Daiwa Securities

Daiwa's Economic View

What changing price/income elasticity imply about tipping point for tariff impact

- Potential for prolonged tariffs, changes in automakers' behavior
- Price elasticity of Japan's US export volume down, income elasticity up
- Factors behind falling price elasticity: shift to higher value added, changes in corporate behavior
- Lower price elasticity mitigates tariff shock; risk is US recession

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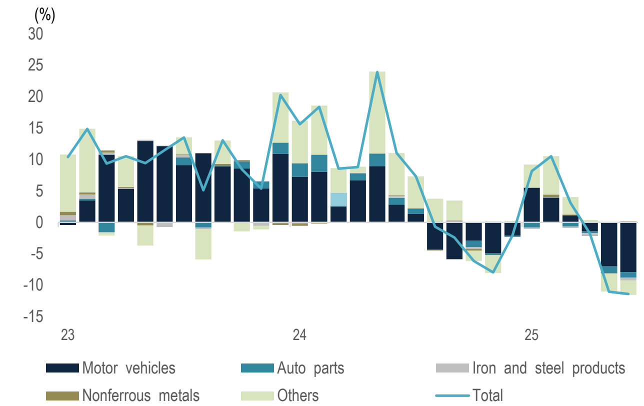
Potential for prolonged tariffs, changes in automakers' behavior

Thus far in July, the Trump administration has postponed the imposition of additional tariffs on Japanese imports while notifying Japan of a 25% "reciprocal" tariff. This 25% tariff would depress Japan's real GDP by around 1.1ppt in cumulative terms and could have a major impact on the Japanese economy.

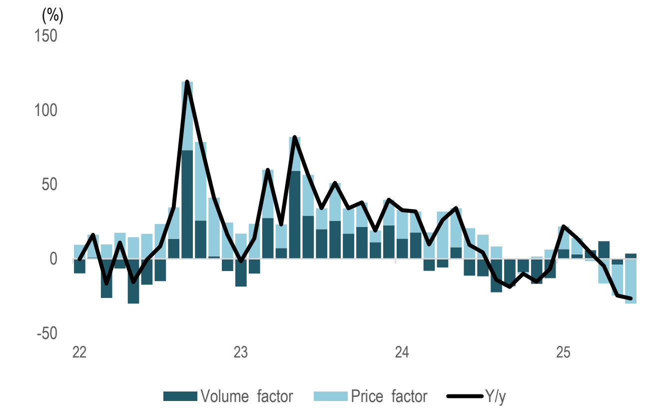
However, an impact on exports is already emerging from the 10% reciprocal tariff and sectoral tariffs on specific items that have been in place since spring. June trade statistics (released 17 Jul) showed that the value of Japan's exports to the US was down 11.4% y/y. Autos' contribution to export value is particularly large, and automakers are continuing to shoulder the cost of tariffs rather than raise prices in the US. As a result, there has been no major impact as yet on the volume of Japan's auto exports to the US.

Y/y Contribution to Export Value to US



Source: MOF; compiled by Daiwa.

Y/y Contribution to Export Value to US (motor vehicles)



Source: MOF; compiled by Daiwa.

This decision by companies (in this case, automakers) to absorb the cost of tariffs has a direct negative impact on their earnings, but maintaining sales prices allows them to remain competitive on price. However, there are recent signs of firms raising prices for autos exported to the US, suggesting that some are finding it difficult to continue absorbing the entire cost of tariffs.

The rapid rise in US tariff revenue could lead to the view that tariffs are a stable source of funding for the US government. This would make scrapping tariffs difficult even under a future Democratic government, suggesting that they could remain in place in the long run. This would likely force even the auto industry to raise prices in future. Companies could also respond by relocating production bases to the US to reduce their tariff costs.

Analyzing Trump tariffs' impact: Price elasticity down, income elasticity up

Analyzing the impact of Trump tariffs, assuming that both automakers and other companies may begin passing on the cost of tariffs, requires us to first confirm the factors that affect export volume. It is typically explained by two metrics: the price elasticity of demand and the income elasticity of demand.

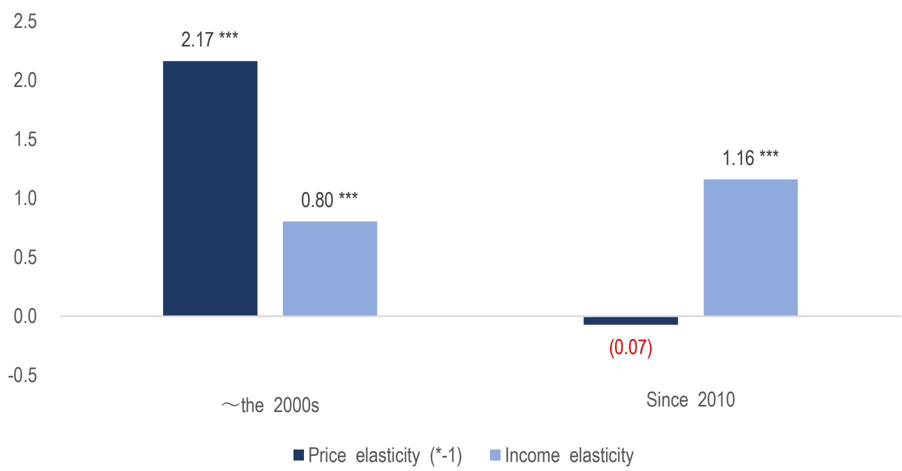
Price elasticity indicates the change in export volume in response to changes in export prices. Export volume tends to decline when prices rise and increase when prices fall. Income elasticity is an indicator of how export volume changes in line with a country's economic conditions (income levels). Rising incomes in countries that are export destinations tend to increase their demand for exports and boost export volume.

Our estimates based on data since 2000 show that US demand for Japanese products fluctuated sharply in line with price movements during the 2000s, but since 2010, price movements have not had a statistically significant impact on export volume. However, income elasticity has risen since 2010, resulting in greater (and statistically significant) changes in Japan's export volume in response to changes in US income levels.

The above analysis implies a limited impact on export volume even if Japan passes through higher tariffs into prices, but a major impact if the US economy slows.

The formula we use in our analysis is: ln (Japan's real exports to US) = constants + α x ln (relative price) + β x ln (US income). α in this formula indicates price elasticity, while β indicates income elasticity. Given that the recently introduced US tariffs will apply to all countries, we took the view that relative prices that could potentially affect demand should be based on a comparison with consumer prices in the US. We therefore simulated them by converting the US-bound export of unit value index to USD and dividing by the US goods CPI. We used US real GDP as a proxy for income.

Price/Income Elasticity of Exports to US



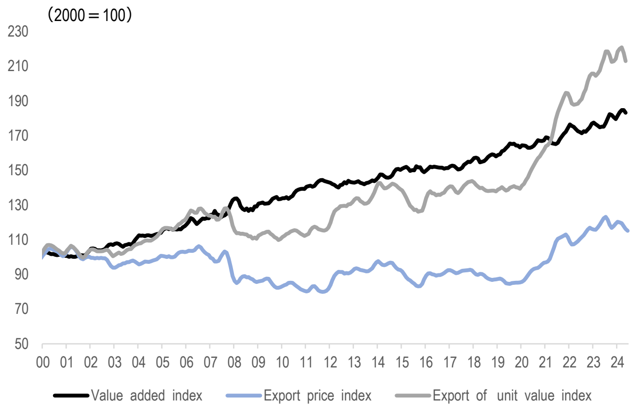
Source: MOF, BOJ, US BEA; compiled by Daiwa.
Note: Three stars indicate statistical significance at the 1% level, and for convenience, we multiply a price elasticity by –1.

Why has price elasticity declined?

We think the decline in the price elasticity of Japan's exports to the US reflects (1) a shift to exporting higher value-added products, and (2) changes in corporate behavior that have kept prices stable.

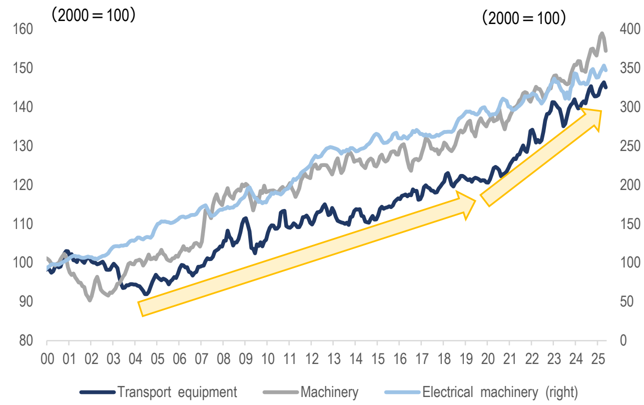
Amid rapid yen appreciation following the Plaza Accord and the growing presence of emerging markets, Japanese exporters increased the value added of their exports (e.g., by improving product performance and enhancing brand value) to maintain their competitiveness. The value-added index shows that Japanese firms in general continue to increase value added, and that the uptrend has gathered pace particularly for transportation equipment and machinery since the start of the COVID-19 pandemic. However, as we discuss below, Japanese firms' international competitiveness in electric appliances has declined despite the shift to higher value added driven by improvements in product development capabilities and greater adoption of IT.

Value-added Index



Source: MOF;BOJ; compiled by Daiwa.
Notes: (1) Value added index = Export of unit value index / Export price index.
(2) 3-month backward moving averages.

Value Added Index by Sector

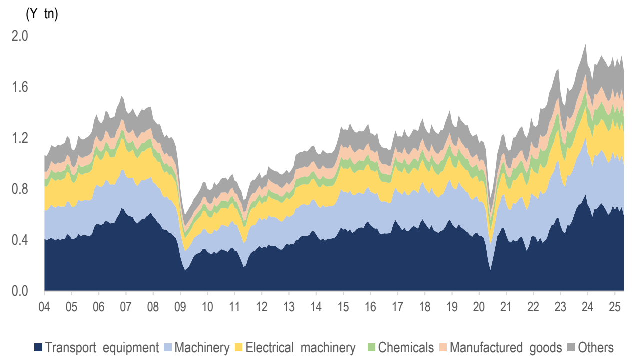


Source: MOF, BOJ; compiled by Daiwa.
Note: 3-month backward moving averages.

The breakdown of Japan's US exports shows that transportation equipment and machinery (in which it has strong global competitiveness) have a higher weighting than they do in total global exports. According to the Revealed Comparative Advantage (RCA) index, Japan remains highly competitive in transportation equipment and machinery, but in electric appliances its competitiveness is declining due to the growing presence of Chinese and South Korean rivals.

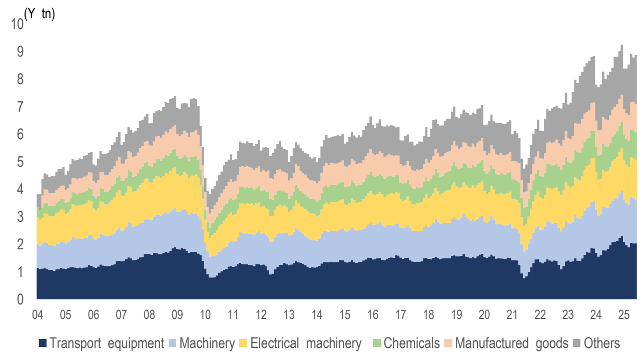
An increase in value added and in the weighting of highly competitive products causes consumers to prioritize quality and brand over price, reducing the sensitivity of demand to price movements (price elasticity). In contrast, we think the income elasticity of demand rises as income growth results in a substantial increase in demand for these high value-added products.

Export Value to US (monthly)



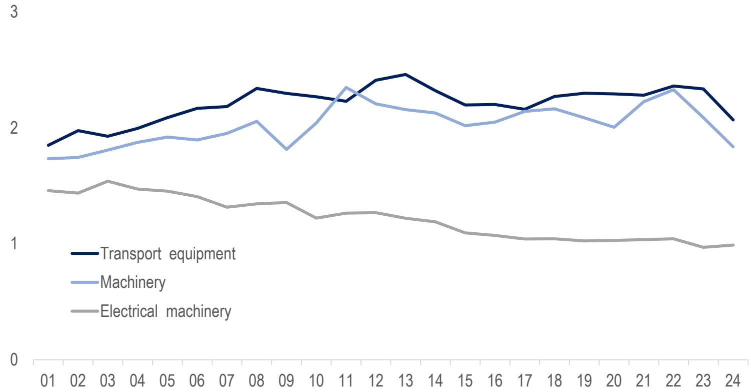
Source: MOF; compiled by Daiwa.

Total Export Value (monthly)



Source: MOF; compiled by Daiwa.

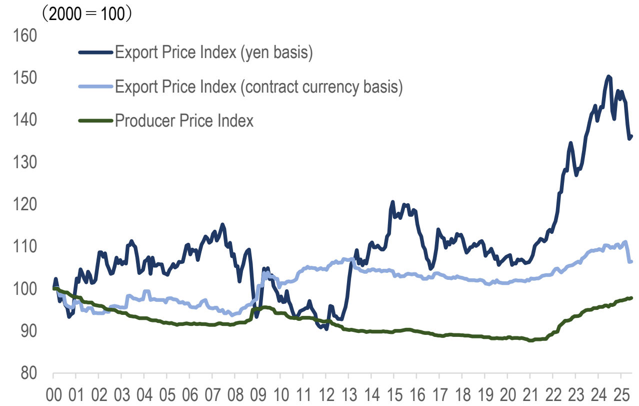
Revealed Comparative Advantage (RCA) Index



Source: MOF, United Nations; compiled by Daiwa.
Notes: (1) RCA index = (Value of Japan's exports of specific goods/Japan's total exports) / (Value of global exports of specific goods/Total global exports).
(2) Shows Japan's export weightings relative to global average, indicating goods that have a comparative advantage.
(3) A score above 1 indicates a comparative advantage.

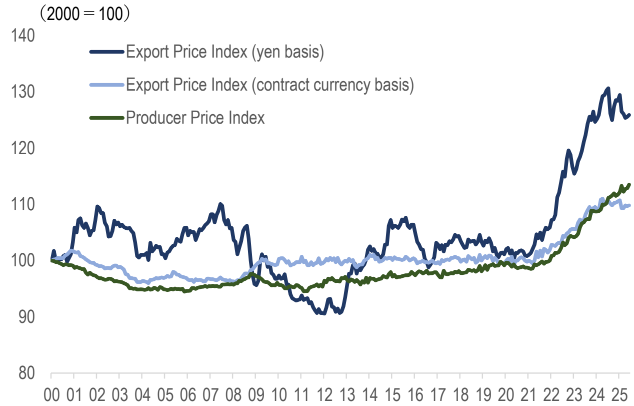
In transportation equipment and machinery, the export price index on a contract currency basis remained broadly flat during the period of yen weakness that began in 2013, and this trend continued through 2021. While the weaker yen made it possible to increase market share by lowering prices, during this period companies opted to avoid passing through forex movements into prices and instead captured forex translation gains by keeping prices constant. In our view, companies were able to avoid triggering major changes in consumers' purchasing behavior by minimizing price volatility, which ultimately reduced the price elasticity of demand.

Export Prices and Producer Prices (transportation equipment)



Source: BOJ; compiled by Daiwa.

Export Prices and Producer Prices (machinery)



Source: BOJ; compiled by Daiwa.

Lower price elasticity mitigates tariff shock; risk is US recession

The 1.1ppt cumulative negative impact on Japan's real GDP from the imposition of the 25% reciprocal tariff that we discussed at the beginning of this report assumes that the price elasticity of export volume is 1. However, our analysis suggests that price elasticity may be declining, which implies that even if Japanese companies (mainly automakers) begin passing through tariff costs this may not have a major impact on export volume to the US.

However, the income elasticity of demand may be rising, implying that Japan is becoming increasingly vulnerable to a US recession. We therefore think US economic trends will be even more important in assessing tariffs' impact on the Japanese economy, and a US recession could be an inflection point for the effect of tariffs. Conversely, tariffs' impact could diminish if the US economy remains strong, as implied by Bank of Japan (BOJ) policy board member Hajime Takata's comments in a 3 July speech that "the Bank may need to nimbly shift back to the rate hike cycle in response to policy changes in the United States".

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