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The spread of new technology may lead to a future rise in wages

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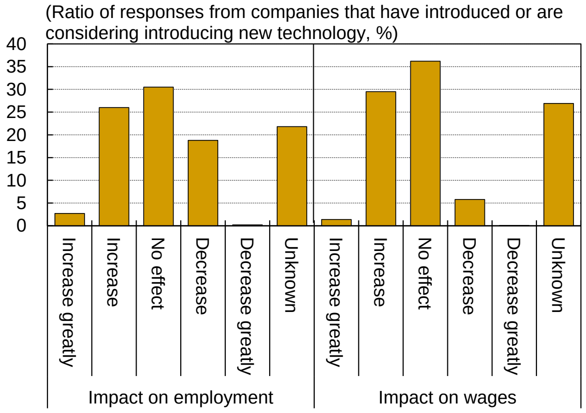
1. The Real Economy

The Cabinet Office has published the results from its "Survey on Companies' Attitude toward Use of New Technologies and Human Capital to Improve Productivity", the first of its kind. This survey aims to examine the impact of the use of new technology, such as IoT (the Internet of Things) and AI on corporations' productivity and employment, and provides various indications at the time when the spread of new technology is advancing. One of the noteworthy points of the survey is it quantitatively shows how corporations view the effect of new technology on employment and wages.

Firstly, the number of replies that the impact on employment will "increase" and the replies that it will "decrease" were comparatively balanced (Chart 1). On the other hand, the ratio of responses that the impact on wages will "increase" was five times higher than of "decrease". The main reasons for this are an "increase in profit" and an "increase in skilled workers" owing to the introduction of new technology. In other words, the introduction of new technology is assumed to have a positive impact on wages through a rise in productivity, though its impact on the number of employees differs depending on the industry and company. In the discussion paper about this survey, the Cabinet Office points to the importance of improving human capital training and investment for achieving such a situation, but, at the same time, a rise in liquidity in the labour market is also considered necessary. The survey suggests companies that have a positive attitude towards using new technology tend to aspire to make "joint efforts, including other industries". Considering this from a workforce perspective, it is important to build a situation where personnel made redundant from a single firm due to being replaced with new technology can go beyond the borders of industry and move smoothly to businesses where productivity is high. This could be the key to balancing the spread of new technology with a rise in labour productivity and wages.

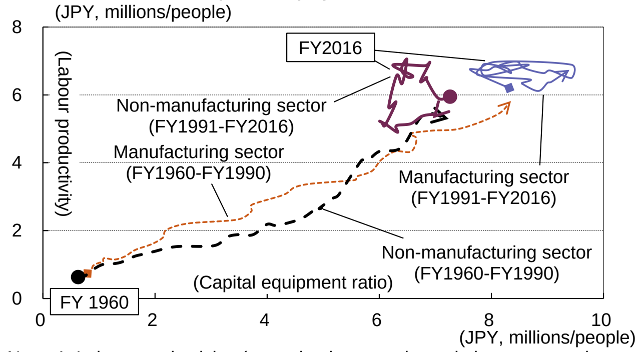
The sluggish growth of wages has been evident recently, and one reason for this is that labour productivity has fallen into stagnation. Up until the 1980s, labour productivity continually improved owing to a rise in the capital equipment ratio, but there has been increasing saturation of capital accumulation since the 1990s and labour productivity has plateaued (Chart 2). It seems there is a possibility that the uptake of new technology by companies will ensure their growth amid a declining population, and that it will lead to a rise in wages through the reallocation of accumulated capital and labour.

Chart 1: Companies' Views on the Impact of New Tecnology on Employment and Wages



Source: Cabinet Office, BTMU Economic Research Office

Chart 2: Labour Productivity and the Capital Equipment Ratio



Note: 1. Labour productivity=(operating income+depreciation+personnel expenses)/number of personnel. Capital equipment ratio=(tangible fixed assets-land-construction in progress)/number of personnel
2. Non-manufacturing sector excludes electricity, gas and water.
Source: Ministry of Finance, BTMU Economic Research Office

2. Financial Markets

(1) Monetary Policy

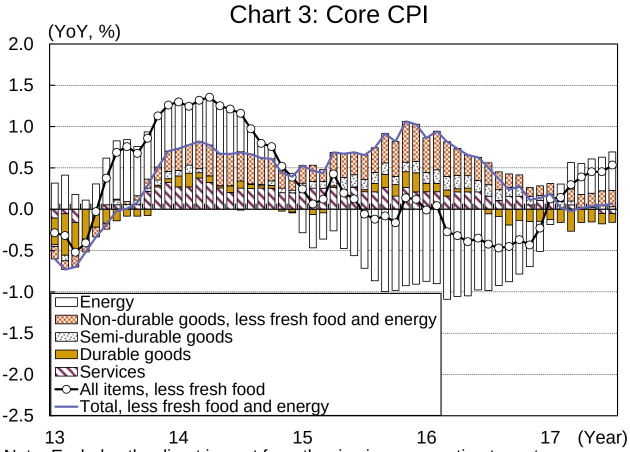
The Bank of Japan decided to maintain its current monetary policy at its Monetary Policy Meeting on 19th – 20th September. It has been exactly one year since the Bank of Japan introduced its “Quantitative and Qualitative Monetary Easing with Yield Curve Control” in September last year, and within that time, core CPI – which was -0.5% YoY in September last year – rose to 0.5% YoY in July (Chart 3). However, looking at the top five items which contributed most to the current rise in prices, the largest of these was “energy”, which pushed up core CPI with a contribution ratio of 0.47% (Table 1). Next, the price of many products in “food (less fresh food and alcoholic beverages)”, such as “meats” and “candies and cakes”, rose due to the impact of yen depreciation. Following on, “alcoholic beverages” were affected by a tightening of regulations regarding excessive discounts on alcoholic drinks, and an increase in tyre prices due to a rise in the cost of raw materials was the main factor in the increased price of private transportation (semi-durable goods). Out of the top five items, only “services related to domestic duties” (general services) saw a rise in prices which apparently stemmed from a tightening of supply and demand, such as an increase in “costs related to construction” due to the labour shortage. The current rise in prices indicates it was generally pushed up by external factors, such as the price of energy and materials, exchange rates and system factors.

In the macro economy at present, the supply-demand balance is tightening as the output gap has turned positive. Furthermore, looking at the unemployment rate and the active opening rate, the degree of tightness in the labour market is rising to a level which has never been seen before. However, it will take some time until such situation will lead to a serious rise in prices through an increase in wages.

(2) Long-Term Yields and Exchange Rate

The 10-year Japanese Government Bond yield fell into negative territory at the start of September for the first time since November last year, and the JPY appreciated against the USD to temporarily reach just above JPY107 per USD owing to a rise in geopolitical risks surrounding North Korea. At the Federal Open Market Committee on the 20th and 21st September, the US Fed decided to shrink the balance sheet and once again their position towards normalising monetary policy was confirmed, which led to a rise in US interest rates. This pushed up the 10-year Japan Government Bond yield to 0.02% and weakened the JPY against the USD back to around JPY112 to the USD. Looking forwards, Japan's monetary policy is not forecast to change for the time being, yet it is expected to continue to be affected by external factors such as the geopolitical risk and changes in US monetary policy mentioned above.

Chart 3: Core CPI



Note: Excludes the direct impact from the rise in consumption tax rate
Source: Ministry of Internal Affairs and Communications, Bank of Japan, BTMU Economic Research Office

Table 1: Items Which Pushed Up Core CPI In July 2017

	Item	Contribution to Core CPI (YoY, %)	Details
	Core CPI	0.50	-
1	Energy	0.47	Rise in energy prices, yen depreciation
2	Food (less fresh food and alcoholic beverages) (Non-durable goods)	0.14	Imports of items such as "meats" and "cakes and candies"
3	Alcoholic beverages (Non-durable goods)	0.06	Revision to Liqour Tax Law tightening regulations on excessive discounts on alcoholic beverages
4	Private transportation (Semi-durable goods)	0.02	Tyre prices increased due to rising cost of raw materials
5	Services related to domestic duties (General services)	0.01	Rise in "costs related to construction" owing to a labour shortage

Source: Ministry of Internal Affairs and Communications

(Translated by Elizabeth Foster)

MAIN ECONOMIC AND FINANCIAL INDICATORS (JAPAN)

1． Main Economic Indicators

As of Sep. 26, 2017

	Fiscal	Fiscal	2016		2017	2017				
	2015	2016	3Q	4Q	1Q	APR	MAY	JUN	JUL	AUG
Real GDP Growth Rate <% changes from	1.3	1.3	1.6	1.2	2.5	***	***	***	***	***
previous period at SA annual rate>			(1.7)	(1.5)	(1.4)					
Index of All Industries Activity	0.9	0.6	0.4	-0.1	1.6	2.3	-0.7	0.2	-0.1	
			(1.1)	(0.8)	(2.5)	(2.1)	(3.2)	(2.2)	(2.0)	
Industrial Production Index	-0.9	1.1	1.8	0.2	2.1	4.0	-3.6	2.2	-0.8	
Production			(2.1)	(3.8)	(5.8)	(5.7)	(6.5)	(5.5)	(4.7)	
Shipments	-1.1	0.8	2.4	-0.1	1.5	2.7	-2.9	2.5	-0.7	
			(1.8)	(3.7)	(5.2)	(4.9)	(5.4)	(5.3)	(4.1)	
Inventory	1.1	-4.0	-2.4	2.2	-0.5	1.5	0.0	-2.0	-1.1	
			(-5.3)	(-4.0)	(-2.9)	(-1.1)	(-1.3)	(-2.9)	(-2.3)	
Inventory/Shipments Ratio	114.9	112.9	109.7	111.5	112.5	114.7	112.5	110.4	113.3	
(2010=100)			[114.9]	[116.8]	[116.0]	[115.9]	[116.7]	[115.4]	[116.1]	[113.2]
Domestic Corporate Goods Price Index	-3.3	-2.3	0.4	1.6	0.4	0.2	0.0	0.1	0.3	0.0
			(-2.1)	(1.0)	(2.1)	(2.1)	(2.1)	(2.2)	(2.6)	(2.9)
Consumer Price Index(SA, total, excl.fresh foods)	0.0	-0.2	0.2	-0.1	0.6	0.0	0.0	0.0	0.0	
			(-0.3)	(0.2)	(0.4)	(0.3)	(0.4)	(0.4)	(0.5)	
Index of Capacity Utilization	98.0	98.6	100.1	99.8	101.9	104.1	99.8	101.9	100.1	
(2010=100)			[97.9]	[96.1]	[96.3]	[96.4]	[95.9]	[96.6]	[97.2]	[99.2]
Machinery Orders(Private Demand,	4.1	0.5	0.3	-1.4	-4.7	-3.1	-3.6	-1.9	8.0	
Excl.Electric Power and Ship building)			(3.6)	(-1.0)	(-1.0)	(2.7)	(0.6)	(-5.2)	(-7.5)	
Manufacturing	6.2	-4.6	2.7	-4.2	3.7	2.5	1.0	-5.4	2.9	
			(3.5)	(-6.8)	(3.5)	(9.8)	(6.3)	(-3.2)	(-1.8)	
Non-manufacturing	2.5	4.3	-1.0	0.0	-9.9	-5.0	-5.1	0.8	4.8	
Excl.Electric Power & Ship building			(3.3)	(3.1)	(-4.5)	(-2.1)	(-4.0)	(-6.9)	(-12.3)	
Shipments of Capital Goods	-2.2	1.5	2.4	-2.4	5.0	6.5	2.1	-0.9	-4.3	
(Excl.Transport Equipment)			(4.7)	(3.1)	(6.6)	(4.2)	(9.5)	(6.1)	(1.5)	
Construction Orders	-0.9	4.0								
			(5.3)	(2.2)	(0.7)	(-0.2)	(-0.5)	(2.3)	(14.9)	
Private	7.9	5.1								
			(16.7)	(4.8)	(-7.0)	(-2.2)	(-17.9)	(-0.1)	(8.4)	
Public	-15.6	8.4								
			(-9.5)	(-1.8)	(19.9)	(-5.6)	(91.1)	(6.3)	(31.9)	
Public Works Contracts	-3.8	4.1								
			(-4.5)	(9.9)	(2.6)	(1.7)	(8.5)	(-0.6)	(-5.4)	(-7.9)
Housing Starts	92.1	97.4	95.3	97.5	100.2	100.4	99.8	100.3	97.4	
10,000 units at Annual Rate, SA	(4.6)	(5.8)	(7.9)	(3.5)	(1.1)	(1.9)	(-0.3)	(1.7)	(-2.3)	
Total floor	(2.1)	(4.1)	(5.3)	(3.3)	(1.0)	(3.0)	(-1.6)	(1.5)	(-3.2)	
Sales at Retailers	0.8	-0.2								
			(0.8)	(1.2)	(2.5)	(3.2)	(2.1)	(2.2)	(1.8)	
Real Consumption Expenditures	-1.2	-1.6	-0.9	0.8	1.0	0.5	0.7	1.5	-1.9	
of Households over 2 persons (SA)			(-0.7)	(-2.0)	(0.2)	(-1.4)	(-0.1)	(2.3)	(-0.2)	
Propensity to Consume	73.6	72.1	71.8	73.1	75.3	73.1	78.8	74.1	69.2	
(SA,%)			[73.0]	[72.6]	[72.8]	[74.2]	[74.7]	[69.6]	[70.0]	[70.7]
Overtime Hours Worked	-1.3	-0.7	0.1	1.5	-0.4	-0.9	0.6	-0.1	-0.8	
(All Industries, 5 employees or more)			(-1.2)	(1.2)	(0.9)	(0.6)	(1.6)	(0.7)	(0.6)	
Total Cash Earnings (Regular Employees	0.2	0.4								
Only; All Industries, 5 employees or more)			(0.4)	(0.2)	(0.5)	(0.5)	(0.6)	(0.4)	(-0.6)	
Employment Index(Regular Employees Only;'All Industries,	98	103	105	112	131	127	137	130	134	
5 employees or more）(Change over the M/Q/Y)										
Ratio of Job Offers to Applicants	1.23	1.39	1.41	1.44	1.49	1.48	1.49	1.51	1.52	
(SA,Times)			[1.26]	[1.29]	[1.35]	[1.33]	[1.35]	[1.36]	[1.37]	[1.37]
Unemployment Rate	3.3	3.0	3.1	2.9	2.9	2.8	3.1	2.8	2.8	
(SA,%)										
Economy Watcher Survey	48.8	46.4	48.7	49.2	50.1	50.4	50.1	49.9	51.0	49.6
(Judgment of the present condition D.I,%)			[47.7]	[45.6]	[42.6]	[43.5]	[43.0]	[41.2]	[45.1]	[45.6]
Bankruptcies (Number of cases)	8,684	8,381	2,086	2,079	2,188	680	802	706	714	639
	(-9.0)	(-3.5)	(-3.1)	(-3.0)	(2.8)	(-2.2)	(19.5)	(-7.5)	(0.3)	(-12.0)

(Notes)

Unless otherwise indicated, tabulated figures and those in parentheses show % changes from previous quarter/month as applicable.

The figures in ( ) indicate % changes from previous year.

[ ] show the comparable figure of the previous year.

2． Balance of Payments

As of Sep. 26, 2017

	Fiscal	Fiscal	2016		2017	2017				
	2015	2016	3Q	4Q	1Q	APR	MAY	JUN	JUL	AUG
Customs Clearance (Exports in Yen Terms)	-0.7	-3.5	(-1.9)	(8.5)	(10.5)	(7.5)	(14.9)	(9.7)	(13.4)	(18.1)
Value	2.0	-5.8	(-6.3)	(3.1)	(5.2)	(3.2)	(6.9)	(5.5)	(10.5)	(7.0)
Volumes	-2.7	2.4	(4.7)	(5.1)	(5.1)	(4.2)	(7.5)	(4.0)	(2.6)	(10.4)
Imports (In Yen terms)	-10.2	-10.2	(-9.3)	(8.6)	(16.2)	(15.2)	(17.9)	(15.5)	(16.3)	(15.2)
Value	-8.4	-10.7	(-10.7)	(6.2)	(10.8)	(9.8)	(11.8)	(10.8)	(12.7)	(12.5)
Volumes	-1.9	0.5	(1.6)	(2.2)	(4.9)	(4.9)	(5.4)	(4.2)	(3.2)	(2.4)
Current Account (100 mil. yen)	178,618	203,818	40,876	59,697	45,405	19,519	16,539	9,346	23,200	
Goods (100 mil. yen)	3,296	57,726	17,146	10,961	9,570	5,536	-1,151	5,185	5,666	
Services (100 mil. yen)	-13,527	-13,816	-5,520	50	-3,024	-2,947	421	-499	-2,373	
Financial Account (100 mil. yen)	238,492	249,299	22,119	52,424	45,989	10,705	21,847	13,437	8,542	
Gold & Foreign Exchange Reserves ($1mil.)	1,262,099	1,230,330	1,216,903	1,230,330	1,249,847	1,242,295	1,251,868	1,249,847	1,260,040	1,268,006
Exchange Rate (\/$)	120.13	108.37	109.32	113.60	111.06	110.06	112.21	110.91	112.44	109.91

3． Financial Market Indicators

	Fiscal	Fiscal	2016		2017	2017				
	2015	2016	3Q	4Q	1Q	APR	MAY	JUN	JUL	AUG
Uncollateralized Overnight Call Rates	0.063	-0.045	-0.043	-0.042	-0.054	-0.054	-0.053	-0.056	-0.054	-0.049
			[0.076]	[0.035]	[-0.050]	[-0.037]	[-0.059]	[-0.055]	[-0.043]	-0.043
Euro Yen TIBOR	0.157	0.057	0.056	0.056	0.056	0.056	0.056	0.056	0.075	0.056
(3 Months)			[0.169]	[0.122]	[0.060]	[0.060]	[0.060]	[0.059]	[0.058]	[0.058]
Newly Issued Japanese Government Bonds Yields	-0.050	0.065	0.040	0.065	0.075	0.015	0.040	0.075	0.075	0.010
(10 Years)			[0.270]	[-0.050]	[-0.230]	[-0.085]	[-0.120]	[-0.230]	-0.195	[-0.070]
Average Contracted Interest Rates	0.924	0.847								
on Loans and Discounts(City Banks)			0.853	0.847	0.842	0.850	0.849	0.842	0.841	
(% changes from previous period)			(-0.012)	(-0.006)	(-0.005)	(0.003)	(-0.001)	(-0.007)	(-0.001)	
The Nikkei Stock Average	16,759	18,909	19,114	18,909	20,033	19,197	19,651	20,033	19,925	19,646
(TSE 225 Issues)			[19,034]	[16,759]	[15,576]	[16,666]	[17,235]	[15,576]	[16,569]	[16,887]
M2(Average)	(3.5)	(3.6)	(3.7)	(4.1)	(3.9)	(3.9)	(3.8)	(3.9)	(4.0)	(4.0)
Broadly-defined Liquidity(Average)	(3.7)	(1.8)	(1.6)	(2.2)	(2.8)	(2.5)	(2.8)	(3.0)	(3.5)	(3.7)
Principal Figures of Financial Institutions										
Loans and Discount (Average): Banks & Shinkin	(2.4)	(2.4)	(2.5)	(2.8)	(3.1)	(3.0)	(3.2)	(3.3)	(3.3)	(3.2)
Banks	(2.5)	(2.4)	(2.5)	(2.8)	(3.2)	(3.0)	(3.3)	(3.3)	(3.4)	(3.2)
City Banks etc.	(1.2)	(1.2)	(1.4)	(2.0)	(2.8)	(2.4)	(2.9)	(3.1)	(3.2)	(2.8)
Regional Banks	(3.7)	(3.5)	(3.6)	(3.6)	(3.7)	(3.6)	(3.7)	(3.7)	(3.7)	(3.8)
Regional Banks Ⅱ	(3.2)	(3.1)	(3.1)	(3.2)	(3.0)	(2.9)	(3.0)	(3.0)	(3.1)	(3.1)
Shinkin	(2.2)	(2.3)	(2.3)	(2.5)	(2.8)	(2.8)	(2.9)	(2.8)	(2.7)	(2.8)
Deposits and CDs (Average): Total(3 Business Condition)	(3.7)	(3.8)	(4.2)	(4.5)	(4.5)	(4.4)	(4.5)	(4.7)	(4.5)	(4.4)
City Banks	(4.5)	(5.5)	(6.0)	(6.4)	(6.5)	(6.4)	(6.3)	(6.7)	(6.4)	(6.3)
Regional Banks	(3.0)	(2.3)	(2.3)	(2.7)	(2.6)	(2.5)	(2.6)	(2.7)	(2.7)	(2.6)
Regional Banks Ⅱ	(2.5)	(2.1)	(2.2)	(2.4)	(2.3)	(2.2)	(2.5)	(2.4)	(2.3)	(2.3)

(Notes)
Newly Issued Japanese Government Bonds Yields and Interest rates are averages. The Nikkei Stock Average is as of month-end.
Unless otherwise indicated, tabulated figures and those in parentheses show % changes from previous quarter/month as applicable.
The figures in ( ) indicate % changes from previous year.
[ ] show the comparable figure of the previous year.

(Sources)
Cabinet Office, National Accounts, Machinery Orders; METI, Indices of Tertiary Industry Activity, Industrial Production, Current Survey of Commerce; MOF, Trade Statistics, Balance of Payments; MPMHAPT, Consumer Price Index, Family Income and Expenditure Survey, Labour Force Survey; MHLW, Monthly Labour Survey; Ministry of Land, Infrastructure, and Transport, Economic Construction Statistics; BOJ, Corporate Price Index, Financial and Economic Statistics Monthly, etc.

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