

Learning Objectives

- We continue with our trade policy discussion but shift focus to non-tariff barriers such as quotas, export subsidies and “unfair” antidumping and countervailing duties.
- Show that quotas and tariffs can yield identical economic effects under certain circumstances.
- Show that export subsidies are detrimental to the welfare of the country that imposes such policies, but for political reasons, such policies may still be implemented.
- Explore the international trade legislations, actual data and case studies of the above policies.

4.1 Motivation

In Chapter 4, we will focus on non-tariff trade barriers such as quotas, export subsidies, and “unfair” trade policies. Quotas are quantity restrictions and are no longer legal under world trade rules except for least developed countries. Export subsidies are still common, especially in the agricultural sector. “Unfair” trade policies, which include antidumping and countervailing duties, are tariffs with different names. Recall from Chapter 3 that tariffs are being phased out of the international trade arena. However, old wine has been coming back in new bottles. Antidumping duties are commonly used by developed countries to restrict imports with the banner of restricting unfairly “dumped” imports into their markets by developing countries. Developing countries are quickly learning the tricks of the game by retaliating with their own antidumping protection. Importing countries can use countervailing duties to counteract the subsidies given to the exporters by their own governments. Both types of “unfair” trade policies are gaining popularity.

4.2 Quotas

An import quota is a ceiling on the level of imports (i.e., a quantity restriction). A quota is relevant only if the quota quantity is set below the equilibrium quantity. The government in H enforces the quota by selling import licenses to the potential importers. For example, if H wants to limit the import of X_1 to 1,000 units, it can issue 10 pieces of licenses. Each license allows the holder to import 100 units. The importer must pay the H government for this license. Similar to tariffs, the H government collects quota revenue. We would also assume that the H government keeps the quota revenue and does not redistribute it back to the consumers. Also similar to tariffs, the imposition of a quota would create a world price P_1^W (which the F firms collect) and a total import price P_1^Q (which the H consumers pay inclusive of the quota cost).

Suppose H imposes a quota on its imports of X_1 :

- Let X_1^Q = import quota on imports. For example, we have a quota of 100 units.
- Let P_1^W = price of X_1 traded at the world market (i.e., the world price of X_1). F receives this price for its exports. For example, we pay \$2 for a unit of F product.
- Let q_1^H = quota fee per unit that the H importers have to pay to the H government to buy import licenses. For example, we pay \$0.12 for a license to import one unit of F product.
- Let P_1^Q = price of X_1^Q that H consumers pay (i.e., $P_1^Q = P_1^W + q_1^H$). All together, H consumers pay \$2.12 = \$2 + 0.12 for each unit of X_1 imported, of which \$2 goes to F exporters and \$0.12 goes to the H government as quota revenue.

Demonstrating Quotas Graphically

How would a quota affect the world market? **Figure 4.1** shows that the imposition of the quota would not shift the MD or XS curves, but rather the quantity restriction is set at X_1^Q . Similar to a tariff, a quota discourages imports and raises the total import price for the H consumers. The F firms export less and receive a lower price (P_1^W versus P_1^{FT}) because they have to absorb part of the quota fees.

The general effects of a quota can be summarized as follows:

- Trade volume drops from X_1^{FT} to X_1^Q .
- World price drops from P_1^{FT} to P_1^W → F exports less and receives a lower price.
- Import price rises from P_1^{FT} to P_1^Q → H imports less and its import-competing sector faces less competition.
- Quota revenue = $X_1^Q \times (P_1^Q - P_1^W)$.

These general results are very similar to that of a tariff. Specifically, note that Figure 4.1 is almost identical to Figure 3.8, the diagram for world welfare under tariffs, in Chapter 3. If we imagine the MD curve shifting inward until it intersects XS at P_1^W , then the effects of a tariff and that of a quota are identical. This implies that tariffs and quotas can achieve equivalent results on prices and traded quantities. Intuitively, if we want to restrict import quantity at X_1^Q , we can also calculate the corresponding implicit tariff rate that would also induce the same import quantity $X_1^T = X_1^Q$.

From Figure 4.1, we can also analyze the welfare effects of the quota on the world. From our tariff analysis, we found that a tariff will create a deadweight loss in the world. Recall that the deadweight loss (DWL) was the area “j + m” in Figure 3.8. Here, we suspect the DWL under a quota is also “j + m,” but in Figure 4.1. To verify this, we can compare total surplus changes.

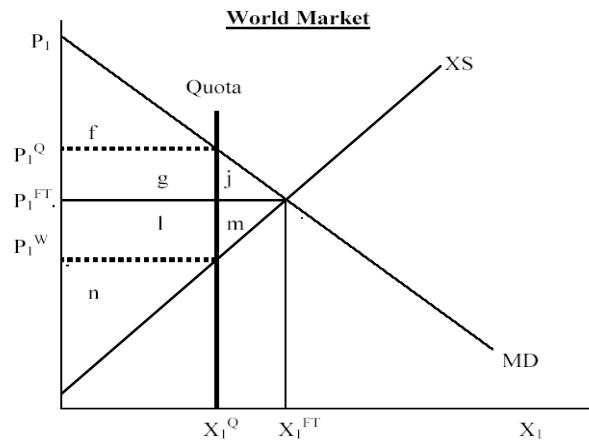


Figure 4.1 Welfare Effects on the World as a Result of a Quota

We can compare TS changes under quota (new situation) with free trade (old situation):

$$\begin{aligned} \Delta CS &= f - (f + g + j) = - (g + j) && \text{(Compare } P_1^Q \text{ and } P_1^{FT}.) \\ \Delta PS &= n - (l + m + n) = - (l + m) && \text{(Compare } P_1^W \text{ and } P_1^{FT}.) \\ \Delta QR &= (g + l) - 0 && \text{(Import Quantity } \times (P_1^Q - P_1^W), \text{ where QR is quota revenue.)} \\ \text{Net } \Delta TS &= - (j + m) < 0, \text{ which is always negative.} \end{aligned}$$

Similar to tariffs, quotas cannot increase world welfare. The world as a whole loses under a quota because of DWL. The loss in consumer surplus and producer surplus due to the drop in consumption and production cannot be recovered by quota revenue. Hence, such losses become DWL as shown by the area (j + m).

Welfare Effects on H

Hopefully, **Figure 4.2** looks familiar to you! This graph is identical to Figure 3.6 in Chapter 3. This should not be surprising given that we have just concluded that tariffs and quotas *can* yield identical price and traded quantity results. The interpretation of the changes in CS, PS, and quota revenue are identical to the case under tariff. All that is different is that now we have P_1^Q rather than P_1^T .

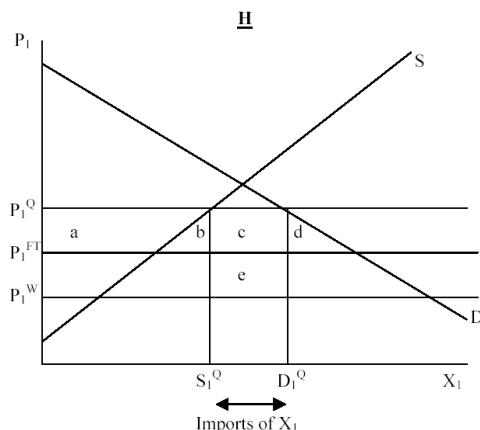


Figure 4.2 Welfare Effects on H as a Result of a Quota

We can compare TS changes under quota (new situation) with free trade (old situation):

$$\Delta CS = -(a + b + c + d) \quad (\text{Compare } P_1^Q \text{ and } P_1^{FT}.)$$

$$\Delta PS = (a) \quad (\text{Compare } P_1^Q \text{ and } P_1^{FT}.)$$

$$\Delta QR = (c + e) \quad (\text{Import Quantity} \times (P_1^Q - P_1^W), \text{ where QR is quota revenue.})$$

$$\text{Net } \Delta TS = e - (b + d), \text{ which can be positive, negative, or equal to zero.}$$

Again, H may be tempted to impose a quota because its domestic welfare can gain via terms of trade gain. The terms of trade gain is the area “e,” and consumption and production efficiency losses are “b + d.”

Welfare Effects on F

The welfare effects on F would be identical to the discussion of welfare effects we had in Chapter 3. As an exercise, repeat the analysis here by yourself and make sure that you can reach the same conclusion that we reached in Chapter 3.

Conclusion

Tariffs and quotas can be quite similar when it comes to quantity and price effects on imports. However, tariffs and quotas will not give rise to identical results under certain circumstances. For example, if H’s GDP grows and would like to import more, tariffs will be less restrictive than quotas. Similarly, if the F country grows and would like to export more, F would prefer tariffs to quotas. In reality, developed countries such as the US and Canada have placed tariffs and quotas on textiles and clothing imports from developed countries such as Korea and Taiwan. These restrictions were collectively known as the Multi-Fibre Arrangement (MFA) from early 1970s to 1995. The WTO replaced the MFA with its Agreement on Textiles and Clothing in 1995. The main steps that the WTO took were to phase out the quota restrictions under the MFA and replace them with tariffs. The tariffs were then gradually cut over 10 years. The WTO’s action suggests that quotas are indeed more restrictive than tariffs.

4.3 Export Subsidies

An export subsidy is a payment from the government to the firm for each unit it exports. This export subsidy, similar to a tariff, can be specific or *ad valorem*. We would focus on *ad valorem* subsidy rate σ . Because we have been assuming that F exports X_1 , the export subsidy must be offered by the F government to its exporters. Let σ_1^F be the *ad valorem* subsidy rate that F offers to its exporters. The stark difference between our previous three trade policies and export subsidy is that the subsidy will encourage higher trade volume rather than restrict it.

Suppose F offers an *ad valorem* subsidy on its exports of X_1 :

- Let σ_1^F = *ad valorem* subsidy rate on exports. For example, we have a subsidy of 10%.
- Let P_1^W = price of X_1 traded at the world market (i.e., the world price of X_1). F receives this price for its exports. For example, H consumers pay \$2 for a unit of F product.
- Let P_1^{ES} = price of X_1^F that F producers receive, i.e., $P_1^{ES} = P_1^W (1 + \sigma_1^F)$. This means all together, H consumers pay \$2, and the F producers receive \$2 (1 + 0.10), of which \$2 comes from H consumers and \$0.2 comes from the F government. The F government incurs an expenditure, which is \$0.2 for each unit its firms export to H.

Demonstrating Export Subsidies Graphically

Figure 4.3 shows that the F firms would increase their export supply from XS to XS^{ES} as a result of the export subsidy. Intuitively, the F firms supply more because the subsidy translates to a drop in production costs for the firms. The F firms want to export more, but this means they have to lower the world price in order for the H consumers to import more. Note that even though the F firms will receive a lower price from H, the firms will also be receiving a mark-up from the F government. Inclusive of the export subsidy, the F firms receive a higher total price than under free trade. The F firms would be supportive of export subsidies, and so should the H consumers. However, the subsidy is an expenditure to the F country, which is tax-payers' money.

The general effects of an export subsidy can be summarized as follows:

- Trade volume rises from X_1^{FT} to X_1^{ES} .
- World price drops from P_1^{FT} to P_1^W → F exports more and receives a lower price from H consumers.
- Import price drops from P_1^{FT} to P_1^W → H imports more and its import-competing sector faces more competition.
- Subsidy expenditure = $X_1^{ES} \times (P_1^{ES} - P_1^W)$ → F exporters receive subsidy from the F government in the amount of $\sigma_1^F \times P_1^W$ each unit exported. Inclusive of the subsidy, the F exporters earn $P_1^{ES} = P_1^W (1 + \sigma_1^F)$ each unit exported.

From Figure 4.3, we can analyze the effects of an export subsidy on world welfare. Because this trade policy encourages more trade volume, we may not be able to easily conclude that export subsidies would decrease world welfare. However, a closer look at the figure would tell us that export subsidies would also be detrimental to world welfare.

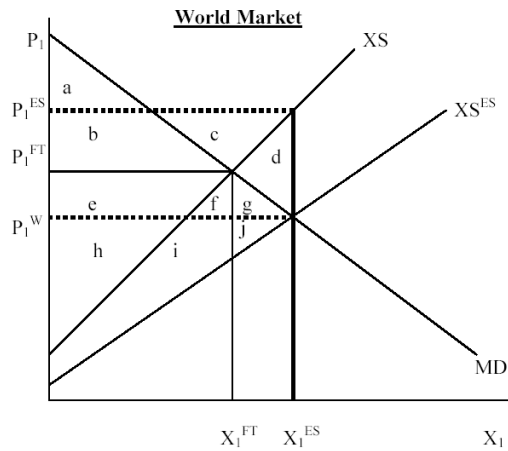


Figure 4.3 Welfare Effects on the World as a Result of Export Subsidy

We can compare TS changes under export subsidy (new situation) with free trade (old situation):

$$\Delta CS = (a + b + e + f + g) - (a + b) = (e + f + g) \quad (\text{Compare } P_1^W \text{ and } P_1^{FT}.)$$

$$\Delta PS = (e + h + b + c) - (e + h) = (b + c) \quad (\text{Compare } P_1^{ES} \text{ and } P_1^{FT}.)$$

$$\Delta SR = -(b + c + d + e + f + g) - 0 = -(b + c + d + e + f + g) \quad (\text{Where SR is subsidy "revenue", which is negative.})$$

$$\text{Net } \Delta TS = - (d) < 0, \text{ which is always negative.}$$

In contrast with tariffs and quotas, H importers gain from F's export subsidy because the import price has dropped from P_1^{FT} to P_1^W and import quantity has risen from X_1^{FT} to X_1^{ES} . As for producer surplus, it is a bit tricky. Because we now have two XS curves, we must ask which one would give us the accurate ΔPS . The answer is the original XS. The reason is because we know that the eventual export quantity is X_1^{ES} , and the F firms would only export this higher quantity if they receive P_1^{ES} , which is higher than P_1^{FT} . The only point where P_1^{ES} and X_1^{ES} meet is on the XS curve, not the XS^{ES} curve. The total subsidy expenditure or negative subsidy revenue is $X_1^{ES} \times (P_1^{ES} - P_1^W)$.

Similar to tariffs and quotas, export subsidies also create DWL, which is the area "d" in Figure 4.3. Even though export subsidy encourages trade, the subsidy has led to over-production and over-consumption of X_1 . Graphically, we can see that in order for the H consumers to buy X_1^{ES} , they are only willing to pay P_1^W because the demand curve shows our willingness to pay for different quantities at different prices. For the F exporters to produce and export X_1^{ES} , they have to receive P_1^{ES} . The excess production and consumption arises from the fact that consumers only value the product at P_1^W , whereas it takes the firms at least P_1^{ES} to produce this amount. Hence, we have artificially encouraged over-production and over-consumption of X_1 by offering the subsidy. This is inefficient because the labour and capital used to produce the additional amount $X_1^{ES} - X_1^{FT}$ could have been used more efficiently in other industries. The efficient quantity is X_1^{FT} because at this quantity, the price that the consumers are willing to pay is exactly what the producers receive. Allocation of inputs or resources at X_1^{FT} is efficient because our production and consumption quantity is just right.

Welfare Effects on H

Figure 4.4 shows how H's total surplus is affected by F's export subsidy. Note that only P_1^{FT} and P_1^W are relevant for H, but not P_1^{ES} . H consumers pay P_1^W and the H government does not have to pay for the subsidy. Hence, P_1^{ES} does not affect H.

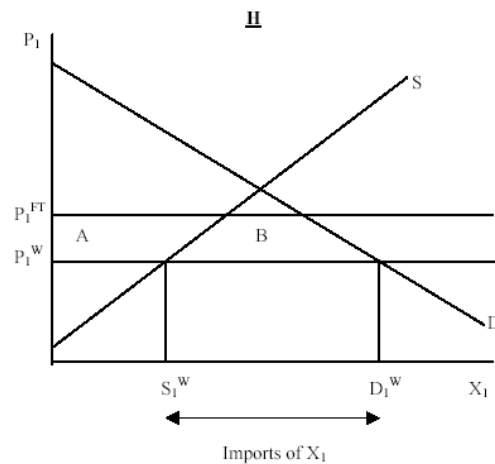


Figure 4.4 Welfare Effects on H as a Result of an Export Subsidy

We can compare TS changes under export subsidy (new situation) with free trade (old situation):

$$\Delta CS = (A + B) \quad (\text{Compare } P_1^W \text{ and } P_1^{FT}.)$$

$$\Delta PS = -(A) \quad (\text{Compare } P_1^W \text{ and } P_1^{FT}.)$$

Net $\Delta TS = (B) > 0$, which is always positive.

H unambiguously benefits from F's export subsidy. H gains because imports are cheaper and more plentiful. Note that the cheaper imports also force the H domestic firms to lower their price to P_1^W in order to stay competitive. H import-competing firms will lose from having a smaller market share and a lower price. They, of course, would be against F's export subsidy. They are very likely to lobby for their own subsidy or countervailing duties from the H government.

Welfare Effects on F

Figure 4.5 shows how F welfare will be affected because of its own export subsidy. The F firms would receive P_1^{ES} for each unit that they export, and hence they would also command the F consumers to pay them P_1^{ES} for each unit that is offered for domestic consumption. Basically, the F firms are willing to offer H consumers a low price because they would receive top-offs from the F government. If the F firms sell to F consumers, these consumers must pay a higher price because the F firms do not receive top-offs for the quantities sold to domestic F consumers. Both P_1^{ES} and P_1^W are relevant for F welfare analysis because the difference of these two prices is the subsidy expenditure of the F government for each unit exported.

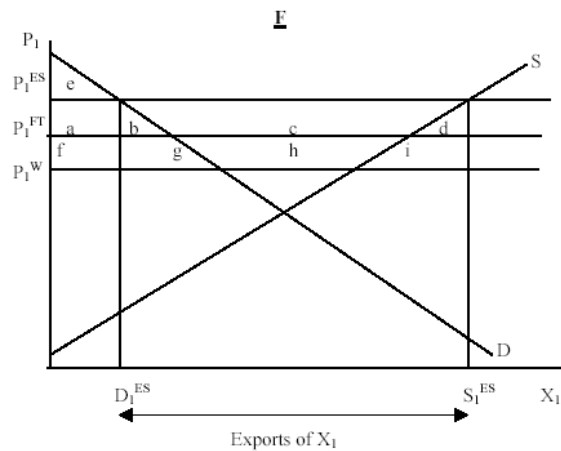


Figure 4.5 Welfare Effects on F as a Result of Export Subsidy

We can compare TS changes under export subsidy (new situation) with free trade (old situation):

- $\Delta CS = -(a + b)$ (Compare P_1^{ES} and P_1^{FT} .)
 $\Delta PS = (a + b + c)$ (Compare P_1^{ES} and P_1^{FT} , because P_1^{ES} shows accurate supply quantity.)
 $\Delta SR = -(b + c + d + g + h + i)$ (Export Quantity $\times (P_1^{ES} - P_1^W)$, where SR is subsidy revenue, which is negative.)
Net Δ welfare $= -(b + d + g + h + i) < 0$, which is always negative.

From our welfare analysis, we can clearly see that F always loses with an export subsidy. The question is why does it ever want to grant export subsidies? The SST can provide us with an answer. As a result of the subsidy, P_1^{FT} rises to P_1^{ES} . From SST, we know that the input used intensively in the production of the subsidized product will enjoy a real income gain, although the other factor will lose. The winning factor will actively lobby for such subsidies; however, the subsidies are paid for by the F tax-payers. Overall, F as a whole will lose because such subsidies schemes are very expensive and will more than likely lead to over-production of the product and under-production of other products.

In reality, European countries offer substantial subsidies to their agricultural producers. The annual budget for these subsidies hovers around US\$100 billion and is the subject of much of the trade friction between the EU countries and developing countries. Developing countries argue that the EU exporters flood the world market with cheap, subsidized agricultural products. Because developing countries could not match the subsidies to their own farmers, these countries could not compete fairly in the world market. The EU subsidies are also a main source of EU-US trade friction. US farmers often complain that they should also receive similar subsidies from the US government. We will explore such controversies in the pages to follow, as well as in class.

Trade policies such as tariffs and quotas are becoming less important in today's international trade arena. In Chapter 3, we learnt that tariff rates in GATT/WTO countries have been significantly slashed over the past few decades. Quotas are no longer legal under current trade rules (except for the least developed countries), but export subsidies are very much alive. Reaching an agreement to cut export subsidies is actually one of the main challenges that the WTO faces today.

4.4 Unfair Trade Policies

Although uniform tariffs have been gradually phased out over the past few decades, import taxes under different names have been returning to the international trade arena in the past two decades or so. The return of de facto tariffs is broadly classified as “unfair” trade policies, meaning that the import protection is justified on the ground of “fair” competition. The two main types of unfair trade policies are countervailing duties and antidumping duties. Legally, GATT’s Kennedy and Tokyo rounds of negotiations first switched their attention to such unfair trade policies. In the Uruguay round, the use of antidumping and countervailing duties was officially allowed, but the round does increase the speed at which such cases are to be resolved. Regulations were also tightened to discourage the abuse of such legislation.

Countervailing Duties

Countervailing duties are used to offset subsidies. If F gives a subsidy to its own firms and the firms export to H, trade rules allow H to retaliate with a countervailing duty that would offset the effect of the subsidy. Export subsidies are being countervailed and hence the playing field should be leveled. Countervailing duties are most commonly imposed on agricultural products. Note that the imposition of countervailing duties requires the pre-existence of some type of government aid being offered to the firms. The main challenge with resolving countervailing disputes involves the determination of what constitute a subsidy. A direct payment from the government to the export firms is straightforward enough, but policies such as low-interest loans, tax incentives, grants, etc., are often debatable.

Antidumping (AD) Duties

The second type of unfair trade policies is AD duties, which is far more popular than countervailing duties. To examine AD, we first need to discuss what constitutes dumping and why firms dump. Dumping can be defined in two ways: price discrimination dumping and below-cost dumping.

1. Price discrimination dumping

Price discrimination means a firm produces its products with the same marginal costs, but sells its products at different prices to different consumers. Hence, the different prices that different consumers pay cannot be explained by cost differences. Price discrimination is very common and often legal within a country. For example, Canadian firms often adopt this practice in the form of age discount, volume discount, seasonal discount, etc. In order for firms to engage in price discrimination, some conditions have to be satisfied. For example, different consumers must have different elasticity of demand, which allows the firms to charge a high price to the inelastic consumers and a relatively low price to the elastic consumers. Intuitively, if the demand is inelastic, the consumers have to buy the product, and hence the firm can charge a higher price to these captive consumers. This is also known as the inverse-elasticity pricing rule. It is essential that the firm is able to prohibit goods arbitrage between the two groups of consumers. It has to be able to stop the consumers who are charged the lower price to turn around and sell to the consumers who are charged the higher price. This can be accomplished by requiring identification when using the product, such as metro/bus passes. A high penalty is required if caught cheating. Also, the firm needs to have some degree of market power in the sense that competition is limited. Other firms cannot steal the group of consumers that has been charged the higher price. For simplicity, we can assume that we have only one firm, i.e., a monopoly.

In international trade, price discrimination means that the F firm charges H consumers a price that is less than what it charges to the F consumers. For example, a Japanese firm sells a DVD player for C\$50 in Japan but only C\$45 in Canada. Japan is price discriminating in favour of Canada. In this case, the Canadian import-competing firms can ask the Canadian government to impose an AD duty (i.e., tariff dressed under a fancier name) equivalent to C\$5.

Why would the F firm ever want to give H a discount to begin with? The answer is inverse-elasticity pricing rule. Because the F firm is a monopoly in F, it charges its profit-maximizing price given by P_1^F , as shown in Figure 4.6. This profit-maximizing price and quantity combination is given by $MC = MR^F$, as standard microeconomics textbooks discuss. However, when the F firm exports to H, the F firm has less market power because it is very likely that there are some H firms that also produce X_1 . Also, firms from other countries can also export to H. As a result, the demand in H D^H that the F firm faces is more elastic than D^F . The F firm charges the profit-maximizing price of P_1^{EX} . Obviously, P_1^{EX} should be lower than P_1^F . Although H consumers would welcome such a discount, the H import-competing firms can lobby for AD duties to be imposed on the F exports and eliminate this discount. International trade rules allow such AD duties to be imposed.

Are the AD duties economically sensible? The answer is no. If the H firm were to offer different prices to different H consumers, the H government will not rule this as illegal. Price discrimination is a profit-maximizing strategy that usually increases total consumer surplus. However, if the F firm price discriminates across the two countries, it will be subjected to AD duties punishment by the H government. We can argue that perhaps it is not so much that price discrimination is unfair, but how the trade rules allow us to treat H and F firms differently for the same selling practice is unfair.

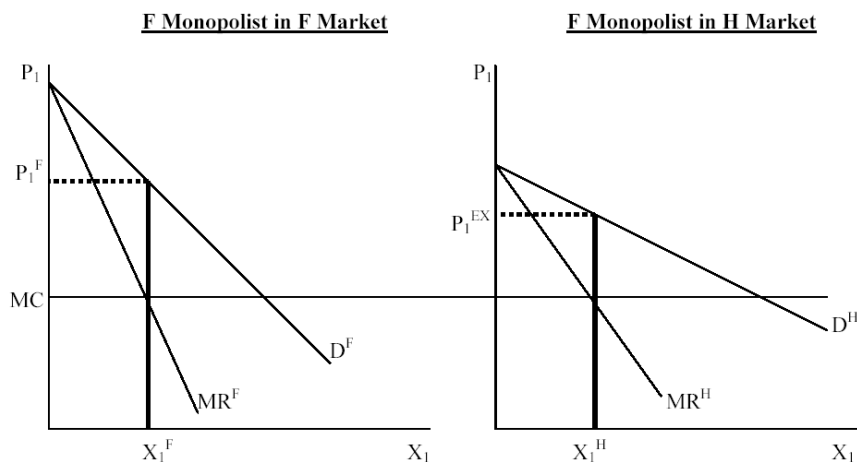


Figure 4.6 International Price Discrimination and Dumping

2. Below-cost dumping

The second type of dumping is selling below-cost. If the F firm sells to H at a price that is less than its average total cost (ATC), then the H import-competing firms can lobby for AD duties to be imposed on such imports until the total import price is at least as high as the F firm's ATC. For example, if the Japanese firm sells to Canadians at the price of $P = C\$5$, but $ATC = C\$8$, an AD duty of \$3 can be legally imposed on these Japanese imports.

Is selling below ATC a sensible economic practice? Recall from your study of introductory microeconomics, the two variables that a firm should compare when it decides whether to produce or not are price versus minimum average variable cost (AVC). In the short run, fixed costs are unavoidable. Whether a firm should produce and sell in order to maximize profits or minimize losses depends on whether its price is higher than its AVC_{min} . Intuitively, variable costs are avoidable. If $P > AVC_{min}$, then the difference between these two values can be used to cover fixed costs. Of course, if the difference can cover more than the fixed costs, the firm is making a profit. If $P > AVC_{min}$ but $P < ATC$, then an intelligent firm will produce at a loss because the loss is being minimized in the short run. However, an F firm doing so would be subjected to AD duties. Clearly, this legislation is not economically sound.

Predatory Dumping

Economists often struggle to find economic justification for imposing AD duties. The only case in which we agree AD duties may be desirable is if the products are dumped with a predatory intent, or predation. The word *predation* comes from zoology, meaning that strong animals eat weaker animals. The same logic applies to firms, with economically strong firms trying to induce cutthroat competition in the market with the intent of killing the smaller firms. Predation is often frowned upon and is also illegal in many countries. The main reason is that, although consumers may gain from the period of competitive price-cutting, once the weaker firms are driven out, the strong firm or firms that remain will raise their prices. Consumers will eventually pay for the benefits they have enjoyed before. We have seen examples of alleged predation in Canada. For example, Air Canada has been accused of using deep price-cutting strategies and forcing out Canadian Air. Also, Safeway and Superstore have been accused of offering deep discounts in an attempt to force out IGA or other smaller stores. Predation is illegal in Canada, and if proven in court, the predators would be fined.

Arguably, the F firm may be offering discounts to H consumers with a predatory intent. However, how believable is this claim? Is international predation a viable, profitable strategy? The answer is most likely no. In order for the F firm to successfully predate and monopolize the H market, the F firm has to somehow prevent firms from other countries to compete in the H market. The F firm has to become the monopoly in the world, not only in the H market. It is very unlikely, or even impossible, for the F firm to stop other firms from entering and competing for its monopoly profits. Also, the H government is very unlikely to pass a legislation that would protect or grant the F firm monopoly rights in the H country. In reality, less than 4% of all EU AD cases may be related to predation.¹ The remaining 96% of all complaints is mainly day-to-day price discrimination.

Because the only case in which AD duties could be justified is not likely to exist, economists find it very difficult to justify such duties on the grounds of sound economics. Basically, if we are against tariffs, we should also be against AD duties. Unfortunately, AD duties are placed under the banner of “fairness,” and the word *dumping* tends to invoke negative sentiments.

¹Patrick Messerlin, “Competition Policy and Antidumping Reform: An Exercise in Transition,” in *The World Trading System: Challenges Ahead*, edited by Jeffrey Schott, (Peterson Institute, 1996) p. 223.

4.5 Data and Interpretation

Effects of Trade Barriers on Prices

From our graphical analysis, we have learned that domestic prices tend to rise when trade barriers are imposed on imports or exports. One way to examine the costs of such barriers is to examine the ratios of domestic prices to world prices. If such ratios are higher than one, this implies that the trade barriers have raised domestic prices and hindered the domestic consumers from importing at the lower world prices.

Economist Scott Bradford² has calculated some price ratios for a selected group of countries for a selected group of products for the years 1991 to 1993. **Table 4.1** shows that because of import barriers, Canadians have been paying more than twice the world price for drugs and medicine, and Americans have been paying three times as much the world price. As for textiles and clothing, Canadians have been paying around 16% more than the world price. Canadians also pay around 42% more for footwear because of import restrictions. Overall, Canadians pay an average 27% more on the selected products due to the trade barriers that Canada has imposed. Again, even though import restrictions can save some jobs, it is the general Canadian public who are paying the price.

Table 4.1 also shows that products such as drugs and medicine, footwear, apparel, and metals are intensely protected by trade barriers. Interestingly, Japan does not have import protection on office machinery and automobiles. Of course, Japan is a main exporter in these products rather than an importer.

Ratios of Domestic Prices to World Prices of Selected Countries and Products 1991-1993											
Country	Agriculture	Textiles	Apparel	Leather	Footwear	Drugs and	Chemical	Metal	Office	Motor	Country
				Products		Medicines	Products	Products	Machinery	Vehicles	Means
Canada	1.112	1.163	1.175	1.236	1.415	2.680	1.064	1.328	1.234	1.197	1.270
US	1.158	1.051	1.158	1.143	1.111	3.105	1.037	1.165	1.015	1.106	1.118
Japan	1.584	1.478	1.384	1.329	2.289	1.217	1.555	1.977	1.000	1.000	1.567
Germany	1.529	1.101	1.457	1.437	1.328	2.643	1.107	1.770	1.446	1.315	1.539
UK	1.648	1.237	1.074	1.168	1.027	1.845	1.064	1.602	1.666	1.680	1.480

Table 4.1 Ratios of Domestic Prices to World Prices for the Period 1991–1993

Source: Scott Bradford, "Paying the Price: Final Goods Protection in OECD Countries," *Review of Economics and Statistics*, volume 85, no.1, February 2003, page 31.

² Scott Bradford, "Paying the Price: Final Goods Protection in OECD Countries," *Review of Economics and Statistics*, volume 85, no.1, February 2003, p. 31.

Pervasiveness of Non-Tariff Barriers

Although average tariff rates have been cut over the years, non-tariff trade barriers, such as quotas and unfair trade measures, are still quite pervasive in impeding trade. Noticing the detrimental economic effects of such policies on global welfare, the WTO has set up committees dedicated to cut back these measures. However, such negotiations were suspended in 2006 and have yet to produce any meaningful results³. **Table 4.2** shows the percentage of products within a given industry is affected by non-tariff barriers in 1996. For example, in Canada, 42.9% of textiles and apparel trade is affected by non-tariff barriers. These numbers are hopefully lower today, but unfortunately more recent data are not available.

	Australia	Canada	European Union	Iceland	Japan	Mexico
Food, beverages and tobacco	6.2	0.4	17.2	0.1	5.9	3.8
Textiles and apparel	0.0	42.9	75.2	0.0	31.9	65.9
Wood and wood products	0.0	3.2	0.0	0.0	0.0	0.0
Paper and paper products	0.0	0.4	0.7	0.0	0.0	0.0
Chemicals, petroleum products	0.8	0.6	2.9	0.0	0.9	2.4
Non-metallic mineral products	1.2	0.0	0.0	0.0	0.0	0.7
Basic metal industries	0.0	1.7	0.6	0.0	5.1	34.4
Fabricated metal products	0.3	2.2	0.0	2.9	0.0	9.0
Other manufacturing	0.0	0.9	0.0	1.0	0.0	30.5
Manufacturing	0.7	7.8	13.4	0.5	10.3	14.6
	New Zealand	Norway	Switzerland	Turkey	United States	
Food, beverages and tobacco	0.6	0.0	1.0	0.0	2.8	
Textiles and apparel	2.1	14.6	0.0	0.0	67.5	
Wood and wood products	0.0	0.0	0.0	0.0	0.6	
Paper and paper products	0.0	0.0	0.0	0.3	1.1	
Chemicals, petroleum products	1.4	1.7	0.0	0.1	3.3	
Non-metallic mineral products	0.7	0.0	0.0	12.4	3.6	
Basic metal industries	0.0	0.0	0.0	0.1	30.4	
Fabricated metal products	0.3	0.0	0.0	0.6	5.9	
Other manufacturing	0.2	0.3	0.0	0.0	1.7	
Manufacturing	0.8	3.0	0.2	0.7	17.9	

Table 4.2 Pervasiveness of Non-Tariff Barriers of Selected Countries on Selected Products

Source: http://www.wto.org/english/news_e/pres01_e/pr222_e.htm, p. 21.

Table 4.3 shows that large developed countries tend to have high non-tariff barriers. For example, non-tariff trade barriers affected about 16.7% of all US imports in 1996. In contrast, only about 7.3% of Canadian imports were affected. Similar to tariffs, developing countries also tend to use non-tariff barriers rather often. For example, in 1998, non-tariff barriers affected 93.8% of India's imports. Hong Kong and Singapore are still highly open to free trade, with minimum percentage of imports affected by non-tariff barriers.

(a) Developed countries			(b) Developing countries		
	1993	1996		1989-1994	1995-1998
Australia	0.7	0.7	Argentina	3.1	2.1
Canada	8.3	7.3	Brazil	16.5	21.6
European Union	22.1	13.0	Chile	5.2	5.2
Iceland	3.0	0.5	Colombia	55.2	10.3
Japan	11.4	9.9	Hong Kong, China	2.1	2.1
Mexico	2.0	14.1	India	99	93.8
New Zealand	0.4	0.8	Indonesia	53.6	31.3
Norway	5.9	2.6	Korea, Rep. of	50.0	25.0
Switzerland	3.6	0.2	Malaysia	56.3	19.6
Turkey	0.4	0.6	Morocco	58.3	13.4
United States	23.0	16.7	Nigeria	14.4	11.5
			Singapore	1.0	2.1
			South Africa	36.5	8.3
			Thailand	36.5	17.5
			Uruguay	32.3	0.0

Table 4.3 Pervasiveness of Non-Tariff Barriers of Selected Countries on All Products

Source: http://www.wto.org/english/news_e/pres01_e/pr222_e.htm, p. 20.

³ <http://www.international.gc.ca/trade-agreements-accords-commerciaux/goods-produits/nama.aspx?lang=en&view=d>

Quota Case Study: The Multi-Fibre Arrangement (MFA)

The MFA governed the world trade in textiles and clothing from 1974 to 2004. The MFA was introduced in 1974 as a temporary measure to allow developed countries adjust to imports from the developing world. Developing countries have a comparative advantage in textiles and clothing production because these are labour-intensive products, and these countries are relatively abundant in labour. The abundance in labour implies low labour costs. About 60% of the world's textiles and clothing exports originate from developing countries. However, recall from Chapter 1 that trade values in textiles and clothing are quite low compared to machinery and fuels.

The MFA consisted of a convoluted web of bilateral quotas and tariffs on the amount of textiles and clothing that developing countries could export to developed countries. The developed countries, such as the US, EU and Canada, imposed quotas and tariffs on exports from developing countries such as Pakistan, India and China. These arrangements were bilateral in the sense that the terms and conditions of the arrangements differ significantly depending on the pair of importer and exporter as well as the products in question. For example, the MFA reached between the US and India would differ from the MFA reached between Canada and India. Because the individual developing countries were negotiating independently with developed countries, we can infer that the terms and conditions were inferior compared to a uniform set of agreement that could have been reached if the developed countries were to be united in their negotiations.

According to a US government study,⁴ the restriction due to the web of quotas was equivalent to an average tariff rate of 25%. The MFA encompassed more than 20,000 separate rules covering thousands of individual products. Exports from more than 40 different developing countries were affected. Various studies have estimated that in the absence of the MFA, trade in textiles and clothing could have increased by 96%, or US\$15 billion per year in the 1980s.⁵ The costs to the consumers in the importing countries were even higher. For example, the costs to the US consumers due to higher prices and lost consumption were estimated to be around \$70 billion per year.⁶

With the creation of the WTO in 1995, the MFA was replaced with the WTO's Agreement on Textiles and Clothing (ATC). The ATC provided for the gradual replacement of the quotas that existed under the MFA with equivalent tariffs. The tariffs were subsequently slashed over time from 25% to around 12%. This process was to be completed on January 1, 2005. To prevent massive job losses in developed countries, these trade barriers were cut over a 10-year period. However, tariffs remain in place on many textiles and clothing products, and developed countries have since imposed AD duties on these products.

In 2005, the world's largest textiles and clothing importers were the EU (45%), the US (28%), and Japan (8%) of total exports.⁷ The value of textiles and clothing exports has risen from US\$310 billion worldwide in 1995 to around US\$530 billion in 2006. The share of China has increased significantly. China's share of the world's textiles and clothing exports was around 12% in 1996 and 27% in 2006, respectively. The share of India has barely changed, still hovering around 4%.⁸ In response to China's rapid export growth, both the US and the EU have restricted China's export growth in these products to around 7.5% a year, running through 2008. China has also been taxing its own exports to curb such exports.

⁴ <http://www.ers.usda.gov/publications/cws/apr05/cws05c01/cws05c01.pdf>

⁵ http://www-wds.worldbank.org/servlet/main?menuPK=64187510&pagePK=64193027&piPK=64187937&theSitePK=523679&entityID=000178830_98101911453946

⁶ <http://72.14.205.104/search?q=cache:k65SmYAbiocJ:www.lafollette.wisc.edu/publications/workshops/2004-2005/fiber.pdf+multifiber+arrangement+costs&hl=en&ct=clnk&cd=4&gl=ca&client=firefox-a>

⁷ <http://www.researchandmarkets.com/reports/449241>

⁸ <http://stat.wto.org/StatisticalProgram/WSDBViewData.aspx?Language=E>

Export Subsidy Case Study: Common Agricultural Policy (CAP)

In 1957, six Western European countries (Germany, France, Italy, Belgium, the Netherlands, and Luxembourg) formed the European Economic Community (EEC), which has since grown into the EU. The origin of the CAP is the formation of the EEC. CAP began as a domestic price support system (recall from Chapter 1 price floor) for farmers. The EEC would buy the excess supply at the guaranteed high prices. The supported prices were so high that the EEC countries would have been importers under free trade. The farmers were producing so many surpluses that by 1985, the EEC was accumulating massive amounts of beef (780,000 tons), butter (1.32 million tons), and wheat (12 million tons)⁹. To dispose of the surplus, CAP was transformed into an export subsidy program. However, this flood of agricultural products in the world market would drive down world prices and invite complaints from other agricultural exporters in the world, such as the US and developing countries. Of course, US farmers could lobby for equivalent subsidies from the US government, but farmers in developing countries do not have such luxury.

Figure 4.7 shows agricultural subsidies or producer support payments as a percentage of total agricultural output. Support for the producers in these OECD countries in 2009 totaled US\$253 billion, accounting for 22% of farmers' income. The cost of EU subsidies was around US\$120 billion, accounting for about 23% of the farmers' output value. The US and Japan spent US\$30 billion and US\$46 billion on subsidies, respectively. These monetary values account for around 10% and 47% of total agricultural output value. As for Canada, it spent about US\$8 billion, accounting for around 17% of agricultural output. Note that although these subsidies cost the taxpayers in these countries significant amount of resources, developing countries were also adversely affected by these subsidies. The EU has been trying to reform CAP in recent years by cutting back some subsidies that support as a percentage of total agricultural output has been dropping. Our Forum section will explore these topics further.

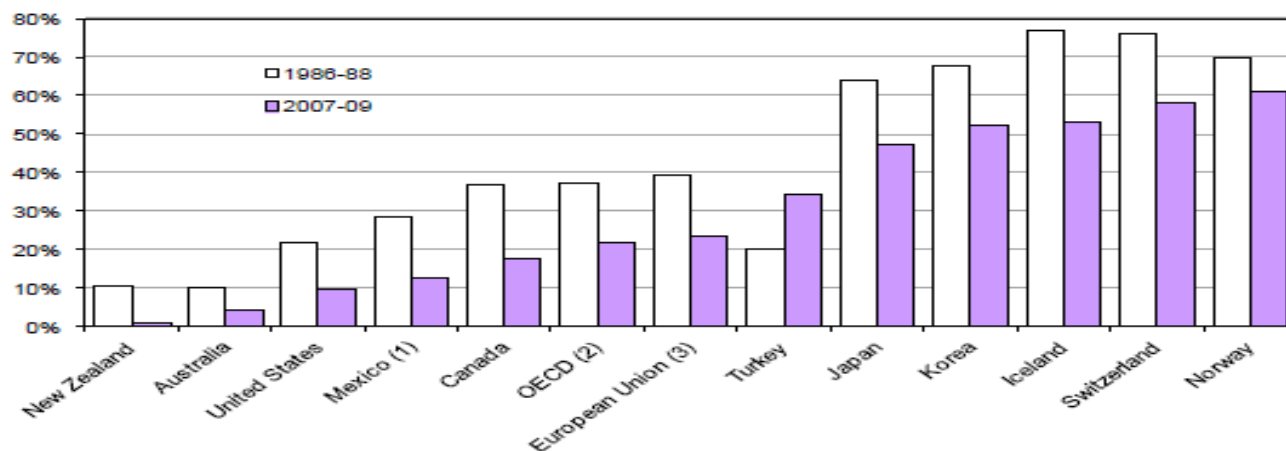


Figure 4.7 Producer Support Payments as a Percentage of Total Farm Receipts

Source: <http://www.oecd.org/dataoecd/37/16/43239979.pdf>, p. 19.

In 2009, the products that have received the most subsidies, as a percentage of farmers' income, include rice (55%), sugar (35%), poultry (15%) and milk (12%). Most of the rice subsidies are paid by Japan and South Korea to their rice farmers. Since rice is a staple, and consumers generally are less opposed to paying subsidies to maintain a part of their history and culture, this product is highly subsidized. The imports of rice into these two countries are restricted to an annual maximum of 4% to 8% of domestic consumption. The policies on sugar and milk involve not only subsidies but also production and import quotas. The US has a system of protection for their sugar producers, while Canada (especially Quebec) has its own supply management system for dairy production. Our Forum section will explore these topics further.

⁹ Paul Krugman and M. Obstfeld, *International Economics, Theory and Policy*, 7th edition, (Boston, Pearson Publishing: 2006) p. 188.

With the massive production subsidies that farmers in developed countries receive, farmers in developing countries could not compete fairly in the world market. Because developing countries are abundant in labour, the products that they tend to have comparative advantage in are textiles, clothing and agricultural products. However, we have seen that world trade in these industries has been impeded by tariffs, quotas and export subsidies. To this day, disagreement in cutting agricultural subsidies is the main reason for stalling the WTO's Doha Round of negotiations.

Can cutting agricultural subsidies in developed countries help alleviate poverty in African countries? According to various studies,¹⁰ it could. The article in **Figure 4.8** argues that by simply cutting cotton subsidies that the US offers to its farmers, Mali and Mozambique would benefit dramatically. However, more investment in African agriculture is also needed to improve productivity.

Subsidies hurt Africa

By Omar Ben Yedder

At the US-Africa Business Summit in Washington, Mali and Mozambique's Heads of State participated in a press conference to address the issue of hunger and poverty in Africa. One of the major issues being addressed at the US-Africa Business Summit was trade, and at a press conference held by Presidents Amadou Toure of Mali and Joaquim Chissano of Mozambique, both leaders spoke of the problems that Africa's farmers continue to face.

In this world of free trade, it is astonishing that the West still subsidises its farmers to the tune of billions of dollars a year. These subsidies are not only detrimental to the poor farmers of Africa, but are also, according to the theories of the West's favourite 19th century economist Adam Smith, a burden to the tax payers of the developed nations and global trade as a whole.

Taking Mali's cotton industry as an example one can see the consequences subsidies can have on such a small and poor nation. A few years ago cotton was a source of wealth for Mali and its neighbours, but has now become a burden, "a factor of impoverishment" to quote President Toure. Mali's President had a simple message at this press conference: Stop the subsidies which Western governments give their farmers.

Using Toure's own figures, due to the effects of cotton subsidies which stimulates over-production and drives down prices, last year Mali lost 1.7% of her GDP and 8% of her export receipts. Burkina Faso was similarly affected, losing 1% of her GDP and 12% of her export receipts. Benin also lost 1.4% of her GDP and 9% of her export receipts. All three countries lost out due to the drastic fall in the world price of cotton, which reached its lowest level in late 2002 at \$0.35 a pound. In Mali alone, two million producers rely directly on the cotton industry for their livelihood. It is estimated that in West and Central Africa, 10m depend on cotton farming.

And now for the economics. The production cost of cotton is on average \$0.47 a pound in Western and Central Africa. This compares with \$0.73 in the USA and even higher production costs in Europe. However, with annual subsidies estimated at \$2.3bn in the USA, \$1.2bn in China and \$700m in Europe (principally to Spain and Greece), the price of cotton on the world markets was actually a meagre \$0.35, effectively erasing all comparative advantages which African nations enjoy.

Agriculture for almost all African nations still forms the backbone of economic activity. In Mali, it stands for 42% of the country's GNP, and provides both the communal authorities with 75% of its export receipts as well as a large portion of tax revenues. A prosperous and profitable agriculture sector is essential for African countries' prosperity, and ultimately to enable them to pursue their democratic and social development. We shall have to wait until the WTO's fifth round of talks, taking place in Cancun, Mexico this September, to see whether the reduction and eventual elimination of the cotton subsidies will take place. Mali has joined Benin, Burkina Faso and Chad in deciding to jointly lobby the WTO for the elimination of cotton subsidies.

AFRICA MUST PRODUCE MORE EFFICIENTLY

Neither Toure, nor Mozambique's President Chissano, tried to claim that subsidies are the only reason behind the current predicament facing Africa's agriculture sector. They both accept the need to develop irrigation systems and the better use of water. Toure, in good humour but nonetheless with a serious point to make, highlighted the fact that in his country, during the rainy season, the Niger waters at Kolicoro, the centre of Mali's cotton growing region, can reach volumes of 40bn cubic metres. Yet, in the dry season, one can play football between its riverbanks!

Chissano pointed out that if Africa is to stop the vicious circle confronting its agricultural sector, Africa cannot just simply buy the know-how and the inputs, such the machinery, seeds and the pesticides, but must also learn how to exploit its resources and produce more efficiently.

Inevitably, the subject of genetically modified food was also raised at the press conference. Both Chissano and Toure were evasive on this matter, preferring to leave the talking to the scientists. President Bush, in his speech to the Summit, received rapturous applause when he nonsensified the EU for scaremongering on this subject. Both African Presidents sat on the fence on the GM debate, even if they each admitted to having eaten GM foods. But Toure insisted that in Mali, food has always been grown organically and naturally, thus satisfying the needs of the most discerning customers.

Figure 4.8 Mali and Mozambique's Quest for Lower Cotton Subsidies

Source: http://findarticles.com/p/articles/mi_qa5327/is_200308/ai_n21341972/print

¹⁰ <http://www.stopagriculturalsubsidies.com>, www.globalpolicy.org/soecon/trade/subsidies/2002/10stopdumping.pdf, <http://www.washingtonpost.com/wp-dyn/content/article/2006/07/02/AR2006070200691.html?sub=AR> and <http://www.rand.org/commentary/061802WSJ.html>.

Biotechnology has added more complications to the policy debates in the international trade arena. Biotechnology, in its broadest sense, can be defined as the use of biological organisms or processes in all technological applications¹¹. At its oldest definition, biotechnology has existed for more than 6,000 years. Traditional biotechnology covers diverse activities that range from the use of yeast in brewing or bread-making to the crossbreeding of plants and animals. Farmers have used biotechnology to crossbreed plants or flowers to create a plant with larger flowers or a sweeter or seedless variety of the fruit, such as seedless grapes¹². Traditional biotechnology is limited because of its dependence on natural reproduction.

The fundamental difference between traditional and modern biotechnology is that the new technologies allow breeders to operate at the molecular level. Many scientists date the beginning of modern biotechnology back to the 1970s when deoxyribonucleic acid (DNA) was moved across unrelated organisms. Much of the current discussion on food and biotechnology focuses on foods produced using recombinant DNA techniques. Recombinant DNA techniques, or gene-splicing, involve the isolation and subsequent introduction of discrete DNA segments containing the genes of interest into the recipient organism. The DNA segments can come from any organism, such as plants, animals, or microbes. Gene-splicing encompasses both within-species and inter-species modifications. Within-species modification is relatively uncontroversial because it merely speeds up what could be accomplished by the traditional breeding techniques. Transgenic modifications, however, alter the new genes that are often derived from a different species. Such modifications, for example, include laboratory experiments of producing tomatoes and strawberries that are spliced with anti-freeze genes from flounders. Transgenic alterations are extremely contentious because genetic information is transferred between species that would never exchange information under natural circumstances or under traditional breeding techniques. In other words, the world may have become the laboratories of “mad scientists” who are “playing god”.

The application of biotechnology into food production became common in the 1980s. Since 1988, there have been more than 4,000 field trials of GM crops in Canada. Currently, more than half of canola and one-third of corn grown in Canada are GM crops¹³. Internationally, approximately 72% of the world production of GM crops has been conducted in the US, 17% in Argentina, and 10% in Canada. European countries have also conducted GM crops field trials, but at a much smaller scale. The top three GM food crops (soybeans, corn, and canola) are mostly processed into oil and meal components, which are present in about 70% of processed foods. It is safe to say (or unsafe?) that all of us have eaten some form of GM food.

In recent years, about 99% of the GM crops involved two key input traits: herbicide tolerance and pest resistance. The most notable herbicide tolerance crop is perhaps Monsanto's Round-Up Ready soybean, which is resistant to the Round-Up herbicide¹⁴. Farmers could spray the herbicide freely without causing harm to their crops and thereby increase crop yields. Since 1996, Canadian farmers have been growing GM corn that is resistant to the corn borer. This common pest destroys on average 40 million tons of corn per year, or 7% of world production¹⁵. The corn borer can carve deep tunnels through the stalks of the corn, killing the plants or seriously reducing the quality of the corn. Biotechnology has introduced a gene from the bacterium *Bacillus thuringiensis* (Bt) that occurs naturally in soil into corn seeds. Bt does not affect mammals with acidic stomachs, but it kills the corn borer, which has an alkaline digestive system. Bt kills the pest by shrinking their intestines and leaving them to starve to death. Organic farmers have used Bt as pesticide sprays for years. Introducing a Bt gene into corn is considered to be more effective than Bt sprays

¹¹ L. Hoffman and P. Riley, “Value-Enhanced Crops: Biotechnology's Next Stage,” *Agricultural Outlook*, March 1999.

¹² Food and Consumer Products Manufacturers of Canada, “Food Biotechnology,” 2000.

¹³ “Discussions Among Leaders of the Group of Eight at Their Summit Have Failed to Resolve Differences between North America and Europe over the Risks of Genetically Modified Foods,” *Canadian Press Newswire*, July 23, 2000.

¹⁴ P. Wyssong, “Food Fight: As Public Fears Mount, Experts Trumpet the Safeguards that Regulate GM Foods,” *Medical Post*, February 22, 2000, pp. 34-35.

¹⁵ B. Gates, “Will Frankenfood Feed the World?” *Time*, June 19, 2000, pp. 50-51.

because the sprays have to be applied exactly where the insects are feeding. Because sunlight breaks down Bt, all spraying must be done before sunrise. Rainfall or irrigation also limits the effectiveness of Bt sprays because water washes the chemical back into the soil¹⁶. The likelihood of consumers ingesting Bt pesticide residues on corn also decreases because the Bt gene is expressed in the leaf and stalk parts of the corn, with quantities in corn kernels barely measurable.

These input traits have translated to significant decreases in production costs to farmers and benefits to the environment. On average, US farmers saved more than \$190 million in insecticide costs and reduced the amount of chemical insecticide usage by 10% to 40% per year¹⁷. The growers of Bt cotton saw a reduction of chemical insecticide usage by two million pounds a year¹⁸. The economic gains of growing Bt cotton, however, accrue mainly to farmers (42%) and firms (35%), with only about 7% passed on to the consumers.

Since 2000, food scientists have successfully developed some GM products that would benefit the consumers. The golden rice, which incorporates genes from daffodils and a bacterium called *Erwinia Uredovora*, provides beta-carotene that the body converts into Vitamin A. Vitamin A deficiency has been the leading cause of blindness in more than 100 million of malnourished children¹⁹. Given that the United Nations has estimated that currently more than 800 million people are undernourished, of which 400 million are women with iron deficiency who subject their babies to various birth defects, the golden rice could supply the essential nutrients to these consumers. The company that holds the patent to the rice, Syngenta, has reached an agreement with the inventors that it would give the rice for free to developing countries in exchange for commercial and marketing rights in the US and other affluent markets²⁰. Meanwhile, other products are also in the developmental stages. Scientists are experimenting on potatoes that absorb less oil, bananas that deliver vaccines against Hepatitis B, peanuts and rice that are free of allergens and natural toxins, and food that stay fresh longer and with improved taste and appearance²¹.

Other input traits of GM foods (GMFs) are also in the works. GM crops that could be grown with using less land, water, and chemical pesticides are being explored. Plants could eventually make their own fertilizers by plucking the nitrogen they need to make proteins directly from the air instead of absorbing it from the soil²². Aluminum that exists in soil often damages the roots of plants and causes many staple crops to yield low harvests. The gene that neutralizes aluminum toxicity in rice has been identified, and it is expected that the overall crop productivity in the world could increase by 25%. As the world population is expected to increase to 9.5 billion by 2050, and the subsequent food demand to triple its current levels, developments in food biotechnology offers the opportunity to cope with such changes. With our current rises in food prices since 2008, GMFs may be a viable assistance, if not solution, to our food shortage.

As with any new technological development, consumers are concerned about its unknown effects. Concerns over GMFs include ethical and environmental concerns, as well as long-term health risks. Some are concerned over gene-splicing because it is “unnatural. They believe that interventions into the way nature works would incur unforeseeable and disastrous consequences. The proponents of biotechnology argue that transplant surgery, in-vitro fertilization, and GM bacteria that are used to produce a number of medical products have been seen as unnatural. Some have also expressed concerns over the possible “escape” of genes from GM crops to related wild species and could subsequently confer herbicide-resistance on them. There are also concerns that genetically modified animals, such as fish, may escape into the wild and prey on the natural population.

¹⁶ “Bt Corn Saves Millions for Canada’s Farmers,” *Hill Times*, February 14, 2000, Insert 2.

¹⁷ “Frankenstein Food,” *The Economist*, February 20, 1999.

¹⁸ J. Kemp, “Resistance Dropping Toward Biotech Foods,” *Chicago Tribune*, August 25, 2000.

¹⁹ B. Gates, “Will Frankenfood Feed the World?” *Time*, June 19, 2000, pp. 50-51.

²⁰ <http://www.goldenrice.org>

²¹ Food and Consumer Products Manufacturers of Canada, “Food Biotechnology,” <http://www.fcPMC.com/public/info/biotech/brochure.htm>, 2000.

²² “In Defense of the Demon Seed,” *The Economist*, June 13, 1998.

Currently, almost all scientists are in consensus that the present generation of GMFs is safe. The World Health Organization (WHO) and Food and Agriculture Organization of the United Nations have issued a joint report approving the methods national authorities use to assess the safety of biotechnology crops. More than 2,700 eminent scientists endorse a “Petition in Support of Biotechnology.” They believe that public fear comes from poor understanding of biotechnology²³. GM experts indicate that food biotechnology has been used for years without much controversy, such as Canadian wheat with higher gluten content, the “Flavsavr” tomato and brocco-flower²⁴. In fact, people have readily accepted genetic modification in medicine when they saw how better drugs and clearer diagnosis had improved their lives²⁵. To date, no one has yet found scientific evidence that GMFs are unsafe. Critics argue that scientific evidence may appear decades after the consumption of GMFs, and by that time it may be too late to find a solution or cure.

Although explicit international rules that govern GM products do not exist, the WTO agreement on Sanitary and Phyto-Sanitary Measures (SPS) can also be used to regulate trade in GM foods. The SPS agreement is the first set of rules that solidified the principles to be adopted in disputes over food safety. It states that phyto-sanitary trade barriers should be used only to protect human, animal, or plant life or health, but the decisions must be based on sufficient scientific evidence. The SPS measures are to be based on risk assessment, and each country does its own assessment to determine the acceptable levels of risk. In other words, countries have the autonomy to incorporate their social and cultural concerns in determining the acceptable levels of risk. Countries could impose import bans on products deemed unsafe, but they are still subject to retaliations. In practice, however, the WTO ruling on the EU-US case over hormone-treated beef clouded the effectiveness of the SPS. The WTO ruled that although the EU has not provided scientific proofs that US hormone-treated beef is unsafe, it also states that the EU has the right to set high health standards. The ruling left both sides claiming victory. The EU has gone ahead with the ban, and the US has since imposed retaliatory tariffs on some EU exports.

The issue of labeling of GMFs is controversial. Japan and Germany believe that products containing GM ingredients should be labeled as such, whereas the US and Canada favor labeling only if the GM products are significantly different in nutritional value compared to the conventional counterparts or if they pose health hazards. The difficulties of segregating GMFs are significant. It often involves 10 to 15 points on the trip of farm products to final consumption. The separation on their long trip from field to cargo hold and then to processing plants requires testing for GM ingredients at every step of the way. Studies suggest that such segregation could increase the price of foods by 30%²⁶. Some also argue that because GM ingredients are present in more than 70% of processed foods, the labeling of GM components would lead to any stigma to be quickly dulled by familiarity.

At least 35 countries have adopted mandatory labeling for any product that has been genetically modified. The European Parliament passed laws in 2003 on GMFs that lifted the seven-year ban on the introduction of new biotechnology products. As of April 2004, all products containing more than 0.9% of GM ingredients must be labeled. The new rules will allow GM products as long as they are clearly labeled.

The Canadian Food Inspection Agency (CFIA) and Health Canada are the two main agencies that regulate GM products in Canada. The CFIA is responsible for inspecting and monitoring GM products, while Health Canada has the responsibility for human health-related issues. It tests novel foods in accordance with the standards set out in its guidelines for the Safety Assessment of Novel Foods, which were developed in consultation with the WHO and the Food and Agriculture Organization of the United Nations²⁷. GM foods,

²³ “Udder Confusion,” *The Economist*, July 3, 1999.

²⁴ “GMOs: Nightmare or Opportunity?” *Canadian Grocer*, June 2000, p. 27.

²⁵ “Who’s Afraid?” *The Economist*, June 19, 1999.

²⁶ “Loblaws Says Removing Genetically Modified Foods Would Send Prices Soaring,” *Canadian Press Newswire*, May 4, 2000.

²⁷ P. Wysong, “Food Fight: As Public Fears Mount, Experts Trumpet the Safeguards that Regulate GM Foods,” *Medical Post*, February 22, 2000, pp. 34-35.

which are considered to be new or novel foods, are subject to more rigorous rules and testing than those produced under conventional methods. Health Canada also posts its decisions on GM foods on its website²⁸. The current labeling practice in Canada is that GM products are labeled only if their nutritional content is significantly different from their conventional counterparts or if they pose health risk²⁹. The CFIA and Health Canada carry joint responsibility for food labeling policies. The CFIA is in charge of non-safety related product labeling, such as voluntary labeling of organic foods and frauds. Health Canada is responsible for labeling related to safety issues such as allergenicity or changes in nutritional composition.

Antidumping

Table 4.4 shows the number of AD measures imposed by selected countries from the years 1995 to 2010. Canada has filed 95 AD complaints against its trading partners, while the US has filed 301 in the same time period. Note that the size of the US' economy is roughly 10 times that of Canada's, so if the two countries were to file AD complaints in similar frequencies, the number of US cases should be around 950. However, also recall that only about 15% of the US economy is related to trade, whereas 40% of Canada's economy is related to trade. Dividing 950 cases by 2.5 times, the number of US cases should be 380. We may conclude that the US is not as frequent an AD user as Canada, but we should be careful in making such a comparison. This is because we do not know the monetary value of each Canadian or US AD case involved. A Canadian case may involve one exporter, but a US case can involve 50 exporters. Therefore, we cannot simply look at the number of AD complaints and compare across countries. One thing that we can conclude is that the number of AD complaints rises in recessions. For the years 1999 to 2000 and 2007 to 2009, countries have filed more complaints to protect their import-competing industries during an economic downturn.

AD Measures: By Reporting Members																	
Reporting Member	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
Canada	7	0	7	10	10	14	19	0	5	8	4	0	3	3	2	3	95
Brazil	2	6	2	14	5	9	13	5	2	5	3	0	9	11	16	4	106
EU	15	23	23	28	18	41	13	25	2	10	21	12	12	15	9	4	271
India	7	2	8	22	23	55	38	64	52	29	17	16	25	31	30	31	450
Japan	1	0	0	0	0	0	0	2	0	0	0	0	0	4	0	0	7
Korea, Rep. of	0	5	10	8	0	5	0	1	4	10	3	8	0	12	4	0	70
Mexico	16	4	7	7	7	6	3	4	7	7	8	5	0	0	1	2	84
Singapore	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
United States	33	12	20	12	24	31	33	27	12	14	18	5	5	23	15	17	301
Others	36	40	50	80	103	76	51	90	140	71	64	94	54	40	60	60	1109
Total	119	92	127	181	190	237	170	218	224	154	138	140	108	139	137	121	2495

Table 4.4 AD Measures by Selected Countries

Source: http://www.wto.org/english/tratop_e/adp_e/adp_e.htm, Anti-dumping measures: by reporting Member

Table 4.5 shows that the products that are most commonly faced with AD complaints are metals and chemicals. Given that these products are very likely to be used as inputs by various other industries in the importing countries, AD duties placed on these products will raise production costs and may end up hurting the overall competitiveness of these countries. Of course, to be certain, we need to examine the monetary value of each AD case launched, rather than just the number of cases. Unfortunately, monetary values of the cases are considered to be confidential information and are not reported by the WTO.

AD Measures: By Sector																	
Category	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
Metals	49	24	46	61	85	83	66	60	65	39	25	15	10	29	28	28	713
Chemicals	19	12	22	15	15	51	37	57	68	43	30	26	26	43	18	32	514
Plastic Products	10	11	13	14	27	26	11	25	48	23	23	28	7	25	13	15	319
Textiles	4	8	9	2	21	24	9	30	2	14	13	23	17	10	29	17	232
Machinery	8	17	16	28	4	14	11	15	8	6	14	9	19	8	27	14	218
Others	78	44	67	122	123	122	102	91	98	68	58	54	39	53	50	43	1212
Total	119	92	127	181	190	237	170	218	224	154	138	140	108	139	137	121	2495

Table 4.5 AD Measures by Selected Sectors

Source: http://www.wto.org/english/tratop_e/adp_e/adp_e.htm, Anti-dumping measures: by Sector

²⁸ <http://www.novelfoods.gc.ca>

²⁹ http://www.hc-sc.gc.ca/fn-an/gmf-agm/fs-if/faq_3-eng.php