

Economic estimate of the impact of WTO accession by Taiwan

Excerpt from a report by Dr. Greg Mastel

<Commissioned by the Bureau of Foreign Trade, Ministry of Economic Affairs>

For this study, an attempt was made to measure the potential increase in imports in each of the aforementioned industrial and agricultural sectors⁴⁰. This exercise required data for the top-7 imports for each sector in 1998; tariff rates at accession and the liberalization timetable; the incorporation of non-tariff measures; and own-price elasticities for each product. Assumptions about endogenous import demand during the phase-in period were also required.

[Import Data](#)

[Tariff Rates and Liberalization Timetable](#)

[Dealing with Non-Tariff Measures](#)

[Own-Price Elasticities for Imports](#)

[Endogenous Import Demand](#)

[Methodology](#)

[Results](#)

[Estimated Impact of Liberalization on Taiwanese Imports](#)

[CONCLUSION](#)

Import Data

Data on the price, quantity, and value of imports (in U.S. dollars) at the ten-digit HS level were taken from the December 1998 version of the "World Trade Atlas, Taiwan Edition." This CD-ROM, produced with Taiwanese data by Global Trade, Information Services, Inc., contains statistics released through the end of 1998. The Taiwanese government will release revised trade data for 1998 later this year that may differ from the data used in these estimates. However, revisions are typically small and would have only a minor impact on the estimates contained in this study.

Rather than estimate the impact of WTO accession for each ten-digit product, this analysis focuses on the top-7 products in each sector. The top-7 imports on average (weighted) accounted for 67 percent of total sector imports. Among individual sectors, the coverage ratio ranged from 64 percent to 98 percent for all but the textile and apparel sector, for which the coverage ratio was only 26 percent. (See exhibit.)

Tariff Rates and Liberalization Timetable

The tariff rates and liberalization timetable were taken from the *Schedule for the Separate Customs Territory of Taiwan, Penghu, Kinmen and Matsu Part I and Part II*. The tariff reductions illustrated on this schedule are listed at the eight-digit HS level. Most tariff rates are expressed as a percent of import value. For some products, the duties are calculated according to quantities rather than values. This complicated the task of incorporating non-tariff measures, which were expressed as percentage points. In such cases, tariff rate equivalents were calculated based on 1998 data. This required converting the volume-based tariff, expressed in New Taiwanese dollars, into U.S. dollars. This was done at an exchange rate of NT\$ 33.5 per U.S. dollar.

The timetable for liberalization varied between and within sectors. For semiconductors, liberalization is completed on the second year after accession. For automobiles, the phase-in period varied from 2 to 9 years. (See exhibit) Rates are reduced in equal increments for almost all products, the exception being the auto industry, in which implementation is staggered for several products.

Because the model used in this study is dynamic, it requires an assumption about the year of accession. The year of accession is assumed to be 2001. Due to growth in the Taiwanese economy, if accession is one year earlier, the gains from liberalization will be roughly 5 percent lower than expressed in this report. Similarly, if accession occurs in 2002, the gains will be roughly 5 percent greater than estimated here.

Dealing with Non-Tariff Measures

The estimates of non-tariff barriers discussed earlier were simply added to the tariff rates and reduced according the same schedule.

Own-Price Elasticities for Imports

Ideally, own-price elasticities would be calculated using monthly price and quantity data for imports, domestic output, and domestic demand. However, elasticities traditionally have varied from study to study, depending on the methodology, data sources, and time frame of the data. Rather than using estimates that may not correspond to the current data, a range of values is used for each industry being considered. For agricultural products, the elasticity used here ranges from minus 0.5 to minus 1.5. For other sectors, the range is minus 1.0 to minus 2.0.

Endogenous Import Demand

In order to calculate more accurately the change in imports during the phase-in period, it is necessary to incorporate some measure of changes in domestic demand for each sector.

Because Taiwan is a high growth economy, growth in import demand is high as well, roughly reflecting the rapid growth in the country's GDP; an endogenous growth rate of 5 percent was used.

Methodology

The following steps were taken to estimate the impact of lower tariffs (and lower NTMs) on imports.

1. Phase-in schedules were calculated.
2. A baseline of import values was created, assuming a five-percent annual increase in the quantity of imports consumed and constant import prices (excluding tariffs) over the period.
3. The percent changes in domestic prices (the import price after the tariff has been applied) were calculated.
4. The impact of lower prices was transmitted to import quantities via the own-price elasticity of import demand. The new quantity is calculated by multiplying the price change and the elasticity, adding this product to 1, and multiplying this sum by the baseline import quantity for the first year of accession. The product, adjusted for endogenous growth, then becomes the baseline for the following year's calculation.
5. A new series of import values is calculated by multiplying the resulting quantities by the constant import price (excluding the tariff).
6. The difference between the results of 5) and 2) is calculated. This value represents the change in the value of imports due to liberalization.

Ideally, an additional set of equations would be used to incorporate the impact of lower import prices on the prices of domestic producers. Domestic producers would likely reduce their prices somewhat, thereby limiting the import gains below those estimated by the above system of equations. However, without data on domestic prices or cross-price elasticities, these calculations are not possible. Thus, the values calculated below should be viewed as maximums, under the given set of assumptions.

Results

In 1998, Taiwan's import bill was US\$ 106.4 billion. Among the six sectors covered in this study, there were US\$ 13.6 billion of imports slated for liberalization. (See exhibit.) The 42 imported products that were analyzed here accounted for US\$ 9.2, or 8.6 percent of Taiwan's 1998 imports.

The two columns furthest to the right in the exhibit below contain estimates of the potential increase in imports during the phase in period. Due to the different phase-in schedules among and within sectors, the numbers are not strictly comparable; however, they do indicate that a substantial increase in imports. The results suggest that when tariffs alone are considered, an additional US\$ 3.1 billion in imports will be realized while the tariff reductions are being phased in. If NTMs are reduced to the levels presented in this report, the import growth potential is an estimated US\$ 5.5 billion. Given the greater volume of Taiwan's total imports, the total import increases on an economy wide basis are likely to approach a figure nearly ten times as high.⁴¹ To do such a calculation accurately, however, would require a careful product-by-product examination as was done for the sectors examined.

The biggest gains are in autos and semiconductors. In the automobile sector, the reduction of prohibitive duties generates significant import gains. For semiconductors, it is the reduction of non-tariff barriers that generates large gains.

Estimated Impact of Liberalization on Taiwanese Imports

Millions of U.S. Dollars (unless otherwise indicated)

	Liberalized Imports, 1998 Data			Phase-in Period	Increase of Top-7 Imports during Phase-in Period	
	Total	Top-7	Top-7 Share		Top-7 Imports	Tariffs only
Fruits and Vegetables	311.7	200.8	64.4%	2 - 5 years	28 - 73	70 - 224
Meat Products	211.2	156.8	74.2%	4 years	29 - 90	61 - 195
Automobiles	1,097.6	1,077.2	98.1%	2 - 9 years	1,712 - 3,448	1,842 - 3,772
Auto Parts	1,380.0	1,053.3	76.3%	4 years	169 - 343	295 - 602
Semiconductors	8,873.1	6,277.3	70.7%	2 years	90 - 180	298-591
Textile and Apparel	1,730.1	449.1	26.0%	2 - 3 years	4 - 8	20 - 40
Total (mid-point value)	13,603.6	9,214.5	67.7%	N/A	3,086	5,508

CONCLUSION

Taiwan and the world trading system have a complex history. Even without formal membership in the trading system, Taiwan has developed into an important trading partner for many countries. Despite the lingering impact of the Asian Economic crisis, Taiwan's total trade with the world is likely to approach \$250 billion this year; which puts Taiwan in the top rank of trading powers.

More importantly, from the perspective of the WTO and its trading partners, Taiwan has proven itself a responsible trading power. In the last decade, Taiwan has greatly liberalized its trading system; tariffs and NTMs have come down and protection of intellectual property has improved to a level consistent with other developed countries. There are still areas in Taiwan's trading regime which could be improved, but Taiwan's economy is already more open than that of most of its Asian neighbors. Unlike the PRC and many current members of the WTO, Taiwan's trading regime is already in compliance with the provisions of the WTO.

Upon accession to the WTO, Taiwan has agreed to undertake a series of additional trade liberalizing measures that will open billions of dollars in new trade opportunities annually for its trading partners. Certainly, Taiwan's largest trading partners, such as the United States and Japan, will enjoy a substantial share of these new opportunities, but Taiwan is a diversified trader that maintains substantial trade relationships with many countries. All of these are likely to see some additional export opportunities and some countries that do not currently trade with Taiwan may also enjoy some benefits.

In the end, Taiwan's membership in the WTO will strengthen the WTO as an institution. The trade liberalization that results will benefit Taiwan, Taiwan's trading partners, and the world trading system. Political maneuvering and point scoring has needlessly held up Taiwan's WTO application for too long to the detriment of Taiwan and the WTO. It is time to put political concerns aside and, on the merits, welcome Taiwan into the WTO.

40. A similar analysis was conducted by the Chung-Hua Institution for Economic Research in June 1999. They estimated that Taiwan's proposed tariff cuts would boost agricultural imports by \$91.1 million and manufacturing imports by \$902 million (conversion from New Taiwanese dollars was performed at the rate of US\$ 1 = NT\$ 33.5).

41. A simple linear extrapolation of these figures to the total quantity of imports would not provide an accurate estimate because the level of trade barriers and growth potential varies greatly from product to product.