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Japan in the World

Japanese economy in the era of advanced
information and communication technologies

January 2018



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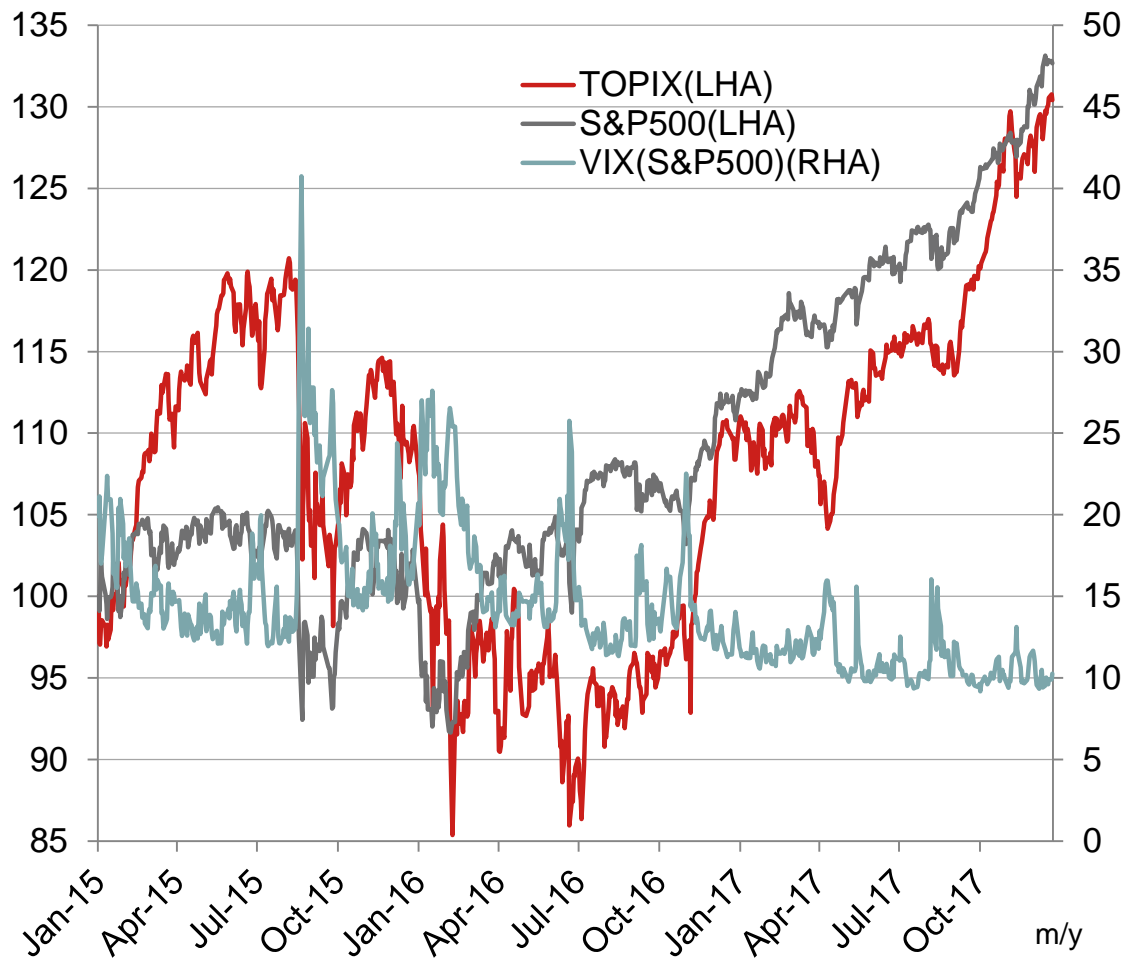
Japanese economy in the era of advanced information and communication technologies

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See Appendix A-1 for analyst certification, important disclosures and the status of non-US analysts.

Stock price index and volatility

The beginning of 2015=100

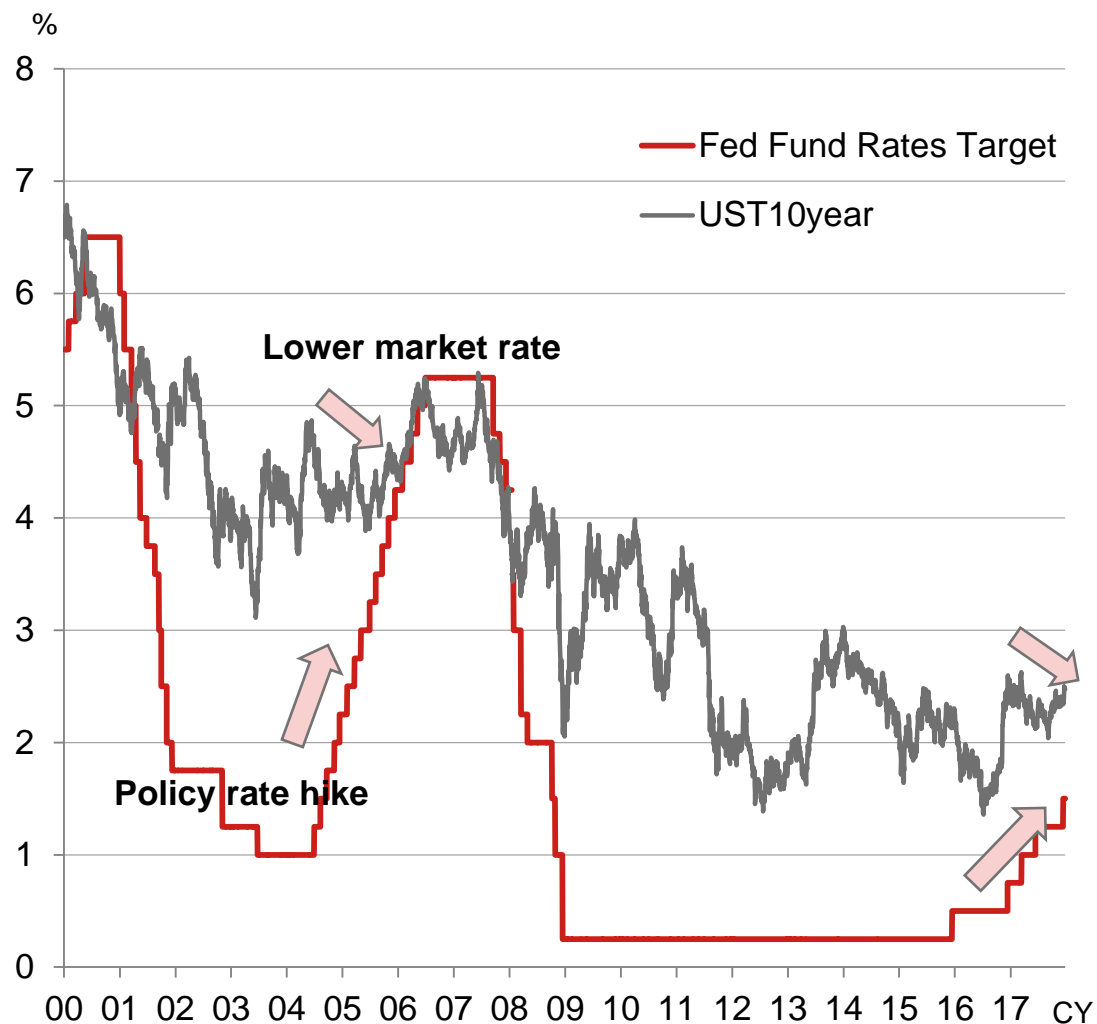


Stock markets reached record highs worldwide in 2017.

Following the US market, which continuously saw new record highs, the Japanese equity market eventually grew past the post-asset price bubble high recorded in 1996.

Despite the bullish global equity market, market volatility has also subsided.

A renewed Greenspan conundrum?

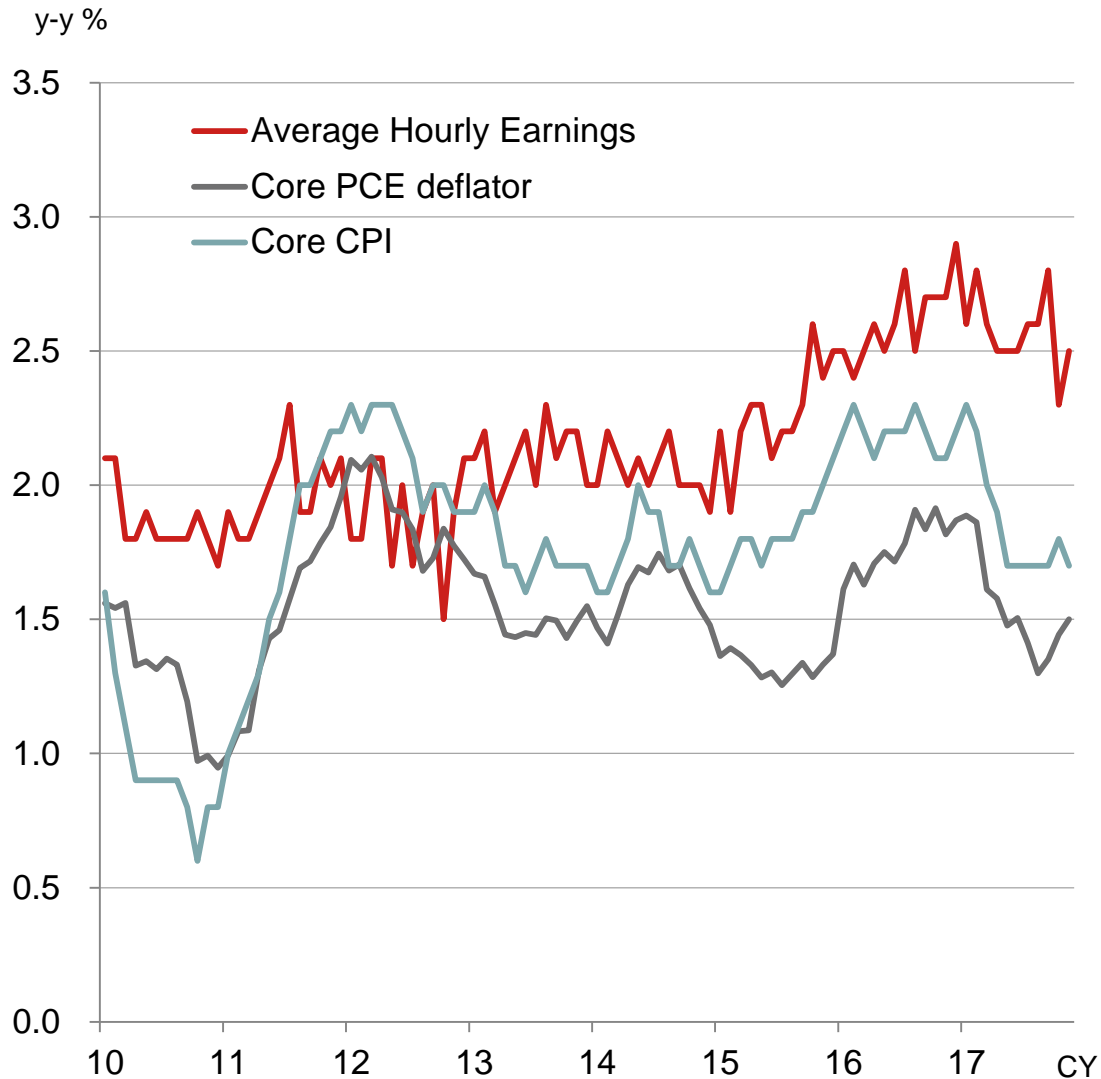


The current global equity bull market is not typical considering that it is coupled with economic expansion and rising interest rates.

Despite a normalization trend in the monetary policies of major central banks, led by the US Federal Reserve, a renewed 'conundrum' of lower long-term yields in bond markets is materializing.

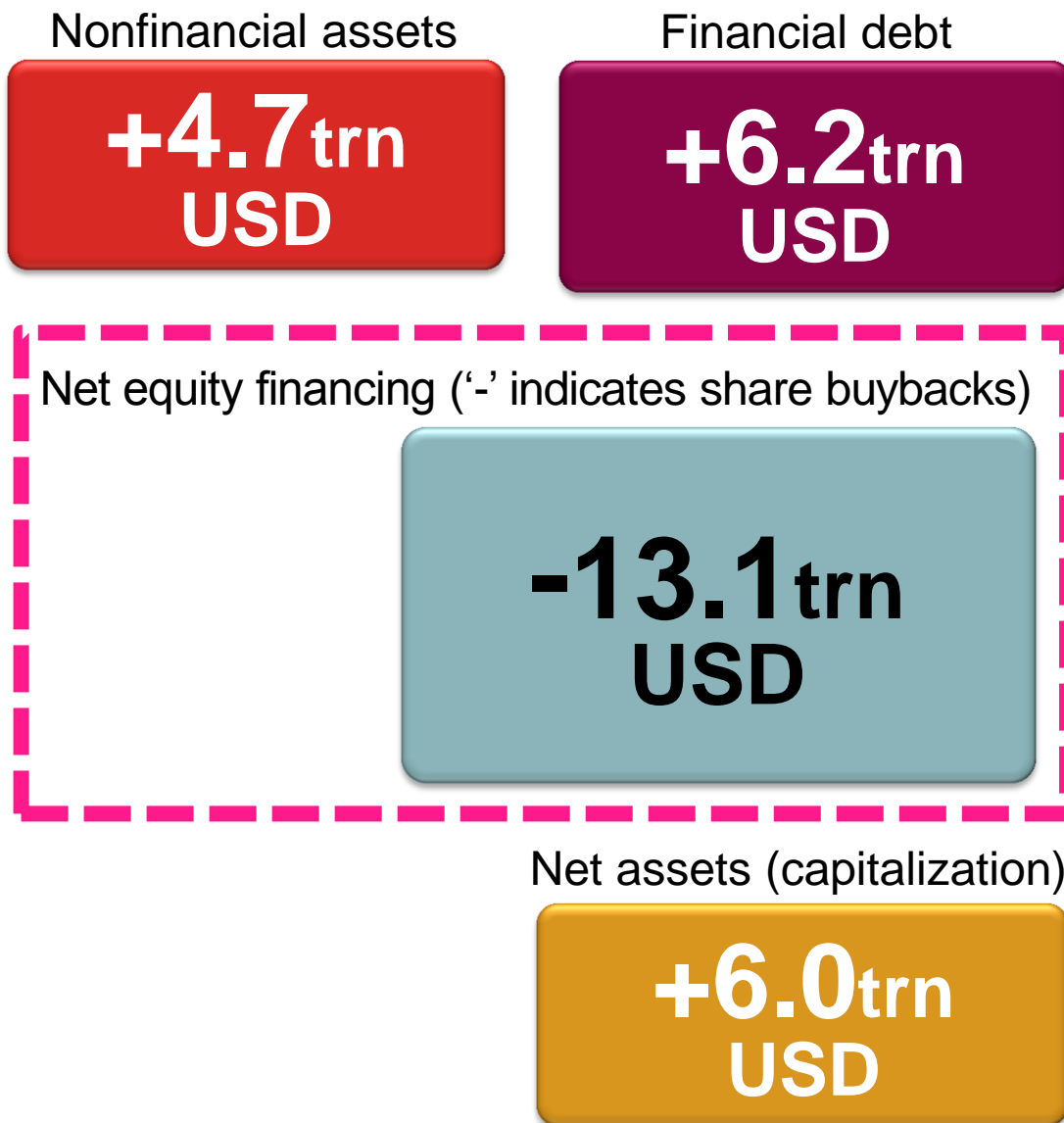
One of the causes of this conundrum may be the 'goldilocks' economy, where the expansion of the real economy coexists with low inflation. While central banks react with policy tightening, sustained low inflation continues to suppress market interest rates.

Major wage and inflation measures in US



Continuous worldwide low bond yields may reflect stagnation in wage growth and inflation under tight global labor market conditions, which are thought to be caused by advanced information-related technologies replacing human jobs.

Fundraising and investment by nonfinancial US companies (from Sep. 2008 to Jun. 2017)



Innovation in information technologies reduces the cost of purchasing assets and limits demand for funds, leading to sustainable low interest rates in the financial markets.

In response to persistently low rates, corporates are seeking higher debt to equity ratios by significantly increasing payouts for shareholders.

Accordingly, low interest rate conditions described as a 'conundrum' coupled with the 'goldilocks' economy have resulted in a bullish equity market.

Summary of Nomura's global economic forecast

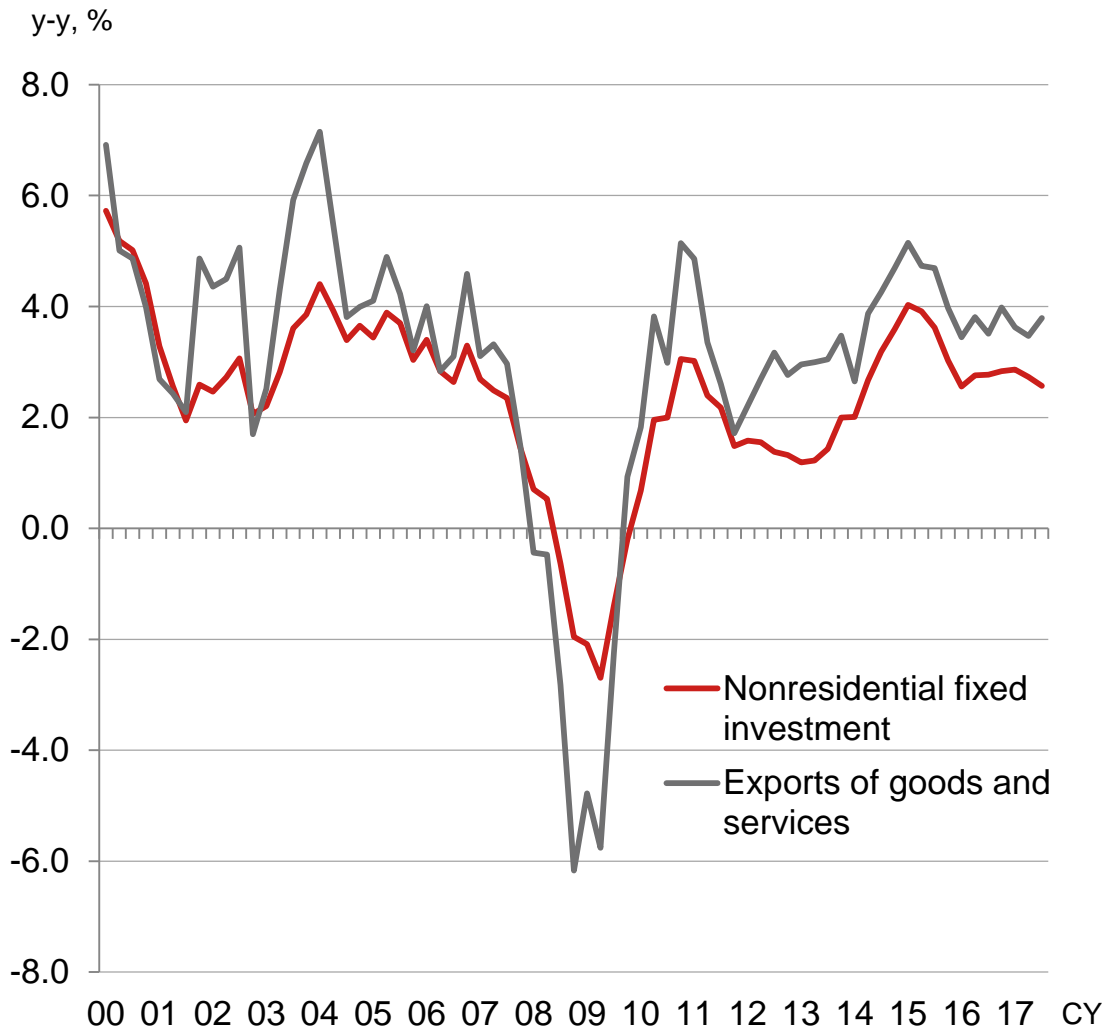
	Real GDP y-y, %			CPI y-y, %		
	2017	2018	2019	2017	2018	2019
World	3.8	3.9	3.6	2.6	3.0	2.8
Developed countries	2.3	2.3	1.9	1.7	1.8	1.8
Japan	1.8	1.3	0.7	0.5	1.0	0.5
US	2.3	2.7	2.3	2.1	2.2	2.1
Eurozone	2.3	2.4	1.8	1.5	1.5	1.8
Emerging countries	4.9	5.1	4.9	3.3	3.8	3.5
China	6.8	6.4	6.1	1.5	2.4	2.0

Nomura expects the world economy to remain above 3.5% growth, higher than the potential growth rate of the Japanese economy.

Chinese economic growth will gradually slow down as policy stimulus targeting the Communist Party Congress in October 2017 begins to fade. Although the risk remains that a sudden decline in asset prices could destabilize the financial system, the strengthened political grip of the Xi Jinping administration may help stabilize both the real economy and the financial system.

Growth in the US and Eurozone is likely to accelerate compared to 2017. Stabilizing fiscal conditions in the Eurozone and an advance in US economic policies including tax reform by the Trump administration will make economic expansion in both regions more sustainable.

US corporate capex and real exports (GDP basis)

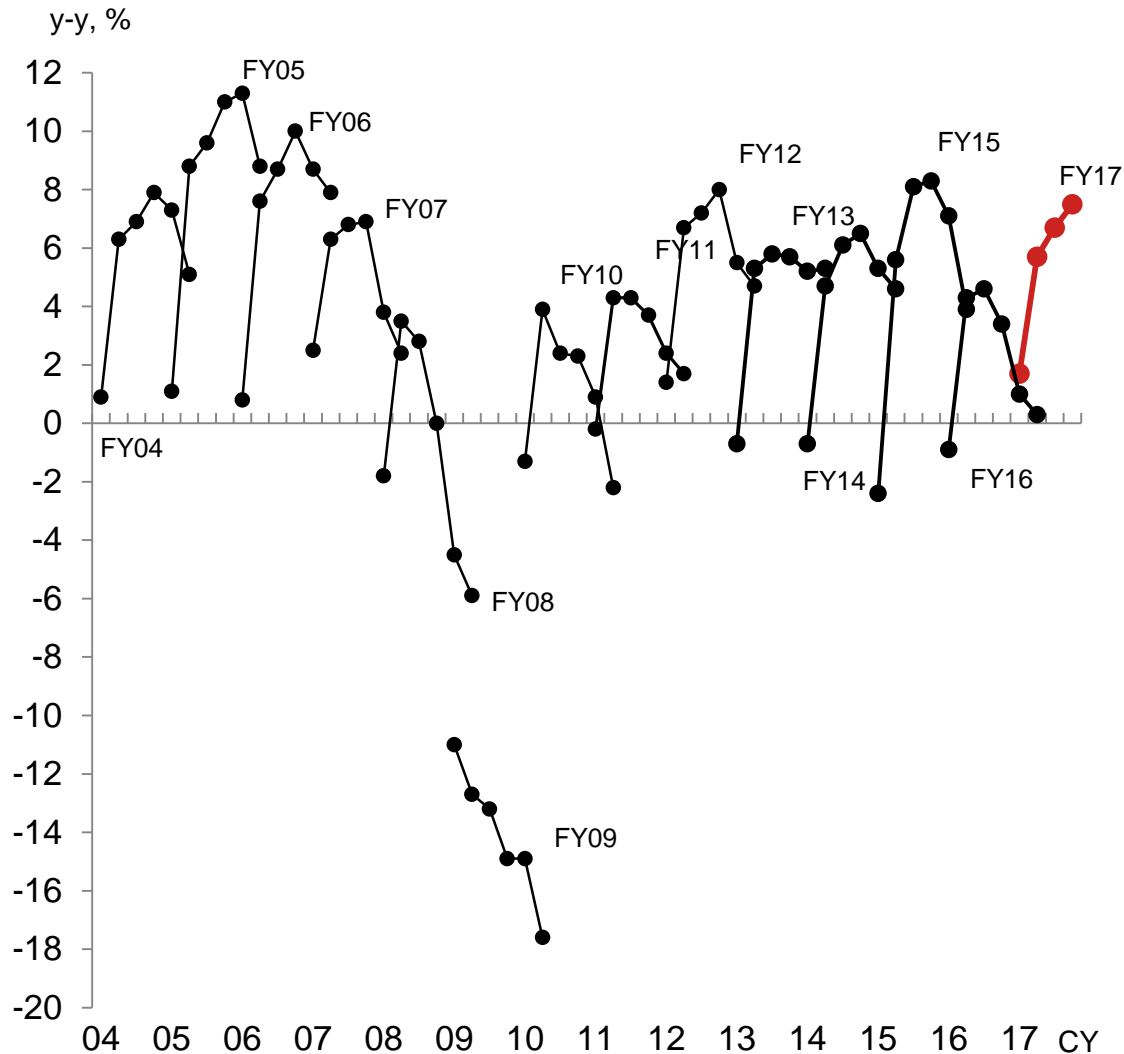


The global economic recovery starting in the middle of 2016, mainly driven by China, now finds its way to accelerated corporate capex growth in the US and Eurozone.

An uptick in corporate capex activities as well as manufacturing production in the US and Eurozone is likely to extend global economic recovery, which will also lengthen the recovery of Japanese real exports.

It is now more likely that a robust global economy will lead Japan to its greatest economic recovery since World War II.

Capex projection in the BOJ TANKAN survey



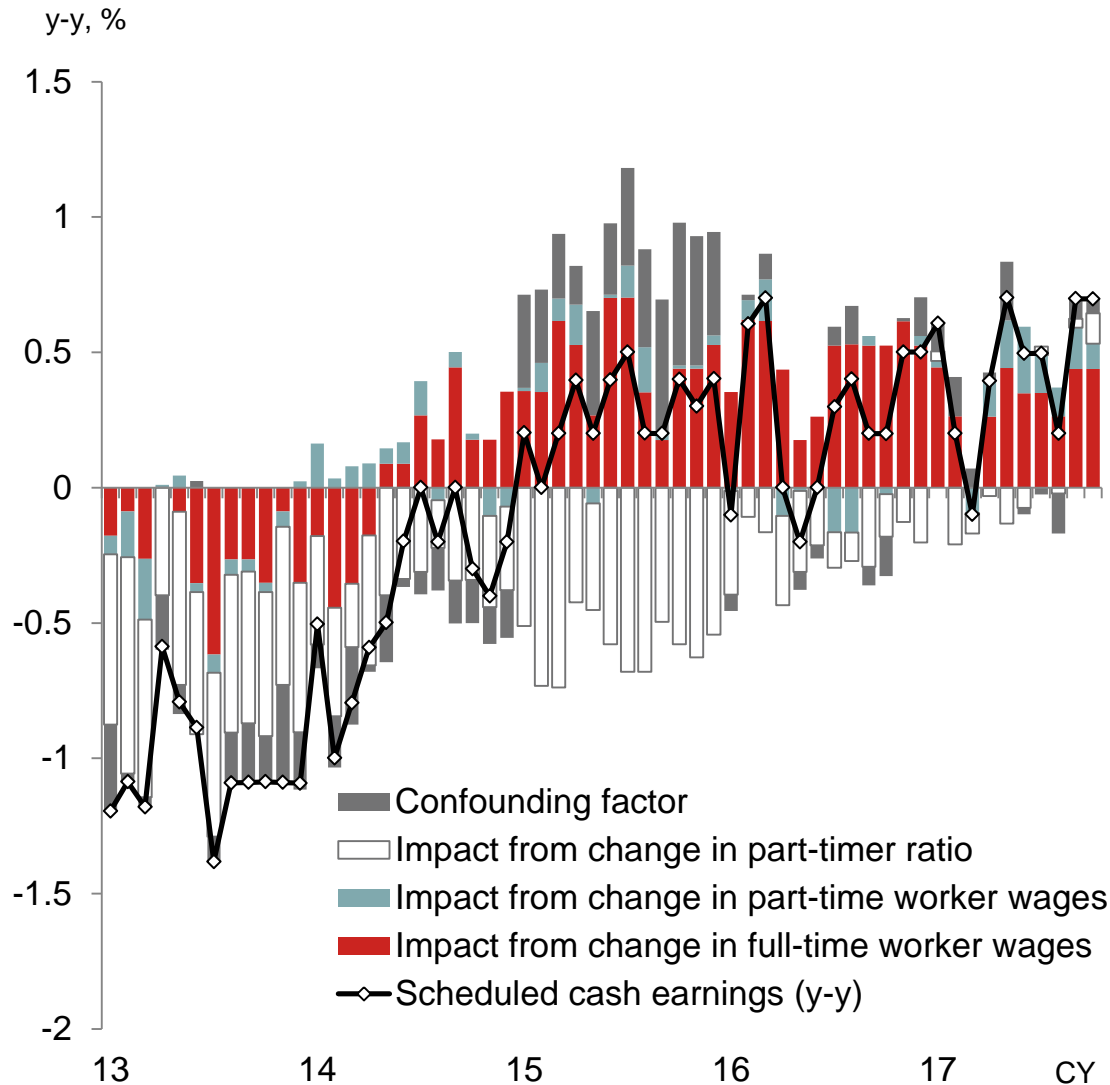
Robust external demand is stimulating corporate business investment.

In addition, a serious labor shortage, due in part to an aging population and declining birthrate, is also motivating Japanese companies to increase capital expenditure to reduce labor and enhance efficiency.

Stronger appetite for software and computer system investment implies underlying necessities among Japanese companies for reducing labor and for enhancing efficiency and profitability.

Note: Including software investment but excluding land investment. All enterprises in all industries basis.
Source: Nomura based on BOJ data.

Factor decomposition of scheduled cash earnings per capita

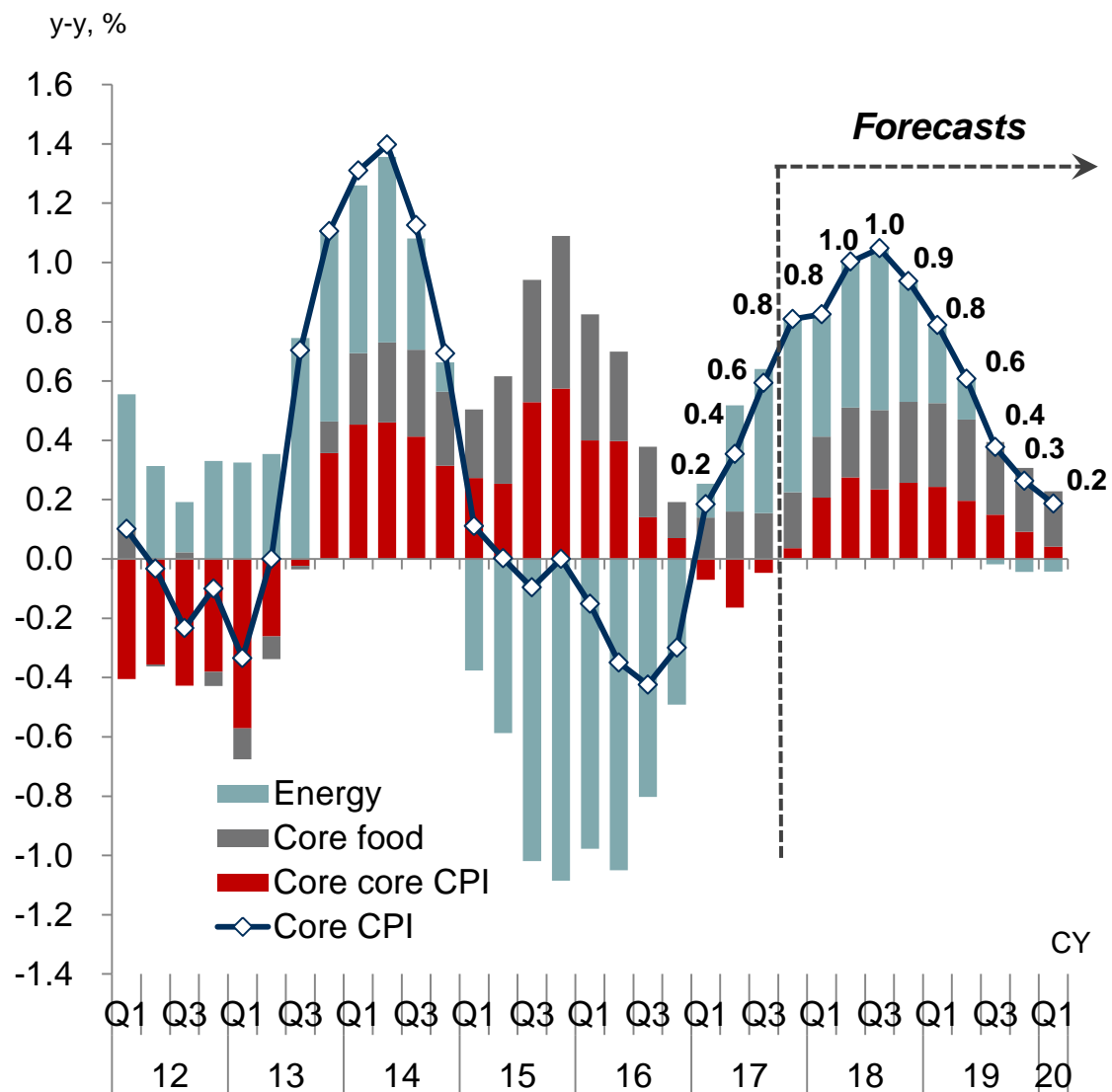


We are also seeing wage growth continually subdued in Japan despite the tight labor market.

Ironically, advanced information technologies that help reduce labor are a part of the reason for stagnant wage increase.

The Japanese economy is still several steps away from reaching a typical virtuous cycle of accelerated household income leading to increased household consumption.

Nomura's core CPI inflation forecast and decomposition



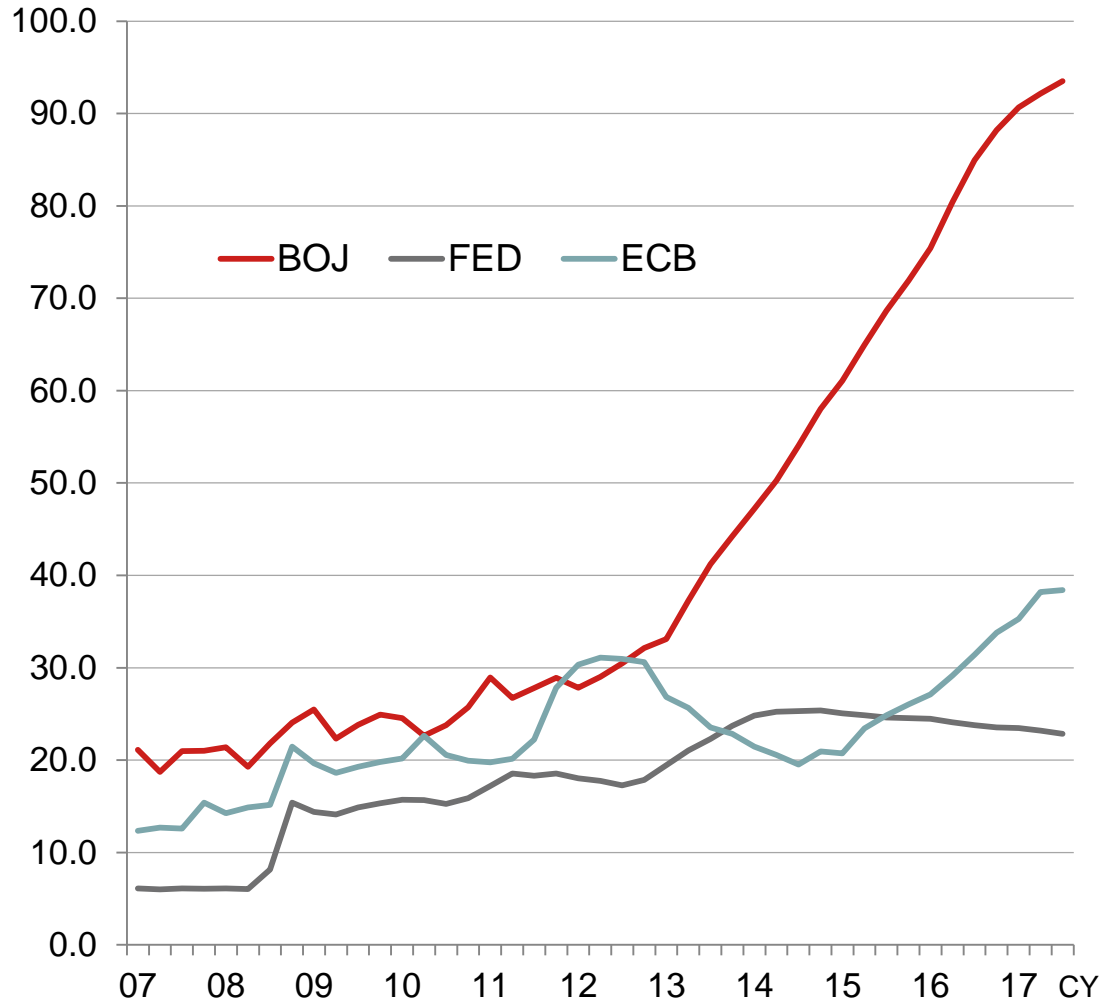
The underlying vulnerability in household demand is weakening the pricing power of Japanese companies and, as such, consumer inflation continues to be depressed.

As external positive shocks to inflation, such as higher raw material prices overseas and a weaker yen, will likely diminish, we expect Japanese consumer inflation to start decelerating from the 2nd half of 2018.

Note: Core food refers to foods excluding fresh foods and alcoholic beverages.
 Source: Nomura based on Ministry of General Affairs data

Asset outstanding held by G3 central banks

as % of nominal GDP

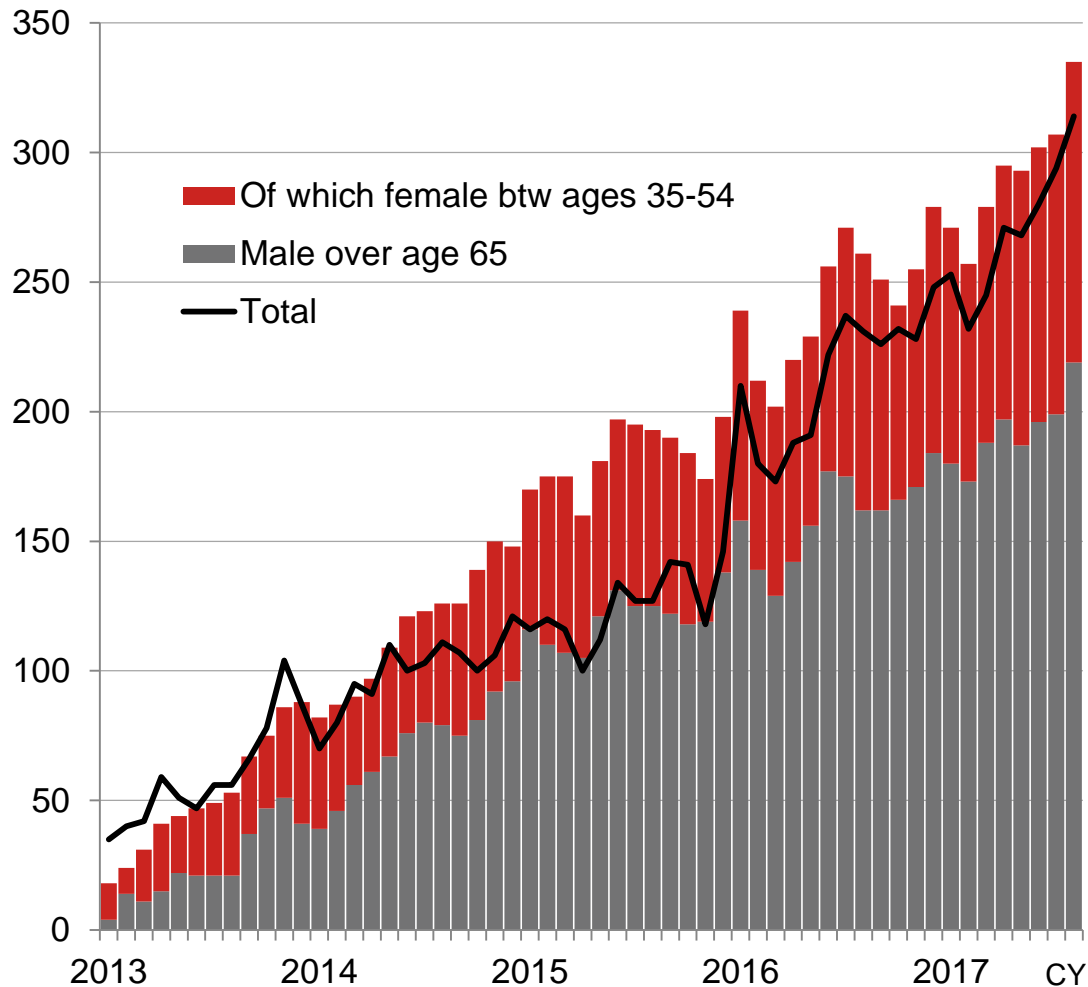


Some market participants are beginning to wonder whether the BOJ will soon start normalizing its monetary policy, following the global normalization trend led by the US Federal Reserve.

With the prospect of achieving its 2% inflation target still very much low, the BOJ and Japanese government cannot bear the risk that an early start to policy normalization could cause renewed appreciation of Japanese yen.

Accumulative increase in the number of employees

Accumulative increase since the end of 2012, 10 thd

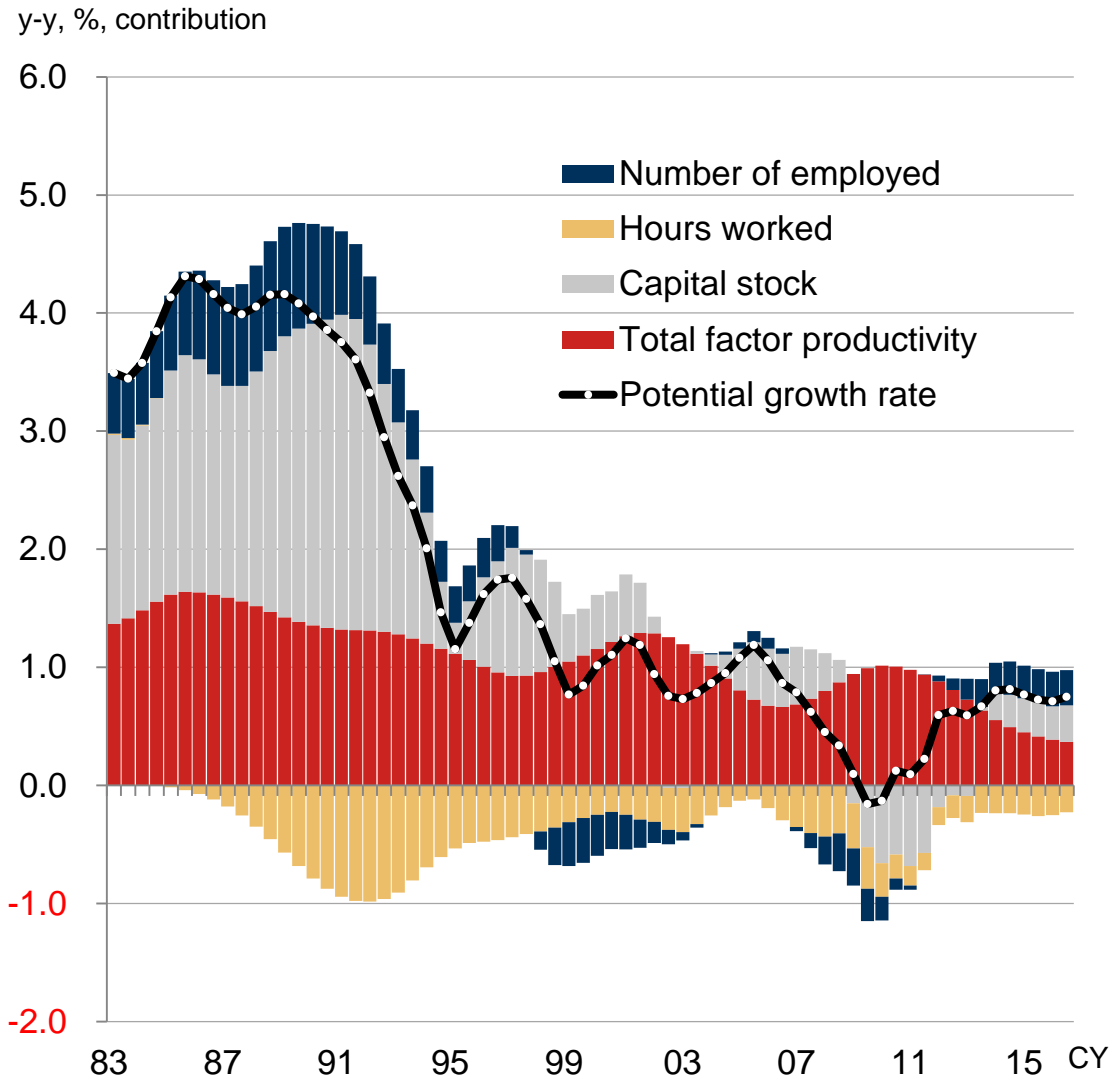


One of the successes of Abenomics has been the steady creation of new jobs in line with the economic recovery achieved thus far.

Increased employment since the start of the Abe administration, however, has been mostly concentrated on women and the elderly, for whom employment contracts are generally part-time and the level of compensation is not considerably high.

The fact that the jobs created under Abenomics have not been very high-quality implies that there are still tasks remaining for the administration to tackle in its macroeconomic policy.

Potential growth of the Japanese economy and decomposition



A contradictory outcome of increased general demand and employment coupled with the deteriorating quality of jobs might be indicative of deceleration in productivity growth.

Under the renewed probability that the Japanese economy is likely to face labor constraints as the labor participation rate of women and the elderly approaches its natural limit, improved productivity growth is becoming increasingly necessary to raise the potential growth rate of the economy.

Missing perspectives on 'Human Resource Innovation'

Comparison of human and nonhuman capital by country (2010)

US dollars in terms of 2005 purchasing power	Total (\$trn)		Per capita (\$'000)		Human capital/nonhuman capital (x)
	Human capital	Nonhuman capital	Human capital	Nonhuman capital	
Japan	33.7	20.7	266	163	1.6
US	99.6	35.5	321	115	2.8
Germany	24.6	9.9	299	120	2.5
France	19.1	7.3	304	116	2.6
UK	19.1	6.2	308	101	3.1
China	13.4	11.7	10	9	1.1
Korea	5.5	3.5	114	73	1.6
Singapore	0.9	0.5	178	91	2.0

The 'Human Resource Innovation' project in which the Japanese government is currently engaged is of critical importance in enhancing the productivity of the economy.

Rather than lowering the cost of education by subsidizing households with income transferred from the government, Japan should increase investment in human capital to aid its citizens in surviving the era of disappearing jobs brought on by the rapid advance in information technologies.

Such human capital investment that serves to increase both productivity and income will be the key to accelerated growth of the Japanese economy and expansion of its potential in the era of rapidly advancing technological innovation and the aging population and declining birthrate

Note: Human capital = total for country as a whole of present value of per capita lifelong wages. Nonhuman capital = capital stock (estimated using rate of population growth, average rate of economic growth, and rate of depreciation).

Source: Nomura, based on UN University, IHDP, Inclusive Wealth Report 2014



Takashi Miwa
Chief Japan Economist

Takashi Miwa is the Chief Japan Economist of Nomura Securities Co. Ltd. He provides in-depth analysis and forecasts of the Japanese economy, based on interregional analysis of the macro economy and financial market analysis across various asset classes. He has a particular strength in analysing the macro economy from legal and administrative perspectives. Since joining Nomura Research Institute in 1990, he has engaged in macroeconomic analysis and financial market forecasting for various regions. In 1994-96, he moved to the Fixed Income Department of Nomura Securities and analysed the macro economy from more market-oriented perspectives while engaging in forecasting monetary policy and interest rates. He also made feasibility studies and conducted investment strategy planning with a view to the start of European Monetary Union in 1999.

He received his master's degree in Law from the University of Tokyo in 2001 and his bachelor's degree in Liberal Arts and Science from the University of Tokyo in 1990. While in the graduate school of law, he studied contract law, corporate law and bankruptcy law, and made an analysis of financial contracts and corporate behaviour from the perspectives of 'Law and Economics'. This experience proved useful in analysing banking behaviour, administrative responses and price reactions of fixed income and other securities during Japan's financial turmoil through 2003 and the global financial crisis after the collapse of Lehman Brothers in 2008.

From 2001, he provided economic analysis and investment ideas for major regional financial institutions including regional banks in Japan and gained an extremely good reputation among the top management of those clients. He moved to Nomura Securities in 2004. After belonging to the Economic Research, Investment Research, and Investment Research and Investor Services departments, he took his current position in May 2016.

He has authored several textbooks on economics and finance for beginners that are popular among university students and young graduates starting careers in financial institutions.

Appendix A-1

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