

25 May 2018 (No. of pages: 15)

Japanese report: 22 May 2018

# Japan's Economy: Monthly Outlook (May 2018)

## Japan's economy to enter a temporary lull; our estimates of the effects of the rising price of crude oil on Japan's economy and corporate earnings

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### Summary

- In light of the 1<sup>st</sup> preliminary Jan-Mar 2018 GDP release we have revised our economic growth outlook. We now forecast real GDP growth of +1.0% in comparison with the previous year for FY18 (+1.2% in the previous forecast), and +0.8% in comparison with the previous year for FY19 (+0.8% in the previous forecast). Japan's economy is expected to enter a temporary lull, with the positive factors which came together in FY17 now appearing to be in the process of falling away. Until now exports had been accelerating due to the following overseas demand factors: (1) the inventory cycle moving into the recovery phase in the US, (2) China's economy speeding up in anticipation of the meeting of the National Congress of the Communist Party in October last year, and (3) the recovery in Europe's economy associated with the shift from austerity to an expansionary fiscal policy.
- Domestic demand may very possibly continue to mark time with positive factors providing support in the past having run their course. These include (1) the inventory cycle is nearing the end of the accumulation phase, (2) the replacement cycle for durables will very likely peak out soon, and (3) the trend of shifting employees from non-regular employee status to regular employee status, most likely a means of dealing with The Revised Labor Contracts Act, has run its course. However, assuming that negative growth will continue is an overly pessimistic view. For one thing, the effect of growth in the price of fresh foods on consumption restraint has completed its cycle. Meanwhile, the effects of bad weather in major destinations for Japanese exports have also dissipated, and effects of the tax cut in the US are expected to appear in the future.
- From the midterm point of view, the capital stock cycle is maturing in the US, Japan, and China, while in addition, a negative income effect is expected when the planned increase in the consumption tax comes along in October 2019. The outlook for Japan's economy in FY19 is hence a continued slowdown throughout the year. It is quite possible that Japan's economic growth rate peaked out in FY17.
- One of the risk factors in the future is the rising price of crude oil. If the average price of crude oil in 2018 continues along the lines of the recent prevailing price (market price) of around 70USD/bbl., the following effects on Japan's economy are expected in comparison with 2017 performance when the price of crude oil averaged around 50USD/bbl.: (1) Nominal import growth in simple terms is expected to be 2.9 tril yen (0.52% decline in nominal GDP), (2) Analysis of corporate earnings using industrial input-output table sees a decline of 1.6 tril yen, and (3) Estimate according to macro-economic model sees real GDP declining 0.22% and nominal GDP declining by 0.97%.

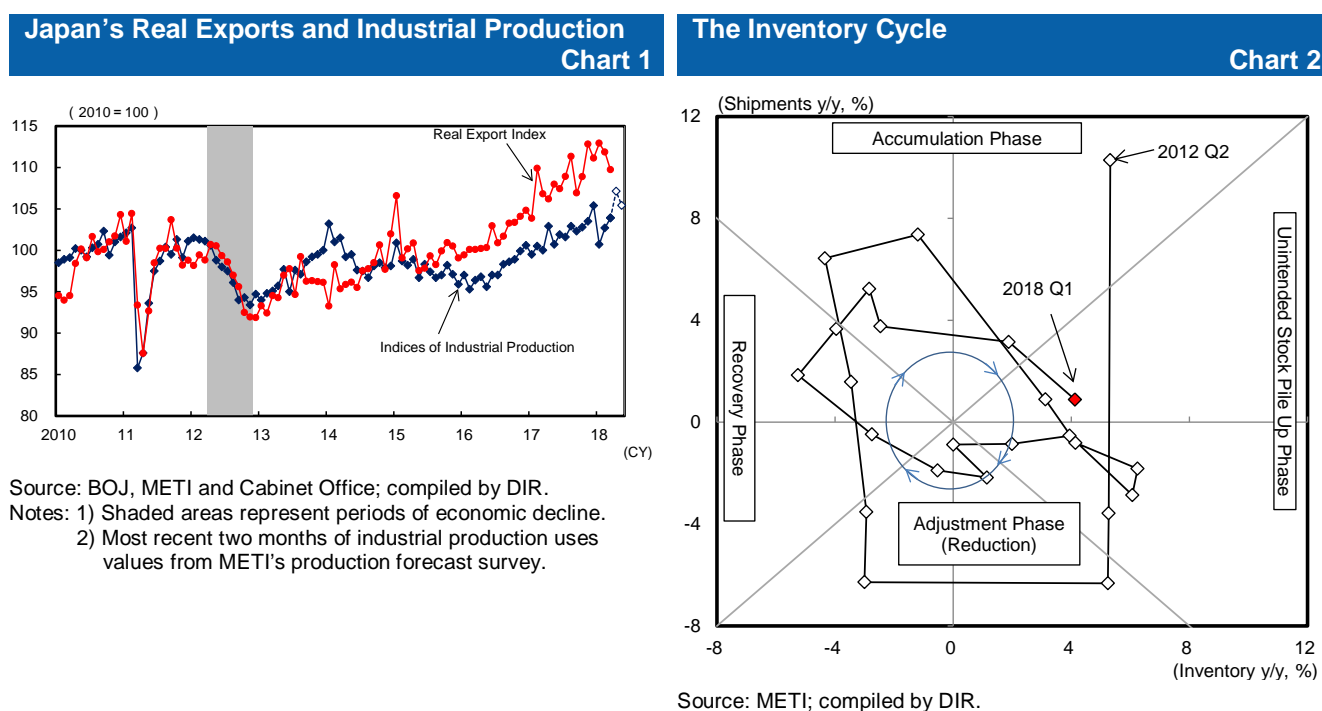
## 1. Future of Japan's economy: temporary lull seen, then slowdown in growth rate (+1.0 in FY2018 and +0.8% in 2019)

### *Temporary lull seen in the future*

The real GDP growth rate for Jan-Mar 2018 experienced negative growth for the first time in nine quarters at -0.6% q/q annualized (-0.2% q/q). Factors leading to the slide into negative growth included a major decline in exports, and all around negative growth for major domestic demand components.

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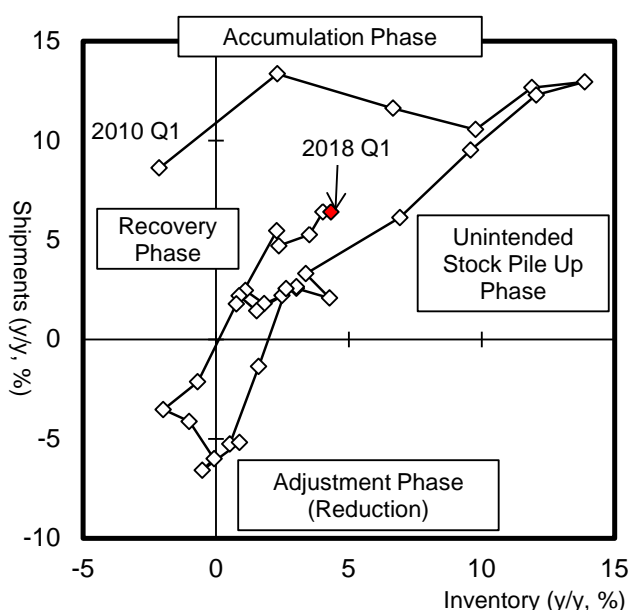
Japan's economy is expected to enter a temporary lull, with the positive factors which came together in FY17 now appearing to be in the process of falling away. Until now exports had been accelerating due to the following overseas demand factors: (1) the inventory cycle moving into the recovery phase centering on the US, (2) China's economy speeding up in anticipation of the meeting of the National Congress of the Communist Party in October last year, and (3) the recovery in Europe's economy associated with the shift from austerity to an expansionary fiscal policy.



Looking back we see that as of 2014 inventory was already accumulating, then the renminbi was devalued. Along with the stalling of China's economy, shipments declined causing a deterioration of business sentiment amongst both Japanese and US corporations, leading to a reduction in inventory in 2015. However, China's economy gradually regained composure throughout 2016, and coupled with expectations of a recovery in demand in the US following the presidential election, business confidence improved. The inventory cycle then re-entered the accumulation phase where it remained throughout 2017. Europe broke away from austerity originally stemming from the Greek financial crisis of 2015, and returned to an accommodative fiscal policy. This was one of the factors leading to the acceleration of economic growth in 2016-17. As for China's economy, leverage from policies implemented in 2017, the year the National Congress of the Communist Party of China met, likely contributed somewhat to the acceleration in economic growth in that country.

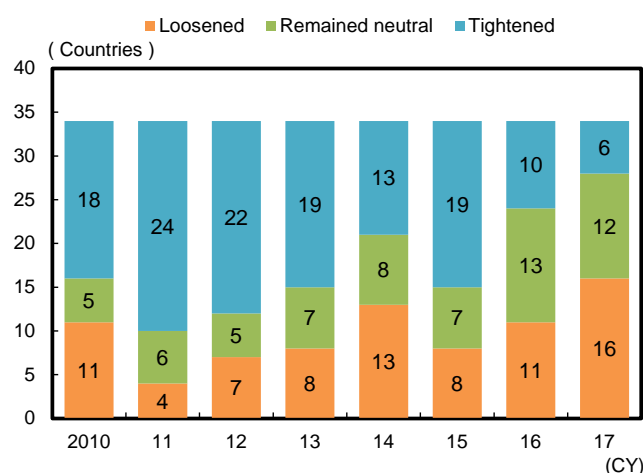
As of this point, the possibility that factors leading to accelerated growth will continue to be operative in the future is becoming less and less likely. In the US and Japan, the inventory accumulation phase is already reaching its end. And in Europe, the ECB has announced its plans to reduce quantitative easing, but it is doubtful whether the EU countries will be able to maintain the momentum of fiscal expansion. China's economy has been gradually slowing down since the meeting of the National Congress of the Communist Party in October last year. At the same time, just because the factors which led to acceleration of the economy in the past are now falling away does not mean that the global economy will fall into a recession. The slowdown is expected to be gradual with the occasional temporary speed-up adjustment phase. However, with the factors which have led to the acceleration of Japan's economy up to now fading into the background, mainly the expansion of exports and the benefits of the inventory accumulation phase, it is highly likely that Japan's economy will move toward a slowdown in the future.

**The US Inventory Cycle** Chart 3



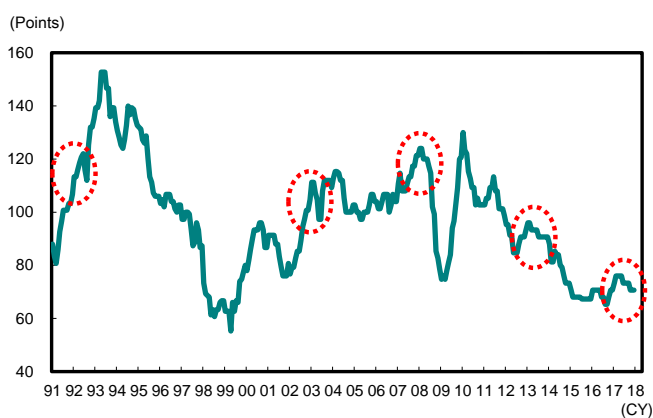
Source: US Dept. of Commerce, Haver Analytics; compiled by DIR.

**Fiscal Policies of the Advanced Nations** Chart 4



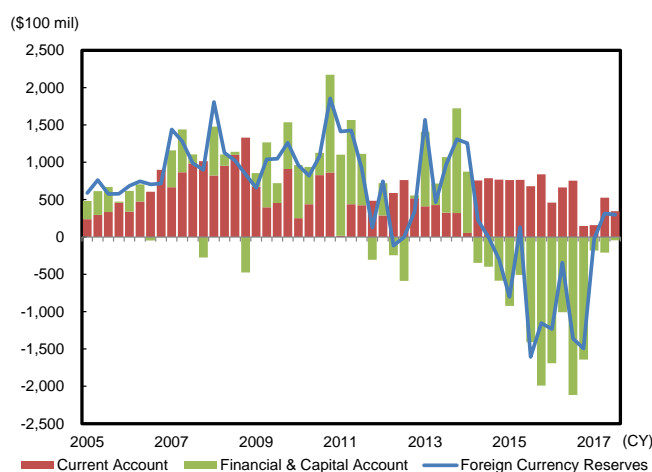
Source: IMF; compiled by DIR.

**China's Business Cycle Signal Index** Chart 5



Source: China National Bureau of Statistics, People's Bank of China, CEIC; compiled by DIR.

**China's Balance of International Accounts** Chart 6



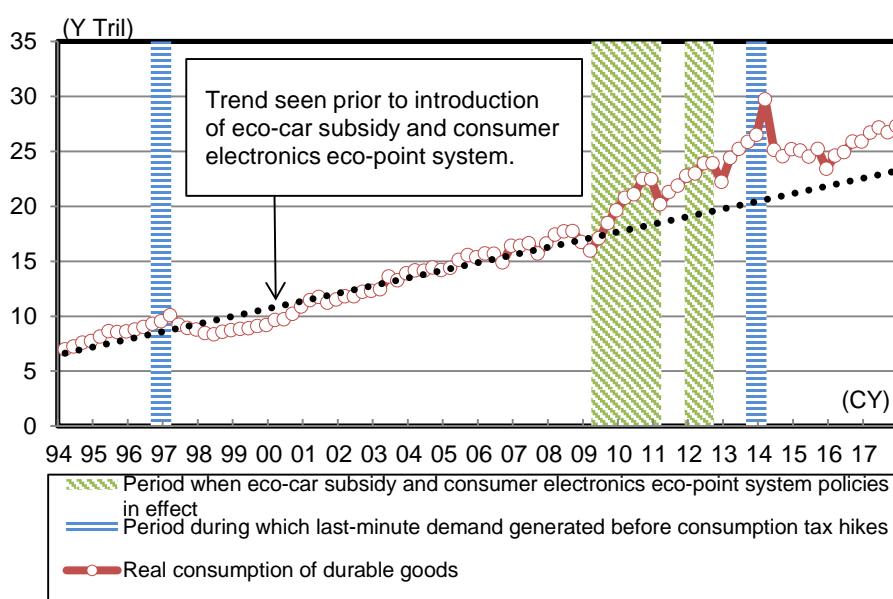
Source: Haver Analytics, State Administration of Foreign Exchange; compiled by DIR.

### *Both domestic and overseas demand lack factors which could trigger accelerations*

Domestic demand may very possibly continue to mark time with positive factors providing support in the past having run their course. As was mentioned previously, these include (1) the inventory cycle is nearing the end of the accumulation phase, (2) the replacement cycle for durables centering on light vehicles will very likely peak out soon, and (3) the trend of shifting employees from non-regular employee status to regular employee status, most likely a means of dealing with The Revised Labor Contracts Act, has run its course.

Chart 7 shows the period when the eco-car subsidy and the consumer electronics eco-point system were in effect, as well as periods up through the Jan-Mar period of 2014 during which last minute demand was generated before consumption tax hikes. The chart indicates that the consumption amounts for durables during periods of last minute demand greatly exceed past trends. In other words, these various policies resulted in pre-consumption over demand for durables, and very possibly may have artificially raised the amount of consumption. This phenomenon is thought to have something to do with the decline in consumption of durables up until around 2015. Then with around eight years having passed since the introduction of the eco-car subsidy and the consumer electronics eco-point system, and more than three years since the previous instance of increase in the consumption tax, durable goods purchased during those periods were up for replacement again by 2016 and beyond. However, the effect of the replacement cycle doesn't last forever, and signs of replacement demand peaking out are already now on the horizon.

**Real Consumption Amount of Durables** **Chart 7**

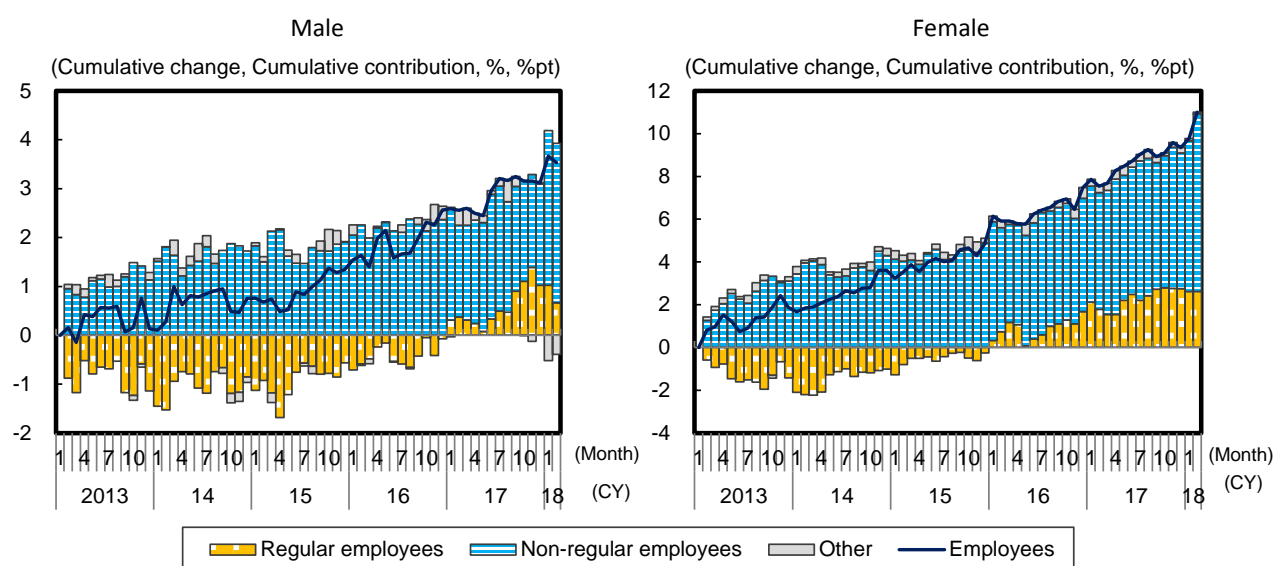


Source: Cabinet Office; compiled by DIR.

Meanwhile, Chart 8 illustrates the trend in switching non-regular employees to regular employee status since around 2016. This trend appears to have run its course just recently. One of the factors whose influence cannot be ignored here is that of The Revised Labor Contracts Act. The new law stipulates that “Where an employee on a fixed term contract has had a total period of continuous employment of five years or more with one employer, that employee will now be entitled to apply for an indefinite term Labor Contract (“Permanent Contract”).” However, the change applies only to fixed term contracts beginning after April 2013. Many Japanese corporations decided to make the switch to permanent contracts in advance of the April 2018 date of its going into effect, in some cases taking the form of changing an employee’s status to regular employee. Hence the trend toward the switch in employment status accelerated in 2017<sup>1</sup>. This temporary factor has had the effect of raising household income. However, this effect is now beginning to disappear.

## Factor Analysis of Employees

Chart 8



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

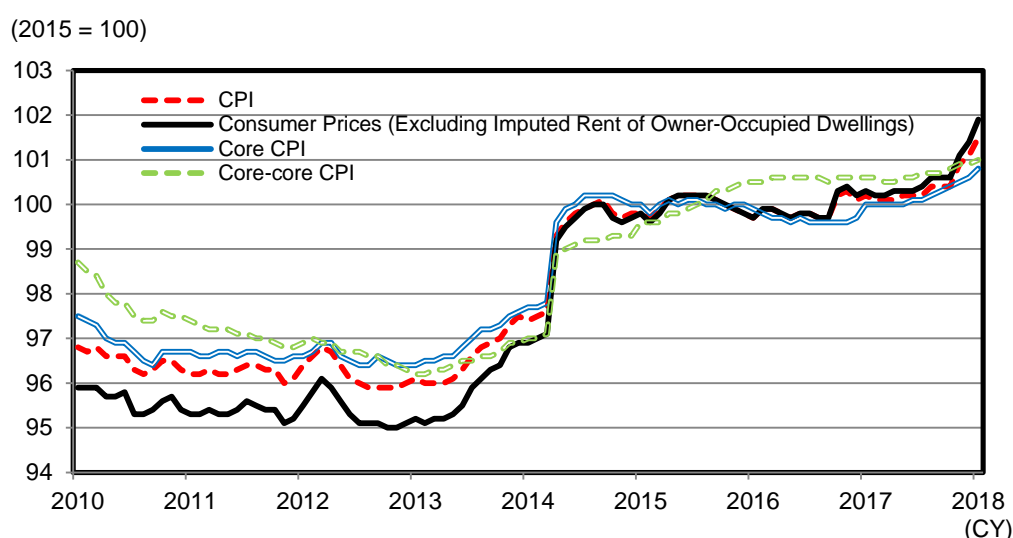
<sup>1</sup> Another possible reason for the increase in change of employee status may merely be the fact that Japan’s working force population has recently grown despite the problem of the declining birthrate and aging society. This is because there are more elderly persons working, and especially, the number of women in the work force has risen considerably, such that Japan has now caught up with some Western countries such as the US in terms of the percentage of women working. However, the population problem has not changed and the problem of the labor shortage is only getting worse. Hence corporations may also have decided that it would be best to have more regular employees despite their higher salary because corporate management can ask them to put in more overtime than they can non-regular workers. In other words, this may be a last-minute attempt for corporations to protect themselves against future problems caused by the shortage of labor.

### *No need for excessive concern*

Despite the above developments, assuming that negative growth will continue is an overly pessimistic view. For one thing, the effect of growth in the price of fresh foods on consumption restraint has completed its cycle. The important thing in predicting consumption is the trend in consumer prices excluding imputed rent of owner-occupied dwellings, which is included in the category of household expenditure. This index continued to mark time from the aftermath of the 2014 consumption tax hike up until 2016. Then it started to increase again in 2017 and beyond. Its growth rate has accelerated rapidly since the end of 2017. What triggered this movement was the sharp rise in the prices of energy and fresh foods. If nothing else, at least the price of fresh foods has ceased rising. On the other hand, the negative effects of the price of crude oil remain something to keep an eye on, but it is still too early to assume the possibility of recession. Meanwhile, the effects of bad weather in major destinations for Japanese exports have also dissipated, and effects of the tax cut in the US are expected to appear in the future.

#### Trends in CPI Indices

Chart 9



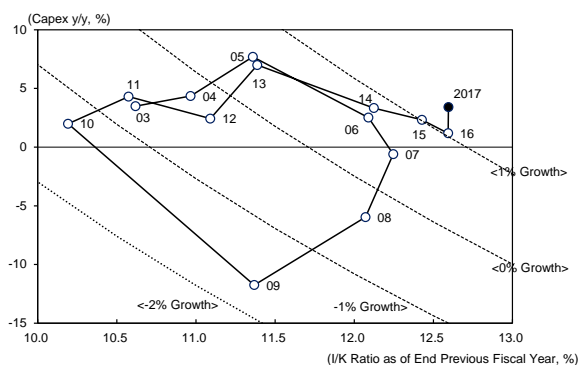
Source: Ministry of Internal Affairs and Communications; compiled by DIR.

### *Japan's economic growth rate peaked out in FY2017*

From a more long-term point of view, Japan's economic growth rate is expected to slow down to near cruising speed. As long as the shortage of labor continues, employee compensation should recover again and gain more improvements, and the reactionary decline following replacement demand for durables will pass. The negative effect of the US inventory cycle will also disappear given time, and the slowdowns in the Chinese and European economies will also gradually settle down.

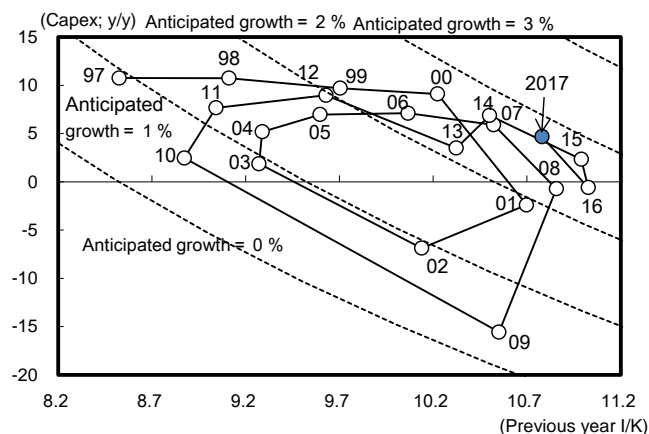
However, as the recovery phase from the last recession grows longer, it is difficult to expect major growth in capex in either the Japanese or the global economy as the maturation phase grows nearer. Without an additional stimulus package, the margin for increasing the growth rate is limited. Furthermore, with a negative income effect expected from the consumption tax hike planned for October 2019, we expect Japan's economy to continue to slow down throughout FY2019.

**Japan's Capital Stock Cycle** Chart 10



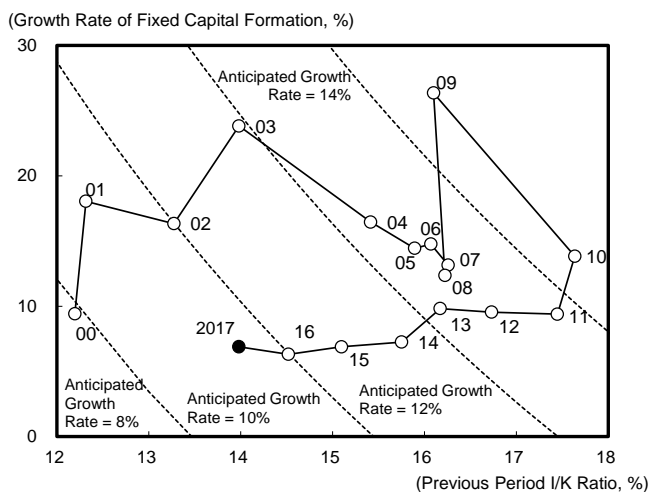
Source: Cabinet Office, BOJ; compiled by DIR.  
 Note: The dotted lines are hyperbolic curves corresponding to the current anticipated growth rate.

**US Capital Stock Cycle** Chart 11



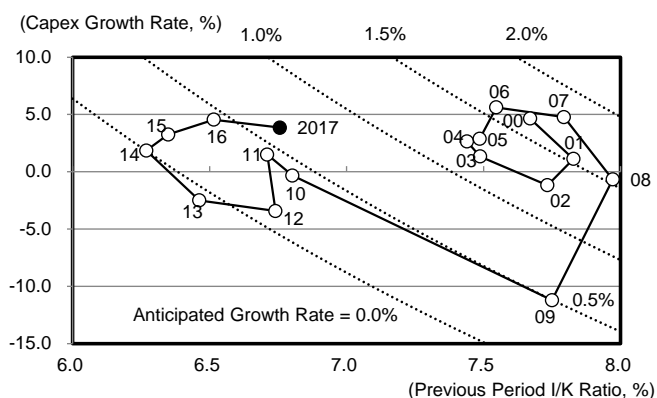
Source: BEA, Haver Analytics; compiled by DIR.

**China's Capital Stock Cycle** Chart 12

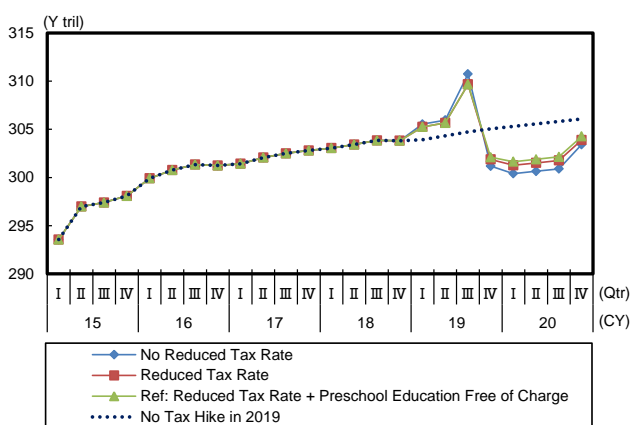


Source: China Statistical Year Book, CEIC, Haver Analytics, World Bank; compiled by DIR.

**Europe's Capital Stock Cycle** Chart 13



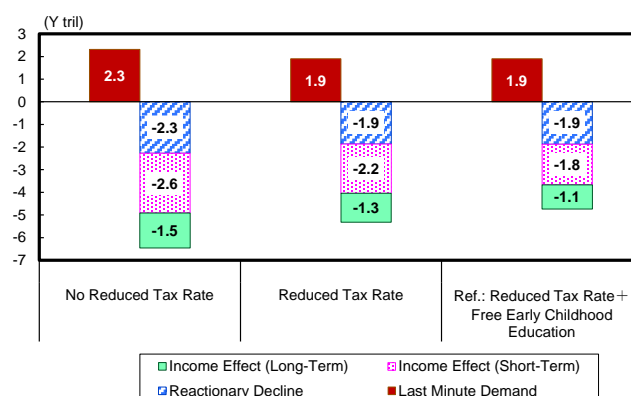
Source: Haver Analytics, Eurostat; compiled by DIR.  
 Note: Dotted lines represent anticipated growth rate.

**Effects of Consumption Tax Hike (Time Series)**  
**Chart 14**


Source: Cabinet Office; compiled by DIR.

Notes: 1) Annualized value. Future exogenous variables are placed so as to grow 1% per year from recent performance values.

- 2) The reduced tax rate also reduces the effects of last minute demand and reactionary decline, but according to assumptions used, has no effect on preschool education. Preschool education is completely free for ages 3-5, but for ages 0-2 it may be limited to households with an income of less than ¥3,600,000. However, this may be changed to household income of less than ¥2,600,000. Chances are high that actual effect of pushing up consumption may be somewhat relaxed.
- 3) These estimates are based on certain assumptions, and figures should be taken with a certain grain of salt. Moreover, they differ from figures in our economic outlook.

**Effects of Consumption Tax Hike (by Scenario)**  
**Chart 15**


Source: Cabinet Office; compiled by DIR.

- Notes: 1) Income effect as estimated here has short-term influence based on marginal propensity to consume. In the long-term, a negative income effect could occur equivalent to the following formula: tax burden x average propensity to consume – income effect (short-term). Hence its influence is also shown here.
- 2) Last minute demand covers period from 2013 Q3 to 2014 Q1. Reactionary decline covers the period from 2014 Q2 to 2015 Q1.
  - 3) Preschool education is completely free for ages 3-5, but for ages 0-2 it may be limited to households with an income of less than ¥3,600,000. However, this may be changed to household income of less than ¥2,600,000. Chances are high that actual effect of pushing up consumption may be somewhat relaxed.
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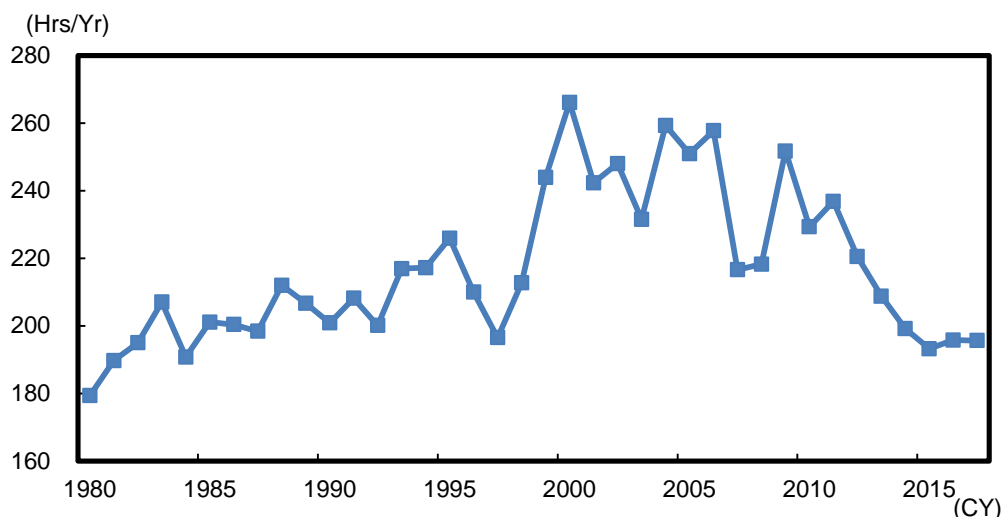
### Outlook by demand component

Looking at the outlook by demand component, to begin with personal consumption is expected to continue experiencing some ups and downs. An increase in employee compensation associated with the further tightening of the labor market should provide underlying support for personal consumption. However, growth in wages associated with the shortage of labor may be offset by corporations through the flattening of the wage curve and cutting back on overtime, and this could slow down the pace of growth in employee compensation and therefore consumption. Hence we urge caution on this point. As is indicated in Chart 16, there is a tendency for employees to perform voluntary unpaid overtime, which may be good news, but on the flip side, if this tendency should spread to management and specialized or professional workers, employee compensation on a macro level will ultimately stagnate.

Meanwhile, as was mentioned previously, corporate handling of The Revised Labor Contracts Act in the form of shifting employees from non-regular employee status to regular employee status made headway in 2017, and is considered to have improved the income environment, but more recently, this trend has been gradually moving toward slacking off. In addition, it is impossible to ignore the fact that the positive effect of replacement demand for durables centering on automobiles on pushing up consumption has diminished. At the same time, however, in the short-term the effect of growth in the price of fresh foods on consumption restraint has completed its cycle, and as of this point there is not an environment which could cause the ebb of consumption to continue.



**Estimated Unpaid Overtime Hours** **Chart 16**



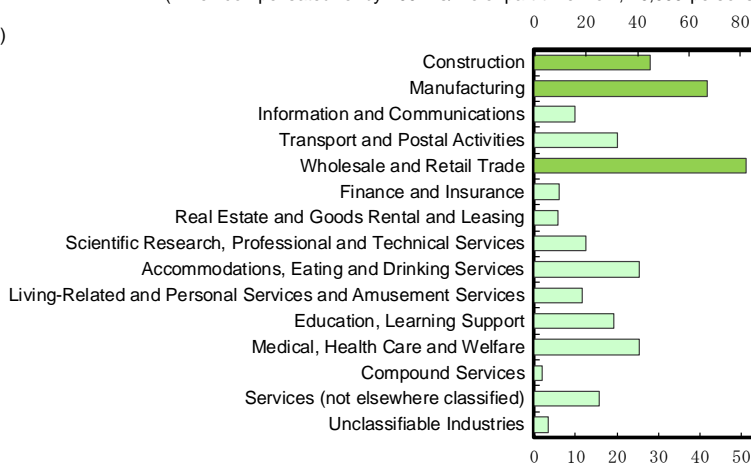
Source: Ministry of Health, Labour, and Welfare, Ministry of Internal Affairs and Communications; compiled by DIR.  
 Note: Estimates are based on the responses of workers on a labor force survey regarding working hours, from which we subtracted the responses of corporations regarding working hours on the Monthly Labor Survey.

**Estimated Effects of Overtime Regulations (Risk Scenario)** **Chart 17**

**Total Overtime of More than 60-Hrs per Month**

	(10,000 hrs)
Construction	+ 4,508
Manufacturing	+ 6,709
Information and Communications	+ 1,562
Transport and Postal Activities	+ 4,501
Wholesale and Retail Trade	+ 8,227
Finance and Insurance	+ 981
Real Estate and Goods Rental and Leasing	+ 898
Scientific Research, Professional and Technical Services	+ 2,014
Accommodations, Eating and Drinking Service:	+ 4,050
Living-Related and Personal Services and Amusement Services	+ 1,857
Education, Learning Support	+ 3,068
Medical, Health Care and Welfare	+ 4,065
Compound Services	+ 302
Services (not elsewhere classified)	+ 2,517
Unclassifiable Industries	+ 547
Management	- 1,817
Drivers (60-80 hrs overtime)	- 1,260
<b>Total</b>	<b>42,727</b>
Labour Force Survey Excess Count (x0.9)	38,454

(When compensated for by 100 hrs/mo of part-time work, 10,000 persons)



(When compensated for by 160 hrs/mo of work by regular workers, 10,000 persons)

**Regulated Overtime Hours Converted to Labor Force**

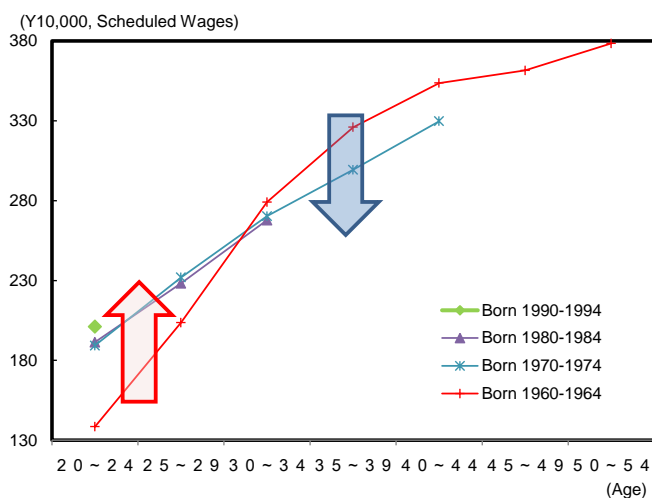
Regular Workers, 160 hrs/month	2.4 mil persons
Part-Time Workers, 100 hrs/month	3.85 mil persons

**Overtime Pay -8.5 tril yen/yr = Downward Pressure of 3% on Employee Compensation**

Source: Ministry of Internal Affairs and Communications, Ministry of Health, Labour, and Welfare; compiled by DIR.  
 Note: The term "Management" refers to all jobs with a managerial function. The term "Drivers" includes operation of all kinds of transport equipment and machinery. This includes the operation of trains and airplanes. According to labor force surveys, there is a chance that in the case of many of these jobs, unpaid overtime and break time may in some cases be counted as work time. Therefore 10% is subtracted from the estimate with reference to the difference between the labor force survey and the monthly labor survey.

Wage Curve by Birth Year and by Age Group

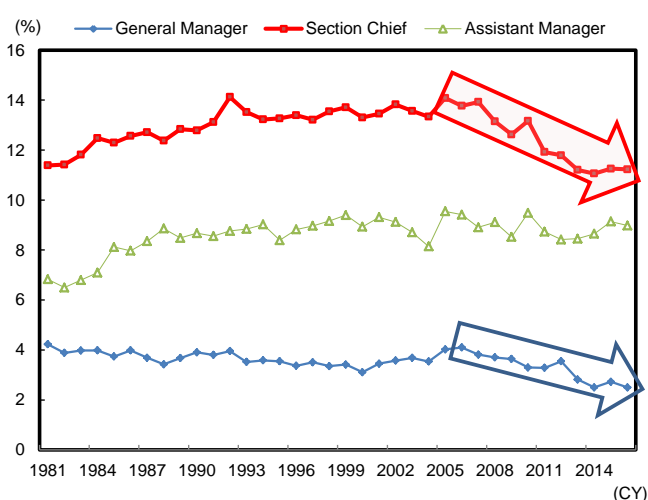
Chart 18



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

Proportion of Management Positions Accounted for by Workers in their 40s

Chart 19



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

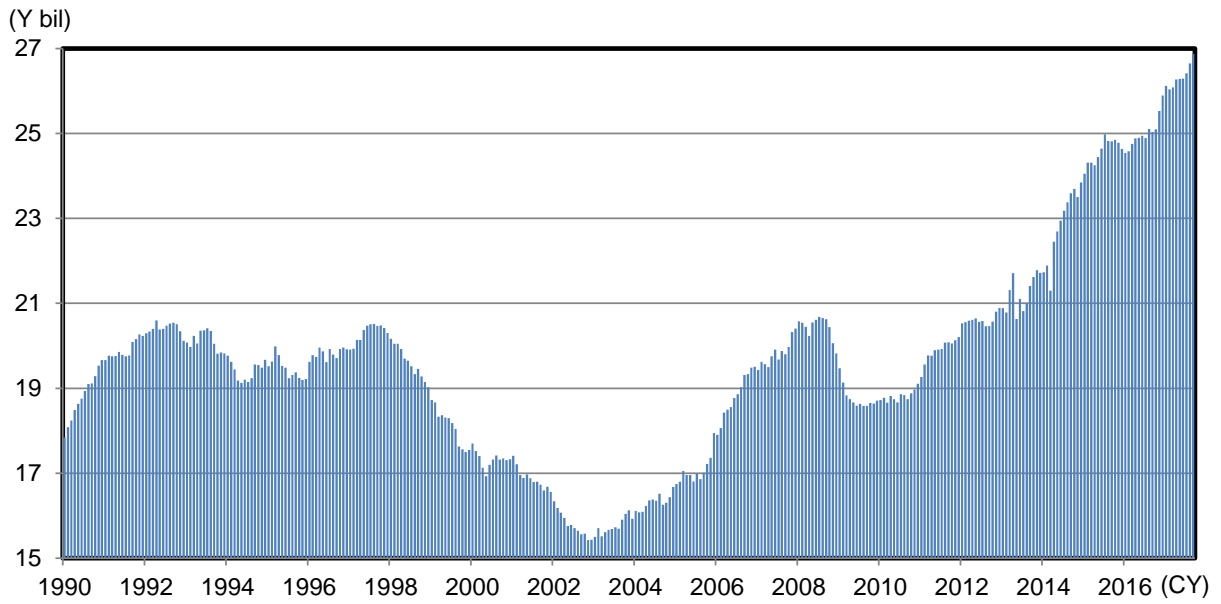
On the other hand, housing investment is expected to continue its gradual decline. The positive effects of strategies in dealing with inheritance tax are beginning to disappear, and the reactionary decline, while moderate, continues. Meanwhile, in addition to the concerns that future declines in housing investment could have a negative effect on Japan's economic growth, the decline in construction demand could cause a ripple effect on related industries, and hence caution is required. Another possibility that must be kept in mind is that if housing prices begin to collapse in the future due to oversupply, growth in other demand components such as consumption could also be hindered through the effects of the negative wealth effect. However, starting around autumn of 2018 a temporary recovery could very well occur due to the beginnings of last-minute demand in anticipation of the increase in the consumption tax planned for October 2019.

Capital expenditure is expected to experience moderate growth. Fears of further yen appreciation will recede temporarily, and ample free cash flow for corporations is expected to provide underlying support. Meanwhile, investment in labor-saving and rationalization due to the continuing labor shortage is expected to continue its growth, as well as investment in research & development oriented toward increasing profitability. However, as was mentioned previously, there is a declining need to accumulate overall capital stock, while in addition, suppliers of capital expenditure related goods may be nearing the limit of supply constraints, and hence caution is required. As for public investment, the positive effect of the supplemental budget is gradually disappearing, and public investment is expected to move into a gradual decline.

As for exports, due to the above mentioned factors, exports are expected to head toward a cooling off phase, but then later should recover to an expansion at cruising speed. Risks are considered to be well-balanced on both the up-side and the downside. On the up-side there is the effect of the US tax cut (expected to have a direct effect on capex and housing investment in the US itself, while a negative wealth effect is expected through movements on the financial markets, and capital outflow from the emerging nations seen), while on the downside, there are the negative effects of interest rate hikes centering on the US, as well as the factor of the US trade policy which is becoming increasingly protectionist. These factors will require continued caution.

## Long-Term Trends in the Balance of Machinery Orders

Chart 20



Source: Cabinet Office; compiled by DIR.

Note: Excluding ships. Figures are seasonally adjusted.

## 2. Estimated effects of rising price of crude oil on Japan's economy and corporate earnings

*If price exceeds WTI 70 dlrs, nominal GDP (simple calculation) could decline by 2.9 tril yen (0.52%)*

The price of crude oil continues to rise. The WTI crude oil futures price bottomed out at 30 dlrs/barrel in February 2016, and then moved into a growth trend. Aside from temporary adjustments after that point, the price of crude oil has continued to rise, hitting the mid-40s in the dlrs/barrel price in June 2017, and continuing to grow since that time. By May 2018 it had exceeded 70 dlrs/barrel. This was the first time the price of crude oil exceeded 70 dlrs/barrel since November 2014, a total of three years and six months.

The major factors behind the rising price of crude oil include the following: (1) Rising demand due to the expanding global economy, (2) Supply (caused by OPEC production cuts), and (3) Uncertainty (the chaotic situation in the Middle East centering on Iran and Saudi Arabia). There is a good chance that the price will continue growing as long as these factors remain unchanged.

With things as they are, it has become self-evident that the Japanese economy, with its dependency on imports for energy resources including, and especially, crude oil, as well as Japanese corporations, will be on the receiving end of effects which cannot be ignored. Japan's imports of crude oil and unrefined oil totaled 7.2 tril yen in 2017 on a performance basis. The WTI crude oil futures price averaged approximately 50 dlrs/barrel in 2017. In a simple calculation this means that the import price in Japan rose by 40% or approximately 2.9 tril yen in terms of growth in import value, bringing direct downward pressure on nominal GDP of approximately 0.52%.

And this is merely the direct effect. When we look at the ripple effects, we see a number of examples such as the deterioration of corporate profits associated with the rising price of crude oil, which has the effect of suppressing capital expenditure. Then there is the effect of suppressing consumption once price pass-through takes place and final products become more expensive. Meanwhile, there is the problem of who is forced to carry the ultimate burden of the cost of rising prices of crude oil – corporations, or households? In this chapter we will examine these issues, and present the results of our estimates using the industrial input-output table and the DIR macro-economic model.

*Estimates using industrial input-output table sees downward pressure of 1.6 tril yen on corporate earnings (manufacturing 0.4 tril yen, non-manufacturing 1.1 tril yen)*

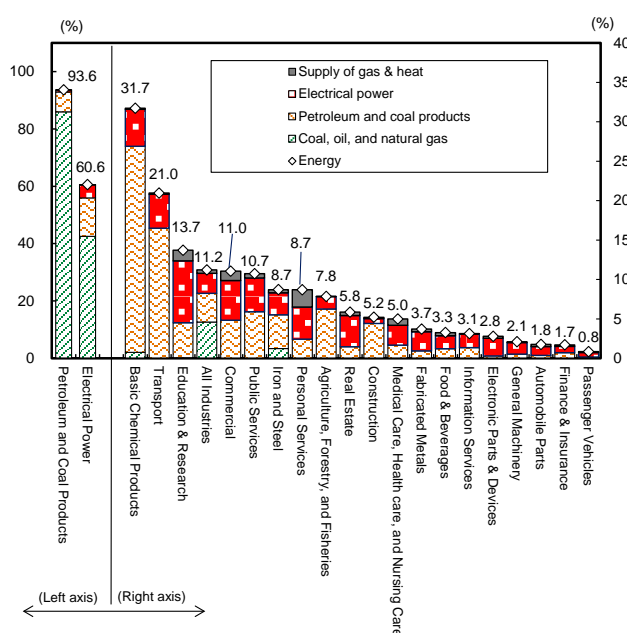
First, we perform an estimate of the influence that crude oil price highs have on the corporate sector using industrial input-output table. High crude oil prices are a factor leading to the deterioration of profits for the corporate sector. In Japan, which depends on imports for the majority of its resources, corporations benefitting from crude oil price highs are restricted to a limited circle. For most Japanese corporations, this has a purely negative effect. The high price of crude oil causes an increase in the variable cost ratio, which serves, in the case of most corporations, to increase their break-even point, causing profitability to deteriorate.

Of course, the effect of downward pressure on profits depends greatly on the industry and the corporate cost structure, hence the impact is not uniform. First we look at Chart 21, which shows the proportion of intermediate inputs of corporations accounted for by energy in different industries. Here we see that there are only two industries, petroleum & coal products and electrical power, for whom crude oil represents a direct input. For the majority of industries, crude oil is not a direct input, but rather, inputs are in refined petroleum & coal products and electrical power. In other words, most corporations do not experience crude oil price highs as an immediate effect, but rather begin to feel the disadvantages once price pass-through has occurred on petroleum & coal products and electrical power.

Chart 22 presents estimates of the influence which crude oil price highs have on corporate profits (or operating surplus) based on this input-output structure. The result we obtained was that, on an all-industry basis, there is downward pressure on corporate profits totaling 1.6 tril yen. However, it should be noted that this estimate is based on input-output structure as of 2011. The value for the price pass-through ratio also uses the past average. Therefore the results of this estimate must be taken with a certain grain of salt. As for the assumptions used in this estimate, growth in the price of crude oil is set at 20%. Since the average WTI price was around 95 dlrs/barrel in 2011, this assumption pretty much matches the degree of increase of the current price of crude oil on a performance basis.

Looking at results by industry, we see that manufacturing suffers downward pressure on profits of 0.4 tril yen, while non-manufacturing experiences 1.1 tril yen in downward pressure. Looking at specific industries we see that the majority of Japanese corporations suffer from deterioration of profits. On the other hand, if we use the price pass-through ratio of the past, we see that petroleum & coal products experiences the disadvantage of an increased input price, but since sales prices also increase, the result is that this industry gains some levity in terms of profits.

**Proportion of Intermediate Inputs Accounted for by Energy by Industry**  
Chart 21



Source: Ministry of Economy, Trade and Industry; compiled by DIR.

**Effect of 20% Increase in Price of Crude Oil on Corporate Profits (or Operating Surplus)**  
Chart 22

	Amount Ybil	Rate of Change %
All Industries	-1,557	-1.9
Manufacturing	-422	-3.9
Food & Beverages	-22	-0.6
Pulp, Paper, and Paper Products	-13	-3.4
Chemicals	-205	-14.5
Petroleum and Coal Products	39	26.2
Ceramics, Stone, and Clay Products	-21	-5.2
Iron and Steel	-122	-25.8
Non-ferrous Metals	-7	-6.2
Fabricated Metals	-7	-2.2
General Machinery	-11	-1.0
Electrical Machinery	-5	-1.6
Information and communication electronics equipment	-2	-1.5
Electronic Parts and Devices	-6	-7.1
Transport Equipment	-18	-2.3
Precision Machinery	-1	-1.0
Non-manufacturing	-1,135	-1.5
Agriculture, Forestry, and Fisheries	-31	-0.9
Mining	-6	-22.8
Coal, Crude Oil, Natural Gas	13	125.0
Recyclable Resource Collection & Processing	-1	-5.7
Construction	-93	-20.7
Electrical Power	-203	-24.8
Wholesale & Retail	-140	-0.9
Finance & Insurance	-8	-0.1
Real Estate	-8	-0.1
Transport	-212	-10.1
Information and communication	-21	-0.5

Source: Ministry of Economy, Trade and Industry, Bank of Japan; compiled by DIR.

Note: Estimated values based on input-output structure of 2011.

### Macrosimulation: Increase of WTI 20 dlrs/barrel, real GDP -0.22%, nominal GDP -0.97%

As was mentioned in the previous section, in addition to effects on the corporate sector, crude oil price highs also influences the household sector through damage to actual income. Here we used the DIR macro-economic model to perform a comprehensive analysis of influence on Japan's overall economy. The results are shown in Chart 23. According to the results of the simulation, if the price of crude oil increases by 20 dlrs/bbl, real GDP between the years 2018 and 2020 will receive downward pressure as follows: -0.22% in 2018, -0.26% in 2019, and -0.24% in 2020.

Looking at influence by individual demand component, we see that declines in personal consumption and housing investment can be expected due to a decline in real wages. In addition, the decline in corporate profits will likely bring downward pressure on capex. A part of this decline in corporate profit will be felt as a decline in wages causing households to carry a portion of the burden. The decline in corporate income will also contribute to a decline in household demand. Moreover, prices will be forced upwards due to the increase in the price of crude oil. This will likely lead to a decline in real interest rates, which should promote housing investment and capex, but this positive effect is expected to be less than the negative effect of decline in income.

As for prices, the rise in the price of imports will push up CGPI and core CPI, causing the domestic demand deflator to increase considerably. Meanwhile, the import deflator, which is an item deducted from GDP, will also rise considerably, causing the GDP deflator to decline. As a result, nominal GDP will be pushed down even further than real GDP. The level of nominal GDP between 2018 and 2020 will therefore be effected as follows: -0.97% in 2018, -0.90% in 2019, and -0.98% in 2020.

As was confirmed in the above calculations, the rising price of crude oil may very well be extremely disadvantageous for the Japanese economy. Hence caution is required regarding the risk of further increases.

#### Effects of Fluctuations in the Price of Crude Oil on Japan's Economy

#### Chart 23

		Real GDP	Real Personal Consumption	Real Housing Investment	Real Capital Expenditure	Real Exports	Real Imports	Nominal GDP	GDP Deflator
		%	%	%	%	%	%	%	%
\$20/bbl Increase in Price of Crude Oil	FY2018	-0.22	-0.35	-0.67	-0.86	-0.17	-1.10	-0.97	-0.74
	FY2019	-0.26	-0.45	-1.02	-0.96	-0.18	-1.32	-0.90	-0.64
	FY2020	-0.24	-0.39	-0.82	-1.04	-0.18	-1.25	-0.98	-0.74

		Current Account Balance / Nominal GDP	Import Price	Export Price	CGPI	Core CPI	Industrial Production	Tertiary Industry Activity Index	All Industry Activity Index
		%pt	%	%	%	%	%	%	%
\$20/bbl Increase in Price of Crude Oil	FY2018	-0.89	7.52	0.89	1.19	0.42	-0.42	-0.22	-0.24
	FY2019	-0.87	7.59	0.89	1.22	0.62	-0.50	-0.26	-0.29
	FY2020	-0.97	7.60	0.89	1.25	0.58	-0.48	-0.25	-0.28

Source: Compiled by DIR.

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	FY17	FY18 (Estimate)	FY19 (Estimate)	CY17	CY18 (Estimate)	CY19 (Estimate)
<b>Main economic indicators</b>						
Nominal GDP (y/y %)	1.6	1.2	1.8	1.4	1.1	1.9
Real GDP (chained [2011]; y/y %)	1.5	1.0	0.8	1.7	0.9	1.1
Domestic demand (contribution, % pt)	1.1	0.6	0.6	1.1	0.5	1.0
Foreign demand (contribution, % pt)	0.4	0.3	0.2	0.6	0.3	0.1
GDP deflator (y/y %)	0.1	0.3	1.0	-0.2	0.3	0.8
Index of All-industry Activity (y/y %)*	1.8	1.3	0.9	1.6	1.3	1.2
Index of Industrial Production (y/y %)	4.1	2.6	1.4	4.4	2.4	2.0
Index of Tertiary Industry Activity (y/y %)	1.0	1.1	0.7	0.7	1.1	0.9
Corporate Goods Price Index (y/y %)	2.7	2.7	3.3	2.3	2.7	2.8
Consumer Price Index (excl. fresh food; y/y %)	0.7	1.0	1.4	0.5	1.0	1.2
Unemployment rate (%)	2.7	2.5	2.5	2.8	2.5	2.4
Government bond yield (10 year; %)	0.05	0.06	0.06	0.05	0.06	0.06
Money stock; M2 (end-period; y/y %)	3.7	2.0	1.8	4.0	2.4	1.9
Balance of payments						
Trade balance (Y tril)	4.4	3.2	4.0	5.0	3.1	3.3
Current balance (\$100 mil)	1,921	1,731	1,835	1,957	1,719	1,750
Current balance (Y tril)	21.6	19.1	20.3	22.0	18.7	19.1
(% of nominal GDP)	3.9	3.5	3.6	4.0	3.4	3.4
<b>Real GDP components</b> (Chained [2011]; y/y %; figures in parentheses: contribution, % pt)						
Private final consumption	0.8 (0.5)	0.6 (0.3)	0.2 (0.1)	1.0 (0.5)	0.4 (0.2)	0.8 (0.4)
Private housing investment	-0.3 (-0.0)	-2.8 (-0.1)	1.8 (0.1)	2.7 (0.1)	-4.7 (-0.1)	3.2 (0.1)
Private fixed investment	3.0 (0.4)	1.6 (0.3)	1.2 (0.2)	2.9 (0.4)	1.8 (0.3)	1.5 (0.2)
Government final consumption	0.4 (0.1)	0.5 (0.1)	0.8 (0.2)	0.2 (0.0)	0.4 (0.1)	0.8 (0.2)
Public fixed investment	1.5 (0.1)	-2.5 (-0.1)	1.4 (0.1)	1.2 (0.1)	-1.5 (-0.1)	-0.7 (-0.0)
Exports of goods and services	6.2 (1.0)	4.1 (0.7)	2.7 (0.5)	6.7 (1.1)	4.5 (0.8)	3.0 (0.6)
Imports of goods and services	4.0 (-0.6)	2.5 (-0.4)	1.5 (-0.3)	3.4 (-0.5)	2.9 (-0.5)	2.5 (-0.4)
<b>Major assumptions:</b>						
<b>1. World economy</b>						
Economic growth of major trading partners	4.2	3.8	3.7	4.1	3.9	3.8
Crude oil price (WTI futures; \$/bbl)	53.6	69.0	69.0	50.9	67.5	69.0
<b>2. US economy</b>						
US real GDP (chained [2009]; y/y %)	2.5	2.7	2.3	2.3	2.7	2.4
US Consumer Price Index (y/y %)	2.1	2.5	2.2	2.1	2.5	2.2
<b>3. Japanese economy</b>						
Nominal public fixed investment (y/y %)	3.2	-1.8	2.2	2.8	-0.4	-0.1
Exchange rate (Y/\$)	110.8	109.0	109.0	112.2	108.8	109.0
(Y/€)	130.3	132.0	132.0	127.2	132.1	132.0

Source: Compiled by DIR.

Note: Due to rounding, actual figures may differ from those released by the government.

\* Excl. agriculture, forestry, and fisheries.

Estimate: DIR estimate.