

Impacts of Globalization on Agricultural Competitiveness: The Case of NAFTA

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Major components of agricultural competitiveness, including definitions, factors, and indicators of competitiveness, are discussed. The case of the North American Free Trade Agreement (NAFTA) is used to illustrate how factors have influenced the competitive position of the NAFTA countries. Traditional neoclassical trade theory is used to evaluate the impact of currency exchange rate fluctuations and trade preferences on agricultural competitiveness. Pre- and post-NAFTA market shares are evaluated for five agricultural commodities of importance to the southern United States. The results of these evaluations are compared with theoretical expectations and discussed with special emphasis on implications for future trade negotiations.

Key Words: agricultural competitiveness, exchange rates, international trade, NAFTA

JEL Classifications: F14, Q17, Q18

Over the past decade, international trade has increased its dominance in the agricultural sector, accounting for 30–40% of total U.S. agricultural production and 25% of farm cash receipts in most years. However, during this same period, risk and uncertainty associated with agricultural trade has increased. This variability stems from, among other factors, increased globalization of markets via trade liberalization, which results in increased competition in international markets.

This paper sets the stage for this invited paper session by examining the new international trade environment resulting from trade agreements and the interaction of these trade

agreements with changes in domestic agricultural policy. The major components of agricultural competitiveness, including definitions, factors, and indicators of competitiveness, will be discussed. The case of the North American Free Trade Agreement (NAFTA) will be used to illustrate how these factors have influenced the competitive position of the NAFTA countries. In particular, traditional neoclassical trade theory will be used to evaluate the impact of currency exchange rate fluctuations and trade preferences on agricultural competitiveness among the NAFTA countries. Finally, these results will be discussed, with special emphasis being placed on implications for a Free Trade Area of the Americas (FTAA).

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Issues in Agricultural Competitiveness

The economic, political, and technological environment of the 1980s and early 1990s has contributed to the recent focus on competitiveness. The U.S. budget and trade deficits, because of their effects on exchange rates and

interest rates, have led to an emphasis on the overall competitiveness of the U.S. economy. A fear of losing competitive advantage to European and Pacific Rim countries has contributed to the investment of time and resources in an attempt to retain and enhance our competitive edge. The agricultural sector has been no exception.

The competitiveness of U.S. agriculture is evidenced by recent agricultural trade surpluses. These surpluses have been particularly significant given the chronic trade deficits experienced by the rest of the U.S. economy. The argument could be made that given the contribution of agriculture to the trade position of the nation, enhancement of the competitiveness of the U.S. agricultural sector benefits the overall economy. Advocates of this position might propose agriculture-specific research and development or export promotion as means to maintain, and even enhance, the competitive position of U.S. agriculture. This raises the question of whether policies of this nature improve the welfare of the nation as a whole.

While increasing competitiveness appears to be a useful pursuit at first glance, it has been suggested that an obsession with competitiveness at the national level can be detrimental to a country's welfare. Both Krugman and Porter (1990) note that it is individual firms, not nations, that compete for both domestic and foreign markets. Attempts to enhance competitiveness at a national level without regard to the specific advantages of firms or industries may not yield positive welfare consequences for the nation as a whole. In order to maximize the welfare of the nation, resources should be directed toward those firms or industries that possess the greatest potential advantage. This "strategic policy" concept hints at the law of comparative advantage.

The development of strategies that benefit the nation as a whole requires an awareness of the interrelationships between factors that influence competitiveness and the welfare of various interest groups. At the same time, several contemporary issues have influenced, and will continue to influence, the competitiveness of U.S. agriculture. Four key issues and their

relationships to agricultural competitiveness will be discussed. These issues include domestic agricultural policy, agricultural trade agreements, processed and differentiated products, and biotechnology.

Domestic Agricultural Policy

The U.S. agricultural sector has faced a turbulent policy environment in recent years. Changes in domestic and international policy mechanisms have forced producers to adapt to a new playing field. Central to these changes is the Federal Agricultural Improvement and Reform Act of 1996 (FAIR). The reforms that stem from FAIR are consistent with global trends in agricultural policy, which include increased market orientation, decreased government regulation, and the desire to lower the costs of agricultural programs. Even before FAIR was implemented, however, market conditions changed, leading to record low prices and record high levels of support for U.S. producers. To date, the results of this policy experiment have been the opposite of what was expected, causing producers to rely more, instead of less, on government.

This trend in domestic agricultural policy toward increased market orientation has the potential to impact the competitiveness of U.S. agriculture in a number of ways. On the surface, it might appear that decreased production incentives would lower the effective commodity prices received by producers, resulting in reduced profits and thus reduced competitiveness. However, these decreased production incentives could be the catalyst that causes domestic producers to tighten their belts, adopt state-of-the-art technologies, and reduce their costs of production. This, in turn, will enhance their competitive position relative to other domestic sectors and the rest of the world. It is thus important to account for the dynamic effects of various factors throughout analyses of agricultural competitiveness. These results assume that the United States does not adopt macroeconomic or trade policies that will distort the expected increase in competitiveness.

Agricultural Trade Agreements

In addition to changes in domestic policies, the rules governing the international trade of agricultural products are rapidly changing as institutions such as the World Trade Organization (WTO) and NAFTA seek to lower trade barriers and increase market access. The course of international agricultural policy will be a critical issue as governments prepare for the next round of WTO agricultural negotiations, which were launched in Doha, Qatar, in November 2001.

Of importance to the competitiveness of U.S. agriculture is the type and degree of trade liberalization that occurs. Multilateral trade liberalization, such as that proposed within the WTO, has the potential to create a more level playing field. The removal of protection will have differing effects, depending on the initial levels of support and the degree to which protection is lowered. The trend toward freer trade will increase the clarity of world price signals. As a result, agricultural production will be based increasingly on comparative advantage rather than on domestic or international agricultural policies. The reduction and elimination of export subsidies, along with the discipline of state trading enterprises, will also impact competitiveness.

Processed and Differentiated Products

The world market for agricultural products has historically involved commodity trade. The United States has a strong tradition in this market. However, in recent years the share of processed and differentiated agricultural products has increased, surpassing commodity trade even for the United States. Despite this, the growth of U.S. value-added exports has not kept pace with that of several European countries. This raises questions as to how the United States should pursue this expanding market. If the United States does not possess an advantage in the processed-foods sector, should the development of an advantage in the processed food products area be encouraged?

Hughes examines the argument that given the increasing competition from newly indus-

trializing countries in the area of low-technology products, maintenance of international competitiveness requires advanced countries to specialize and become internationally competitive in higher-technology sectors. While this proposition may be true for the manufacturing and services sectors, it requires careful evaluation with respect to the agricultural sector. This issue is examined to some extent by Gopinath, Roe, and Shane, who discuss the two-way transfer of efficiency gains between primary agriculture and the processed food sector. Given this symbiotic relationship, strategic policy should aim at coordination between sectors rather than specialization in only one.

Also of importance in the evaluation of competitiveness in processed and differentiated agricultural products is the analytical framework. Traditional concepts, such as comparative advantage, were useful in examining competitiveness when agricultural economists were for the most part dealing with commodities. The increased quantity and importance of processed and differentiated agricultural products necessitates the use of, at the very least, a modified concept. Firms are increasingly able to differentiate their products and themselves, thus affecting their ability to provide higher quality and more value to the consumer. As a result, analysts must consider quality issues as they evaluate agricultural competitiveness.

Development and Adoption of Biotechnology

An additional issue facing the U.S. agricultural sector involves recent trends in the development and adoption of biotechnology. For example, how will the development of herbicide-resistant plant varieties by U.S.-based multinational firms affect the competitiveness of U.S. agriculture? A host of side issues, including consumer acceptance of genetically modified organisms (GMOs) will make this a contentious issue to analyze and discuss. In fact, recent work by Runge, Bagnara, and Jackson reveals that major policy differences between the United States and the European Union over public acceptance of GMOs may

relate more to cultural difference and a basic philosophy regarding the role of science than to any other set of issues, making it increasingly difficult, if not impossible, to reach a reasonable solution.

A major consideration with respect to the development and adoption of biotechnology is related to the concept of the "agricultural treadmill." As more and more producers adopt technologies designed to improve their operational efficiency, the supply curve shifts to the right. If the demand for agricultural products is inelastic, then producer prices and total revenue decline. Since producers do not usually possess proprietary technology for which access can be limited, care should be taken to ensure that the call to competitiveness does not adversely affect all producers. This paradox means that firms not aggressively adopting new technologies may ultimately find themselves in a cost-price squeeze and forced out of the industry.¹

Definitions of Competitiveness

Competitiveness has been addressed from a number of different perspectives in the literature. Researchers focusing on the national level have defined competitiveness as the ability to sustain an acceptable growth rate and a real standard of living for the citizenry while efficiently providing employment and maintaining the growth potential and standard of living for future generations (Landau). This definition is linked to a nation's employment and, consequently, the standard of living of its citizens. The level of national employment, the growth of employment, and the standard of living in an economy, however, depend on the competitiveness of firms within the country. Hence, a nation's competitiveness depends on the underlying factors that influence the competitiveness of individual firms and industries.

Other definitions contrast competitiveness

with comparative advantage. The law of comparative advantage suggests that trade flows occur as the result of relative opportunity cost differentials between countries. Barkema, Drabentstott, and Tweeten contend that this theory does not apply to a world with market-distorting government policies. They assert that competitiveness takes a more realistic view of the world. Their definition, similar to that discussed above, views competitiveness from a national perspective. It also implies that government policy affects competitiveness. However, their definition fails to provide insight into the underlying sources of competitiveness or account for demand-side factors, such as product differentiation. Thus, a description of the linkages between the sources and indicators of competitiveness must account for the effects of government policies and consumer demand.

Porter (1990) advances the notion that firms, rather than nations, compete with one another in international markets. When competitiveness is considered, the emphasis must be placed not on the economy as a whole, but on specific industries and industry segments. Competitive advantage results from the difference between the value a firm is able to create for its buyers and the cost of creating that value. Superior value results when a firm offers lower prices than its competitors for equivalent benefits or provides unique benefits that more than offset a higher price. These results raise the question, If a firm is profitable, is it necessarily competitive?

Firm-level definitions of competitiveness have been put forward by various economists. For example, competitiveness is defined as the ability to deliver goods and services at the time, at the place, and in the form sought by buyers at prices as good as or better than those of other suppliers while earning at least opportunity costs on resources employed (Cook and Bredahl; Sharples and Milham). This definition, although viewing competitiveness from the perspective of the firm, fails to address the sources that give firms the ability to deliver goods or services at "competitive" prices. Still other definitions view competitiveness as the sustained ability to profitably

¹ Related to this issue, the competitiveness of the United States in many commodities has stemmed from its large investment in agricultural education, research, and extension. As the priority of these activities diminishes, so too will the competitiveness of the agricultural sector.

gain and maintain market share in domestic or foreign markets (Van Duren, Martin, and Westgren). This firm perspective explains competitiveness in terms of performance indicators (e.g., net worth, profitability, and market share).

These definitions contrast the differing approaches used to analyze competitiveness. The strategic-management school defines competitiveness as the ability to profitably create and deliver value through cost leadership or product differentiation (Kennedy et al.). This approach assumes that competitiveness is directly related to factors that influence a firm's cost-and-demand structure. Other schools of thought place greater emphasis on the indicators of competitiveness. These approaches describe competitiveness as the sustained ability to profitably gain and maintain market share (Van Duren, Martin, and Westgren). Both approaches can be useful for evaluating competitiveness, depending on the objectives of the researcher. However, neither approach demonstrates a clear linkage between the factors that influence the cost-and-demand structure of the firm and possible measures of competitiveness.

Factors and Indicators of Competitiveness

Analysis of a nation's competitiveness requires that the underlying factors influencing the competitiveness of individual firms and industries be examined (Porter 1990). Firms become more competitive by creating value through cost leadership or product differentiation (Porter 1980). More specifically, technology, attributes of purchased inputs, product differentiation, production economies, and external factors are primary sources of competitiveness (Harrison and Kennedy). These factors can be grouped into two categories: (1) those that affect the firm's relative cost of production and (2) those that affect the quality, or perceived quality, of its product or business enterprise. As firms gain advantage through the various sources of competitiveness, relative market share and profits increase. In situations in which firms are able to decrease production costs or improve their products rel-

ative to other firms in the industry, market share will increase.

The ability of existing firms to profitably gain and maintain market share indicates a competitive advantage. Yet, knowledge of a firm's profitability or market share does not provide information regarding any specific source of competitiveness. An increase in the profitability of a firm or industry may indicate an increase in competitiveness, but it does not indicate whether this result stems from decreased cost, increased quality, or some external factor. Similarly, relative advantage in any individual source of competitiveness does not guarantee profitability or a sustained share of the market. For example, cost-reducing technologies that adversely affect product quality do not necessarily increase competitiveness. As a result, the measures and indicators used to evaluate competitiveness must be selected on the basis of the circumstances of the unit of analysis.

Broad measures such as market share and profitability provide useful insights into overall competitiveness. On the other hand, the individual sources of competitiveness provide information with respect to specific strengths and weaknesses. Used separately, these tools provide a valuable indication of a firm's competitive position. Used together, they provide information regarding the strengths to be maintained and exploited and the weaknesses that are prime targets for improvement.

From an international perspective, agricultural competitiveness is reflected by the ability to profitably gain and maintain world market share. An increase in market share typically indicates an increase in competitiveness, while a decrease in market share would indicate a decline in competitive advantage. It must be remembered, however, that the factors affecting competitiveness are not identical to those affecting comparative advantage. If the enhancement of societal welfare is an objective of policymakers, each determinant of competitiveness must be considered in the formulation of strategic agricultural policy.

NAFTA and Agricultural Competitiveness

In order to examine the impact of globalization on agricultural competitiveness, the case

of NAFTA will be considered. While a number of factors have been shown to influence a country's agricultural competitiveness, because of the nature of a regional trade agreement such as NAFTA, we will focus primarily on the impact resulting from external factors. Of these factors, the primary focus will be placed on the agricultural competitiveness impacts of currency exchange rates and agricultural trade preferences.

There are a number of external factors that influence the competitiveness of firms and industries. Among these factors, government policies affect competitiveness in both domestic and international markets. This linkage is such that changes in the real agricultural price consist of a world price component, a real exchange rate component, and a sector-specific price intervention component (Quiroz and Valdés). Policies that subsidize the production of raw agricultural commodities directly affect the prices that food processors pay for inputs. Lowering the price of agricultural commodities leads to lower costs for downstream firms and an increase in their competitiveness relative to that of foreign rivals.

Government policies also affect a firm's ability to obtain world market share. Export subsidies lower the world price at which domestic industries are willing to sell various quantities of their product. As a result, exporters can sell their products at a discounted price on the world market while maintaining, or increasing, their effective price per unit. This process acts to expand the world market share of the subsidized firm or industry.

Currency Exchange Rates

The impacts of currency exchange rate fluctuations on agricultural competitiveness can be demonstrated with the graphs shown in Figure 1. The excess-supply schedule of exporting country A in its domestic currency is represented by ES_A . The excess-demand schedule of importing country B in its domestic currency is represented by ED_B , and the excess-demand schedule of country B in the currency of country A is represented by ED_{B0} . These

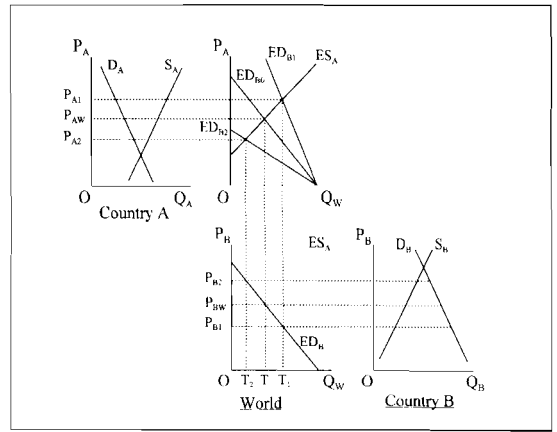


Figure 1. Trade Impacts of Currency Exchange Rate Fluctuations

schedules result in an equilibrium world price of P_{AW} or P_{BW} and a trade quantity of T .

Suppose now that the currency of country B appreciates relative to the currency of country A or, equivalently, the currency of country A depreciates relative to the currency of country B. While this will not change the underlying excess demand of country B in its own currency, excess demand as measured in the currency of country A will rotate from ED_{B0} to ED_{B1} . In the resulting equilibrium, the quantity traded increases to T_1 , and there is a corresponding increase in the currency A price to P_{A1} and a decrease in the currency B price to P_{B1} .

This development shows an increase in competitiveness for country A from both a market-share and a profitability perspective. Country A producers' share of the country B market increases as their exports increase from T to T_1 . At the same time, producers in country A experience an increase in profits as domestic production and price increase. Producers in country B experience a decrease in profits as domestic production and price decrease.

The alternative scenario involves the currency of country B depreciating relative to the currency of country A. Excess demand as measured in currency A will rotate counter-clockwise from ED_{B0} to ED_{B2} . In the resulting equilibrium, the quantity traded decreases to T_2 , and there is a corresponding decrease in

the currency A price to P_{A2} and an increase in the currency B price to P_{B2} .

As a result of this depreciation of country B's currency, there is a decrease in competitiveness for country A from both a market-share and a profitability perspective. Country A producers' share of the country B market decreases as their exports decrease from T to T_2 . At the same time, producers in country A experience a decrease in profits as domestic production and price decrease. Producers in country B experience an increase in profits as domestic production and price increase.

The implications for NAFTA can be seen in Table 1. Comparisons of the pre-NAFTA and post-NAFTA cross rates for Canada, Mexico, and the United States are made. From a nominal perspective, one of the most obvious changes is the dramatic increase in the value of the Canadian dollar and the U.S. dollar relative to the Mexican peso. On the basis of the previous analysis, one would expect Mexican competitiveness to increase relative to that of Canada and the United States. When the exchange rates between Canada and the United States are compared, although the change is much smaller in magnitude, an increase in the value of the dollar indicates an increase in Canadian competitiveness relative to that of the United States.

The use of real exchange rates alters the implications significantly. The depreciation of the Canadian dollar relative to both the Mexican peso and the U.S. dollar indicates an increased incentive for the exportation of Canadian products. At the same time, the United States and Mexico have less incentive to export to Canada than before. The real value of the dollar increases only slightly, as opposed to the nominal value of the U.S. dollar, which increases by over 150% relative to the peso. While Mexican producers may gain a slight edge in competitiveness due to the exchange rate depreciation, the impact is of a smaller magnitude than is that for the nominal rate.

Agricultural Trade Preferences

Just as the appreciation or depreciation of a currency has been shown to impact competi-

tiveness, so will the creation of trade preferences. An example of the impacts of trade preferences is shown in Figure 2. Suppose country A initially imposes tariff t on imports of commodity Q . Given the initial supply (S_A) and demand (D_A), this results in domestic production of Q_{S_t} and in domestic consumption of Q_{D_t} at domestic price $P_W + t$.

Suppose the establishment of trade preferences between importing country A and exporting country B results in country B being exempt from the tariff. This increased access to the domestic market causes supply to shift from S_A to S_{A+B} , serving to lower the domestic price to P_1 , increase the quantity demanded to Q_{D_1} , and decrease supply to Q_{S_1} .²

The results of this graphical analysis show the impacts of trade preferences to manifest themselves through both profits and market share. From the perspective of the importing country, allowing increased access to the domestic market through trade preferences serves to decrease the domestic price and production. This results in lower profits and a decrease in competitiveness relative to country B. The decrease in production and the increase in consumption indicate that country A loses market share while country B gains market share. Once again, this indicates that country A experiences a decrease in competitiveness relative to country B.

The implications for NAFTA can be seen in Table 2. Changes in trade policy occurring among the three countries, resulting from either the Canada-U.S. Trade Agreement (CUSTA) or NAFTA, are reviewed for five commodities: beef, corn, sugar, tomatoes, and wheat. For each of these five commodities, a commitment has been made among the countries to provide preferential access or remove tariff barriers. The differences among the commodities pertain to the amount of market access provided or the length of the transition period. In the case of beef, a significant amount of progress has been made. In the case of sugar, several years remain in the transition

² Note that in this case, $Q_{D_t} - Q_{S_t}$ represents trade diversion, while $Q_{S_t} - Q_{S_1}$ and $Q_{D_1} - Q_{D_t}$ represent trade creation.

Table 1. Pre- and Post-NAFTA Currency Exchange Rates Between NAFTA Countries for Nominal and Real Values

| | 1989–1993 Average | 1994–2000 Average | % Change |
|-----------------------------------|----------------------|----------------------|----------|
| Nominal Value of Canadian Dollar | | | |
| Mexican Pesos per Canadian Dollar | 2.417 | 5.346 | 121.18 |
| U.S. Dollars per Canadian Dollar | 0.836 | 0.703 | -15.93 |
| Nominal Value of Mexican Peso | | | |
| Canadian Dollars per Mexican Peso | 0.416 | 0.207 | -50.35 |
| U.S. Dollars per Mexican Peso | 0.348 | 0.149 | -57.31 |
| Nominal Value of U.S. Dollar | | | |
| Canadian Dollars per U.S. Dollar | 1.200 | 1.420 | 18.33 |
| Mexican Pesos per U.S. Dollar | 2.900 | 7.640 | 163.45 |
| Real Value of Canadian Dollar | | | |
| Mexican Pesos per Canadian Dollar | 4.346 | 3.606 | -17.03 |
| U.S. Dollars per Canadian Dollar | 0.874 | 0.691 | -20.86 |
| Real Value of Mexican Peso | | | |
| Canadian Dollars per Mexican Peso | 0.235 | 0.285 | 21.00 |
| U.S. Dollars per Mexican Peso | 0.204 | 0.198 | -2.88 |
| Real Value of U.S. Dollar | | | |
| Canadian Dollars per U.S. Dollar | 1.149 | 1.446 | 25.79 |
| Mexican Pesos per U.S. Dollar | 4.965 | 5.180 | 4.33 |

Note: The real exchange rate for the currency of country i with respect to country j is calculated by taking the nominal value of currency j per currency i times the ratio of consumer prices for country i and j ($ER_{ij} \times (CPI_i/CPI_j)$).
Source: International Monetary Fund.

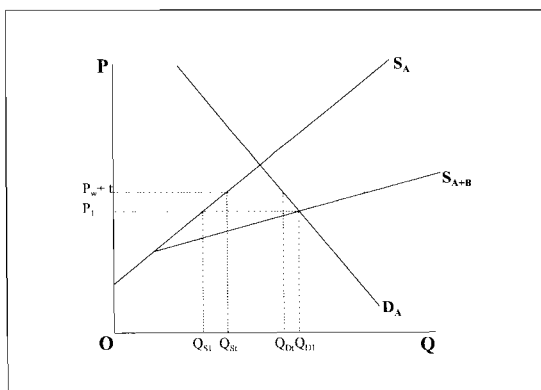
period, and even then free trade might not occur.

What is clear among these policies is that in each case progress has been made toward freer trade, and preferential access has been granted. In some unique cases, such as that of tomatoes for Mexico, that of durum wheat for

Canada, and those of beef trade and high-fructose syrup trade for Mexico, the markets do not yet fully reflect the market-opening intentions of NAFTA. On the basis of the framework discussed earlier, the competitiveness of exporting countries should increase as a result of NAFTA, while importing countries should suffer a decline in their competitive position in the short run. In the long run, however, the firms remaining in the industry will experience the dynamic gains to trade that will reduce their costs and increase economies of scale, profitability, and competitiveness.

The Experience of NAFTA

NAFTA has had mixed impacts on U.S. agriculture, with some firms experiencing gains in economic welfare and others suffering losses. Market share analysis is one method to assess whether an industry has been more or less competitive over a specified period. This

**Figure 2.** Impacts of Trade Preferences

method is used here to determine how the competitive positions of several agricultural industries have changed under NAFTA. Beef and veal, corn, sugar, tomatoes, and wheat are analyzed using market shares for 1989–1993 and 1994–2000. Percentage changes in market shares are compared in order to draw conclusions about overall industry competitiveness between pre- and post-NAFTA periods. These shares are presented in Table 3.

Beef and Veal

The Canadian beef industry has experienced gains in U.S. market share since NAFTA, with an increase of 129%. Canada's share of the U.S. beef market has grown from just under 1% to 2.2%. The U.S. share of its own market increased by only 0.23% but remains at more than 90%. The U.S. share of the Mexican beef market increased by 97%, while the U.S. share of Canada's beef market rose by 31%, increasing to nearly 10% of the market. Canada appears to be the large gainer in the U.S. market, while the United States has gained in both Mexico and Canada. It has been documented that Mexico demands a relatively low carcass weight and that boxed beef represents about two thirds of all U.S. beef exported to Mexico. What is less clear, however, is the extent to which U.S. and Canadian beef are direct substitutes. It is generally assumed that they are, but more work is needed to measure the degree of substitutability between the products.

Corn

The U.S. share of its own corn market has changed little since the implementation of NAFTA, holding at about 99.8%. The U.S. share of Mexico's market, however, has increased from 12.7 to 19.1%, or by 50%. The U.S. share of the Canadian corn market has increased by 33%, to 12.5%. Canada's share of the U.S. corn market has also increased, but only marginally, to about 0.15%. It would appear that NAFTA has done little to alter U.S. competitiveness in the area of corn but has reduced barriers enough to allow the United

States to capture significant shares of both the Mexican and the Canadian markets.

Sugar

Trade disputes have marred the sugar trade since the implementation of NAFTA. While sugar is under a tariff-rate quota (TRQ), both Mexico and the United States disagree over the terms of the transition to free trade. The U.S. share of both the Canadian and the Mexican markets has declined by 50 and 82%, respectively. The Canadian share of the U.S. market has increased by 27%, while the Mexican share has increased by 35%. Both countries are small suppliers, however, as their post-NAFTA market shares were less than 1%. The U.S. share of its own market has increased by 6.4%, from 74.6 to 78.3%. The remaining share of the market is controlled by the TRQ negotiated between the United States and non-NAFTA sugar suppliers in the early 1990s resulting from a General Agreement on Tariffs and Trade dispute filed by Australia.

Tomatoes

NAFTA tomato trade has also been mired in dispute. The U.S. Department of Commerce suspended an antidumping petition filed by the U.S. tomato industry in 1996 and implemented a minimum price scheme for tomatoes imported from Mexico. Mexican tomatoes cannot enter the U.S. market at a price of less than \$0.172 per pound from July 1 through October 22 or at a price of less than \$0.211 per pound from October 23 through June 30. Even so, the Mexican share of the U.S. tomato market has increased by 73.5% since the implementation of NAFTA, rising to 4.2% for all tomato use. At the same time, the U.S. share of the Canadian market has declined by 15%, while the U.S. share of the Mexican market has fallen by 16%. The U.S. share of its own market has slipped by 2.25%.

Due to the seasonal and perishable nature of tomatoes, it is important to view U.S. imports during the peak shipping weeks from January to April in order to have a clear picture of the relative importance of trade to the

Table 2. Policy Changes Resulting from NAFTA for Selected Commodities

| | Canada | Mexico | United States |
|--------------------------|---|---|--|
| Beef | | | |
| Canadian Import Policies | Not applicable | Removal of quantitative restrictions; elimination of tariffs | Removal of quantitative restrictions; elimination of tariffs |
| Mexican Import Policies | Elimination of tariffs; beef offal tariffs phased out over 10 yrs. | Not applicable | Elimination of tariffs; beef offal tariffs phased out over 10 yrs. |
| U.S. Import Policies | Removal of quantitative restrictions; elimination of tariffs | Removal of quantitative restrictions; elimination of tariffs | Not applicable |
| Corn | | | |
| Canadian Import Policies | Not applicable | Elimination of tariffs | Elimination of tariffs on Jan. 1, 1998 |
| Mexican Import Policies | Establishment of TRQ; over-quota tariff phased out by 2008 | Not applicable | Establishment of TRQ; over-quota tariff phased out by 2008 |
| U.S. Import Policies | Elimination of tariffs on Jan. 1, 1998 | Elimination of tariffs | Not applicable |
| Sugar | | | |
| Canadian Import Policies | Not applicable | No change | Duties on sugar between the U.S. and Canada phased out in 1998 |
| Mexican Import Policies | No change | Not applicable | Agreement to implement TRQ by end of 1999; Harmonization of second-tier tariff with U.S.; sugar tariffs decline 15% over first 6 yrs. and reach zero by 2008 |
| U.S. Import Policies | Quantity provisions of U.S. quota/TRQ; duties on sugar between the U.S. and Canada phased out in 1998 | Based on "net surplus production." duty-free access is at least 7,258 MT but not more than 25,000 MT for 1994–1999 and at least 7,258 MT but not more than 250,000 MT for 2000–2007; sugar tariffs decline 15% over first 6 yrs. and reach zero by 2008 | Not applicable |

Table 2. (Continued)

| | Canada | Mexico | United States |
|--------------------------|---|---|--|
| Tomatoes | | | |
| Canadian Import Policies | Not applicable | Elimination of tariffs on January 1, 1998; inclusion of "snapback" provision to MFN tariff levels until 2008 under certain conditions | Elimination of tariffs on Jan. 1, 1998; inclusion of "snapback" provision to MFN tariff levels until 2008 under certain conditions |
| Mexican Import Policies | Mexico matches U.S. tariffs and transition periods | Not applicable | Mexico matches U.S. tariffs and transition periods |
| U.S. Import Policies | Elimination of tariffs on January 1, 1998; inclusion of "snapback" provision to MFN tariff levels until 2008 under certain conditions | July 15 to Aug. 31 and Sept. 1 to Nov. 14 tariffs phased out over 5 yrs.; Mar. 1 to July 14 and Nov. 15 to last day of Feb. tariffs phased out over 10 yrs.; TRQ in effect for each period, increasing at a compound annual rate of 3%; implementation of suspension agreement with minimum prices 1996 | Not applicable |
| Wheat | | | |
| Canadian Import Policies | Not applicable | Elimination of tariffs | Elimination of tariffs on Jan. 1, 1998; elimination of license requirement in 1991 |
| Mexican Import Policies | Elimination of import license requirement; 15% <i>ad valorem</i> tariff removed over 10 yrs. | Not applicable | Elimination of import license requirement; 15% <i>ad valorem</i> tariff removed over 10 yrs. |
| U.S. Import Policies | Elimination of tariffs on January 1, 1998 | 5-yr. elimination of common wheat tariff; 10-yr. elimination of common wheat tariff | Not applicable |

Source: U.S. Department of Agriculture, Economic Research Service (1999, 2000).

Table 3. Pre- and Post-NAFTA Market Share Compositions for Selected Commodities in NAFTA Countries

| | 1989–1993 Average | 1994–2000 Average | % Change |
|-------------------------------|----------------------|----------------------|----------|
| Beef and Veal | | | |
| U.S. Share of Canadian Market | 0.0752 | 0.0984 | 30.85 |
| U.S. Share of Mexican Market | 0.0255 | 0.0502 | 96.99 |
| Canadian Share of U.S. Market | 0.0096 | 0.0219 | 128.85 |
| U.S. Share of U.S. Market | 0.9038 | 0.9058 | 0.23 |
| Corn | | | |
| U.S. Share of Canadian Market | 0.0939 | 0.1248 | 32.90 |
| U.S. Share of Mexican Market | 0.1271 | 0.1910 | 50.22 |
| Canadian Share of U.S. Market | 0.0012 | 0.0015 | 25.44 |
| U.S. Share of U.S. Market | 0.9981 | 0.9982 | 0.01 |
| Sugar | | | |
| U.S. Share of Canadian Market | 0.0760 | 0.0380 | -50.06 |
| U.S. Share of Mexican Market | 0.0343 | 0.0061 | -82.18 |
| Canadian Share of U.S. Market | 0.0044 | 0.0056 | 26.80 |
| Mexican Share of U.S. Market | 0.0040 | 0.0054 | 34.98 |
| U.S. Share of U.S. Market | 0.7357 | 0.7829 | 6.42 |
| Tomatoes | | | |
| U.S. Share of Canadian Market | 0.1616 | 0.1376 | -14.85 |
| U.S. Share of Mexican Market | 0.0057 | 0.0048 | -15.83 |
| Mexican Share of U.S. Market | 0.0244 | 0.0424 | 73.47 |
| U.S. Share of U.S. Market | 0.9747 | 0.9528 | -2.25 |
| Wheat | | | |
| U.S. Share of Canadian Market | 0.0019 | 0.0011 | -38.37 |
| U.S. Share of Mexican Market | 0.1022 | 0.2502 | 144.73 |
| Canadian Share of U.S. Market | 0.0306 | 0.0537 | 75.40 |
| U.S. Share of U.S. Market | 0.9504 | 0.9315 | -1.99 |

Source: U.S. Department of Agriculture, Economic Research Service (various issues) and Food and Agricultural Organization of the United Nations, FAO Statistical Database.

industry. During the 2000/2001 season, for example, tomatoes imported from Mexico peaked at 1,054 boxes the week of February 3, 2001, but continued at more than 500 boxes through April 1. Consequently, the Mexican share of total U.S. fresh market tomato imports averaged 71% for the 2000/2001 season, which is typical of an average year.

Wheat

The North American wheat market has experienced trade disputes. First, there was concern over the use of export subsidies on wheat exported to Mexico. Next, the United States im-

plemented a TRQ on durum wheat imported from Canada. The Canadian share of the U.S. market has increased by 75%, from 3 to 5.4%. While the U.S. share of its own market has fallen by 2%, the U.S. share of the Mexican wheat market has more than doubled, increasing to 25%. The U.S. share of the Canadian market has declined by 38%.

Conclusions and Implications

Competition under NAFTA has important implications for U.S. producers and agribusinesses. While the gains to trade are difficult to measure and are often overshadowed by con-

cerns about the negative impacts of imported products, there is little doubt that the dynamic gains from the formation of trade agreements such as NAFTA benefit those businesses and industries that are willing and able to compete.

Trade, employment, and economic activity are interdependent, and trade gains have not been made without costs, as labor-intensive agricultural sectors in the United States faced more competition from imports and were forced to adjust to lower prices and shrinking profits.

NAFTA impacts on Southern agricultural trade are difficult to assess, are not clearly separated from non-NAFTA forces and events, and tend to be mixed, with some sectors experiencing increases in trade while others have seen declines in trade.

Benefits to the South have come about as exports in some sectors have increased, creating additional business activity and more jobs, and food processors and consumers have benefitted from lower prices due to increased imports. Costs have been incurred in all three countries when domestic production has been supplanted by imports and jobs have been lost. Most job losses have been fully or partially offset, however, by economic growth and job gains in other sectors. Net benefits from trade depend on the balance between trade gains and losses and the resulting impacts on prices, jobs, income, taxes, and costs.

While NAFTA progress has been marked by antidumping petitions, sanitary and phytosanitary disputes, and threats of border closings due to intense competition, it is important to note that trade has continued to grow despite these disruptions. In fact, since 1996, U.S. agricultural exports to Canada have increased by 25%, while exports to Mexico have grown by 20%. U.S. agricultural exports to other major markets declined by between 15 and 32% during this same period. Canada and Mexico continued to grow, in part because of NAFTA and in part because of their proximity to the United States. Both of these countries have been critical in sustaining exports of products important to the South, while many traditional Asian markets have faltered.

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