In Brief: Understanding the Rising Japanese Trade Surplus

by Thomas Klitgaard

Intuition suggests that a strengthening of the yen should moderate Japan's trade surplus by reducing the price competitiveness of Japanese goods. Yet the Japanese merchandise trade surplus more than doubled from 1990 to 1993, reaching a record $120 billion, at the same time that the yen appreciated roughly 30 percent against the dollar. Is the pairing of these developments evidence of an unusual relationship between Japan's exchange rate and its trade surplus?

The answer, in short, is no. The nominal trade surplus, which is the difference between the value of exports and imports, is affected by changes in prices. A yen appreciation tends to lower the price of imports relative to exports, pushing the trade balance higher. The real trade surplus, by contrast, excludes these valuation effects, assessing trade developments instead as the difference between the volume of goods shipped in and out of Japan. By this measure, the trade surplus did respond to the yen appreciation as one might expect it fell 20 percent from 1990 to 1993 as more goods were imported into Japan and fewer goods were exported (Chart 1).

This article explains why the two measures of the Japanese trade surplus initially move in different directions when the yen appreciates. It also examines how the surplus is likely to behave under different exchange rate scenarios. The article's key conclusion is that the nominal surplus should fall significantly once the yen stabilizes. A further rise in the yen, however, would push the nominal balance still higher over the short term—while putting more downward pressure on the surplus when calculated in volume terms.

Recent developments

When measured in the yen value of the goods being traded, the nominal surplus jumped 75 percent from 1990 to 1993 as imports fell much more than exports.[1] When calculated in dollars, the nominal surplus advanced even more—130 percent to $120 billion—because a given yen surplus is automatically converted into a higher dollar value whenever the yen appreciates.[2] Most of the $70 billion increase in the trade surplus during these three years stemmed from trade with the developing world. The trade balance with the United States rose by a relatively modest $12 billion, dropping from three-quarters of Japan's global surplus in 1990 to less than half in 1993.[3]

Although the slowdown in domestic activity in Japan affected the change in the trade surplus after 1990, the picture of a large trade surplus in 1993 would not be substantially altered if the Japanese economy had instead been operating at its potential level. The Japanese recession is estimated to have reduced imports by about $12 billion in 1993 from what they would have been if the economy were operating at its potential level.[4] This calculation indicates that the trade surplus would still have exceeded $100 bil-

[1] All data in this article are from the Japanese Tariff Association

[2] When the yen's value changes, the behavior of imports and exports differs according to their currency denomination For example, after the yen's rise from 1990 to 1993, imports remained roughly unchanged in dollar terms while they dropped sharply in yen terms

[3] The bilateral balance with the United States, in yen terms, remained unchanged from 1990 to 1993

[4] This estimate is based on a negative 4 0 percent gap between actual and potential GDP in 1993 and a 1 3 income elasticity for import demand Further adjusting for weakness in some major industrial countries would narrow the difference between the actual and the cyclically adjusted trade surplus

lion in 1993, twice its 1990 level, even without the slowdown in the Japanese economy. A similar calculation for 1990 suggests that the trade surplus in that year was about $12 billion smaller because the Japanese economy was operating above its potential level.[5] Together, these estimates imply that changes in Japanese GDP relative to its potential level explain roughly a third of the $70 billion increase in the trade surplus from 1990 to 1993.

In contrast to the rise in the nominal trade surplus, the surplus in real terms dropped 20 percent from 1990 to 1993.[6] The rising yen helped push the real surplus down by making Japanese goods relatively more expensive on both domestic and world markets. As a consequence, the growth of exports moderated while the demand for imports rose despite the Japanese recession. An additional factor behind the slowdown in exports was weak economic activity in the major industrial countries.

A similar divergence between the real and nominal trade balances occurred after the yen's sharp rise in the mid-1980s. From 1985 to 1987, the yen appreciated 70 percent against the dollar. As in the more recent period, the nominal surplus rose in yen terms, increased much more in dollar terms, and declined in real terms.

The recent behavior of the real and nominal measures of the Japanese trade surplus raises two issues for policymakers:

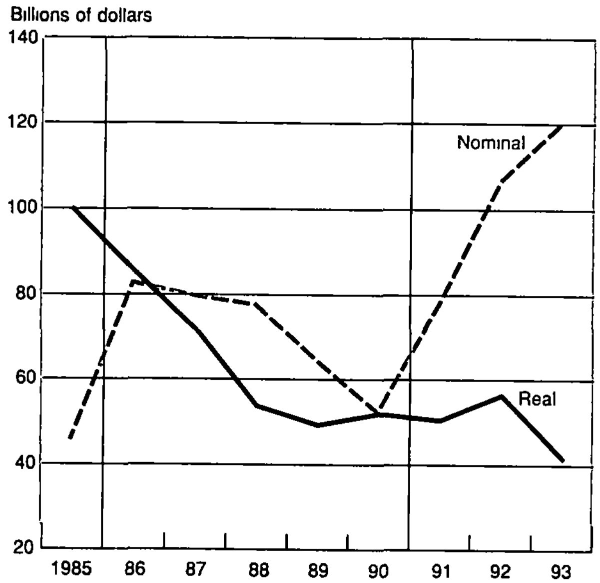
- The steep increase in Japan's nominal trade surplus may be troubling to the foreign exchange markets. In the mid-1980s, large nominal imbalances in the world were seen as one of the principal forces upsetting currency markets. The increase in the Japanese surplus marks the reappearance of large imbalances among the major industrial countries. In particular, Japan's $120 billion trade surplus in 1993 was $40 billion higher than its peak surplus in the 1980s.
- The decline in Japan's real trade surplus has favorable implications for employment and production in coun-

[5] The calculation assumes that the Japanese economy was operating roughly 4.0 percent above its potential level in 1990.

[6] The volume data, derived using unit value price indexes, reflect the number of items being shipped in and out of Japan. Some analysts question whether unit value indexes are the most appropriate price measure for calculating the real trade surplus because they do not take into account changes in the quality of traded goods.
The decline in the real surplus is closer to 50 percent if both 1990 and 1993 levels are adjusted for the deviation of Japan's output from its potential level.

Chart 1

Japanese Merchandise Trade Surplus

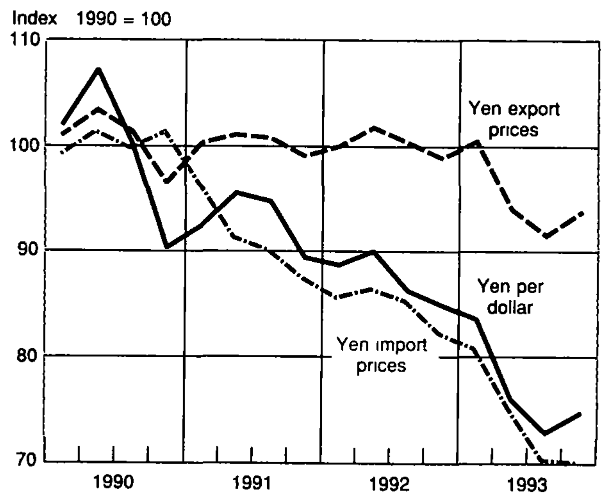


Source: Japanese Tariff Association, *Summary Report on Trade of Japan*.

Note: Real trade surplus is calculated using quantum indexes based on 1990 prices. Yen values are converted into dollars at the 1990 exchange rate.

Chart 2

Exchange Rate and Yen Prices



Source: Japanese Tariff Association, *Summary Report on Trade of Japan*.

Note: Prices are unit value indexes in yen terms.

tries that trade with Japan Output in these countries has been stimulated by the drop in the volume surplus to roughly half its 1985 record level

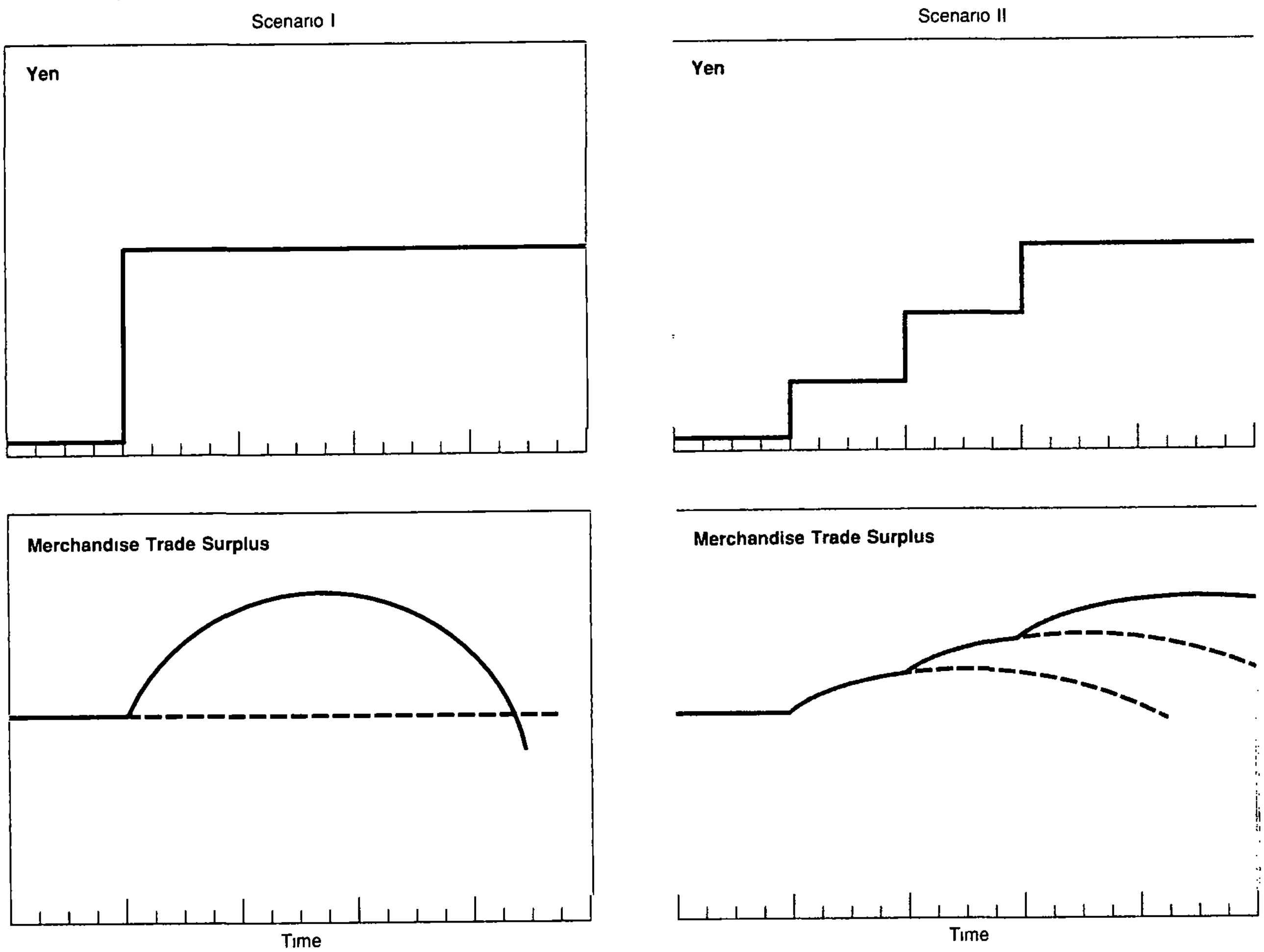
The yen and import prices

The tendency for a yen appreciation to lower import prices governs the behavior of the nominal trade balances over the short term The yen price of imported goods falls immediately when the yen rises against the dollar because most Japanese imports are denominated in dollars and therefore cost less in yen terms [7] An appreciating yen will therefore lower the cost of imports, leading to a drop in nominal imports Export prices may also fall as Japanese producers seek to offset the yen's rise to preserve their foreign sales, but the decline is limited by the producers' ability to cut costs or their willingness to accept lower profits The recent difference in price behavior—with import prices in yen

[7] Food, oil, raw materials, and manufactured materials make up 85 percent of Japanese imports These goods are usually priced in dollar terms on world markets

Chart 3

Change in Trade Surplus under Two Yen Appreciation Scenarios



Note Scenario I involves a single appreciation in the first period, scenario II, a sequence of appreciations terms down 30 percent from 1990 to 1993 and export prices down less than 10 percent (Chart 2)—caused nominal imports to fall relative to exports, pushing the nominal surplus higher.[8]

The initial increase in the nominal surplus generated by a currency appreciation is eventually unwound as lower prices spur the demand for imports. Over the same period, export sales moderate because the stronger yen puts Japanese goods at a price disadvantage on world markets. More specifically, the boost to the nominal surplus from the drop in import prices is more than offset by a decline in the real balance as the demand for imports and exports responds to the change in relative prices.[9]

The behavior of the nominal yen surplus, first rising and then eventually falling below its initial level, is known as the J-curve effect. This effect is illustrated in the lower panels of Chart 3. In Scenario I, a onetime yen appreciation raises the trade surplus (represented by the solid line) above the path it would have followed in the absence of an exchange rate change (dashed line). Over time, however, the balance falls below the level it would have maintained had the currency remained unchanged.

The Japanese trade surplus has yet to experience the full J-curve effect. It has not fallen back to its 1990 level because the rise in the yen was not a onetime jump. Instead, the yen appreciated 7 percent in 1991, 6 percent in 1992, and 14 percent in 1993, effectively creating a sequence of smaller J-curves (Scenario II). The trade surplus increased steadily after 1990 because the yen's ongoing appreciation kept the trade balance adjustment always on the initial upward segment of a succession of J-curves (represented by the solid line), preventing the surplus from reaching the downward segment (represented by dashed lines). If all of the yen's rise since 1990 had occurred in the first year, then the nominal yen balance would likely be significantly lower than it is today. The sequence of J-curves, however, has effectively delayed the date when the nominal balance reaches the downward segment of the J-curve.

Finally, note that the eventual decline in the nominal surplus in response to a yen appreciation will always be less than the decline in the real surplus. As explained above, a strengthening yen lowers import prices relative to export prices. The resulting change in relative prices offsets part of the decline in the real balance, causing the nominal surplus to be less affected by a rise in the yen than is the real surplus. Consequently, the yen has a relatively large impact on how Japanese trade affects the world's real economies and a relatively smaller impact on capital flow imbalances between countries.

Conclusion

The rise in the yen since 1990 pushed the nominal Japanese trade surplus upward while reducing the real trade surplus. If the yen stabilizes, then the nominal balance is poised to decline in response to the past yen appreciation. A further rise in the yen, however, would likely force the nominal surplus even higher, delaying once again the downward adjustment in the merchandise trade surplus that eventually comes from a stronger yen.

[8] An alternative measure of export prices is available in Japanese wholesale price data Based on a survey of prices for exported goods adjusted for quality changes, this index indicates more aggressive price cutting by Japanese exporters, particularly in 1991 and 1992, than is suggested by the unit value data

[9] The nominal yen balance will fall back below its initial level if the demand for imports and exports responds sufficiently to changes in relative prices The Marshall-Lerner condition specifies the relative price elasticities needed for a rising currency to lower the trade balance over time Most empirical studies find that Japanese trade satisfies this condition