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# Mizuho Economic Outlook & Analysis

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October 4, 2018

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## *How a rise in crude oil prices may affect Asian countries*

*The key factor is whether these countries can absorb the negative impact from a decline in terms of trade*

### < Summary >

- ◆ Since the latter half of 2017, crude oil prices have been on a gradual upward trend. Of the leading Asian countries, only Malaysia is a net exporter of oil, and it is anticipated that other nations will see their trading gain/loss worsen.
- ◆ However, if the expanding global economy is causing crude oil prices to rise, the benefits from export growth will more than offset the negative impact of a worsening trading gain/loss even for net oil importers, and the economic situations in these countries are expected to remain robust in general.
- ◆ On the other hand, a hike in oil prices that does not accompany an actual demand increase can be labeled a malignant crude oil price hike. We need to be alert to the possibility of a malignant crude oil price hike due to stronger restraints on the oil supply toward the first half of 2019.

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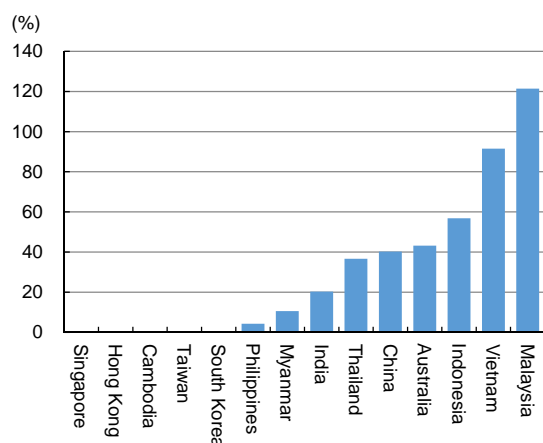
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## 1. Introduction

Crude oil prices that remained sluggish from the latter half of 2014 began a gradual upward rise from the latter half of 2017. Looking at the trend in the leading Asian countries from East to South Asia, Malaysia is the only nation with an oil self-sufficiency ratio over 100% (net exporter of oil) (**Chart 1**), and many countries are greatly dependent on oil imports (**Chart 2**). Recently, there has been speculation that crude oil prices may rise further due to geopolitical factors, suggesting the possibility of a negative impact on Asian nations. In this report, we will consider how rising crude oil prices may affect Asian countries mainly from a trading gain/loss perspective.

The fourteen countries/regions subject to analysis in this report include China, South Korea, Taiwan, Hong Kong, Singapore, Indonesia, Thailand, Malaysia, Philippines, Vietnam, Myanmar, Cambodia, India and Australia; but for some countries we could only make partial reference due to statistical restraints.

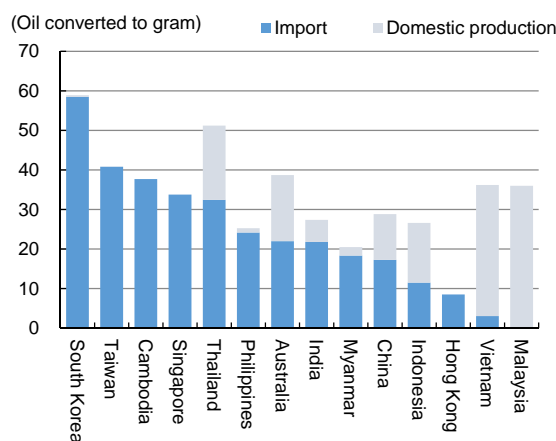
**Chart 1: Oil self-sufficiency ratio**



Note: Crude oil production / (crude oil supply + petroleum products supply) × 100. Figures are calculated not in terms of weight but energy amount. Data as of 2015.

Source: Made by MHRI based upon the International Energy Agency.

**Chart 2: Oil necessary to produce unit GDP**



Note: Crude oil supply per international US dollar derived based on the 2011 price + petroleum products supply. Data as of 2015.

Source: Made by MHRI based upon the International Energy Agency.

## 2. Theoretic consideration of the impact of the crude oil price increase

### (1) Crude oil price hike and terms of trade, and trading gain/loss

In this report, we use the trading gain/loss, which represents the transfer of income between nations caused by changing terms of trade, to measure the impact of the oil price hike. Terms of trade is defined as “export price index / import price index × 100” and indicates the exchange ratio of one unit of export item against one unit of import item. An improvement in terms of trade means that the amount of import items than can be

purchased in exchange for export items has increased, while a decline in terms of trade means that the amount of import items that can be purchased in exchange for export items has decreased.

Focusing only on the oil price hike suggests an improvement in terms of trade through heightening of the export price index for net oil exporting nations, and a worsening of terms of trade due to a rise in the import price index for net oil importers, with a resulting income transfer from net importing countries to net export countries (exacerbating the trading gain/loss of the net importing countries).

## **(2) Indirect factors affecting terms of trade**

But the story is not so simple in the real world because a hike in oil prices can also affect terms of trade via other routes, as described below.

The first route is the transfer of the oil price increase onto export prices. For example, chemical manufacturers may try to lift the export price of synthetic rubber, which is made from crude oil, in conjunction with the increase in oil prices. Particularly for high-demand items in oil-producing countries, it may be easier to raise their prices thanks to the tightening supply-demand balance. If exporters succeed in this price transfer, export prices will rise and possibly cause terms of trade to improve.

The second route is the impact on other commodity prices due to fluctuations in oil prices. A typical example is energy<sup>1</sup> such as natural gas, which can substitute for crude oil, and its price movement is similar to that of crude oil in general. If we include energy sources other than oil, countries like Australia, Indonesia and Myanmar, in addition to Malaysia, can cover their energy needs on their own, and hence these countries may benefit from rising crude oil prices through improved terms of trade, even though they are not net oil exporters (**Chart 3**). In contrast, countries heavily dependent on energy imports include South Korea, Taiwan, Thailand and Singapore, and their terms of trade may easily deteriorate with a rise in energy prices (**Chart 4**).

## **(3) Relationship between crude oil price fluctuations and trading gain/loss**

Next we look at our estimate results on how the trading gain/loss can be affected when oil prices actually rise by 10% (**Chart 5**). Our calculation revealed that the degree of trading gain/loss improvement increased in the order of Australia, Malaysia and Indonesia, while worsening in the order of Taiwan, South Korea and Thailand. Such highly ranked countries in trading gain/loss are mostly consistent with Chart 4, “Energy necessary to produce unit GDP”. (It should be noted that Myanmar is not included in

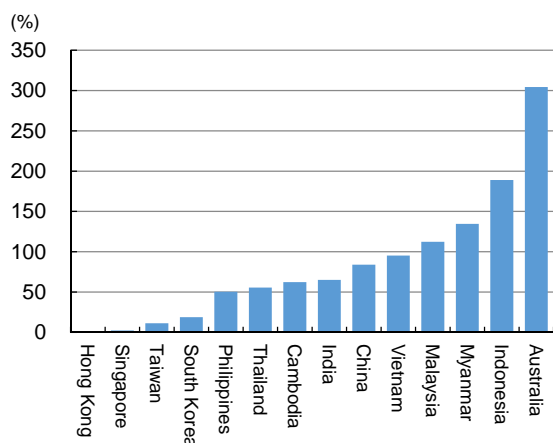
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<sup>1</sup> Some commodities have a price link with crude oil prices even though they are non-energy items.

Chart 5 due to statistical restraints.)

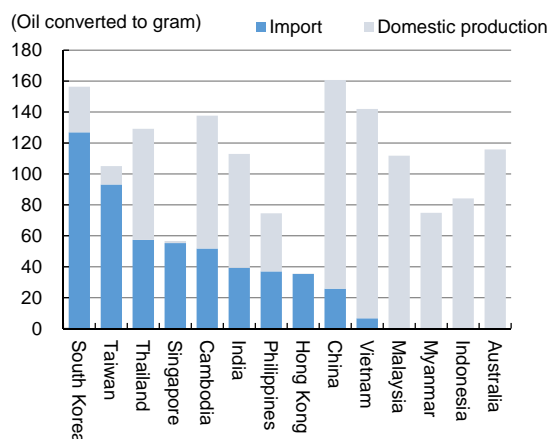
For China and Hong Kong, the worsening of the trading gain/loss followed that of Thailand. It may be the case that their economic structure does not allow for the transfer of energy cost increases onto export prices.

**Chart 3: Energy self-sufficiency ratio**



Note: Energy production / energy supply × 100. Figures are calculated not in terms of weight but energy amount. Data as of 2015.  
Source: Made by MHRI based upon the International Energy Agency.

**Chart 4: Energy necessary to produce unit GDP**



Note: Energy supply per international US dollar derived based on the 2011 price. Data as of 2015.  
Source: Made by MHRI based upon the International Energy Agency.

### 3. Real economy of oil net importers under a crude oil price hike – not necessarily bad

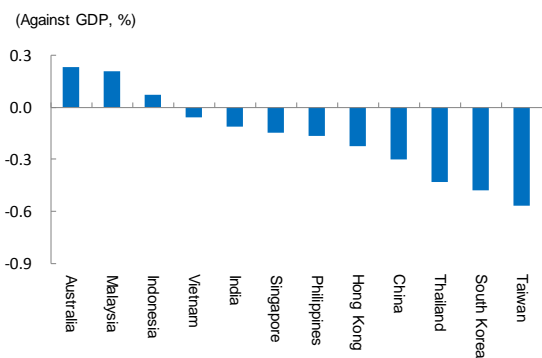
#### (1) Important to grasp the reasons behind the hike in crude oil prices to see the impact on the economy

In the previous section, we confirmed that worsening of the trading gain/loss due to an oil price hike tended to become greater in the order of Taiwan, South Korea and Thailand, and the deterioration of the trading gain/loss should dampen the business sentiment as it will slash real income.

Having said that, since the real GDP growth rate remained relatively high under the oil price hike situation (**Chart 6**), the business sentiment in these net oil importing countries in Asia did not necessarily deteriorate. During the periods from 2002 to 2003, 2004 to 2005, and 2007 to 2008, there was a tendency for the real GDP growth rate to become relatively higher, together with rising oil prices. But during the period from 2011 to 2016 when the oil price growth rate dropped, even plummeting into negative territory, the economic growth rates of these countries became rather sluggish. It should be noted that Thailand's economy improved from 2012 to 2013 on the back of its recovery from

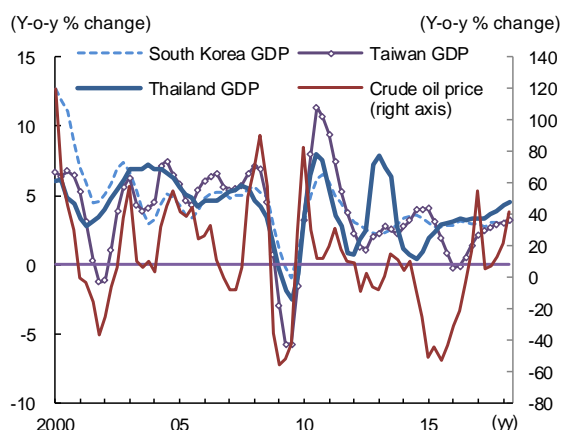
the economic slump in the previous year after severe flooding that affected the country at the end of 2011, and the temporary increase in consumer demand thanks to a tax cut on automobiles.

**Chart 5: Change in trade gain when crude oil prices rise by 10%**



Note: The note for this chart is given at the bottom of the page.<sup>2</sup>  
 Source: Made by MHRl based upon CEIC Data and statistics of the respective countries.

**Chart 6: Real GDP and crude oil prices**



Note: Real GDP is the quarterly moving average. Crude oil prices are based on WTI.  
 Source: Made by MHRl based upon CEIC Data and statistics of the respective countries.

The background to this phenomenon includes the significant expansion of the global economy as well as real exports during the period when oil prices were rising (**Chart 7**). Asia boasts a great number of export-oriented countries, and should the hike in oil prices be a reflection of an actual oil demand increase fueled by the favorable performance of the global economy, then the negative impact of the oil price hike can be more than offset by the positive impact of export growth. In particular, Singapore is heavily dependent on exports to energy producing countries (**Chart 8**) as home to the world's largest oil rig company, Keppel Corporation, and its economic structure allows the country to benefit the most from rising oil prices.

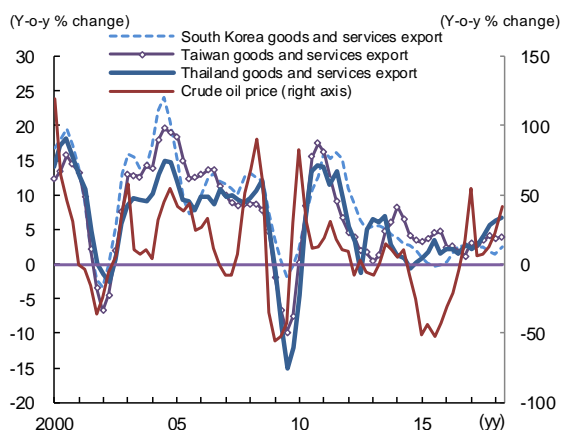
<sup>2</sup> (1) Trading gain/loss is calculated using the formula below.  

$$\text{Trading gain/loss} = (\text{nominal net export} / \text{numéraire deflator}) - \text{real net export}$$

$$\text{Numéraire deflator} = (\text{nominal export} + \text{nominal import}) / (\text{real export} + \text{real import})$$
 (2) We estimated the VAR model consisting of crude oil prices (WTI, logarithm), terms of trade (GDP base), and trading gain/loss (against GDP, GDP base) and calculated the impulse response (calculation period: 2006 Q1 – 2018 Q2, quarterly estimate, one period lag). We presented the effect during the period in which the absolute value becomes the largest and within one year after the 10% rise in crude oil prices (shock of crude oil price increase).  
 (3) For the Philippines, since it was difficult to derive a clear relationship between crude oil and trading gain/loss due to the drastic movement in electronics prices, in this report we deducted the electronics from the import and export data in the estimation process.  
 (4) For India, we estimated the figure using data beginning from 2011 Q2 from the standpoint of GDP data consistency.  
 (5) Since China and Vietnam do not disclose quarterly GDP-based trade data, we calculated the real value of the trade data based on the balance of international payment statistics and allocated the yearly GDP-based trade data to each quarter to derive the quarterly data.  
 (6) We could not make estimates for Myanmar and Cambodia due to statistical restraints.

We believe the recent oil price increase is not of a malignant nature, since it involves the expansion of the global economy as well as increasing exports from Asia.<sup>3</sup>

**Chart 7: Goods and services export and crude oil prices**



Note: Goods and services export is four-quarter moving average. Crude oil prices are based on WTI.  
Source: Made by MHRl based upon CEIC Data and statistics of the respective countries.

**Chart 8: Export dependency (2016)**

	China	Japan	US	EU	Energy net exporting countries	Others
Singapore	16.6	5.3	7.5	9.9	25.4	48.4
Vietnam	13.9	7.6	19.4	17.9	11.5	26.0
Thailand	6.5	4.8	5.8	5.2	9.7	19.8
Malaysia	9.3	5.5	6.5	7.0	7.7	33.1
Taiwan	26.8	4.4	7.3	5.8	5.2	24.1
South Korea	9.2	1.7	4.5	3.4	4.6	13.2
China	0.0	1.1	3.6	3.1	2.7	8.5
India	0.5	0.2	1.8	2.0	2.6	4.4
Indonesia	2.3	1.8	1.8	1.6	1.8	7.4
Philippines	2.2	3.3	2.9	2.9	1.3	7.4
Australia	5.6	2.4	0.7	0.9	1.3	5.8

Note: Energy is defined as crude oil, petroleum, natural gas, coal and palm oil.  
Source: Made by MHRl based upon the United Nations and IMF.

## (2) Shale revolution restrains the malignant oil price increase

In other words, oil prices rising independently from the real demand for oil may be a blow to the Asian economy. This is what we call a malignant crude oil price hike, a situation that was typically seen when the oil supply was restricted during the past two oil crisis in 1970s. Also, during the commodity bubble from 2007 through 2008, we can say there were concerns over a possible malignant oil price hike.<sup>4</sup> But thanks to the shale revolution in the United States, an oil price increase of a malignant nature has become less likely to occur.

First, the growth in shale oil production itself serves as a powerful brake on oil price increases. The break-even point for US oil companies should be 1 barrel = 50 US dollars at most, and if it rises to 70 US dollars, the extraction volume is expected to increase significantly (**Chart 9**).

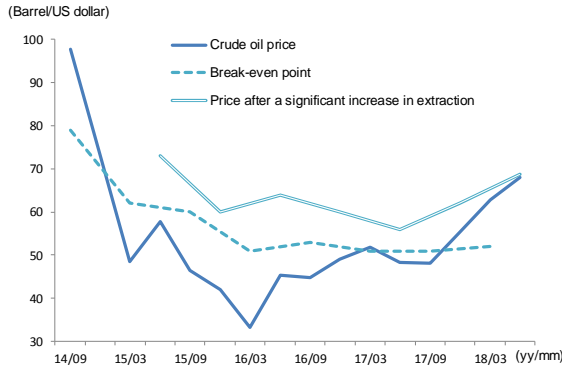
Next, we cannot overlook the fact that the US is becoming an oil producing country. Although the US energy self-sufficiency ratio is still under 100%, the oil price increase has recently become a positive factor for the US economy since it has triggered an expansion of capital expenditure led by shale-related industries (**Chart 10**). In sum,

<sup>3</sup> South Korean exports have been sluggish recently due to the lower impact of vessels, which are characterized by sharp fluctuations in export volume. Excluding the impact of vessels, the overall export environment is not so bad.

<sup>4</sup> But unlike oil shocks, prices increased for a variety of non-energy commodity items such as metals and agricultural products. It seems that the increase did not have a significantly negative impact on Thailand, which is predominantly an agricultural nation.

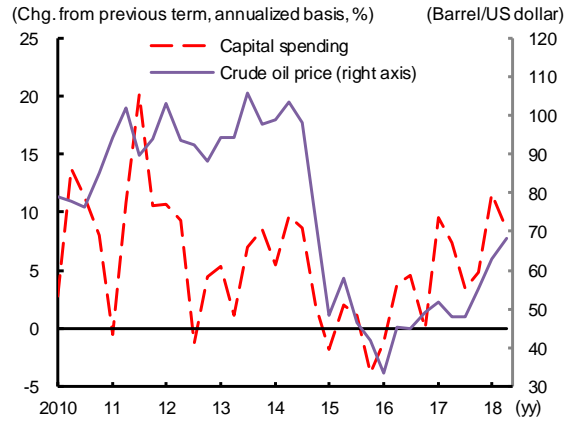
rising oil prices now serve as an indirect cause of increased Asian exports to the United States.

**Chart 9: Break-even point of US oil companies**



Note: The above data is based on surveys conducted on energy companies. Crude oil prices are based on WTI.  
Source: Made by MHRl based upon the Federal Reserve Bank of Kansas City.

**Chart 10: US capital spending and crude oil prices**



Note: Crude oil prices are based on WTI.  
Source: Made by MHRl based upon the United States Department of Commerce.

#### 4. Future outlook – Unlikely chance of a malignant crude oil price hike, but short-term risk still exists

Summarizing the discussion thus far, an oil price hike can be a negative factor for crude oil net importing countries in Asia centered on Taiwan, South Korea and Thailand. But as long as rising oil prices are triggered by real oil demand growth driven by the global economic expansion, it may act as a stimulus for economic growth in Asia since the region includes many export countries that can benefit from export growth.

Then, can we continue to avoid crude oil price hikes of a malignant nature in the future? There are two important concerns regarding this point.

First, amid supply restraints such as the economic crisis in Venezuela and production cuts by OPEC, it is anticipated that the US will bring to bear full-scale economic sanctions against Iran in November. We believe there is a high possibility that supply restraints will be strengthened further in the near future.

Second, we have started to find more media coverage claiming that shale oil production growth began to stall from the latter half of 2018,<sup>5</sup> stemming from a delay in the development of transportation infrastructure, such as pipelines, and that this situation

<sup>5</sup> Refer to “Why the lid is off of oil prices for now” (*The Wall Street Journal*, September 24, 2018) and “US shale production slows down” (*The Nikkei*, August 25, 2018), among others.



will likely continue until mid-2019.<sup>6</sup>

In the light of these factors, it may be better to suppose that Asian net oil importing countries will be negatively affected by a temporary malignant rise in crude oil prices, caused by supply restraints toward the first half of 2019. Nevertheless, we do not expect this malignant crude oil price hike to last for long if it does occur, under the assumption that supply restraints currently caused by shale oil transportation infrastructure will be eliminated in the latter half of 2019 in line with most people's expectations.

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<sup>6</sup> Refer to "Why the lid is off of oil prices for now" (*The Wall Street Journal*, 24 September 2018) and "Crude oil markets: Crude oil price often rises to over 70 US dollars per barrel based on information on the decline in crude oil supply from Iran, etc.," (website of *Japan Oil, Gas and Metals National Corporation*), among others.