LIBERALIZED AGRICULTURAL TRADE: PROSPERITY FOR ALL?

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Overview

Florida Farms Hurt Under NAFTA: "Florida's farmers and ranchers have been hurt by seven years of the North American Free Trade Agreement (NAFTA), which has led to a surge in Mexican imports and lower crop prices… Public Citizen said in its report released Wednesday that the state's farmers would be further devastated if free trade is expanded across the Americas under a proposal by President Bush…The group said that NAFTA has resulted in more imports from Mexico and Canada, lower incomes for farmers in Florida, higher consumer prices and lost farm worker jobs. The orange, tomato, beef and sugar industries have been particularly hard hit… The report comes as the Bush Administration has been pressing Congress to grant President Bush "fast-track" trade promotion authority that would help create the Free Trade Area of the Americas, a trade pact that would include almost every country in the Western Hemisphere… Florida lost 1,000 small– and medium–sized farms since NAFTA went into effect, while income for large agribusiness increased. For example, the number of major tomato farms dropped from 300 before the trade pact to 15 this year." (*The Gainesville Sun*, Sec B)

Agricultural Tariffs and the Uruguay Round: Agriculture world-wide has been highly protected. Tariff and non-tariff barriers protect domestic producers from import competition. In his book *Agriculture in Disarray*, the late Professor D. Gale Johnson from the University of Chicago argues that many of the distortions that exist in agriculture come about because of trade barriers. From the above quotation, it is clear that there is continued pressure to impose barriers to trade such as quotas and tariffs.

This paper addresses the gainers and losers from liberalized agricultural trade. When a country uses policy instruments to impede trade, there are clearly losers and gainers.

Much of the pressure for protectionism comes from lobbying activities of special interest groups (Schmitz, Furtan, and Baylis, 2002). The theory of public choice is useful in explaining why certain protectionist policies remain in place. Many of the efforts toward trade liberalization fail because the compensation offered to the losers from moving to freer trade is inadequate.

The Uruguay Round agreement of the General Agreements of Tariffs and Trade (GATT) included agreements that covered a number of industries traditionally protected by domestic governments. It addressed areas such as agriculture, textiles, banking, foreign investment and intellectual property rights. In brief, the Uruguay Round agreement, instituted in 1994, requires that all non-tariff trade barriers are to be converted to tariff barriers, and that all tariffs are to be reduced over time. Tariffs are to be reduced a minimum of 15 percent over six years. Export subsidies are also to be reduced. The volume exported under export subsidies must decrease 21 percent, and the value of export subsidies must decrease 36 percent. Domestic supports that are determined to be trade distorting are to be reduced 20 percent in total. Minimum access requirements (MARs) are also to be established, allowing foreign producers some tariff-free access to protected markets.

Agriculture has been a highly protected industry. For example, before the Uruguay Round, Korea had tariffs on agriculture and food products set at 99.5 percent. Other Asian nations had similarly high tariffs of over 80 percent. For Europe and North America, agricultural tariffs were lower, but still were large relative to tariffs on other products. The EU tariffs were 26.5 percent and the North American tariffs were 11.7 percent. For manufactured products, tariffs were generally lower. Countries in South

Asia had high tariffs on manufactured products set at around 52 percent. Western countries had low tariffs: the EU tariffs for manufactured goods were around 6.5 percent, whereas the Canadian and American tariffs were 4.3 percent.

As a result of the Uruguay agreement, farm programs were to be categorised into one of four 'box' types: red box, amber box, green box or blue box. Programs that fell in the red box were to be discontinued and include, for example, import quotas and other non-tariff barriers. Programs that were characterized as amber were subject to quantity and value reduction as mentioned above. Export subsidies, for example, fell into this category. The World Trade Organization (WTO) also detailed what was to be an allowable, non-trade-distorting, farm-support program called a green-box program. Green-box programs must satisfy two basic criteria: (1) support must be government funded and (2) the money cannot be used for commodity-type, price-support programs.

The Uruguay Round allowed the Europeans to keep a revised version of their CAP, which supports producers and sells excess production at subsidized levels on the world market. It was recognised that the European Union had more farm-policy changes to make than most developed countries to bring them in line with the WTO. To do this, the WTO created a special box for CAP called the blue box.

The WTO set rules about health and food inspection under a section discussing Sanitary and Phyto-Sanitary Issues. At the beginning of the 21st century, these rules are the subject of ongoing discussion, but the fundamental concept is that any trade barrier for health and safety that supersedes international standards should be based on scientific evidence. This concept puts the onus of scientific proof upon the country wanting to erect a trade barrier that is above international standards. In comparison,

domestic rules on new products generally put the onus on the company introducing the new product to prove that it is safe. In Canada, this is an important issue for producers who want to export transgenic canola, and for consumers who are opposed to the licensing of the transgenic dairy hormone, rBST.

Trade agreements under the WTO have attempted to limit the use of trade-distorting measures with the view that more liberalized trade increases societal welfare. In theory, green-box policies are non-trade distorting, however, trying to find actual green-box policies that meet this criterion is virtually impossible.

CUSTA, NAFTA AND the FTAA

In 1989, Canada and the United States entered into the Canada-U.S. Trade Agreement (CUSTA). This agreement covered all aspects of trade, including agricultural trade. Both countries were to remove tariffs either immediately, or over a ten-year period. A snap-back clause was included under CUSTA, which allowed a country to reinstate a tariff if there was evidence that an increase in imports was doing irreparable damage to its domestic industry. CUSTA also contained a clause prohibiting certain methods of increasing exports into a third market in which both countries competed. In 1994, CUSTA was rolled into the North American Free Trade Agreement (NAFTA) agreement that included Mexico. The effects of NAFTA have generally been mixed. For example, since the inception of CUSTA, U.S. beef exports to Canada (and likewise Canadian beef exports to the United States) have risen sharply. This has not been the case, however, for all of the traded commodities.

One of the provisions of CUSTA was the creation of a dispute-resolutions mechanism. Trade disputes between Canada and the United States were to be brought

before a trade tribunal, with adjudicators from both countries, for a decision. Since its inception, the dispute-settlement mechanism has been used by both countries a number of times. The result has been to remove some of the rancour of disputes by creating an official body to decide these issues outside of the domestic political arenas.

In CUSTA, the question of Canada's import quotas on dairy, poultry and egg products was left to GATT. When Canada converted its import quotas to tariffs, per the 1994 WTO agreement, however, the United States took Canada to the trade tribunal under NAFTA, and challenged Canada's right to implement new tariffs that would block U.S. imports. Another example of the workings of the dispute-settlement panel is the case of the U.S pork countervailing duty that we discuss below.

CUSTA was incorporated under the NAFTA agreement in 1994. (As noted earlier, the Florida tomato industry for example lost under NAFTA.) The agricultural portion of the agreement remained in the form of three bilateral agreements among Canada, the United States and Mexico. The NAFTA agreement can be expanded to include other countries in the Americas, such as the agreement between Canada and Chile. It is interesting to note that CUSTA and NAFTA attempt to define what an agricultural subsidy is, and how it affects trade. Unfortunately, this part of the agreement was not completed at the time of the signing, but was left to later negotiations. It remains incomplete, in part because of the difficulty to define what a subsidy is.

A great deal of discussion continues over the Free Trade of the Americas Agreement (FTAA). However, this free trade agreement has yet to be written. Any agreement would include almost every country in the Western hemisphere. Some sectors of

agriculture will lose under a FTAA agreement. For example, the citrus producers in Florida would lose, as import tariffs would be lowered under the FTAA.

Canada and the United States are also members of the Asia-Pacific Economic Co-operation (APEC), formed in 1989, which, although not an explicit trade agreement, does attempt to lower trade barriers among the countries along the Pacific Rim. It is mandated to have free trade in the region by 2010 for developed countries, and by 2020 for developing countries.

As tariffs are reduced through a variety of trade agreements, international trade discussions are increasingly addressing the issues of non-tariff barriers. The Organization for Economic Co-operation and Development (OECD) is discussing the need for international competition legislation to ensure that foreign and domestic firms can compete on equal footing. Future trade issues are also likely to include questions of environmental, health, and safety laws.

Gainers And Losers: Conventional Wisdom

Many theories are available to explain trade patterns in international trade. In 1817, David Ricardo proposed the law of comparative advantage in *Principles of Political Economy and Taxation*. His theory states that, even if one nation is less efficient at producing all goods than another nation (that is, it has an absolute disadvantage), both nations can still benefit from trade as long as each nation has a comparative advantage in the production of one commodity. The nation with the absolute disadvantage should produce the good for which its disadvantage is smallest. Ohlin (1933) later formulated a comparative-advantage theory around resource endowments. A country will export those commodities produced from its relatively

abundant factors. A more modern theory of trade, developed by Krugman and Obstfeld (1991) focused on trade and specialization due to the economies of scale. Adam Smith in his well-known treatise, *The Wealth of Nations,* stressed the importance of trade and argued that freer trade is superior to protected trade. Many economists still agree. Free-trade arguments underpin most international trade agreements.

There is a rich literature on the welfare impacts of international trade (Chambers, Letiche, and Schmitz, 1979) and (Letiche, Chambers, and Schmitz, 1982). Many Nobel Prize winners in Economics have researched this topic. Some of the basic propositions follow from the earlier works of many economists including Smith (1776), Ricardo (1817), and Ohlin (1933). Despite the many paradoxes that exist (Magee 1979) several gains from trade propositions are accepted among neo-classical economists.

The Gains-from-Trade- Theorem: *Suppose that the value of production is maximized at free trade prices. Then the value of free trade consumption at free trade prices exceeds the value of autarky consumption at free trade prices. The free trade consumption bundle must thus be preferred to the autarky bundle, because if it were not, consumers would pick the cheaper autarky bundle.*

There are certain assumptions needed to prove the gains-from-trade theorem. When there are various distortions such as taxes or imperfect competition, or when there are non-convexities due to scale economies, gains cannot be guaranteed. Gains from trade will not be shared equally by all citizens of a country. Because individuals have different tastes or different endowments, some individuals may even be worse off. In the absence of income redistribution to compensate the losers, some group will rationally oppose any move to free trade or lobby hard for protection.

The gains from trade depend on whether or not a country can affect the world price of a commodity by changing the quantity supplied, or demanded. Under the small-country assumption, world prices are not impacted by producers' production decisions or by consumers' consumption decisions in response to policy changes. In the large-country case, prices are impacted by changes in producer output

Gains from trade are mutual. *Each possible trade leads to a different distribution of the gains, with the result that there is some element of conflict as well as an element of cooperation in international trade.*

Free trade to maximize welfare: *Free trade is also shown to maximize welfare in a competitive market. Distortions, brought about by the use of trade instruments, such as tariffs, usually result in net welfare losses, even though certain sectors can gain from protection.*

Empirical Estimates Of Gains From Trade

Many estimates are now available on the impact of freer trade in agricultural products. Generally, the models show that significant gains are to be had from trade liberalization. (The following studies are taken from Schmitz and Schmitz 1994). If this is true, then clearly there are major road blocks to trade liberalization. Otherwise, free trade would be the norm.

Organization for Economic Cooperation and Development (OECD) - According to the OECD, the world market effects of trade liberalization by commodity are as follows:

Wheat: Price rises 18% and production increases 0.5%. World trade declines 1.5%.

Rice: Price rises 21% and production increases 1%. World trade increases 37%.

Feed grains: Price rises 11% and production increases 2%. World trade declines 5%.

Dairy: Price rises 31% and production increases 2%. World trade goes up to 13%.

Tyers and Anderson – The effects of industrial market economy liberalization on agricultural markets are:

Wheat: World price rises 2% and trade declines 1%.

Rice: Price rises 5% and trade increases 32%.

Beef: Price rises 16% while traded amount rises 195%.

Dairy: Price jumps 27% and trade increases 95%.

Sugar: Price increases 5% and trade increases 2%.

Food and Agricultural Policy Research Institute (FAPRI) – Significant changes are expected to occur within the EU when it implements a 15% set-aside requirement and lowers intervention prices. Under this CAP reform, FAPRI offers the following estimates:

Wheat: price increases roughly 18%.

Corn: price increases roughly 11%.

Barley: price increases roughly 8%.

Soybeans and soybean oil: price increases roughly 23%.

Soybean meal, Beef, Pork, Poultry, and Dairy: minor changes are expected

Most of the general equilibrium trade models show that there are significant net gains (there are gainers and losers) to be had from more liberalized trade in agricultural products. The numbers run into the billions of dollars. To remove trade barriers requires policy ingenuity, including compensation packages where losers from freer trade are compensated by gainers.

The models cited show the impacts of freer trade on commodity prices. But they are somewhat empty when looking at the impacts of liberalization in a vertical market setting. Trade impacts not only producers, but also processors, wholesalers, marketers, and consumers. Given the dominance of multinational firms in agricultural processing and trade, perhaps the greatest gainers from free trade would be certain multinationals. This statement appears to be consistent with their lobbying efforts to have tariff and non-tariff barriers removed.

Arguments For Protectionism

Trade distortions in agriculture are widespread. They result from actions taken by governments, including the use of tariffs, export subsidies, and import quotas. Why do governments intervene in trade? As examples, consider supply management in Canada. Under this system both production controls and import quotas prop up the income of those producers in supply management. The arguments as to why such a system was put in place include low farm income and high price instability prior to the implementation of supply management. Protectionism is also employed in the EU through common external tariffs, justified under food security arguments along with low farm incomes.

From a broader perspective, there are other reasons why certain types of protection can lead to welfare improvements. This is the case, for example, when trade barriers can remove negative externalities. Also, there is the theoretical optimal welfare tariff case recognizing however, that all trading nations can not gain from the use of optimal welfare tariffs. As an example of the use of an optimal tariff, EU tariffs on wheat imports in the 60's and 70's lead to welfare improvements to the EU since the gain to

producers plus the gain in EU tariff revenue was greater than the consumer cost due to higher prices (Carter and Schmitz, 1979).

Like tariffs, trade distortions can be caused through the use of export subsidies. An export subsidy is one of the more obvious trade distortions. Export subsidies have been used extensively in the past. One of these, the Export Enhancement Program (EEP), was utilised by the U.S. in 1985. The EU also pursued the use of export restitution payments.

Trade distortions can be created in cases where market power is exercised through various means that include export cartels, voluntary-export restraints, and producer-marketing boards:

Producer Export Cartels. Producers in exporting countries can gain by cooperating in output reduction in order to raise prices (e.g., OPEC).

Export Taxes. Export taxes generally act as a tax on farmers. These taxes are illegal for the U.S., however, they have been used by Argentina. .

Voluntary Export Restraints (VERs). The use of VERs is quite widespread. VERs require that exports be restricted below free-trade levels. Examples include VERs on beef exports to the United States and tomato exports into the United States. This voluntary reduction in exports can increase the welfare for the producers in both the exporting and the importing country.

The Scientific Tariff

Many arguments have been put forward for protection, in addition to standard tariff and quota arguments. These include food security, price and income stability, environmental protection, the maintenance of small farms, and rural development. The scientific tariff, as coined by Professor Harry Johnson, includes various trade

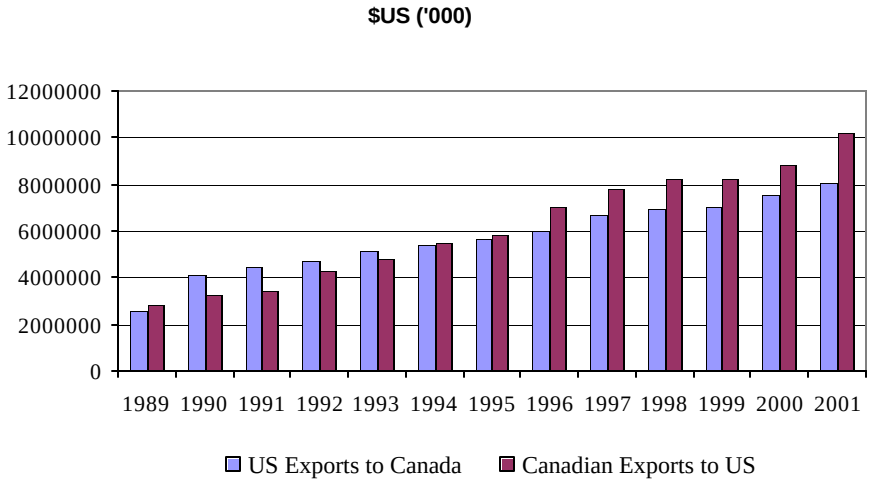
instruments to deal with such issues as food security and environmental protection. However, the notion of the scientific tariff has come under attack since often trade policy is not the first-best means for achieving certain policy goals. For example, if an exporter is abusing child labour laws, the immediate remedy for the importer is not to impose tariffs on the relevant products produced but rather to provide direct monetary assistance to import competing producers. Likewise, if an exporter is exploiting its environment, thus lowering its production costs relative to a competing importer, the solution for the importer is not to impose tariffs or quotas to deal with the perceived negative externality, but rather policies should be applied directly to the source of the problem, not through trade protectionist measures.

Recently, trading partners such as the EU and Japan have reintroduced the notion of the scientific tariff through multifunctionality. The agricultural sector produces not only food but rather multiple joint products that include food security, open space, economic activity in rural communities, and environmental benefits such as wildlife habitat, flood control, and carbon sinks. Multifunctionality is a term that encompasses the concept of joint outputs. Multifunctionality implies that some of the non-traded outputs exhibit characteristics of externalities or public goods resulting in markets functioning poorly (OECD, 2001). As pointed out by Thornsbury, Moss and Schmitz (2003), the policy debate is subtly shifting from a focus on legitimacy of the multifunctionality concept to a more specific focus how such a concept might be effectively used. One thing is clear, adhering to the multifunctionality idea will likely lead to greater protectionism.

Anti-Dumping And Countervail Measures

When governments subsidize production or exports, their trading partners can respond with countervail and anti-dumping measures, permitted under the WTO and under various regional trade agreements. Canada has faced countervail action

Figure 1. Agricultural Exports: U.S. & Canada



Source: UN Comtrade data using ERS Ibat classifications

from the United States for commodities including lumber, potash, tomatoes, hogs, beef and grain. On the other hand, Canada has brought countervail charges against U.S. corn producers (as well as EU beef producers). In all cases, the question is whether or not domestic policies affect the production and/or export of products into another market. Different farm programs often result in production responses that affect the quantity traded and, in some cases, the trade price. Subsidised exports have a negative impact on import-competing producers. Farmers then ask for protection from imports in the form of either countervail or anti-dumping duties. The use of countervail trade dispute resolution is different from anti-dumping action.

Anti-dumping and Countervailing Duty Investigations

U.S. anti-dumping legislation provides relief in the form of special additional duties that are intended to offset margins of dumping. Anti-dumping duties are imposed when the administering authority in the United States, the Department of Commerce, has determined that imports are being, or are likely to be, sold at less than fair market value in the United States; and when the International Trade Commission (ITC) has determined that a U. S. industry is materially injured, or is threatened with material injury; or that the establishment of an industry in the United States is materially impeded by such imports.

Countervailing duty legislation provides for the levying of special duties to offset foreign subsidies on products imported into the United States. In general, procedures for such investigations are similar to those under the anti-dumping law. Petitions are filed with the Department of Commerce and with the ITC. Before a countervailing duty order can be issued, the Department of Commerce must find a countervailing subsidy. In most cases, the ITC must determine that there has been material injury, threat of material injury, or material retardation due to the subsidized imports. The primary difference between the two measures is that to pursue countervail action, the Department of Commerce must identify a foreign subsidy as the culprit, whereas that is not necessary under anti-dumping provisions.

Canada also protects it domestic businesses from injury due to unfair import competition. The *Special Import Measures Act (SIMA)*, passed in 1984, is a principal legislative mechanism by which such protection is provided. Under SIMA, Canadian

producers may ask for relief from unfair and injurious competition from goods that are exported to Canada:

- at prices lower than in the home market, or at prices lower than the cost of production (dumping); or
- that have benefited from certain types of financial contributions, or support from governments (subsidising).

The Canadian International Trade Tribunal (the Tribunal) is an independent, administrative tribunal operating within Canada's trade remedies system which determines if Canadian producers suffer injury from imported goods. If the Tribunal decides that dumped or subsidised goods have caused injury to Canadian producers, anti-dumping and/or countervailing duties are assessed on the imported goods.

While anti-dumping legislation was used initially by only a few industrialised countries, its use has grown significantly since the 1980s. The number of countries using anti-dumping law more than tripled, from seven to 22, between 1987 and 1997. Use by countries, such as Mexico, Argentina, Brazil, and Korea, increased considerably between 1987 and 1997. The U.S., Australia and the European Union together account for more than half of all anti-dumping cases (2,196 investigated during 1987 and 1997).

Although the United States has been the most frequent user of anti-dumping in absolute numbers, based on the trade-weighted criterion it ranks 19th in its intensity of anti-dumping use. Using the trade-weighted index, Australia ranks as the most intensive user of anti-dumping, with its share of investigations eight times larger than its share of global imports.

With increased use by developing countries, anti-dumping investigations on agricultural products are in danger of escalating. This is due partly to the fact that developing economies rely to a greater extent on agriculture than industrial economies do. Many of these countries, such as India and China, continue to restrict food and agricultural imports through very high tariffs, quantitative restrictions, licensing requirements, and parastatal-import controls. As these countries further liberalize agricultural trade to meet their WTO obligations, they will likely resort more often to the use of anti-dumping measures to protect their domestic industries. While agriculture accounted for about 6 percent of the total number of anti-dumping cases launched between 1987 and 1997, it accounted for 10 percent of the total cases among the newly established anti-dumping users, including 96 percent of all cases for Poland. Similarly, the share of agriculture in total anti-dumping cases investigated is high for some developed countries, such as New Zealand, Australia and Canada, which are major agricultural exporters.

Examples of Trade Disputes:

Hogs:

In the 1984 U.S. hog-countervail dispute against Canada, the primary issue was whether or not the Canadian hog stabilisation program caused an increase in Canadian hog supplies and exports. How much did the Canadian stabilisation affect domestic U.S. hog prices? The impact of increased Canadian production on the U.S. price was insignificant. The Canadian stabilisation programs increased production by one to three percent, and even if all of this production were exported into the U.S. market, it would have a minimal effect on U.S. hog prices. A countervailing duty of CDN $0.0439 per lb.

live weight was put in place by the U.S, appealed by the Canadian government, and removed under the CUSTA dispute settlement mechanism. The countervailing duty on Canadian hogs 'taxed' away the stabilisation benefit.

Potash:

In 1987, the United States countervailed Canadian exports of potash to the U.S. market. Ironically, The U.S. potash producers gained far less from their legal action against Canada than was lost by U.S. farmers, who were significant users of potash. The effects from the U.S. anti-dumping litigation against Canada from 1986 (January – June) and 1988 (July – December) were:

U. S. Potash Producers	+ $ 12.9 million
Canadian Potash Producers	+ $108.4 million
U. S. Farmers	- $ 70.4 million
Net Effect	+ $ 50.9 million

From the above, we see that the Canadian firms were the largest gainers from resolving the potash dispute between the United States and Canada. The losers were the U.S. farmers. There was a net gain of approximately U.S. $51 million. This is a conservative estimate since, by comparing other time periods, the Canadian potash producers gained much more than the U.S. $108.4 million shown above. The above numbers show that, in aggregate, the 'gainers' gained more from the lawsuit than the 'losers' lost. From an American perspective, however, it would have been in the best interest of U.S. farmers to bribe the U.S. potash producers (to the tune of $12.9 million) in order that they not instigate legal procedures.

Beef Cattle:

In 1998 R-CALF of the U.S., launched both an anti-dumping investigation and a countervailing-duty investigation into live cattle that were exported from Canada into the United States. Using constructed costs, R-CALF argued that Canada was exporting cattle below the cost of production. The countervailing-duty part of the case alleged that, by restricting barley exports, the Canadian Wheat Board (CWB) caused the domestic price of feed barley to be lower in Canada than it would be under a competitive market situation with multiple sellers, thereby it subsidised Canadian cattle feeders.

On October 4, 1999, the U.S. Department of Commerce ruled that the marketing activities of the CWB do not constitute an export subsidy to Canadian producers of live cattle. The U.S. Department of Commerce found that there were no consistent patterns between Canadian barley prices and American prices. At times, Canadian prices were higher than U.S. prices, while at other times the opposite was the case. In the dumping case, the ITC ruled on November 9, 1999 in favour of Canada. They determined that U.S. cattle producers were not injured by Canadian cattle exports.

New cases have continued to emerge. For example, in 2001, the U.S. brought trade action against Canadian exports of tomatoes into the U.S. Likewise, Canada brought a trade action against the U.S., also on tomatoes.

There is an increased motivation for rent seeking behavior on the part of producers to support trade actions against other countries. Under the Byrd amendment, in certain cases can retain the dumping duties. This is true, for example, in lumber and crayfish, U.S. producers are allowed to retain a percentage of the dumping duties. Schmitz and Seale (2003) construct an optimal dumping duty that maximizes producer welfare from the imposition of dumping duties.

Trade in Vertical and Horizontal Market Channels

The New Institutional Economics has placed increased emphasis on transaction costs within an entire marketing and production channel. There has been some work that uses this framework to analyze the impact of trade policy (Schmitz and Moss, 2001) and (Moss and Schmitz, 2002). Within this framework, it is possible to identify the many gainers and losers from freer trade, rather than only producers and final consumers. For example, processors have a great deal at stake on trade matters

To highlight gainers and losers within a vertical market chain, consider the General Accounting Office (GAO) report on the U.S. sugar program, "Sugar Program: Supporting Sugar Prices Has Increased Users' Costs While Benefiting Producers." First, according to the GAO, the net losses to the U.S. economy from the U.S. sugar program are sizable. But, this is indeed not the case. The net cost in 1996 was estimated to be only $273 million (when the export rents obtained by sugar exporters who export sugar to the U.S. were included). In 1998, the net cost of the program was estimated to be $532 million. Based on past studies of costs and benefits of the U.S. sugar program, the net costs have been decreasing through time. Some estimates, for example, the Department of Commerce, put the consumer cost of the program at over $3 billion. The GAO results suggest that U.S. sugar policy is becoming less of a factor in distorting world sugar markets.

The largest gainers from removing the U.S. sugar program appear to be industrial sugar users, like chocolate bar manufacturers, and not consumers (the demand from industrial users far exceeds direct sugar purchases by consumers). This is consistent with the intensive lobbying efforts of industrial sugar users to have the sugar program

removed. The GAO estimates that the cost to sweetener users from the sugar program was $1.5 billion in 1996 and $1.9 billion in 1998. Using the GAO estimates, producer losses from removing the program far exceed consumer gains. For example, in 1996, producers and processors would have lost $788 million from the removal of the sugar program, food manufacturers and sugar refiners would have gained $810 million, and consumers would have gained only $587 million. Food manufacturers and sugar refiners gain more from the removal of the sugar program than do consumers. In 1998, producers would lose $1.05 billion from removal of the sugar program, whereas consumers would have gained only $769 million. The gain to food manufacturers and sugar refiners was $1.06 billion.

It is not clear from the GAO report what is meant by removing U.S. sugar policy. The major instrument currently used is import quotas on both raw and refined sugar. Importing refined sugar is essentially prohibitive. Under the complete removal of sugar policy, sugar would be allowed into the U.S. in both raw and refined forms. A significant volume of sugar traded outside the United States is in refined form. There has been a significant growth in trade in refined sugar. Brazil, the largest sugar exporter increased its refined sugar exports from 2 million metric tonnes in 1993/94 to roughly 5 million metric tonnes in 1999/2000. As a result, added imports into the U.S. under elimination of the sugar program may come in the form of refined sugar. In this case, significant losses will occur to sugar refineries, including those owned by producers.

The large sugar cane producers in Florida are vertically integrated from production through to the marketing of refined sugar. This is not the case for states such as Louisiana, where producers sell the majority of their sugar cane to private millers. As

pointed out by Moss and Schmitz (2002), removing the sugar import quotas would have a detrimental effect on the producers. Whereas, for Florida, part of the impact would be lessened since the refining aspect of the producer business would increase from added imports of raw sugar.

There are examples in agriculture, where horizontal linkages exist and trade occurs in joint products. For example, over fifty percent of Brazil's sugarcane is used in the production of ethanol. Brazil exports both sugar and ethanol. The production of ethanol from sugarcane provides a hidden subsidy for Brazilian sugarcane farmers. If a rapid expansion in sugar exports from Brazil were to occur, the subsidy would be greatly reduced (Schmitz, Schmitz and Seale, 2003).

The Compensation Test, Pareto Principle, or Neither?

When analyzing the distributional aspects of trade, we often fail to point out whether or not policy changes can meet the compensation test, the Pareto test, or neither (Just, Hueth, and Schmitz, 1982). If the compensation test is met, there is only a potential improvement in welfare, from a policy change, since the actual losers do not have to be compensated by the winners. Under the Pareto test, compensation has to be paid so that no one loses from the change in policy.

There are examples of policy change where the compensation test was met. In the case of the mechanical tomato harvester introduced in California, farm workers were not compensated for their losses but the harvester was introduced anyway (Schmitz and Seckler, 1970). Another case was the removal of the CROW transportation subsidy in Canada. There were significant efficiency gains from the elimination of the subsidy. However, farmers were not compensated for their losses; hence, the compensation test

was met but not the Pareto test. As pointed out by T. Schmitz, T. Highmoor, and A. Schmitz (2002), farmers were under-compensated by the removal of the CROW to the tune of at least CDN $10 billion.

Of course, then there are policies that meet neither of the above criteria. This would be consistent with rent-seeking behavior where inefficiency considerations seem to play a minor role in policy outcomes. Clearly, not all gain from freer trade!

Multinationals And New Trade Theory

One of the most rapidly changing aspects of trade is the increasing influence of multinational (MTN) firms upon international-trade negotiations. For these MTN firms, including those in the distribution and retailing business, international trade is often inter-firm trade. Any restriction on the movement of food items within the firm will tend to cause problems for the firm, and will be fought.

In the standard trade theory, it is assumed that factors of production do not move across borders. When one relaxes this assumption, there are cases where product trade and factor movements are substitutes (Mundell 1957), and there are cases where they are compliments (Schmitz and Helmberger 1973). In either case, there are generally gains to be had from trade in the presence of factor movements. But factor movements generally entail multinationals. Viewed from a theory of the firm prospective, the new trade theory emphasizes economies of scale from specialization. Regardless of the framework used to analyze trade barriers in the presence of capital movements, welfare analysis becomes increasingly more difficult because the international firm has no national boundaries. As a result, this activity in one part of the world can benefit from freer trade while at the same time activities elsewhere can generate losses.

Multinational Firms and Trade Disputes

Consider the U.S. trade dispute with the European Union over bananas. Onlookers might have found it strange, given that the United States is a net importer of bananas. However, the CEO of the U.S.-owned Chiquita Brands International persuaded the U.S. government to support Central American banana producers in their WTO complaint, which resulted in trade sanctions being taken against EU exporters. Agricultural and trade policy could well be shaped in the future by multinationals.

In the Canada-U.S. dispute on cattle during the late 1990s initiated by the R-CALF, the voice of the multinationals was on Canada's side because Cargill, Inc. and Iowa Beef Packers, Inc. (IBP) both operate slaughter facilities in Canada, and frequently move cattle across the border. Hence, they would lose from the restricted flow of live cattle between the two countries. These companies lobbied against the efforts of U.S. cattle interests and provided expert testimony in favor of free trade.

Multinationals continue to influence U.S. sugar policy. The importation of refined and raw sugar into the U.S. is restricted by import quotas. Support for this program of quotas varies by producer group (Moss and Schmitz, 2002). For example, it appears that the U.S. Sugar Corporation (a major sugar producer in Florida) supports more restrictive import quotas than does Flo-Sun (which produces sugar in Florida and the Dominican Republic). Flo-Sun ships sugar from the Dominican Republic into the United States under preferential quota treatment, receiving the internal U.S. sugar price for exports. Therefore, it attempts to maximize returns jointly for domestic production and from production in the Dominican Republic. Flo-Sun lobbies for less restrictive quotas than does the U.S. Sugar Corporation.

Often gains from trade arguments only consider producers and consumers. What about the impact of trade on marketing intermediaries, including multinationals? For example, since Cargill, Inc. owns soybean processing facilities in Brazil, it has an interest in expanding Brazilian exports of soybean oil products. Soybean exporters and their products are in direct competition with soybean producers in the U.S. The case can arise where a multinational can gain from expanded trade, but this doesn't necessarily mean that all producers in export- and import- competing countries gain.

In the production of goods, firms often produce parts outside its borders, import these parts back into the U.S., and assemble the final product in the U.S. Therefore, these firms would push for free trade in imports that they use as inputs, but would argue for protection in the final good that they produce for the home market. This likely case points out that it is no simple matter to isolate the gainers and losers from freer trade. This is because a "firm" has no national or international boundaries.

Even within a given import-competing industry, producers may not be in total agreement over the degree of protection. A multinational firm, which produces a commodity in both the U.S. and abroad, and which ships this commodity into the U.S., may take a stance for more liberalized trade than would a producer that is not multinational. Also, even within a given industry (apart from whether or not firms are multinational), some firms may suffer less from trade liberalization than others, especially those firms that are highly integrated, from production through to final retailing. Increased imports of a raw product allows a fully integrated firm to benefit from further processing even though it may lose from a reduction in prices at the farm level. A non-integrated firm cannot take advantage of further processing of imports.

One also observes an interesting development when U.S. agricultural firms produce products abroad but also produce like products in the U.S. Likewise, firms from abroad produce like products in the U.S. but also those similar to ones produced in their home country. Thus it is not often clear as to who is trading what. A producer may lose from trade liberalization with respect to its home production, but gain from expanded production and trade in terms of its operations abroad.

Gravity Models and Trade Flows

Gravity models are commonly used to measure the impact of tariff and non-tariff barriers on trade flows between two countries. In the simplest form of the gravity model, the quantity of trade between two regions is a function of the size of the importing region, the exporting region, and the distance between the two markets. The gravity model has been used to measure the impact of policy changes on trade flows including regional trade agreements, the economic effects of open versus closed trade blocs, and the relationship between increased trade and economic growth. However, there is concern with how well the gravity model explains trade flows when monopolistic competition exists.

Several authors combine a gravity model and a computable general equilibrium model to derive welfare estimates of further trade liberalization between Canada and the United States, and between the United States and Mexico (they also include comparisons to the rest of the world). They report that tangible gains in trade and welfare are attainable from a further reduction in tariff and non-tariff barriers in North America. They also report that large trade restrictions for agricultural commodities still exist at the Canada-U.S. border.

International Trade: Farmers' Wealth and Income

In international trade analysis, policy instruments such as quotas and tariffs clearly affect the value of farmland. For example, the price of comparable farmland for production in sugar is roughly four times higher in the U.S. than in Brazil. Correspondingly, producer prices in the U.S. are roughly four times higher than prices in Brazil. Any movement toward freer trade in sugar would result in lower land prices.

There are more and more cases where land values are impacted by both trade and increased urbanization. The effects of urban development on land prices must be considered. (Schmitz and Just, 2003) In many areas of the United States, land prices are positively impacted by urban growth. Where urban growth is present, generally the price for agricultural land is much higher when sold for urban real estate rather than for agricultural purposes exclusively.

Consider tomato production in Miami-Dade County, Florida. The total per-acre cost of land used for producing tomatoes is roughly U.S. $11,500 (Table 2). Given a per-acre land rental of U.S. $450, the net per-acre profit has been both positive and negative since 1995 (Figure 2). Farmland prices for tomato land in Miami-Dade County, for land situated less than five miles from a major town was priced at U.S. $40,000 per acre in 2001(Table 2). Even at 5 percent interest, the per-acre land-rental payment would be U.S. $2,000 annually, which is far above the rental rate assumed in Figure 2. In other words, the per-acre income generated from tomatoes cannot support farmland at U.S. $40,000. Of course, the price of farmland remains high in Miami-Dade County because of its potential for urban development.

Cases such as these, which can be found around most major cities, raise questions about both short and long run effects of trade on gainers and losers. Over the long term, the Miami-Dade County farmers cannot compete with Mexican tomato producers, if new or existing U.S. farmers have to pay U.S. $40,000 per acre.

Table 2. 1999 to 2000 Florida Staked Tomato Production Costs, Dade County

Category	Per-acre average (U.S. Dollars)
Operating Costs	
Fertilizer and lime	350.50
Fumigants	625.50
Fungicide and insecticide	751.97
Labor and machinery	797.21
Other	1,558.75
Total operating cost	4,083.91
Fixed Costs	
Land rent	450.00
Supervision and machinery	1,029.68
Overhead	1,113.52
Total fixed costs	2,593.20
Harvest and Marketing Costs	
Pick and haul	1,190.00
Pack	2,240.00
Containers	1,120.00
Other	280.00
Total harvest and marketing costs	4,830.00
Total Cost Per Acre	11,507.12

Source: Smith and Taylor

Figure 2. Staked Tomatoes: Estimated Net Profit per Acre, 1995/96 to 1999/2000

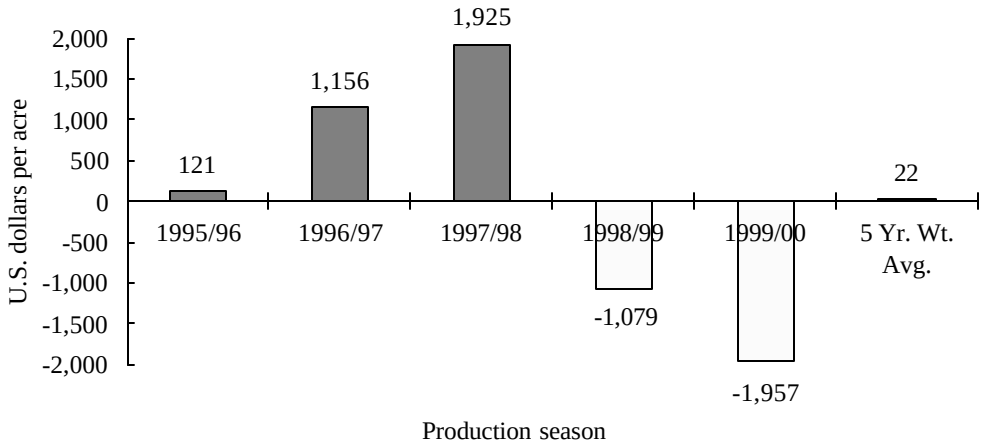


Table 3. Transition Land Values, Southeast Miami-Dade County, FL, 1994 to 2001

Year	Less than 5 miles to a Major Town Dollars per acre	More than 5 miles to a Major Town Dollars per acre
1994	25,166	15,000
1995	28,500	16,200
1996	30,167	17,375
1997	28,400	19,000
1998	28,000	20,600
1999	32,063	21,953
2000	34,000	22,917
2001	40,000	26,250

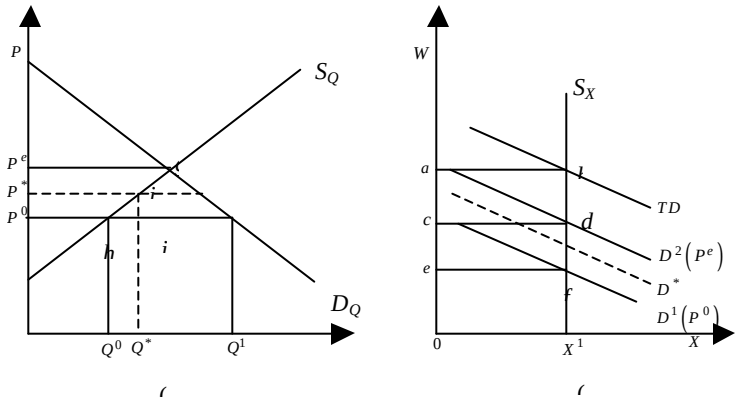
Source: Reynolds and Dorbecker (2002).

Often, trade barriers affect land prices in the same manner as increased urbanization, and at times both forces work together to prop up land values. Consider first, the impact of trade on land values. The U.S. supply curve for tomatoes is S_Q while domestic demand is D_Q (Figure 3a). Under a free-trade scenario, price is P^0 and imports are $Q^1 - Q^0$. The land market is modeled in Figure 3b. If the land on which tomatoes are produced can be used only for agriculture, the rent is area $e0X^1f$ in Figure 3(b) in

which S_X is the supply curve of farmland and $D^1(P^0)$ is the derived demand curve for farmland, given the tomato price P^0 in Figure 3(a)

Now, suppose producers lobby the government to impose an import quota with the effect of raising the commodity price to P^* causing output to increase to Q^* (Figure 3a). Producer rents increase by P^*P^0hi as the demand curve for land shifts to D^* in Figure 3b. If producers lobby for the complete elimination of imports, their rents will increase by area P^eP^0hg as in Figure 3a, which is equal to rent area $cefd$ in Figure 3b. The derived demand for farmland in Figure 3b thereby shifts to $D^2(P^e)$.

Figure 3. Land Rent, Urban Development, and Trade Barriers



Now consider the case in which urban development has pushed the derived demand for farmland outward to total demand TD as in Figure2b. The so-called urban demand rent is area $acdb$. If the farmer continues to use this land for tomato production, then this rent is a lost opportunity for increased income from the sale of the property. Alternatively, if the farmer chooses to continue farming in the anticipation that the appreciation of his land will be equal to or greater than the additional urban-demand rent, then these economic rents will not be realized until the land is sold for development purposes. Under these circumstances, new entrants will not be able to afford to buy the land for growing tomatoes unless the land is zoned solely for agricultural use. If the

agricultural land is zoned residential, new entrants will probably not enter into tomato production. And eventually the existing viable farmers may be able sell their land to developers. (It is difficult to assess the meaning of cost of production when the demand from urban growth is present.)

Because of the wealth that land represents, farmers, especially owners of farm land, obviously have an interest in lobbying governments for farm policies. Landowners have no interest in having land values drop with the accompanying decrease in wealth that occurred in the mid 1980s. However, because of the increasing separation between farm operators and landowners, more and more farm subsidies will end up in the hands of landowners than they will in the hands of farmers. In the tomato case above, three points are worth considering. (1) Renters gain less from import quotas than do land owners who may or may not be farmers. (2) Land value appreciation from the potential for urban development may well outweigh the rents generated from import quotas. (3) Land values are much higher than supported from farming. As a result, the rents generated from import quotas may well only have a minor effect on land values, but they do enhance net farm income, which, in the sort term, can be used to keep land in agriculture before it is eventually sold for urban real estate.

Policy Switching

Policy switching is an important topic for trend analysis where the possibility exists that one program in existence could be replaced by another or completely eliminated. For example, under the 2002 U.S. farm program, peanut production quotas were replaced with deficiency payments. Was this an improvement in economic efficiency, or not?

Consider the case of the U.S. sugar program, which, through import quotas, restricts the importation of sugar (A. Schmitz, T. Spreen, W. Messina, and C. Moss, 2002). What would happen if this import quota policy were replaced with a deficiency-type scheme? Can farmers' income be maintained when policies are switched in favor of these programs that are more efficient? In the case of sugar, using deficiency payments would allow users to buy sugar at the world price, rather than paying the high internal U.S. price. Thus there would be gainers from a switch in the U.S. Sugar Program. However, due to the sugar farm size distribution, some producers would likely lose because of payment limitations.

Also, why are tariffs used to protect import producers when deficiency payment schemes could be used to achieve the same producer result while at the same time increase efficiency? For example, in the case of citrus, why not replace tariffs with deficiency-type price support schemes?

Who Wants Free Trade Anyway?

The impacts of freer trade on various sectors of society have to be analyzed in the context of U.S. farm programs. For example, Schmitz, Schmitz, and Dumas (1997) show for cotton, that in the presence of water subsidies and deficiency payments, there actually can be negative gains from trade even though the volume of trade can be substantial. Also, we have argued elsewhere, that for certain commodity groups, even though they are on an export oriented basis, they may have little interest in pushing for freer trade since the resulting increase in prices would be insufficient to move prices above target levels (Schmitz and Gray, 1992). In this case, the gains from trade would accrue to governments in the form of reduced subsidy payments rather than adding to

producer welfare. In this context, coalitions are not present to argue for free trade; import competing producers lobby for protection, consumer interests are generally silent on the matter, and there is little or no support from export producers who are covered by commodity programs.

We All Lose!

Much of the trade analysis assumes, and correctly so, that there are losers and gainers from specific trade policy actions. There are exceptions. Take, for example, the recent terrorist acts. These will likely result in arguments for increased protection, added border cost measures, and shifts in consumer preferences away from certain foods. No one gains from adding enormous transactions costs to the food system to deal with bio-terrorism. Even under a world of free trade, added transaction costs to deal with food safety will generally make everyone worse off.

The 2003 outbreak of Mad Cow Disease in Canada provides an interesting laboratory for trade economists. At first blush, cattle prices in the U.S. increased since the U.S./Canadian beef trade ceased due to border closings as a result of the outbreak. (Over fifty percent of the beef exports from the Prairie Region goes to the U.S.). If there is no negative reaction in the U.S., then clearly, U.S. beef producers win and Canadian producers loose. However, if there is a negative reaction from North American consumers then, both U.S. and Canadian beef producers lose.

Conclusions

Further progress toward trade liberalization will partly hinge on identifying who the losers are from freer trade and providing appropriate compensation. To compensate losers from a policy change is clearly a value judgment. However, in many cases, a policy

change is not possible unless compensation is paid to those producers who lose. This is especially true where strong lobbying efforts by special producer interest groups support the status quo. Paying compensation and moving to a first best situation is preferred to not paying any compensation and remaining in a second best situation

Research is badly needed on trade impacts within a vertical and horizontal market structure framework. Within this framework processors and multinationals have to be identified along with producers and ultimate consumers. Only then will it be possible to identify the rent-seeking behavior of firms past the farm gate.

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