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Japan's Economy: Monthly Outlook (Jul 2017)

Benefits and consequences of manpower shortage. The inconvenient truth of capex

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Summary

- The effective opening-to-application ratio for regular employees has reached a historic high of 0.99X, and is getting closer to the point where it will exceed 1X. Once it does, barring the occurrence of cyclical factors such as economic recession, possibilities are high that the ratio will continue to increase for structural reasons. In the not-too-distant future, serious wage inflation may begin to occur, affecting even regular employees.
- However, there is still quite a bit of distance to cover before said wage inflation reaches the point of triggering a virtuous circle brought about by domestic demand. Sustainable wage inflation depends on whether or not corresponding labor productivity can also be attained in tandem. Since labor productivity such as this can take time to achieve, companies suffering from rising unit labor costs may very likely have to keep total labor costs under control by flattening the wage curve and placing restrictions on overtime.
- With the shortage of manpower becoming more serious, moderate growth is expected in investment in rationalization & labor-saving for the purpose of improving productivity, as well as investment in research & development as a means of improving earnings. Mergers & acquisitions are expected to increase as well. However, it may be too much to expect these factors to become leaders in growth in capital expenditure overall.
- Japan's capital stock cycle is nearing the maturation phase. Meanwhile, the marginal productivity of capital expenditure in Japan is generally lower than the cost of capital, or the marginal productivity of labor in a price comparison. In addition, the fallacy of composition is now appearing, in which there is assumed to be little margin left for carrying out investment, especially in the labor-intensive industries which really need to invest in improving productivity. Consequently, if the unit cost of labor rises, there is the risk that corporations will be forced to make a choice between scaling down their business or suffering the hollowing out effect, or possibly even having to accept both. We advise caution regarding this situation.

1. Benefits and Consequences of Manpower Shortage

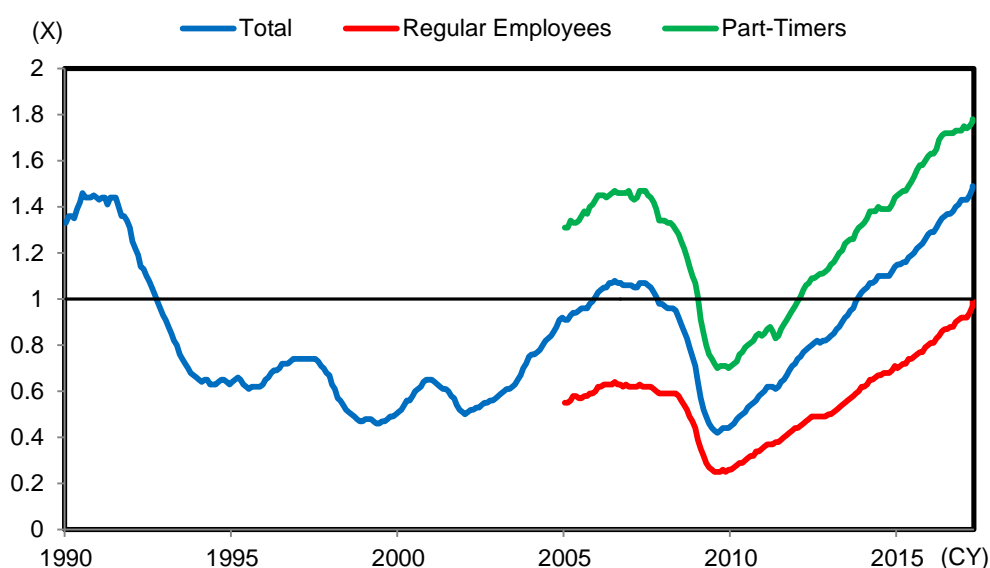
The effective opening-to-application ratio for regular employees has reached the historic high of 0.99X, and is getting closer to the point where it will exceed 1X (Chart 1). Once it does, barring the occurrence of cyclical factors such as economic recession, possibilities are high that the ratio will continue to increase for structural reasons.

First of all, the fundamental problem in Japan is its low birthrate and aging population, which will continue on into the future. Until now the problem of the declining population and the shortage of manpower accompanying this phenomenon was compensated for by raising the labor force participation of women and the elderly. However, when we take a look at the M-curve which best described the situation with women's labor force participation in the past, we see that over the past several years of increase in women's participation in the labor force, the curve has changed its shape and now most resembles the situations seen in other advanced countries, such as the US and Europe. In other words, we must consider the fact that there is not much more room for growth in the women's labor force participation.

Considering the fact that it is now difficult to expect a major increase in the labor force participation rate of women, one of the only practical things left for corporations to do in the attempt to mitigate the problem of shortage of manpower is to extend the number of work hours per person. However, here we run up against a major constraint – that of the 1.3 mil yen limit which the government places on the annual income of dependent spouses, beyond which the household loses a major tax deduction. Employment data tells us that the hourly wage of part-time workers has been constantly on the rise, having grown by 17.7% between 1994 and 2016 when the average hourly wage for a part-timer was at 1,116 yen. At the same time, however, the growth rate of annual income for part-timers is marking time at only +4.3% annually. As of calendar year 2016 the annual income of part-timers was at 1.17 mil yen. In other words, work hours per person were offset by increases in hourly wage, and have continued to decline. Looking at real work hours for part-time workers we see that they have declined by 11.4% between 1994 when they were at 1,184 hours annually and 1,049 hours annually in 2016. The existence of a systemic disincentive could be said to be a factor in providing additional momentum to the problem of the shortage of manpower.

Effective Opening to Application Ratio by Type of Employment

Chart 1



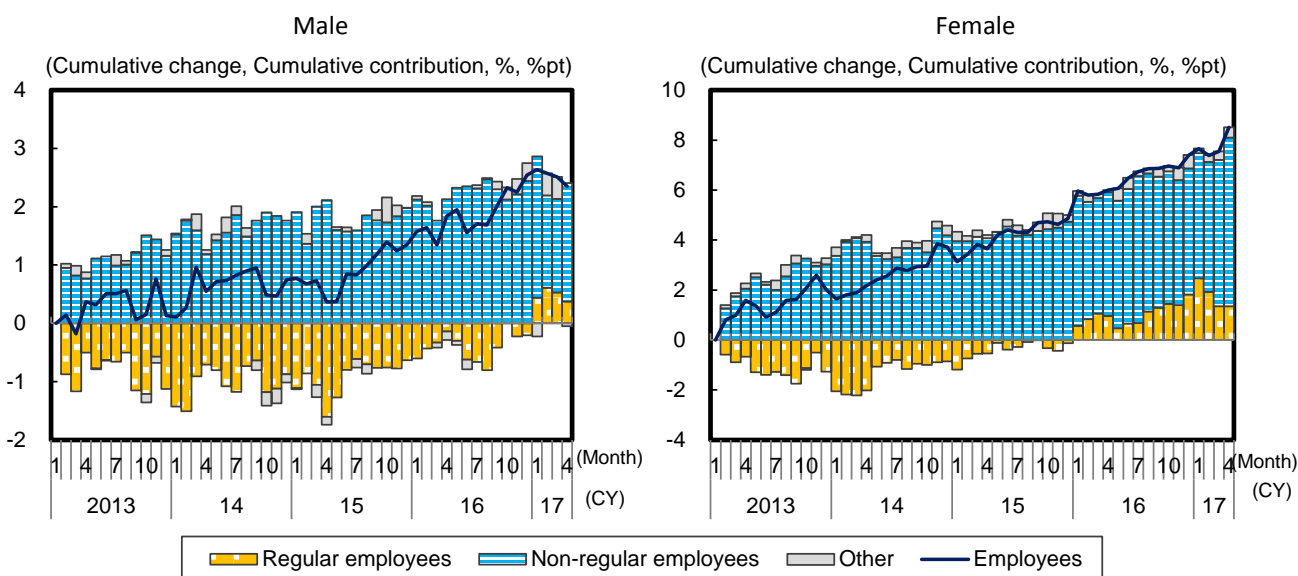
Source: Ministry of Health, Labour and Welfare; compiled by DIR.

Note: Values are seasonally adjusted.

Consequently, for better or for worse, the tide is turning in the labor market. Looking back over the past twenty years, the wages of regular workers have been marking time (or possibly even decreasing), while those of part-timers have been continually on the rise, along with the total number of employees. However, some employers find that it has become more difficult to find part-time workers, while others say that it has become difficult to convince part-timers to work longer hours. These kinds of corporations are slowly and carefully beginning to change direction, and are instead hiring more regular employees (Chart 2). As a result, the effective opening-to-application ratio for regular employees is growing more rapidly as was mentioned at the beginning of this report. As long as the structural factors discussed so far remain in place, serious wage inflation may very likely occur in the not too distant future, and it will affect regular employees as well.

However, there is still quite a bit of distance to cover before said wage inflation reaches the point of triggering a virtuous circle brought about by domestic demand. First of all, simple wage inflation from the viewpoint of corporations is not only a factor bringing negative pressure on earnings, but could even lead to scaling down their business or to the hollowing out effect. Sustainable wage inflation depends on IT investment, research & development, or in some cases carrying out mergers & acquisitions, as well as whether or not corresponding labor productivity can also be attained in tandem.

Factor Analysis of Employment **Chart 2**



Source: Ministry of Internal Affairs and Communications; compiled by DIR.

Note: Seasonal adjustment performed by DIR.

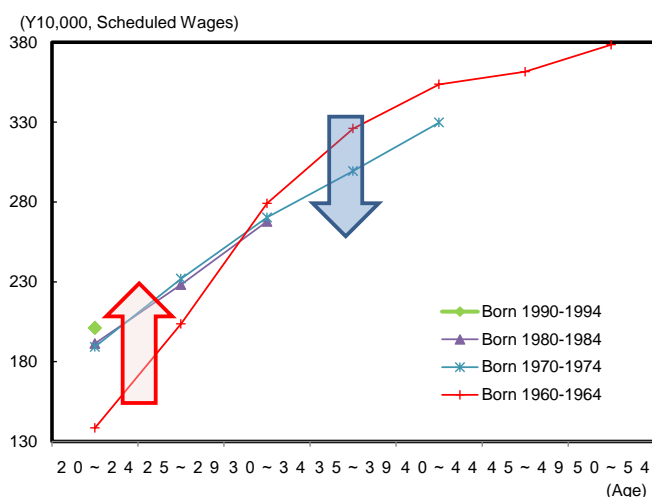
Meanwhile, since labor productivity such as this can take time to achieve, companies suffering from rising unit labor costs (nominal wages ÷ productivity) may very likely have to keep total labor costs under control by flattening the wage curve and placing restrictions on overtime, rationalizing the latter by dressing it up as “workstyle reform.” The practice of increasing the hourly wage at which new regular employee hires are taken on (both new graduates and non-regular employees who have gained the status of regular employees), and then holding down the total salaries of existing regular employees may likely continue for some time.

There is nothing new about this type of corporate behavior. Chart 3 illustrates the wage curve and how it is generally applied by birth year. Here we can see how starting salaries are raised, while mid-level and senior salaries are depressed. The chart reveals how flattening the wage curve continues to be practiced by corporations.

Meanwhile, Chart 4 shows the technique of flattening the wage curve from a different angle. In another development which will become more prominent by the latter part of the 2000s, the proportion of workers in their 40s who have moved into managerial positions is decreasing. In other words, corporations appear to be delaying the promotion of workers in their 40s, while also decreasing the number of workers who are promoted to management positions. Members of Japan's second-generation baby boom are now just entering their 40s, hence this age group accounts for a large proportion of overall personnel expenses. By delaying the promotion of employees who form the "volume zone" in terms of age-group, corporations hope to cut back on personnel expenses. The possibility of a similar phenomenon occurring in the future is also a factor which cannot be ignored.

Wage Curve by Birth Year and Age Group

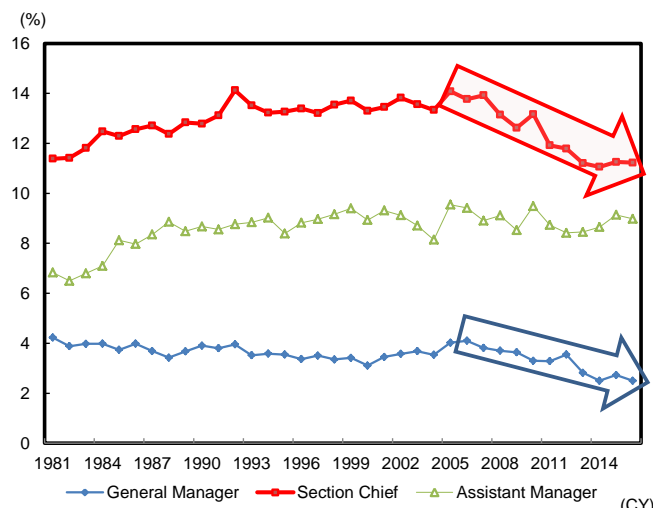
Chart 3



Source: Ministry of Health, Labour and Welfare; compiled by DIR

Proportion of Workers in Their 40s in Managerial Positions

Chart 4



Source: Ministry of Health, Labour and Welfare; compiled by DIR

US Economy Reliving Hysteresis Effect Once Experienced by Japan

Another element of concern is the hysteresis effect. In recent years, the US has been experiencing a historic low in its unemployment rate, and yet growth in wages has not picked up speed. This phenomenon has been discussed in the US as if it were a great mystery. However, as is shown in Chart 5, while the US revised unemployment rate (number of unemployed ÷ population aged 16 and above) is definitely at a historic low, the employment rate (number of employed persons ÷ population aged 16 and above) is also at a historic low. Which of these two figures represents America's reality – the revised unemployment rate, which indicates an extremely tight labor market, or the employment rate, which suggests that the labor market still has some slack?

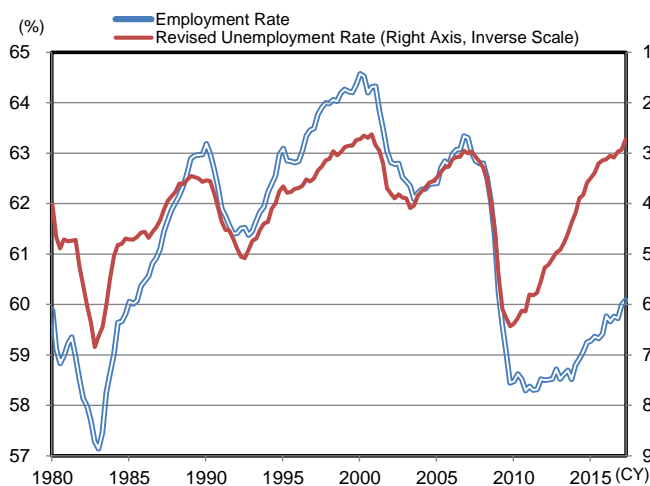
Before drawing a conclusion, let us first clearly define our terms. The population aged 16 and above is divided between the population of employed persons and the population of unemployed persons. In other words, the fact that both the revised unemployment rate and the employment rate are at historic lows ultimately indicates that the proportion of non-working population making up the population of persons over age 16 is at a historic high. This tendency for people to move into the non-labor force began to develop during the global financial crisis of 2008. This is quite similar to the phenomenon experienced by Japan during the latter 1990s and beyond (Chart 7). In other words, those who could not find employment during the hard times after the financial crisis hit in 2008 entered the non-labor force, and have been in standby mode outside of the labor market.

This phenomenon in which a portion of the population enters the non-labor force after an economic crisis giving rise to the long-term decline of the potential growth rate and a tendency toward disinflation is widely recognized as one of the aspects of the hysteresis effect. The longer a population remains in the non-labor force unable to take advantage of education, training, or OJT, the more the

quality of labor deteriorates, and this leads in turn to a decline in labor productivity in the macro sense. From a micro point of view as well, workers who have no skills are forced to accept low wages and bad employment conditions. As a result, a tendency toward wage disinflation occurs.

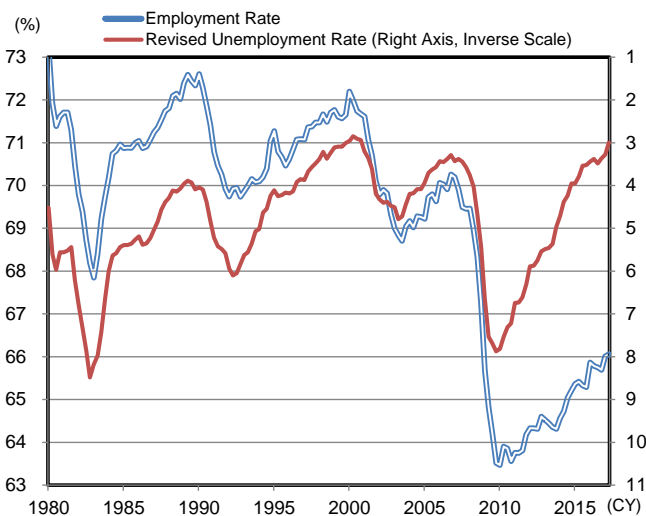
At the same time, one wonders whether Japan has ever truly healed from the wounds of the hysteresis effect, which is now being relived by the US. Chart 7 indicates that over the past four years, the alligator gap between the employment rate and the revised unemployment rate has been shrinking. But the gap is still a large one. We therefore believe that caution is required regarding the possibility that the non-labor population could act as an element of potential slack and suppress wage inflation.¹

US Employment Rate and Revised Unemployment Rate
Chart 5



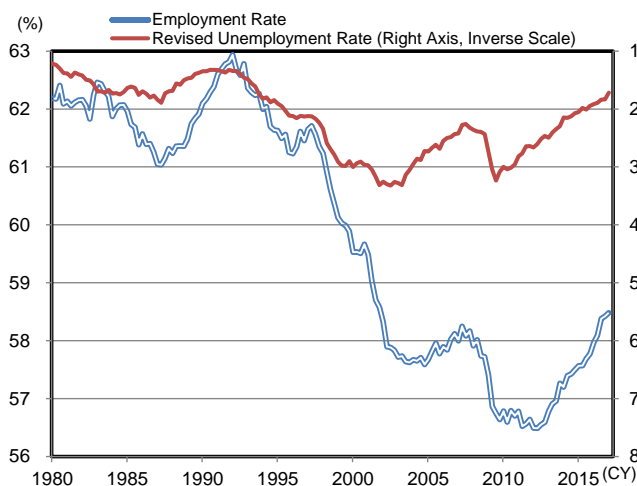
Source: OECD; compiled by DIR

US Employment Rate and Revised Unemployment Rate for Men
Chart 6



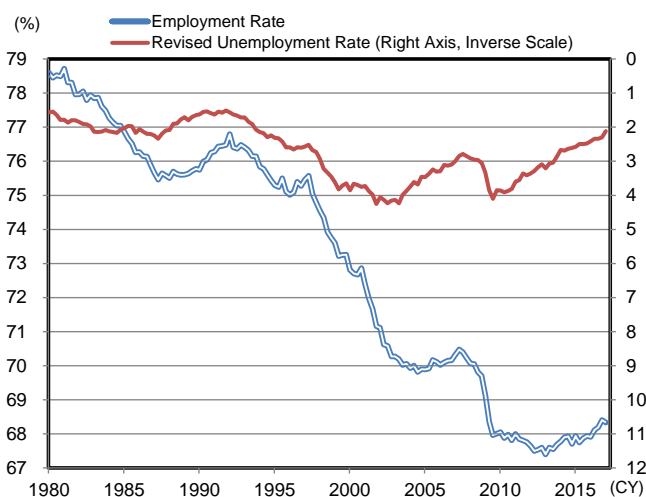
Source: OECD; compiled by DIR

Japan's Employment Rate and Revised Unemployment Rate
Chart 7



Source: OECD; compiled by DIR

Japan's Employment Rate and Revised Unemployment Rate for Men
Chart 8



Source: OECD; compiled by DIR

¹ If we take this scenario to its full expression, this would involve employees eventually returning to the labor market. This would bring upward pressure on Japan's overall total employee compensation and the level of its potential GDP. Hence it is not necessarily a negative phenomenon.

2. The Inconvenient Truth of Capex

Despite the advice of caution in the previous section, the incentive to carry out investments oriented toward rationalization & labor saving in the face of the worsening labor shortage is actually stronger than it has been in the past, and few have any doubts about whether or not this is a wise move. But if serious wage increases including those affecting regular employees occur in the future, unit labor cost will increase as well, bringing pressure on corporate earnings, unless labor productivity or profitability can be raised to the degree that they can offset wage increases. For this reason, investments in research & development with an aim to improve earnings in addition to investment in rationalization and labor-saving directly linked to improving productivity will likely continue to achieve moderate growth in the future, along with M&A activity.

Chart 9 is a factor analysis indicating what is behind the fact that growth in wages is sluggish in Japan compared to the other advanced nations. Results indicate that labor productivity and price pass-through rate compare poorly with other major economies. In order for Japan's economy and corporate earnings to maintain balanced growth, these two components must improve in tandem with growth in wages.

As for the price pass-through rate, it is possible that this has been kept low over the years by groups of corporations dealing with excessive competition in the domestic market, and where mergers & acquisitions did not occur. In recent years cash surplus created by improvements in corporate earnings and monetary easing has encouraged progress in mergers & acquisitions and research & development, and in this context, the question of whether the price pass-through rate can be strengthened through these activities may become an important issue in the future.

On the other hand, the last time improvement in labor productivity was behind in Japan was at the end of the 1990s after having come through a major financial crisis. At that time capex spending was insufficient and computerization was still behind, and these two factors were major contributors to the problem. However, looked at in another way, this also means that Japan still had plenty growth potential.

Factor Analysis of Real Hourly Wages				Chart 9		
(Average Growth Rate from 2000 to 2009, %)				Japan	US	Germany
Real Hourly Wages				▲ 0.5	1.4	0.2
① Productivity				0.7	2.0	1.2
Real GDP				0.5	1.8	0.9
Contribution of hours worked (% pt)				▲ 0.4	▲ 0.2	▲ 0.3
Contribution of labour composition change (% pt)				0.3	0.3	0.1
Contribution of Fixed Capital Formation				0.5	1.1	0.8
Contribution of IT Investment				0.3	-	0.3
Contribution of Non-IT Investment				0.3	-	0.5
TFP Contribution				0.1	0.3	0.3
Total Hours Worked				Sign Reversed	0.2	0.3
Number of Employees				Sign Reversed	▲ 0.1	▲ 0.3
Hours Worked				Sign Reversed	0.5	0.7
② GDP Deflator/CPI				▲ 1.0	▲ 0.3	▲ 0.7
GDP Deflator				▲ 1.2	2.2	0.9
Terms of Trade Factor				▲ 0.3	▲ 0.0	0.0
Domestic Demand Deflator Factor				▲ 0.8	2.3	1.0
Import Deflator Factor				▲ 0.0	▲ 0.1	0.0
Others				▲ 0.0	▲ 0.0	▲ 0.0
CPI				Sign Reversed	▲ 2.5	▲ 1.6
③ Labor's Share				▲ 0.3	▲ 0.2	▲ 0.3
Nominal Employee Compensation				▲ 1.0	3.8	1.4
Nominal GDP				Sign Reversed	▲ 4.0	▲ 1.7

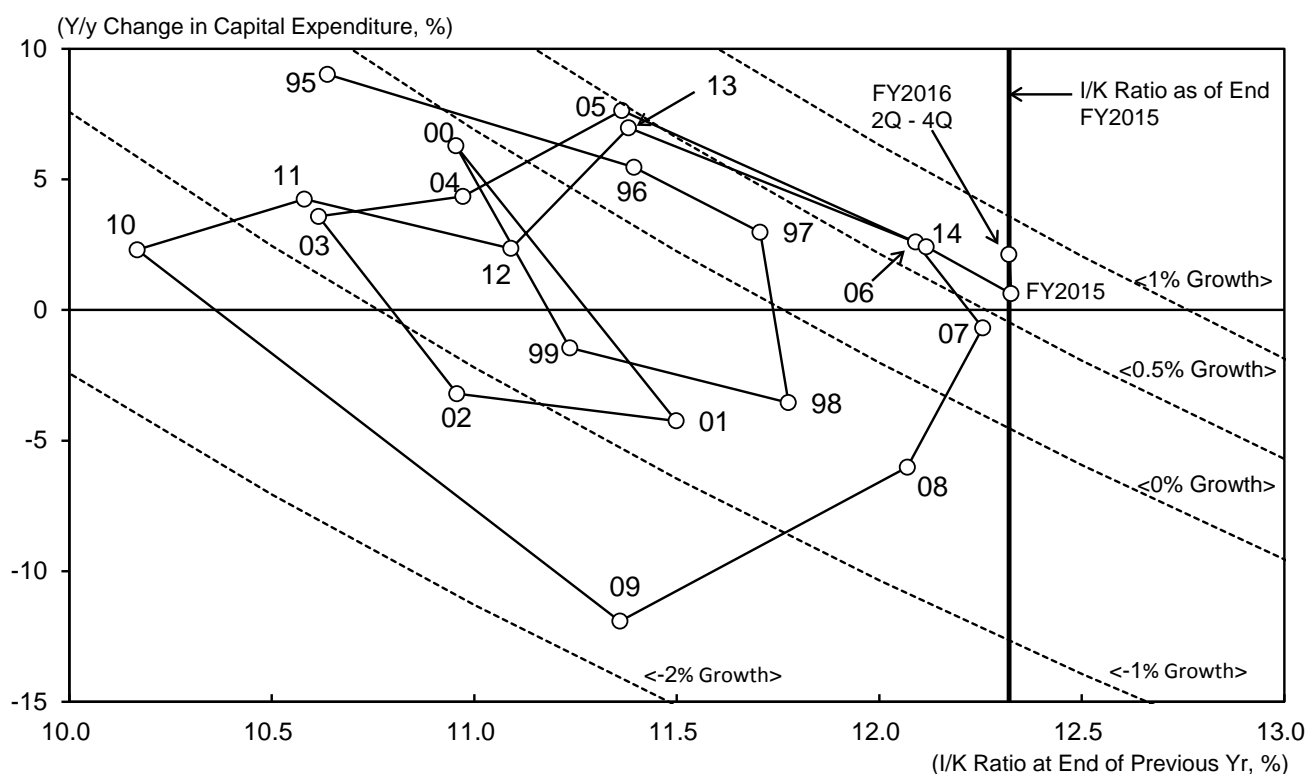
Real hourly wages, labor productivity, and labor's share defined as follows:
 Real hourly wages = nominal employee compensation / (no. of employees x hours worked) / CPI.
 Labor productivity = real GDP / (no. of employees x hours worked).
 Labor's share = nominal employee compensation / nominal GDP.
 Thus, real hourly wages are expressed as:
 Real hourly wages = labor productivity x GDP deflator / CPI x labor's share.
 Then, % change (Δ ln) is expressed as:
 Δ ln (real hourly wages) = Δ ln (labor productivity) + Δ ln (GDP deflator / CPI) + Δ ln (labor's share)
 Δ ln (labor productivity) = Δ ln (real GDP) - Δ ln (no. of employees) - Δ ln (hours worked)
 Δ ln (labor's share) = Δ ln (nominal employee compensation) - Δ ln (nominal GDP)

Source: Cabinet Office, US Bureau of Economic Analysis, Bundesbank, EU KLEMS; compiled by DIR.

However, it may be too much to expect investment in means of handling the labor shortage to become a leader in growth in capital expenditure overall. First of all, as is shown in Chart 10, the capital stock cycle is now in the maturation phase. In order to extend the stock accumulation phase, it is essential that the anticipated growth rate be increased. In addition, factory operating rates are at a lower level than they have usually been during past periods of growth in capital expenditure and this is a worrisome point. In order to predict whether or not capital expenditure will move into full swing, we have to confirm that the following conditions have been met: along with growth in production volume, factory operating rates must exceed a certain threshold and continue performing at that level.

Diagram: The Stock Cycle

Chart 10



Source: The Bank of Japan.

MPL > MPK and $r > MPK$

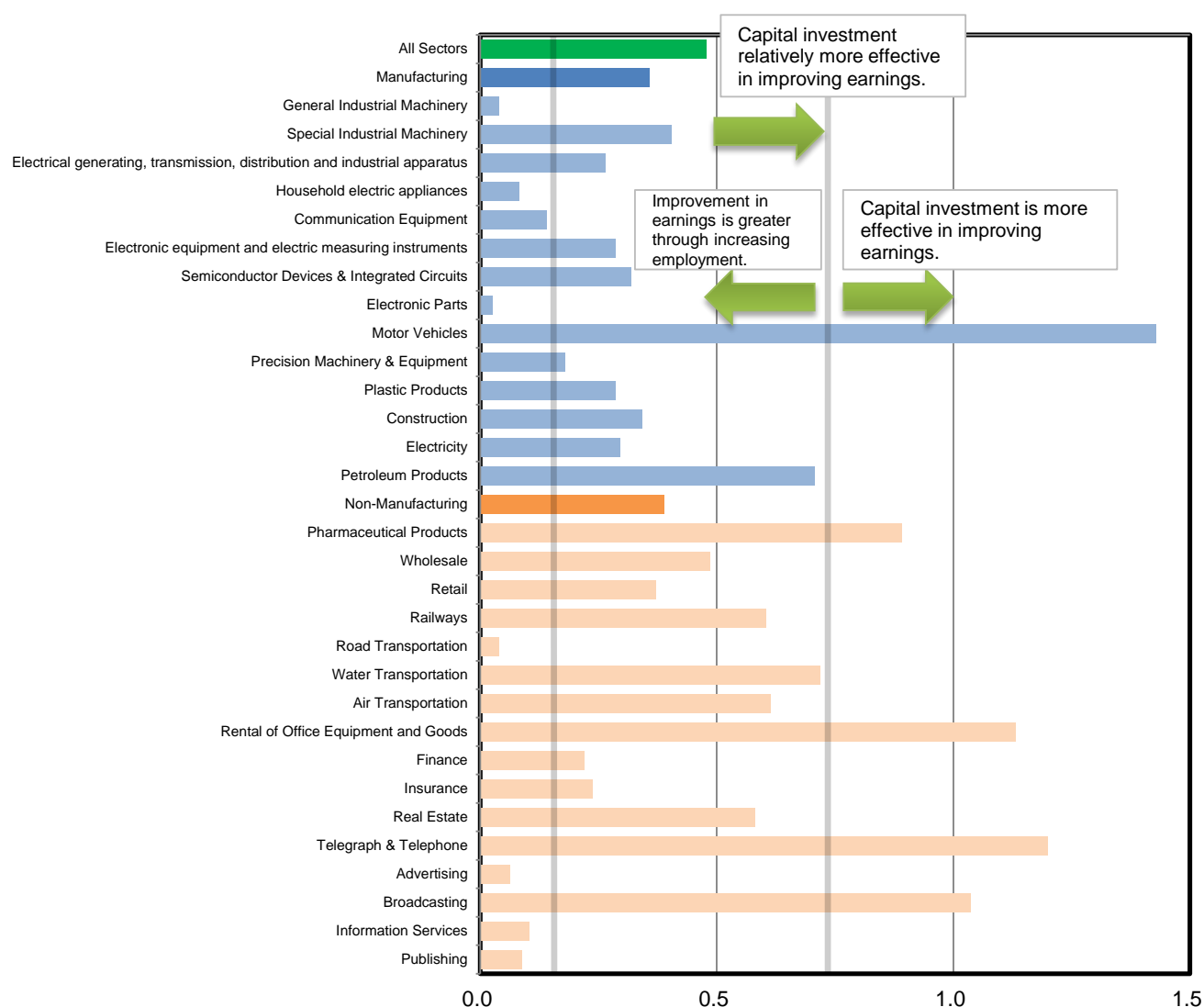
Finally, what cannot be ignored is the inconvenient truth that the marginal productivity of capital expenditure in Japan is generally lower than the cost of capital, and the marginal productivity of labor in a price comparison. Using the Japan Industrial Productivity Database to look at this issue on a per industry basis, we see that, with the exception of petroleum products and the telegraph & telephone industry, the marginal productivity of capital for all industries in Japan is generally lower than the cost of capital. Of course, these are merely mechanical calculation results and should be viewed with a certain grain of salt. However, from the viewpoint of improving corporate earnings and productivity, we can assume that Japan's economy is not built merely on the assumption that all one has to do is to increase capital expenditure and everything will fall into place. Rather, well-focused and selective investment is crucial.

Next we look at Chart 11 which shows relative marginal productivity of capital input as opposed to labor input (MPK/MPL), and how many times the relative price (r/w) this represents. When the index exceeds 1, this means that capital investment has been more effective in improving corporate earnings than increasing employment. Conversely, when the index is below 1, it is increasing employment that becomes more effective in improving earnings than capital investment. The latter seems to be the case

for industries other than motor vehicles, rental of office equipment and goods, telegraph & telephone, and broadcasting.

Of course, in comparison to capital investment, employment entails costs and risks that cannot be measured by this index since there are big differences between individuals. Plus there is the cost of training, and labor regulations which place certain constraints on how employees are used. Hence it may not seem fair to make use of merely numeric values in making a comparison. However, we can still use this measurement to make a general comparison between industrial averages. This allows us to make a list of industries in which capital investment has been more effective in improving corporate earnings than increasing employment. Again we see that, in addition to the industries mentioned previously, the industries which conform to this statement are petroleum products, pharmaceutical products, wholesale, railways, water transportation, air transportation, and real estate. In other words, generally speaking it is the non-manufacturing industries which conform to this category.

Comparison of $(MPK/MPL) \div (r/w)$ Rule by Industry **Chart 11**



Source: JIP Database; compiled by DIR.

Risk Associated with Fallacy of Composition

A final lingering problem is that of the possibility that we may unwittingly commit a fallacy of composition in moving from the micro to the macro. The idea that aggressive capital expenditure is required as a means of offsetting downward pressure on corporate earnings caused by wage increases originating in the shortage of manpower is one associated primarily with the labor intensive industries, mainly small and medium-sized enterprises in the non-manufacturing sector. However, the corporations which actually have more margin to become aggressive in capital expenditure are the large manufacturers.

The following provides a more detailed summary of the above issue. Small and medium-sized enterprises in the non-manufacturing sector which exhibit an especially strong sense of employment shortage are also high in labor's relative share. This means growing personnel expenses, which are thought to be a major factor holding down earnings. Hence it may also be possible to deduce that capital expenditure is being held down by growth in personnel expenses since this leads to a decline in corporate earnings. On the other hand, large manufacturers do not feel the shortage in employment to the same degree as small business and non-manufacturing industries. With labor's relative share at a low level, there should be limited downward pressure on capital expenditure originating in worsening of earnings.

Caution is advised regarding the risk involved in not carrying out improvements in labor productivity to match the increase in wages or in not carrying out capital expenditure as a result of having focused more on the macroeconomic view of spending versus income. This mistake results from the fallacy of composition, in which one naively assumes that what is true for a part is also true for the whole (micro vs. macro). Ultimately, capital expenditure is necessary in order for corporations to attain profitability. The result of not carrying out enough capital expenditure would be that if unit labor cost increases, corporations will be forced to make a choice between scaling down their business or suffering the hollowing out effect, or possibly even having to accept both.

Corporate Stance Toward Distribution of Profits

Chart 12

(Component percentages of total number of respondents, %)

	Large Corporations			Middle-size Corporations			Small Corporations		
	All	Manufacturing	Non-Manufacturing	All	Manufacturing	Non-Manufacturing	All	Manufacturing	Non-Manufacturing
Capex	62.3	72.1	57.3	51.0	66.5	46.2	41.4	50.9	39.5
Research & development	26.6	47.0	16.2	20.5	31.3	17.1	15.7	30.4	12.8
Capitalization of associate companies, M&A	10.8	8.4	12.0	5.7	4.2	6.2	3.2	2.9	3.3
Reduce interest-bearing liabilities	19.2	21.4	18.0	22.7	26.2	21.6	26.6	27.8	26.4
Increase number of new employees	7.0	4.1	8.5	18.2	13.3	19.6	21.3	19.7	21.6
Profit-sharing with employees	27.7	24.9	29.1	41.9	40.1	42.4	54.6	56.9	54.1
Compensation, bonuses to directors	3.7	2.6	4.3	8.7	6.4	9.5	22.4	15.8	23.7
Dividend payout to shareholders	56.5	58.2	55.6	34.2	34.2	34.2	8.6	7.1	9.0
Retained earnings	55.2	42.0	62.0	58.8	48.2	62.1	58.3	48.3	60.3
Others	1.8	0.3	2.5	1.5	1.2	1.6	2.5	1.3	2.7

Source: Cabinet Office, Ministry of Finance; Compiled by DIR.

Notes: 1) Component percentages of total number of respondents. Respondents were asked to provide answers to at least three out of a total of ten questions.

2) Questionnaire took place in Jan-Mar 2017 period, based on FY2016 business performance.

Economic Indicators and Interest Rates

Chart 13

Indicator	2016	2017				2018	FY15	FY16	FY17	FY18
	Oct-Dec	Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec	Jan-Mar				
	Actual		DIR estimates				Actual		DIR estimates	
Real GDP										
Q/q %, annualized	1.4	1.0	2.6	1.3	1.1	1.3				
Y/y %	1.6	1.3	1.5	1.5	1.5	1.5	1.2	1.2	1.5	1.1
Current account balance										
SAAR (Y tril)	20.6	18.4	20.2	21.1	21.7	22.1	17.9	20.2	21.5	23.1
Unemployment rate (%)										
	3.1	2.9	2.9	2.9	2.8	2.8	3.3	3.0	2.8	2.7
CPI (excl. fresh foods; 2015 prices; y/y %)										
	-0.3	0.2	0.5	0.9	1.0	0.9	-0.0	-0.2	0.8	0.9
10-year JGB yield										
(period average; %)	0.00	0.07	0.04	0.00	0.00	0.00	0.26	-0.05	0.00	0.00

Source: Compiled by DIR.

Note: Estimates taken from DIR's *Japan's Economic Outlook No. 193 Update (Summary)*.