Outlook for Japanese Stock Market & Economy

Monthly comments & views by Sumitomo Mitsui DS Asset Management (SMDAM)

-April 2021-

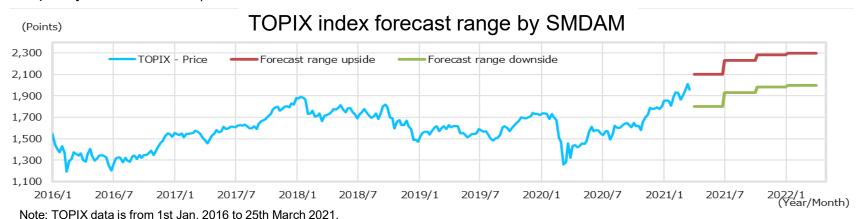


Investors' keep focusing on strong economic & earning recovery

SMDAM view

(Source) TOPIX: Tokyo Stock Exchange, forecast by SMDAM

- ➤ The stock market is expected to remain uptrend over the next 12 months as accommodative monetary and fiscal policy responses continue for the time being.
- The stock market is expected to take into account the recovery of the economy and corporate performance on the back of the widespread use of vaccines. There is also plenty of room for foreign investors to buy.
- ➤ However, in the April-June period, the market may struggle due to conservative guidance from companies before and after the FY 20 earnings result announcement. Market participants will assess the strength/weakness of the guidance and the pace of business recovery as well as the impact of rebounding costs and raw material prices.
- ➤ In the second half of the 2021, the increase in EPS will be the driving force of the market upturn, although the expansion of valuation will not continue as long-term interest rates rise in the phase of normalizing economy from pandemic turmoil. (Moving to the "earnings driven market" in the second half of the year from the "liquidity driven market").



Base scenario & Upside / Downside risks for our forecasts

Our Base Scenario is assuming the following views:

- Progressing vaccination of COVID-19 calms down infection and economic recovery gathers pace in the latter half of 2021.
- Severe tensions between US and China go on, however, both countries will try to continue the dialog and find out the ground where they can cooperate, such as environmental issue.
- Global economy sustains recovery path into 2021 and 2022.
- Japanese yen does not get extremely stronger beyond 100 yen against US\$.
- Tension in the East Asia or Middle East does not get out of control.
- Central banks continue easing policies and avoid causing taper tantrum.

Upside Risks include:

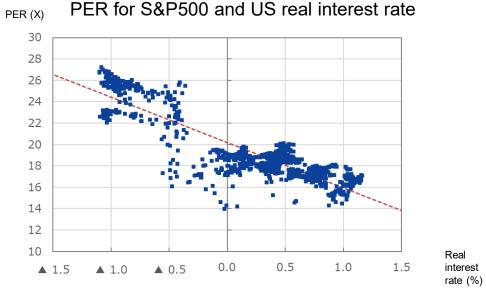
- Stronger-than-expected global growth.
- US and China make significant concessions in the trade negotiations.
- Japanese economy gets stronger than expected boosted by large fiscal spending and strong exports.

Downside Risks include:

- Vaccination proves slow in taking effects of containing COVID-19 and restrictions on activities continue.
- Tensions between US and China escalate to ignite severe disruption in global trades.
- Seriously escalating geo-political tensions in Middle East & East Asia.
- Joe Biden fails to lead divided party and congress to achieve aggressive fiscal spending plan.
- Populism gains in Europe further destabilizing EU.
- Central banks start tapering of easy monetary policy causing negative shock to financial markets.

Current stock valuation for US looks still reasonable

- PE Ratio (PER) and real interest rate (RI) have negative correlation, which is shown on the chart below.
- Just before the stock prices collapsed due to COVID-19, PER was 19.5, 12M forward EPS (EPS) was 173.4 and RI was -0.12%. It was close to the regression line. In September, COVID brought EPS down to 131.5, on the contrary stock prices bounced back strongly, which combined together made PER rising to 27, which was the peak of PER.
- Lately, PER was 22.6 based on EPS of 172.6, which almost recovered to the level before the COVID. Current position on the chart looks reasonably valued and it could stay so if RI rises just slowly in line with gradual EPS growth.



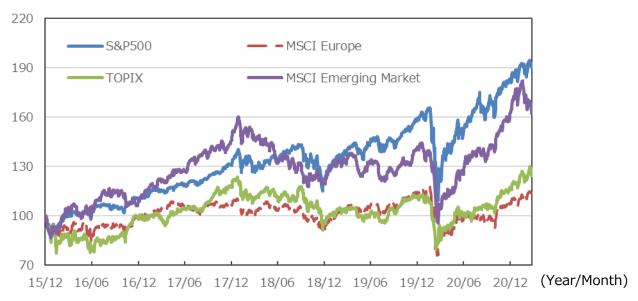
Note: Data is from 2nd Jan. 2017 to 25th Mar 2021. PER is based on 12M forward EPS forecast.

Real interest rates are calculated from Index linked US treasury bond and straight bond both 10Y maturity.
(Source) Bloomberg

Stock markets keep rising strongly

- US market continue to rise renewing historical high.
- In Japan, Nikkei 225 index (not shown on the chart) reached above 30,000yen, which was the first time after 30 years. TOPIX index also reached 2,000 points, a level recorded in May 1991.

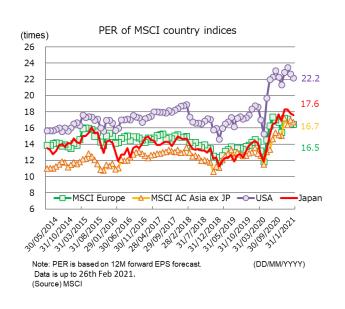
(Dec 2015=100) Performance of major stock markets

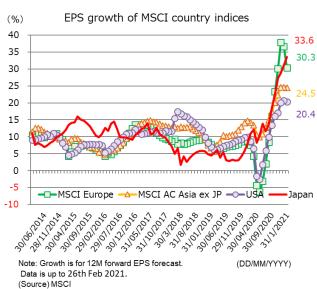


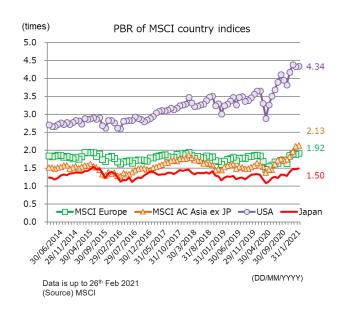
Note: Data is from 31 Dec 2015 to 25 Mar 2021. Source: Bloomberg, compiled by SMDAM

EPS growth forecasts for the coming 12 months are rising sharply

- EPS growth forecasts are rising to a quite high level for all countries and regions, which are the major driver of the continuing rally in the global stock markets. Japan showed the strongest growth momentum in February.
- PE Ratio (PER) looks a little stretched, even after considering above mentioned EPS growth. How far US interest rates are going to rise is an important factor if such elevated valuation levels can be sustained.
- Difference in PBR reflects gap in ROE, however, Japan's PBR at 1.50 looks attractive if corporate activities for improving governance and shareholder return resume when economic environments gradually normalize.

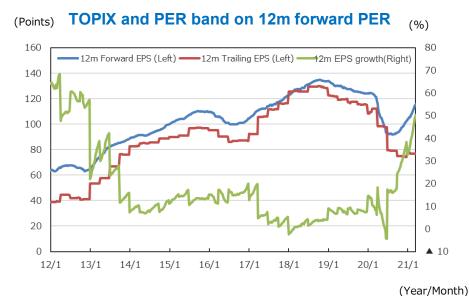






Current high PER requires rapid EPS growth to materialize

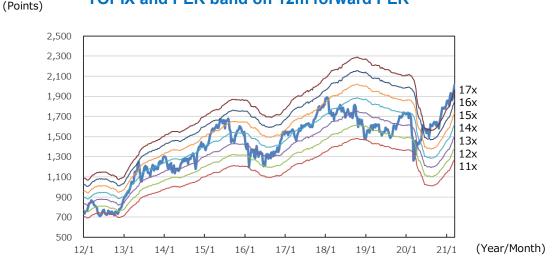
- 12M EPS consensus forecast has been bouncing back from September. Latest 12M forward EPS growth forecast for TOPIX rose further to robust 50.3%, as of 19 March.
- Given the latest EPS forecast of 115.5, TOPIX at 2,012 corresponds to PER of 17.4, which is much higher than the historical range between 11 times and 15 times. This was initially caused by even more extreme valuation for US stock prices, which was created by massive liquidity pumped in by central banks and sharp fall in bond yields. Current high PER means the market assumes loose monetary policy will continue and economy & corporate earnings will strongly recover in 2021. PER will gradually come down to the normal range as such expectations materialize.



Note: Data is weekly, from 6 Jan 2012 to 25 Mar 2021.

Source: Bloomberg, compiled by SMDAM

TOPIX and PER band on 12m forward PER



Note: Data is weekly, from 6 Jan 2012 to 25 Mar 2021. PER is based on 12-month

forward EPS.

Source: Bloomberg, compiled by SMDAM



SMDAM's corporate earnings forecasts

- SMDAM makes earnings forecast for 488 companies excluding financials in its corporate research coverage.
- In the latest forecast on 5 th March, recurring profits are forecast to decline by -5.4% in FY2020 and then recover by 33.0% in FY2021. There is the large upward revision in FY2020 earnings, due to better than expected results announced for the period of Oct-Dec quarter last year. The positive surprises were mainly brought by the economic recovery in China and US.
- When indexed with the latest high in FY2018 as 100, level of recurring profit for FY2019, 2020, 2021 are calculated at 77, 73 and 97 respectively. ("Recurring profits" in Japanese accounting means "earnings from continuous businesses", which is basically before tax and extraordinary items.) We expect the recurring profit for FY2022 will be the historical high, thanks to the global economic recovery.

SMDAM corporate Earnings forecasts (Coverage: 488 companies)

Fiscal year		FY2019	FY2020E	FY2021E
Date of forecast		Actual	5-Mar	5-Mar
Sales	(YoY, %)	-2.4%	-8.7%	8.4%
Operating Profit	(YoY, %)	-25.3%	-2.5%	31.0%
Recurring Profit	(YoY, %)	-23.0%	-5.4%	33.0%
Net Profits	(YoY, %)	-35.3%	5.3%	39.8%
Recurring Profit				
Manufacturing 293 companies	(YoY, %)	-27.3%	0.8%	40.8%
Non-manufacturing 195 companies	(YoY, %)	-17.1%	-12.8%	22.3%

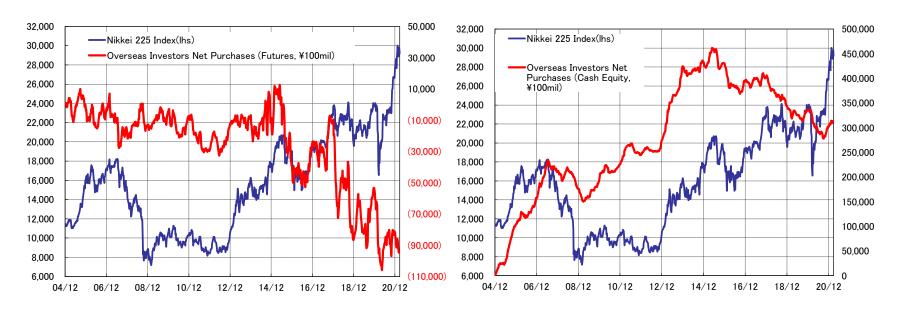
Note: Key assumption for FY2020.4Q & 2021 are Yen/US\$ 106 and Yen/EUR 124.

Source: SMDAM Corporate Research Group

Foreign investors continue purchasing Japanese equities

- Foreign investors continued purchasing Japanese equities since October last year. Positive outlook for global economic recovery tends to make foreign investors bullish on Japanese equity market, as it is perceived as the very cyclical market.
- Many companies are postponing share buy-backs this fiscal year in the face of adverse business environments caused by COVID-19. Share buy-backs are expected to recover in FY2021, which starts from April this year.

Foreign investors net purchase of Japanese equity



Note: Data is from 7 January 2005 to 26 March 2021. Data of Net purchases is until 12 March 2021.

Source: Japan Exchange Group

Advancing Corporate Governance Code and Stewardship Code

- Stewardship Code (SC) was set in February 2014. Investors are taking more pro-active approach in talking to the companies and exercising proxy voting rights. Financial Services Agency discloses the name of institutional investors, which publicly accepted SC.
- After inception of Corporate Governance Code (CGC) in June 2015, pressure has been increasing on companies to improve its governance, efficiency and shareholder returns.
- These two codes have been progressively reviewed and enhanced, and making visible impact on the corporate behavior and investors' attitudes as shareholders.
- In the recent amendment of CGC, companies are required to explain the rationale of "cross holdings" or "strategic holdings" of other companies' shares, which implicitly provide protection against takeovers and hostile shareholder actions, and is often negative for achieving shareholder value.
- SC was reinforced in March 2020 requiring investors to evaluate ESG factors.

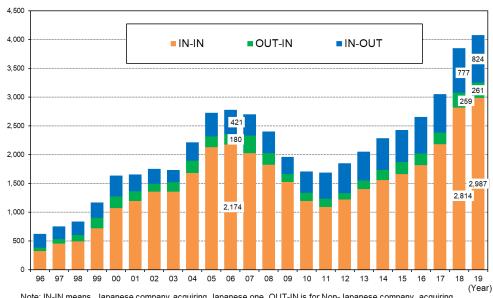
Total number of institutional investors, which publicly declared acceptance of the stewardship code					
Trust banks 6					
Investment management companies					
Insurance companies	23				
Pension funds	53				
Others (include proxy voting advising companies)					
Total	280				

Note: As of 13th Mar. 2020. (Source) Financial Services Agency

Business restructuring is progressing for Japanese companies

- Japanese companies are getting more and more willing to make positive business restructuring.
- Number of M&A deals between Japanese companies (IN-IN) rose from 2,174 in 2006 to 2,814 in 2018 and further to 2,987 in 2019, which is an evidence that business restructuring is progressing in Japan.
- Number of the deals of Japanese companies acquiring overseas businesses (IN-OUT) also rose from 421 in 2006 to 777 in 2018 and further to 824 in 2019.

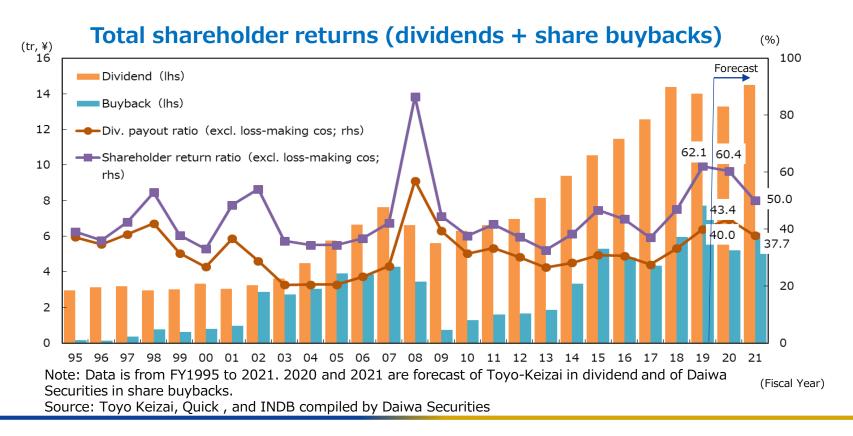
Number of M&A deals involving Japanese companies (Excluding transactions among the same business group)



Note: IN-IN means Japanese company acquiring Japanese one, OUT-IN is for Non-Japanese company acquiring Japanese company, and IN-OUT is for Japanese company acquiring non-Japanese company. (Source) RECOF and SMBC NIKKO Securities.

Behavior of Japanese companies are making positive changes

- Share buyback is getting popular among Japanese companies as one of the powerful tools for disposing of accumulated liquidity in the B/S and enhancing EPS growth as well as ROE. After recording a historical high in FY2019, share buybacks are constrained by COVID-19 impact in FY2020. Dividends also renewed historical record in FY2019.
- After a setback in FY2020 due to COVID-19, buybacks and dividends are forecast to make a quick recovery in FY2021.





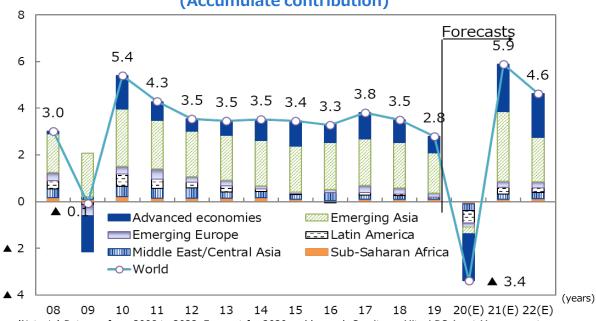
Overall investment environment in 2021

- Global economy: Business sentiment in the service sector has picked up, led by the United States and Britain, as the manufacturing sector continues to show strength. The pace of the economic expansion will accelerate from April to June due to the spread of vaccines and the expansion of US fiscal spending from Biden Administration.
- China maintains its economic expansion, but its economic policy will return to normal. A recovery in the current account surplus.
- The pace of economic expansion in 1H of the year will be strongest in US. This has 2 implications. ① Differences in monetary policy between the United States and major countries. ② The current account imbalances between the United States and other countries will expand through 2021. These things will impact foreign exchange rate.
- Although the US's shift to a GDP-gap positive is inflationary, other countries' surplus supply capacity (widening current account surplus) and flat Phillips curve in US will make inflation acceleration moderate.
- Fiscal and monetary policies: Acceleration of inflation is expected to be temporary, and the Fed and ECB are expected to make moderate adjustments to their quantitative easing from the viewpoint of the necessity of job recovery and the avoidance of taper tantrums.
- Foreign exchange: The recovery of the US economy and the rise in long-term interest rates are factors of the strong dollar. However, FRB persistently keeps short-term interest rates near zero and current account deficit will widen. Thanks to these, the pace of dollar appreciation will be moderate. The JPY/USD rate will be 100 yen to -115 yen.
- Crude oil prices will be around 60 dollars per barrel on a WTI basis.
- Risk: Weaker effectiveness of corona-vaccine due to viral mutations and delay in vaccination. Left wing shift of the Biden administration. Diplomatic and geopolitical issues such as US-China relations. Too strong **household spending in US**

Outlook for the world economy

- The global growth rate is expected to +5.9% in 2021 and +4.6% in 2022. We revised upward the growth rate in 2021 from 5.7% to 5.9% this month. A sense of recovery is expected to spread from the middle of the year to the latter half of the year due to the vaccine effect.
- We revised up the inflation forecasts in 2021, too, due to the rise in crude oil and other commodities prices. However, we expect the acceleration of inflation to be temporary and will not change the 2022 inflation outlook.

(%) Trends and forecasts of growth rates in each region (Accumulate contribution)



(Note 1:) Data are from 2008 to 2022. Forecast for 2020 and beyond: Sumitomo Mitsui DS Asset Management.

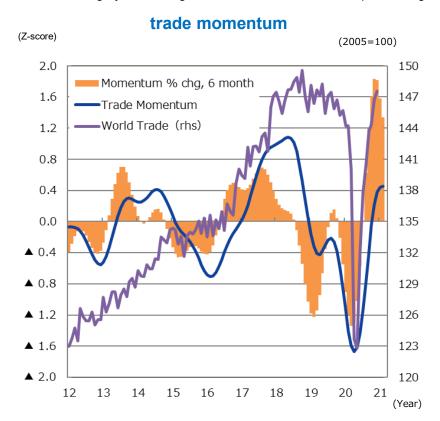
They are classified by Sumitomo Mitsui DS Asset Management with reference to the International Monetary Fund (IMF).

(Note 2:) Global growth rate is the sum of growth rates in each region (Rounded to the first decimal place).

(Source) Compiled by Sumitomo Mitsui DS Asset Management based on data from each country and region

Global trade momentum

- Trade momentum in February was positive but flat from the previous month. However, the past minutes were revised upward, and the momentum trajectory shifted upward. Results to confirm the strength of the manufacturing cycle. However, momentum is peaking out in terms of direction, with the six-month difference slowing for the third consecutive month.
- In the aspect analysis, the risk asset is positioned in the "3" region where it is easy to support the risk asset from the fundamentals. As we move toward the fourth category, the driving force to boost risk assets is expected to gradually weaken.

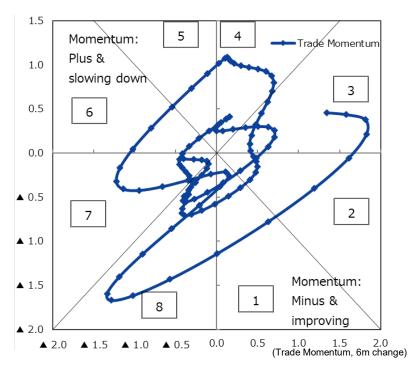


Data for (Note 1:) are from January 2012 to December 20. (Note 2:) Trade momentum is calculated by our company based on various economic indicators.

(Source) Creation of Sumitomo Mitsui DS Asset Management based on various data

analysis of trade momentum

(Trade Momentum)



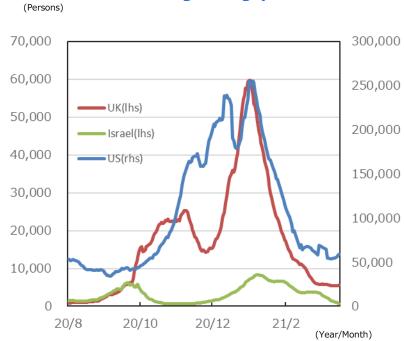
Data for (Note 1:) are from January 2012 to December 20. (Note 2:) Trade momentum is calculated by our company based on various economic indicators. (Source) Creation of Sumitomo Mitsui DS Asset Management based on various data



Status of COVID-19 Infection: Slowly Declining with Expansion of Vaccination

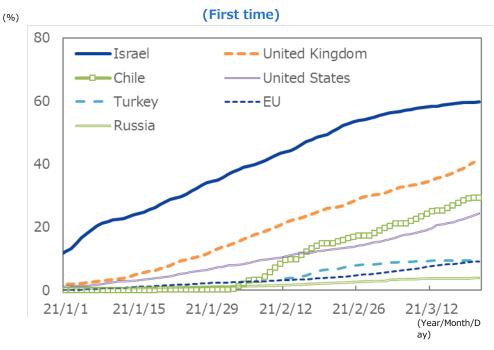
- New infections and deaths have subsided in highly vaccinated countries/regions.
- There is a risk that the effectiveness of the vaccine will not be increased by the variant strain, but the action regulation for infection control will be eased by the spread of the vaccine in the future.

Number of newly infected patients (7-day moving average)



(Note)Data is from 10 August 2020 to 27 March 2021. (Source) Created by Sumitomo Mitsui DS Asset Management based on WHO

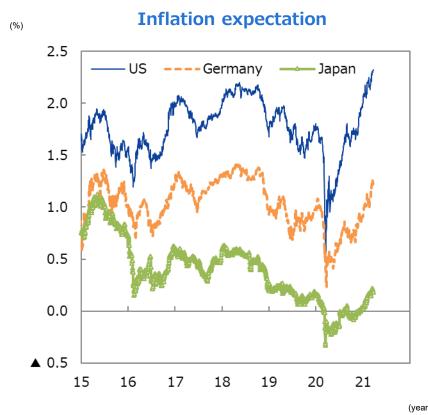
Vaccination rate per 100 population

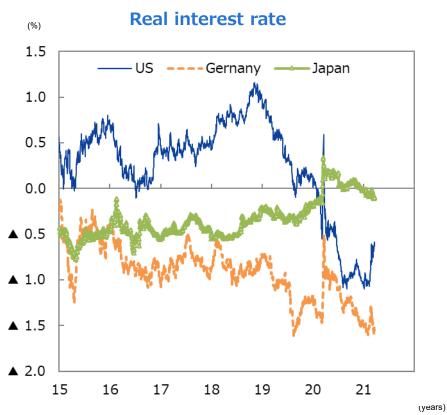


(Note)Data is from January 1, 2021 to March 16, 2021. (Source) Created by Sumitomo Mitsui DS Asset Management based on Our World in Data

Real interest rates rebounded but still low

- Since mid-February, U.S. real interest rates have rebounded slightly, but yields on 10 year U.S. government bonds have risen more than 0.4%. Meanwhile, inflation expectations remained stable at around 2.3% and real interest rates rebounded from minus 1.1% to minus 0.7%.
- At present, the rise in real interest rates is a gradual and gradual process that is balanced with the economic outlook and stable money flows.



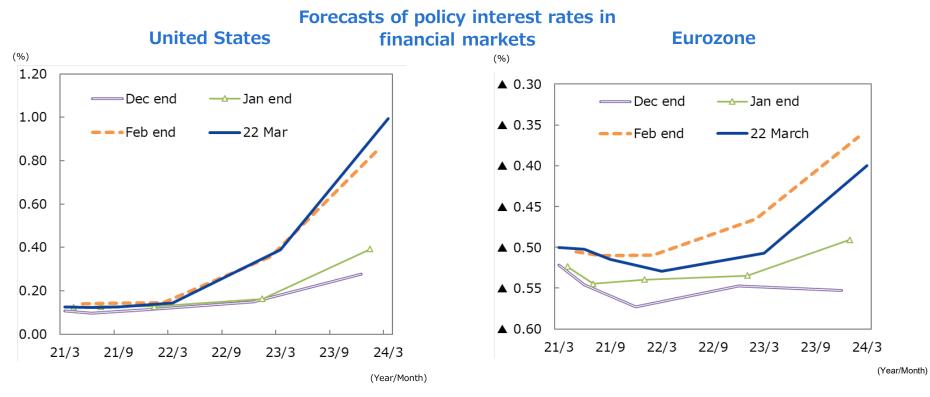


(Note)Data is from January 1, 2015 to March 17, 2021. Inflation expectations are the BEI 10 year interest rate. (Source) Created by Sumitomo Mitsui DS Asset Management based on Bloomberg data



Expectations for interest rates

- The U.S. and eurozone governments are expected to raise their key interest rates in 2023, according to the (market-implied interest rate).
- After the meeting of the Board of Governors of the European Central Bank (March 10) and the U.S. Open Market Committee (FOMC), the outlook for interest rates in the United States moved slightly (Slight decline compared to before meeting), while the outlook for interest rates in the euro area receded.

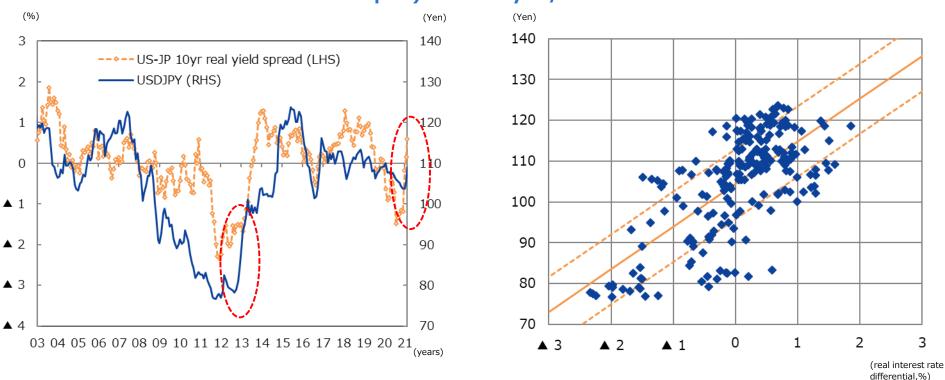


(Note)Data are from March 2021 to March 2024. (Source) Created by Sumitomo Mitsui DS Asset Management based on Bloomberg data

Real interest rate differentials and yen/U.S. dollar rates

■ Given the real interest rate differential, the possibility of a yen-dollar exchange rate of 100 yen has declined.

Japan-U.S. real interest rate differentials (10: United States - Japan) and the yen/U.S. dollar rate



The (Note 1:) data is from January 2003 to March 2021. March 2021 is until the 17th. (Note 2:) Substantiated based on year-on-year changes in overall consumer prices excluding food and energy. (Note 3:) The dotted line in the scatter plot is one standard deviation above and below the trend line. (Source) Created by Sumitomo Mitsui DS Asset Management based on data from the US Department of Labor, Statistics Bureau, Ministry of Internal Affairs and Communications, and Bloomberg.



[Japanese economy] Summary

Current Status and Prospects of the Japanese Economy

- The forecast for real GDP is 5.1% (Last time ▲ 5.0%) down in fiscal 20, 4.6% (Last + 4.3%) up in fiscal 21, and 2.1% (Last + 2.1%) up in fiscal 22. The main reason for the downward revision in fiscal 20 was the second preliminary report in Q4 20. The upward revision in fiscal 21 reflects higher exports and capital investment. Although the economy is already beginning to recover, it is likely to show negative growth in the first quarter of 21 due to the lingering effects of the decline at the beginning of the year. On the other hand, from Q2 21 onward, the economy is expected to return to positive growth as a result of the reaction to the declaration of a state of emergency, a pickup in external demand, the effects of economic measures, and the spread of vaccines.
- The nationwide core CPI outlook (Excluding the effects of the consumption tax hike and free education) is minus 0.5% (Last time ▲ 0.6%) in fiscal 20, plus 0.6% (Last + 0.3%) in fiscal 21 and plus 0.5% (Last + 0.5%) in fiscal 22. The main reason for the upward revision in fiscal 20 and 21 was the increase in the crude oil price assumption (WTI \$50 → \$60). In addition, considering the upward swing of the Tokyo metropolitan area. While the effects of the Go To Travel campaign and the reduction of mobile phone charges are highly uncertain, the energy impact is likely to turn the core CPI positive. However, the supply-demand balance is moderate, and the underlying inflationary pressure is likely to be limited.
- The BOJ announced that it will hold a "Review to implement more effective and sustainable monetary easing" and announce the results of the meeting in March. It has been previously announced that the BOJ will not change the framework of its quantitative and qualitative monetary easing with long- and short-term interest rate manipulations and that it will not review negative interest rates, so it is unlikely that "inspection" will lead to large-scale monetary policy changes. We expect that the main measures to be taken during the inspections will be to make purchases of ETFs and REITs more flexible and to clarify the scope of interest rate cuts.
- The government has compiled a package of measures to support needy households. As for the possibility of large-scale additional economic measures, including a supplementary budget, attention should be paid to measures to deal with the respread of the disease, general elections and post-corona demand stimulation.
- The main scenario is to continue economy-friendly fiscal and monetary policy management. Prime Minister Yoshihide Suga has called for the continuation of Abenomics. The previous policy management has been carried over. Even if the administration of Prime Minister Yoshihide Suga ends up with a short life span, it is likely that the government will continue its economy-friendly policies until the coronavirus outbreak is under control.

Japanese Economic Forecast

- While real GDP was revised downward from FY 20, it was revised upward from FY 21. In fiscal 20, the downward revision of the second preliminary report on GDP, and in fiscal 21, increases in exports and capital investment were the main impacts.
- Core CPI was revised upward from FY 20 and FY 21. The increase was mainly due to a hike in the WTI assumption. The rise in the CPI in the Tokyo metropolitan area also had an impact.

Fiscal year	FY 17	FY 18	FY 19	FY 20 E	FY 21 E	FY 22 E
Real GDP	1.8%	0.3%	-0.3%	-5.1%	4.6%	2.1%
Private final consumption expenditure	1.0%	0.2%	-1.0%	-6.5%	4.4%	1.5%
private housing investment	-1.8%	-4.9%	2.5%	-7.4%	1.7%	2.2%
Private-sector capital investment	2.8%	1.0%	-0.6%	-6.8%	5.0%	5.6%
Public fixed capital formation	0.6%	0.8%	1.5%	4.7%	3.7%	1.4%
Net export contribution	0.4%	-0.1%	-0.2%	-0.9%	1.1%	0.1%
Exports of goods and services	6.3%	2.1%	-2.6%	-11.3%	12.2%	6.3%
Imports of goods and services	3.8%	2.8%	-1.3%	-6.5%	5.5%	5.8%
Nominal GDP	2.0%	0.2%	0.5%	-4.4%	4.3%	2.4%
GDP deflator	0.2%	-0.1%	0.8%	0.6%	-0.3%	0.3%
Industrial Production Index	2.9%	0.3%	-3.6%	-9.8%	11.6%	5.3%
Consumer Price Index (Core)	0.7%	0.8%	0.4%	-0.5%	0.6%	0.5%
Domestic corporate goods price index	2.7%	2.2%	0.1%	-1.4%	1.8%	0.0%
Employee compensation	2.0%	3.2%	2.0%	-2.2%	0.3%	1.5%
Unemployment rate	2.7%	2.4%	2.4%	2.9%	2.9%	2.7%
Call Rate (End value)	-0.1%	-0.1%	-0.1%	-0.1%	-0.1%	-0.1%

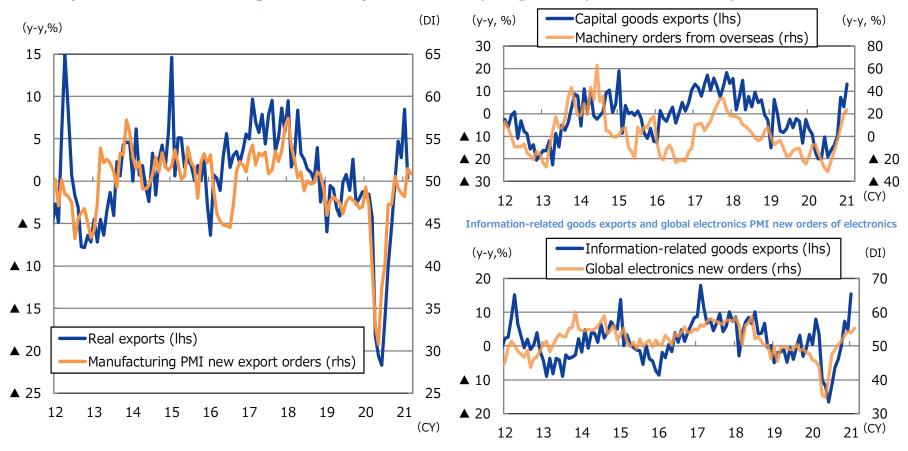
(Note) Rate of increase over the previous year. Net exports are based on the degree of contribution, and the consumer price index (Core) excludes the effects of the consumption tax and free education. The forecast is for Sumitomo Mitsui DS Asset Management.

(Source) Creation of Sumitomo Mitsui DS Asset Management based on data from the Cabinet Office, the Ministry of Internal Affairs and Communications, and the Ministry of Economy, Trade and Industry



New Export Order is re-accelerating

Real exports and manufacturing PMI new export orders Capital goods exports and Machinery orders from overseas

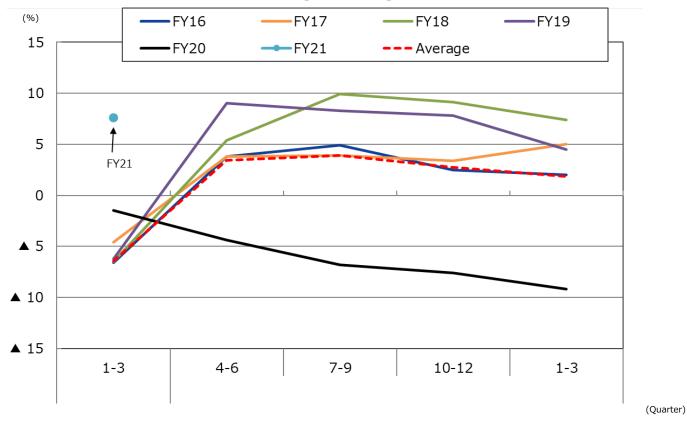


(Note)Orders for machinery and external demand are on a 3-month moving average.
(Source) Compiled by Sumitomo Mitsui DS Asset Management based on data provided by the Bank of Japan, the Cabinet Office and Markit.



Strong plan of Capital Investment for FY 2021

Capital Expenditure Plan (Including software, excluding land and research and development)



(Note)All industries of all sizes. The average is from FY 2004 to FY 2020. (Source) Developed by Sumitomo Mitsui DS Asset Management based on data from the Cabinet Office

Schedule for corona vaccination

- The vaccination of the elderly started on 4/12. The vaccination is expected to start in May or later. The time of completion of vaccination depends on the plan of each municipality.
- It has yet to be decided when to start vaccinations for elderly people, those with underlying diseases, and the general public.
- By the end of June, the Pfizer Corp. unit is expected to serve 50 million passengers (For more than 40 million people). This system covers all medical workers and the elderly, workers in facilities for the elderly, and some people with underlying diseases.
- In terms of domestic production that will contribute to the stable supply, AstraZeneca's production will start in May and Nova Bucks production in the latter half of the year.

				Vaccination Target	Vaccine Supply							
	Health care workers with highest priority		Elderly persons (65 years old ~)	Elderly care facility workers	Persons with underlying disease	General (60 ~ 64 years old)	General (16 ~ 64 years old)	Pfizer import	AstraZeneca Import and domestic production	Moderna import	Novavax domestic production	J&J
	40,000 people	4.7 million people	36 million people	2 million people	8.2 million people	7.5 million people	52 million people	72.2 million servings	60 million servings	25 million servings	125 million servings	Before contract
	(0.03%)	(3.8%)	(28.8%)	(1.6%)	(6.6%)	(6.0%)	(41.6%)					
January												
February	Initiation of vaccination							Approval	Application			
March		Initiation of vaccination						By the end of June,	Start of import (15 million servings)	Application		
April			Initiation of vaccination					it will have secured enough space for 50 million people. Supply increase from				
May			Delivery to municipalities					May ->Medical personnel and elderly persons will be	Start of domostic			
June			completed by the end of June ->The vaccination will begin in earnest					covered.	->enhancement of stable supply	By June 20 million servings		
July & future			in May.	Vaccination started?	Vaccination started?	Vaccination started?	Vaccination started?			In addition by September 5 million servings	Start of domestic production ->enhancement of stable supply	

(Note)Parentheses of the vaccinated subjects show the ratio of population. (Source) Creation of Sumitomo Mitsui DS Asset Management based on various materials

Major domestic events

		Mai	n domestic events for the future
2021	April	1	Implementation of equal pay for equal work (small and medium-sized enterprise)
		12	Novel Coronavirus Vaccination for the Elderly Started
		26 to 27	Monetary Policy Meeting (perspective report)
		Expected	Prime Minister Suga to visit the US?
	June	16	End of the ordinary Diet session
		17-18	Monetary Policy Meeting
		29	Term of office of the BOJ Policy Board Member Masai
		Expected	Cabinet Decision on Basic Policies and Growth Strategies
	July	15-16	Monetary Policy Meeting (perspective report)
		23	Tokyo Olympics (Until August 8)
		Expected	Tokyo Metropolitan Assembly election
	August	25	Tokyo Paralympics (Until September 6)
_	Summer	Expected	Revised CPI standards
	September	1	Digital Agency launched
		21-22	Monetary Policy Meeting
		30	LDP President's Term
	October	21	End of the term of office of a member of the House of Representatives
		27-28	Monetary Policy Meeting (perspective report)
	December	26-17	Monetary Policy Meeting
		Expected	Outline of Tax Reform in Fiscal 22
		Expected	Cabinet Decision on the FY 22 Budget

(Source) Compiled by Sumitomo Mitsui DS Asset Management Co., Ltd.

Japan is still competitive in innovation, but has some weaknesses

- According to World Economic Forum, Japan was ranked 8th in innovation among 137 economies, which is still competitive, however on a moderate declining trend. As a strength, R&D in Japan is largely led by companies and producing the largest number of patents in this ranking.
- On the weak side, however, this company-led R&D tends to be "progressive" rather than "innovative" and often lacks in global collaboration. Government initiative on innovation is stronger in economies such as US, Germany, Singapore and China.
- Facing with strong global competition in developing key technologies such as AI or Autonomous Driving Technology, Japanese companies are changing approach to more open and more collaborating with global partners.

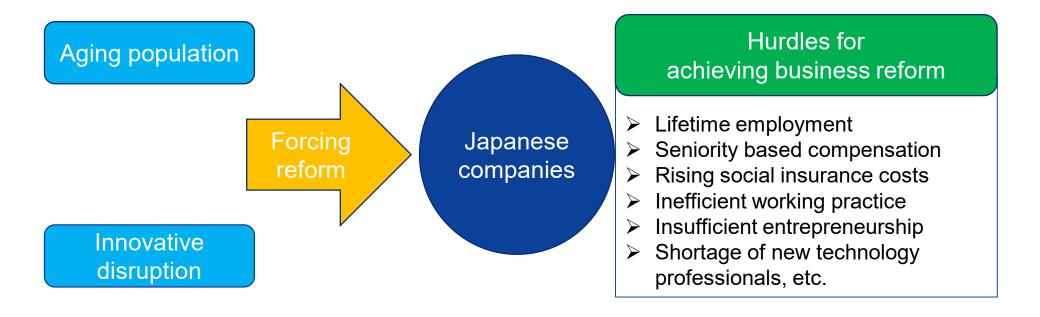
Global Competitiveness Ranking of Innovation among 137 economies

		Switzerland	U.S.	Israel	Finland	Germany	Netherlands	Sweden	Japan	Singapore	Denmark	China
Inn	ovation total	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	28th
la۱	Capacity for innovation	1	2	3	7	5	6	4	21	23	16	44
	Quality of scientific research institutions	1	5	3	8	11	4	13	14	12	16	36
c)	Company spending on R&D	1	2	3	7	4	8	6	5	17	16	21
IO)	University-industry collaboration in R&D	1	2	3	4	7	5	10	23	8	21	28
e)	Gov't procurement of advanced technology products	37	2	11	20	6	19	17	23	5	39	10
	Availability of scientists and engineers	12	2	6	1	11	19	20	8	9	44	29
g)	PCT patents	3	10	6	4	7	9	2	1	12	8	30

Note: All numbers are rankings among 137 economies. Top 10 rankings are highlighted in green. Japan's relative weakness is highlighted in orange. (Source): World Economic Forum, The Global Competitiveness Report 2017–2018

Japanese society is changing slowly but steadily

- It may look slow or even stagnant from outside, but Japanese society is making necessary reforms.
- Many problems are stemming from deep rooted Japanese culture & social practice, which became apparent in the face of "aging population" and "innovative disruption".
- Change of the deep rooted culture & practice should take time, however, it is making progress, and will eventually put Japan in an advantage over other advanced economies, which also have aging population lagging Japan.



Japanese society is changing slowly but steadily

Examples of long-term social challenges and progressing solutions

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Source of problems	Challenges	Solutions
	a) Pension system reform	 Unconventional "macro-slide" has been implemented to curb pension payment increase referring to "low birth rate" and so on. Encourage people to continue working into 70's. Encourage people to shift saving to investments. (NISA*, DC)
1. Aging population	b) Labor shortage	 Capital investment for enhancing labor efficiency. (FA, AI, IoT, autonomous driving car, renovating software, etc.) Allowing more foreign workers. Encourage people to delay retirement. Support female workers. (increase nursery, etc.)
2. Weak consumption propensity	c) Clearing peoples worry for the future life	 Pension system reform. Gradual adjustment of seniority based wage system to shift compensation from elderly to younger workers. Increase of new generation companies. Increase of young people working with non-seniority wage system.
3. Rigid employment practice	d) Encouraging business structure reform	 Elder people to retire or continue working at lower wage. Gradual adjustment of seniority based wage system. More fluid labor market enabling companies to make restructuring. Young people are not expecting lifetime employments and focusing on building own career (already progressing).
4. Inefficient working practice	e) Enhancing labor efficiency	Work style reform to progress.
5. Insufficient entrepreneurship6. Shortage of new technology professionals	f) Enhancing "challenge spirit" g) Education reform	 Increase of successful new generation companies. Increase of young people with skills of new technologies. Young and talented people choose new generation companies rather than old & large firms (already progressing).

Note: *NISA is "Nippon Individual Savings Account". (Source) SMDAM

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