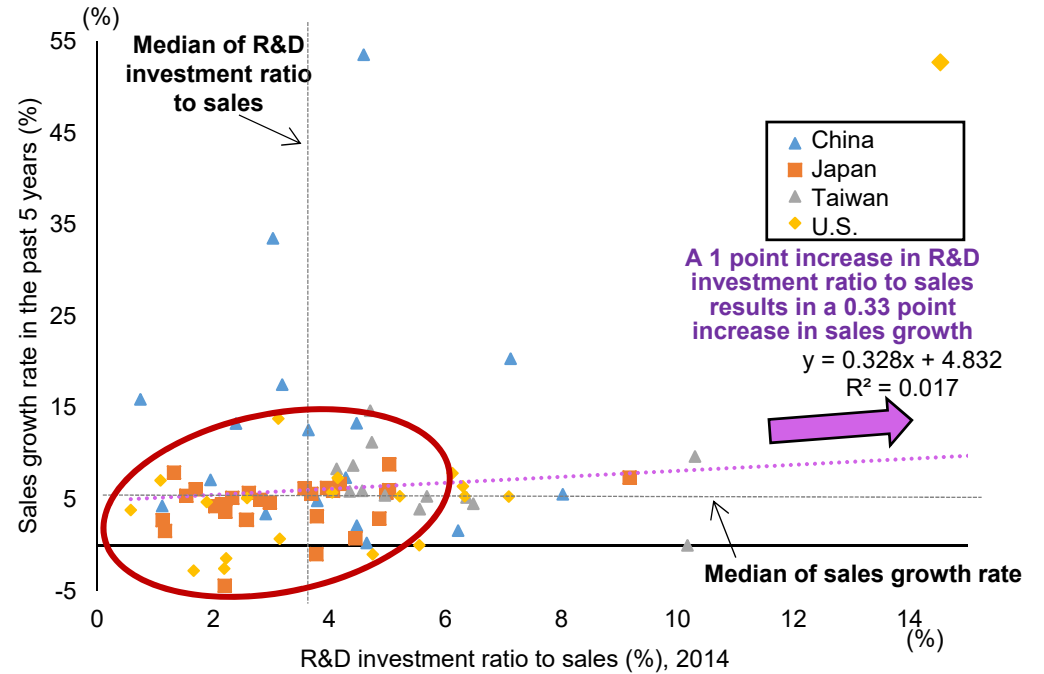
- Although both R&D investment ratio and sales growth are relatively low for many Japanese companies compared to the international level also in electronic/electrical equipment industry, you can find some companies showing a high investment ratio or sales growth.
- On the other hand, it is notable that a relatively large number of companies belong to the group with a higher R&D investment ratio and sales growth in the automobiles and parts industry.

Relevance of R&D investment and sales growth (by industry)

(3) Electronic & Electrical Equipment



(4) Automobiles & Parts



	R&D investment ratio to sales: low	R&D investment ratio to sales: high
Sales growth: high	28 companies, among which 6 are Japanese companies	45 companies, among which 4 are Japanese companies
Sales growth: low	33 companies, among which 13 are Japanese companies	39 companies, among which 9 are Japanese companies

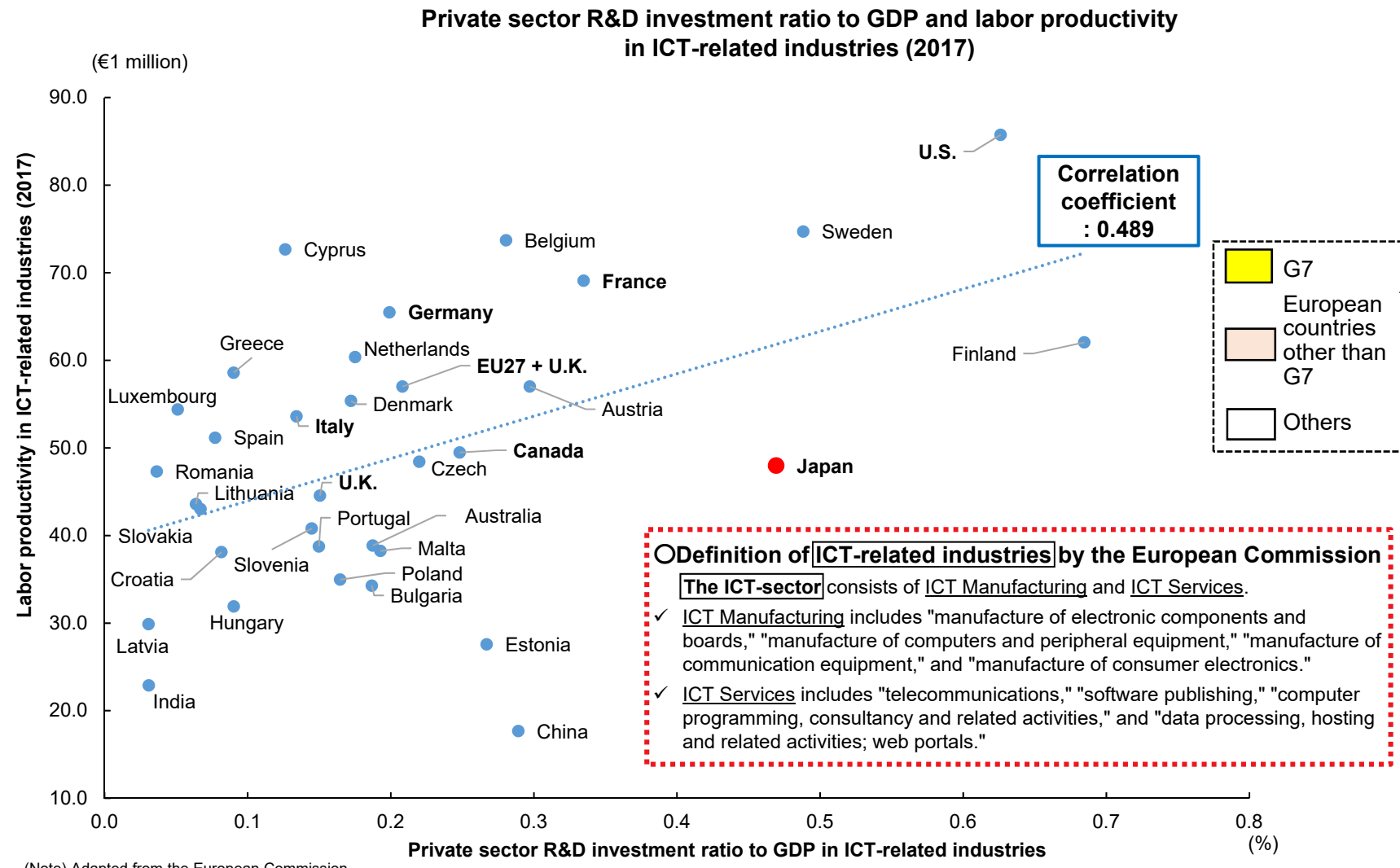
	R&D investment ratio to sales: low	R&D investment ratio to sales: high
Sales growth: high	17 companies, among which 5 are Japanese companies	33 companies, among which 9 are Japanese companies
Sales growth: low	34 companies, among which 11 are Japanese companies	17 companies, among which 4 are Japanese companies

(Note) Adapted from the 2015 and 2020 EU Industrial R&D Investment Scoreboard.

2 Trends of R&D Investments in Major Industries: Relevance of R&D Investment and Productivity (Analysis at the National Level)

It is pointed out that R&D investment raises productivity and produces a positive ripple effect. By country,

- There is a positive correlation between "R&D investment amount in the private sector (ratio to GDP)" and "labor productivity" in the EU and major developed countries in ICT-related industries. While R&D investment in the private sector is relatively active in Japan, productivity is lower than in the U.S. or the average of the EU.
- Regarding ICT-related industries, productivity growth is high in Ireland, some East European countries, and Denmark among the EU, and the growth varies largely among countries.



Growth rate of labor productivity in ICT-related industries (2006 → 2017, major countries and EU member states)

Country	Labor productivity growth rate in ICT-related industries (%)
Ireland	6.29
China	5.74
Romania	4.36
Taiwan	4.15
India	4.13
Bulgaria	3.42
Cyprus	3.40
South Korea	2.86
Poland	2.11
Denmark	2.11
U.S.	1.52
Hungary	1.25
Slovakia	1.24
Czech	1.10
Norway	1.05
Sweden	1.01
Canada	0.97
Germany	0.87
Italy	0.81
Austria	0.68
Estonia	0.58
Japan	0.57
EU28	0.47
Belgium	0.03
U.K.	-0.08
Netherlands	-0.31
Malta	-0.31
France	-0.44
Slovenia	-0.62
Greece	-0.64
Finland	-0.82

(Note) Adapted from the European Commission.

(Note) Average growth rate from 2006 to 2017. Data from 2006 to 2014 for Ireland.

2 Trends of R&D Investments in Major Industries: Case Examples of R&D Investment Support in Europe and Implications for Policies in Japan (1)

In **Europe and the U.K.**, R&D investment measures are prioritized and expanded as a part of a growth strategy. As a background,

➤ There is risk awareness concerning lagging behind competitors in terms of research and innovation (R&I). According to the analysis by the European Commission,

(1) The R&D investment itself is showing little growth

- While the European Commission has set a target R&D investment ratio to GDP at 3% since 2000, R&D investment in **the EU** in 2018 was 2.2% and the target was unachieved. Private sector R&D investment ratio to GDP in **the EU27 + the U.K.** is lower than **the U.S. and Japan** as of 2017 (left figure).

(2) Sluggish growth of R&D investment in knowledge-intensive industries (*) (right figure)

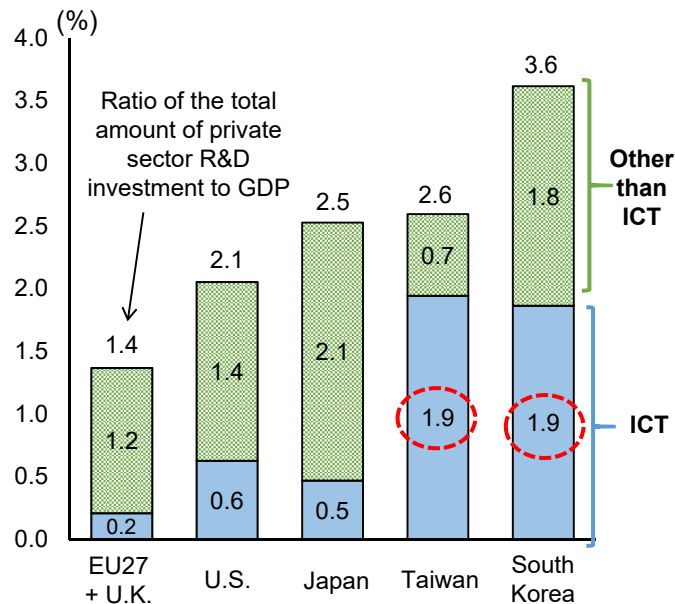
- Private sector R&D investment in the 2010s increasingly concentrated in relatively advantageous areas between regions (especially **the EU** and **the U.S.**).
- In **the EU**, the traditional manufacturing sector has the advantage, while **the U.S.** stretches its lead in the ICT sector.

(*) The European Commission defines knowledge-intensive industries as those in which the ratio of R&D investment to sales reaches a certain level. It includes software & computer services, technology hardware & equipment, and electronic & electrical equipment.

(3) Investment may not immediately lead to results

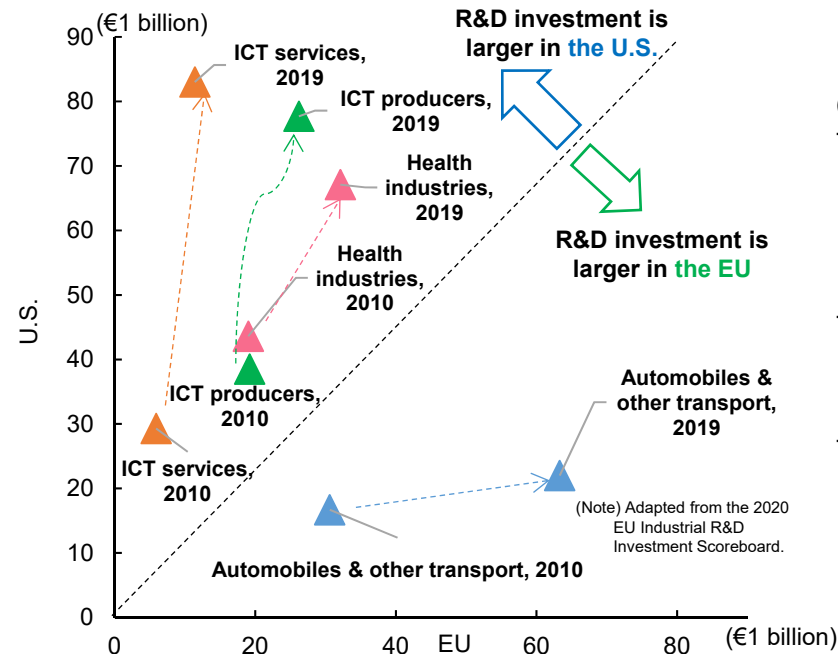
- In **Germany**, while private sector R&D investment is increasingly concentrated in large-sized companies, startups face restrictions in terms of financing.

Private sector R&D investment ratio to GDP (2017)



(Note) Adapted from the European Commission.

EU-US by-sector comparison of R&D investment (change from 2010 to 2019)



(Source of the above analysis)

- A New ERA for Research and Innovation (September 2020)
[a report by the European Commission on research and innovation for the development of science and technology within Europe]

- The 2020 EU Industrial R&D Investment Scoreboard (December 2020)
[a report by the European Commission on R&D in Europe]

- Commission staff working document / Country Report Germany 2020 (February 2020)
[a report by the European Commission on recommendations by country]

2 Trends of R&D Investments in Major Industries: Case Examples of R&D Investment Support in Europe and Implications for Policies in Japan (2)

- The European Commission points out that the promotion of industrial structure transformation is essential when considering future growth potential.
 - The problem is that strategic key areas (specifically ICT and green technologies) do not have a relative advantage.
 - As a policy response, (1) a recovery fund mainly focusing on climate change and digital leadership (EU extraordinary budget) and (2) Horizon Europe (research and innovation program established within the fiscal framework of the EU from 2021 to 2027) are implemented. Based on the comparative advantage of the EU and the future prospective, the establishment of a growth strategy capitalizing on the strength of the member states and the orientation of the existing policies will be promoted through the programs.
 - Further, considering that these are still insufficient for investment in achieving a shift to green digital age, it is pointed out that a call for private sector investment in each country is important.

R&D- and innovation-related budget in the European Commission

Recovery and Resilience Facility (including research and innovation)

€672.5 billion from 2021 to 2023 (about ¥82 trillion). Major part of the Facility.

Among them, up to €312.5 (about ¥38 trillion) are grants, and up to €360 billion (about ¥44 trillion) are loans. Each country sets forth a recovery and resilience plan according to the allocated amount.

As for the use of the fund, a lower limit is set for expenditures related to climate change and digitalization as a ratio to total expenditure (37% and 20%, respectively) to set a certain direction.

Horizon Europe (research and innovation program)

€95.5 billion from 2021 to 2027 (about ¥11.6 trillion). Built up with three pillars.

- (1) Excellent Science: €25 billion (€16 billion for supporting frontier research projects, etc.)
- (2) Global Challenges and European Industrial Competitiveness: €53.5 billion (Health (€8.3 billion), Digital, Industry and Space (€15.4 billion), Climate, Energy and Mobility (€15.1 billion), etc.)
- (3) Innovative Europe: €13.6 billion (support for startups, etc.)

(Example of use by each country 1) **Recovery and resilience plan by France**

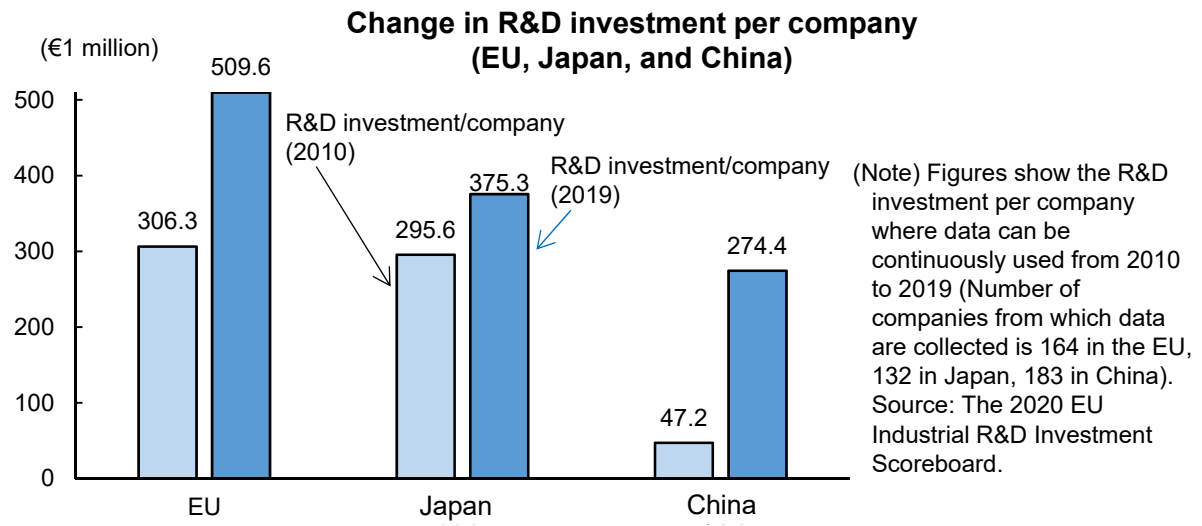
- Grant amount: €39.4 billion (about ¥4.8 trillion, 1.6% of GDP in 2019)
- Three prioritized areas: transition to green economy, competitiveness, and social/regional inclusion.
- Supporting R&D investment in the areas of quantum computing, green technology, cyber security, etc. Allocating €25 billion for promoting start-up by research institutes and universities.
- The budget amount related to climate change targets accounts for 46% of the total. The budget related to digitalization accounts for 21%.

(Example of use by each country 2) **Recovery and resilience plan by Germany**

- Grant amount: €25.6 billion (about ¥3.1 trillion, 0.74% of GDP in 2019)
- Six concentrated areas: measures against climate change and energy shift, digitalization of economy and infrastructure, digitalization of education, strengthening social inclusion, reinforcing the medical system to cope with infectious disease epidemics, and the digitalization of administration and lowering of investment barriers.
- R&D investment in renewable hydrogen energy, microelectronics, and cloud technology. R&D support for automobile manufacturers and supplier SMEs.
- The budget amount related to climate change targets accounts for 42% of the total. The budget related to digitalization accounts for 52%.

2 Trends of R&D Investments in Major Industries: Case Examples of R&D Investment Support in Europe and Implications for Policies in Japan (3)

- Looking at the trend of R&D investment in **Japan**, R&D investment per major company was about the same level as **companies in the EU** in 2010, but dropped to about the 70% level in 2019. Further, **Japan** is facing **problems similar to Europe** (while having an advantage in the traditional manufacturing sector, investment in fast-growing areas such as the ICT sector is showing sluggish growth and concentration in large-sized companies (*)).
 (*) OECD Japan Survey 2019 points out that the R&D investment share among SMEs in Japan is about 5% and is significantly lower than the OECD average (about 30%).
- Promotion of R&D will be the source of growth in **Japan** in the future. It is important to **promote the shift to knowledge-intensive industries while capitalizing on the existing comparative advantage**, by also referring to policies in **Europe**.



- Definition by the EU Industrial Scoreboard**
- **Software & Computer Services**
: consists of computer services, software, and digital services for consumers
 - **Technology Hardware & Equipment**
: consists of semiconductors, electronic components, manufacturing equipment for hi-tech products, and computer hardware manufacturing
 - **Electronic & Electrical Equipment**
: consists of electrical components (components of home electrical appliances, cables, etc.) and electronic equipment manufacturers

[Breakdown of R&D investment by industries]

