
Mizuho Economic Outlook & Analysis

June 1, 2018

*Is there any sign of change in the price trend?
Some industries including restaurants have started transferring
costs onto service prices*

< Summary >

- ◆ The recent CPI excluding fresh food and energy (“BOJ-style core CPI”) is on a gradual upward trend as companies move to transfer higher personnel costs onto prices driven by the nation’s labor shortage. In particular, the services CPI is moving higher fueled by a rise in the unit labor cost.
- ◆ The major factor prompting the rise in the services CPI is higher food prices in restaurants (meals outside the home). There is a possibility that such factors as labor cost and transportation cost, in addition to the supply and demand factor, are having a greater impact on rising prices compared with the past.
- ◆ Higher crude oil prices and personnel costs may result in the transfer of costs onto prices mainly in the services sector, albeit not to the extent that would push up overall prices significantly. We need to be alert to the risk that higher restaurant prices may strengthen the thrift-consciousness of households.

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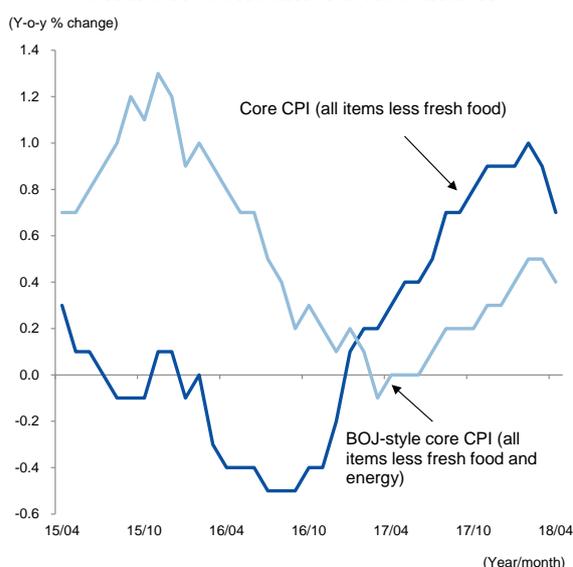
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1. The BOJ-style core CPI has been on an upward trend since the latter half of 2017

The Consumer Price Index (CPI) has been moving upward gradually thus far. The recent nationwide core CPI (all items less fresh food) recorded +0.9% year on year in March and +0.7% in April, revealing that the growth rate has contracted for two consecutive months (**Chart 1**). This contraction can be attributed to the slower rise in gasoline and electricity prices as well as other extraordinary factors. It seems that slower growth in March was due to repercussions over accommodation charges and overseas package tour expenses that surged during the Chinese New Year, and was driven in April by the loss of the rebound effect of mobile telephone prices from last year's price drop. If we exclude these temporary factors, we can say the CPI is on a gradual upward track. Even in the BOJ-style core CPI, less fresh food and energy, as seen in Chart 1, the CPI rose by +0.4% year on year in April and has continued to move upward since October 2017, albeit the pace of growth is somewhat slower compared with the past. When we examine the contributing factors, we see that the prices of goods and services are making a positive contribution to recent price increases (**Chart 2**).

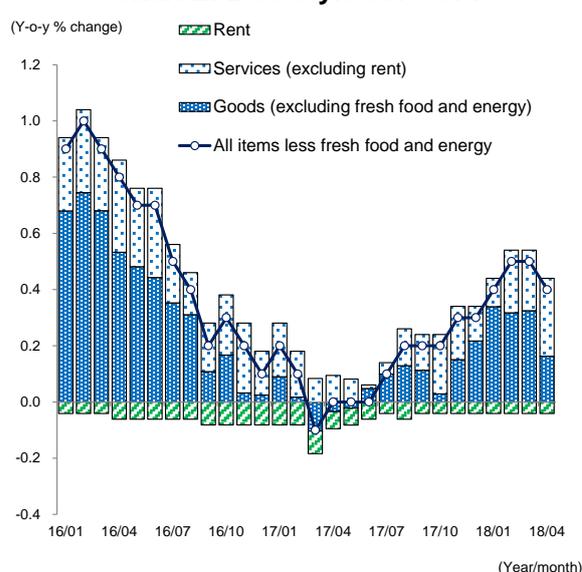
The BOJ-style core CPI is an important indicator for understanding the underlying inflation trend, excluding the impact of fresh food and energy prices, and is referred to by the Bank of Japan when determining the monetary policy. In this report, we focused on the BOJ-style core CPI to analyze the background of the recent price increases and the outlook of the price trend in the future.

Chart 1: Consumer Price Index



Source: Made by MHRI based on the Ministry of Internal Affairs and Communications, *Consumer Price Index*.

Chart 2: BOJ-style core CPI



Source: Made by MHRI based on the Ministry of Internal Affairs and Communications, *Consumer Price Index*.

2. The rise in labor cost has pushed up prices centered on services

In this section, to confirm the factors driving changes in the BOJ-style core CPI, we broke down it by contributing factors¹ as follows:

$$\text{BOJ-style core CPI} = \text{BOJ-style core CPI/GDP deflator (1)} \times \text{Wage per hour} \times \text{GDP deflator/Unit labor cost (2)} \times \text{1/Labor productivity (3)}$$

(1) “BOJ-style core CPI/GDP deflator” represents the factor of deteriorating terms of trade. For example, a surge in crude oil prices affects the core CPI by directly increasing energy prices; but it also exerts an indirect impact on the BOJ-style core CPI through the upsurge in raw materials costs. Food items also use crude oil in their manufacturing process, and chemical products such as trays and packages can be affected as well by the movement in crude oil prices. In this report, we looked at the increase rate of the BOJ-style core CPI against the GDP deflator, an indicator that reflects domestic inflation, as the factor of deteriorating terms of trade. In the case where import prices rise due to overseas factors, such as higher crude oil prices and a falling yen, if the domestic demand deflator rises in the same manner as the above movement, increases in the import deflator (elimination item from the GDP deflator) and domestic demand deflator will be offset and the GDP deflator will not be affected. In other words, where the rise in raw materials cost and transportation cost, driven by higher resource prices and the depreciating yen, is transferred onto prices, the GDP deflator will not increase; but the BOJ-style core CPI will rise and represent a deteriorating terms of trade (a rise in the BOJ-style core CPI/GDP deflator). Next, we looked at (2) “Wage per hour × GDP deflator/Unit labor price.” The unit labor cost is calculated by dividing nominal compensation of employees by real GDP and represents the labor cost per one unit of goods and services sold by companies. Therefore, the “GDP deflator/Unit labor cost” can be interpreted as the degree of labor cost transferred onto prices. In other words, (2) can be understood as “wage growth × transfer rate of wages onto prices,” so we regard this as a “labor cost factor.” If rising wages and the degree of price transfer on the wage increase become greater, we expect this factor to push up the BOJ-style core CPI. Lastly, we considered (3) “1/Labor productivity” as a cost absorption factor by improvement in productivity.

¹ The BOJ-style core CPI is broken down or defined as follows: “BOJ-style core CPI = BOJ-style core CPI/GDP deflator × nominal compensation of employees /labor input amount per hour × GDP deflator/(nominal compensation of employees /real GDP) × 1/(real GDP/labor input amount per hour).”

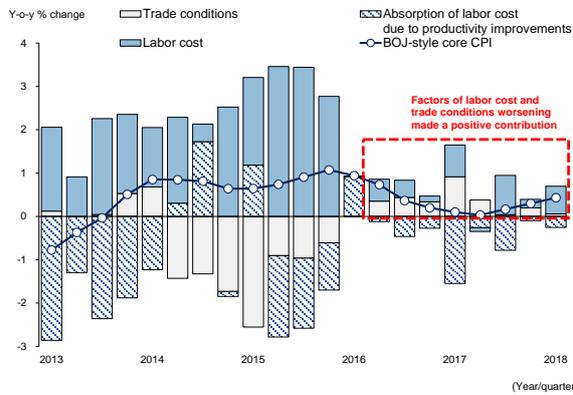
Chart 3 depicts a breakdown of the contributing factors based on the above. Looking at this chart, from 2014 to 2015 the BOJ-style core CPI maintained an upward trend to the extent that the increase in labor cost exceeded what could be absorbed by improved labor productivity and terms of trade. With cheaper crude oil prices ameliorating terms of trade, companies should have found it easier to raise both wages per hour and the price transfer rate of wages. On the other hand, amid the trend in 2016 when ameliorating terms of trade disappeared,² companies became more prudent about transferring increasing costs onto prices. While wages per hour rose, the price transfer rate of wages became lower, and as the contribution of the labor cost factor became smaller to the extent that could be absorbed by productivity improvements, growth in the BOJ-style core CPI also slowed down. Nonetheless, from 2017 onward the contribution of labor cost has tended to grow larger compared with 2016. Although terms of trade deteriorated on the back of crude oil price hikes, companies were compelled to transfer the wage increase per hour onto prices while the labor shortage trend was strengthening, making it easier to invite a situation where rising labor costs lead to increasing prices. If we look at the recent period of January to March of 2018, while deteriorating terms of trade were largely mitigated thanks to the appreciating yen at the beginning of the year, the labor cost factor following the increase in wages per hour contributed to pushing up the BOJ-style core CPI.

A rise in labor cost can exert greater upward pressure on prices, particularly in labor intensive industries such as the services sector. In fact, looking at the past development of the unit labor cost³ and services CPI (excluding the impact of rent and institutional factors), we can see that the services CPI tends to surge in conjunction with the rising unit labor cost (**Chart 4**). Recent data shows that the unit labor cost in the 2018 January to March period rose by +2.2% year on year, and while labor supply and demand continues to tighten due to the serious labor shortage since the Bubble Economy era, we can infer that a constant increase in the unit labor cost in the future has a good chance to bring about higher services prices.

² Even for the Core CPI, the degree of improvement in trade conditions (core CPI/GDP deflator) is decreasing.

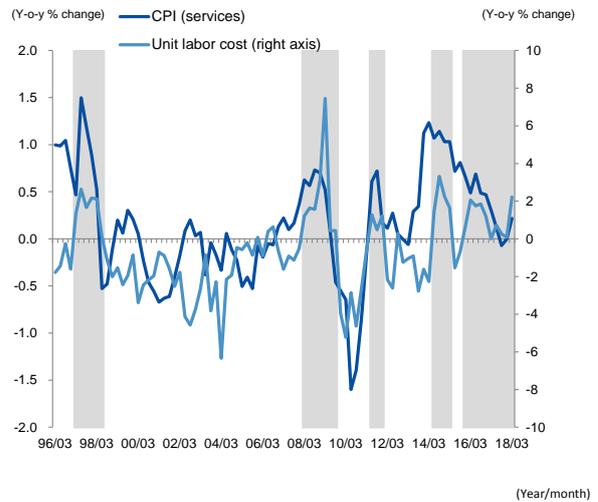
³ While wage represents labor cost per one laborer, unit labor cost refers to the labor cost for one unit of goods/services sold by companies, and therefore the unit labor cost is considered to have a more direct relationship with prices.

Chart 3: Contributing factors of the BOJ-style core CPI



Note: Prices are indices of the BOJ-style core CPI on a 2015 basis after adjusting for the consumption tax (adjusted for the consumption tax hike in 2014).
 Source: Made by MHRI based on the Cabinet Office, the Ministry of Internal Affairs and Communications, and the Ministry of Health, Labour and Welfare.

Chart 4: Unit labor cost and services CPI



Note: 1. Services CPI excludes the impact of rent, institutional factors (high school education, medical fees, etc.), and consumption tax.
 2. Shaded parts represent the unit labor cost increase phase.
 Source: Made by MHRI based on the Cabinet Office and the Ministry of Internal Affairs and Communications.

3. Hikes in restaurant price were fueled by such cost factors as personnel and transportation costs, in addition to the supply and demand factor

In the previous section, we pointed out the possibility that upward pressure on prices may heighten in the services industry driven by surging personnel costs. Among the various services, the restaurant service has shown a constant price increase trend until the most recent data. Ever since the latter half of 2017, the restaurant industry has been the driving factor behind the services CPI increase (**Chart 5**).⁴ Although the CPI data in April 2018 suggest that companies remain cautious about increasing prices, the CPI growth rate for the restaurant industry expanded, recording +0.8% from the preceding year (+0.7% in March 2018) driven mainly by grilled meats, beer and sushi. Restaurants account for around 10% of the services CPI, and since restaurants have a certain impact on the movement of the overall BOJ-style core CPI, we focused on the restaurant CPI as a typical example of the services CPI and studied what factors might affect the development of this data.

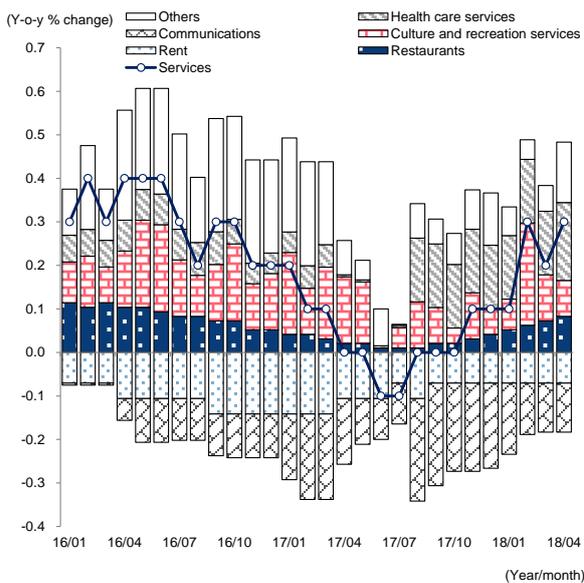
First, considering the supply and demand environment, the condition of the restaurant industry is favorable thanks to the overall economic recovery. According to the “Market Trend Survey of the Food Service Industry” by the Japan Foodservice Association, sales

⁴ Other than restaurant service, with the medical fee increase after revision of the medical treatment fee system, health and medical services also serve as a factor pushing up prices.

in the restaurant industry grew by +2.8% year on year in 2016 and by +3.1% in 2017. Furthermore, due to increasing labor shortage and rising crude oil prices, the rise in the restaurant CPI may have also been affected by increasing costs, such as wage and transportation costs. If we actually look at the DI of change in output and input prices in accommodation and restaurant services, the DI of change in output prices is rising in conjunction with the DI of change in input prices, and the forecast DI of change in output prices (April to June period) even reached as high as +17%pt (**Chart 6**).

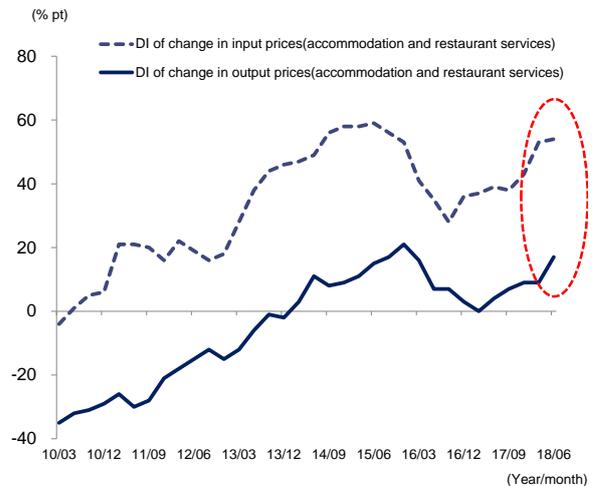
For the movement of the restaurant CPI, we estimated the degree of impact of various factors, including the demand factor (output gap), personnel cost factor (unit labor cost), transportation cost factor (service producer prices [road freight transportation]), raw materials cost factor (corporate goods prices [beverage and food]), and inertial factor, or price rigidity factor (lagged restaurant CPI [lag from one quarter ago]).

Chart 5: Contributing factors of the services CPI



Source: Made by MHRI based on the Ministry of Internal Affairs and Communications, *Consumer Price Index*.

Chart 6: DI of change in output and input prices in accommodation and restaurant services



Note: Data of the April to June period of 2018 are the forecast DI.

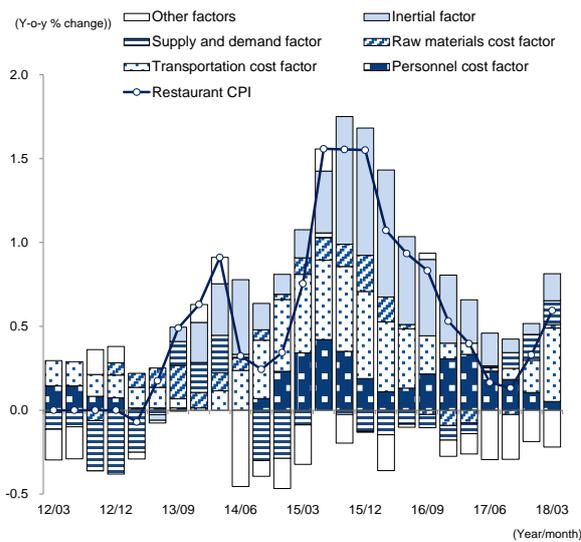
Source: Made by MHRI based on the Bank of Japan, *Tankan* (Short-Term Economic Survey of Enterprises in Japan).

Chart 7 is a breakdown of the restaurant CPI development by various contributing factors based on the estimate results. We could confirm that the contribution of labor cost and transportation factors has grown larger since 2014. Recently, the supply and demand factor is having a positive contribution, and the contribution of the transportation factor is expanding again. Looking at the trend of service producer prices (road freight

transportation), its growth has accelerated since the latter half of last year (**Chart 8**), and we can see that this rise is pushing up the restaurant CPI. The logic behind this is as follows: an increase in wages in the road freight transportation sector on the back of the labor shortage and higher crude oil prices is affecting transportation costs with a time lag and pushing up the restaurant CPI indirectly. We recently saw a string of price increase announcements by transportation firms, and we can say this is now about to be transferred onto prices in industries other than transportation.

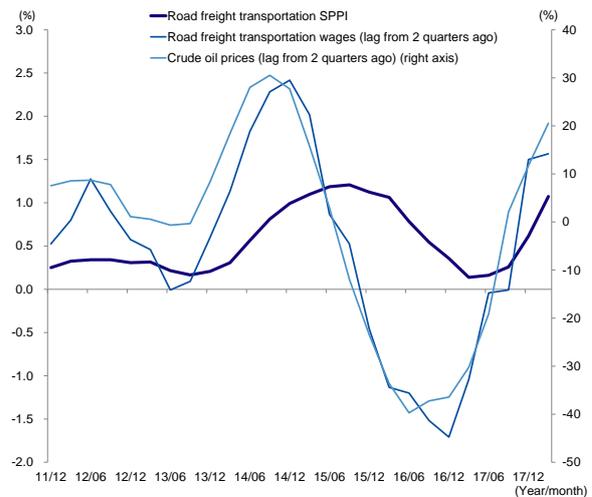
It should be noted that although we picked the restaurant industry as a typical example of the services sector, an increase in the unit labor cost also serves as an increase factor in other services as well (such as services related to household tasks, culture and recreation including travel), as we pointed out earlier. The rise in raw materials cost and transportation cost is also considered to be making a positive contribution to price increases.

Chart 7: Contributing factors of the restaurant CPI



Note: "Other factors" represents constant term and error term (factors not reflected in the estimation formula).
 Source: Made by MHRI based on the Cabinet Office, the Ministry of Internal Affairs and Communications, and the Bank of Japan.

Chart 8: Service producer price index (road freight transportation)



Note: Data represent four quarters of the year-on-year moving average. Crude oil prices and road freight transportation wages lag from data of two quarters ago.
 Source: Made by MHRI based on the Bank of Japan and the Ministry of Health, Labour and Welfare.

4. Price transfer is expected to proceed gradually, reflecting the increase in crude oil prices and personnel costs, albeit the heightening the thrift-consciousness of households is a risk factor

Lastly, we studied the future direction of prices. In 2018, we expect a hike in the unit

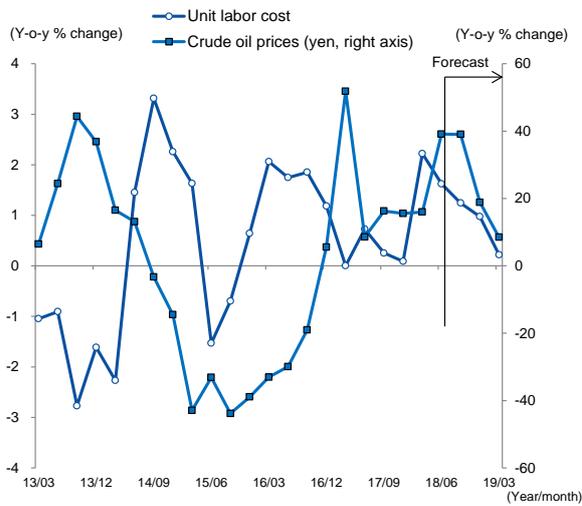
labor cost driven by the labor shortage and a substantial hike in crude oil prices compared with the previous year (**Chart 9**). While the supply and demand environment is expected to continue tightening, the movement to transfer increases in personnel, raw materials and transportation costs onto prices is projected to proceed even further centered on the services industry such as restaurants. On the other hand, we need to discount the fact that for communication costs, rents and items whose prices are determined institutionally (such as medical costs and school education fees), the impact on the CPI remains limited even if personnel costs surge. Overall, although the pace of growth in the BOJ-style core CPI and core CPI will expand, we expect the degree of expansion to remain relatively small. Mizuho Research Institute forecasts that the Core CPI in FY2018 will grow by +1.2% year on year and the BOJ-style core CPI by +0.5%, which are far lower than the Bank of Japan's inflation target of +2% growth in the Core CPI.

But even though the impact on the CPI is expected to remain limited, we need to be alert to the risk that if the movement to transfer cost increases onto prices spreads even further centered on the services industry, it may strengthen the thrift-consciousness of households and ultimately reduce household consumption. In the 2018 January to March period, households' familiar prices⁵ rose by +5% year on year fueled by a surge in fresh food prices, raising the thrift-consciousness of households⁶ (**Chart 10**). Recently, fresh food prices are no longer soaring, but if gasoline prices remain high and the prices of familiar services for households (e.g. restaurants) increase, the thrift-consciousness of households may remain at a high level. We mentioned earlier that the sales performance of the restaurant industry is currently favorable, but a prominent reason for this is the increasing consumption of meals outside the home due to the higher numbers of single households and female workers. This suggests that households are now more susceptible to the trend of the restaurant CPI. Should the price transfer trend in the restaurant industry prevail and the thrift-consciousness of households rise, it will be more difficult to raise the prices of goods and services as a whole and, paradoxically, the pace of CPI growth may become slower (even compared with our forecast described earlier). We need to watch closely for such a scenario.

⁵ Median value of households' responses to the BOJ's "Opinion Survey on the General Public's Views and Behavior" question: "By what percent do you think prices have changed compared with one year ago?"

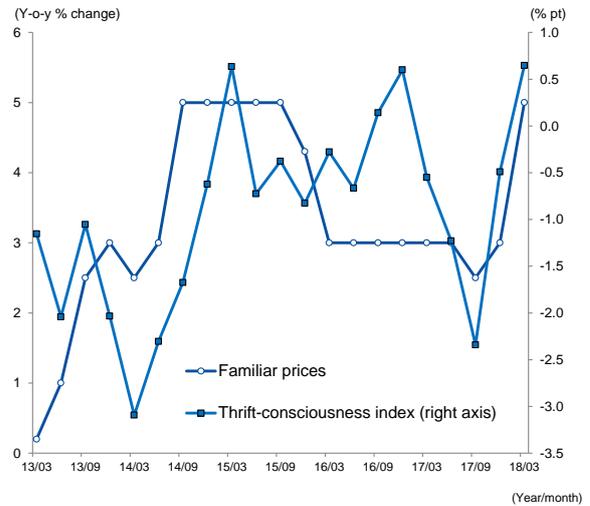
⁶ We compared 137 items common to the CPI and household surveys and calculated the index by indexing the difference in the growth rate of the CPI and the average unit price using CPI weight.

Chart 9: Outlook of the unit labor cost and crude oil prices



Note: Outlook data is from MHRI, *FY2018, FY2019 Economic Outlook*, May 17, 2018.
 Source: Made by MHRI based on the Cabinet Office and the Ministry of Health, Labour and Welfare.

Chart 10: Households' thrift-consciousness and familiar prices



Note: The "thrift-consciousness" index is derived by comparing 137 common items covered by the CPI and Family Income and Expenditure Survey and indexing the difference of the year-on-year growth rate of the CPI and average unit price using the weight of the CPI (2015 standard).
 Source: Made by MHRI based on the Bank of Japan and the Ministry of Internal Affairs and Communications.

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/jp180601.pdf>