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# Mizuho Economic Outlook & Analysis

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May 11, 2018

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## *Impact of the yen appreciation on corporate earnings*

*10% rise in the yen slashes corporate earnings by 0.2 trillion yen and GDP by 0.2%*

### < Summary >

- ◆ Japan's corporate earnings in 2017 hit a record high. In addition to steady economic conditions inside and outside the country, the yen's relatively cheaper value compared with 2016 contributed positively to corporate profit. On the other hand, the yen's appreciation in early 2018 may negatively affect corporate earnings.
- ◆ Our estimates revealed that a 10% rise in the yen will lower the output price and volume and reduce corporate earnings of the manufacturing sector by slightly less than 30%. Meanwhile, the non-manufacturing sector will benefit from a lower input price, and profit is expected to grow by about 8%. Overall, corporate profit is forecast to decline by approximately 200 billion yen.
- ◆ A 10% increase in the yen will cause a decline in volume and lower GDP by about 0.2%. While a higher yen will not lead immediately to an economic recession, if crude oil prices rise at the same time as the global economy slows down, there is a risk that the Japanese economy worsens together with the deterioration of corporate earnings.

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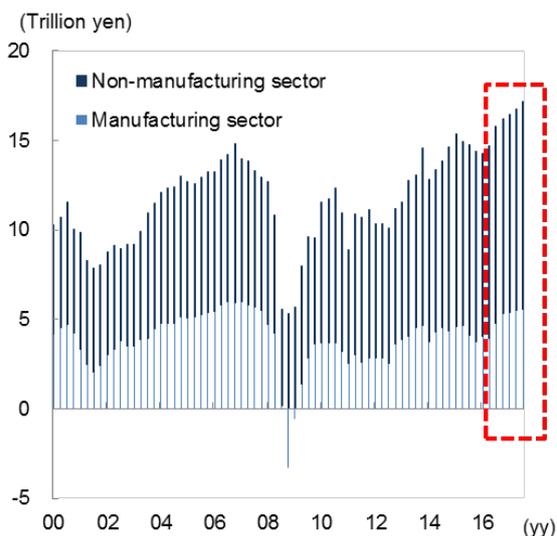
## 1. To what extent will the yen appreciation push down corporate earnings?

Corporate earnings have reached a historical peak. According to the *Financial Statements Statistics of Corporations by Industry* released by the Ministry of Finance, ordinary profits have more or less followed a recovery path in both the manufacturing and non-manufacturing sectors since around 2012 (**Chart 1**). Although the pace of growth slowed toward the first half of 2016, ordinary profits started rising again in 2017. One factor behind this strong expansion in ordinary profits is the yen depreciation, in addition to solid overseas and domestic economic conditions (**Chart 2**). After the US presidential election in November 2016, the value of the yen weakened against the US dollar on the back of expectations toward the Trump administration's new economic policies, and the yen remained relatively low against the US dollar for the most part throughout 2017 compared with the previous year.

However, the yen began to strengthen in 2018. Although this trend seems to have ceased recently, the value of the yen continues to be higher than last year, and now the risk has emerged that this trend may negatively affect corporate earnings.

Now, to what extent will the yen appreciation affect corporate earnings? For example, in the export-oriented manufacturing sector, the yen appreciation will substantially lower the sales price (or output price) and cause a decline in corporate earnings (because a

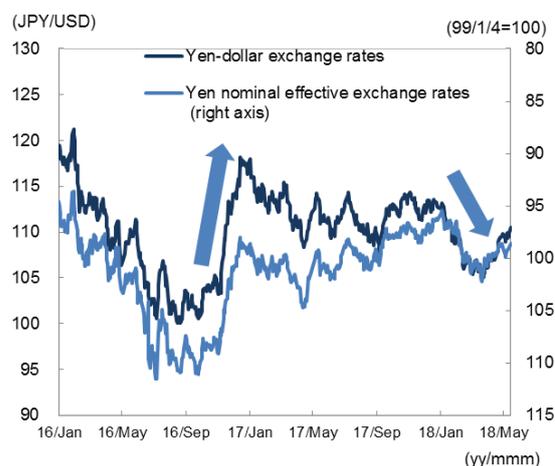
**Chart 1: Ordinary profits**



Note: The above data are seasonally adjusted and cover industry as a whole, excluding the financial and insurance sectors.

Source: Made by MHRI based on the Ministry of Finance, *Financial Statements Statistics of Corporations by Industry*.

**Chart 2: Yen-US dollar exchange rates and yen nominal effective exchange rates**



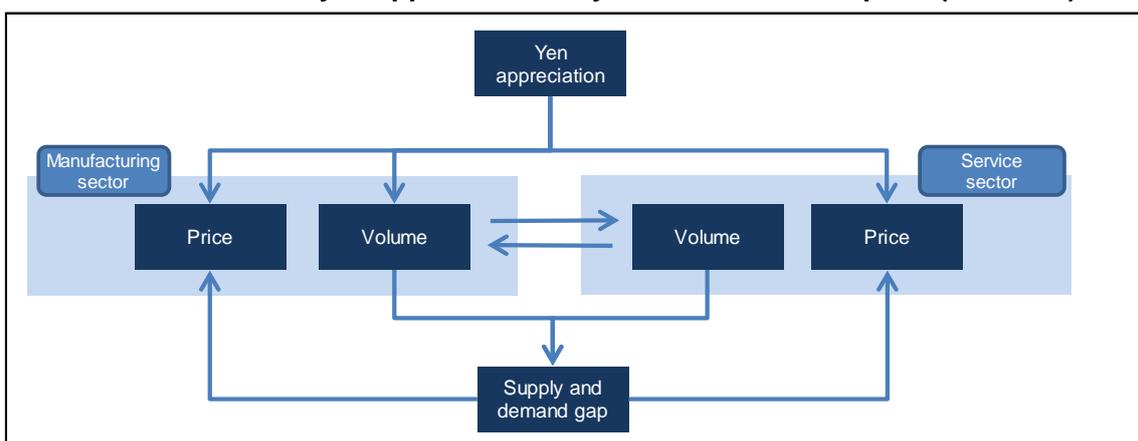
Source: Made by MHRI based on the Bank of Japan, *Foreign Exchange Rates*.

company selling a product priced 1 US dollar at 110 yen must now sell the same product at 100 yen when the value of the yen rises). If the company translates the change in yen value into the sales price (selling a product worth 1 US dollar at 1.1 US dollar after the yen rise), then it may lead to a fall in sales volume (or output volume).

Meanwhile, the manufacturing and non-manufacturing sectors mainly operating in the domestic market will likely benefit from the yen appreciation, since the higher yen will lower the import price, or procurement price (input price), thereby having a positive impact on corporate earnings. But if the sales volume of manufacturing firms mainly engaged in exports declines, it will most probably affect the sales volume of non-manufacturing companies as well. Furthermore, if the sales volume in both the manufacturing and non-manufacturing sectors decreases, and demand in the domestic market declines, the supply and demand gap will widen and exert a negative impact on the sales and procurement prices in the future.

As explained above, the appreciation of the yen may affect both price and volume in various ways, and the degree of impact will differ from manufacturers to non-manufacturers. In this report, we created a model of corporate earnings to estimate how much the yen appreciation will impact the earnings in the manufacturing and non-manufacturing sectors, and to see by what factors the yen appreciation will push down the corporate earnings. (Refer to **Chart 3** for an overview of how the yen appreciation may affect both price and volume in the model.)

**Chart 3: How the yen appreciation may affect volume and price (overview)**

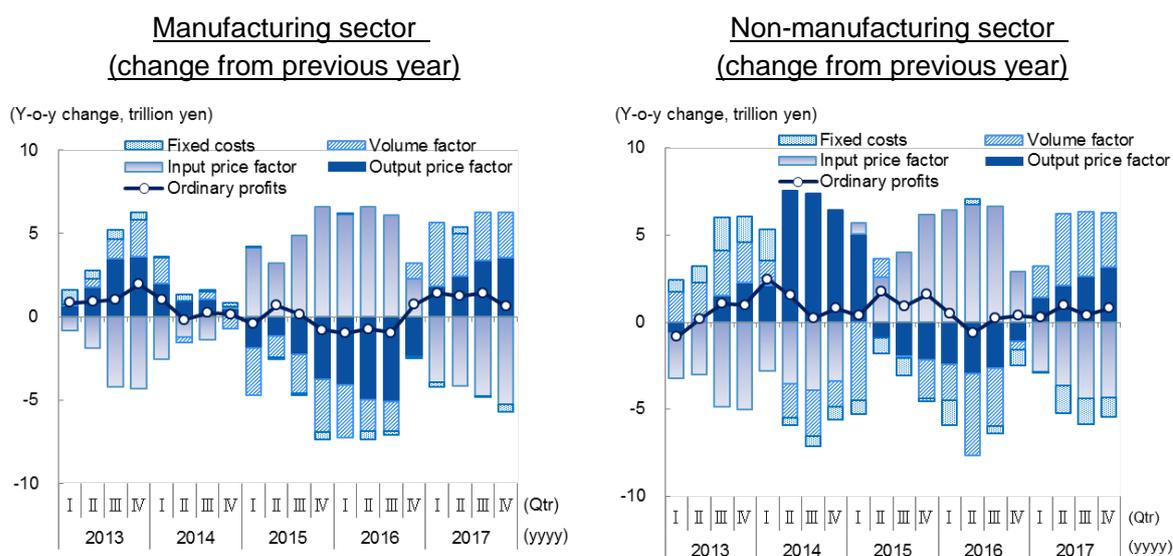


Source: Made by MHRI.

## 2. Volume and output price factors positively contributed to corporate earnings in both the manufacturing and non-manufacturing sectors in 2017

Before we start discussing the impact of the yen appreciation, let us review the changes in corporate earnings in both the manufacturing and non-manufacturing sectors from volume and price perspectives (**Chart 4**). Specifically, we broke down corporate earnings into four factors, namely, output price, input price, volume, and fixed costs.

**Chart 4: Breakdown of the contributing factors of ordinary profits**



Note: I Qtr refers to the Jan-Mar qtr, II Qtr refers to the Apr-Jun qtr, Qtr III refers to the Jul-Sep qtr, and IV Qtr refers to the Oct-Dec qtr.

Source: Made by MHRI based on Ministry of Finance, *Financial Statements Statistics of Corporations by Industry*, the Cabinet Office, *National Accounts of Japan*, the Bank of Japan, *Input-Output Price Index of the Manufacturing Industry by Sector*, *Corporate Goods Price Index*, and *Services Producer Price Index*, and the Ministry of Internal Affairs and Communications, *Consumer Price Index*.

In terms of the manufacturing industry, the volume and output price factors made a positive contribution to earnings, and ordinary profits started improving year-on-year from the Oct-Dec quarter 2016. As the global economy turned to recovery since the latter half of 2016, it seems that an increase in output volume in the manufacturing sector had a positive impact on corporate earnings. The yen depreciation toward the end of 2016 also raised corporate earnings through the volume increase and output price factor from the beginning of 2017.

In the non-manufacturing industry, while the factors of fixed costs and input price weighed down on corporate earnings in 2017, the volume and output price factors made a favorable contribution, and corporate earnings continued improving as a result. A rise in fixed costs due to higher personnel costs and an increase in input price affected by the weakening yen and rising crude oil prices worked negatively on corporate earnings, but

this impact was more than offset by an increase in volume driven by the recovery of Japan's economy, pushing up corporate earnings. In addition, a partial translation of the higher input price and fixed costs into the output price caused the corporate earnings to improve.

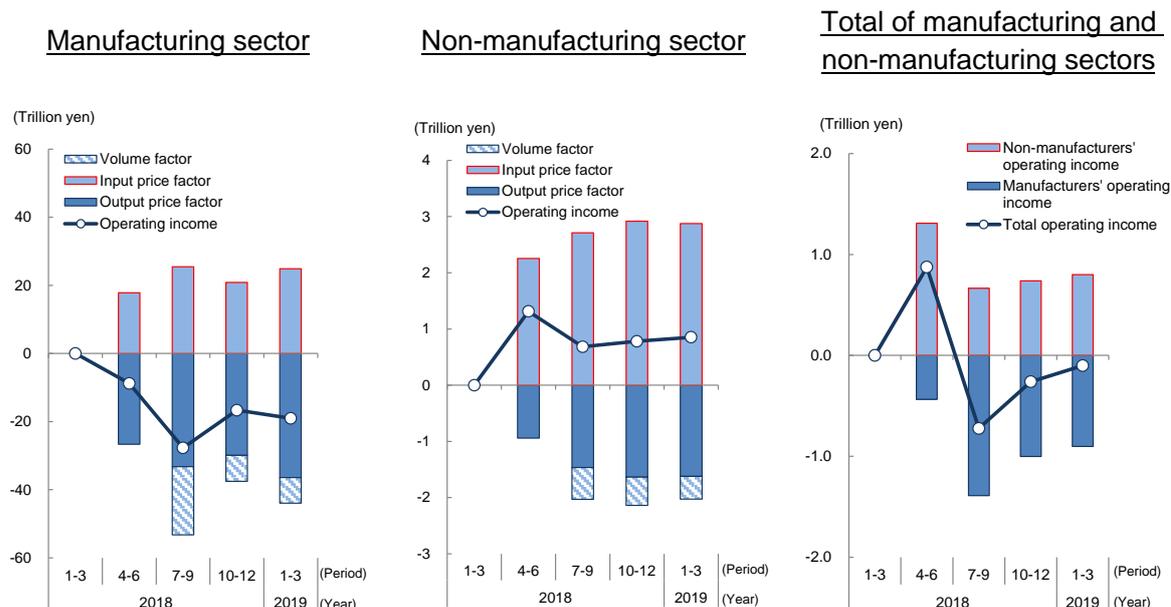
**3. A 10% yen appreciation results in a 0.2 trillion-yen earnings decline. The impact on manufacturers' earnings is slightly lower than -30% and on non-manufacturers +8%.**

Our next discussion is how a further appreciation of the yen in the future may impact corporate earnings based upon the fluctuation factors of corporate earnings described in the previous section. As mentioned earlier, we created a corporate earnings model to estimate the impact of the yen appreciation. In concrete terms, we assumed the case where the nominal effective exchange rate of the yen will rise by 10% in the Apr-Jun quarter of 2018 compared with the Jan-Mar quarter of the same year while other conditions remain unchanged (if we simply convert this assumption into the actual yen-US dollar exchange rate, we assumed the case where the value of the yen to the US dollar will rise to about 98 yen).

The impact on corporate earnings in the manufacturing and non-manufacturing industries is depicted in **Chart 5**. We need to be aware that our estimated results may vary somewhat, but in the manufacturing sector, a 10% yen appreciation pushed down ordinary profits by approximately 3.7 trillion yen (-28.3%pt). This stems from the negative contribution from output price and also the volume factor, which started to work negatively after a certain time lag. In the non-manufacturing sector, a 10% rise in the yen value resulted in an increase in ordinary profits by about 3.5 trillion yen (+8.0%pt) in FY2018. While the output price and volume factors worked negatively, there was a substantially positive contribution from the input price factor that more than offset the negative impact.

Looking at the total of the manufacturing and non-manufacturing sectors, a 10% increase in the yen value reduced corporate earnings in FY2018 by around 200 billion yen. Although the price effect in the non-manufacturing sector had a positive impact immediately after the yen appreciation (Apr-Jun quarter), the negative impact in the manufacturing sector started to affect earnings to a greater extent later on, and the overall impact was negative throughout FY2018.

**Chart 5: Impact of a 10% yen appreciation on ordinary profits**



Note: Data are calculated comparing FY2018 earnings scenario where external conditions (foreign exchange rates, crude oil prices, world production volume, etc.) remain unchanged from the Jan-Mar qtr of 2018 onward.  
 Source: Made by MHRI based on the Ministry of Finance, *Financial Statements Statistics of Corporations by Industry*, the Cabinet Office, *National Accounts of Japan*, the Bank of Japan, *Input-Output Price Index of the Manufacturing Industry by Sector*, *Corporate Goods Price Index*, and *Services Producer Price Index*, and the Ministry of Internal Affairs and Communications, *Consumer Price Index*, CPB and Bloomberg.

The impact on ordinary profits of the total of the manufacturing and non-manufacturing sectors was approximately -0.4%, a figure which is not necessarily significant. But considering that the recovery of corporate earnings in the non-manufacturing industry due to the yen appreciation was attributable only to the price effect, we need to be alert to the fact that output volume of the non-manufacturers will also fall along with the manufacturers (**Chart 6**). The managers of non-manufacturing companies may understand that improved earnings amid the declining volume is a one-time phenomenon and may become cautious about raising wages immediately or making investment decisions.<sup>1</sup>

#### **4. In addition to the yen appreciation, the combination of higher crude oil prices and a global economic slowdown may stall the Japanese economy**

##### **(1) A 10% increase in the yen drives down GDP by about 0.2%pt**

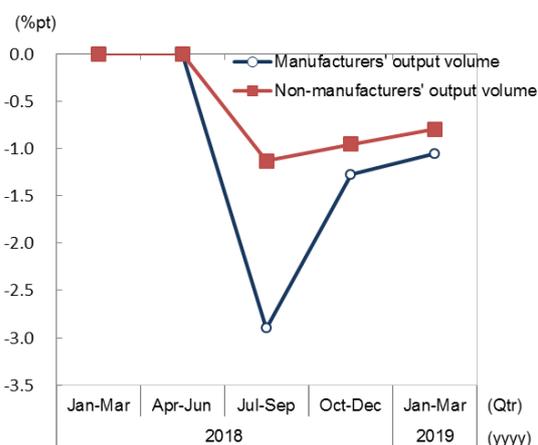
We also estimated the impact of the yen appreciation on GDP. As the yen

<sup>1</sup> According to Kato and Kawamoto (2016), while improvement in the profit margin resulting from the increase in volume had a significantly positive impact on capital investment in the short term, improvement in the profit margin driven by the price factor did not generate a significant impact on capital investment in the short term, and such an impact was smaller compared with the volume increase factor.

appreciation caused a decline in output volume in the manufacturing and non-manufacturing sectors, a 10% appreciation of the yen pushed down GDP in FY2018 by around 0.2%pt (**Chart 7**).

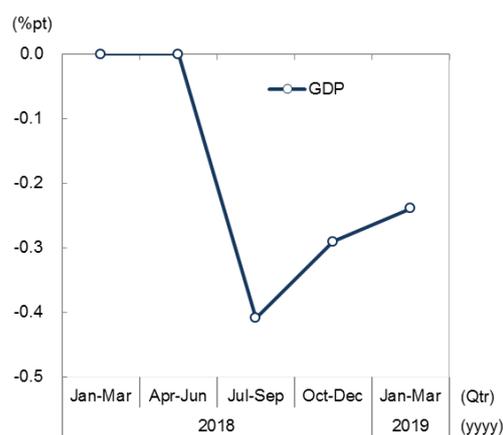
The Japanese economy is on a stable growth track, reflecting the recovery of the global economy. Should the gradual expansion of the Japanese and global economies continue going forward, we do not expect that a 10% appreciation of the yen will lead immediately to an economic recession. However, in the event crude oil prices start rising and the overseas economies begin to slow down in addition to the appreciation of the yen, these may serve as risks causing the Japanese economy to stall along with the deterioration of corporate earnings

**Chart 6: Impact of a 10% yen appreciation on output volume**



Source: Same as Chart 5.

**Chart 7: Impact of a 10% yen appreciation on GDP**



Source: Same as Chart 5.

**(2) A rise in crude oil prices and fall in world production volume reduce corporate earnings in the manufacturing and non-manufacturing sectors**

Our last analysis is the impact of higher crude oil prices and decline in overseas production on corporate earnings. More specifically, we estimated the impact on corporate earnings assuming that crude oil prices will rise by 10% and world production volume will fall by 1% in the Apr-Jun quarter of 2018 compared with the previous quarter (**Chart 8**).

Keeping in mind a margin of error in the estimate results, a rise in crude oil prices and a fall in world production volume had a negative impact on the earnings of both manufacturers and non-manufacturers. Also, a 10% rise in crude oil prices reduced manufacturers' earnings by 12.4%pt (about 1.6 trillion yen) and non-manufacturers'

earnings by 3.6%pt (about 1.6 trillion yen) through price effect.

A 1% decline in the world production volume resulted in an 8.2%pt (about 1.1 trillion yen) drop of manufacturers' earnings through a fall in export volume and its ripple effects. Also, the decline in volume seen in the manufacturing sector affected the non-manufacturing sector, whose earnings decreased by about 1.8%pt (about 0.8 trillion yen).

Looking at the manufacturing and non-manufacturing sectors combined, the impact of a 10% rise in crude oil prices on corporate earnings came in at -5.6%pt, which was greater than the impact of the 10% yen appreciation (-0.4%pt). Furthermore, a 1% reduction in the world production volume pushed down corporate earnings by 3.2%pt. Thus, our estimates revealed the impact of higher crude oil prices and a fall in world production volume on corporate earnings to be quite significant. We need to pay attention not only to the developments surrounding foreign exchange rates but also to the trends in crude oil prices and the global economy.

**Chart 8: Impact of a 10% yen appreciation, 10% rise in crude oil prices, and 1% decline in world production volume on ordinary profits**

	10% yen appreciation	10% increase in crude oil prices	1% decline in world production volume
Manufacturing sector	-28.3%pt (-3.7 trillion yen)	-12.4%pt (-1.6 trillion yen)	-8.2%pt (-1.1 trillion yen)
Non-manufacturing sector	+8.0%pt (+3.5 trillion yen)	-3.6%pt (-1.6 trillion yen)	-1.8%pt (-0.8 trillion yen)
Total	-0.4%pt (-0.2 trillion yen)	-5.6%pt (-3.2 trillion yen)	-3.2%pt (-1.8 trillion yen)

Source: Same as Chart 5.

Refer to the original Japanese report by clicking the URL below for the addendum and reference material

<https://www.mizuho-ri.co.jp/publication/research/pdf/insight/jp180511.pdf>