
Mizuho Economic Outlook & Analysis

December 14, 2018

Impact of trade friction on capital investment *Uncertainty restrains capital investment growth by around 1%Pt*

< Summary >

- ◆ There is concern that trade friction will dampen business sentiment. Our text analysis revealed that the number of companies' negative comments on future business confidence due to trade friction factors increased in 2018.
- ◆ Japan's trade policy uncertainty index showed a strong rising trend from 2017 through 2018 on the back of anxiety about the US trade policy and trade frictions between the US and other countries.
- ◆ We estimate that the uncertainty shock driven by trade policy after 2018 will push down capital investment growth by around 0.9%Pt on average (0.2%Pt on GDP terms). The manufacturing industry in particular will be dealt a heavy blow. We need to be alert to the risk of rising uncertainty.

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When forecasting the Japanese economy in 2019, if the consumption tax hike is the greatest risk factor for the domestic economy, then surely global trade friction is the biggest external risk factor. At present, the impact of trade friction on Japan’s economy remains subdued, but in the case where trade frictions between the US and China intensify further, it may exert downward pressure on the Japanese economy indirectly through a slowdown of external demand. Moreover, should the US implement additional tariff on automobiles, it may lead to a decline in automobile exports as well as exert a negative impact on related industries and personal spending through employment.¹

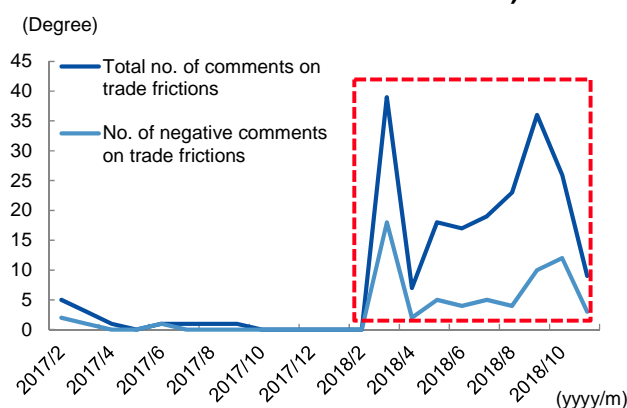
However, the impact of trade friction is not confined to this phenomenon alone. Mizuho Research Institute (2018a) points out that one of the imminent risk factors for the Japanese economy is the escalation of trade tensions and adds “there are concerns that the rise of uncertainty would depress corporate sentiment.” In this report, we provide a quantitative analysis on how uncertainty over trade policy has actually affected corporate behavior.

1. Company reactions to trade friction – increasing negative assessments of the future business conditions

How have firms actually captured the trade policy trends, including trade friction, thus far?

Using the text analysis method, we collected comments from the Cabinet Office’s *Economy Watchers Survey* that contain such words as (1) “trade,” “the US and China,” “international trade,” “protectionism,” and “tariff” in the “reasons for assessment of future economic conditions” and (2) “▲ (slightly worse)” or “× (worse)” in the “assessment of future economic conditions,” and depicted them in chronological order in **Chart 1**.² The chart reveals that the number of companies questioning the outlook on business environment increased

Chart 1: Number of negative comments on the economic outlook (comments that include words related to trade friction)



Note: The data above show the number of comments from January 2017 through November 2018.
Source: Made by MHRI based upon the Cabinet Office, *Economy Watchers Survey*.

¹ For details on the discussion points of trade friction, refer to Mizuho Financial Group (2018) which widely discusses the impact of contracting world trade and deteriorating business sentiment, among others, on the global and Japanese economies.

² More specifically, we picked out comments containing such words as “trade,” “friction,” “the US and China,” “international trade,” “protectionism,” “tariff,” “trade war,” “import restriction,” “trade negotiation,” and “TAG” in the “reasons for assessment of future economic conditions.”

due to the rising volume of media coverage on trade frictions between the US and other countries in 2018 (the period from January through November 2018 saw 194 comments that included trade friction related words, of which 63 comments carried a negative assessment of future economic conditions).

Chart 2 shows the main content of the actual comments. We can see there are many voices concerned about the potential negative impact on the economy via foreign exchange and stock market routes and uncertainty on trade frictions, both in the manufacturing and non-manufacturing sectors. Also, the many words such as “restrain,” “alert,” “difficult to control,” “watch the status,” and “wait and see” indicate that uncertainty is affecting corporate behavior.

Since the inauguration of the Trump administration in 2017, the uncertainty surrounding US trade policy seems to have risen. In fact, if we refer to Japan’s “Trade Policy Uncertainty Index” in the Economic Policy Uncertainty (EPU), we can confirm a growing trend from 2017 through 2018 (**Chart 3**). This index counts the number of articles in major Japanese newspapers that contain words related to the economy and policy, and also trade (trade friction, trade issue, import restriction, trade rule, and so forth) and uncertainty (uncertain, not sure, undecided and concern), and scales the raw EPU counts by the number of articles in the same newspapers (on a seasonally adjusted basis). From **Chart 3** we can see that the degree of uncertainty has risen significantly in recent years, even since the 1990s. Also, if we look at the Trade Policy Uncertainty Index by the type of policy, growth of trade policy uncertainty was particularly high compared with other policy categories in 2018 (**Chart 4**). Thus we can say that the word “uncertainty” nowadays means uncertainty on trade policy.

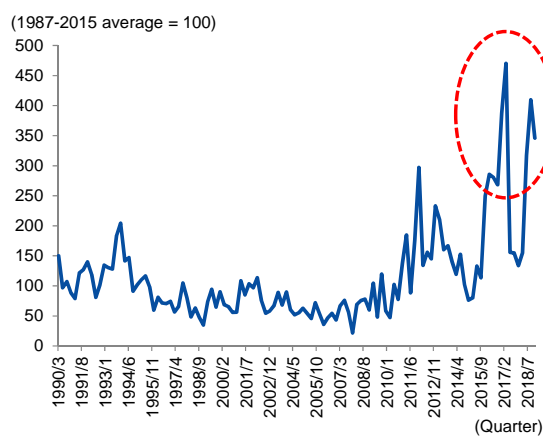
**Chart 2: Comments with a negative assessment of the business sentiment
(related to trade policy, 2017-18)**

Assessment	Industry/position	Reason for assessment
▲	Electric appliance retailer (store manager)	As for the domestic economy, given that the political situation and trade issues have a great impact on stock prices, and that it is uncertain how they will affect corporate earnings in the first quarter, consumers' purchase appetite will likely be unstable .
▲	Other service (video production) (proprietor)	Concerns over US tariff issues seem to be spreading among large companies, and they are tending to refrain from advertising activities .
▲	Other retailer (jewelry) (proprietor)	We expect the harmful effects of the trade war triggered by the US to surface gradually in the coming 2 to 3 months . Manufacturers centered on automobiles will likely be damaged , particularly on exports to the US.
▲	Metal products manufacturing (proprietor)	Iron and steel import tariffs adopted by the US have raised alarm in the iron and steel related markets.
▲	Clothing store (proprietor)	The business environment is expected to deteriorate if Japan remains a target of the iron and steel import tariffs adopted by the US.
▲	Electric machinery, equipment & supplies manufacturing (planning staff)	We will be affected if the US raises its tariffs. Trying to maintain our existing sales prices will suppress profits, but raising prices may reduce sales. It is difficult to make a decision .
▲	Automobile shop (proprietor)	I am concerned about the outlook of the US president's statement on raising the automobile tariff to 25%.
▲	Other service (software development) (proprietor)	The business sentiment will certainly worsen if the US automobile tariff is raised.
▲	Tourist hotel and inn operators (administrative staff)	There is a concern that the trade issue with the US will expand further, and improvement in the economy may stall .
▲	Communications (marketing staff)	Trade friction with the automobile tariff rising to 25% may affect domestic demand .
▲	Automobile shop (proprietor)	Although the world economy started to pick up at the beginning of the year, the US president's policy to raise tariffs has triggered a trade war and the world economy has started to decline. The economy is expected to turn downward with personal spending remaining sluggish until this problem is resolved .
▲	Metal products manufacturing (proprietor)	The US import tariff issue will affect not only special steel but also automobile-related parts with wide applications as well as their materials .
▲	Clothing store (proprietor)	Business sentiment will deteriorate if a trade war caused by US protectionism breaks out.
▲	Communications (marketing staff)	Unusual weather worldwide and US tariff measures will likely be a big blow to the economy. Japan is particularly dependent on the US, but since Japan is not targeted for special treatment, we need to shift to a Southeast Asia policy and consider more exports to this region .
▲	Communications (marketing staff)	We believe companies will accelerate their cost reduction efforts. Currently we are refraining from making investments and are watching the developments surrounding the US tariff issue .
▲	Iron & steel industry (administrative staff)	With the US and China strengthening their trade tariffs, we expect export orders to decline .
▲	Transportation equipment manufacturing (administration/accounting staff)	The US-China trade war will lead to a decline in exports to the US and China. Since Japan exports automobiles to these countries, our operating performance will be negatively affected if consumer sentiment overseas worsens .
▲	Transport (area staff)	Tariff issues will force us to avoid existing import and export routes. This change in operation flow will cause confusion .
▲	Tourist hotel and inn (administrative staff)	Import tariff issues between the US and China and concerns that the US may impose tariffs against Japan make the future outlook uncertain .
▲	Clothing store (proprietor)	As the impact of the trade war between the US and China surfaces, the future outlook will deteriorate .
▲	Automobile shop (manager)	When we discuss the business outlook with local business people, most do not expect much from political, economic and foreign policies (including trade), and because of the lack of transparency we cannot help being worried and concerned .
▲	Transport (director)	The closed and protectionist economy and trade policies of the US will gradually affect our country .
▲	Automobile shop (manager)	With the worldwide plunge in stock prices triggered by the US-China trade war, the business sentiment will deteriorate even further .
▲	Chemicals (personnel staff)	Negative factors both inside and outside of Japan, for example, the US-China trade war, Brexit, the Middle East and so forth, are the main topics in the media, and there are almost no positive stories that the economy will improve in the coming 2 to 3 months .
▲	Transport (area staff)	The movement of logistics has slowed down because of US-China trade issues.
▲	Real estate (marketing staff)	More business managers think the economic outlook is uncertain due to the US-China trade war. More companies are refraining from capital investment or buying/renting real estate, and are adopting a wait and see position . As a result, the economy is expected to weaken toward next year .
x	Transportation equipment manufacturing (administration/accounting staff)	US import tariffs and trade friction with China will lead to a significant rise in the yen, and exports will likely decline as a result .
x	Other non-manufacturing (electric utility) (marketing staff)	The global economy has slowed down due to the introduction of import tariffs by the US president. How Japan will respond to this measure is uncertain .
x	Transport (store manager)	The outlook of Japan's economy because of the US-China trade war and the risk of a stronger yen is uncertain .
x	Standard class restaurant (proprietor)	The biggest factor of deterioration is the US-China trade war. The US administration's strong protectionist trade policy may have a negative impact on its own economy, and I feel it has a risk that the global economy will

Note: We collected comments published from January 2017 through November 2018. A portion of the comments was omitted due to the large volume.

Source: Made by MHRI based upon the Cabinet Office, *Economic Watchers Survey*.

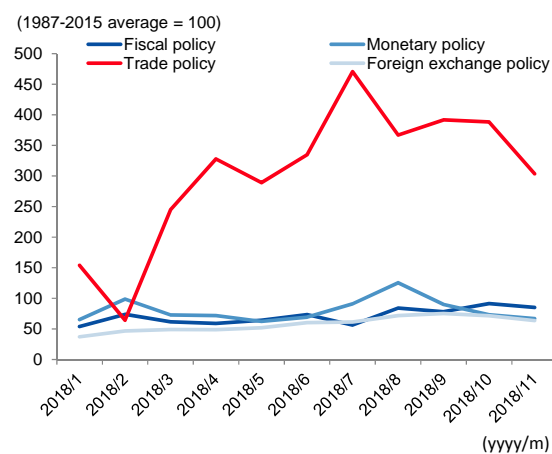
Chart 3: Trade policy uncertainty index (1990-2018)



Note: Data of the 2018 fourth quarter are the average of October and November 2018.

Source: Made by MHRI based upon Arbatli et al.(2017)

Chart 4: Uncertainty index by policy type (2018)



Source: Made by MHRI based upon Arbatli et al.(2017)

2. Quantitative assessment of the impact of trade policy uncertainty on capital investment

(1) Preceding research on uncertainty and capital investment

How does uncertainty on trade policy as described in the earlier section affect corporate behavior? Preceding research conducted by Bernanke (1983) and Bloom (2009) suggest that when uncertainty arises, companies tend to delay capital investment (or hiring) due to the high adjustment cost and strong irreversibility, a movement referred to as the “wait and see” mechanism. Furthermore, Morikawa (2015) points out that uncertainty on business sentiment and the future excess or shortage of facilities exert a negative impact on Japanese firms’ capital investment plans, based on an empirical analysis using micro data from the Bank of Japan's quarterly Short-term Economic Survey of Principal Enterprises in Japan (Tankan survey). Moreover, Ichikawa (2015) estimates that a rise in stock prices’ historical volatility (around 6.5Pt) per one unit of standard deviation due to heightened uncertainty will push down capital investment in the next year by about 1%. The IMF (“World Economic Outlook” [2018/10]) has recently conducted a simulation on how trade friction affects the macro economy and concluded that worsening business sentiment will weaken capital investment (an effect called confidence effect) and will push down Japan’s real GDP growth rate by about 0.2%Pt from 2018 through 2020.³

³ In the IMF’s simulation, in the worst case scenario where the trade war has escalated (including tightening of financial conditions), the world economy would enter recession on a real basis with an economic growth rate of under 3%, with Japan plunging into negative economic growth. Refer to Mizuho Financial Group (2018) for details.

In light of the recent situation as confirmed in the previous section, we can say that an increase in uncertainty is possibly reducing firms' capital investment through the “wait and see” mechanism.

(2) Estimate of how trade policy uncertainty affects capital investment

In this report, we estimate the quantitative impact of trade policy uncertainty on companies' capital investment by using the vector autoregression (VAR) model that utilizes the three parameters of (1) trade policy uncertainty index (TPU_t)⁴ that represents the degree of uncertainty, (2) industrial production index (Y_t) that expresses the actual trend of the real economy and (3) capital investment taken from the Financial Statements Statistics of Corporations by Industry (excluding financial, insurance and software industries) (IP_t) to show corporate behavior.

We decided to use the Financial Statements Statistics of Corporations by Industry for the capital investment parameter because of its data on capital investment by industry, as can be seen in the analysis in the later section.⁵ It should be noted that although this estimation model is considered to be of a small size as a model with enough estimation flexibility as it is based on quarterly data,⁶ our conclusion as discussed below was not greatly affected even after adding other such variables as corporate earnings, lending interest rates, and stock prices to the three existing parameters.

As the concrete framework of our analysis, we estimated the structural VAR assuming that each parameter is controlled by the three structural shocks of “trade policy uncertainty shock ($u_{uncertainty}$), “real economy shock (u_{real})” and “capital investment shock (u_{ip})”.

Chart 5 shows how trade policy uncertainty shock identified in the structural VAR affects capital investment (impulse response when shock of one unit of standard deviation is given). It has been shown that a rise in trade policy uncertainty exerts a significant negative impact on capital investment with a lag.⁷ On a quantitative basis, uncertainty shock of one unit of standard deviation is estimated to push down capital investment in the next quarter by approximately 0.8%Pt.

⁴ As an alternative parameter for uncertainty, many preceding studies employ the stock prices' volatility index, as Ichikawa (2015) has done. Nonetheless, as pointed out by Morikawa (2015), while stock price data is a forward-looking index since the market reflects forecast factors, whether it really captures the uncertainty faced by economic entities is open to further discussion.

⁵ However, when using the Financial Statements Statistics of Corporations by Industry, we need to recognize that it may be exposed to destabilizing factors when the statistics change the small and medium-sized enterprise coverage.

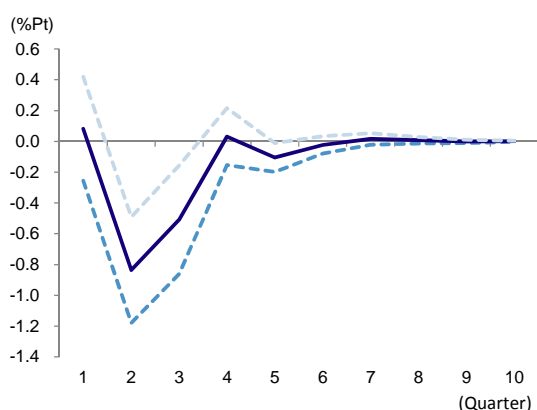
⁶ We can secure a greater number of samples by using monthly data. But monthly data generally contains noise and causes the lag order to lengthen. In this report, we decided to use the Financial Statements Statistics of Corporations by Industry since we can conduct an analysis of each industry, as mentioned in the main text, and estimate based on quarterly data.

⁷ We conducted the same estimate in various patterns. For example, we changed the order of the real economy (production) and capital investment parameters or added other parameters such as corporate earnings, lending interest rates, and stock prices to the model, but the resultant shape of the impulse response was almost the same.

Chart 6 depicts the cumulative impact of trade policy uncertainty shock. Just like in Chart 5, we can see that uncertainty shock of one unit of standard deviation reduces capital investment growth by about 1.3%Pt on a cumulative basis.

If we simply calculate the impact on the recent capital investment trend, trade policy uncertainty shock after 2018 will cause capital investment growth to drop by about 0.9%Pt on average (0.2%Pt for the nominal GDP growth rate). Although the decline in capital investment during the July to September period was explained as a repercussion of the previous quarter and the occurrence of natural disasters, if we consider that the degree of uncertainty shock was particularly large after the April to June period of 2018,⁸ the deterioration of firms' investment appetite may also have caused capital investment to decline to a certain extent.

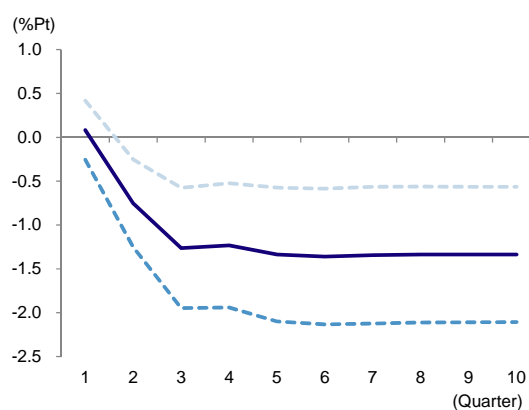
Chart 5: Impulse response of capital investment to trade policy uncertainty shock



Note: The graph shows changes in capital investment (quarter-on-quarter growth rate) when trade policy uncertainty shock of one unit of standard deviation is given. The dotted lines represent a confidence interval of ± 1 difference of standard error.

Source: Made by MHRI.

Chart 6: Impulse response of capital investment to trade policy uncertainty shock (accumulative effect)



Note: The graph shows changes in capital investment (quarter-on-quarter growth rate) when trade policy uncertainty shock of one unit of standard deviation is given. The dotted lines represent a confidence interval of ± 1 difference of standard error.

Source: Made by MHRI.

(3) Impact assessment by industry

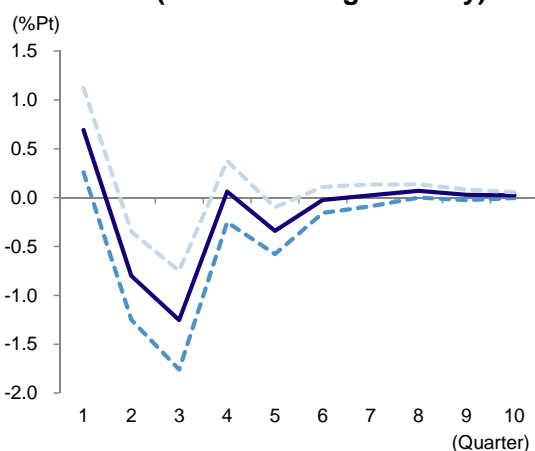
Next, we look at whether there is any difference in the degree of impact caused by uncertainty in different industries. **Charts 7 and 8** depict the impulse response per one unit of standard deviation in the manufacturing and non-manufacturing industries. We conducted an estimate of the non-manufacturing industry using the structural VAR under the same framework as the manufacturing industry, since the non-manufacturing industry

⁸ If we conduct a historical analysis using the estimate results of the structural VAR, we can estimate that of the 4% quarter-on-quarter decline in capital investment during the July to September period of 2018, about a 1.4%Pt decline can be explained by the uncertainty shock pushing down capital investment growth.

is starting to have a stronger connection with the world economy through inbound activities, etc., and transportation and wholesale industries are considered to be particularly susceptible to the trend of the real economy (manufacturing industry production). Looking at the shape of the impulse response, the negative impact lengthened in the manufacturing industry for two quarters, a longer period compared with the non-manufacturing industry, and the degree of pushdown effect on capital investment growth was also large at about 1.3%Pt per one unit of standard deviation after two quarters (after 2018, the impact of uncertainty shock of an average size was around a 1.4%Pt decline in manufacturers' capital investment growth).

As for the manufacturing industry, we believe companies will be driven to take a cautious stance toward capital investments. For example, if the Chinese economy slows down as a result of trade frictions between the US and China, capital goods shipments bound for China will likely become sluggish. Furthermore, if trade frictions intensify globally, companies may be compelled to review their supply chains, making them more cautious about new capital investments.

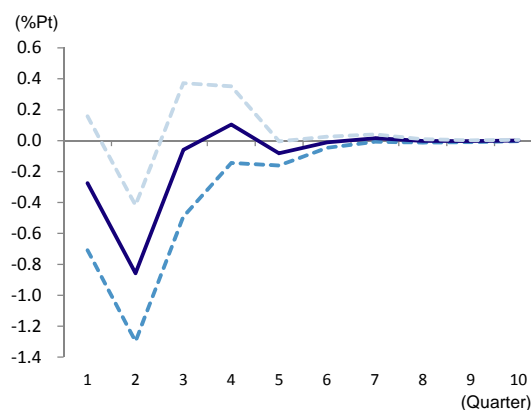
Chart 7: Impulse response of capital investment to trade policy uncertainty shock (manufacturing industry)



Note: The graph shows changes in capital investment (quarter-on-quarter growth rate) when trade policy uncertainty shock of one unit of standard deviation is given. The dotted lines represent a confidence interval of ± 1 difference of standard error.

Source: Made by MHRI.

Chart 8: Impulse response of capital investment to trade policy uncertainty shock (non-manufacturing industry)



Note: The graph shows changes in capital investment (quarter-on-quarter growth rate) when trade policy uncertainty shock of one unit of standard deviation is given. The dotted lines represent a confidence interval of ± 1 difference of standard error.

Source: Made by MHRI.

Also, **Chart 9** depicts the impact of trade policy uncertainty shock on manufacturers' capital investment by industry using the structural VAR with the same framework. Although the timing and degree of impact vary, in sum, an increase in uncertainty pushed down capital investment growth by 1%Pt to 4%Pt with a one or two quarter time lag, and

we can confirm a negative impact emerging in the main sectors of the manufacturing industry.⁹

3. Future outlook

In this report, we discussed how an increase in trade policy uncertainty affects capital investment. Since our estimate adopted a simplified method, we need to interpret the estimate results with sufficient latitude. But the results reveal that a rise in uncertainty exerts a negative influence on corporate capital investment centered on the manufacturing industry.

The outlook on trade issues is absolutely “uncertain.” The US now faces “divided Congress” after the midterm election, but as Mizuho Research Institute (2018b) has pointed out, there is concern that President Trump and the Democratic Party may come to terms over the issue of protectionism. Looking at US-China trade friction, the two countries have agreed on a temporary truce in the trade war, with the US postponing the imposition of additional tariff on Chinese goods. But the US intends to expand its tariffs if the two nations fail to agree on structural reforms regarding trade, and hence the future outlook remains murky. President Trump calls himself “Tariff Man,” and has said that tariffs are always the best way to maximize the economic power of the US. We need to continue watching the developments of the US-China trade deliberations.

In addition, negotiations between Japan and the US (TAG: Trade Agreement on Goods) will go into full swing at the beginning of 2019. The main focal point is the outcome of negotiations on the automobile sector. As Sugawara (2018) points out, the US-Japan joint statement declares that the US intends to make the TAG negotiations a growth driver of production and employment in the US automobile industry and that Japan should respect the US position. To realize this goal, the US may ask Japan to increase its investment in the US and to restrain car exports to the United States (**Chart 10**). If the US demonstrates its intention to impose additional tariffs or restrictions on Japanese car exports to the US, this may affect Japanese companies’ mid- to long-term investment plans or supply chains. We need to be alert to the possibility that firms’ investment appetite centered on the manufacturing industry will be dampened significantly.

While we expect capital investment to remain solid for the time being, thanks to the emergence of the need for labor-saving investments, in light of the discussion set out in this report, we should be cautious about the downside risks. Based on machinery orders

⁹ If we divide the data by industry, the number of samples of firms becomes small. Also, with the simplified model adopted for our analysis, there is a possibility that the characteristics of each industry have not been captured properly. We therefore need to interpret the estimate results with sufficient latitude.

released by the Cabinet Office, the degree of recovery in the October data was slightly worse than the decline in the September data, and the Cabinet Office revised its basic assessment downward to “the recovery trend is showing signs of slowing down.” We need to continue monitoring the external risk factors that may tamp down firms’ investment appetite, such as intensifying US-China trade friction leading to an acute slowdown of the Chinese economy.

Chart 9: Impact of trade policy uncertainty shock on capital investment in the main sectors (manufacturing industry)

	Range of decline (%Pt)	Lag (no. of quarters)
Total manufacturing industry	-1.3	1 to 2
Food	-2.5	2
Pulp & paper and paper products	-1.7	0
Chemicals	-1.1	2
Petroleum and coal products	-3.5	1
Fabricated metal products	-4.3	2
Machinery and equipment	-1.6	1 to 2
Electrical machinery and information communication	-3.0	1 to 2
Automobile and its accessories	-2.0	2
Other manufacturing	-2.4	1

- Notes: 1. The table above depicts changes in capital investment (quarter-on-quarter growth rate) when trade policy uncertainty shock of one unit of standard deviation is given. In the case where a significant negative impact has been confirmed over several quarters, we presented the figure of the quarter where the range of decline was the biggest.
2. The table presents the main sectors out of those where a significant negative impact was confirmed in a confidence interval of ± 1 standard deviation.
3. If we divide the data by industry, the number of samples of firms becomes small, and therefore we need to interpret the estimate results with sufficient latitude.
4. The capital investment figures by industry are seasonally adjusted values calculated by MHRI. Industries for which long-term time series capital investment data are not available are excluded from the estimate subjects.

Source: Made by MHRI.

Chart 10: Outline of the US-Japan joint statement (September 26, 2018)

	Japan	US
Basic stance	Free, fair, and rules-based trade	<ul style="list-style-type: none"> •Reciprocal trade •Reducing the trade deficit with Japan and other countries
Agreement terms	<ul style="list-style-type: none"> •The US and Japan will enter into negotiations for a US-Japan Trade Agreement on goods (TAG). •The US and Japan will negotiate other trade and investment items following the completion of the TAG discussions. 	
Understandings	With regard to agricultural, forestry, and fishery products, outcomes related to market access as reflected in Japan's previous economic partnership agreements constitute the maximum level.	Market access outcomes in the automobile sector will be designed to increase auto production and jobs in the United States.
	The US and Japan will refrain from measures that contravene the spirit of this joint statement during the consultation process.	

Source: Made by MHRI based upon The White House, *Joint Statement of the United States and Japan*, September 26, 2018.

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

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