

Political Market Impacts on Mexican Import Permits for White Corn

by

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Introduction

Trade relations between the United States (U.S.) and Mexico are becoming increasingly important ever since January 1, 1994 when Mexico, Canada, and the U.S. entered into the North American Free Trade Agreement (NAFTA). In the agriculture sector, Mexico is a net importer of agricultural products and imports most of its corn and sorghum solely from the US. For example, Mexico imported 195,056 metric tons of white corn from the U.S. in 1995. By 1999, it imported 1,072,896 metric tons of white corn from the U.S., an increase of 450 percent. In the case of white corn, trade barriers exist that add a measure of uncertainty to the transaction between exporter and importer. Trade uncertainty reduces trade volume and prices in the origin market and increases the prices in the destination market (Gallagher 1998).

With the advent of NAFTA, tariffs on many agricultural products were lowered or are in the process of being lowered. U.S. and Canadian corn has restricted access into the Mexican market until 2009, with Mexico having to allow an increasing amount of corn into the country every two years from ratification (Josling 1997). Mexico implements a duty-free quota for U.S. corn. This quota is divided among the various importers in Mexico with “cupos”, which are import license permits. U.S. exports to Mexico in excess of this quota are assessed a tariff that in 1998 was \$135 per metric ton. The tariffs are to be phased out by 2009.

The objective of this study is to identify factors that determine the likelihood of issuing licensing permits for white corn and the quantity allocated through import permits. To accomplish this objective the probability that an import permit will be issued is estimated using a tobit model. The tobit model is estimated using monthly data from

1994 to 2000. This is used to determine the probability that a white corn import permit will be issued and its affect on the quantity allocated.

Import permits are generally allocated to four main industries: starch, corn flour, tortilla, and livestock. Import permits are also issued to the state food distribution agency, CONASUPO. These groups are generally in favor of import permits being issued and lobby the government to allocate import permits to their respective industries.

On the other hand, corn and sorghum producers and peasant associations have in general been opposed to the issuance of import permits. They believe that to allow corn to be imported tariff free undermines the prices they would receive for their domestic crop. Another group that is opposed to tariff free corn imports is sugar producers and manufacturers. This group states that manufacturers of high corn fructose syrup have an advantage because they import corn at a lower cost and then invade their market.

It is the purpose of this paper to determine if pressure from these groups affects the allocation of import permits and the probability that import permits will be issued. In this fashion it will be possible to truly determine if the allocation of import permits is a political process and a barrier to free trade. The following section is a brief history of agricultural trade policy in Mexico. The literature review then covers some public choice and uncertainty analysis work that directly relates to this paper. The conceptual model, data, and empirical model follow and the results and conclusions finish the paper.

Agricultural Trade Policy

The Mexican Economy and agricultural sector have gone through many reforms in the twentieth century. It has suffered through revolution, earthquakes, and several

currency devaluations. The instability of the economy due a lack of political stability and protectionist programs had a profound effect on Mexico's agricultural sector.

Import licenses were required under the import substitution policy instituted by the Mexican government after World War II. This protectionist policy controlled foreign exchange with a system of multiple exchange rates and trade tariffs that averaged 27 percent with a maximum of 100 percent. Mexican agricultural and national programs were designed to protect low-income producers, ensure food security, and protect urban wage earners (Mielke 1989; Garcia 1996).

These programs influenced agricultural production and trade through domestic prices (guaranteed minimum farm prices, trade volume controls, and exchange rate manipulation) and subsidization of production (input subsidies, preferential interest rates on agricultural credit, subsidized crop insurance premiums, and irrigation subsidies) (Mielke 1989). Price controls and subsidies affected food, feed, and fiber consumption. Agricultural markets were regulated by a state-owned enterprise (SOE) called CONASUPO the national commodity marketing board and food distributor, which bought basic crops (such as corn and dry beans) and foodstuffs for cheap distribution through a network of its own stores (Garcia 1990). CONASUPO consisted of 18,000 retail stores, 32 manufacturing and food processing operations, and accounted for 70 percent of the food storage facilities (Belejack 1990; Shwedel 1991). Other SOEs, engaged in the production and/or the distribution of agricultural products were INMECAFE (coffee), TABAMEX (tobacco), FERTIMEX (fertilizer), PRONASE (seed), and AZUCAR (sugar) (Garcia 1996; Mielke 1989).

Agricultural trade was and is still controlled by licensing requirements, import tariffs, and export subsidies. Agricultural imports were affected through the private

sector and CONASUPO, which imported for its own account and resold some commodities to the private sector. By the end of 1988, Mexico was in its final stages of trade liberalization ushered in by its formal GATT membership in 1986. Licenses were required on 27 percent of imported items, the average tariff was 19 percent, and the maximum tariff was lowered to 40 percent. By the time formal NAFTA negotiations started, licenses were required on only 12 percent of imported items, average tariffs were 10 percent and the maximum tariff was 20 percent (USITC 1990). Trade reforms had a limited effect on agriculture, since 80 percent of Mexico's agricultural imports still required an import license. Volume controls were still in effect for major imported grains, oilseeds, and dairy products (Mielke 1989).

Faced with a declining agricultural sector the Salinas Administration in early 1991 unveiled a four-year agricultural modernization plan called the National Program for the Modernization of the Countryside (PROCAMPO). Part of the program and a component of the debt-restructuring agreements involved selling off all or parts of the state-owned enterprises (SOEs). The sell of parts of the food processing division of CONASUPO in 1990 actually began the process of privatization.

Agricultural reform has been difficult due to the existence of two distinct farming systems: traditional agriculture (subsistence production of edible corn and dry beans by peasant farmers) and commercial agriculture (exportable tropical products, fruits, vegetables, and livestock products). The government has prevented the market of staple grains such as corn from operating independently by keeping a not so invisible hand in the market. It is an intermediary between producers and millers and also buys basic commodities for its own account since it owns 70 percent of the country's storage capacity (although millers must only pay for the grain and not the storage) (Garcia 1990).

Mexico is a net importer of agricultural products and imports most of its corn solely from the U.S. (Reynolds 1984). Reynolds states that trade relations between the U.S. and Mexico are ones of increasing interdependence and importance. This interdependence increased when Mexico, Canada, and the United States entered into the North American Free Trade Agreement (NAFTA) on January 1, 1994. Josling (1997) states that free trade is the absence of deliberate tariff barriers, non-tariff barriers such as quotas, and any discriminatory policy against imported goods. He goes on to state that governments are unlikely to allow such an ideal situation to arise.

“Nevertheless, NAFTA has had an impact on grain marketing in Mexico. For example, prior to NAFTA, millers were required to buy grain from the government without regard for the quality or variety of grain. In 1993, millers purchased 90 percent of their corn from the government’s marketing agency. In 1994, however, with the inception of NAFTA, the quality problem with government owned grain encouraged millers to purchase private grain, which was competitively priced (prior to the devaluation)” (Garcia 1990).

With NAFTA, tariffs on many agricultural products were lowered. Although corn will have restricted access into the Mexican market until 2009, with Mexico having to allow an increasing amount of corn into the country every two years from ratification (Josling 1997). The Mexican government controls agricultural imports through licensing requirements, tariffs, and export duties (Smith 1984; Mielke 1984). The overall controls are determined by a committee within the Secretariat of Commerce and Industrial Development (SECOFI) and none are issued until the domestic crop has been purchased (Mielke 1989). The Mexican government’s aim of using import licenses is to avoid displacing domestic production. One of the main problems of this licensing policy and

the basis of this study is that the terms of the import license are subject to change without notice, thereby adding uncertainty to the trade flow of white corn between the U.S. and Mexico.

Despite the economic cost, the political price of an open border policy in corn would be excessive because of its central role as a subsistence crop for most of Mexico's peasants. Although, ending government intervention in the market would affect all consumers it would disproportionately affect the poor. According to Garcia (1990) tortillas and flour may be subsidized by as much as 40 percent. Small tortilla shops sell to low-income consumers and supply 60 percent of the market while industrial tortilla producers sell to high-income consumers in urban areas.

Several groups have been on opposing sides for the liberalization of the corn market. Since the ratification of NAFTA in 1994, these groups can be placed into two general categories, those opposing the issuance of import permits because of fear that corn imports will damage domestic producers and those for the issuance of import permits because of a need for low cost inputs of consistent quality. The different groups that have been historically for and against import permits can be characterized as three distinct groups: (1) producer groups and peasant associations, (2) industrial processors, and (3) sugar manufacturers.

Beginning with producer groups, they have historically been against the issuance of import permits as they regard lower priced U.S. corn as a rival in their market. It has been shown that completely liberalizing a commodity market does have a detrimental affect on Mexican producers. For example, Bivings (1997) showed that the liberalization of the sorghum market in Mexico hurt Mexican producers who could not compete with U.S. sorghum imports. The Mexican government did not re-instate import permits in this

case but did put in place seasonal tariffs on imports, domestic price controls, and a storage subsidy scheme (Bivings 1997). Therefore, producers are very wary of U.S. imports. However, Mexico as stated previously is a net importer of corn so the government has no choice but to allow imports (especially after it became a member of NAFTA). In its effort to appease the producers the government has tried to institute a policy of not issuing permits during the domestic harvest in an attempt to avoid displacing domestic production and keeping prices high.

This, however, has not always worked as producers have continuously protested the issuance of import permits and the distribution of those permits. Producer groups led by the Consejo Agrario Permanente (CAP), have lobbied for the inclusion of producers in the decision making process for when, how, and how many import permits will be issued. They have continually protested that SECOFI and the Cupo (import permit) Committee have always consulted with industrial groups but leave producers out of the process. The import permit committee is made up of SECOFI officials, industry representatives, and CONASUPO.

The group more consistently consulted about import permits has been the industrial users of corn. This group includes the livestock industry, the industrial producers of tortillas, the corn flour industry, and the starch industry. These groups have historically lobbied for import permits to be issued in a consistent manner. Of the four industrial groups mentioned the starch industry is the group that always gets their import permits issued. The starch industry includes large companies such as Almidones Mexicanos (ALMEX) that have ties to companies in the U.S such as Archer Daniels Midland Company (ADM) and A.E. Staley Manufacturing Company. The starch industry is the only industry to be issued import permits consistently, quarter after

quarter. This may be because it usually imports yellow corn and is not a direct competitor in the white corn market. Another heavy hitter in this group is Gruma, which has a 70% share of the corn flour market in Mexico. Gruma is also a 22% owner of ADM.

The third group that has historically expressed an interest in corn import permits is the sugar group. This group consists of manufactures of high fructose corn syrup (HFCS) in Mexico, which normally lobby for corn import permits and sugar manufacturers in Mexico that normally lobby against import permits. Sugar manufactures in Mexico have claimed that the NAFTA negotiations worked against them since the U.S. restricts sugar imports and although sugar imports will increase they do so only if the Mexican demand for sugar increases (including demand for HFCS) but Mexico has an obligation to increase its corn imports significantly. They claim that not only is their export market restricted but also a low cost competitor has entered their market (Mena 1997). Devadoss, Kropf, and Wahl (1995) concur that the establishment of a corn sweetener market and the substitution of HFCS for sugar in Mexico will decrease Mexican sugar consumption. Like the industrial manufacturers of corn tortillas, the manufacturers of corn sweetener and HFCS lobby for the issuance of import permits. They claim that in order to compete in the market they must be allowed to import high quality low-cost inputs that include corn.

Literature Review: Public Choice and Uncertainty Analysis

Public Choice

According to Krugman (1995) political factors have played a dominant role in the growth of world trade since in end of World War II. Rausser and Freebairn (1974) also

stated that public decision makers must choose between alternative policies that influence different sectors of society in various ways and which have different welfare effects on society. However, given that voters do not as a rule make international trade policy especially between election cycles, government officials are susceptible to pressure groups. Before Olsen's (1965) article, the role of interest groups were thought of as an informative one, that is, that interest groups informed politicians on issues that were important to the electorate but would not have otherwise gained any attention until the politicians came up for elections. However, since interest groups do not have the same access to politicians, the role is no longer that of informant but of pressure group. Since the interest group with the most access will have their interests met.

Rowley (2001) gives two conditions that make collective action feasible when associated with effective leadership that apply to the interest groups in this paper (1) the group must be small and homogeneous and (2) the group must be able to force the supply of pressure by any means. These two conditions apply to both the producer associations and the industrial groups that are pro and anti the liberalization of corn.

Since free trade is thought to be efficient, any barriers to free trade have to be attributed to the political process. Grossman and Helpman (1994) conclude that industries with higher import demand or export supply elasticities will have smaller deviations from free trade and that protection will reflect the political strength of the interest groups involved in a particular issue. In their 1995 article, Grossman and Helpman added that politically motivated governments tilt negotiations in trade talks with other governments toward their most organized interest groups. This can be seen clearly in the NAFTA negotiations between the U.S. and Mexico concerning the sugar and corn policies. Tariff rates will reflect the strength of both the domestic and foreign interest

groups. Protection will be particularly high when the domestic interest group is strong and the foreign interest group is weak, in relative strength in each country.

Expanding further on political factors, interest groups influence ATBs in several ways. For corn, lobbying producer groups are in direct conflict with lobbying importer groups. Grossman and Helpman (1994) showed that competing lobbies prefer to tie the hands of the government through inefficient protection policies such as import quotas. Including the size and number of corn producer associations and importers is a way to quantify the relative strength of their lobbying power with the Mexican government. Another potentially important determinant is the makeup of the oversight committee issuing the permits. Finally, recognizing changes in government regimes may also be an important part of the political process that governs import permits.

Uncertainty Analysis

Trade uncertainty exists when access to the import market is not assured and obscures marketing firm behavior and margins for internationally traded agricultural commodities (Gallagher 1998). There have been several analyses that study the role of uncertainty in agricultural marketing (McCalla 1967; Krugman 1987; Pick 1990; Miljkovic 1999). Hennessy (1995) found that quality and volume controls are often used to ensure orderly marketing in markets with inelastic demand and unpredictable supply.

Gallagher (1998) considered marketing margins and trade determination in the presence of trade uncertainty. Although Gallagher states many causes that may distort price alignment the main concern of the study is what he terms administrative trade barriers (ABTs). ABTs are classified as licenses, health restrictions, exchange rate risk, and import classifications, or any import procedure that appears or disappears when market conditions change.

The corn import license is the administrative trade barrier that will be studied in this paper as it is issued as market conditions change. Gallagher (1998) finds that the equilibrium and structure of trade in the market changes when there is uncertainty about the success of the transaction. He finds that the margin decreases when the probability that the transaction will be success is high.

Gallagher concludes that trade uncertainty reduces trade volume, reduces prices in the origin market, and increases prices in the destination market, thereby reducing total welfare. Trade uncertainty, which is the chance that a commodity transaction will not be successful, is a trade barrier (Gallagher 1998).

There have been few models that have empirically tested the effect of trade uncertainty on agricultural trade. Many models such as the one by Gallagher (1998) are theoretical in nature. Goodwin, Grennes, and Wohlgenant (1990) incorporated expectations into an empirical investigation of the law of one price directly applicable to international agricultural commodity markets. They contend that international commodity arbitrage and trade occur over time as well as across spatially separated markets. They conclude that firms face price uncertainty due to delivery lags and when these lags are considered, expected future prices must be included in the analysis.

Miljkovic (1999) established that the law of one price in international trade might not hold when there is trade uncertainty due to: (a) pricing-to-market; (b) exchange rate risk, choice of currency denomination of export prices, and price responses to the exchange rate changes; and (c) effects of geographical separation of markets, including transportation costs, trade regionalization, and other institutional factors, tariffs, and non-tariff barriers. Pricing-to-market (Krugman 1987) occurs when exporters price

discriminate across destination markets and export prices depend on bilateral exchange rates.

A model that incorporates exchange rate risk, a form of trade uncertainty, was formulated and estimated by Pick (1990). He analyzes the effects of exchange rate risk on U.S. agricultural exports to ten different countries including Mexico. Pick assumes that the demand for imports is a derived demand, where the imports are used in the domestic production of the final goods. This assumption is appropriate for white corn since it is an intermediate good used in the production of masa (flour) for tortillas. The results showed that exchange rate risk adversely affected U.S. agricultural exports to Mexico.

Conceptual Model

Mexico produces mainly white corn for human consumption and yellow corn and sorghum for feed. Production and storage inefficiencies however, make Mexico a net importer of these commodities. No model for white corn could exclude either yellow corn or sorghum. White corn is traded at a premium to yellow corn and sorghum is traded at a discount to yellow corn. White corn can be substituted for yellow corn for feed if the price is right (i.e., white corn in 2000 had a premium that was almost zero in relation to yellow corn due to overproduction). Also, white corn and yellow corn are interrelated as the same import permit is issued for both commodities. Sorghum as a substitute for yellow corn is also correlated with the white corn. No import permit is needed for sorghum thereby making it a substitute for yellow corn when import permits have not been issued or are not available to certain industries. Also, at a certain price

ratio, sorghum will automatically be substituted for yellow corn, as the protein in corn will no longer make up for the price difference between the two commodities.

The Mexican government's aim of using import permits is to avoid displacing domestic production (Interviews; Mielke 1989; Garcia 1990). Therefore, the issuance of import permits is a highly political and uncertain process. The Secretariat of Commerce and Industrial Development (SECOFI) issues the import license permits through a Tariff Commission (import permit committee). Import permits are not issued until the domestic crop has been purchased (Mielke 1989), which is reflected in equation (1) for white corn. The likelihood of a market transaction a probability function is specified as

$$(1) \quad \rho_w = f_{\rho}(M, L, Z_{\rho})$$

where M are macroeconomic variables, L represents political factors, and Z_r are production variables. For example, macroeconomic variables could be exchange rates or total imports to proxy macroeconomic conditions. Political factors could include information related to size and number of interest groups or trade agreements that involve the U.S. or Mexico (Grossman and Helpman 1994). Important production variables are domestic production and seasonal aspects of production.

Marginal Effects

In order to give an intuitive feel for how these socio-political aspects can affect the probability of import permits being issued and how this in turn affects price some marginal effects are shown in the following equations. Equation (3) shows how an increase in production will decrease the probability of import permits being issued.

$$(2) \quad \frac{\partial r}{\partial \text{Production}} \leq 0$$

As production in Mexico increases the import demand for corn will decrease, thereby decreasing the probability that import permits will be issued.

$$(3) \quad \frac{\partial r}{\partial \text{Producer Associations}} \leq 0$$

As pressure from producer associations in Mexico increases the probability that import permits will be issued decreases. Some of the pressure tactics that producers have used in the past have included blocking U.S. trains at the border in Nuevo Laredo (Laredo, TX) and Ciudad Juarez (EL Paso, TX). This tactic of blocking trains and causing already heavy traffic areas to come to a stop has worked several times in getting the attention of SECOFI and the Import Permit Committee and getting them to grant producers access to the process of issuing import permits (Quintero 1999).

In contrast, Mexican importers lobby to get import permits issued at times when they think they will need them the most. Historically, importers have had more of an influence year round on SECOFI since they were normally consulted when plans for import permits were being made. Following this line of thought I would expect that as pressure from importers mounts the probability of import permits being issued increases and is shown in equation (4).

$$(4) \quad \frac{\partial r}{\partial \text{Corn Importers}} \geq 0$$

Data and Empirical Model

Data were collected from various sources. The quantity of white corn, yellow corn, and sorghum inspected for export to Mexico per month from 1994 to 2000 was obtained from United States Department of Agriculture (USDA) Federal Grain Inspection Service (FGIS). Total U.S. exports to Mexico, which include agricultural and

nonagricultural goods, were obtained from the U.S. Department of Commerce. Mexican corn and sorghum production in metric tons was obtained from the Food and Agricultural Organization (FAO) of the United Nations. Import permit allocations by industry were obtained from the Foreign Agricultural Service (FAS) of the USDA from 1994 to 2000. The five industries to which corn import permits are allocated are the livestock industry, starch industry, the corn flour industry, the tortilla industry, and CONASUPO.

All grain exported outside of the U.S. must be inspected by the Grain Inspection Service of the USDA. Therefore, if no inspections of white corn took place in a certain month then no white corn was exported during that month. It is assumed that after inspection white corn is not stored for export in another month. The export variables should also capture other reasons why exports would not occur such as currency devaluations.

Mexico has two harvest seasons for corn. The first harvest is in May through July (spring) and the second harvest season is October through December (fall). Production quantity was divided between these two seasons while also adding an extra month to each season. For example, the spring season had the greatest quantity concentration in June and July and May and August would have some production divided between them. In other words, if production for spring of 1994 was 30,000 metric tons, June and July would each have 10,000 metric tons and May and August would each have 5,000 metric tons. As the production in Mexico increases I would expect that the probability of having a successful transaction would decrease since import permits are issued after domestic production is exhausted. Negative articles in the media are a proxy for producer pressure to halt imports. Most of the negative articles were referencing corn and

sorghum producers pressuring the government to halt imports. The rest of the negative articles dealt with sugar producers unhappy with corn imports.

The probability that import permits are allocated is estimated using a tobit model. Equation (5) states that the factors that affect the probability that a white corn import permit will be issued and in turn the quantity of permit issued.

$$(5) \quad \begin{aligned} permit &= f(W_i \mathbf{b}) \\ &= f(\mathbf{b}_0 + \mathbf{b}_1 W_{i1} + \mathbf{b}_2 W_{i2} + \mathbf{b}_3 W_{i3} + \mathbf{b}_4 W_{i4} + \mathbf{b}_5 W_{i5} + \mathbf{b}_6 W_{i6} + \mathbf{b}_7 W_{i7} + \mathbf{b}_8 W_{ik8}) \end{aligned}$$

where the variable *permit* denotes the quantity of export inspections per month of white corn. The variable W_1 is a quadratic time trend, W_2 is yellow corn inspected in metric tons, W_3 sorghum inspected in metric tons, W_4 is total exports to Mexico (agricultural and non-agricultural products), W_5 is Mexican production of corn in metric tons, W_6 is Mexican production of sorghum in metric tons, W_7 is producer pressure to stop imports, and β are parameters to be estimated. The variable W_{ik8} is a binary variable which denotes whether or not import permits have been allocated to the five corn importing industries.

Yellow corn and sorghum inspection are expected to have a positive impact on the allocation of white corn import permits. Total exports are also expected to have a positive impact on the allocation of white corn import permits. These three variables can not only proxy for macroeconomic variables such as exchange rate but if yellow corn and sorghum exports are occurring then one would expect that white corn imports would have a higher probability of occurring.

Domestic production of corn and sorghum are expected to have negative impacts on the allocation white corn import permits. As shown in the marginal effects as production increases the demand for imports will decrease thereby decreasing the

probability that import permits will be issued. Producer pressure is also expected to have a negative affect on the issuance of import permits. One would tend to think that as producer pressure increases the government cuts back on the allocation of import permits. The only expected affects regarding industry pressure is that the corn flour and tortilla industries would have a positive affect on white permit allocations, as would CONASUPO. The starch and livestock industries would only import yellow corn so their influence on white corn import permit allocations is uncertain.

Results

The summary statistics for the variables used in the tobit model to determine the probability of white corn import permits issued are shown in Table 1. The results of the tobit model for white corn import permit allocations are shown in table 2 and the marginal effects are shown in Table 3. Neither the linear nor quadratic time trends are statistically significant. On the whole however the time trends indicate that as you go from January to December the import permit allocations increase.

The results indicate that as expected export inspections of yellow corn and sorghum have a positive impact on the probability that a white corn import permit will be issued. These variables are also statistically significant at the one percent level. This would indicate that concurring export of sorghum and yellow corn increase the probability that white corn import permits will be issued and increase the allocation quantity. Total exports also have a positive impact on import permit allocation but it is not statistically significant.

Domestic production of corn and sorghum both have negative impacts on the probability that import permits will be issued. Although, sorghum production is

statistically significant at the one percent level and corn production is not statistically significant. Producer pressure and pressure from the corn flour and livestock industries are not statistically significant. Pressure from the tortilla industry is statistically significant at the five percent level and positive as expected. CONASUPO is also positive as expected and statistically significant at the one percent level. In other words, both CONASUPO and the tortilla industry have positive affect on the probability that white corn import permits will be issued. Pressure from these two groups will increase the amount of import permit issued. The marginal effects indicate that pressure from the tortilla industry will increase import permit allocations by 17,459 metric tons and pressure from CONASUPO will increase import permit allocations by 30,719 metric tons.

On the other hand, the starch industry has a negative affect the probability that import permits will be issued and is statistically significant at the five percent level. Therefore, as pressure from the starch industry increases (this industry imports yellow corn only) the probability that white corn import permits will be issued decreases. Also the effect of the starch industry is that the amount of import permit issued will decrease. In other words, pressure from the starch industry could decrease white corn import permit allocations by 27,135 metric tons. It is interesting to see that CONASUPO when it applies pressure has a greater impact on import allocations than any other factor. This makes sense since CONASUPO is the governmental agency and it can cut back its imports at a moments notice.

Conclusion

Agricultural trade policy in Mexico has changed from import substitution to trade liberalization. Within its trade liberalization policy it has sold almost all of its state owned enterprises, yet the Mexican government keeps a tight control over its basic grains such as corn. An open trade policy for corn would have great political implications since it is a subsistence crop for most of Mexico's peasant population. The Mexican government would have to liberalize the tortilla market if it were to liberalize the corn market and that would have serious repercussions for all consumers and especially the poor.

With the advent of NAFTA, Mexico is under the obligation to import corn from the U.S. at an ever increasing quantity under a tariff rate quota that stays in place until 2009. However, in order to avoid displacing domestic production Mexico distributes this quota through import permits allocated to five main industries. These industries are the starch industry, the tortilla industry, the livestock industry, the corn flour industry, and the Mexican national buying agency, CONASUPO.

This paper tries to determine the factors that affect the probability that a white corn import permits will be issued. The factors included in the model are export inspections, total exports, domestic production, producer pressure to stop imports of grains into Mexico, and industry pressure to have import permits issued. We find that the following variables are statistically significant: export inspections of yellow corn and sorghum, production of sorghum in Mexico, pressure from the tortilla and starch industries, and pressure from CONASUPO. The variables that negatively impact the probability that import permits will be issued are the production of sorghum in Mexico and pressure from the starch industry.

From the results we can determine that political pressure and production do have an impact on the probability that a white corn import permit will be issued. We also determine that depending on the industry the impact can be positive or negative. Therefore, it is not only enough to know that all importers will in general want to have import permits issued, but also know which industry is lobbying for the import permits. As the results show the starch industry which imports only yellow corn could actually be countermining the tortilla industry that imports white corn in regards to whether yellow corn or white corn import permits will be issued.

The underlying theme for the authors is the fact that institutional aspects can and do affect private markets. This is our attempt to begin linking private markets with political markets. Understanding the uncertainty that comes through the political market and help to diminish the risk associated with it in the private market.

Table 1: Summary Statistics For White Corn Tobit Model

Variable	Mean	Standard Deviation
White corn insp.	47217.099	51839
Yellow corn insp.	264894.09	167060
Sorghum insp.	169989.97	102400
Total exports	5980.3119	1862
Mexican corn production	1516094.8	1245600
Mexican sorghum production	457494.82	88947
Producer pressure	1.583	1.6635
Corn flour industry	0.654	0.4783
Tortilla industry	0.440	0.4994
Starch industry	0.750	0.4356
Livestock industry	0.595	0.4938
CONASUPO	0.357	0.4820

Table 2: White Corn Estimates for Tobit Model

Variable	Coefficient	Standard Error	P[Z >z]
Linear time trend	1998.7836	1491.8607	0.1803
Quadratic time trend	-15.9763	16.6963	0.3386
Yellow corn insp.	0.1316**	0.0298	0.0000
Sorghum insp.	0.2035**	0.0596	0.006
Total exports	6.1749	6.7618	0.3611
Mexican corn production	-0.0006	0.0039	0.8726
Mexican sorghum production	-0.2763**	0.0980	0.0048
Producer pressure	827.8269	2339.4353	0.7234
Corn flour industry	11545.3559	15104.670	0.4447
Tortilla industry	20038.9243*	10809.361	0.0638
Starch industry	-31145.6581*	14447.335	0.0311
Livestock industry	15302.2561	12293.066	0.2132
CONASUPO	35259.9438**	11076.878	0.0015

** Denotes statistical significance at the 1% level

* Denotes statistical significance at the 5% level

Table 3: Marginal Effects For White Corn Import Permits

Variable	Coefficient	P[Z >z]
Linear time trend	1741.3893	0.1824
Quadratic time trend	-13.9189	0.3409
Yellow corn insp.	0.1147**	0.0000
Sorghum insp.	0.1773**	0.0006
Total exports	5.3797	0.3640
Mexican corn production	-0.0005	0.8726
Mexican sorghum production	-0.2407**	0.0051
Producer pressure	721.2232	0.7234
Corn flour industry	10058.5977	0.4434
Tortilla industry	17458.4031*	0.0648
Starch industry	-27134.8624*	0.0315
Livestock industry	13331.7014	0.2132
CONASUPO	30719.3292**	0.0016

** Denotes statistical significance at the 1% level

* Denotes statistical significance at the 5% level

References

- Belejack, B. "Chipping Away at Government Ownership." *Business Mexico*. 7(3), (March 1990): 23-33.
- Binkley, James K. "Marketing Costs and Instability in the International Grain Trade." *American Journal of Agricultural Economics*. 65 (February 1983): 57-64.
- Devadoss, Stephen, Jurgen Kropf, and Thomas Wahl. "Trade Creation and Diversion Effects of the North American Free Trade Agreement of U.S. Sugar Imports from Mexico." *Journal of Agricultural and Resource Economics*. 20(2) (December 1995): 215-230.
- Economic Research Service, U.S. Department of Agriculture. *Agricultural Outlook*. December 1996. Available from <http://www.ers.usda.gov/publications/agoutlook/dec1996>.
- Foreign Agricultural Service (FAS), *NAFTA Agricultural Fact Sheet: Corn*, available from the internet at <http://www.fas.usda.gov/itp/policy/nafta/corn.html>.
- Gallagher, Paul. "International Marketing Margins for Agricultural Products: Effect of Some Nontariff Trade Barriers." *American Journal of Agricultural Economics* 80 (May 1998): 322-336.
- Gamero, Laura, Alba. "Políticas de Secofi perjudican a productores rurales: CAP." *Cronica*. October 26, 1996.
- Garcia, Roberto J. "Structural Changes in Mexico: Implications for the Agricultural Sector." *Journal of International Food & Agribusiness Marketing*, Vol. 8(1) 1996: 55-73.
- Goodwin, Barry K., Thomas J. Grennes, and Michael K. Wohlgenant. "A Revised Test of the Law of One Price Using Rational Price Expectations." *American Journal of Agricultural Economics* 72 (August 1990): 682-693.
- Goodwin, Barry K. and Gary W. Brester. "Structural Changes in Factor Demand Relationships in the U.S. Food and Kindred Products Industry." *American Journal of Agricultural Economics* 77 (February 1995): 69-79.
- Grossman, Gene and Elhanan Helpman. "Protection For Sale." *American Economic Review* 84 (September 1994): 833-850.
- Gujarati, Damodar N. *Basic Econometrics*. 3d ed., (Singapore: McGraw-Hill, Inc., 1995), 554-567.
- Hennessy, David A. "Microeconomics of Agricultural Grading: Impact On the Marketing Channel." *American Journal of Agricultural Economics* 77 (November 1995): 980-989.
- Interviews. Interviewed several Mexican importers and U.S. exporters October 2000.
- Josling, Tim. *Implications of Regional Trade Arrangements for Agricultural Trade*. FAO Economic and Social Development Paper. Food and Agricultural Organization of the United Nations. Rome: 1997.
- Kmenta, Jan. *Elements of Econometrics*. 2d ed. (Ann Arbor: University of Michigan and Macmillan Publishing, 1997) 681-687.
- Krugman, P.R. "Pricing to Market when the Exchange Rate Changes." *Real Finance Linkages Among Open Economies*. S.W. Arndt and J.D. Richardson, eds., pp:49-70. Cambridge, MA: MIT Press, 1987.
- _____. "Growing World Trade: Causes and Consequences." *Brookings Papers on Economic Activity*. (1) 1995: 327-377.

- McCalla, Alex F. "Pricing in the World Feed Grain Market." *Agricultural Economics Research* 19 No. 4 (October 1967): 93-102.
- Mena, Yadira, "Subsidia el gobierno mexicano a empresas productoras maiz" *El Economista*, September 25, 1997.
- Mielke, Myles J. "Dimensions of U.S.-Mexico Agricultural Interdependence." *Consortium on Trade Research: Debt, Trade, and Payments Issues of Developing Countries and U.S.-Mexican Economic Interdependence*. Charles E. Hanrahan and Maury E. Bredehl, eds., International Economics Division, ERS, USDA. Report No. AGES840607. July 1984.
- Mielke, Myles J. "Government Intervention in the Mexican Crop Sector." Agriculture and Trade Analysis Division, ERS, USDA, Staff Report No. AGES89-40. September 1989.
- Miljkovic, Dragan. "The Law of One Price in International Trade: A Critical Review." *Review of Agricultural Economics* 18, No. 1 (Spring/Summer 1999): 126-139.
- Olson, Mancur. *The Logic of Collective Action: Public Goods and the Theory of Groups*. Cambridge, MA: Harvard University Press.
- Organization for Economic Cooperation and Development (OECD). *Mexico*. Paris: OECD, 1992.
- Organization for Economic Cooperation and Development (OECD). *Mexico*, Paris: OECD 1995.
- Pick, Daniel H. "Exchange Rate Risk and U.S. Agricultural Flows." *American Journal of Agricultural Economics* 72 (August 1990): 694-700.
- Quintero, Alejandro. "Protesta campesina por apertura a productos de EU". *Diario de Chihuahua*. January 29, 1999.
- Rausser, Gordon, C. and J.W. Freebairn. "Estimation of Policy Preference Functions: An Application to U.S. Beef Import Quotas." *The Review of Economics and Statistics*, Volume 56, Issue 4 (November 1974): 437-449.
- Reynolds, Clark W. "The Trade Environment." *Consortium on Trade Research: Debt, Trade, and Payments Issues of Developing Countries and U.S.-Mexican Economic Interdependence*. Charles E. Hanrahan and Maury E. Bredehl, eds., International Economics Division, ERS, USDA. Report No. AGES840607. July 1984.
- Rowley, Charles K. "The international economy in public choice perspective." *The Elgar Companion to Public Choice*. William F. Shughart II, and Laura Razzolini, eds., Edward Elgar, Cheltenham, UK., 2001.
- Salazar, Jose Alberto Garcia. "Los aranceles a las importaciones mundiales de maiz y sus efectos en el Mercado nacional." *Comercio Exterior*. September 2001.
- Servicio Universal de Noticias. "Productores Nacionales Fructosa." Servicio Universal de Noticias, S.A. de C.V. September 25, 1997.
- _____. "Camara Azucarera SECOFI." Servicio Universal de Noticias, S.A. de C.V. September 29, 1997.
- Secretariat of Commerce and Industrial Development (SECOFI). Website located at: <http://www.secofi.gob.mx>
- Shwedel, K. "Will the countryside modernize?" *Business Mexico*, 1(7) (July 1991): 24-26.
- Smith, Richard A. "U.S.-Mexican Agricultural Trade Relations." *Consortium on Trade Research: Debt, Trade, and Payments Issues of Developing Countries and U.S.-Mexican Economic Interdependence*. Charles E. Hanrahan and Maury E.

Bredehl, eds., International Economics Division, ERS, USDA. Report No. AGES840607. July 1984.

United States Department of Agriculture (USDA). Website located at:
<http://www.usda.gov>

United States Trade Commission. Review of trade and investment liberalization measures, Phase I [Monograph]. USITC Publication no. 2275, 1990.

White, k. SHAZAM: *User's Reference Manual Version 8.0*. (New York: McGraw-Hill Book Company, 1997).