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# Japan's Economy: Monthly Outlook (Oct. 2018)

## The true nature of the US-China Trade War: The end of "the end of history" (or a new beginning?)

Economic Research Dept.
**Shunsuke Kobayashi**
**Yota Hirono**

**Summary**

- In this report we approach the prediction of where the US-China cold war will go in the future on both political and economic issues in hopes of revealing its true nature. We see the turning point in China's role as "the world's factory" and the end of its high growth period as occurring in 2010, as a result of the working age population having peaked out. At this point, with no further economic expansion in sight in quantitative terms (production volume having been the basis of its national wealth until that time), China began looking for ways of improving its productivity. A representative example of this effort was the "Made in China 2025". A major part of this plan was the forced transfer of technology from advanced nations.

- After President Obama left office, the US began efforts to prevent the usurping of its cultural and economic hegemony by China. Military policy has been a part of this effort, and in order to maintain and expand military superiority, the disparity in national wealth and economic strength with China must also be maintained and expanded. It is here that domestic tax cuts and tariffs on imported goods have their significance. China bashing by the US does not stop at tariffs. The containment of China by US allies is now making steady progress.

- The cold war is a war of attrition. To maintain superiority in a war of attrition, provisions are essential. For this, the US can rely on its allies, who have accepted the following terms: Japanese investment in the US domestic automobile industry, the EU's cutting of tariffs, Canada and Mexico increasing the ratio of their US domestic production, all of these have contributed to the effort. However, China has a way to breach this encirclement – that is the strategy of shaking up the US alliance by virtue of building mutually beneficial relationships with alliance members.

- We have provided analyses of the effects of the US-China trade war on the economies of those countries, as well as on Japan and the world economy in our recent monthly reports. In this report we again present our estimates of the economic effects of US and Chinese tariffs based on the DIR macro model. There is essentially no change in our opinion (i.e. the effects will not be devastating, but they will be of a scale which cannot be ignored). The IMF's calculations have also been updated, and do not differ greatly from ours if assumptions of the two studies are matched more closely.

- At the same time, it is important to note that there are limitations to these models in how secondary effects and substitution effects are captured. A secondary effect is where components and capital needed to produce electronic devices manufactured in China for export to the US are imported from Japan, meaning that US tariffs cause Japanese exports to China to decline considerably. A substitute effect is where tariffs imposed by the US and China on each other's products lead to the increase in substitute production in Japan.

## The true nature of the US-China Trade War: The end of "the end of history" (or its beginning)

*The End of History and the Last Man* (1992), by American political economist, Francis Fukuyama, sent shock waves through the international political discussion. The book's arguments were ambitious, claiming that Communism, the one major form of non-democratic government, is not sustainable due to contradictions within the system, and that the free market capitalism of the West and the democratic form of government is the end point of human evolution. The book was published just after the collapse of the Soviet Union, so it's not hard to imagine how the author would have come up with this extreme position. Fukuyama concluded that the triumph of democracy would mean that the critical oppositions of human history (that is history written large) would never occur again.

The general understanding now is that his conclusions were wrong. The intense ideological battle in the Middle East with groups such as the Taliban and ISIS provide powerful evidence of this fact. The fact that Fukuyama's book gave the stamp of approval to the hardline stance of the US as regards the Middle East also gave it a bad name. More recent developments in the US bring further evidence for a complete denial of the book's conclusions. The victory which should have come to the US when the Soviet Union collapsed has now been overshadowed by the ascent of China, the world representative non-capitalist country. And now the US appears to be reviving the cold war with China, while brandishing the slogan of a return to Capitalism. Depending on how the new cold war between the US and China ends up, it could mean "the end of history" where that expression actually means a continuous cold war, or it could mean a new beginning with an American victory. On the other hand, it could mean a completely different, unexpected development. The situation remains fluid at this time. In this report we approach the prediction of where the US-China cold war will go in the future on both political and economic issues in hopes of revealing its true nature.

### China completes its role as the world's factory

We see the turning point in China's role as "the world's factory" and the end of its high growth period as occurring around 2010. Another way to put this is that China's high growth period based on an upper-echelon economic model ended. The reason for this is clear. The working age population peaked out. Taking a look at historical developments, we see that somewhere around the 1980s, growth in the working age populations of developed countries stopped. Then China took on the role of factory for their production demands. Behind this development was not only China's economic reform and the opening of its market, but also the fact that there was a large working population, and it was cheap. Moreover, the working age population was on the increase.

However, since 2010, China's population bonus has disappeared. As is shown in Chart 1, China's working age population is expected to continue its dramatic decline between now and 2060. At the same time, as is shown in Chart 2, growth in wage exceeds productivity, and China has lost its competitive edge in terms of the cost of labor. China's unit labor cost throughout the country is now twice as much as Mexico. If we limit the discussion to the tradable goods sector, the cost of labor has now reached about the same level as Japan[1].

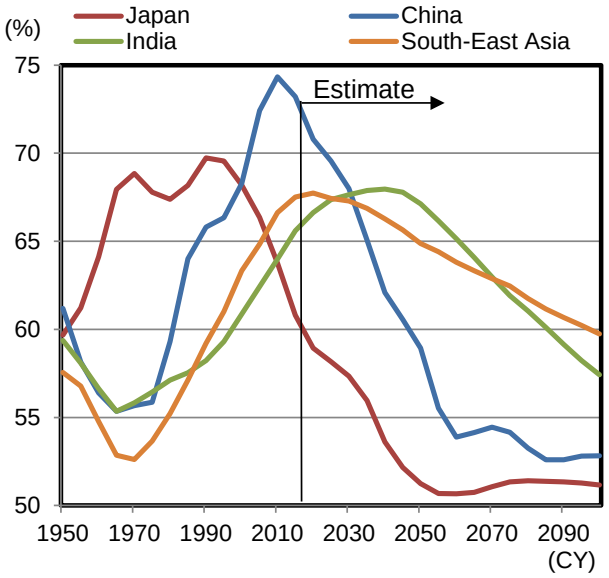
[1] For details see the DIR Report dated 29 January 2018, *Japan's Economy: Monthly Outlook (Jan 2018): No wage increase without restructuring / "Race to the bottom" hinders virtuous circle based on domestic growth*, by Shunsuke Kobayashi.

## *Made in China 2025*: Connecting politics and the economy

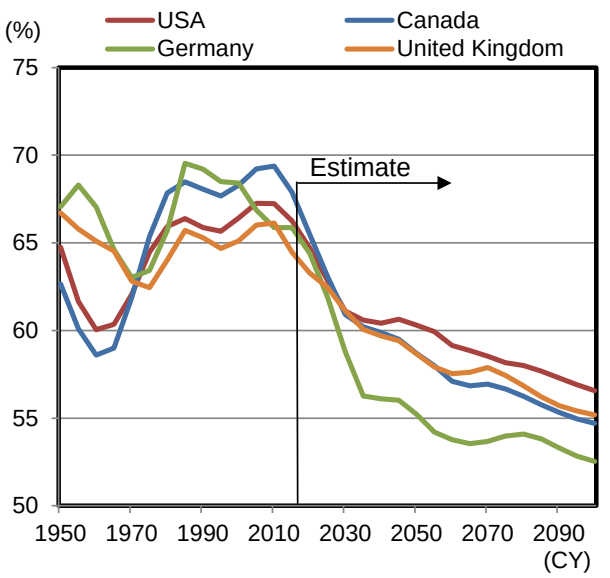
With no further economic expansion in sight in quantitative terms (the basis of its national wealth in the past), China began looking toward qualitative improvements, in other words increasing its productivity. A representative example of this effort was the "Made in China 2025". A major part of this plan was the forced transfer of technology from advanced nations. During this same period China launched its Belt and Road Initiative (also known as One Belt One Road). What this economic initiative actually does is to provide China with access to surrounding regions and countries which can become important bases for its military strategy. China will invest in these countries, thereby increasing their debt, and then gain military use of ports in those countries by promising to write off debt. Coupled with this, there is the increasing problem of infringement of intellectual property rights in the fields of IT and aerospace technology. For the US this was an unacceptable threat.

Then things changed once the Trump administration came in. Or more accurately, President Obama left office. Most likely US policy towards China would have become more hardline even if Hillary Clinton had become president. Clinton spoke of a pivot towards Asia early on in her campaign. In any case, the US began efforts to prevent the usurping of its cultural and economic hegemony by China.

**Change in Working Age Population Ratio: Asia (Left), US & Europe (Right)** **Chart 1**

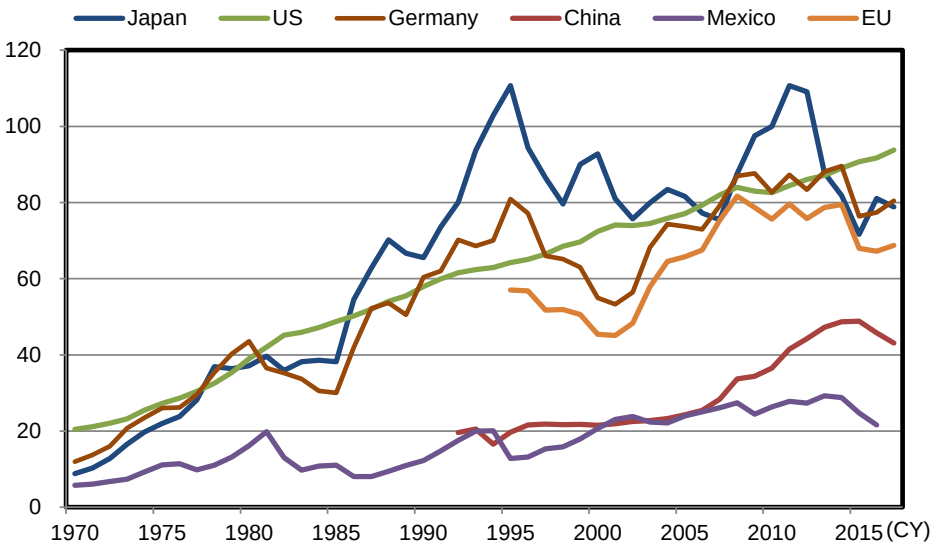



Source: United Nations "World Population Prospects; compiled by DIR.




Source: United Nations "World Population Prospects; compiled by DIR.

**Comparison of Unit Labor Cost in Japan, US, and Germany** **Chart 2**



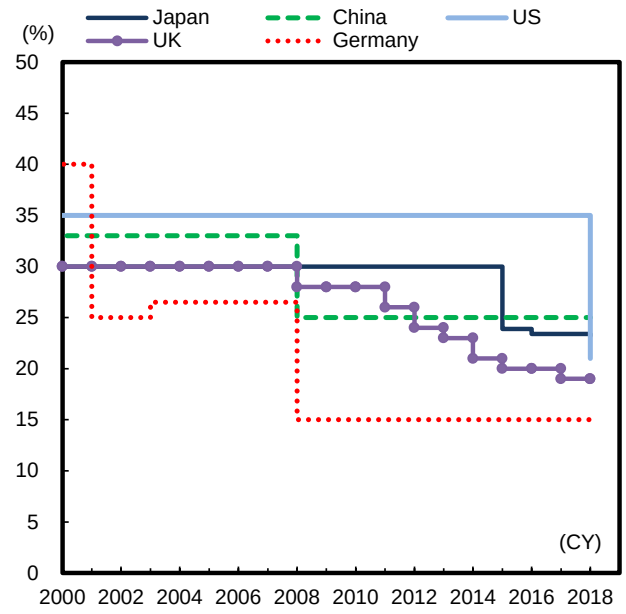

Source: OECD; compiled by DIR.
Note: Calculations place Japan ULC at 100 as of 2010 (dollar basis).

## US Congress: Occupying the same room, but living in two separate worlds

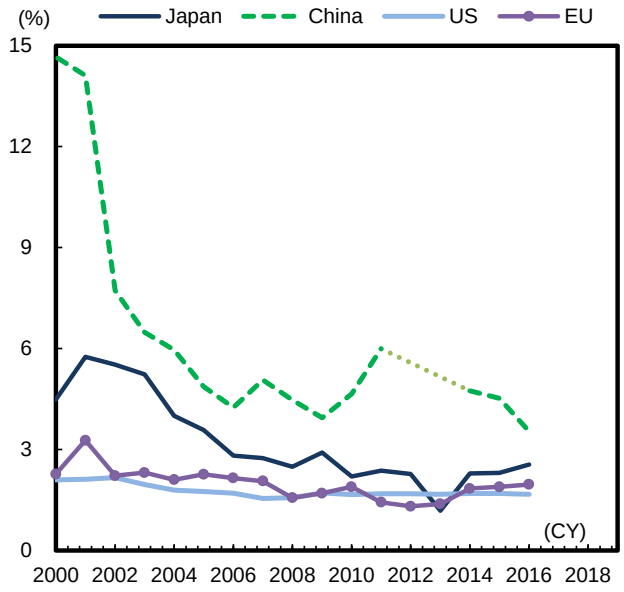
Some commentators say that if the Republicans lose their majority in the midterm elections, the Trump administration may alter its hardline stance, but unfortunately, there isn't much hope for that. China-bashing in the US goes beyond party affiliation. The Democrats have traditionally been more protectionist than the Republicans. As will be explained further in this report, criticisms of China's unfair trade practices will likely remain unchanged even if the Democrats gain the majority in Congress. Moreover, even if President Trump were to be impeached, his successor would be Vice-President Pence, who is a staunch believer in democracy and capitalism. He is said to find the Chinese tendency to distort market principles to be highly questionable (He levelled intense criticism against China in a speech on October 4). Anti-Chinese sentiments in the US are not limited to a small group of Republican hardliners (the economic nationalists as represented by conservative economist Peter Navarro) and members of the military (realists, who emphasize the maintenance of American hegemony)[2].

One of the means of preventing China from usurping US hegemony is military policy as represented by the Freedom of Navigation Operation. In order to maintain and expand military superiority, the disparity in national wealth and economic strength with China must also be maintained and expanded. It is here that domestic tax cuts and tariffs on imported goods have their significance. The tax cuts pushed through by the Trump administration did away with the major difference in corporate taxes that had existed between China and the US (Chart 3). Then there are the tariffs. Most of the benefits of manufacturing in domestic China have been lost both from the viewpoint of tax rates and the cost of labor. An even bigger bite has likely been taken out of these benefits when we consider the huge risk premium that corporations must pay as a result of the gray area unique to the operation of China's government administration.

**Changes in Basic Corporate Tax Rates by Country (Left) and Average Tariff Rate (Right)** **Chart 3**




Source: Ministry of Finance, JETRO, OECD; compiled by DIR.




Source: World Bank, Haver Analytics; compiled by DIR.
Note: No data available from China for the years 2012 and 2013.

[2] It seems to have been popular in the Japanese media of late to quote only the realists mentioned in this paragraph, who rely on Nash Equilibrium from Game Theory, when writing on US politics and Trump's foreign policy. (The media is especially fond of quoting The Thucydides Trap.) However, this view may be overly short-sighted.

## China containment network: Japan, Europe, Canada, and Mexico

China bashing by the US does not stop at tariffs. The containment of China by US allies is now making steady progress. Japan, the US, and the EU agreed to carry out WTO reforms, issuing a joint statement (Chart 4)[3], which includes the following passage agreeing to "address unfair trading practices including intellectual property theft, forced technology transfer, trade-distorting industrial subsidies, distortions created by state-owned enterprises." The USMCA, a continuation of the NAFTA idea, includes provisions obligating member nations to inform other USMCA members and discuss the issue whenever they engage in trade negotiations with a country with a non-market economy[4]. Preparations have been made to continue a containment policy until China begins to promote a completely market oriented economy.

A cold war is a war of attrition. To maintain superiority in a war of attrition, provisions are essential. For this, the US can rely on its allies. Japanese investment in the US domestic automobile industry, the EU's cutting of tariffs, Canada and Mexico increasing the ratio of their US domestic production, all of these have contributed to the effort. However, China has a way to breach this encirclement – that is the strategy of shaking up the US alliance by virtue of building mutually beneficial relationships with alliance members.

**Joint Statement of the United States and Japan** **Chart 4**

**1.** On the occasion of our Summit Meeting in New York on September 26, 2018, we, President Donald J. Trump and Prime Minister Shinzo Abe, affirmed the importance of a strong, stable, and mutually beneficial trade and economic relationship between the United States and Japan, recognizing that our economies together represent approximately 30 percent of global Gross Domestic Product. The President reiterated the importance of reciprocal trade, as well as reducing the trade deficit with Japan and other countries. The Prime Minister emphasized the importance of free, fair, and rules-based trade.

**2.** Against this backdrop, we reaffirmed our determination to further expand trade and investment between the United States and Japan in a mutually beneficial manner, including through further concrete steps, as well as to realize free, fair, and open development of the global economy.

**3.** The United States and Japan will **enter into negotiations, following the completion of necessary domestic procedures, for a United States–Japan Trade Agreement on goods, as well as on other key areas including services, that can produce early achievements**.

**4.** The United States and Japan also **intend to have negotiations on other trade and investment items following the completion of the discussions of the agreement mentioned above**.

**5.** The agreement mentioned above is designed to be mutually beneficial, and, in conducting those negotiations, the United States and Japan will respect positions of the other government:
**For the United States, market access outcomes in the motor vehicle sector will be designed to increase production and jobs in the United States in the motor vehicle industries**; and
**For Japan, 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**.

**6.** The United States and Japan will also strengthen cooperation to better protect American and Japanese companies and workers from non-market oriented policies and practices by third countries. We will therefore **work closely together, through United States–Japan as well as United States–Japan–European Union cooperation, to promote discussions on World Trade Organization reform and e-commerce and to address unfair trading practices including intellectual property theft, forced technology transfer, trade-distorting industrial subsidies, distortions created by state-owned enterprises, and overcapacity**.

**7.** The United States and Japan will conduct these discussions based on mutual trust, and **refrain from taking measures against the spirit of this joint statement during the process of these consultations**. In addition, we will make efforts for the early solution of other tariff-related issues.

Note: Coloring and underlining by DIR.
Source: White House; compiled by DIR.

[3] The US-Japan joint statement of September 26, announced on the previous day, September 25, is even more detailed in content. See "Joint Statement on Trilateral Meeting of the Trade Ministers of the United States, Japan, and the European Union" http://www.meti.go.jp/press/2018/05/20180531009/20180531009-2.pdf
[4] For details see Article 32.10: Non-Market Country FTA in USMCA Chapter 32 - Exceptions and General Provisions. https://usmca.com/exceptions-and-general-provisions-usmca-chapter-32/

## Calculating economic effects of US-China tariff battle: Substitution effect overlooked

We have provided analyses of the effects of the US-China trade friction on the economies of those countries, as well as on Japan and the world economy in our recent monthly reports. In this section, we cover the issue of economic effects of the US-China tariffs, and present data using the DIR macro model, as well as results according to the IMF model, and data associated with the limitations to these models, i.e. secondary effects and substitution effects.

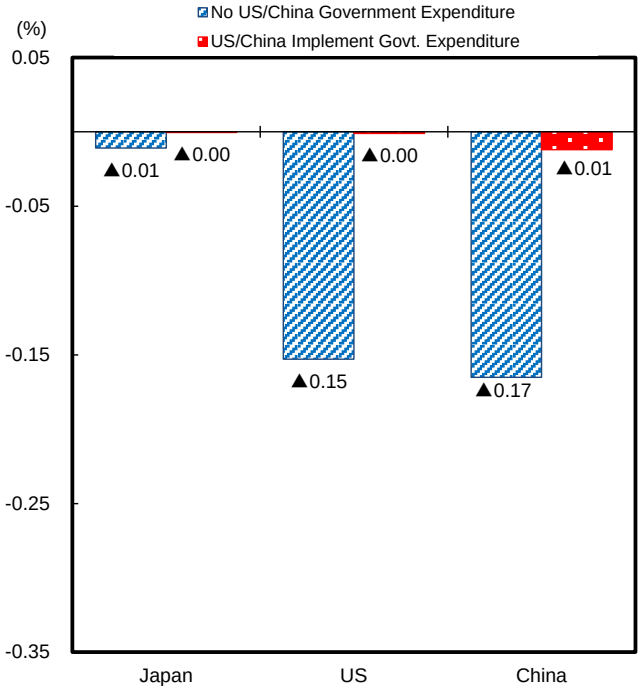
## Beyond model analysis (China -0.17%, US -0.15%, and Japan -0.01%)[5]

First we present the results of calculations using our own model, shown in Charts 5-8. Chart 5 (details in Chart 6) shows our estimate of the impact of the US imposing a 10% additional tariff on 200 billion dollars' worth of products imported from China. Meanwhile, Chart 7 (details in Chart 8) shows our estimate of the effects of US raising its tariff rate to 25%.

Assuming the US keeps its additional tariff rate at 10%, we estimate that the negative effect on GDP assuming that growth in government revenue due to the increase in tariffs does not lead to increased government expenditure would be -0.17% in China, -0.15% in the US, and -0.01% in Japan. If growth in government revenue due to the increase in tariffs does lead to increased government expenditure, the effect on GDP would be as follows: -0.01% in China, -0.00% for the US and Japan.

**Estimation of Effects of Tariffs (Summary)**

**Chart 5**




Source: Estimates produced using the DIR macro model.
Note: All figures are real. Rate of deviation from actual value.

**Effects of Tariffs on Japan, US, and China (Detailed Version)**

**Chart 6**

| Effects on Chinese Economy | | Real GDP | Personal Consumption | Capex | Government Expenditure | Exports | Imports |
|---|---|---|---|---|---|---|---|
| No US/China Govt. Expenditure | Deviation Rate | **▲0.17** | ▲0.34 | ▲0.06 | 0.00 | ▲0.30 | ▲0.32 |
| | Contribution Rate | | ▲0.13 | ▲0.03 | 0.00 | ▲0.06 | 0.06 |
| US/China Implement Govt. Expenditure | Deviation Rate | **▲0.01** | ▲0.34 | ▲0.00 | 0.93 | ▲0.22 | ▲0.20 |
| | Contribution Rate | | ▲0.13 | ▲0.00 | 0.13 | ▲0.04 | 0.03 |
| **Effects on US Economy** | | **Real GDP** | Personal Consumption | Capex | Government Expenditure | Exports | Imports |
| No US/China Govt. Expenditure | Deviation Rate | **▲0.15** | ▲0.26 | ▲0.20 | 0.00 | ▲0.09 | ▲0.47 |
| | Contribution Rate | | ▲0.18 | ▲0.03 | 0.00 | ▲0.01 | 0.08 |
| US/China Implement Govt. Expenditure | Deviation Rate | **▲0.00** | ▲0.26 | ▲0.00 | 1.08 | ▲0.07 | ▲0.05 |
| | Contribution Rate | | ▲0.18 | ▲0.00 | 0.18 | ▲0.01 | 0.01 |
| **Effects on Japan's Economy** | | **Real GDP** | Personal Consumption | Housing Investment | Capex | Exports | Imports |
| No US/China Govt. Expenditure | Deviation Rate | **▲0.01** | ▲0.00 | ▲0.00 | ▲0.08 | ▲0.12 | ▲0.11 |
| | Contribution Rate | | ▲0.00 | ▲0.00 | ▲0.01 | ▲0.02 | 0.02 |
| US/China Implement Govt. Expenditure | Deviation Rate | **▲0.00** | ▲0.00 | ▲0.00 | ▲0.00 | ▲0.00 | ▲0.00 |
| | Contribution Rate | | ▲0.00 | ▲0.00 | ▲0.00 | ▲0.00 | 0.00 |

Source: Estimates produced using the DIR macro model.
Notes: 1) Estimated effects assuming US imposes tariff of 25% on 50 billion dollars' worth of Chinese imports, plus another 10% on 200 billion dollars' worth of Chinese products, and China imposes tariff of 25% on 50 billion dollars' worth of imports from the US, and 7.4% on $60 billion worth.
2) All figures are real. Rate of deviation from actual value (%) and rate of contribution to GDP (%pt).

[5] For a detailed explanation of the model, see the DIR Report dated 22 June 2018, *Is the US-China Trade War Really All that Bad?: Thorough examination of impact on Japan's economy and corporate earnings*, by Shunsuke Kobayashi and Yota Hirono.

Next we look at estimated values assuming that the US raises its additional tariff rate to 25%. We estimate that the negative effect on GDP assuming that growth in government revenue due to the increase in tariffs does not lead to increased government expenditure would be -0.22% in China, -0.28% in the US, and -0.02% in Japan. If growth in government revenue due to the increase in tariffs does lead to increased government expenditure, the effect on GDP would be as follows: -0.05% in China, +0.00% for the US and -0.00% for Japan.

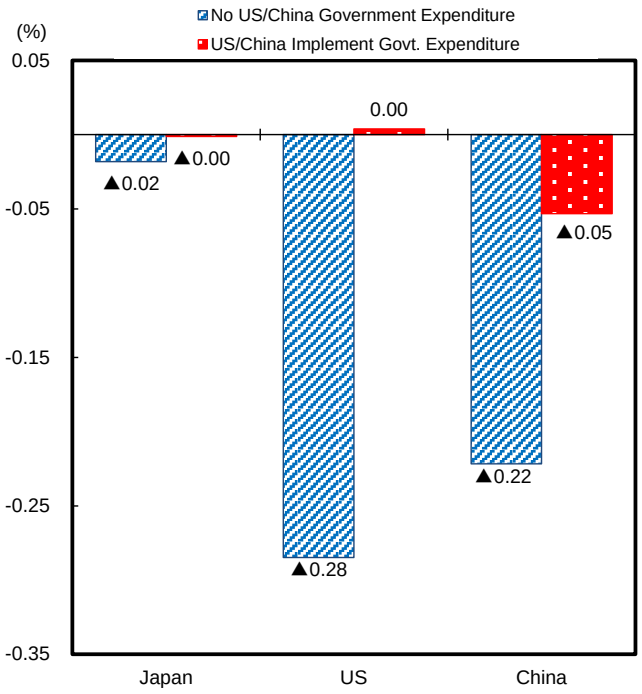
## IMF estimate: Going its own way

On the other hand, the IMF estimate claims that negative effects will be much larger than the DIR estimate suggests. This may be due to the assumptions used in the IMF estimate, which, as has been pointed out in a recent DIR monthly report, are excessive. When we recalculate the IMF estimate using assumptions closer to the ones DIR used, the result is that the IMF estimate is even lower than ours[6].

The IMF has revised its estimate in its most recent World Economic Outlook, and has announced that due to the US-China trade war, "global GDP would fall by more than 0.8 percent in 2020 and remain roughly 0.4 percent lower in the long term compared with a baseline without trade tensions[7]." However, as before, assumptions were excessive, and much more discretionary than before.

The IMF assumptions include the maximum tariff rate of 25% now being considered by the US and China (see Charts 7 and 8, assumptions), and in addition, the US 25% tariff rate on automobiles and automobile parts, and the same amount in retaliatory tariffs imposed on the US by countries which have been the subject of US tariffs[8].

**Estimation of Effects of Tariffs (Summary)** **Chart 7**




Source: Estimates produced using the DIR macro model.
Note: All figures are real. Rate of deviation from actual value.

**Effects of Tariffs on Japan, US, and China (Detailed Version)** **Chart 8**

| Effects on Chinese Economy | | Real GDP | Personal Consumption | Capex | Government Expenditure | Exports | Imports |
|---|---|---|---|---|---|---|---|
| No US/China Govt. Expenditure | Deviation Rate | **▲0.22** | ▲0.34 | ▲0.08 | 0.00 | ▲0.57 | ▲0.36 |
| | Contribution Rate | | ▲0.13 | ▲0.03 | 0.00 | ▲0.12 | 0.06 |
| US/China Implement Govt. Expenditure | Deviation Rate | **▲0.05** | ▲0.34 | ▲0.02 | 0.93 | ▲0.41 | ▲0.24 |
| | Contribution Rate | | ▲0.13 | ▲0.01 | 0.13 | ▲0.09 | 0.04 |
| **Effects on US Economy** | | **Real GDP** | Personal Consumption | Capex | Government Expenditure | Exports | Imports |
| No US/China Govt. Expenditure | Deviation Rate | **▲0.28** | ▲0.50 | ▲0.38 | 0.00 | ▲0.10 | ▲0.87 |
| | Contribution Rate | | ▲0.35 | ▲0.06 | 0.00 | ▲0.01 | 0.14 |
| US/China Implement Govt. Expenditure | Deviation Rate | **0.00** | ▲0.50 | 0.01 | 2.07 | ▲0.08 | ▲0.08 |
| | Contribution Rate | | ▲0.35 | 0.00 | 0.35 | ▲0.01 | 0.01 |
| **Effects on Japan's Economy** | | **Real GDP** | Personal Consumption | Housing Investment | Capex | Exports | Imports |
| No US/China Govt. Expenditure | Deviation Rate | **▲0.02** | ▲0.01 | ▲0.00 | ▲0.13 | ▲0.19 | ▲0.18 |
| | Contribution Rate | | ▲0.00 | ▲0.00 | ▲0.02 | ▲0.03 | 0.03 |
| US/China Implement Govt. Expenditure | Deviation Rate | **▲0.00** | ▲0.00 | ▲0.00 | ▲0.01 | ▲0.01 | ▲0.01 |
| | Contribution Rate | | ▲0.00 | ▲0.00 | ▲0.00 | ▲0.00 | 0.00 |

Source: Estimates produced using the DIR macro model.
Notes: 1) Estimated effects assuming US imposes tariff of 25% on 250 billion dollars' worth of Chinese imports, and China imposes tariff of 25% on 50 billion dollars' worth of imports from the US, and 7.4% on $60 billion worth.
2) All figures are real. Rate of deviation from actual value (%) and rate of contribution to GDP (%pt).

[6] For more background on this point, as well as for details on Chart 9, see the DIR Report dated 25 July 2018, *Estimating the Impact of the US-China Trade War: Comparison of estimates from DIR and international organizations*, by Shunsuke Kobayashi and Yota Hirono.
[7] For details see Chapter 1: Global Prospects and Policies, IMF World Economic Outlook, October 2018 https://www.imf.org/en/Publications/WEO/Issues/2018/09/24/world-economic-outlook-october-2018
[8] However, the possibility of these additional assumptions has now declined rapidly.

The IMF estimate also includes the effect of confidence shock (this is the effect of increasing uncertainty in corporate outlooks regarding government policy), as well as credit spreads (the requirement of additional risk premium when corporate business results deteriorate by 15%). Secondary effects such as these are considerably larger than the direct effect of tariffs.

## Estimated Effects of Tariff Measures on Cost of Trade and World Economy — Chart 9

**① Tariffs Totaling $250 bil for US, and $50 bil for China**

| | US | China | Total |
|---|---|---|---|
| Amount of Change in Tariff (Bil Dlrs) | 325.0 | 169.4 | 494.4 |
| Rate of Change in Global Import Prices (%) | 0.2 | 0.1 | 0.3 |

**Effect on Global Economy**

| | OECD | IMF In 5-Yrs | IMF Long-Term |
|---|---|---|---|
| Rate of Change in Cost of Trade (%) | 0.28 | 0.28 | 0.28 |
| **Change in Global Trade Volume (%pt)** | **-0.17** | **-0.42** | **-0.45** |
| **Change in Global GDP (%pt)** | **-0.04** | **-0.05** | **-0.06** |

**② US Tariff Hike on Steel and Aluminum**

| | Steel | Aluminum | Total |
|---|---|---|---|
| Amount of Change in Tariff (Bil Dlrs) | 58.4 | 16.4 | 74.8 |
| Rate of Change in Global Import Prices (%) | 0.0 | 0.0 | 0.0 |

**Effect on Global Economy**

| | OECD | IMF In 5-Yrs | IMF Long-Term |
|---|---|---|---|
| Rate of Change in Cost of Trade (%) | 0.04 | 0.04 | 0.04 |
| **Change in Global Trade Volume (%pt)** | **-0.03** | **-0.06** | **-0.07** |
| **Change in Global GDP (%pt)** | **-0.01** | **-0.01** | **-0.01** |
| **Case in Which Equal Amount in Retaliatory Tariffs is Implemented** | | | |
| Rate of Change in Cost of Trade (%) | 0.09 | 0.09 | 0.09 |
| **Change in Global Trade Volume (%pt)** | **-0.05** | **-0.13** | **-0.14** |
| **Change in Global GDP (%pt)** | **-0.01** | **-0.01** | **-0.02** |

**③ US Tariff Hike on Automobiles**

| | Passenger Vehicles | Automobile Parts | Total |
|---|---|---|---|
| Amount of Change in Tariff (Bil Dlrs) | 310.0 | 115.3 | 425.3 |
| Rate of Change in Global Import Prices (%) | 0.2 | 0.1 | 0.2 |

**Effect on Global Economy**

| | OECD | IMF In 5-Yrs | IMF Long-Term |
|---|---|---|---|
| Rate of Change in Cost of Trade (%) | 0.24 | 0.24 | 0.24 |
| **Change in Global Trade Volume (%pt)** | **-0.15** | **-0.36** | **-0.39** |
| **Change in Global GDP (%pt)** | **-0.03** | **-0.04** | **-0.05** |
| **Case in Which Equal Amount in Retaliatory Tariffs is Implemented** | | | |
| Rate of Change in Cost of Trade (%) | 0.49 | 0.49 | 0.49 |
| **Change in Global Trade Volume (%pt)** | **-0.29** | **-0.73** | **-0.78** |
| **Change in Global GDP (%pt)** | **-0.07** | **-0.08** | **-0.10** |

**Total Negative Effect (①+②+③)**

| | OECD | IMF In 5-Yrs | IMF Long-Term |
|---|---|---|---|
| Rate of Change in Cost of Trade (%) | 0.85 | 0.85 | 0.85 |
| **Change in Global Trade Volume (%pt)** | **-0.51** | **-1.28** | **-1.36** |
| **Change in Global GDP (%pt)** | **-0.12** | **-0.15** | **-0.17** |

**④ China Lowers Tariffs on Sundries and Automobiles**

| | Sundries | Automobiles | Total |
|---|---|---|---|
| Amount of Change in Tariff (Bil Dlrs) | -52.4 | -45.9 | -98.4 |
| Rate of Change in Global Import Prices (%) | 0.0 | 0.0 | -0.1 |

**Effect on Global Economy**

| | OECD | IMF In 5-Yrs | IMF Long-Term |
|---|---|---|---|
| Rate of Change in Cost of Trade (%) | -0.06 | -0.06 | -0.06 |
| **Change in Global Trade Volume (%pt)** | **0.04** | **0.09** | **0.10** |
| **Change in Global GDP (%pt)** | **0.01** | **0.01** | **0.01** |

**⑤ EU Lowers Tariffs on Automobiles**

| | Automobiles |
|---|---|
| Amount of Change in Tariff (Bil Dlrs) | -43.5 |
| Rate of Change in Global Import Prices (%) | 0.0 |

**Effect on Global Economy**

| | OECD | IMF In 5-Yrs | IMF Long-Term |
|---|---|---|---|
| Rate of Change in Cost of Trade (%) | -0.02 | -0.02 | -0.02 |
| **Change in Global Trade Volume (%pt)** | **0.01** | **0.04** | **0.04** |
| **Change in Global GDP (%pt)** | **0.00** | **0.00** | **0.00** |

**Total Positive Effect (④+⑤)**

| | OECD | IMF In 5-Yrs | IMF Long-Term |
|---|---|---|---|
| Rate of Change in Cost of Trade (%) | -0.09 | -0.09 | -0.09 |
| **Change in Global Trade Volume (%pt)** | **0.05** | **0.13** | **0.14** |
| **Change in Global GDP (%pt)** | **0.01** | **0.02** | **0.02** |

**Grand Total**

| | OECD | IMF In 5-Yrs | IMF Long-Term |
|---|---|---|---|
| Rate of Change in Cost of Trade (%) | 0.77 | 0.77 | 0.77 |
| **Change in Global Trade Volume (%pt)** | **-0.46** | **-1.15** | **-1.23** |
| **Change in Global GDP (%pt)** | **-0.11** | **-0.13** | **-0.15** |

**Total of Tariffs Already Decided (①+②+④)**

| | OECD | IMF In 5-Yrs | IMF Long-Term |
|---|---|---|---|
| Rate of Change in Cost of Trade (%) | 0.26 | 0.26 | 0.26 |
| **Change in Global Trade Volume (%pt)** | **-0.16** | **-0.39** | **-0.42** |
| **Change in Global GDP (%pt)** | **-0.04** | **-0.05** | **-0.05** |

Source: US Census Bureau, General Administration of Customs of the People's Republic of China, Eurostat, Ministry of Finance, FRB, OECD, IMF, World Bank, UN Comtrade, various news sources; compiled by DIR.

Notes: 1) US import content deducted from ④ and ⑤.

2) Data from China consists of 2016 performance values. Data from all other countries consists of 2017 performance values.

The IMF estimate based on these assumptions was not put together properly. First of all, tariff rates and items subjected to tariffs have been clearly decided, hence there is now less uncertainty[9]. Meanwhile, the effects of economic slowdown associated with tariffs on corporate activity via the credit spread and other factors should be built into the model to begin with[10]. So in other words, to have mentioned these factors at all here means that most likely they have been double-counted. As for factors such as confidence shock and credit spread, the IMF has not offered an explanation of the appropriateness of the scale of premiums they used.

## Computation models unable to describe secondary effects

Ultimately, the factors spoken of here are merely estimated values input into the model. A major weak point in both the DIR and the IMF models is that they are unable to describe secondary effects and substitution effects. First we consider the former. The biggest risk of the US-China tariff battle to Japan's economy is in the area electronic devices exported from China to the US. Components and capital needed to produce electronic devices manufactured in China for export to the US are imported from Japan, meaning that US tariffs cause Japanese exports to China to decline remarkably. However, it is difficult to draw all the connections caused by ripple effects which occur when a particular commodity or industry is affected by tariffs.

This is a major problem. In fact, the OECD estimates that of the total in goods exported from China to the US in 2011, the total amount in goods for which added value was produced in Japan came to 24 billion dollars. Of this total 15.2 billion dollars was attributed to computers and electronic parts. Meanwhile, considering the fact that China's exports to the US have expanded considerably since then, the Japanese electronics industry could suffer from much more major secondary effects of tariffs than it would have in 2011.

## Substitution effect overlooked

As for the latter factor (the substitution effect), this can also be described as playing both ends of the game. The substitute effect is where tariffs imposed by the US and China on each other's products lead to the increase in substitute production in Japan and other countries in Asia.

A representative way of calculating the substitution effect is the Global Trade Analysis Project[11] (also known as the GTAP model). The GTAP is a model for analyzing international trade developed by Dr. Tom Hertel of Purdue University and members of his research group. What the model does is take the various components in a country's economy – households, corporations of various industries, and government – and adjust supply & demand of each of these constituents based on changes in price of various goods until market equilibrium is reached. The model can be used to gain an understanding of the effects of changes in import and export prices on individual industries and the substitution effect.

Researchers in foreign countries are making use of the GTAP model to simulate trade friction between the US and China. In Japan the study of Professor Masahiko Tsutsumi of Hitotsubashi University is latest. He performed a simulation assuming an additional tariff amount due to trade friction between the US and China estimated by DIR[12]. He estimated two kinds of effects: (1) Additional tariff only, and (2) Other effects besides higher tariffs as such, including accumulation of capital and technological advances. As for simulation (2), the effects of a country opening its market

[9] Of course, it is always possible that the Trump administration could bring another element of uncertainty into the bargain.
[10] If these factors are not built into the model then that in itself is a problem.
[11] https://www.gtap.agecon.purdue.edu/
[12] The Economic Consequences of U.S.-China Trade Conflict in 2018: CGE Simulation Analysis, Hitotsubashi University, Masahiko Tsutsumi (2018) http://cis.ier.hit-u.ac.jp/Common/pdf/dp/2018/dp672.pdf

internationally on the accumulation of capital and advances in technology are included in the calculations.
Results of the estimates were as follows. (1) The effects of additional tariffs only: US GDP is expected to be reduced by around -0.09%, while China's GDP is expected to be reduced by around -0.21%. As for Japan, this estimate found little influence, with GDP being pushed up by around +0.00%. Japan would gain some benefit due to a relative increase in price competitiveness. This simulation also found little influence on the part of other third countries, with the overall world GDP being reduced by -0.03%.

As for simulation (2), which includes the factors of accumulation of capital and advances in technology, in this case the effects become much larger, though the direction of the sign remains the same as in (1). Concretely speaking, US and Chinese GDP figures will be forced downwards by around -1.60% and -2.46% respectively. Meanwhile, Japan's GDP is expected to get a lift by around +0.23%, with other third countries also gaining a positive effect. At the same time, the overall world GDP would be reduced by -0.45%, suffering a negative result in this case also.

Looking at the effects on individual Japanese industries in the case of simulation (1), most industries will experience a decline in production volume, including the textile and apparel industries, as well as iron & steel, and fabricated metals. On the other hand, transport equipment and electrical machinery, as well as general machinery will see increases in production volume. In the case of simulation (2), since the extent to which Japan's market is open will continue to increase, all industries are expected to see increases in production volume with the exception of only a few industries[13].

Another way of interpreting the results of these simulations might be to say that the more intense the US-China trade war becomes, the more Japan and other third countries will benefit. However, this is most likely too good to be true. The GTAP model assumes that substitution of goods and movement of production factors will all take place smoothly. The model does not take into consideration friction costs associated with reconstructing the supply chain. These are factors we must keep in mind when using estimates made according to the GTAP model as a reference.

[13] Fossil fuels and textile and apparel industries.

## Japan's Economic Outlook No.198 Update

| | FY17 | FY18 (Estimate) | FY19 (Estimate) | CY17 | CY18 (Estimate) | CY19 (Estimate) |
|---|---|---|---|---|---|---|
| **Main economic indicators** | | | | | | |
| Nominal GDP (y/y %) | 1.7 | 1.4 | 1.8 | 1.5 | 1.3 | 1.9 |
| Real GDP (chained [2011]; y/y %) | 1.6 | 1.2 | 0.8 | 1.7 | 1.1 | 1.2 |
| Domestic demand (contribution, % pt) | 1.2 | 1.2 | 0.6 | 1.2 | 0.9 | 1.0 |
| Foreign demand (contribution, % pt) | 0.4 | 0.1 | 0.2 | 0.6 | 0.2 | 0.1 |
| GDP deflator (y/y %) | 0.1 | 0.2 | 1.0 | -0.2 | 0.2 | 0.7 |
| Index of All-industry Activity (y/y %)* | 1.8 | 1.2 | 1.0 | 1.6 | 1.2 | 1.3 |
| Index of Industrial Production (y/y %) | 4.1 | 2.0 | 1.7 | 4.4 | 1.9 | 2.2 |
| Index of Tertiary Industry Activity (y/y %) | 1.0 | 1.2 | 0.8 | 0.7 | 1.1 | 1.1 |
| Corporate Goods Price Index (y/y %) | 2.7 | 2.6 | 3.3 | 2.3 | 2.6 | 2.8 |
| Consumer Price Index (excl. fresh food; y/y %) | 0.7 | 0.9 | 1.3 | 0.5 | 0.8 | 1.1 |
| Unemployment rate (%) | 2.7 | 2.4 | 2.5 | 2.8 | 2.5 | 2.4 |
| Government bond yield (10 year; %) | 0.05 | 0.08 | 0.10 | 0.05 | 0.07 | 0.10 |
| Money stock; M2 (end-period; y/y %) | 3.7 | 2.9 | 1.8 | 4.0 | 3.0 | 2.1 |
| Balance of payments | | | | | | |
| Trade balance (Y tril) | 4.6 | 3.8 | 4.7 | 5.0 | 3.6 | 3.9 |
| Current balance ($100 mil) | 1,968 | 1,911 | 1,968 | 1,957 | 1,870 | 1,886 |
| Current balance (Y tril) | 21.8 | 21.5 | 22.3 | 22.0 | 20.6 | 20.9 |
| (% of nominal GDP) | 3.9 | 3.9 | 3.9 | 4.0 | 3.7 | 3.7 |
| **Real GDP components (Chained [2011]; y/y %; figures in parentheses: contribution, % pt)** | | | | | | |
| Private final consumption | 0.8 ( 0.5) | 0.8 ( 0.5) | 0.1 ( 0.1) | 1.0 ( 0.6) | 0.5 ( 0.3) | 0.8 ( 0.5) |
| Private housing investment | -0.4 (-0.0) | -4.9 (-0.1) | 2.0 ( 0.1) | 2.7 ( 0.1) | -6.4 (-0.2) | 3.0 ( 0.1) |
| Private fixed investment | 3.1 ( 0.5) | 4.7 ( 0.7) | 1.0 ( 0.2) | 2.9 ( 0.4) | 4.4 ( 0.7) | 1.9 ( 0.3) |
| Government final consumption | 0.7 ( 0.1) | 0.6 ( 0.1) | 0.8 ( 0.2) | 0.4 ( 0.1) | 0.5 ( 0.1) | 0.8 ( 0.2) |
| Public fixed investment | 1.4 ( 0.1) | -1.9 (-0.1) | 1.0 ( 0.0) | 1.2 ( 0.1) | -1.2 (-0.1) | -0.4 (-0.0) |
| Exports of goods and services | 6.3 ( 1.0) | 3.4 ( 0.6) | 2.8 ( 0.5) | 6.7 ( 1.1) | 4.0 ( 0.7) | 2.9 ( 0.5) |
| Imports of goods and services | 4.1 (-0.6) | 2.9 (-0.5) | 1.4 (-0.2) | 3.4 (-0.5) | 3.3 (-0.5) | 2.4 (-0.4) |
| **Major assumptions:** | | | | | | |
| **1. World economy** | | | | | | |
| Economic growth of major trading partners | 4.2 | 3.9 | 3.7 | 4.1 | 4.0 | 3.8 |
| Crude oil price (WTI futures; $/bbl) | 53.6 | 68.0 | 67.7 | 50.9 | 66.8 | 67.7 |
| **2. US economy** | | | | | | |
| US real GDP (chained [2009]; y/y %) | 2.4 | 2.9 | 2.2 | 2.2 | 2.8 | 2.5 |
| US Consumer Price Index (y/y %) | 2.1 | 2.4 | 2.3 | 2.1 | 2.5 | 2.1 |
| **3. Japanese economy** | | | | | | |
| Nominal public fixed investment (y/y %) | 3.2 | -0.4 | 1.8 | 2.8 | 0.4 | 0.4 |
| Exchange rate (Y/$) | 110.8 | 110.6 | 111.0 | 112.2 | 109.9 | 111.0 |
| (Y/€) | 130.3 | 128.8 | 128.5 | 127.2 | 129.7 | 128.5 |

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.