SHOULD THE UNITED STATES CONTINUE TO PURSUE FREE TRADE AGREEMENTS?

A PERSPECTIVE FROM NEW JERSEY FARMERS

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ABSTRACT OF THE THESIS

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This research examines the social and demographic factors that inform the perspectives of farmers in New Jersey on whether the United States should continue to pursue free trade agreements. New Jersey is one of twenty seven states that were surveyed in a nationwide study conducted by the National Food, Agricultural and Public Policy in December, 2005.

The paper uses ordered logit models to determine producer preferences on free trade. Five demographic and social variables including age, education, share of income from farming, farm sales, and percent of farm land owned, or tenure are measured in this study. The study finds that support for free trade is positively correlated with level of education and with age. Older farmers, namely those age 55 and above, and farmers/ranch operators with higher levels of education, namely bachelors or masters degrees, support a free trade policy. No evidence regarding support for free trade in terms of level of income, farm sales, or land ownership is found.

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Chapter 1

INTRODUCTION

The United States has ratified several trade agreements or engaged in trade talks with countries around the world over the decades**.** Some of those trade agreements include the North American Free Trade Agreement (NAFTA) (1993), the Central American-Dominican Republic Free Trade Agreement (CAFTA-DR) (2005), Korea-U.S. Free Trade Agreement (KORUS), for which Congressional approval is pending, and Free Trade Area of the Americas (FTAA), which is still in talks. In addition to its existing trade agreements with some countries, the United States is pursuing trade agreements with Panama, Korea, Columbia, Malaysia, Thailand, the United Arab Emirates, and South Africa. These agreements are meant to open markets and facilitate the exchange of goods and fair competition in the global marketplace among countries via laws and regulations. The agreements may involve topics such as intellectual property right protection, labor rights, government procurement, rules of foreign investment, and customs facilitation.

According to the Heckscher-Ohlin (HO) factor endowment theory, trade occurs due to differences in factor endowments between two or more countries, implying that countries with better skilled labor relative to unskilled labor will expand production and exports of goods depending on the goods or services in which they hold the comparative advantage. Growth in exports has been attributed to inflows of foreign direct investment (FDI). FDI, along with bank loans and other types of foreign financing, has funded the construction of Mexican and Canadian factories that produce goods for export to the

United States. Chart 1 shows the variation in inflow of FDI from 1983-1992, before the

ratification of NAFTA, and from 1993-2002, the decade after NAFTA. From 1983-1992,

the stock of FDI in Canada increased by $44 billion U.S. dollars. From 1993-2002, the

stock of FDI increased $202 billion, an increase of 354% over the previous decade.

Similarly, the stock of FDI in Mexico increased $124 billion, an increase of 439% over

the previous decade. The growth in exports for both countries was absorbed by the

United States as imports, and this contributed to the growing U.S. trade deficit and

related job losses. The trade deficit escalated as U.S. imports began to exceed exports.

Chart 1: Change in stock of Foreign Direct Investment (FDI)
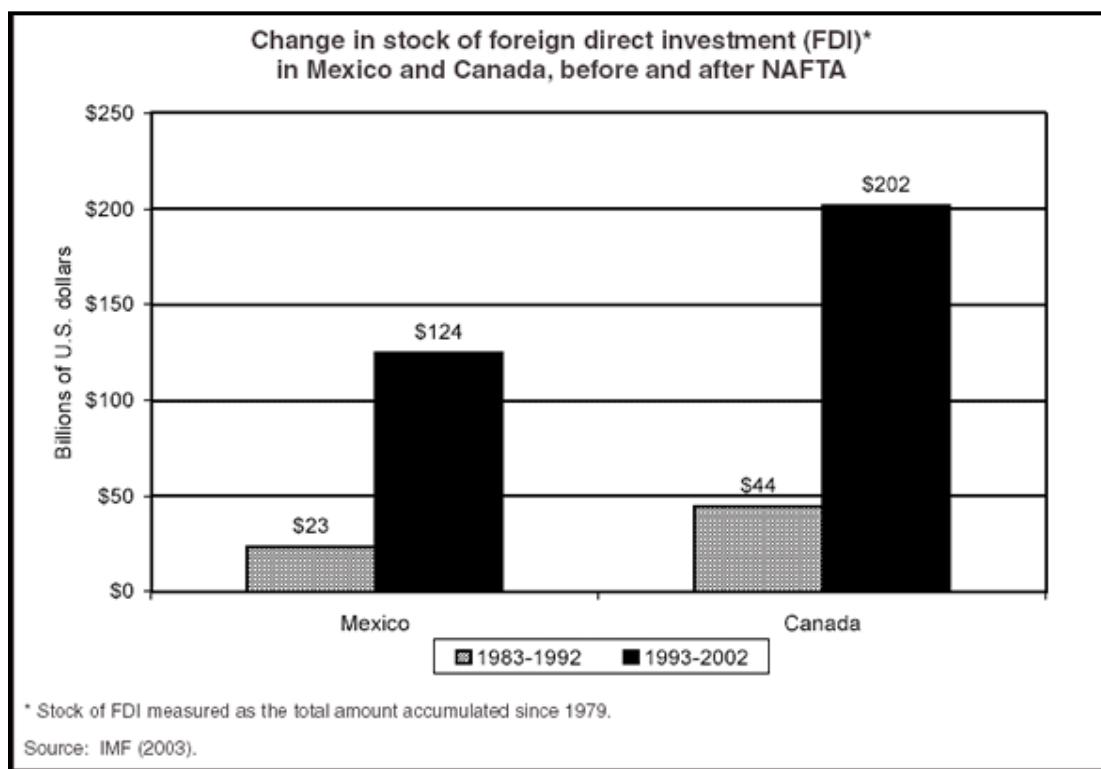
Although Table 1 shows growth in stock of FDI, we conclude that free trade

agreements create benefits as well as disadvantages in the form of trade deficits and job

losses. Free trade agreements may cause trade creation, which may improve economic

welfare as resources are being shifted to more efficient uses, or cause trade diversion, which may reduce economic welfare by shifting resources from an efficient producer to a less efficient producer. Because of this proclivity to cause either action, the free trade agreement could make two countries in the agreement worse off by causing more trade diversion than trade creation. In addition to the immediate effects of trade diversion and trade creation, economists have also determined that free trade agreements may produce long-term effects such as increased efficiency of production as producers face increased competition with the removal of trade barriers. Another effect may be decreased unit costs of production as producers have larger production runs due to enlarged markets for their goods (Suranovic, 1998).

Public opinion on trade liberalization has been divided because of the mixed effects of trade policies. While some may accrue benefits from open trade, others may suffer. If such individuals team up, they may be able to pressure policy makers to increase trade barriers. If individuals who obtain welfare gains are vocal, then open trade is apt to occur (Mansfield & Mutz, 2008). The factor endowments approach states that open trade benefits those who own an abundant supply of factors of production (such as competitive labor) and harms those with meager supply. Mansfield and Mutz exemplify this idea by comparing the effects of free trade around the world. They find that highly skilled workers in the United States benefit from open trade while less skilled workers from the same nation do not, as determined by loss of jobs due to cheaper competition abroad.

Another model the authors cite is the Ricardo-Viner model, which assumes that certain factors of production (land and capital) cannot be shifted across sectors in the

short run. Workers will base their trade preferences on how changes in trade policy are expected to affect the industry in which they are currently employed if they cannot readily move from one sector to another. The model suggests those who work in export-oriented sectors will support open trade, while those in import-competing sectors will be more protectionist because of the competition from foreign imports. Both the Ricardo-Viner and factor endowments models show convey that attitude towards trade has most to do with who is benefited and who is harmed by trade policies (Mansfield & Mutz, 2008).

Besides those by Mansfield and Mutz, other findings showed that social status, relative incomes, and values play major roles in explaining the inclination towards open trade. Upper-class people and people with higher relative incomes have been found to be more pro-trade than lower class people with lower relative incomes. Age has also been found to affect outcomes, as older people were found to be more protectionist than younger generations (Mayda & Rodrik, 2005). In addition, people with higher education, namely college degrees and higher, have been found to have more exposure to arguments about the economic benefits of foreign commerce and thereby have pro-trade attitudes (Hainmueller & Hiscox, 2006). The difference of opinion is evident based on the various trade preferences of the categories mentioned above. Difference of opinion is also based on various events over the decades.

According to the Woodrow Wilson International Center for Scholars, the narrow passage of Trade Promotion Authority[1](TPA) (2002) is one event that indicated the wearing down of public support for trade liberalization. After much debate, President

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[1] TPA allows the President the authority to negotiate trade agreements efficiently.

Bush received congressional approval for the aforementioned bill, though it was unclear whether he would receive any bipartisan support. The main issues with the bill surrounded environmental and labor concerns. Environmental lobbyists especially expressed concerns about the reauthorization of trade promotion authority, which originally had been passed in 1974 and was due for renewal. In addition, the close vote of CAFTA, the lack of definite conclusion to the WTO Doha Round, and the Congressional debates occurring now over recently negotiated free trade agreements with Columbia, Korea, Panama, and Peru, all equally signify the erosion of public support as well. Despite seemingly conclusive evidence towards rejection of trade agreements, public opinion remains undecided.

Even presidential candidates in the past election (2008) attempted to understand and quantify the effects of changes in trade policy. In an August 2007 Democratic debate, President Obama said he would "try to amend NAFTA" since he deemed it a "bad" trade deal. In a February 2008 speech before his election as president, Obama said he "will not sign another trade agreement unless it has protections for our environment and protections for American workers." During a Democratic debate in the same month, Obama expressed the desire to possibly opt out of NAFTA in order to ensure "enforceable labor and environmental protections." He made the point that one million jobs had been lost because of NAFTA and that he did not think NAFTA had been good for America (Barack Obama-Council on Foreign Relations). However, he later argued that repealing NAFTA may actually lead to more job loss than gain because the latter trade agreement was ratified so long ago and has since been entrenched in the economy, according to ABC News (Tapper, 2008).

The issue of whether the United States should continue to pursue free trade agreements is not clear. In order to better understand producer preferences regarding trade policy, this paper uses survey data in a New Jersey case study. The paper hypothesizes that independent variables such as education, age, tenure, income, and farm sales influence the opinions of farm operators regarding whether trade agreements should be pursued.

1.1 Overview of U.S. Trade Agreements

North American Free Trade Agreement (NAFTA)

NAFTA is perhaps the most well-known trade agreement ratified by the United States. NAFTA was established in 1994 and integrates the United States, Mexico, and Canada. Many scholars have varying opinions regarding the benefits of NAFTA and argue that its effects may differ by region as well as by industry. Glasmeier, Campbell, and Henton (1993) have suggested that regional effects differ due to local industry concentration, proximity to resources and markets, and local labor market characteristics. Hanson (1995) explains that increased trade would lead to greater economic activity in the U.S.-Mexico border area, as each country specializes in production of certain goods. Growth in the Mexican border-states, particularly, has been attributed to increased border business due to establishment of free-trade zones and maquiladoras.

The wealth capacity and political strength of the U.S.-Mexico border region has been studied over time. Savage and Blankmeyer (1990) find that income in the border region has lagged behind the U.S. income average, implying that employment growth has

concentrated in the service and retail sectors. Free trade in terms of those sectors has led to increased employment and wealth in the border region. Sanchez-Reaza and Rodriguez-Pose (2002) also find evidence that Mexican border-states benefit from NAFTA. The analysts' arguments coincide with those of Savage and Blankmeyer in that increased trade between the United States and Mexico has led to greater activity in the border region, driving up employment and income levels. Faber points out that increased trade can vary by sector and region in Mexico (2007). Faber specifically mentions that regions with more industrial diversity and those with high levels of foreign market access have experienced higher growth rates with the implementation of NAFTA. Proximity to markets, specifically the proximity of U.S. border retailers to the Mexican market, has proved beneficial due to the ease with which both countries trade time-sensitive goods such as apparel, thus saving time and reducing transportation costs.

Some analysts claim that NAFTA harms U.S. retailers in the border region. Hadjimarcou and Barnes (1998) state that Mexican retailers may acquire U.S.-style retailing techniques and cause the reduction of foreign shoppers in America. Peach and Adkisson (2000) also make the point that reduced tariff rates may lead to declines in cross-border retail shopping as Mexican retailers increase access to U.S. goods to their own consumers at cheaper prices. Adkisson and Zimmerman (2004) also found that although retail sales relative to personal income increased due to proximity to border, those ratios declined following the ratification of NAFTA. Essentially, the aforementioned studies exemplify trade liberalization as beneficial to some sectors while harmful to others, although the country on the whole benefits from trade. A country can produce more gross domestic product from its land, labor and capital when it engages in

international trade. Economic growth is facilitated, as the country opens its borders to free movement goods and services and the market helps move resources into their highest-value uses (Thompson, 2007).

Free Trade Area of the Americas (FTAA)

Thirty four Western Hemisphere nations originally met in 1994 with an idea to create the Free Trade Area of the Americas (FTAA) by 2005. The FTAA was seen as the next important step for Latin American trade opening (Congressional Research Service (CRS), 2003). Growth in agricultural exports and other commodities has caused increased growth in Latin American trade over the past decade. The CRS report indicates that the FTAA will promote trade diversification with the help of foreign investment. However, there have been several summits and trade ministerial meetings since 1994 and none have established the completed FTAA to date.

Some Latin American political actors and groupings like MERCOSUR[2] have expressed opposition towards the FTAA. The reasons are that the FTAA does not provide a mechanism to compensate countries and economic sectors that could be damaged by trade liberalization. That failure could potentially deepen social and economic inequalities among regions. Countries such as Brazil and Venezuela have therefore adopted alternative models. Both countries greatly support MERCOSUR, which has been very beneficial for Latin American regional integration (Ruiz). Twenty percent of MERCOSUR's total exports stay within the regional bloc, twenty nine percent go to the

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[2] MERCOSUR is a Regional Trade Agreement (RTA) among Argentina, Brazil, Paraguay, and Uruguay founded in 1991.

rest of the Americas, twenty six percent go to the European Union, and twenty five percent go to the rest of the world (Osimani, 2005).

Ruiz also points out that Brazilian producers would not fare well with the FTAA, as studies show that electronics, chemicals, and pharmaceuticals sectors would have low productivity (Mello, 2002). It was found that Brazil would lose approximately $1000 million per year in foreign trade if the FTAA were established, according to a study by the Federation of Industries of the State of Sao Pablo (FIESP). The FIESP stated that the FTAA implies more risks for the Brazilian economy than benefits (Ruiz).

World Trade Organization (WTO)

The WTO deals with the rules of trade between nations. WTO agreements are negotiated and signed by the nations in order to help producers of goods and services, exporters, and importers conduct their businesses. Several negotiation rounds have taken place since the establishment of the WTO in 1995. The Doha Development Round in the current trade-negotiation round of the WTO has yet to be resolved. The Doha Round was launched in 2001 to lower trade barriers, such as tariffs, worldwide and to strengthen the powers of the WTO. The objective of the rounds of multilateral trade negotiations is to reach agreements on specific measures to expand global trade in agricultural and industrial goods and services (Hanrahan and Schnepf, 2005). The rounds have dragged on for nearly nine years because of disagreements between the United States, the EU, and developing nations.

Despite such disputes among countries, world exports have significantly increased over time. According to WTO reports, world exports in 2003 were 126 times greater than

exports in 1948. This increase provides some evidence that international trade has flourished over the last several decades. This rapid growth has been attributed to the reduction of trade barriers (Ferguson & Sek, 2005). Furthermore, in the report that President Bush submitted to Congress in 2005, the Administration illustrated key economic successes through international trade. The report cited trade statistics, namely that bound tariff rates for developing countries were lowered by about 40 percent. U.S. exports also increased 63 percent from 1994-2004, an increase from $703 billion to $1.1 trillion, while imports increased 120 percent, from $801 billion to $1.764 trillion. The aforementioned statistics may support the case for continued U.S. participation in the WTO.

1.2 Problem Statement

Since the inception of U.S. trade agreements, public opinion has been divided over whether such agreements provide benefits. Critics have discussed and continue to discuss both the merits and faults of free trade agreements. Opponents mention the increase in job loss due to agreements such as NAFTA, while supporters mention the potential for strategic relationships between the United States and other countries. Given these mixed results, many studies have been done in order to better understand public preference for trade agreements. My study examines a sample of New Jersey farmers in order to gain some insight on whether the U.S. should continue to pursue international trade agreements.

1.3 Research Objectives

The objective of this research is to understand producer preference regarding whether the United States should continue to pursue free trade agreements. In particular the paper uses survey data on New Jersey agricultural producers to examine their preferences for pursuing free trade agreements. Several factors, including age, farm sales, income, education, and tenure, will be measured in order to better understand producer preferences. The results of this research will provide further knowledge on preference towards free trade, as measured by the welfare effects of trade policy changes.

1.4 Study Approach

This paper utilizes logistic regression methodology to determine whether the United States should continue to pursue free trade agreements. The paper hypothesizes that farm and ranch operator preferences regarding trade agreements are influenced by such factors as age, farm sales, income, education, and tenure or duration of farm ownership. To carry out this analysis, the study uses the 2005 National Agricultural, Food and Public Policy Preference Survey. Several regressions were run, both with and without the complete set of variables. The regression that provides the best fit is reported in this study.

Chapter 2

BACKGROUND MODELS

The following chapter summarizes the various trade policy models that have been used in the past, as well as have bearing in current trade policy research. The benefits of trade agreements are evaluated using welfare effects and measuring the gains and losses accrued to consumers, producers, the government, the country, and the world. Upon researching various policies, it can be seen that general and partial equilibrium models are given the most value in terms of determining the welfare effects of changes in trade policy. However, such models still have setbacks, as described below. Although examined below, this research does not focus of evaluating the welfare effects of trade policy in the New Jersey context.

2.1 Analysis of Trade Policy

There are two main ways to analyze the effects of trade policy. One is ex-ante simulation, which involves projecting future effects on a set of economic variables of interest. The other is the ex-post approach, which concerns many econometric models including gravity models and uses historical data to analyze the effects of past trade policy. In explaining the aforementioned models, endogenous variables, namely goods and factor prices, production, consumption, exports, imports and welfare, and exogenous variables, namely tariffs, quotas and other trade policy measures, must be considered. The comparative static approach is used to examine how policy changes affect the final equilibrium of the economy based on endogenous variables. However, this approach may fail to capture some of the costs and benefits associated with transitioning from the initial

to the final equilibrium of the economy, due to only looking at the final equilibrium of the economy. This limitation may cause the benefits from trade policy changes to either be overstated or understated (Piermartini and Teh, 2005).

2.2 Applied General Equilibrium (AGE) models & Partial Equilibrium Modeling

The Applied General Equilibrium models are used to estimate economy-wide effects of trade policy changes. Such models are used especially to analyze policy changes such as tariff cuts and reveal the impacts of economic policies and their effects on factors like price and output. The Wilson Center exemplifies such impacts by claiming that an increase in U.S. steel tariffs causes increases both in steel prices and in steel output. Furthermore, the model could explain the effects of steel tariff increases on firms that use steel, including auto-makers, other U.S. firms competing with steel firms for capital and labor, and foreign steel firms hoping to sell their products in the U.S. (Hughes, McDaniel, & Reinert).

The model is calibrated to actual economic conditions in the base year and the effects that would result from policy changes are simulated. Although the model is understood to provide insight on policy effects like imports, exports, production, and aggregate economic welfare, it does have disadvantages. AGE models are believed to ignore distributional effects. For example, U.S. trade in sugar may negatively affect the sugar industry but may benefit processed food sectors such as confectionary manufacturers (Hughes, McDaniel, & Reinert). The AGE model is believed to incorporate "makeshift" elasticities without application to varied consumer and producer responsiveness to supply and demand. Furthermore, AGE models and their databases are

believed to be expensive to build. Another disadvantage associated with the model is that it must capture many different interactions and linkages with respect to exports, imports, production, and so on. For example, the effects of a steel tariff depend on the substitutability of U.S. and Brazilian steel, the cost of expanding local steel production, quantity of steel used for automobile production, etc. Therefore, the Woodrow Wilson Center points out that in order to account for the various parameters, price responsiveness must be estimated (Hughes, McDaniel, & Reinert). However, as mentioned above, the AGE model incorporates makeshift elasticities, thereby leading to different outcomes of large significance each time they are used. Such inconsistencies have caused analysts and economists to reject the AGE model.

The Partial Equilibrium model is different from the AGE model in that it does not consider interactions and linkages as the latter model does with substitutability, internal, and external costs. This model is appropriate for providing quick analyses of the effects of various policy issues, though it does not provide economy-wide effects (Woodrow Wilson Center). Figure 1 (Deardoff, 2001) represents a partial equilibrium model, where the D and S curves are domestic demand and supply, respectively, for a product in a particular country. The world market price of imports is denoted Pw. The imposition of a tariff is denoted t. When the home country introduces t, domestic price will increase. If markets are competitive and the country is "small"[3] in the case of Figure 1, then price increase will equal the tariff, denoted P_w+t. S_t and D_t will be the new supply and demand, respectively, and D_t-S_t becomes the new demand for imports. Therefore, domestic

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[3] "Small" implies that variation of the country's demand for imports does not affect the world price of the commodity.

demand and demands for imports decline, while domestic supply increases, as indicated

by Figure 1. The strength of the trade effect relates to producer and consumer

responsiveness to price changes, or elasticity. The welfare effect as measured for

producers is the gain in producer surplus from the tariff, for consumers is the loss in

consumer surplus because of the rise in domestic price with respect to the world price, for

the government is the gain in tariff revenue, and for the country is the deadweight loss

resulting from tariff implementation. The gain in producer surplus that measures the

welfare effect for producers is denoted by the area *A-B-C-D*. The loss in consumer

surplus is measured by the area *A-G-I-C*. The gain in tariff revenue for the government is

measured by the area *F-G-H-E*. (Deardoff, 2001). Finally, the resulting deadweight loss

is measured by the areas *D-F-E* and *I-G-H*.

Figure 1: Partial Equilibrium Model
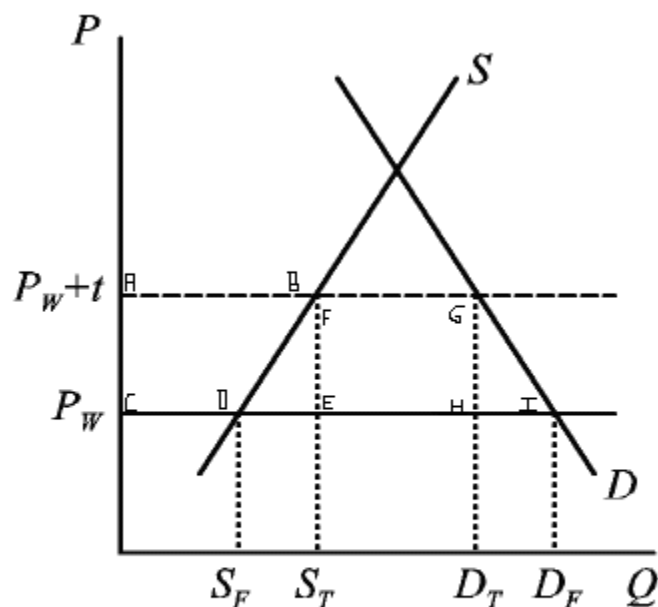
Small-Country Case

Figure 2 represents the partial equilibrium models for large importing and exporting countries. P_{FT} is the free trade equilibrium price, where excess demand of the importing country equals excess supply of the exporting country. The line segment of P_{FT} from the supply curve to the demand curve represents the quantity of imports and exports. In the large country[4] case, tariff implementation causes world prices of a certain good to decrease and domestic prices of that good to increase. Figure 2 represents this idea through an increase in price from P_{FT} to P_T^{IM} for the importing country and a decrease in price from P_{FT} to P_T^{EX} for the exporting country, which represents the rest of the world. The line segment from P_T^{IM} to P_T^{EX} on the supply curve represents the tax resulting from the price difference between the importing and exporting countries (Suranovic, 2004).

Figure 2: Partial Equilibrium Model - Large Countries
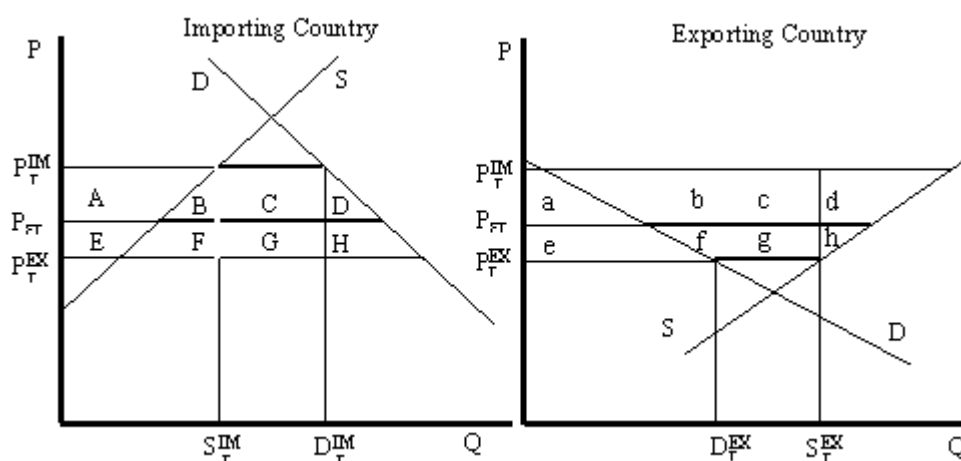
The welfare effects, which refer to the benefits that accrue from the implementation of a tariff, are summarized in Table 2. The importing country consumers

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[4] "Large" countries are those where variation of the country's demand for imports does affect the rest of the world.

suffer from the application of the tariff, because the amount of consumer surplus in the market decreases as the domestic price of imported goods and domestic substitutes increases. However, importing country producers experience an increase in well-being, because an increase in the price of their product increases producer surplus. Other positive spillovers are an increase in output of existing firms, in employment, and in profit. As for the importing country government, which receives tariff revenue as a result of the tariff, who benefits from that revenue depends on how the government spends it. Overall, if a large country implements a small tariff, national welfare will increase, and if not, then national welfare will decrease.

The welfare effects of a tariff for the exporting country vary slightly. Exporting country consumers experience an increase in well-being as the tariff decreases domestic price. Exporting country producers, however, experience a decrease in well-being, because a decrease in the price of their product decreases producer surplus. As for the exporting country government, no effects on revenue are measurable. The overall national welfare of the exporting country decreases.

Table 1: Welfare Effects

Welfare Effects of an Import Tariff		
	Importing Country	**Exporting Country**
Consumer Surplus	- (A + B + C + D)	+ e
Producer Surplus	+ A	- (e + f + g +h)
Govt. Revenue	+ (C + G)	0
National	+ G - (B + D)	- (f + g + h)

Welfare		
World Welfare	- (B + D) - (f + h)	

This figure suggests that an overall tariff causes welfare loss to the world. However, producers and consumers, or even certain interest groups in each category may be affected differently. Thus, the perception towards free trade may be different among groups. My study on the perception of free trade among farmers may shed some light on the effects of income, farm sales, and sociodemographic factors on welfare.

2.2 Special and differential treatment (SDT)

Special and differential treatment (SDT) gave developing countries non-reciprocal preferences by industrial economies. Preferential market access schedules have been given to developing countries without expectations of equal preferences from those countries. The Generalized System of Preferences (GSP) has granted preferential market access especially to low-income developing countries and the least-developed countries (LDCs)[5]. The SDT reflects the GATT/WTO provisions that (i) allow high-income countries to grant preferential access to their markets to some developing economies, (ii) allow the developing economies the right to limit reciprocity in multilateral trade negotiations (MTNs), (iii) give them exemption from some WTO obligations, (iv) give them extra time periods to comply with obligations, (v) allow developing economies greater freedom to use otherwise restricted trade policies, and (vi) provide technical

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[5] The category of least-developed countries (LDCs) was examined in detail during the United Nations Development Policy and Analysis Division conference (New Delhi, 1968). The list of LDCs consists of 49 countries.

assistance and help in institution building so that WTO obligations can be fulfilled. SDT allows more-developed countries to aid developing economics in industrial development (Das, 2007).

SDT was created by Raul Prebisch and Hans Singer, who argued that exports of developing economies were characterized by volatile prices and weak terms of trade. The researchers developed the strategy of import-substituting industrialization (ISI). This strategy was also supported by protection for domestic industries in developing nations. Prebisch and Singer also determined that small and low-income nations did not benefit from trade liberalization under the most-favored nation (MFN) clause because such nations still had difficulties expanding their trade and hastening their growth rates. Based on the above-mentioned premises, Prebisch and Singer determined that low-income economies need preferential market access in more-developed countries' industrial markets and thereby proposed SDT (Das, 2007).

2.2.1 Enabling Clause

The SDT was later clarified and integrated into the multilateral trading system of 1979. [6] The Enabling Clause was introduced at the same time, establishing that developing economies were exempt from Article I, the MFN clause of the GATT-1947[7]. Article I: General Most-Favored-Nation Treatment states "with respect to customs duties and charges of any kind imposed on or in connection with importation or exportation or imposed on the international transfer of payments for imports or exports, and with respect

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[6] The multilateral trading system was created by governments to make the business environment stable.

[7] As indicated in Article I, * refers to the margin of preference.

to the method of levying such duties and charges, and with respect to all rules and formalities in connection with importation and exportation, and with respect to all matters referred to in paragraphs 2 and 4 of Article III,* any advantage, favour, privilege or immunity granted by any contracting party to any product originating in or destined for any other country shall be accorded immediately and unconditionally to the like product originating in or destined for the territories of all other contracting parties" (World Trade Organization.org).

The principle of non-reciprocity in trade negotiations was established by the Enabling Clause, which gave developing countries more preferential market access and the advantage of using trade policies that GATT rules may otherwise disallow. The Enabling Clause also included the Generalized System of Preferences (GSP), by which developing nations were reaping economic benefits through changes in trade policy. The GSP indicated that developing countries would be taken off the GSP list once they gained economic growth (Das, 2007).

Chapter 3

LITERATURE REVIEW

The question of whether the United States should continue to pursue free trade agreements has been extensively debated over the past decades. Some analysts believe free trade agreements provide benefits, while others believe they cause disadvantages such as the exploitation of workers. Countless articles have been written regarding the potential gains and losses of trade liberalization as predicted by static and dynamic applied general equilibrium models on international trade. Such gains and losses are measured by the welfare resulting from trade liberalization.

Given various debates on free trade, the analysis on the perception of farmers may provide some implications to the ongoing debate. If we can measure the welfare attained from changes in trade policy, then we may be able to conclude whether trade agreements provide benefits for farmers. One variable that I could use from my study to indicate welfare, is income. However, that variable only measures the share of family income from farming and does not measure the change in income before and after the implementation of trade policy. Such a variable would provide better insight on the benefits of trade policy and should be considered for future research. This chapter is included to provide understanding of how welfare effects may impact opinions on the effects of changes in trade policy. The idea is to make us aware of what influences the decision of whether the U.S. should continue to pursue free trade agreements.

3.1 Welfare Gains from Trade Liberalization

Applied dynamic general equilibrium models are considered to provide larger welfare gains than static models. Dynamic models have not been completely accurate in quantifying the benefits of free trade, but they have provided insight with respect to some cases. According to Goulder and Eichengreen, removal of tariffs from an average of four percent would reduce consumption by .32 percent, which equates to welfare loss of .44 percent of GDP (1992). In another study, it was found that lowering tariffs from 25 percent to ten percent would result in an increase in consumption of three percent, a reduction to an average rate of five percent would raise consumption growth by about 4.5 percent, and complete removal of tariffs would raise consumption growth by six percent (Ahearne, 1999). The reason for the disparity in the approximations resulting from each dynamic model could be that Ahearne assumed the discount factor depends on level of wealth, while Goulder and Eichengreen assumed that assets enter the utility function used to derive the model (Zarazaga, 2000).

Several Computable General Equilibrium (CGE) simulations of multilateral trade negotiations have been used to estimate overall welfare as caused by trade liberalization. The Uruguay Round[8] of trade negotiations, in particular, generated $500 billion annually, according to studies conducted by the WTO. Of that $500 billion, gains of $200 billion from agricultural liberalization were estimated by the Organization for Economic Co-operation and Development (OECD). However, that estimate is affected by the degree of regional aggregation, especially referring to sub-Saharan Africa, in the models. The WTO states that removal of subsidies would lead to higher world prices, thereby affecting net

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[8] The Uruguay Round was the 8th round of multilateral trade negotiations conducted 1986-1994, embracing 110 countries.

food importing countries negatively. These negative effects do not physically appear in the results, however, since the positive welfare gains overshadow the losses (Piermartini and Teh, 2005).

Table 2 describes the various CGE studies evaluated during the Uruguay Round. The first publication by Goldin and van Mensbrugghe highlights the effects of tariff cuts. Evidently, industrial and agriculture tariff cuts lead to GDP growth in the United States, European Union, and Australia, to name a few, and subsidies cut by 36 percent in developed countries and 24 percent in developing countries lead to GDP and trade growth. The latter study found that 85 percent of the welfare effect resulted from reduction in agricultural tariffs (1996). The second publication by Hertel, Martin, Yanagishima, and Dimaranan exemplifies similar results, but claims that 81 percent of the welfare effect resulted from reduction in industrial tariffs (1996). Finally, the study by Harrison, Rutherford, and Tarr claims that 68 percent of the welfare effect resulted from reduction in agricultural tariffs (1995). The uncertainties and the disparities among the various study results do not go unnamed. Reasons include the fact that welfare losses are overcompensated by welfare gains, as mentioned previously; that cursory assumptions about markets are made, such that products are differentiated both across firms and countries or that products within the same product category are homogenous, both assumptions that may cause estimation errors; and that models vary such that capital stock is fixed in the case of static models, or that capital accumulation is allowed in response to changes in investment in the case of dynamic models, the latter of which may cause large overall effects than in static models.

Table 2: CGE Studies of the Doha Round

Publications	Data/ Evaluation	Model Structure	Sectors Liberalized	Results
Goldin and van der Mensbrugghe (1996)	1985-93 data are used to validate the model. Projections are made for the period 1993-2002	■ RUNS model ■ 20 sectors (15 of which agricultural sectors) ■ 22 countries ■ perfect competition¨ ■ static	■ industrial tariffs cut according to schedules ■ agricultural reforms: tariffs including NTBs cut according to schedules. Subsidies cut by 36 per cent in OECD and 24 per cent in other countries.	■ GDP growth: US 0.1 per cent, EU 0.6 per cent, Japan 0.4per cent Australia and New Zealand 0.1, Mexico -0.5 Upper Income Asia 1.3 ■ Decomposition of welfare effect 85 per cent from agriculture.
Hertel, Martin, Yanagishima and Dimaranan (1996)	1992 data, evaluated at 2005 Using exogenous of regional growth of capital, population and technology the world economy is estimated with and without the Uruguay Round policy change	■ GTAP model ■ 10 sectors ■ 15 regions ■ CRS, perfect competition, Armington trade elasticities	■ Industrial and agricultural tariffs cut according to schedules. MFA quotas are lifted.	■ GDP growth World 0.89 per cent US&Canada 0.4 EU 0.7 Japan 1.04 Lat. America NICs 3.8 ■ Trade growth World 59 per cent US and Canada 48 per cent EU 42 per cent Japan 22 per cent ■ Decomposition of welfare effect Ag 5per cent Industrial tariff 81 per cent MFA 14 per cent
Harrison, Rutherford and Tarr (1995)	1992 data and evaluation	■ GTAP model ■ 22 sectors ■ 24 regions ■ M1: CRT,PC, Armington ■ M2: IRT, monopolistic competition intraregional, Armington-based trade ■ M1 both static and dynamic	■ Industrial and Agriculture tariff cut according to schedule ■ Export (domestic) subsidies cut by 36 (20) per cent and 24 (13) per cent in developed and developing countries respectively.	■ GDP growth World. 0.4 (M1 static) 0.7 (M1 dynamic) 0.42 (M2 static) M1 regional results: US 0.4 EU 0.7 Japan 0.7 Lat. America 1.7 South-East Asia approx. 2.5 ■ Decomposition of welfare effect M1 static: Agr 68 per cent, Ind. Tariff 18 per cent, MFA 15 per cent M1 dynamic: Agr 38 per cent, Ind. Tariff 49 per cent, MFA 12 per cent M2 static: Agr 61per cent, Ind Tariff 23 per cent, MFA 17 per cent.

Source: Piermartini and Teh, 2005

The Global Trade Analysis: Modeling and Applications (GTAP) model was used in two of the above-mentioned publications in order to show overall welfare gains from multilateral trade liberalization. Chart 1 shows how greater trade liberalization, which refers to the reduction or removal of trade practices that disallow free flow of goods and services from one country to another, creates greater welfare gains for developing countries.

Chart 2: Welfare Gains
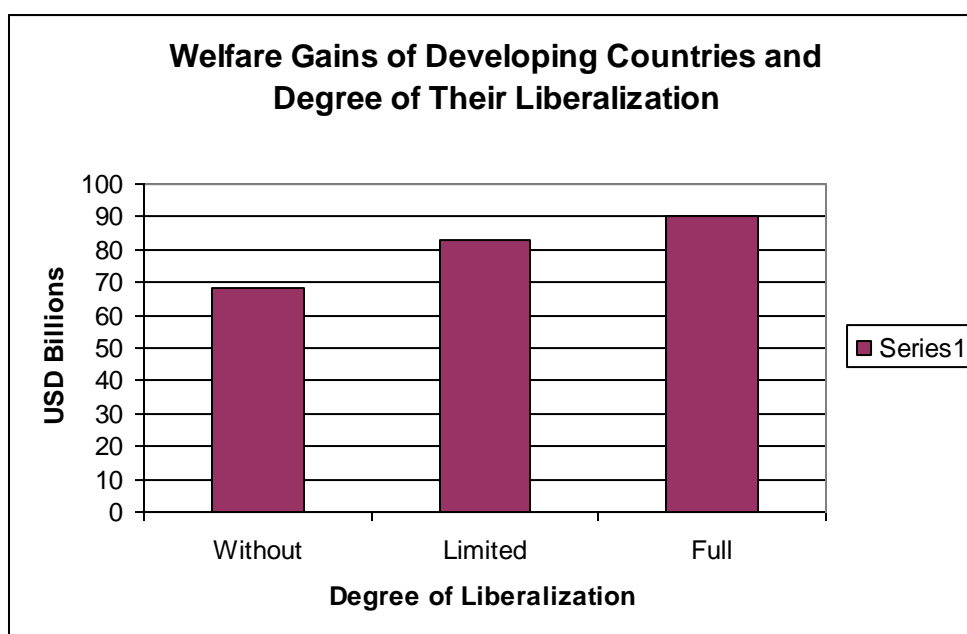
Source: OECD (2003)

Economists argue that free trade provides nations with economic benefits as total gains exceed total costs. Static benefits are one-time benefits, while dynamic benefits accrue over time and can positively affect the long-term growth rate of a country. In reference to production gains, one must look at makeup of jobs, industries, wages, and products in the economy. Trade liberalization fuels the most competitive industries in the

economy through reduction of foreign barriers to U.S. exports and removal of U.S.

barriers to foreign goods and services, for example. This, consequently, allows those

industries to support the shifting of labor and capital from less productive enterprises to

more productive ones (Jackson, 2008).

Jackson also found that consumers reap the greatest benefits from international

trade and reduction of trade barriers. A change in trade policy should lead to changes in

prices for goods, in consumers' real incomes, and in the efficiency of production, all of

which, in turn, improve a nation's economic welfare, according to Jackson. Consumers

benefit from the wider selection of goods and services available at lower prices than are

normally available in the absence of trade liberalization (2008).

3.2 Economic and Social Impacts of Trade Liberalization

Rodriguez and Rodrik find that trade liberalization has not been definitely linked

to economic growth. Despite evidence in favor of trade liberalization, both analysts find

such literature uninformative and conclude that measures of trade barriers fail to consider

sources of poor economic performance (Rodriguez & Rodrik, 1999). The authors are

skeptical about the link between economic growth and the benefits of trade liberalization.

They point out that GDP can be higher with trade restrictions than without in the

presence of increased prices and thereby increased supply from import-competing

sectors. Their reasoning is that data sets covering short time spans reveal partial positive

association between trade restrictions and output growth. Whether trade promotes growth

in small economies depends on "whether the forces of comparative advantage push the

economy's resources in the direction of activities that generate long-run growth" or divert

them from those activities. Following a model by Matsuyama (1992), Rodriguez and

Rodrik analyze the production functions[9] of the manufacturing and agricultural sectors,

the main sectors in the economy, in order to determine the effects of imposing a tariff.

Their analysis reveals that a small tariff would have a positive effect on growth in the

manufacturing sector. However, they also find the tariff imposes a production-side

distortion in resource allocation, in which case a static efficiency loss (the manufacturing

share of output at world prices is less than the labor share in manufacturing) is imposed

as a result. The cost of that loss rises as the manufacturing sector becomes larger

(Rodriguez & Rodrik, 1999). The output being produced can no longer compensate for

the increase in tariff rate and diminishing marginal returns result.

3.3 Presidential Viewpoints on Trade Policy

In June of 2008, President Obama associated a jump in the U.S. trade deficit with

"fiscal irresponsibility and borrowing from abroad," according to the Council on Foreign

Relations (CFR). Obama released a statement in response to the trade deficit increase,

proposing a trade policy that "serves the interest not just of multinational corporations but

of America's hardworking families" (CFR, 2010).

Obama has voted for trade agreements with other countries including Oman,

Columbia, South Korea, China, and Central American countries. While he voted to

approve the FTA with Oman in 2006, he opposed CAFTA because he believed it did not

protect labor any better than other trade agreements. He also expressed disapproval

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[9] See Rodriguez and Rodrik (1999) for additional details on the production functions used to derive conclusions on the effects of policy changes.

towards a free trade agreement with Columbia, because "the violence against unions in Columbia would make a mockery of the very labor protections that we have insisted be included in these kinds of agreements," according to CFR (2010). As for South Korea, Obama believed a free trade agreement would give Korean exports better access to U.S. markets than U.S .markets to Korea.

John McCain, Republican Party Nominee for President in 2008, also had concerns about trade agreements. McCain believed renegotiation of NAFTA would jeopardize military support from Canada for U.S. efforts in Afghanistan, according to Michigan Politics & Elections (Quaid, 2008). He supported NAFTA and offered record exports from Texas to Canada and Mexico as evidence. McCain was quoted as saying, "One of our greatest assets in Afghanistan are our Canadian friends. We need our Canadian friends, and we need their continued support in Afghanistan." If NAFTA was to be changed or restructured in any way, "I think Canada would view that as a betrayal of the long years of negotiations we agree to," McCain said. McCain voted for NAFTA in 1994 and continues his support in favor of the agreement. According to the CFR, McCain views trade as beneficial for integrating nations of the Middle East into the global economy and supports efforts to build a free trade area there by 2013. However, during a presidential debate in 2008, McCain acknowledged the negative effects of free trade and proposed reforms to U.S. unemployment insurance and worker retraining programs in response to the apparent job loss from outsourcing (Quaid, 2008).

Chapter 4

FRAMEWORK AND METHODOLOGY

The following chapter provides the empirical model used in the analysis of whether the U.S. should pursue free trade agreements. The chapter also provides the hypotheses to be tested in this research.

This paper uses the logistic regression model employed in "Agricultural Policy as a Social Engineering Tool: A New Jersey Case Study" (Tavernier, 2006). Tavernier uses the National Agricultural, Food, and Public Policy Preference Survey conducted in 2001 in order to better understand whether farm operators place greater importance on the short-term economic benefits that accrue from social engineering policies. The reason for using the aforementioned study is because Tavernier uses the same policy survey conducted several years before the one used in this paper, thereby providing some insight on producer preference towards various agricultural and trade policies.

The methodology examined in this paper has been presented in the aforementioned study and assumes that farm operators maximize an intertemporal profit function. The model assumes that farm operators maximize their profit functions once they decide whether or not to restrict trade. Maximization errors and other unobserved characteristics of choices or measurement errors in the exogenous variables contribute to the random component denoted by ε_{ij} below (Tavernier, 2006).

The profit function of farm operator i, making the j -th choice is as follows:

$$\pi_{ij} = U_{ij} + \varepsilon_{ij}, \tag{1}$$

where $U_{ij} = (\ln X_{i1}, \ln X_{i2}, \dots, \ln X_{ik})$ and $\ln X_{im}$ represents the set of m observable

characteristics of the *i -th* farm operator. The *i-th* farm operator maximizes profit by

deciding whether or not to restrict trade. Decision *j* will be chosen over decision *k* when

profit is maximized, as shown in equation (2).

$$\pi_{ij} > \pi_{ik}, \ \forall k, \ k \neq j. \tag{2}$$

The random component/error term, ε_{ij}, creates the need to look at probability

defined by:

$$P_{ij} = Pr\,ob(\pi_{ij} > \pi_{ik}), \ \forall k, \ k \neq j. \tag{3}$$

If ε_{ij} has standard Type 1 extreme distributions with density:

$$f(\varepsilon) = \exp\{-\varepsilon - \exp\{-\varepsilon\}\}, \tag{4}$$

then an equation defining the multinomial logit model results:

$$P_{ij} = \frac{\exp\{U_{ij}\}}{\Sigma\exp\{U_{ik}\}}. \tag{5}$$

The standard logistic regression model can be obtained if the random π_{ij} have

independent extreme value distributions. This model is chosen for the study because of its

mathematical simplicity and because its asymptotic characteristic does not allow the

predicted probabilities to be outside of the range between zero and one.

We can estimate the coefficient of each variable using maximum likelihood

estimation (MLE) and equation (5), and by assuming that π_{ij} is a linear combination of

the explanatory variables.

Equation (5) can also be written in terms of probability as:

$$Pr\,ob(Y = j) = \frac{e^{\beta'_j x}}{\Sigma_K e^{\beta'_k x}}, \tag{6}$$

where *Y* represents a discrete choice among *j* alternatives and *β*, the set of

parameters, represents the impact of changes in *X* on the probability. The partial

derivatives of probabilities with respect to the vector of characteristics are computed at

the means in the following equation:

$$\frac{\partial P_j}{\partial X_i} = P_j(\beta - \sum_{i=1}^{m} P_i \beta_i), \, j=1,2,,\ldots m. \tag{7}$$

The aforementioned model assumes the probability of observing a certain

outcome is dependent on X, the vector of explanatory variables.

4.1 Hypotheses

Hypothesis 1: Higher level of educational attainment is expected to have a positive

relationship with free trade agreements. People with college or advanced degrees are

probably more likely to have come into contact with economists' arguments on behalf of

free trade, while less educated people are more likely to believe that stopping imports is

generally good for the US or for them personally.

Hypothesis 2: The income variable refers to share of family income that comes from

farming. A higher value on this variable is associated with a greater personal

commitment to agriculture as a career and way of life. I hypothesize that those with more

income from farming will indicate that free trade is beneficial, while those who indicate

that less of their income comes from farming will tend to oppose free trade. A reason for

this hypothesis is that those with a lesser stake in U.S. agricultural policy will be less

engaged in the relevant debates, and will therefore fall back on old, familiar ideas like

protectionism and subsidy.

Hypothesis 3: Tenure measures the percentage of land farmed that one also owns. The

higher the ownership percentage, the greater the farmer's stake in public policy decisions

in general, because he/she faces potential land value implications as well as income implications of decisions made by the U.S. government. Therefore, full-time tenant farmers may be less favorably disposed to free trade than owners ─ even though they still have a considerable stake in agricultural policy, and the revenue and land value effects of a particular policy should move in the same direction. I suggest a positive relationship between land ownership and free trade preferences.

Hypothesis 4: The sales measure is essentially a measure of farm size. Large farmers (those with sales above $250,000) are more likely than small farmers (those with sales below $100,000) to be able to take advantage of export opportunities. Smaller farmers might only worry about the import competition side of the equation. Therefore, large farmers are expected to have positive correlation with agreement with trade.

Hypothesis 5: As far as age goes, older farmers are expected to be more protectionist and younger farmers to be more forward-looking and more accepting of free trade. Therefore, older farmers are expected to have negative correlation with agreement with free trade.

Chapter 5

DATA

5.1 United States Producer Survey

In order to develop a comprehensive farm bill in 2007, the National Agricultural, Food, and Public Policy Preference Survey was conducted at the end of 2005. This survey builds on the knowledge obtained from policy surveys conducted before the passing of previous farm bills. Farm and ranch operators from 27 states, Alabama, Arizona, Colorado, Florida, Georgia, Idaho, Illinois, Iowa, Kansas, Maryland, Michigan, Missouri, Montana, Nebraska, New Jersey, New York, North Carolina, Ohio, Oregon, Pennsylvania, South Dakota, Texas, Utah, Vermont, Washington, Wisconsin and Wyoming, participated in the survey. The main areas surveyed were a) Farm Programs and Budget Priorities b) Commodity Programs and Risk Management Policy c) Conservation and Environmental Policy d) Trade Policy e) Food System and Regulatory Policy.

Trade policy was one topic on which more feedback was instrumental in developing the next farm bill. The suspension of WTO negotiations on the Doha Round trade agreement led to calls for extension of current farm bill legislation. This idea of extension was believed to achieve completion of the Doha Round of trade negotiations. According to the seventh WTO Ministerial Conference in December 2009, ministers from WTO member governments said the eight-year-old Doha Round negotiations should come to an end quickly, with most pushing for the end of talks in the year 2010.

When surveyed about trade policy, producers responded in support of the pursuit of free-trade negotiations and trade expansion through the elimination of unilateral

sanctions on food trade. Responses to trade policy questions also revealed that producers

supported continued participation in the World Trade Organization (WTO), and expected

market access problems would ensue if the United States withdrew from the WTO.

Producers agreed on the need to comply with the recent WTO ruling on U.S. cotton

programs, namely the complaint[10] filed by Brazil on U.S. cotton policies against specific

provisions of the U.S. cotton program in 2002.

Table 4 outlines U.S. responses concerning trade policy issues. The responses as

outlined by Jesse and Mitchell, authors of Producer Preferences for Agricultural, Food,

and Public Policy, indicate the ambivalence that farmers expressed about liberalizing

international trade. The responses ranged in value from 1-5, where 1 represents 'strongly

disagree' and 5 represents 'strongly agree.' According to Table 4, the strongest

agreement was for labor, environmental, and food safety negotiations, with average U.S.

response of 4.08. The least agreement, with average U.S. response of 2.82, was shown

towards withdrawal from WTO. When the data for the latter topic, or question 20 in the

survey, was examined, somewhat significant results emerged from the regression of the

main dependent variable on the independent variables used in this study, namely age,

education, tenure, income, and farm sales. However, more significant results came from

the survey data for question 16, which is the topic we examine in this paper, whether the

United States should pursue free trade agreements. With respect to pursuit of free trade,

the Northeast average lies just below the national average, indicating that people in the

Northeast agree with free trade to a similar extent as the rest of the country.

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[10] In 2002, Brazil accused the U.S. government of subsidizing cotton farming in excess of the WTO
commitment of $2 billion per year. The WTO established a dispute resolution panel in March 2003, and the
panel ruled in favor of most of the objections in Brazil's petition in September 2004.

Table 3. Trade Policy Issue Responses

Trade Policy Issue	National Average	Northeast Average
Pursue free Trade Agreements	3.42	3.39
Labor, Environment, and Food Safety Negotiations	4.08	4.16
Comply with WTO Ruling	3.19	3.38
Domestic Goals over Trade Goals	3.28	3.33
Withdraw from WTO	2.82	2.66
Market Access Problems if WTO Withdrawal	3.43	3.58
Eliminate Unilateral Sanctions on Food Trade	3.22	3.13

Source: Bradley D. Lubben, Nelson L. Bills, James B. Johnson, and James L. Novak, The 2007 Farm Bill:
U.S. Producer Preferences for Agriculture, Food, and Public Policy

5.2 Sampling Methodology and Response Rates

The nationwide survey of 27 states was conducted across four regions. The total number of participating farms amounted to 1,345,900, which is about 64 percent of total farms in the United States, according to the report Farms, Land in Farms, and Livestock Operations: 2005 Summary (National Agricultural Statistics Survey). The mail survey was conducted across three strata, namely "small" farms with less than $100,000 in agricultural product sales annually, "medium" farms with $100,000-$250,000 in sales, and "large" farms with over $250,000 in sales. According to the 2002 Census of Agriculture (NASS), more than 80 percent of the farms in the 27-state survey were estimated to fall in the "small" farm category. It was estimated that eight percent of farms

made up the "medium" farm category, while another eight percent of farms made up the "large" farm category. There were 162 total responses from New Jersey, of which 149 were usable and yielded a response rate of 21 percent. However, some values were dropped in order to maintain consistency across the various categories surveyed. The dataset contains 141 responses overall.

5.3 Descriptions of Dependent and Independent Variables

Independent Variables

Five variables, *age*, *income*, *education*, farm *sales*, and farm *tenure* (percentage of land owned), were evaluated with respect to farmer response regarding free trade agreements, as indicated by Table 5. *Age* was grouped and evaluated under five categories: 25-34, 35-44, 45-54, 55-64, and 65-over. *Income* was evaluated as "share of family income derived from farming" under four brackets (in thousands): 1-25, 26-50, 51-75, 76-100. *Education* was evaluated under five categories: hs, hs/diploma, some college, ba, ma, where "some college" refers to two-year institutions or technical schools as opposed to "ba," which refers to four-year institutions. *Sales* was evaluated under six brackets (in thousands): 10-49, 50-99, 100-249, 250-499, 500-999, 1 million and over. Farm *tenure* was evaluated under four categories (by percent): 1-25, 26-50, 51-75, 76-100.

Table 6 indicates the breakdown, by percentage, of the various categories under each variable. The table suggests that the majority of farmers, 59 percent, constitute the 55-64 and 65 and over *age* categories. Some values were dropped for better understanding of the impact of farmer response and control variables on *age*. Table 6

suggests that most farmers, about 93 percent, either completed high school/received their GED, or went onto further schooling including graduate school. As far as the *sales* variable goes, the majority of farmers, 81 percent, have market value under $100,000. Finally, in terms of the *tenure* variable, Table 6 indicates that U.S. farmers own a large share (76-100%), 61 percent, of the land they operate.

Dependent Variable

The dependent variable, farmer response to free trade agreements, was initially evaluated under 6 categories, 5 being "strongly agree," 1 being "strongly disagree," and 6 being "don't know." However, it was reevaluated as an ordered or proportional odds variable, coded one if farmer response was "strongly disagree," coded two if "disagree," coded three if "don't know" or "neutral," coded four if "agree," coded five if "strongly agree," and renamed y_i.

Table 4. Definition of Focal Independent and Dependent Variables

Variable	Variable Description and Coding	New Jersey Reponses by Category (Percent)
Independent Variables		
Age	25-34, 35-44, 45-54, 55-64, 65-over	
Under 25		1
25-34		2
35-44		12
45-54		37
55-64		38
65-over		51
Share of Family		
Income from Farming	1-25, 26-50, 51-75, 76-100	
None		16
1-25%		75
26-50%		15
51-75%		9
76-100%		24

Education	hs, hs/diploma, some college, ba, ma	
Grade School		2
Some High School		1
High School/GED		33
Some College/Technical School		28
College Bachelor's Degree		42
College Advanced Degree		33
Sales	10-49, 50-99, 100-249, 250-499, 500-999, 1 mil-over	
Under $10,000		67
$10,000-$49,999		31
$50,000-$99,999		14
$100,000-$249,000		7
$250,000-$499,999		6
$500,000-$999,999		8
$1 million-over		5
Tenure (Share of Farmland Owned)	1-25, 26-50, 51-75, 76-100	
None		6
1-25%		6
26-50%		6
51-75%		9
76-100%		112
Dependent Variable		
y_i*	coded one if farmer response was "strongly disagree," coded two if "disagree," coded three if "don't know" or "neutral," coded four if "agree," coded five if "strongly agree"	

*Indicates that some responses were dropped

Chapter 6

RESULTS

Table 7 contains the estimated coefficients and t-ratios that provide the best model fit. Some of the variables from each category were dropped in order to maintain consistency across the various categories. The pseudo R^2 value of .039 evaluates the explanatory power of the independent variables. This indicates that $100 - 3.9\%$, or 96.1% of the dependent variable, yi, is explained by the model.

The results, outlined in Table 7, were calculated by regressing producer preference with respect to free trade agreements relative to farmer/ranch operator age, income, farm sales, tenure, and education. Producer preference, as indicated by the variable yi, is the result of recoding an ordinal variable into an ordered logit variable, where $yi=1$ if producer preference for trade agreements was "strongly disagree," $yi=2$ if "disagree," $yi=3$ if "neutral" or "don't know," $yi=4$ if "agree," and $yi=5$ if "strongly agree."

Some variables were collapsed in order to produce efficient regression results. The variable *lowage* is the result of collapsing the variables: age of 25-34 and 35-44. The variable *highsales* is the result of collapsing the variables: sales of $100,000-$249,999, $250,000-$499,000, $500,000-$1 million, and over $1 million. The variable *loweduc* is the result of collapsing the variables: education as measured by grade school, high school, and high school/diploma. The tenure variables were not collapsed, because each variable produced a significant number of responses, namely >20. Once the variables

were collapsed, insignificant variables were dropped in order to produce the best model fit.

According to Table 7, the *age* variable is significant for producers in the age groups of 55-64 and over 65, as indicated by estimated coefficients. This indicates that producers age 55 and above generally agree with free trade policies than their younger counterparts, namely produces below the age of 55. The *education* variable is significant for producers with their bachelors or advanced degrees. This indicates that producers with higher education agree more with free trade than those who do not. The latter finding corresponds with Hypothesis 1. The *income* variable is significant and negative for producers with share of income from farming between 26 and 50 percent. Farmers in this category are not completely dependent on farming for their income, but they are not completely independent of farming either. The most professional farmers in the sample, denoted by higher share of income from farming, are more optimistic and unconcerned about free trade, while the least professional farmers, denoted by lower share of income from farming, may not even be involved in the effects of such policy innovations due to low income. Farmers in the middle range between amateur and professional, on the other hand, seem to be skeptical about free trade, as denoted by the negative sign on the estimated coefficient of producers with share of income between 26 and 50 percent.

Upon examining the results of the remaining variables pertaining to farm characteristics, no conclusive effects can be determined, as those variables are not significant. Opinion on free trade seems to have more to do with the personal characteristics of the farmer, namely age and education, than with the characteristics of the farm. The lack of data on how current commodities benefit from different trade

systems could be the reason why farm characteristics do not lend any conclusive results in the model.

Table 5: Ordered Logistic Model Results

Variables	Estimated Coefficients	T-statistics
age5564	0.687*	1.63
age65over	0.66*	1.59
sales1049	0.591	1.27
sales5099	0.739	1.21
salehi	-0.148	-0.23
inc2650	-1.112	-1.92
inc5175	0.443	0.61
inc76100	0.335	0.58
educcoll	0.38**	0.8
educba	1.14**	2.47
educma	0.952	1.96
ten76100	-0.085	-0.21

* denotes significance at 10% level

** denotes significance at 5% level

In addition to using the ordered logit model, I also looked at the percentage of farmers who supported free trade conditional on sample characteristics such as the independent variables mentioned above. There were 74 total producer responses in favor of the United States' continued pursuit of free trade agreements as indicated by the responses "strongly agree" and "agree." Table 8 shows that of the 15 farmers under the age of 45, three, or 20 percent, supported free trade, while the older age categories of 45-54, 55-64, and 65 and over have greater frequencies. This indicates that of the farmers who responded, a greater frequency of older farmers supported free trade than younger farmers. As far as the sales category goes, we can see that a majority of the responses

came from the sales of $10,000 and under category. With almost 50 percent of those responses also in favor of trade, one can deduce that most farmers with low sales below $10,000 also supported trade. The higher sales categories from sales of $50,000 to sales of $1 million and over were collapsed to form one category since the categories did not produce enough responses individually.

The income categories were also collapsed in order to produce meaningful frequencies. Most of the producer responses, 91/141, laid in the income category of none-25 percent derived from share of farming, and 51.6 percent of those responses also favored trade. Similarly, of the remaining responses in the income category of 26 percent-100 percent, 54 percent favored trade. This indicates that income did not play a significant role in whether producers support trade. As far as education goes, most producer responses laid in the bachelors and masters degree categories. This indicates that of the producers who obtained either or both of those degrees, greater than the majority of responses also showed support for trade. Finally, the most producer responses in terms of tenure laid in the category of 76 percent-100 percent land owned. Of the 112 producer responses in that category, 60 percent also indicated support for trade. This shows that producers who own more land also support trade. Examining the correlation between the dependent variable and the various independent variables has allowed us to understand which farmers agree with free trade based on their age group, educational and social backgrounds.

Table 6: Frequency Counts of Dependent and Independent Variable Responses

Under the age of 45	15	3	3/15	20%
Age 45-54	37	23	23/37	62.2%
Age 55-64	38	23	23/38	60.5%
Age 65-over	51	28	28/51	54.9%
Sales 10-under	67	32	32/67	47.8%
Sales 10-49	34	20	20/34	58.8%
Sales 50-over 1 million	40	21	21/40	52.5%
Income none-25	91	47	47/91	51.6%
Income 26-100	50	27	27/50	54%
Education grade-hs/diploma	36	17	17/36	47.2%
Education college	28	13	13/28	46.4%
Education BA	42	26	26/42	61.9%
Education MA	35	20	20/35	57.1%
Tenure none-75	29	14	14/29	48.3%
Tenure 76-100	112	60	60/112	53.6%
Farmers in agreement with trade	74/141	52.5%		

Chapter 7

DISCUSSION

The discussion regarding free trade agreements has caused much debate over the past several decades. There exists tremendous literature on the benefits of changes in trade policy, while there also exists literature on the disadvantages. My goal, in this paper, was to understand producer preferences regarding whether the United States should continue to pursue free trade agreements. Using the dataset of 136 total observations, I found that most farmers supported free trade, as determined by age and education. The idea that older farmers, namely those age 55 and above, supported free trade policy, fails to support Hypothesis 3. The contradictory results may indicate that farmers in New Jersey are not as protectionist as farmers in other states or as previously believed. This research also shows that farmers/ranch operators with higher levels of education, namely Bachelors or Masters degrees, support free trade agreements, corresponding with Hypothesis 1. The reason for this may be that people with higher education are more informed about trade policies and the effects of changes in trade policy, for example the creation of trade barriers and import quotas, through educational courses.

This research has the potential to be continued in the future, as studies on policy preference surveys have already been done in the past, namely Tavernier's study of the National Agricultural, Food, and Public Policy Preference Survey conducted in 2001 (2006). This particular survey will most likely be continued over the next several years in order to better understand producer preferences regarding trade policies and other issues. Perhaps other independent variables can be surveyed in order to understand which other

factors influence producer decisions regarding whether the United States should continue to pursue free trade agreements. Such variables may include the effects of past changes in trade policy. If we can understand those effects, perhaps we can utilize that knowledge to understand the effects of future changes in trade policy.

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