The Estey Centre Journal of
International Law
and Trade Policy

Technical Annex

Costs and Benefits of a WTO Dispute: The Economic Assessment

Josyline Javelosa

Ph.D. Candidate, Food and Resource Economics, University of Florida

Andrew Schmitz

Eminent Scholar, Food and Resource Economics, University of Florida

This document is the technical annex to the full paper "Costs and Benefits of a WTO Dispute: Philippine Bananas and the Australian Market" which is available separately.

If Australia changes its import policy, (i.e., the import ban on fresh bananas is lifted as a result of bilateral settlement or by implementing a hypothetical WTO panel ruling against Australia), there will be gainers and losers from the policy change. We use a standard comparative-static, partial-equilibrium approach for a single commodity market to examine the economic welfare effects of a change in Australia's trade policy. Using the economic surplus framework of analysis,[1] the magnitudes of costs and benefits to Australian producers and consumers are estimated by measuring producer and consumer surplus changes due to the lifting of the import ban. This approach is widely and legitimately used by economists to measure the impact of a policy change.

A. *Welfare Effects of Lifting the Banana Import Restriction on the Australian Market*

We examine Australia's banana market to determine the welfare implications for local producers and consumers of lifting the banana import prohibition on fresh bananas. We estimate the potential amount of bananas that Australia may import upon lifting the import ban and conjecture that this is the amount of bananas the Philippines may potentially export to Australia. To date, no other banana exporting countries have existing import risk analysis protocols with Australia.

In analyzing Australia's banana market, we build on the work of James and Anderson (1998).[2] In 2003, Australia's cumulative average farm-gate production was valued at A$270 million[3] (a 35 percent increase compared to the value in 1996, the basis of estimation by James and Anderson). This banana production value is about 6 percent of the forecasted $4.2 billion net value of total farm output in 2004/2005 (ABARE, 2004). Approximately 95 percent of Australian banana production consists of Cavendish bananas.

Figure 1 models the effects of lifting the banana import ban on the Australian market when there are marketing margins at the wholesale, distribution centre, and retail levels. *Sf* is the growers' supply curve, *Dr* is the retail demand curve, and *Dd, Dw,* and *Df* are derived demand curves at the distribution centre, wholesale, and farm-gate levels, respectively. The initial equilibrium quantity is *Qo* where *Df* and *Sf* intersect. With that level of domestic production, *Qo,* and a ban on imports, the farm gate, wholesale, distribution centre, and retail prices are *Pf, Pw, Pd*, and *Pr,* respectively. Once imports are permitted, the wholesale price, *Pw,* drops to the import price, *Pi,* and the quantity available on the domestic market rises to *Qd'*. At that new equilibrium, the farm-gate and retail prices are *Pf'* and *Pr'* respectively and the quantity produced domestically falls to *Qs'*.[4] The fall in producer welfare[5] is given by area *CDPf'Pf* and the rise in consumer welfare[6] is given by area *BAPrPr'*. The difference between these two areas is the net economic welfare gain in the absence of externalities, in particular the importation of pests and diseases that may affect other markets.
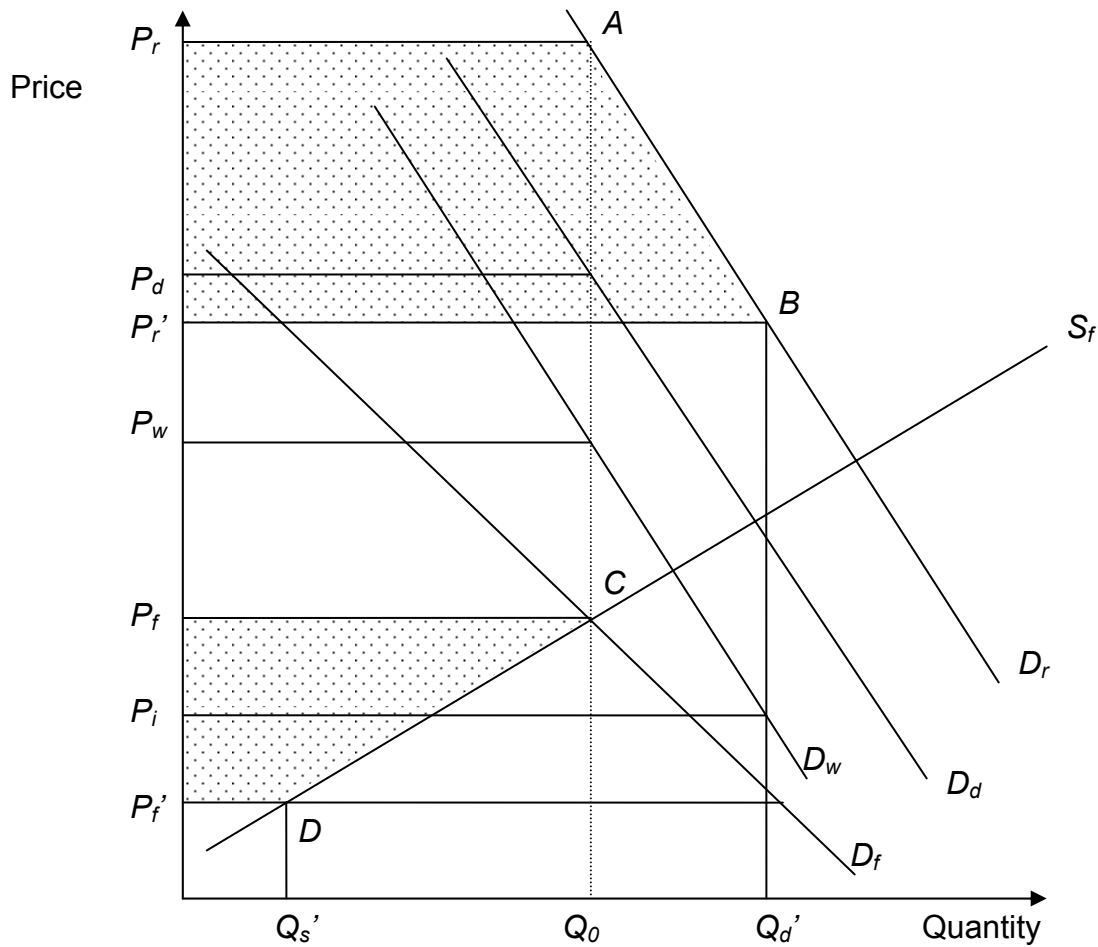
Figure 1 Welfare effects of lifting the banana import restriction on the Australian market.

Data obtained or assumed to quantify the welfare impacts of the policy change include 1) price elasticity of banana demand and supply; 2) the c.i.f. import price of bananas; 3) the domestic wholesale price with the existing regime of no trade; and 4) the domestic consumption with autarky. We assume a -0.5 long-run price elasticity of demand. This is a more conservative approximation (considering more fruit alternatives are available) than the -0.33 short-run price elasticity computed by Anderson in the early 1970s for the demand curve of bananas in Sydney. For the long-run price elasticity of supply for bananas, we assume a 0.5 conservative lower bound and a more likely 1.0 or more estimate. We use the actual 2003 c.i.f. import price of

Philippine bananas in New Zealand as an approximation of the potential import price in Australia, amounting to A$0.85/kg[7]; however, the economies of size in market and shipping costs should ensure that Australia's import price is below that of New Zealand's. In 2003, for example, New Zealand's actual banana imports from the Philippines totaled less than half[8] of the potential Australian imports if the import restriction is lifted. For prices along the marketing chain (i.e., farm gate, wholesale, distribution centre, and retail prices), we used the mean of the Australian banana industry's statistics for 2003 (ABGC, 2003). Regarding the supply chain, note that while 55 percent of all fruits and vegetables are sold through two major supermarket chains, as much as 70 percent of all bananas may be sold through these two chains. The consumption datum of 275,945 tons of bananas is the 2003 market throughput of the Australian banana industry. Virtually all bananas produced in Australia are consumed within Australia (99.9 percent). Information supplied by the Australian Banana Growers' Council indicates that only negligible quantities of Australian bananas are exported, and that these are to a specialty market. Australia does not import bananas at all in view of its stringent quarantine policy.

With these pieces of information, we can estimate production, consumption, and trade and welfare effects of moving from a ban to free trade in bananas, assuming no pests and diseases are imported. The calculations are shown in table 2 of the full paper and are discussed in the full paper.

B. Welfare Effects of Australian Imports on the Philippine Banana Export Market

We analyze the economic consequences to Philippine producers of allowing banana exports to Australia. The Philippines produces about 1,254,000 tons[9] per year of Cavendish dessert bananas, most of which are exported. This amount is about 11 percent of the world's Cavendish production. The Philippines is one of the top banana exporters in the world. In 2002 it was the third largest exporter, next to Ecuador and Costa Rica. The value of Philippine banana exports accounts for about 16 percent of the country's total agricultural exports, amounting to about US$1.6 billion a year.[10] The bulk of Cavendish exports from the Philippines go to Japan. The Middle East used to be the second largest importer of Philippine Cavendish bananas in 1991–1995. More recently it is China that occupies second place in terms of volume of imports. Other destinations of Philippine Cavendish bananas are Korea, Hong Kong, New Zealand, Singapore, and Russia.[11]

The calculated Australian imports of Philippine bananas can increase Philippine banana exports by 5 to 19 percent. The demand curve for Philippine banana exports, ED_i, shifts outward to ED_w as shown in figure 2, in the case of export to Australia. The Philippines' FOB export price is assumed to increase from P_i to P_w. This demand shift translates to additional producer surplus amounting to US$14–63 million[12], as shown in table 3 of the full paper and discussed in the full paper.
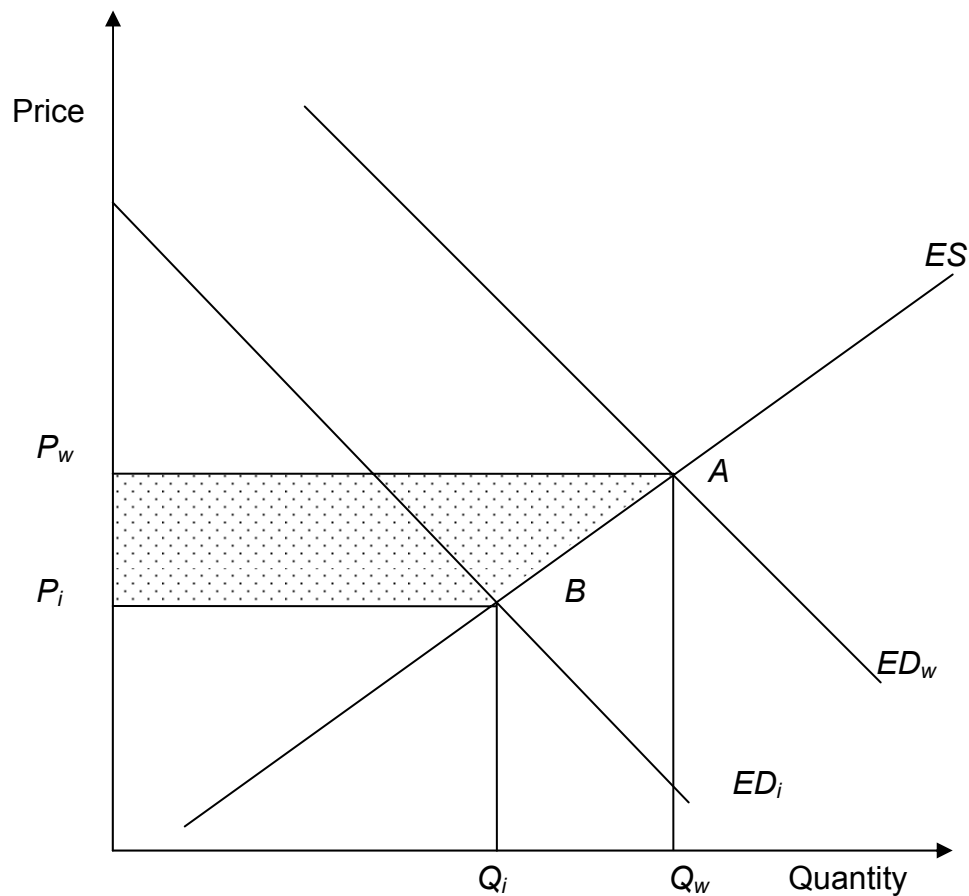

Figure 2 Welfare effects of Australian imports on the Philippine banana export market.

Endnotes

1. For a detailed discussion of the economic surplus framework, see for example Currie, Murphy and Schmitz (1971) and Schmitz, Furtan and Baylis (2002).
2. Another approach that may be used for the economic analysis of quarantine policies is applied by Orden (2002).
3. Data source: ABGC (2003).
4. The new distribution centre price is not shown, but this is the intersection point of line segment B-Qd' and Dd.
5. Producer welfare or surplus represents the gain to producers of being able to produce a certain amount rather than producing nothing.
6. Consumer welfare or surplus is viewed as the difference between the price consumers would be willing to pay rather than go without the product and that which consumers actually do pay.
7. Data are obtained from Statistics New Zealand (2003). Exchange rate used for conversion from NZ$ to A$ is .881534, the first quarter 2004 average, obtained from www.x-rates.com.
8. 2003 banana imports to New Zealand from the Philippines amounted to about 36,042 tons (as obtained from Statistics New Zealand, 2003).
9. 1995-2000 average, as cited in February 2004 Revised Draft IRA Report on Bananas from the Philippines (Biosecurity Australia, 2004).
10. 1995-2002 average, FAO stat data (2004).
11. As cited in February 2004 Revised Draft IRA Report on Bananas from the Philippines (Biosecurity Australia).
12. This is an estimate of the dotted area in figure 2 within points *ABPiPw*. We assume that a 1 percent increase in quantity demanded of Philippine bananas will raise the price of bananas by 1 percent.