Trade Liberalization, Corn Prices and a Rural Community in Guatemala

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TRADE LIBERALIZATION, CORN PRICES AND A RURAL COMMUNITY IN GUATEMALA

by

José Nicolás Cabrera-Schneider

A THESIS

Presented to the Faculty of The Graduate College at the University of Nebraska In Partial Fulfillment of Requirements For the Degree of Master of Arts

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Trade liberalization policies in Guatemala have impacted agricultural production. This thesis focuses on how trade liberalization has happened, what have been the impacts at a national level and describes how a community has adapted to the implementation of these policies. The implementation of trade was influenced by several, international and national institutions. Among the international institutions are the World Bank, the World Trade Organization and the United States Agency for International Development. At the national level the institutions that have partaken in shaping the trade policies are the military and the owners of capital and labor. The implementation of trade policies at a national level has affected national corn prices, population level diets and to some extent reduced poverty levels. At a local level trade liberalization policies have impacted land holdings, increased intensification of agriculture, including agrochemical, machinery and crop plantations per year, and consumption rates of corn have been affected.

Maximization of the benefits and minimization of the detrimental effects can happen with the implementation of policies that promote food security, improve access to health and education, and prevent environmental and human health consequences from the intensification of agriculture and at the same time continue with the production of non-traditional agricultural products.
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CHAPTER 1. Introduction

In recent years (late 1980s) the Guatemalan government has adopted policies with the intention to open the economy by promoting trade with the rest of the world. Among the trade policies implemented were the reduction of the trade barriers, such as, tariffs and quotas that affected the importation of several products like wheat, yellow corn and the exportation of non-traditional agricultural exports (NTAE). This thesis investigates
how these policies have affected a local community in the highlands of Guatemala. To accomplish this task I present three questions. The first question is “Why the trade liberalization of Guatemala happened when it did?” The second question “Is it possible to identify the effects of Guatemalan trade liberalization on poverty, diet and minimum wage at a national level?” Lastly, “What responses were evident in a rural community, heavily dependent on corn, as a result of national policy change regarding corn imports?”

1.1 Globalization

This thesis fits within the broader theoretical construction of globalization as it addresses the question why the promotion of interconnectedness of Guatemala happened when it did. The thesis further analyzes the effects at a national and community level. The concept of globalization has become popular. From 1990 to January 2010, there have been 15,433 publications on the topic of globalization (ISI Web of Knowledge 2010). Guillen (2001) also reports a high number of publications related to globalization using different searching tools. The popularity of the concept of globalization stems from its interdisciplinary utility. The ISI Web of knowledge reports that the 15,433 articles came from 214 subject areas.

Part of the popularity of the concept of globalization is because it is an abundant source of debate. According to Guillen (2001) the debates within the social sciences are centered on five topics: strength in the authority of governments, uniformity in organizational structures, the reality of the interconnections, contrasts with modernity, creation of a global culture. While Velmeyer (2004) shares some debate topics with Guillen he also presents new topics. According to Velmeyer (2004) the debate is focused on the novelty of the globalization phenomenon, the role of technology and information
on productivity, the unavoidability of the globalization process and the role of the Nation-State.

An outcome of the popularity of the concept of globalization has been the production of several definitions. For this work the definition on globalization that I will use is based on Guillen’s 2001 definition that globalization refers to the process of increasing interconnection and interdependence between specific actors (Guillen 2001). Greater description of the theoretical concept of globalization will be provided below.

The study of globalization can take many shapes and forms because of the interconnection of its components. In this thesis, I will focus on trade policies and how they are able to link international markets with local products. I will describe the historical conjuncture present in Guatemala during the implementation of trade policies that lead to the increase exchange of products across it borders. I will also describe the effect of the implementation of these policies from a national point of view and from the perspective of a particular town.

1.2 International Political Economy

International Political Economy (IPE) is a paradigm that studies the connection between International Relations and Political Economy. IPE studies how economic policies are negotiated at local and international levels. The study of how economic policies are being negotiated is useful because every time there is a shift on the economic policies it implies a shift in who is receiving the benefits of the policies. For Guatemala’s trade policies, the beneficiaries can be identified by understanding the policies themselves. This can reveal who was benefiting before and who is benefiting after the implementation of particular policies. An interesting question then becomes why the
transition from a protected economy to a more open economy happened when it did. In other words, why the individuals who were benefiting before the implementation of the policies allowed them to happen and how the individuals benefiting now achieved the implementation of the policies. The theoretical approach of IPE paradigm can be useful to understanding why the trade liberalization happened when it did.

In this thesis I will use two analytical approaches under the IPE paradigm. One is the demand-based or society-centered approach, and the other is the supply-based or state-centered approach. Within the society-centered approach, society’s demands for a trade policy come from two different ways of dividing society. The first way is dividing the population according to the owners of the factors of production i.e., land, labor and capital. The owners of the factors of production will base their demands for economic policy according on the scarcity or abundance of the factor. Owners of a scarce factor will demand protectionism, while owners of an abundant factor will demand a policy that increases trade. The other way to divide society is to divide it by sectors: export-competing or import-competing sectors. The export-competing sectors will promote increased trade and the import-competing sectors will promote a protectionist trade policy. Another component of the demand-based approach is the collective action, which explains that for a large group it is very difficult to organize and present an opposition to the trade policy. The collective action component of demand-based approach is not addressed in this thesis, for more information on the topic read Hardin (1968, 1998), Ostrom (1990), Ostrom et al. (1999), and Sandler (1992). The supply-based approach argues that governments are isolated from external pressures, allowing for protectionism
in cases when it can provide an increase of social welfare. Further development of the concept of IPE will be presented in chapter two.

The two IPE approaches used here deal with trade policies. Trade policies are important because they are the link to the global economic system. Having policies that allow for increase trade promotes the integration of local economies to global markets, in contrast to having protective policies that restrict trade. In Guatemala the transition from a protected economy to an economy that promotes trade came as a result influence from international lending organizations.

1.3 Trade liberalization process

Guatemala, like all the countries in Latin America, went through a period of “Structural Adjustment” during the 1970s and 1980s, promoted by international lending organizations, such as, the International Monetary Fund and the World Bank. The objective of the structural adjustment program was to correct for insolvency issues of countries that acquired debt during a previous program of import substitutions. The general goal of the import substitution program was to promote the internal production of the same items that were being imported into the countries, thus substituting importation with local production.

The debt was acquired by the countries as they received loans from financial institutions established abroad. The loans had attached conditional terms that forced receiving governments to enact changes suggested by the loaning agencies. The debt accumulated as countries used the loans to promote the creation of national business that were going to produce enough to substitute the imports. The objectives of the substitution were to increase jobs, improve the trade balance and reduce the demand for foreign
The implementation of the liberalization policies that have the intention to open the local market to more trade by removing trade barriers (quotas and tariffs) leading to an economy that is more integrated to the world markets started at different points for different countries in Latin America. In the case of Guatemala the trade liberalization started to happen in the later part of the 1980s. Trade liberalization can have many effects on many aspects of society, not only on the products that are promoted, but also can indirectly affect products that are not targeted for exchange in the global market. The trade liberalization for Guatemala was intended to promote production of especially non-traditional agricultural products, such as, broccoli, cabbage, celery, strawberries or miniature vegetables. Furthermore, trade liberalization policies were intended to facilitate the imports of internationally produced products into national markets with the idea to increase economic efficiency. Wheat and yellow corn were among the imported products
that were liberalized. This thesis focuses in particular on the trade liberalization of corn and how this has affected Guatemala’s small landholding corn producers.

One approach for assessing a particular instance of trade liberalization is to compare the local price for a product against the “world” price of the same product at two time periods: before implementation of new economic policies and after. In this work I present an analysis of Guatemala’s corn prices and compare them to the world’s leading exporter of corn, United States. This comparison shows the collapse of the price of corn in Guatemala after the trade barriers for the imports of corn were removed. Additionally, data from the Food and Agriculture Organization of the United Nations website (http://faostat.fao.org/default.aspx) show changes in calorie consumption and changes in diet consumption at a national level. The calorie and diet change data is contrasted with the changes in the area under agricultural production in order to determine if the changes in corn production where related to the changes in the food intake. Analysis of data at a national level gives us broad perspective that is useful for identifying general and nationwide trends. One thing missing from a national level perspective is the detailed identification of how change is expressed at a local level. Also missing is the rationale expressed by local farmers for why they made changes in their past agricultural practices.

In order to better understand the adaptations rural individuals have implemented in response to the trade liberalization policies, an ethnographic approach was necessary. I conducted interviews in a rural town in the highlands of Guatemala. By focusing my interviews especially on farmers and how their farming practices had changed, I was able to get an attitudinal and behavioral rather than economic perspective on consequences of trade liberalization at a small scale of a rural town. The interview findings will be
reported in more detail below. Among the changes found was a greater intensification of production. This included in some cases introducing tractors, applying agrochemicals and relying more on the prices set at national level.

1.4 Corn and Non-Traditional Agricultural Exports

Corn is immensely important to Guatemala’s economy, culture, and world crop biodiversity. Not only is corn a staple grain, but there are also many native cultivars. For instance, 24 cultivars were reported to be found in a small town in the highlands of Guatemala, reflecting important genetic diversity (Steinberg and Taylor 2002, and van Etten 2006a, 2006b), and 47 percent of the volume corn produced in Guatemala is done by a small farmer working in less than 3 hectares (Red SICTA 2007). Culturally, corn plays a major role in the everyday activities and beliefs system of indigenous peoples of Guatemala (Annis 1987, Burgos-Debray 1984, Little 2004). Corn categorization commonly happens by the color of the kernel; taste preferences and industrial use changes depending on the color. White corn is commonly used in the preparation of tortillas as well as in some industrially produced flour. Black and red corn are only produced for tortillas, while yellow corn is mostly used for the industrial production of flour and animal feed.

Research on the corn varieties of Mexico (Brusch and Perales 2007) and Guatemala (Bretting et al. 1990) indicated that varieties planted in a region depend on the geographical and environmental conditions, which are also related to distribution of cultural groups. Furthermore, each variety has different management qualities that are used to the advantage of the farmer depending on his particular needs (Bellon 1991).
In the case of “Tinamit,” red corn was mentioned as cold tolerant, while blue corn had a shorter maturating time and white and yellow corn were preferred for their high yields with the disadvantage of having longer maturation time.

Beyond corn, historically, Guatemala's Gross Domestic Product (GDP) has been dependent on exported agricultural products, such as, cochineal, indigo, coffee, cotton, bananas, sugar, etc. This dependent relationship has made Guatemala vulnerable to changes in the global demand for these products. One recent event was the collapse of the price of coffee in the 1990s (Velasquez 2008). Rural populations are especially vulnerable to market fluctuations because of their political, economical, and cultural exclusion by elites. The basis of the exclusion is class and identity. An example of this exclusion was the signing of the Dominican Republic-Central America Free Trade Agreement (DR-CAFTA), signed in May 28, 2004, and confirmed by Guatemala's Congress on March 10, 2005. The negotiation of this agreement happened with little transparency. A draft was published only after the negotiations had culminated (CONGCOOP 2002).

Before the DR-CAFTA was implemented in Guatemala the government had already began the promotion of non-traditional agricultural exports (NTAE) as was one of the components of the structural adjustments programs. The goal was to produce vegetables for local and foreign markets.

1.5 The timing of the trade liberalization policies

If allowing for the economy to open increases trade and trade increases the welfare of society, why did trade liberalization not happen earlier? One approach to solve

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1 Tinamit is a Kaqchikel word that means town or city. This is the name I will use to refer to the town where I have conducted the interviews.
this recognizes that trade has an international component that relates export producers and importers within a country. At the same time trade liberalization has a political economy dimension that relates the different groups negotiating with the government for the implementation of policies that benefit them economically. We can use the International Political Economy (IPE) perspective as a tool that allows us to ask why the trade liberalization happened when it did and make inferences about which institutions are requesting what kind of trade policies.

1.6 Effects at a national level

The second question was: “Is it possible to identify the effects of Guatemalan trade liberalization on poverty, diet and minimum wage at a national level?” Several arguments suggested that globalization increased income inequality within countries (Wade 2004) and among nations (Krugman and Venables 1995). Other arguments indicated increased trade, especially nontraditional agro-exports, had benefited, not injured, small landholders in Guatemala (Carter et al. 1995). These contradictory arguments prompted me to analyze the effects of economic policies for Guatemala at a national level.

Guatemala was selected for several reasons; I was born and raised in Guatemala which gives me a particular familiarity with the country. Furthermore, I am aware of the strong geographical division between Mayan and Ladinos; the majority of Mayans live in rural areas, while the majority of Ladinos live in urban areas. Similarly, there is a geographical division between the poor and the rich. Poverty is more commonly found in rural areas, while individuals living in urban areas tend to be in a better economic position and to identify themselves as Ladinos. I knew that the choice to revise/change
trade barriers would disproportionately affect rural people who were directly involved in raising corn, both for household subsistence and for sale.

1.7 Effects at a local level
In order to investigate the local impact of national policy change on imported corn, I planned to interview farmers in a rural community in the highlands of Guatemala. I chose the town called “Tinamít” for several reasons. One reason was that farmers there were already practicing a mixed strategy of production that included non-traditional agricultural export products (NTAE) (such as broccoli, cabbage and carrots) as well as corn. Another reason for selecting this town is that it was relatively easily accessible. Furthermore, it was a town in the Kaqchikel region. In preparation for the project described in this paper, I had previously participated in a Kaqchikel intensive language training program and had acquired some facility with this Indian language. I chose to concentrate my research interests on the corn growing sector of the rural economy, rather than on the nontraditional crops, for a variety of reasons having to do with its central cultural and symbolic importance to rural Mayans as well as the fact of the high biodiversity of corn in the Mesoamerican region.

1.8 Methods used to address each question
To answer the questions presented in this research I implemented several approaches. In order to address the first question, “Why the trade liberalization of Guatemala happened when it did,” I used two theoretical models that are common to IPE to assist me in the formulation of my inferences. IPE indicates that there are two possible ways to analyze economic policies: demand-based and supply-based. The two approaches differ in who is promoting the economic policies. In the demand-based models the
“people” are asking for the implementation of the policies. In the supply-based models the State promotes the implementation of the policies.

The analysis using the demand-based approach was based on the hypothesis presented by Milner (1988). Milner presents four hypotheses that relate the level of interconnectedness local corporations have with multinational corporations and a Nation’s dependency on exports. According to these hypotheses, countries with corporations that have a high level of interconnection and high dependency on exports will have tended to have more open trade policies. Furthermore countries whose companies have low levels of interconnectedness and low dependency on exports will tend to have policies with higher restrictions on trade. In order to create my inferences for Guatemala based on Milner’s (1988) hypotheses, I compared Guatemala’s foreign direct investments (FDI) and Guatemala’s exports for the period of 1980 to 2007. This period spans some years during the autocratic period of Guatemala to couple of years after the signing of the Free Trade Agreement with United States.

For the supply-based approach I used Milner and Judkins (2004) and Milner and Kubota (2005). With regards to Milner and Judkins (2004), I use three of the five hypotheses they present. The first hypothesis, used here, indicates that political parties will have opposing views on trade policies, suggesting the right wing parties will have a preference for trade openness, while left wing parties will have a preference for protective polices. I analyze Guatemala’s electoral outcomes since 1985 to 2007 highlighting the transition of the political parties that won the elections, from a center left political perspective to a right political perspective.
The second hypothesis presented by Milner and Judkins (2004) indicates that an increased exposure to globalization is related to an increased preference in trade openness. To analyze this hypothesis in the context of Guatemala I calculated the Pearson’s correlation coefficient between Foreign Direct Investment (FDI) and total exports and FDI and total imports, resulting in a significant positive correlation for both comparisons.

The last hypothesis indicates there is an effect of the hegemony of the major trading partners: bigger trading partners exert pressure on policies in favor of trade openness. To evaluate this hypothesis I identified the US as Guatemala’s major trading partner and evaluated its role in the formulation of the Dominican Republic and Central America Free Trade Agreement (DR-CAFTA).

Another way to examine the supply-based approach is presented by Milner and Kubota (2005). They investigate the assumption of the insulation of the government from national and international pressures. By understanding the insulation one can explain why protectionism persisted. Milner and Kubota (2005) argue that the movement toward democratization leads to trade liberalization. They suggest that autocratic governments respond to a small group of individuals, while with increased democratic participation, governments look to promote the increase of welfare. I examined this approach by investigating the voter participation in the different elections that have happened in Guatemala since 1985.

For addressing the second question, “Is it possible to identify the effects of Guatemalan trade liberalization processes on poverty, diet and minimum wage at a national level,” I examined economic data collected from the US, Guatemalan and
international institutions. These institutions were: United State Department of Agriculture (USDA) for the US, the National Coordinator of Basic Grains Producers (CONAGRAB acronym in Spanish), Guatemala’s Bank (BANGUAT acronym in Spanish) for Guatemala, Food and Agricultural Program of the United Nations (FAO), and the Economic Commission for Latin America and the Caribbean (ECLAC) for the international institutions. The specific data examined for this question were corn prices for Guatemala and the US and the consumer price index for Guatemala and the US. The data just for Guatemala was the gross domestic product, total value of imports and exports, surface area harvest for agricultural products, corn imports and exports, surface area of corn harvested, total corn production for Guatemala, daily consumption of food energy, amounts of food consumed per capita per day and dietary protein consumption. For the comparison of the corn prices I did a variation of the t-test using the values of the slope from the regression of the two prices trends, following procedures recommended in Zar (1999).

For the last question, “What responses could be seen in a rural community, already heavily dependent on corn, as a result of national policy change regarding corn imports?” I carried out a short term ethnographic survey and interview in a small, rural, Guatemalan village. I lived in Guatemala during the summer of 2009, during which I spent six weeks of the summer leaning Kaqchikel, one of the 22 languages spoken in Guatemala. After the language training, I lived for a month in a Kaqchikel rural community in the highlands of Guatemala. While living in the community I interviewed farmers in their fields, had informal conversations with members of the community and did observations of agricultural processes. My interview questionnaire was focused on
identifying the changes in agricultural production that have occurred in the last 20 years and placed specific attention on agricultural activities that relate to corn production (Appendix A). When available, I compared the results obtained in the interviews against national level data or publications from other specific cases.

1.9 Structure of the thesis
The thesis presented is structured in the following way. In chapter two, I elaborate on the historical background of Guatemala and present a description of the study site. The Historical background includes information about the political situation in Guatemala pointing out key contribution of the recent presidents and important element in the process of opening the economy to increase trade. The study site portion of chapter two includes a description of Guatemala as a country and a general overview of the highlands and provides a description of how non-traditional agricultural export products came to be important in Guatemala.

Chapter Three includes the theoretical approaches and conceptual background underlying this research. Specifically, I develop and integrate the ideas of globalization, international political economy, trade liberalization, corn and non-traditional agro-exports. Within my description of globalization I offer my working definition and develop in more detail the specific aspects of the paradigm that are related to the topic. With regards to international political economy I elaborate with more depth the approaches presented above and state the underlying assumptions. For trade liberalization I provide a description and a connection between the economic theory and the objectives these types of policies have as a goal.
In Chapter Four, I describe the methods used in each question presented in this thesis. In particular, I describe the data collection and different statistical and ethnographical methods. Furthermore, I provide a description of Guatemala as country, the historical process that lead to the opening of the Guatemala’s economy and the rural town where the ethnographic part of the research was conducted. The objective of the descriptions is to set the contexts on which the data should be viewed.

Chapter Five contains a detailed description of the results gathered while conducting this investigation. The chapter is divided into three sections in concordance with the three questions that are asked in this thesis.

Finally, Chapter Six provides the discussion of the results obtained including how my results contrast to research presented by others on the topic. Chapter Six also includes an elaboration of my conclusions.

1.10 Major conclusions

When we consider institutions as systems of rules that influence social interactions we can investigate which institutions were influential in the development of the economic policies. These institutions were the Guatemalan military, the owners of capital and land, and Guatemala’s trading partners. Each institution exerted influence in different ways. The Guatemalan military influenced the economic policies by being a force of oppression that prevented formation of organizations that opposed the government during the war period. The influence by owners of capital and land was the acquisition of power by democratic means, from where they were able to design and implement policies that benefited them. It might be easy to consider the military as an institution, however, I also consider the owners of capital and land as institutions because
they coordinate and form associations that can influence the creation of policies. Additionally, Guatemala’s major trading partners have also been influential in shaping the economic policies, specifically the implementation of trade agreements such as DR-CAFTA.

Economic policies that promote the opening of national markets in order to increase trade have had an effect on rural communities. In this thesis I show that in Guatemala these policies have had an effect on the national price of corn and concurrently affected the diet of individuals. Specifically, changes in the diet include a reduction in the caloric consumption, a reduction in the consumption of corn and an increase in the consumption of vegetables.

Corn continues to be a very important agricultural product in Tinamít where individuals still produced enough corn for their consumption and farmers consider that the amount produced in the region is enough to feed the members of their community. Some farmers consider that fewer farmers are dedicating their time to the production of corn. The reasons mentioned include the low price of corn in the market, production other of agricultural products and the presence of other sources of employment. Furthermore, some farmers consider there has been a marked change in the dietary preference of younger people. Wheat, specifically in the form of bread, is replacing corn as the foundation of Guatemalans diet. With regards to agriculture in general, there has been a change to techniques that require higher capital inputs, such as the application of chemical products. One of the problems faced by farmer is the strong price fluctuations in national markets leading to the waste of these products and loss of capital.
The bottom line is trade policies that promote exportation of non-traditional agricultural exports (NTAE) products have costs and benefits. The benefits of the agricultural transition can be maximized with the promotion of policies that consider food security, the health of the community and the environmental effects. The detrimental effects can be minimized by the reducing the economic inefficiencies in the production of NTAE and corn, and by promoting policies that consider the effects on the environment and human health.
CHAPTER 2. Historical background and Study site

In this chapter, I will present relevant historical information for this thesis and provide a description of contemporaneous Guatemala and Tinamít, the rural location of my interviews. This historical description has the objective to set the context for the chapters that follow. I will also present a description of the cultural, biological and economic importance of corn in Guatemala. Lastly, I will describe some cultural aspects of the Kaqchikel group.

2.1 Guatemala the general picture

Guatemala is located in the northern part of Central America. The capital of Guatemala is Guatemala City and its geographical position is 14°38’ N and 19°30’ W. The size of Guatemala is about 108,889 square kilometers, roughly the size of Tennessee. Guatemalan political administration is divided into twenty-two Departments. The official language is Spanish, but the State recognizes Xinka, Garífuna and twenty-two Mayan languages as national languages (Decree 19-2003).

The population of Guatemala is approximately 13 million. Close to half of the population of Guatemala lives in a rural area and about 68 percent of this rural population is poor (ECLAC 2007). According to ECLAC (2010), 41 percent of the population of Guatemala recognizes themselves as indigenous, while Fisher and Benson (2006) report 60 percent of the population is indigenous. Velasquez (2008) argues that the percent reported by State officials tend to reduce the number of Maya peoples and according to Mayan organization the percent of indigenous peoples is most likely around 60.

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2 I will follow Velasquez (2008) use of the term Maya, which is not different with the term indigenous but recognizes the lengthy political, economical and cultural struggles, which Mayan peoples have continued for more than 500 years.
Guatemala’s economy is influenced strongly by the exports of coffee, sugar, bananas and cardamom. Historically these traditional export products have been in control of a few individuals with the capacity of influencing the government to intervene in moments of crisis. One recent example of such influence can be seen during the collapse of the world coffee prices at the end of 1990s. This disruption was partially due to the entrance of Viet Nam into the coffee market but also to the failure to reach an international coffee price agreement with the International Coffee Organization. The price of coffee fell about 60 percent in 2001 and it remained low for several years. During this time the big land extension coffee producers were able receive bail out money but the small producers and the workers in the coffee industry did not receive any assistance (Velasquez 2008).

The production of corn, a staple grain, plays an important role, not only economically, as it generates 37 million labor days a year (MAGA 1998 in Lopez et al. 2005). Nationally individuals consume on average 248 grams per person a day, for 2003 (FAO 2008). Corn is a major livestock feed, requiring over 313 thousand tons a year to feed the livestock (INE 2003 in Lopez et al. 2005).

Guatemala’s political history is full of coupé d’états and military juntas. The first presidential transition between two elected presidents happened for the first time in 1951 and from 1898 to 2010 there have been only five transitions between two elected presidents. In the past it was typically the minister of defense who lead the coupé d’état against the individual in power. In a period of apparent stable democracy, from 1970 to 1978, the ministers of defense became “elected” presidents. In the three electoral years
(1970, 1974 and 1978), the ministers of defense selected the political parties that could participate in the elections (EIU 1996).

2.2 Guatemala’s recent history

2.2.1 The Violence period

Guatemala struggled with a violent 36 year war, from 1960 to 1996. The violence was particularly harsh during the first years of the 1980s. Davis (1988) argues that two historical phenomena were the fodder for this violent period. The first phenomenon was the agrarian crisis, where indigenous communities were suffering from unequal access to land and increased population pressures. At this time many rural dwellers migrated temporarily to work in the coastal areas where they worked under inhospitable conditions. The second phenomenon was the “social awakening” of Mayan groups, during which time political organization emerged with the formation of political parties, unions and cooperatives (Davis 1988).

Other explanations of the origin of the violent period come from Comisión para el Esclarecimiento Histórico (CEH) which indicates that the sources of the violence are related to the historical exclusion of indigenous peoples from participation in the democratic and economic affairs of Guatemala. The exclusion is based on racist values and the lack of social and political spaces that allow the voices of Maya individuals to be equally heard in comparison to Ladinos. Furthermore, the national judicial system lacked and continues to lack the overall capacity protect the human rights of Guatemalan citizens (http://shr.aaaas.org/guatemala/ceh/mds/spanish/cap1/chist.html).

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3 Commission for Historical Clarification. This commission was created by mandate under the framework of the Guatemalan peace accords. Their objective was to investigate the violations against Human Right committed to
The consequences of the Guatemala’s civil war go beyond murders, disappearances, psychological suffering and material destruction. The war had also consequences at a societal level. As Green (1999) explains, the idea of community, in general, as a safe place changed after the war. The community became a place where the violence continued to happen, military garrisons remained active, informers continued to report on the organizing activities and forced recruitment young individuals from the community. All of these factors imposed a silence that was maintained with impunity. The combination of terror and impunity were characteristics of the counterinsurgency strategy (Petri 2002).

Other consequences of the war were the formation of a generation gap within leaders, creating a vacuum of individual to take charge of executive positions of organizations. Another effect was the destruction of social connections within a community through several mechanisms such as the elimination of entire communities by the military counterinsurgency campaign. Entire towns were burned. Another mechanism was forced displacement of communities as they escaped the war. Furthermore, the implementation of a system of spies and informers that had quotas to meet created a sense of lack of trust between community members. For a detailed description of the events that happened during the war read Guatemala Nunca Más (Guatemala No More; Oficina de Derechos Humanos del Arzobispado 1999), Guatemala: Memoria del Silencio (Guatemala Memory of Silence; Comisión para el Esclarecimiento Histórico 1998) and Harvest of Violence (Carmack 1988).

Violence was not spread equally among the population. The violence was mostly rural, a trend that could be seen from the beginning of the war (Ball et al. 1999). There is
a relation between terror inflicted by the military and the class and ethnicity of the victims in the western part of Guatemala; the historically excluded individuals are the majority of the victims of the government’s crimes (Ball et al. 1999). The discrimination will continue to play a role, as Petri (2002) points out, in the short term the Peace Accords do not show benefits or concrete evidence that the situation of underrepresented individuals has improved.

2.2.2 The return to democracy

The first steps to return to a democratic path came around 1984 with the writing of the constitution and setting a date for elections in 1985. However, it was not until December 29, 1996, that the Guatemalan government and the Guatemalan National Revolutionary Unit (URNG in Spanish; this is the organization formed by the four guerrilla groups that later became a political party) signed the final peace agreement. The period between the general elections and the signing of the final peace accord was also marked by persecution and oppression to Guatemalan citizens. The return to democratic system did not guarantee and end to the armed conflict. The brutal strategies, from the early part of 1980s, intended to wipe out entire towns, continued.

Since returning to democracy, Guatemala has had seven presidents from 1985 to 2008. The first three presidents of this new democratic period struggled to harness the power of the military. It has taken eleven years to reduce the control over the government by military. Now, old structures that controlled the power within the government during the military period have become the head of organized crime groups, which have direct connections to the presidency (http://wwwelperiodico.com.gt/es/20100203/investigacion/135954/#comments, accessed Feb 10 2010).
2.3 Recent electoral history

It has been common that the party in power on the Executive branch also has majority of representation in the Legislative branch. Voter participation has been very low, 51.36% on average for all the elections (see Table 2.1).

In 1983, the minister of defense Óscar Mejía Victores ousted Efraín Ríos Montt. During Óscar Mejía Victores (1983-1986) term, he promised a return to democracy. He called for the writing of a new constitution 1984, which was finished in May of 1995, and for elections to happen at the end of 1985. Vinicio Cerezo (1986-1995) was elected the first president under the new constitution. His appointment was severely constrained by the power of the military, the rumors of attempts of coup d’état were constant element throughout his presidency.

After Vinicio Cerezo, the next elected president was Jorge Serrano Elías (1991-1993). His presidency started in 1990 and culminated in 1993 when he tried to do a self imposed coup d’état, following the steps of the Peruvian president Alberto Fujimori. The military did not favor this attempt of coup and held their ground, bringing back democracy to the country. This event demonstrated to civilians that the military was still under control of the political arena. The congress convened and named the ombudsman Ramiro De León Carpio as the provisional president to finish Jorge Serrano Elías’ term.

The presidency period of Ramiro De León Carpio (1993-1996) was marked by a call to transparency and the promotion of human rights. Two tasks that where virtually impossible to improve in such a short term. However, one of his accomplishments was the depuration of Congress, by calling for elections to reduce the number of members of congress, from 116 to 80. With this election members of congress that had a reputation of
corruption where removed from Congress. This success was tarnish by the continued killings and forced disappearances supposedly in hands by members of the armed forces.

During the first year of Alvaro Arzú Irigoyen (1996-2000) presidency, the final Peace Accord with the URNG was signed, on December 29 1996. His presidency was marked by a neoliberal rhetoric. His policies were committed to push for privatization of the public services that included the phone company (GUATEL in Spanish), national airline company (AVIATECA in Spanish), part of the electrical company (EEGSA in Spanish) and national train company (FEGUA in Spanish). Half way into his presidential term the Assistant Archbishop Juan José Gerardi Condera was murder, just two day after he presented the results from the Commission for Historic Clarification (CEH). The murder was carried out by members of the presidential security force; hindering the development of the peace and reconciliation process. Beyond this murder, the presidency of Alvaro Arzú showed improvements in reducing the military’s power over the president.

The next elected president was Alfonso Portillo Cabrera (2000-2004). His campaign had a populist tone. He ran as the candidate for the Frente Republicano Guatemalteco (Guatemalan Republican Front), which was lead by the infamous Efraín Ríos Montt. During his presidency, he did support a populist agenda that increased the minimum salary twice, promoted literacy education and closed tax loops for big industries. At the same time, his presidency was marked by corruption scandals, drug trafficking and money laundering.

Óscar Berger (2004-2008) presidency increased international trust in Guatemala; needed after the repeated scandals related to drug trafficking and money laundering. The
business class welcomed the increase foreign trust, as it meant increase foreign direct investment. This optimism ended after hurricane Stan hit Guatemala in 2005, severely affecting crops and houses in the highlands and in the northern part of Guatemala. His immediate reaction to the storm was keen and precise but long-term follow up to the disaster was nonexistent. He was a fervent proponent of the mining industry, in an attempt to mimic Perú’s development model, setting him in confrontation with the environmental and indigenous groups.

The presidency of Alvaro Colom Argeta (2008-present) so far has focused on the improving the social welfare of Guatemalans. The implementations of programs like free education and health services, public-dining halls, and special assistance programs that targeted to help families in 44 of the most needy municipalities of Guatemala. His presidency has also been marked by a lack of plan to deal with increase levels of violence and the impunity that has characterizes the Guatemala.
<table>
<thead>
<tr>
<th>Election Year</th>
<th>President (Party of the president)</th>
<th>Votes received in the last round</th>
<th>Registered voters (% participation in the first round)</th>
<th>Party with majority in congress (No. of seats) political tendency</th>
<th>Number of congressmen by district/national listing</th>
<th>Number of congressmen (No. of parties in congress)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1985</td>
<td>Marco Vinicio Cerezo Arévalo (Christian Democracy) center left</td>
<td>648,681</td>
<td>2,753,572 (69.3%)</td>
<td>Christian Democracy (50) center left</td>
<td>76/24</td>
<td>100(7)</td>
</tr>
<tr>
<td>1990–1991</td>
<td>Jorge Serrano Elías (Solidarity Action Movement) right</td>
<td>936,385</td>
<td>3,204,955 (56.44%)</td>
<td>National Center Union (41)</td>
<td>87/29</td>
<td>116(9)</td>
</tr>
<tr>
<td>1993</td>
<td>Failed Auto Coup d’état. Congress names a new president, Ramiro de León Carpio to finish the period, constitutional reforms are accepted by popular vote, among them a reduction in the number of congressmen to 80, presidential office period reduced to 4 years, and elections to “clean” congress from their corrupt members.</td>
<td>3,438,405 (15%)</td>
<td>Guatemalan Republican Front (32) hard right</td>
<td></td>
<td>64/16</td>
<td>80(6)</td>
</tr>
<tr>
<td>1995</td>
<td>Ramiro de León Carpio (no party)</td>
<td>671,358</td>
<td>3,711,589 (46.88%)</td>
<td>National Forward Party (43) center right</td>
<td>64/16</td>
<td>80(16)</td>
</tr>
<tr>
<td>1999</td>
<td>Alfonso Portillo (Guatemalan Republican Front) hard right</td>
<td>1,185,160</td>
<td>4,458,213 (53.8%)</td>
<td>Guatemalan Republican Front (63) hard right</td>
<td>91/22</td>
<td>113(7)</td>
</tr>
<tr>
<td>2003</td>
<td>Oscar Berge (Great National Alliance) centre right</td>
<td>1,235,219</td>
<td>5,073,282 (57.80%)</td>
<td>Great National Alliance (47) center right</td>
<td>127/31</td>
<td>158(16)</td>
</tr>
<tr>
<td>2007</td>
<td>Alvaro Colom (Unity for Hope) center left</td>
<td>1,449,533</td>
<td>5,990,029 (60.36%)</td>
<td>Unity for Hope (48) center left</td>
<td>127/31</td>
<td>158(14)</td>
</tr>
</tbody>
</table>

2.4 Structural Adjustment program in Guatemala

The economic conditions in Guatemala during the 1980s were not stable. Instability emerged after the import substitution program (ISP) that was implemented during several governments. The import substitution policies had the goal of substituting the importation of products that replace those that were already locally produced. The ISP had left Guatemala with costly national economic policies like price controls, expensive social services and bureaucratic state businesses. Furthermore, the ISP promoted damaging international political economic policies, such as protectionism, high deficits, subsidized interest rates, nonpayment of debt and declining exports (Conroy et al. 1996).

To amend the effects of the ISP structural changes needed to be implemented. Several institutions played a role in the promotion of the Structural Adjustment Program (SAP), among them international financial agencies, such as the World Bank and International Monetary Fund, and international development agencies like the United States Agency for International Development (Conroy et al. 1996).

The goal of the SAPs was to coordinate different policies among countries, specifically fiscal, monetary, industrial, labor, and commercial policies. This coordination had the objective of increasing the fluidity of capital from different origins through national borders. The mechanisms implemented to increase the coordination and the fluidity of capital where the elimination of governmental manipulation and regulation over the economy (Robinson 2003).

According to Robinson (2003) the SAPs had two stages. The first stage was the stabilization, whereby fiscal and monetary policies were implemented. It allowed increased security for international investors as it promoted clear rules and their application. The second stage had multiple objectives of liberalization, deregulation, and
privatization. The liberalization promoted connection with the global economy.

Deregulation, helped remove the state’s influence on economic decision making.

Privatization of public services gave private capital chances effectively accumulate more capital as it did not have the restrictions of slow bureaucratic services (Robinson 2003).

The end result of the SAPs was mixed. On the benefits side, the SAPs showed increase economic efficiency, reduced government deficit and lower inflation. At the same time, detrimental effects were increased poverty and increase debt levels (Conroy et al. 1996).

2.5 Description of Guatemala’s economic openness process

One of the first steps in the economic openness process was the stabilization of the political ambiance. The treaties of Esquipulas I and II had the objective of achieving peace in the Central American region. These treaties were signed in 1986 and 1987 respectively. Beyond their peace objective, the Esquipulas treaties set a framework for returning to democracy, dealing with the refugees and the cooperation for democracy, peace and development. Guatemala’s return to democracy (1986) was an important step towards economic openness because it brought political stability in the government; a factor that is useful for attracting foreign direct investment (Basu and Srinivasan 2002).

By 1989, the government policy to encourage trade and attract investors started to take shape with the promotion of two laws: one promoted exports and the establishment of maquilas (Decree 29-89 Ley de maquilas) and the other dealt with free trading zones (Decree 65-89 Ley de zonas francas). After the enactment of these laws, the export of manufactured goods increased from 184 million US dollars in 1986 to 387 million US dollars in 1992.
In 1991, the Central American countries took another step towards the integration with the formation of the Central American Parliament. The Central American Integration System (SIECA in Spanish) started to work in 1993 with the objective to promote and coordinate in the Central American economic integration process.

In order to modernize the state, Guatemala’s government started to privatize the national utility companies in 1994. In 1995, Guatemala joined the World Trade Organization (WTO). Furthermore, the creation of Guatemala’s stock market was approved by Congress in 1996 (Decree 34-96), a move that made the transaction of capital and ownership more efficient.

To increase the government’s tax revenue and to simplify the tax procedure, the Guatemalan government created the Superintendencia de Administración Tributaria (SAT) (Superintendence Tax Administration) in 1998. To prevent the withdrawal of international capital and to attract foreign capital, the Guatemalan government allowed foreign currency banking in 2000.

A more recent step, by Guatemala, integrating with the global economic system has been affected by the signing of Free Trade Agreements. A regionally important development was the implementation of the Dominican Republic and Central America Free Trade Agreement (DR-CAFTA) with the United States signed in 2004 and implemented in 2006.

2.6 Corn

Corn in Guatemala is important to Guatemala for many reasons. Specifically, corn is important because its position within Guatemalan culture, economy, and biological diversity. According to the Popol Wuj (transcribed into Spanish by Fray Francisco
Ximénez circa 1701) a book of narratives from the Maya K’iche’ tells the story of how the gods created humans from corn dough. Another highlight of the cultural importance of corn is found in “Me llamo Regoberta Menchú y así me nació la conciencia;” here corn appears repeatedly in the narrative of Rigoberta Menchú as she tells her history (Burgos-Debray 1984). Little (2004) comments on social factors that corn production have among women, for example: girls and women interact during the grinding process and during the preparation of meals in special social events. For Annis (1987) corn is “the corner stone of the economy,” and other economic activities like wage labor complement corn production and do not supplement it (see Results section 5.3.1.5 for more information on the corn planted in Tinamít).

Corn is genetically diverse, reports showing twenty-four different native cultivars in the highlands region (Steinberg and Taylor 2002, and van Etten 2006a, 2006b). This genetic diversity has been promoted by human intervention, geographic isolation and ecologically imposed selective pressures (Bretting et al. 1990, Brusch and Perales 2007). Corn variation is not only morphological, but also developmental, as different varieties take different times to produce fruit. This difference in fructification timing is advantageous to the farmers. Early in the season they plant corn varieties that take longer to mature (white corn). Later they visit their fields to check for places where seedlings have not sprouted. On those spots farmers plant corn varieties that mature more rapidly, such as blue corn. One more visit happens to check for spots were seedlings have not sprouted and they plant the variety with the shortest time of maturity type, red corn. The white type of corn matures in six months while blue type requires five months and red

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4The English title of the book is I, Rigoberta Menchú
needs four and a half months (Clawson 1985). The color variation in black, blue and red corn is due to differences in the concentration of anthocyanin pigments in the aleurone layer, seed coat and the pericarp (Hernandez-Uribe et al. 2007). The pigments providing the yellow color to corn are different forms of carotenoids (Fraps and Kemmerer 1941).

2.7 Study site

2.7.1 Country

I choose Guatemala for this study because I am a native of the country. I lived in Guatemala for about 25 years before moving to the United States to further my education. I feel that my experience of growing up in Guatemala was different from the majority of urban individuals of my generation. From early age I was interested in the recent history of Guatemala, a history that was not in the traditional textbooks. This interest for the unwritten history leads me to question why the Guatemala’s internal war was happening and why the people in the city did not seem to care about the war crimes. It did not take me long to realize the discrimination and injustice that indigenous peoples, peasants, and economically disadvantaged individuals were living. Recognizing the discrimination, the injustice and the lack of interest by Guatemalans has motivated to investigate how State policies affect rural communities.

Another reason for why I selected Guatemala for this study was my familiarity with the recent economic and political events that had transpired, for example the Central American integration process and the negotiations of Free Trade Agreements. These events happened during the 1980s and 1990s leading me to think enough time has passed since the implementations of economic policies described above that it is reasonable to investigate their effects at a local level.
2.7.2 Tinamit

The municipality and the town share the same name Tinamit. The municipality is within the department of Chimaltenango. Tinamit is in the highlands of Guatemala. The highland refers to the mountainous part of Guatemala that is formed by the Sierra Madre and the Sierra del Los Cuchumantanes. The Sierra Madre extends from Alaska all the way to Chile, on the Pacific side of the American continent. The Sierra de Los Cuchumatanes branches off the Sierra Madre, in the West part of Guatemala. The highest peak of the highlands reaches above 3800 masl. Tinamit’s altitude is close to 2500 masl.

The majority of the population is Maya-Kaqchikel. There are two languages spoken in Tinamit, Spanish and Kaqchikel. The town is said to be founded around the XII century, well before the arrival of the conquistadores, and was officially recognized in the year 1545. The municipality of Tinamit has a population of about 30,000. At the town level, the population is about 15,000.

The town covers an area of about two square kilometers. In the center of town is a small plaza, with the traditional Spanish layout. The local government offices are to the west, the main church at the east side and market to the south. In the north side, one would expect to find the state or department level offices, but in the case of Tinamit there are private houses. The central plaza becomes the center of the market during market days.

There are three market days. During the main market day more than six street blocks are filled with portable stands that vary in their complexity of the products being offered for sale. The vegetable stands are usually baskets of products that surround the owner of the stand. While, more elaborate stands include tables and racks for displaying their products. A shade is created by a patchwork of plastic linings and cloth fabrics that
are tied to the window sills, improvised frames or any pole on the street. Some of the locations of the stands are inherited from mother to daughter, most of these stand are located close to the center of town. Other stands are filled as people come.

On the other two days of market the area occupied by sellers is reduced to about four street blocks. Product diversity seems lower and there are fewer hours of operation, merchants pack their products around noon, about two hours earlier than the main market day. On Sundays, merchants take advantage of this day because people come down from surrounding hamlets to attend religious services. Each town has their own particular days of market; allowing merchants to travel each day to different towns.

Agricultural fields surround the town’s urban area. There are no houses within the agricultural fields. Corn and vegetables are planted in the same field at different times, vegetables are placed closer to the road while corn is planted farther away from the road. Similarly, irrigation systems and electricity meters to power the irrigation system were mostly observed close to a road. In a few cases, irrigation systems were powered by small gasoline electric generators that activated water pumps to extract and distribute water from wells.

The most common vegetables produced in the area were beans, broccoli, cabbage, carrots, corn, lettuce and squash. Other produce seen in the area were avocados, celery, cauliflower, *hierbita*, lima beans, radishes, and strawberries. Only a few crops were planted simultaneously, such as, corn, beans, *hierbita*, lima beans and squash.

*Tinamít* was selected as a study site because I wanted a town that had a long history of planting vegetable crops and at the same time corn continued to be planted. Furthermore, I was looking for a place that had relatively easy access by bus, since I
didn’t have a car in Guatemala. Lastly, I was also looking for a town within the Kaqchikel region, because I had spent the first half of the summer in an intensive language school.

2.8 Kaqchikel
Kaqchikel is one of the 22 Mayan languages that are spoken in Guatemala. There are about 500,000 speakers of Kaqchikel, making it the third most spoken Mayan language in Guatemala. The area of Kaqchikel covers the departments of Sacatepéquez, Chimaltenango, Sololá, and some parts of Escuintla and Guatemala.

Since before the Spanish invasion, the Kaqchikel group was one of the most powerful groups in the highlands of Guatemala. Along with the K’iche’ group, the Kaqchikel expanded their presence in the highlands in the postclassic period (Fisher 2001:103-104). According to Fischer (2001) the K’iche’ and Kaqchikel alliance broke around 1470 when the Kaqchikel separated from the K’iche’ and established in Iximche’. At the time of the Spanish invasion (1524) the Kaqchikel were in conflict with the K’iche’ and form an alliance with to defeat the K’iche’. The Spanish-Kaqchikel alliance did not last after they had defeated the K’iche’. Then Spanish turned on the Kaqchikel and moved to seized control of Iximche’. The city became the first Spanish capital of Guatemala. Since then the Kaqchikel group has been in direct contact with influence of Guatemala’s capital in its different locations (Fischer 2001).

Females in Tinamit still wear the costume attires that consist of pot and uq’ (Kaqchikel for blouse and skirt). The pot and uq’ change according to the region where they are made. Few males still use their traditional costume, but usually they are the older individuals. Several reasons are presented to explain the difference in the use of
traditional costumes. Among them is the introduction of imported used clothing that has made western style clothing cheaper (Goldín 2009). One more reason relates the oppression by Ladinos and the traditional costume. Mayan women are the transmitters of Mayan culture and by wearing the traditional costumes they are rejecting oppression (see Fischer 2001:210 for an example). Traditional dress costumes is a complex issue were more than one explanation might be playing a role.

For the Kaqchikel a division of labor may be occurring in market relations. Little (2004) described how Kaqchikel females were in charge of the sale of típica (handicraft). Similar in Tinamít, most of the vegetables sold in the local market were female merchants. However, all of the bulk grains, beans and corn, were male merchants. Even more, there were some items sold in the market that had both males and females working together such as apparel items, coconuts and household supplies.

The division of labor is also seen in the production of land. Males did the tasks of planting and preparing the soil for planting. Nevertheless, there were females assisting field labor tasks such as harvesting, washing and packaging the products as part of a group that was collecting produce to take to the market. Also I saw females as hired labor doing tasks of weeding carrot fields and in the packing produce at a local collection hub. Children did not work in the field, but I did see young adult males as hired labor working to prepare the land for planting.
CHAPTER 3. Theoretical background

In this chapter I present the theoretical background that supports my research. This chapter consists of four sections. In the first section I present the overarching concept of globalization. The concept of globalization provides the theoretical background that demonstrates the connection between the global and the local worlds. In the second section I present the theoretical construction of international political economy, using it as a theoretical null model, against which Guatemala’s recent economic and political history can be contrasted. Next I present a specific component of international political economy, trade liberalization, which allows me to demonstrate the effects of globalization at a national level within Guatemala. The last section describes one outcome of trade liberalization, which are the non-traditional agricultural export products.

3.1 Globalization

The concept of globalization is a difficult term to define succinctly because it encompasses many aspects of social, political and economic life. Globalization can be understood as a process and as an outcome. A process because it is the flow of goods, technology, labor, capital and services along with the modifications these tradable items have. Even more, globalization can be understood as an outcome because it is the result of policies that promote the flow of goods, technology, labor, capital and services (Oatley 2008).

Globalization viewed as a process has generated a series of debates. According to Guillen (2001) the debates are centered in five topics: whether globalization reduces the authority of governments, promotes uniformity in organizational structures, questions the reality of the interconnections, contrasts globalization with modernity, or if globalization
creates a global culture. In another approach Velmeyer (2004) the debate is focused on the novelty of the globalization phenomenon, the role of technology and information on productivity, the unavoidability of the globalization process and the role of the Nation-State in the process.

Guillen (2001) offers an interesting analysis of complexity of defining globalization and proposes his own definition: “Globalization is a process leading to greater interdependence and mutual awareness (reflexivity) among economic, political and social units in the world and among actors in general.” For Heshmati (2006) globalization is “the free movement of goods, services, labor, and capital across borders.” These definitions stress the multidimensional aspects of globalization, including social, political, and economical. For this work the definition on globalization that I will use is based on Guillen’s 2001 definition of globalization which refers to the process of increasing interconnection and interdependence between specific actors.

Globalization typically is viewed to have positive outcomes, like promotion of economic growth (Dreher 2006), positive social and economic impacts (Bhagwati 2007), and benefiting countries that have transformed and modernize their agriculture (Pingali 2007). However, other researchers question the view that globalization always has positive outcomes. The critiques are based on how inequality has widened (Wade 2004), the weak evidence that financial integration promotes growth, and that globalization could be related to volatile consumption (Prasad et al. 2004), globalization promotes unsustainable economic development (Borghesi and Vercelli 2003; Tisdell 2001), and that rural communities have unequal access to knowledge and other resources which hinders their capacity to compete (Bhensdadia and Dana 2004). Part of the reason why
globalization works well in some places but not in others are the characteristics of the
economic openness policies implemented within each country (Sachs 2000).
Nevertheless, in the midst of this uncertainty as to the consequences of globalization,
many countries have taken the steps to open their economies to the world’s economy
(Martin et al. 2001, Winters 2002). The interconnectedness of factors in globalization
makes it very difficult to predict its consequences (Hesmati 2006).

In general, the term globalization is used to describe the transition to a new epoch
of capitalism or as Robinson (2003) points out, globalization is a historic process that
represents the accumulation of changes in the world capitalistic system. This new period
has four main characteristics that are the unprecedented intensity and velocity of
transactions, the blurring of the distinction between industrial countries and developing
countries as they become more integrated and interdependent, the decentralization of the
systems of production and international capital markets have acquired greater importance
by increasing in quantity and variety of transfers (Bernanke 2006).

This thesis focuses on the increased amount of the transactions that have been
motivated by the trade liberalization policies. This includes the reduction of the quotas
and tariffs for the importation of corn and the promotion of non-traditional agricultural
export products. The increased amount of trade and the promotion of non-traditional
agricultural exports are the processes that connect the global to the local. The effects of
this connection can be seen at a national level. At the same time, communities adapt their
agricultural production, growing corn and nontraditional agricultural products; these
adaptations become the mechanisms that connect the local to the global.
3.2 International Political Economy

International political economy (IPE) offers a model to compare against Guatemala’s recent economic and political history. This model incorporates the explanations of the political influence from international organizations, such as the International Monetary Fund (IMF), the World Bank (WB), the World Trade Organization (WTO) and the Unites States Agency for International Development (USAID). Further, IPE model incorporates political and economical interactions that happen within Guatemala and with other countries. This approach is an improvement from previews models, because IPE incorporates international organization and political and economical interactions that happened within Guatemala. The other models just consider international trade issues (Oatley 2008).

Within the IPE framework there are two particular models to consider when explaining the trade policies preference. I will use these two models to compare Guatemala’s historical events that created the trade policy currently in place in Guatemala. The first model is the supply-based model. This model is also called state-centered. The supply-based model has two main assumptions, one that suggests that protectionism under certain circumstances can promote the increase of social welfare. The other assumption of the supply-based model is that governments are isolated from the pressures of interest groups (Oatley 2006).

The protectionism assumption points out the instance where it is beneficial to protect an economic sector. Beginning industries need protection because in highly competitive sectors of the economy it is difficult to enter the markets if an economy of scale or an economy of experience is not established first. Economy of scale means that the costs of production become more efficient as production output increases, while
economy of experience refers to the fact that industries need time to acquire the empirical knowledge that production systems require (Oakley 2006). The other model that is used by IPE is demand-based; this model is also known as society-centered model. This model argues that trade policies are shaped by the demands interest groups place on politicians. It focuses on the impact that trade policies have on the income of individuals. This model indicates that, according to the impact on individuals’ incomes, society can be divided in two ways, the factors model and the sectors model. The factors model indicates that the actors will be organized according the ownership of the factors of production, which are labor, land or capital. An assumption of the factors model is that each factor is mobile across economic sectors, meaning that capital invested in one area of the economy can be move to another area or that an individual laboring in an industry can shift to another type of economic activity. The predictions made by the factor model indicate that the factors that are able to influence the government in order to promote their policies are going to be the owners of the factors of production that are more abundant. Another prediction is that the owners of the labor will promote protectionist policies while owners of capital will promote trade liberalization policies (Oatley 2006).

Within the demand-based model, when it argues the society can be divided according to the effects trade has on individuals’ incomes, the sector model argues that trade policies preferences are influenced by the type of industry. The sectors model argues that protective or liberalizing trade policies will affect labor wages and returns on capital in the same industry. The sector model indicates that the effects are seen at an industry level because it assumes that the factors of production have very little mobility,
meaning that they are specific to each industry. For example, the sectors model argues that a worker in the apparel industry cannot easily shift to the computer industry as the laborer has acquired a particular skill set to operate the apparel machinery and it will take time and preparation for the transition to the computer industry. Similarly, this applies to the capital invested in the apparel industry cannot be easily moved to the computer industry as it is invested in machinery and supplies. The lack of mobility of labor and capital divides the effects of trade policies. When trade is liberalized export oriented industries will benefit by the increased trade; while import competing businesses will suffer by the increased competition, as foreign product will enter the local market. Furthermore, when protectionist policies are enacted export oriented companies will suffer from the restrictions to trade and possible retaliation from other countries; while import competing industries will benefit from the lack of competition (Oatley 2006).

3.3 Trade liberalization
In this research I will mainly deal with two trade liberalization policies implemented by the Guatemalan government at the end of the 1980s. The first policy is the reduction or the elimination of quotas for imports, specifically for corn and wheat, which I will describe in this section. The second policy is the promotion of non-traditional agricultural exports, which I will describe in the next section.

The principal reason why countries promote trade liberalization is because trade increases social welfare, by removing the barriers to trade one promotes trade and increases social welfare. The Heckscher-Ohlin model explains how trade increases the welfare of the countries that select it. This model indicates that trade increases the welfare by increasing the efficiency of the production system. Companies that are not
able to compete against traded goods stop producing and make the resources that they were using available to companies that need the goods (FAO 2006). This model points out that the items that are going to be traded by countries are based on the factor endowments and factor requirements that each country has. The factors referred by this model are the basic factors of production labor, land and capital. It is proposed that differences between countries in ratio factors of production will promote trade. One example would be food and raw materials are traded to places were labor and capital are abundant; countries would export products that use the relative abundant factor and import the ones that are scarce (O’Rourke and Williamson 1999, Morrison and Pearce 2000).

Morrison and Pearce (2000) describe several collateral effects of the Heckscher-Ohlin model. The model predicts trade is going to happen according to the abundant factors only if there is a fair market, meaning that both sides are at equal levels, otherwise restrictions to trade may arise. A second effect is that the gains that each country harnesses from trade will not be equal; the gains depend on the balance of the prices of exports and imports, also known as terms of trade. Another consequence is that there is no mechanism of fairness, where winners compensate losers of the trade transactions. Furthermore, the redistribution of the gains and losses from trade is not guaranteed to be fair within the countries that engage in trade. The last effect pointed out is that external costs become internalized, such as damages to the environment.

In the previous section I have explained why in some cases protectionism is promoted. In the case of Guatemala the shift from protectionism to a liberalized trade policy is a response to several factors. Among them the conditioning from international
institutions such as the IMF and the WB, where they condition the loan of moneys needed after the debacle of the Import Substitution Program they promoted. The loan moneys were attached to conditions that promoted adjustments in the economic structures of the country. This is part of the explanation but it does not consider the actions of institutions taken within Guatemala in order to promote protective or liberalizing policies.

With the intention of identifying the agents that promote and resist the structural changes designed to promote the liberalization of trade, I presented the question “why did the economic openness happen when it did.”

The push for a liberalization of trade policies for Guatemala does not have a single date of start because it required the implementation of several policies necessary for the liberalization of trade. One of the first steps to facilitate trade was established by Executive Order (790-86). The Executive Order created an Export Single Window, which facilitated the exports by bringing together several governmental agencies and allowing the paper work to be handled by a single office, thus increasing the efficiency in the trade. Among the policies put into decree by the Guatemalan Congress, Decree 29-89, which encourages the promotion of exports and the development of the maquila industry, by granting tax breaks and exonerations. Another Decree in place (65-89) dealt with the establishment of free trade zones, which are designated areas within the territory of Guatemala that have special privileges such as the tax credits and exonerations. Furthermore, Guatemalan Congress approved the Decree 64-1991, adhering Guatemala to the General Agreement on Tariffs and Trade (GATT), this agreement regulated worldwide trade and later became the WTO (Decree 0037). More recently the Decree 31-
2005 ratified by congress the free trade agreement signed by the Central American Countries, the Dominican Republic and the United States.

3.4 Non-Traditional Agricultural Exports, examples from Latin America

The literature on Non-Traditional Agricultural Export (NTAE) products presents several definitions of what is considered NTAE. One definition considers NTAE as a new product that is produced in a particular region, for example the introduction of broccoli in Guatemala. Another definition of NTAE is to consider the products as items that have a history of local production but now are also exported, such as mangos and avocados. Lastly, NTAE can be considered as products locally produced for export, that now are opening new export markets (Braham et al. 1992). In this research I will consider NTAEs as new products that are locally produced with the intention of exports.

Moreover, agriculture can be done at small to large scales, with different intensification levels, and with different market objectives (local, national or export). In this section, I will describe some of the characteristics previous research has identified to be important components in describing how trade liberalization (specifically NTAE), and some economic factors interact. I will restrict my focus on Latin American countries, further description of the case for Guatemala is provided in the next section.

Large size farms and small size farms are going to be affected differently by the promotion of nontraditional agriculture. Carter and collaborators (1996) provide a list of seven characteristics of production that assist in determining when promotion of NTAE will benefit large size farms or give an advantage to small size farms. The characteristics are “interactive labor intensity, working-capital intensity, human-capital intensity, measurement of price and quality measurement, product perishability, continuous
processing and gains from vertical coordination, investment gestation period, and output and relative price risk.” From this list, the only factor that promotes small size farms is the interactive labor intensity. The other factors promote the concentration of land into large farms.

Small size farms benefit when the NTAE product requires high interactive labor intensity. Interactive labor refers to when an individual laborer needs constantly make decisions about the harvest of the product and a bad decision will affect the product quality and quantity. This characteristic is seen especially in products like snow peas, because snow peas are handpicked before a particular stage and if they are picked too early, they lose by not having the optimal weight. Small size farms have the advantage to coordinate and supervise their labor with greater efficiency than large size farms (Carter et al. 1996).

The other six factors give an advantage to large size farms. The first factor, high working-capital intensity, refers to the capital needed by producers to guarantee that the product achieves the standards and reaches its destination. One example is the capital needed to purchase fertilizers and pesticide to achieve the production of a stem of broccoli of blue-green color with no yellow spots and of particular size. The working capital tends to be a constraint to small farmers (Carter et al. 1996). Another factor is high human-capital intensity. Human capital in this case refers to the technical knowledge and managerial skills needed in production of NTAEs. The technical knowledge and managerial skills can be elusive for small size farms, because either they cannot afford the cost or skilled individuals are hard to come by without access to the guild’s network. Products that require managerial and technical skills are
disadvantageous to small farmers (Carter et al. 1996). Additionally, the measurement of price and quality measurements indicate that the quality standards can affect the price of a crop. The delivery of a product that has been marked to have a lower quality can severely reduce its price. As mentioned above small farmers can better coordinate supervision of labor. However, when the mechanisms of control of quality are expensive like chemical residue analysis, small size farms are also restrained by working capital (Carter et al. 1996). Another group of related factors contains product perishability, continuous processing and vertical coordination. This group of factors is important because continuous processing and gains from vertical coordination increases the value and reduces the cost of production. Continuous processing refers to freezing or drying and vertical coordination is the management of land and production to guarantee a constant flow of products to the market. However, the cost of operation of freezing or drying plants is high which tend to promote economies of scale (i.e., large farms) that gain benefit by vertically coordinating production (Carter et al. 1996). Investment gestation period refers to the period of time the investment needs before it starts producing gains. Some NTAE have particularly long investment gestation periods, in particular fruit trees. This is problematic for small farmers in the absence of credit; individuals might have a hard time investing capital for long periods of time (Carter et al. 1996). Lastly, output and relative price risk mean that NTAE production is a risky endeavor because the harvest is subject to failure due to quantity reasons or quality controls. Moreover, if the capital requirements are high, then it becomes a large financial undertaking. In the case in which there is no access to insurance or future markets, there
is an increase in the chance that the small farmer will suffer a subsistence crisis or a wealth and savings loss (Carter et al. 1996).

Carter and co-workers (1996) also mention two mechanisms that can mitigate the effects of bias that results from farm size. The first mechanism is collective action and the second is contracts. With collective action, small farmers can overcome the human-capital intensity obstacles and issues regarding measurements of price and quality. Further, with contracts, an interaction is created between capital and technical collaborators that cooperate with small farmers to solve issues of human and working-capital, interactive labor intensity, vertical coordination. For example, Carter and collaborators (1996) discovered that one of the major exporters of frozen vegetables in Guatemala (ALCOSA) stopped producing within the company and carried on with contracts to small farmers after realizing the advantages of cost reduction acquired by providing technical and working capital assistance instead of coordinating production within the same region.

Although collective action and contracts may mitigate some of the differential effects of factors on farm size, Conroy and collaborators (1996), found one instance in which the size of the farm mattered in the assigning of the price. They found that bigger farms received a better price for cantaloupes among producers from El Salvador, in what appeared to be a size bias in favor of bigger farmers. These contradicting situations show how each production region and product are idiosyncratic and farm size differential can play out differently in different situations.

Some studies have described how different countries have implemented the promotion of NTAE and what the particular consequences of their implementation have
been. The following section will describe some of the studies that have been done in Latin America. This is not an exhaustive list, but it characterizes some of the factors mentioned above in the context particular countries. The examples have been selected because they provide particular interactions between the factors mention above and others not mentioned in the list given by Carter and co-workers (1996) that I consider are also important.

In a study conducted in Guatemala, Carletto (2000) found that farm size has fluctuated since the introduction of agricultural export product. At the beginning of the 1980s, the small size farms accumulated land, reducing discrepancies of land tenure, similar to what Carter and colleagues (1996) reported. However, the land accumulated in the 1980s was lost by the 1990s due to the fading quality of agricultural conditions from over production and overuse of agrochemicals. Fluctuations in export markets also contributed to this change in the size of farms. Carletto (2000) suggested that small farmers did not have the capacity to handle the intensity of the market, making NTAE production by smallholders a non-sustainable situation. To solve this, he proposed that the government should provide support in the form of crop insurance, credit, and information so that farmers gain from NTAE production. In this example, Carletto points to the human capital factor as being prohibitive to small farms, and adds to Carter and colleagues’ (1996) work the observation that the size of farms fluctuates.

In a study on grapes, Collins (1995) discusses the advantages and disadvantages that farm size has on production of grapes for export in Brazil. She argues that smaller farms can produce at lower costs but the access to marketing and transport to market becomes a restricting issue. Conversely, large farms have greater costs, specifically labor.
However, the weak labor laws and the over abundance of labor allows larger farms to cut labor costs in multiple ways to overcome this. Collins’ work provides an example of how small farms benefit due to high interacting labor but also contributes the mechanism used by large size farms to overcome this disadvantage in the cost of production.

Another study conducted in Brazil (Jank et al. 2004) identifies two major changes in the agricultural sector caused by the implementation of trade and economic policies. These two changes were driven by the high intensity of the competition. One of the changes was the concentration of the land by way of mergers and acquisitions, which had great participation from foreign firms. The other change was the restructuring of the management and organization within the agricultural sector. The commodities subsector within agriculture restructured to coordinate the chain of production; the coordination and the implementation of technology pushed the commodities subsector into an economy of scale. Once the economy of scale was established, the concentration of land became the *modus operandi*. The specialty products subsectors promoted a restructuring that led to quality and certification programs with the goal of creating global brands and entering particular market niches (Jank et al. 2004). In this example, Jank’s group highlights the influence that the working capital factor has in shaping competition and how intense competition can benefit large farms and lead to restructuring of production.

Similar to the situation in Brazil, NTAE also led to the concentration of land in Chile. In Chile, the NTAE promotion has a longer history. NTAE production started in 1960s and it has been characterized by the promotion of fruit trees. The promotion of NTAEs excludes smallholders because it required investment gestation time. At the same time standardization of production and packaging the products requires working capital.
Furthermore, smallholders needed human-capital and export firms were not willing to work with smallholders due to the high transaction costs that were required to organize multiple small farmers. The lack of access to human and working capital to small farmers led to a concentration of land by exporting companies and allowed for positive gains in the net employment due to the increased intensity of production (Carter et al. 1996). Von Braun and co-workers (1992) also confirm the result of increased employment caused by the promotion of NTAE in Chile. Here Carter and colleagues mention the factors investment gestation time, standardization of production and working capital, which positively influenced the generation of employment.

In the case of Paraguay, Carter and contributors (1996) indicate that the development of NTAE was different from Guatemala and Chile. While in Guatemala and Chile the promotion of NTAE generated employment, in Paraguay it caused a reduction in employment. The promotion of NTAE started in a framework of land exclusion that intensified with the propagation of NTAE. The mechanisms that promoted the exclusion were the involvement of Brazilian emigrants with capital who purchased land in the area near the border in the 1980s. The other mechanism causing exclusion was the increase in production of NTAEs that required less labor, significantly reducing the number of days of employment needed per hectare; for example in the border region of Itapúa in the early part of the 1990s, the employment needed was reduced from 100 days in 5 hectare farms to 30 days in 100 hectare farms. These two mechanisms promoted the outcome of exclusion of small farmers from participation in NTAE production, because either they could not compete and were bought out or the reduction in employment and the increase in the price of land excluded them from purchasing land. Thus, this is an example of
small farmers lacking Carter and collaborators’ factor of working capital. In this case, the promotion of NTAE caused land concentration and caused reduction of employment due to the particular export crops grown.

Von Braun and colleagues (1992) describe the particular situation of Costa Rica NTAE. Costa Rica’s case is distinct from the rest of Latin America in the sense that it has had a long lasting period of stable democracy, with governments known for their promotion of equality among its citizens. Other peculiarities of the case of Costa Rica were the speed of reaction to the economic crisis of the early 1980s and the decisive promotion of a more diverse set of export products. Foreign companies dominate the NTAE sector in Costa Rica. The domination is controlled by a differential in access to market information, transportation, technological expertise and credit. Production of agricultural products by small farmers and cooperatives is strong in Costa Rica but they are not major participants in the production of NTAE; reasons like problems with plant diseases, production and market knowledge, and inadequate access to credit, plays a role in restricting the participation of NTAEs.

In the studies described above, there are few cases that have factors shared in common, suggesting that each country has a unique set of historical, social, and political circumstances which influence the impact that NTAEs have on agriculture and the trajectory that agriculture takes over time. However, Carter and collaborators (1996) have identified characteristics that are important in determining who benefits from the promotion of NTAE, either the small landholder farmer or big extension farming. Carletto’s (2000) example indicates that these factors can change in time, due to the fluctuations in the market and environmental conditions. The study by Collins (1995)
shows how crucial guaranteed access to markets is for small landholder farmers. At the same time, the study indicates how vulnerable labor can be to the exploitation of big landholders in the absence of the application of labor laws. Jank and collaborators (1999), Carter and contributors (1996), and von Braun and coworkers (1992) give examples of how foreign companies can influence the local production of NTAE. Despite differences in exactly how NTAEs play out in each country, possibly the one commonality to all of these case studies is that NTAEs tend to favor large farms in Guatemala, Brazil, Chile, Paraguay and Costa Rica, unless governments or international organization assist to help small farmers.

3.5 Non-Traditional Agricultural Exports in Guatemala

According to von Braun et al. (1988) the production of export vegetables started around 1970, with the establishment of two companies that were mainly sponsored by the USAID. In 1982 the Guatemalan Association of Non-Traditional Exporters (AGEXPRONT) a non-governmental organization (NGO) that promotes non-traditional exports (NTE) was formed. The formation of this association coincides with the support from USAID to private companies to build collecting and freezing plants that will export frozen products. The promotion of the NTAE was done in order to assist Guatemala out of the political and economic crisis by spearheading the entrance of international investment in the sector and acting as a “modernizing force” that promoted a change from old oligarchic labor and land relations and to provide another alternative for acquiring foreign exchange (Barham et al. 1992).

According to Carter et al. (1995), there are proponents and opponents of the agricultural exports. The proponents argue that the exportation of agricultural products
benefits the macroeconomics of the country by increasing the foreign exchange earnings, diversifying the products being exported and increasing the efficiency of the use of resources. Furthermore, from a labor perspective, proponents of agricultural exports indicate that there is an associated increase in the productivity and employment. The opponents of the agricultural exports question the continuity and breadth of the macro economical, as evident in the short export booms, the strong dependency on food importation, and the decrease of the ratio of export to imports. The opponents suggest that agricultural exports have a detrimental effect on the poor and the environment. The poor are affected by increases in the food price, reduction in the land accessible to them and fluctuations in the labor market. Deterioration of the environment is caused by intensification in the use of agrochemicals, lack of efficient regulatory schemes, and the strategies implemented by the poor.

Carter and co-workers (1995) indicate that the success of the agricultural export model of improving the social welfare depends in the short run on which social class produces the agricultural product. In the long run, the success depends on structural changes in the land tenure that allows a transfer in the land ownership towards smallholders. Furthermore, they suggest that policies that promote an agricultural export model need to do more than promote trade. These policies should incorporate mechanisms that encourage and keep small scale producers competitive. Von Braun and collaborators (1989) present two suggestions to increase the success of the agricultural export model. The first suggestion indicates that the agricultural export model will have success if attention is given to staple food production; at the same time that diversification of production to NTAEs happens in order to harness the outcomes of the
successes in a highly risky situation. The second suggestion is to promote a joint effort with health and sanitation programs which will allow for the gains from NTAE to trickle and increase the nutritional and welfare situation of the rural communities.

Above I have described how NTAE production developed and affected Guatemala at a national level. The following part in this section will describe how NTAE has affected local communities specifically in the highlands of Guatemala. Hamilton and Fischer (2003) have found that NTAE production is viewed by Maya farmers as a means of achieving economic prosperity and as mechanism that allows them to maintain and promote certain aspects of their cultural identity such as the continuing to produce in their lands and the labor associated with the agricultural production. They report there is a tendency for younger farmers and Protestants to be involve in the production of NTAEs. At the same time there is no difference in the levels of education in comparison to non-NTAE producers (Hamilton and Fischer 2003). Opposite to this, von Braun and collaborators (1989) found that there was a positive relation between the farmers’ level of education and higher yields. Further, von Braun and co-workers (1989) found that per capita corn consumption from their own production was higher for individuals who produced NTAEs and were members of cooperative. The causes for the increased were increased agrochemical inputs and increased maintenance practices.

One factor that has been influential in the development of vegetable production has been the formation of cooperatives (von Braun et al. 1989). Though I was told in many occasions there were no cooperatives in Tinamít, the reputation of one cooperative from Santiago Sacatepéquez, Cuatro Pinos, was mentioned repeatedly. This cooperative is described by von Braun and co-workers (1989) “as organizing export vegetable
production and provides field extension, input supply, produce collection, selection and storage.” Further, von Braun and collaborators (1989) indicate that Cuatro Pinos used to work for ALCOSA, one of the first exporting companies, but now they are working independently and export to the United States and Europe.

When asked if their economic situation was better or worse since they started to produce NTAE, sixty percent of the individuals interviewed in 2001 by Hamilton and Fischer in two communities in the highland of Guatemala responded that their economic situation has improved and only seven percent reported that their situation had worsened. The economic improvements also were reflected in higher levels of education reached by the children of NTAE producers and improvement in the diets. Among the improvements in the diet, one third of the women in households that produced NTAE indicated increased consumption of meat and three quarters indicated increased production in corn (Hamilton and Fischer 2003).

With respect to land tenure changes due to NTAE production, research shows that small land owners are able to purchase land from bigger land owners (Carter et al. 1996, Hamilton and Fischer 2003, 2005). Individuals that reported to have sold land during the period of research (18 percent of the total), only three percent of the individuals admitted selling due to market reasons (Hamilton and Fischer 2003, 2005). While the shift of land ownership toward the small land holder has allowed for the continuity of the Mayan relation with the land, it has also promoted alienation by individuals who seem to care more for their production and making the extra money than partaking in local community life (Hamilton and Fischer 2005).
The risks related to the NTAE production come from several factors such as, crop failures, and potential for price and market institutions to collapse. Even though the gains are higher with NTAE, the cost of production is also high and, in the case of market institutions collapsing, the NTAE products like broccoli, celery, cabbage, carrots, etc. do not last in storage as long as corn does. The risk related to NTAE production is understood by producers yet NTAE production allows the farmer to maintain control of the production of the land and to preserve cultural identity (Hamilton and Fischer 2003).

This thesis will attempt to make a contribution in our understanding of the effects that global processes have on rural communities by explaining how corn production in Tinamit has changed due to the liberalization of corn imports and the promotion of non-traditional agricultural exports. To achieve this goal I present an explanation for why trade liberalization happened when it did, pointing out which institutions played a key role in the implementation of the policies. Furthermore, I will explain what have been the effects of the trade policies at a national level and how a local community has adapted to the trade policies.
CHAPTER 4. Methods

This chapter will describe the methods used to answer the questions presented in chapter one and is divided in three sections according to each question. The first section will address the question of why the economic openness in Guatemala happened when it did. The second section addressed the effects of economic openness at a national level. While the last section deals with the effects of economic openness at a local level.

4.1 Why the trade liberalization in Guatemala happened when it did?

4.1.1 Origin of the question

This research project addresses how globalization has affected Guatemalans. Globalization is a complex concept that can incorporate several aspects. The aspects of globalization that I am interested in are the economic policies that promote trade. From the start of this research project I had realized that in order to understand the effects of globalization I needed to understand what shaped and influenced the design and implementation of trade promoting policies. Since trade has an international component I needed to incorporate in my research a paradigm that included international political interactions as well as economical components. Thus, I focused on the paradigm of international political economy (IPE).

4.1.2 Procedure

The IPE model has two parts. (1) Demand-based: here I first compared four hypotheses presented by Milner (1988) where she argues that there is a positive relation between high export dependence countries, high multi-national interconnectedness and preference for open trade policies. These hypotheses were analyzed by comparing the total exports for Guatemala and the foreign direct investment (FDI) from 1980 to 2007, and increase in the exports and FDI in the later part of the period suggests a transition
form a level that prefers open trade policies to another level that with increase preference for open trade policies.

(2) Supply-based: here I analyzed the hypotheses presented by Milner and Kubota (2005) where they indicate a move to democratization leads to greater trade openness. The mechanism they present suggest that autocratic governments will respond to a small “selectorate,” if the small “selectorate” wishes a protective trade environment they will get it. Furthermore, an increase on the “selectorate” base will be related to a demand for trade liberalization policies because trade increases the welfare of the “selectorate.” To analyze this hypothesis I investigated the electoral participation in Guatemala’s recent elections (1985-2007), specifically looking at the percent of register voters participating in the first round of elections.

Continuing with the supply-base, Milner and Judkins (2004) present three hypotheses that related partisanship and exposure to globalization with increase preference to open trade policies. The first hypothesis argues that parties within the left side of the political spectrum will have protectionist trade preference while parties on the right side of the spectrum will prefer open trade policies. The second hypothesis presented indicates a positive relation between higher levels of exposure to globalization and increased preference for policies that promote trade. The third hypothesis offered points to the power exerted by a country affecting other country’s trade policy, influencing them to promote open trade policies.

To address the first hypothesis presented by Milner and Judkins (2004) I looked at the political tendencies of the parties that have won the presidency in Guatemala since 1985 and compared partisanship to the Guatemala’s Gross National Product (GDP),
inward Foreign Direct Investment (FDI), total exports and imports for all products and corn exports and imports. For the second hypothesis, I correlated separately the values of Guatemala’s exports and imports against the values of inward FDI. Concerning the third hypothesis, I looked for the main trading partner of Guatemala and identified their influence in the development of trade policies.

4.1.3 Data Sources
Data from different websites was gathered in order to address this question. Specifically, Guatemala's GDP at current prices came from the World Bank, the foreign direct investment for Guatemala came from two sources, the Economic Ministry and the United Nation for Conference for Trade and Development, Guatemala's exports and imports by commodity type from the World Trade Organization and United States’ corn prices came from United States Department of Agriculture.

From the website for Economic Commission for Latin America and the Caribbean (ECLAC) I obtained Guatemala's rural population living in poverty and extreme poverty, the population by geographical area, the minimum wages in urban areas and Guatemala’s corn prices.

Other data used for the description of the outcomes of the democratic elections that have occurred in Guatemala since 1985 were gathered from the Supreme Electoral Tribunal website and from a special electoral section of Prensa Libre (a Guatemalan newspaper; http://www.prensalibre.com/pl/domingo/elecciones/tribuna/archivo/01/08.shtml) and from the Political Party Monograph published by the Association for Research and Social Studies (ASIES 1998).
4.2. Effects of trade liberalization at a national level

4.2.1 Origin of the Question

One way to get at the effects of policies that promote trade is to view their effects at a national level. Specifically, one can focus on the changes in the macroeconomic indicators that have occurred before and after the implementation of the policies. Another strategy is to focus on the changes in the prices of one product. In this case I have focused on the price of corn in Guatemala from 1980 to 2005 and contrasted it with the price of corn in the US.

4.2.2 Procedure

As the first step to determine the effect of economic policies in Guatemala, I collected the macroeconomic data from the sources mentioned above. The next step was to produce graphic interpretations of the data. The two corn price series were adjusted for 1983 inflation, using each country’s Consumer Price Index. The 1983 year was chosen because at this time the two currencies had exchange parity, meaning that the exchange rate was one to one.

To determine when economic trade liberalization policies began to affect Guatemala, I determined the year when Guatemalan corn prices started tracking the prices of the USA. This was done by calculating the slopes of the corn prices over time for Guatemala and the US. Then I compared the slopes to determine if they were different, if they were different, I omitted the earliest year and repeated this method. To determine if the slope of Guatemalan corn price was similar to that of the US corn price, I used a modification of the t-statistic when testing for differences between the slopes of two population regressions (Zar 1999). A Pearson correlation was used to analyze the relation between the two data sets.
4.2.3 Data Source

The data of the US corn prices was compiled from the Crop Value yearly summary reports presented by the National Agricultural Statistics Service on the USDA web page (www.nass.usda.gov). Guatemala’s corn price was gathered from the United Nations Economic Commission for Latin America and the Caribbean statistics department web page. Corn prices were obtained for the years from 1980 to 2005. I chose to start with the year of 1980 because the civil war was going on and I wanted to have some years of data before the stabilization period started. I chose the year of 2005 to end because I wanted may data not to be affected by the ethanol related increase of corn price.

Data on the quantity of Guatemala’s corn imports and exports was provided by the Coordinadora Nacional de Productores de Granos Básicos (CONAGRAB personal communication). The data on total dietary protein consumption by food group and food consumption was obtained from the United Nations Food and Agriculture Organization statistics web page (FAO 2007). The rest of the information was downloaded from United Nations Economic Commission for Latin America and the Caribbean web page (ECLAC 2007).

4.3 Effects of trade liberalization at a local level

4.3.1 Origin of the question

This thesis focuses on two components of trade liberalization. One component is the removal of the trade barriers to import grains into Guatemala. The other component is the promotion of Non-Traditional Exports (NTE). Specifically, I am interested in the removal of the barrier to import yellow corn and indirectly of wheat. My interest on yellow corn stems from the economic elastic effect that it has on the general price of corn.
in Guatemala (Figure 5.11). Moreover, I am specifically interested in the promotion of the Non-Traditional Agricultural Exports (NTAE), which included broccoli, cabbage, snow peas and other similar products.

When combining the liberalization of the importation of corn and wheat with the promotion of NTAE, an interesting question arises. How is the production of corn being affected by the promotion of NTAE? By looking at the national level effects section it can be identified that at a national level the area under production of NTAE has increased (Figure 5.10). At the same time production of wheat and the area harvested have decreased severely (Figure 5.14 and Figure 5.15) and production of corn has had a minimal decreased (Figure 5.13). The reduction of in the area of corn becomes important when we consider that in 2005 about half of the national production of corn was done by farmers producing in less than three hectares.

The combination of factors happening at a national level, such as, the promotion of NTAE, the decrease production of wheat and the small reduction in the production of corn encourages me to investigate at a local level how agricultural production is changing. One way to see what the effects at a local level are is to conduct ethnographic investigations in the area where there is a history of NTAE production and corn production.

A component of the ethnographic investigation was an interview schedule. The interview schedule had the objective of finding out what was motivating farmers to change agricultural production. I designed the interview schedule to find out about if NTAE and corn production were changing. I considered that asking farmers what motivated them to change from producing a product to producing another would point to
what were the factors that farmers are considering important with regards NTAE production. Concerning changes of corn production I thought that change could caused by three main factors. One factor was a reduction in the number of people who are producing corn. Another factor was changes in techniques used in corn production. The last factor was changes in the consumption of corn.

4.3.2 Procedure
I arrived to Tinamit on August 10 to look for a place to stay. By the end of the day I had found a place and moved in the following day. During the first two weeks my objective was to walk around Tinamit so people could see me and for me to become familiar with the landscape. On August 14, I conducted a pilot study to test my interview schedule. The pilot study showed me that I had too many questions and that some necessary information could be attained by observation, rather than by interview.

From August 20 to September 7 I had three main objectives. One objective was to improve my questionnaire based on the information collected with the pilot study. Another objective was to continue walking around Tinamit especially during market day and on the paths that lead to the fields, in order to investigate the terrain where I was going to conduct the interviews. My third objective was to have informal conversations with people in Tinamit that could increase my knowledge of the town and how agriculture was practiced in around town. During September 8 – 12, I conducted the majority of the interviews with farmers following the strategy presented above. During the last day in Tinamit I took pictures of the different agricultural techniques present in Tinamit.
4.3.3 Data source and observations

The data gathered to answer this section was collected during my visit to Tinamít during the summer of 2009. I used several anthropological strategies that I will describe below. During the first two weeks I walked around Tinamít and planned my interviews sampling strategy. I made a particular effort to walk in the vicinity of the outdoor market and to learn which agricultural products were being sold in the market.

4.3.3.2 Informal conversations

I made a particular effort to shop in the small stores. While there I had the opportunity to talk to the clerks about everyday matters. These conversations led to explanations of my presence in town. Many of the people I talked to told me stories about their own experiences as farmers. Through acquaintances made this way I found local housing. Many informal conversations gave me a better understanding of agriculture and farming in Tinamít.

Another technique used to start informal conversations was to greet individuals in Kaqchikel. These conversations later changed to Spanish, a language in which I am more proficient. In two occasions these informal conversation with strangers led to an invitation to visit the person’s field.

4.3.3.3 Interviews

I interviewed only men. For the most part the interviews were conducted while farmers were in the fields and on two occasions we met at the interviewee’s house. After pilot testing the interview schedule, I interviewed 21 men. The final interview schedule consisted of 35 questions of which only 17 are described in detail in this thesis (see Table 4.1 and Appendix A for a full list of the questions). The table is accompanied by an explanation for why each question was asked. The pilot study was conducted on August
Interviews with the final schedule were conducted from September 8 to September 12, 2009. My sampling strategy was the snowball strategy. I interviewed all the farmers who were available on a stretch of road (see Figure 4.1).

After introducing myself to the farmers, I presented with a brief explanation of my project and explained their rights as an interview subject, following IRB procedures. The introduction, the IRB explanation, and the interviews were conducted in Spanish. The answers to the questions were written in Spanish and later translated to English. I did all the translations.

When walking along the road looking for men to interview I chose any man who appeared to be approachable with two exceptions: a man with a spraying pump and a man who was actively loading a truck with farm produce. I did not approach in the first instance because I did not know what the individual was spraying and I did not have protective gear. I did not approach in the second instance because I learned that reaching the market on time was a sensitive issue for farmers.

Figure 4.1 Schematic representation of the location where the interviews were conducted in Tinamit
<table>
<thead>
<tr>
<th>No</th>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Please tell me what crops have grown in since you started farming?</td>
</tr>
<tr>
<td>2</td>
<td>What else have you grown besides the ones you have told me about? (looking for the crop)</td>
</tr>
<tr>
<td>3</td>
<td>Why did you switch from growing (answer in question 1) to (answer in question 2)? (if there is no change between 1 and 2 ask)</td>
</tr>
<tr>
<td>8</td>
<td>Could you tell me when you think they started to use pesticides in this community?</td>
</tr>
<tr>
<td>9</td>
<td>When do you think they started to use fertilizers in this community?</td>
</tr>
<tr>
<td>10</td>
<td>When do you think they started to use organic fertilizers (manure and allies)?</td>
</tr>
<tr>
<td>11</td>
<td>How many quintals of corn do you get each time you harvest on average? (per cuerda)</td>
</tr>
<tr>
<td>12</td>
<td>Has your yield of corn increased/decreased/stayed the same since you started planting corn?</td>
</tr>
<tr>
<td>13</td>
<td>What do you think made your yield increase/decrease?</td>
</tr>
<tr>
<td>14</td>
<td>From the corn that you harvest, how much do you sell?</td>
</tr>
<tr>
<td>15</td>
<td>From the corn that you harvest, how much do you is consumed at home?</td>
</tr>
<tr>
<td>17</td>
<td>Could you tell me the changes that you notice in the way people farm in this area since 1980?</td>
</tr>
<tr>
<td>29</td>
<td>Do you think the number of people producing corn in this community has increased/decreased/stayed the same in the last 20 years?</td>
</tr>
<tr>
<td>30</td>
<td>Could you tell me why the number of people producing corn in this community has increased/decreased?</td>
</tr>
<tr>
<td>31</td>
<td>Do you think that people in this community are consuming more/less/same amount of corn than 20 years ago?</td>
</tr>
<tr>
<td>32</td>
<td>Do you think the amount of corn grown in the region is enough to feed the community?</td>
</tr>
</tbody>
</table>

*Table 4.1* Interview schedule

The first three questions were designed to work in conjunction with each other. In question one “Please tell me what crops have grown in since you started farming” was trying to get at the products that farmers had produced at one moment. In the case of question two “What else have you grown besides the ones you have told me about” I was looking for more crops that the farmers had planted in the past. A specific period of time to recall was not offered to them as I was interested in what changes in the crops were produced. I did not ask the farmer to give me a chronological account of his crop production. The third question “Why did you switch from growing (answer in question 1)
to (answer in question 2)” I was looking for the reasons that farmers change from planting a crop to another. In this question I was not looking at a particular dyad of crop, I was looking for what prompted the change in agricultural products.

To get at when chemical agricultural products started to be used in Tinamît I asked the questions eight and nine. While with question ten, I was interested in determining if organic fertilizers had a recent history of introduction. The purpose of this question was to try to identify a point in time when capital intensification of agriculture started in Tinamît.

For questions eleven “How many quintals of corn do you get each time you harvest on average” and twelve “Has your yield of corn increased/decreased/stayed the same since you started planting corn,” I was looking to get information on the local yields of corn and how they have changed during the farming life of the individual. Question eleven focused on knowing the yields of present or recent corn production events, while question twelve was getting at the direction of the changes in the yields of corn. To accompany question twelve, question thirteen was looking for the ideas that farmer had as to what made the changes in the yields of corn. Similar to question four, identification of the changes in the corn yields can be a useful strategy to determine which the factors that are affecting corn production are.

With the questions fourteen “From the corn that you harvest, how much do you sell” and fifteen “From the corn that you harvest, how much do you consume at home” I was interested in finding out what happened to the corn that was harvested. Specifically, with question fourteen I was looking at how much of the harvested corn was sold by the
farmer. While with question fifteen, I was interested in finding out how much of the harvested corn was consumed by the family members.

Question seventeen “How many days does a quintal of corn last your family” was asked to find out what was the rate of consumption of the farmers. It also asked the number of family members that consumed from it. I did not ask the age distribution of their family members. Consumption rates are affected by the number of individuals, the gender and the age distribution of the consumers. This question was asked to compare the basal rate consumption of Tinamít against the national average of consumption. Rate of consumption also indicates how dependent they are on the product.

With the question eighteen “Could you tell me the changes that you notice in the way people farm in this area since 1980,” I was looking for the farmers perspective to what had changed in the way people do agriculture.

I asked question twenty-nine “Do you think the number of people producing corn in this community has increased/decreased/stayed the same in the last 20 years” in order to see if the number of corn producers had changed since 1980. Furthermore, I asked question thirty “Could you tell me why the number of people producing corn in this community has increased/decreased” to get at the opinion of farmers for why the number of corn producers had changed since 1980. This pair of question was looking for the effects of liberalization of corn imports on the number of corn producers. If increased corn had an impact on the producers, one would expect a reduction in their numbers, but since other factors could have been playing a role I asked for the opinions of the farmers to see if the reasons for the changes in the number of corn producers was due to the economic effects of the trade policies.
One factor that could be affecting the number of corn producers is a change in the consumption of corn. Question thirty-one “Do you think that people in this community are consuming more/less/same amount of corn than 20 years ago” was looking for the opinion of farmers on the changes in the consumption of corn since 1980. If the farmer thought that a change had happened in the consumption on corn I asked a follow up question “Why do you thing corn consumption in this community has changed” as to why they thought that the corn consumption had changed. Furthermore, corn consumption could be maintained and a reduction on the number of corn producers could happen if corn was brought from other regions of Guatemala. To address this issue I asked question thirty-two, this question was also looking at local food production security for the community.

Another explanation for changes in the corn and vegetable production could be that farmers are changing their life styles such as migrating to work in the city or finding other sources of employment in town. One possible factor that is facilitating the access to other types of employment is increase levels of education. This possible explanation was address with questions thirty-three and thirty-four. Where the question thirty-three was looking for the general changes in the number of farmers and question thirty-four was looking for the opinion of farmers as to why the changes had happened.
CHAPTER 5. Results

This chapter presents the results for the three components of the thesis. It is divided in three sections according to the questions presented in the introduction. The first section will provide the results for why economic openness happened when it did. The second section gives the results to the question what are the effects of trade liberalization a national level. In the third section I present the results that address the question about the effects of trade liberalization at a local level. Lastly, I recapitulate the results describing the changes in the production, consumption and the producers of corn.
5.1 Why trade liberalization happened when it did?

5.1.1 Evidence for trade liberalization

As a result of the effort to liberalize of Guatemala trade, the gross domestic product (GDP) grew from 7.8 billion US dollars in 1980 to 38.9 billion US dollars in 2008 (in current prices) (Figure 5.1). Foreign direct investment (FDI) did not start to increase the capital inflows to Guatemala until 2000s. By 2005, it had more than doubled the average of the 1990s to 226 million US dollars, and by 2007 it has risen to more than 500 million US dollars (Figure 5.2). Guatemala started to see an increase of its exports around the early 1990s, especially in the agricultural and manufactured goods sectors (Figure 5.3). For Guatemala’s imports, the increase of manufactured goods started in the late 1980s; the agricultural product imports in Guatemala also increased during the same period but at a slower rate compared to the exports (Figure 5.4). The GDP, FDI, total exports and total imports are positively and significantly correlated (See Table 5.1 for values).

![Guatemala's GDP](image)

Figure 5.1 Guatemala's GDP at current prices, World Bank
Figure 5.2 FDI for Guatemala, data does not include amounts from privatization, MINECO, and UNCTAD

Figure 5.3 Guatemala’s Exports by commodity type, WTO

Figure 5.4 Guatemala’s imports by commodity type, WTO
5.1.2 Why protectionism continued

Using the demand-based framework, specifically the sectors approach, Milner (1988) presents four hypotheses that explain the level of opposition to protectionism within a country. She states that there are two factors important for opposing protectionism. The first factor is the level of multi-national interconnectedness that the companies have. If their business is highly integrated with companies in other countries, they will oppose protectionism, because they need the free flow of goods. The second factor is export dependency. Countries that are heavily dependent on their exports will be against protectionist measures as the export companies fear retaliation. These two factors describe the position of export-oriented companies. The first hypothesis suggests that a country with low export dependency and companies with low multinational interconnection will lead to higher trade protectionism, and the demand for trade protectionism will vary according to the economic situation. The second hypothesis indicates that a country with high export dependency whose companies have low multinational connections would be less protectionist in comparison to countries in the first hypothesis, and these countries will favor more open economies abroad. The third hypothesis points out that a country with high export dependency and high multinational relations of their companies will lead to favoring economic openness. The last hypothesis presented by Milner suggests that a country with low export dependency and high multinational relations of their companies will lead to protectionism in selected areas.

In the period from 1980 to 2007, Guatemala was in transition from conditions indicated in the second hypothesis to those indicated in the third hypothesis presented by Milner. Guatemala has been highly dependent on exports (see Figure 5.3), especially
agricultural products such as coffee, sugar, bananas and cardamom. In addition, before
the peace agreement was signed (1996), less FDI was attracted (see Figure 5.2). As FDI
started to increase in influence, the pressures for opening the market by the multinational
interconnectedness also started to increase; as a result, the free trade agreements
happened. Before the increase in the influence of FDI could happen Guatemala needed to
attract FDI, in order to do this Guatemala needed political and macro-economic stability.

Basu and Srinivasan (2002) noted the importance of political and macro-
economic stability as a key element for the attraction of FDI into Africa. This fits under
the demand-based sectors framework, and it can explain why protectionism persisted for
such a long time in Guatemala during the period of 1980 to 2007. The return to
democracy and accomplishment of the peace agreement prompted political stability in
Guatemala. Macro-economic stability was demonstrated by the promotion of the export-
oriented sector (trade laws promoting exports and *maquilas* and creation of free trade
zones), privatizations of the state-owned utility companies, and creation of the
Superintendency of Tax Administration (SAT in Spanish). It was not until these reforms
were in place in Guatemala that the FDI and trade started to increase at a fast rate.

5.1.3 Left-right division on trade openness

Partisanship and globalization can affect trade policy. Three hypotheses presented
by Milner and Judkins (2004) explain the effects of partisanship and globalization on
trade policies. (1) Political parties have opposing views on the open trade policies,
predicting that left-wing parties prefer protectionism and right-wing parties will prefer
trade openness. (2) There is a positive relation between increased exposure to the
globalization and an increased preference to open trade, as increased exposure to the
globalization happens, both sides tend to promote open trade policies suggesting
increased importance of the trade. (3) There is a relation between trade policies and the
effect of hegemonic powers of bigger trade partners. Bigger trade partners exert influence
on trade policies using their power to favor openness, pointing to the idea that
governments are not completely isolated when designing trade policies.

To contrast Milner and Judkins (2004) three hypotheses with the situation of
Guatemala consult Tables 5.1 and 5.2 and Figures 5.1 to 5.6. Further description of the
variables and their relation is presented below. Milner and Judkins (2004) first
hypothesis, in the case of Guatemala, the opening of the economy started to happen as the
right-wing parties arrived to power, in 1993 for the Legislative and in 1995 for the
Executive branch. Evidence for the second hypothesis, suggesting an increase exposure
to globalization leads to trade openness is the correlation between FDI and imports ($r =
0.696, p < 0.01, N = 28$) and exports ($r = 0.682, p < 0.01, N = 28$) (Figures 5.2 to 5.4 and
Table 5.2). The third hypothesis, relating the effect of the hegemonic power and the trade
policies, is relevant to Guatemala because the US is the principal trading partner of
Guatemala, and thus has much influence over Guatemala’s trade policies such that the
negotiation of DR-CAFTA had little transparency, publishing a draft only after the
negotiations had culminated (CONGCOOP 2004).

5.1.4 Description of the comparison between variables in table 5.2

In Table 5.2 I compare the information graphically presented (Figures 5.1 to 5.9).
A Pearson’s correlation was used to compare the economic and social parameters. The
correlation coefficient values, the p values and the number of items compare are
presented in Table 5.2. In this section, I will provide an interpretation of these relations.
The first cell explained is the comparison between the corn prices from Guatemala and
the United States, the explanations continue by row, reading from left to right. Only the relations that are statistically significant at a p < 0.05, which are present in the upper triangular half of the matrix will be explained. Further, the social variables, which include rural poverty levels, urban population and rural population will be explained at the end. The data for all of the variables corresponds to the years from 1980 to 2005, in some instances more data is available. This period was selected because I wanted to include information during the times of military regimes in Guatemala, transition to democracy and push for opening the economy of Guatemala.

One comparison between the corn prices of the United States and Guatemala. Both prices have been adjusted for inflation with their respective consumer price index for 1983. This year was selected because the Guatemalan Quetzal and the United States' Dollar had an exchange rate of one to one. The positive relation of the two corn prices indicates that the Guatemalan price is affected by the price of the world's leading corn producer after Guatemala liberalized the trade of yellow corn. Figure 5.11 shows a reduction in prices of corn in Guatemala and in the United States. Further, the price of corn in Guatemala started to decrease around the same time that liberalization happened.

Corn imports into Guatemala and the price of corn in the United States have a negative relation. This indicates that there is an increase in the importation of corn into Guatemala simultaneously a reduction in the price of corn in the United States. The demand of imported corn in Guatemala and the mechanisms that influence the price in the United States are not interrelated, meaning that Guatemala's demand for corn does not influence the price of corn in the United States. However, the reduction of the price in the United States does affect the capacity of purchase of corn by Guatemala. A reduction in
the price of corn in the United States could lead to an increase in the amount of corn that can be purchased by Guatemalans. When we consider inflation, we can infer that the increase in the imports of corn into Guatemala was due to an increase in the demand and not because there was a reduction in the price of corn adjusted for inflation in the United States.

One drawback from doing correlation matrices is the generation of comparisons that have no logical explanation. The correlation comparison that are statistically significant just indicates that they are mutually correlated to another variable that has not been determined. The rest of comparisons against the price of corn in the United States do not have a particular explanation; they are Guatemala’s minimum urban wages, total imports, total exports, gross domestic product, foreign direct investment and the social variables.

The second variable to be compared is the price of corn in Guatemala adjusted to 1983. The first comparison is against Guatemala's corn imports. The correlation is negative indicating that as Guatemala increased the importation of corn there was also a reduction in the Guatemala's price of corn. This can be explained with the supply and demand curves. As the supply increases, there is a reduction in the demand of the product, shifting the price to a lower value.

The next comparison is between the corn price in Guatemala and the minimum urban wages of Guatemala. The relation is positive indicating that as the corn prices decreased there was also a reduction in the minimum wages of the urban labor. The mechanism that could be driving this relationship is a reduction in the price of corn has
prompted many farmers to stop producing corn, instead of farming they have migrated to urban areas increasing the supply of labor having an effect on their wages.

The relationship between corn price in Guatemala and the total imports of Guatemala is similar to the relation between corn price in Guatemala and the imports of corn into Guatemala. The similarity is caused by the inclusion of imports of corn with in the total imports of Guatemala and that importation of other products increased.

The corn price in Guatemala and the total exports of Guatemala are negatively related, indicating that as exports in Guatemala increased there was at the same time an reduction in the price corn. There is no apparent explanation for this relation.

There is a negative relationship between gross domestic product (GDP) and the price of corn in Guatemala. The GDP is composed of the summation of the variables: private consumption, gross investment, state consumption and exports minus imports. This relationship is complicated to explain because private and state consumption affect inflation. Inflation is affected by increasing the demand with out an increasing production, which leads to general increase in prices. Inflation is the measurement in the increase in prices. Further, the price of corn used in this study was adjusted to the inflation of 1983, which means that the corn price was adjusted to the variations of inflation. The mechanisms that drive the negative relationship between the corn price in Guatemala and the GDP is the increase in consumption by the state and private sector, because these consumptions are part of what is driving inflation up. The result is negative relation between the GDP and price of corn in Guatemala that is explained by the adjustment for inflation.
The next variable is the Guatemala's total corn imports. The first relationship to compare is the Guatemala's corn imports with the minimum urban wages. The relationship is negative, indicating that as the imports of corn increased there was a simultaneous reduction in the minimum wages earn by the urban labor force. A partial explanation for this relationship is the effects that corn imports have on the local price of corn in Guatemala, with an increase in the imports there has been a reduction of the price adjusted for inflation. This reduction in the price of corn is one of the reasons that prompted farmers to migrate to urban area. Other reason that explain the rural to urban migration of labor are the reduction to access to land and the collapse of the markets of traditional export product, such as coffee, meat and cotton. An over abundance of urban labor has lead to a reduction in the wages.

Total corn imports for Guatemala and the total imports for Guatemala are positively correlated. This was expected, as corn is included in the list of items imported. Further, this could indicate that there is a general increase in the demand of products in Guatemala.

The next comparison is between total corn imports and total exports for Guatemala. There is a positive relation. No apparent direct mechanism explains this relationship.

Another comparison is the total corn imports and the GDP. There is a positive relation. As I mentioned earlier imports are included in the measurements of GDP but imports are subtracted from the exports. The positive relation is explained by the increase consumption of the private sector and the state.
Concerning the relation between corn imports into Guatemala and the foreign direct investment (FDI), there is a positive relation. This indicates that both the corn imports and FDI were increasing at the same time. The mechanism that could explain this relation is the increase in FDI can be translated to an increase in the industrial production of Guatemala. Among the industries that have grown are those that use corn in their processes, such as animal feeds or processed foods, resulting in an increase in the demand of imported corn.

The next variable to compare is the minimum wage in urban areas. The first relation explained is between the minimum wage in urban areas and the total imports into Guatemala. There is a negative relation between minimum wages and the total imports, indicating that as imports increased there was a reduction in the minimum wages in urban areas. The mechanism that might be explaining this relationship is that the arrival of imports has prompted an increase in competition for local producers, in order to reduce costs of production labor wages have been reduced. Further, with the abundance of labor supply caused by the migration of individuals from rural areas to urban areas has also put pressure to maintain minimum wages low.

Similarly, the comparison between minimum urban wages and total exports from Guatemala and GDP is negative and the mechanisms that could be used to explain this relation are the increase competition and rural to urban migration. In the case of exports, there has also been an increase in the exports, suggesting that competition has also increased, forcing producers to cut costs. Additionally, the export sector has also benefited from migration of individuals into urban scenarios leading to a cheaper labor wages. Concerning the GDP, the migration to urban settings indicates that individuals are
changing from a subsistence system of living to an economic system. In the subsistence system, the individual produces its food and there is very little transaction of capital. In contrast, the majority of transactions in the economic system are base on capital and there is very little self-production of food. This transition of systems implies that the individual has incorporated into a system of private consumption, which is a component of the GDP. Further, once the individual has incorporated into the labor force the remittances that the individual sends back home help incorporate the individuals receiving them into the economic system that increases consumption.

Another variable to consider is the total imports of Guatemala. The comparison between total imports and total exports of Guatemala is positive, indicating that both variables were increasing at the same time. The mechanism that could be explaining this relation is the increase involvement of Guatemala in global trade, by removing trade barriers and providing incentives to increase trade.

The relation between total imports into Guatemala and GDP is positive. As mentioned before imports are subtracted from the exports when the GDP is calculated. The mechanism that is relating the two variables is consumption. In the case of GDP, the increase is driven by private and state consumption and investment. Additionally, for the total imports the increase is driven by private and state consumption.

One more relation is between the total imports into Guatemala and the FDI, which is positive. First, I need to explain how FDI works. Foreign direct investment is the process by which a foreign company acquires control of a local company or installs a new branch of the company in a local country. The acquisition of control usually happens by purchasing the local company. Once the company has been purchased, a local team
runs it. However, the decisions of production tend to be controlled by the foreign branch of the company. The foreign branch can also provide the local company with materials and expertise for particular techniques to make production standard. It is frequent that the local branches import some of their materials for production. An example is the maquila production of clothing garments for particular brand. In these cases, the foreign company will send the fabric and the local company cuts and assembles the materials. By sending the material into the local country, the materials are registered as imports.

The next variable is the total exports from Guatemala. There is a positive relation between total exports and GDP of Guatemala. This indicates that the exports and the GDP were increasing at the same time. As I said before the exports are included in the GDP calculations. In the case of Guatemala, the imports are higher than the exports thus mathematically canceling the effect that an increase in the exports can have on the GDP. The mechanism that might be relating the two components is the increase in production, specifically for export. With increase production, there is a simultaneous increase in consumption from producers.

The next relation is between total exports of Guatemala and the FDI, which is a positive. This indicates that the two variables were increasing at the same time. The mechanism that explains this relationship includes components given while explaining the relationship between total imports and FDI. In this case, the finished product, elaborated in the local branch of the company, is then sent to the foreign branch or to other countries and this is included in the total exports of the country.

The last economic variables to compare are the GDP and FDI. There is a positive relation between the two variables, indicating that the two were increasing at the same
time. Two mechanisms might be used to explain this relationship. The first mechanism is an increase in the GDP signals that the consumer base is increasing attracting foreign investors to a growing market. The second mechanism is by attracting investment there is a development of the production capacity that leads to increase consumption, which is reflected in the GDP.

In the following section, I will explain the three social variables and how they relate to the economic variables and to the other social variables. I will describe them by columns going down, focusing only on the relationships that have a statistically significant result. I will start with rural population in poverty.

The first comparison is between rural poverty and price of corn in Guatemala adjusted at 1983 prices. There is a positive relationship between the two variables, indicating that at the same time that there was a reduction in the price of corn in Guatemala there was also a reduction in the levels of poverty in rural areas in Guatemala. Several processes can explain this relation. Among the explanations is the migration to urban areas that provided rural communities with remittances. Further, agricultural production incorporated non-traditional agricultural exports, which allowed higher income. The combination of remittances, higher earnings, and the cultural importance of corn promotes its production withstanding the price reduction.

Another comparison is between rural poverty and minimum wages in urban areas. This relation is positive, indicating that the levels of rural poverty and minimum wages in urban areas were reducing at the same time. This relationship seems to be explained by rural to urban migration. Were increase migration to urban areas affected wages with the abundant supply of labor at the same time the individuals that were able to find work
send back remittances that reduce poverty by providing capital resources for the establishment of businesses, access to medicine and education.

One more comparison is between rural poverty and the gross national product (GDP) of Guatemala. The relation is negative, which indicates that GDP was increasing and the rural poverty was decreasing. The mechanism that connects the two variables is earnings. With increase earnings there is a reduction in poverty simultaneously there is an increase in the private sector consumption.

The next variable to explain is total urban population. The first comparison to be address is between total urban population and total corn imports into Guatemala. The relationship between the two variables is positive, indicating that they were both increasing in the same period. This two variables seem to be related by the an increase in the population in the urban areas, which has lead to increase in the demand of imported corn that is consumed by humans after industrial modifications. Additionally, the increase in urban population has also lead to and increase demand for beef and poultry, increasing also the demand for animal feeds, which include corn.

The next comparison is between total urban population and total imports. This relation is positive indicating that the two variables were increasing during the same period. The mechanism explaining this relationship is similar to the previous explanation. With increased urban population, there is an increase demand for product, one mechanism to satisfy the demand is through importation.

One more comparison is between total urban population and total exports. This is a positive relation, indicating that the two variables were increasing in the same period. The mechanism that could explain this relation is production. The increase demand was
accompanied by increase production, once production achieved an economy of scale access to new markets through exports became important to sell the production.

Another comparison is between total urban population and Guatemala's GDP. This relation is positive. Both variables were increasing at the same time. Additionally, this relation can be explained by increase consumption. With increase population in urban areas, by either migration or intrinsic population growth, there is an increase in consumption by the private sector, which is a component of the GDP formula.

The last variable to explain is the total rural population. The first relation to compare is against the price of corn in the United States adjusted to 1983 price. The relation is negative, meaning that as the price of corn decrease, there was a simultaneous increase in the rural population of Guatemala. I believe that this is a spurious relation, with no mechanism that can explain it.

The next comparison to explain is between the total rural population and the price of corn for Guatemala adjusted to 1983 price. This negative relation indicating as the corn prices in Guatemala decrease the population in rural areas increased. Several factors that are interrelated are involved in explaining this relation. One factor is increase population, which normally would lead to increase demand and increase in the price. However, in this case the increase population in the rural areas means increase production since rural populations tend to produce corn for consumption within the family. Another factor is increase imports, which helps satisfy the demand for individuals that do not produce their own corn. In the case of Guatemala, the imported corn has affected the local price of corn, causing it to decrease.
One more comparison is between the total rural population and the minimum urban wages. This relationship is negative. This means that as the rural population grows there is a simultaneous reduction in the wages earned by the urban labor. The mechanism that could explain this relation is migration. As the population grows in the rural areas, there is a larger pool of individuals that migrate to urban areas in search of labor having a negative effect on wages. The migration does not need to be permanent or for long periods, migration can have an effect on wages if the individuals are commuting.

Several mechanisms might be explaining the interconnection of the relations among the economical and social variables. The most common mechanisms are migration, consumption and production. Further description of the variables is provided below. The objective of this section was to introduce the variables and to present ideas on how they were interconnected.
<table>
<thead>
<tr>
<th>Election Year</th>
<th>President (Party of the president)</th>
<th>Votes received in the last round</th>
<th>Registered voters (% participation in the first round)</th>
<th>Party with majority in congress (No. of seats) political tendency</th>
<th>Number of congressmen by district/national listing</th>
<th>Number of congressmen (No. of parties in congress)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1985</td>
<td>Marco Vinicio Cerezo Arévalo (Christian Democracy) center left</td>
<td>648,681</td>
<td>2,753,572 (69.3%)</td>
<td>Christian Democracy (50) center left</td>
<td>76/24</td>
<td>100(7)</td>
</tr>
<tr>
<td>1990–1991</td>
<td>Jorge Serrano Elías (Solidarity Action Movement) right</td>
<td>936,385</td>
<td>3,204,955 (56.44%)</td>
<td>National Center Union (41)</td>
<td>87/29</td>
<td>116(9)</td>
</tr>
<tr>
<td>1993</td>
<td>Failed Auto <em>Coup d'état</em>. Congress names a new president, Ramiro de León Carpio to finish the period, constitutional reforms are accepted by popular vote, among them a reduction in the number of congressmen to 80, presidential office period reduced to 4 years, and elections to “clean” congress from their corrupt members.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1993–1994</td>
<td>Ramiro de León Carpio (no party)</td>
<td>3,438,405 (15%)</td>
<td></td>
<td>Guatemalan Republican Front (32) hard right</td>
<td>64/16</td>
<td>80(6)</td>
</tr>
<tr>
<td>1995</td>
<td>Álvaro Arzú (National Forward Party) center right</td>
<td>671, 358</td>
<td>3,711,589 (46.88%)</td>
<td>National Forward Party (43) center right</td>
<td>64/16</td>
<td>80(16)</td>
</tr>
<tr>
<td>1999</td>
<td>Alfonso Portillo (Guatemalan Republican Front) hard right</td>
<td>1,185,160</td>
<td>4,458,213 (53.8%)</td>
<td>Guatemalan Republican Front (63) hard right</td>
<td>91/22</td>
<td>113(7)</td>
</tr>
<tr>
<td>2003</td>
<td>Óscar Berge (Great National Alliance) centre right</td>
<td>1,235,219</td>
<td>5,073,282 (57.80%)</td>
<td>Great National Alliance (47) center right</td>
<td>127/31</td>
<td>158(16)</td>
</tr>
<tr>
<td>2007</td>
<td>Álvaro Colom (Unity for Hope) center left</td>
<td>1,449,533</td>
<td>5,990,029 (60.36%)</td>
<td>Unity for Hope (48) center left</td>
<td>127/31</td>
<td>158(14)</td>
</tr>
</tbody>
</table>

Table 5.1 Historical description of the Guatemala’s democratic period
Sources accessed on December 12, 2008. TSE, Prensa Libre, ASIES
<table>
<thead>
<tr>
<th></th>
<th>US corn price</th>
<th>GUA corn price</th>
<th>GUA corn Imp</th>
<th>Min Urban wage</th>
<th>GUA Imp</th>
<th>GUA Exp</th>
<th>GDP</th>
<th>FDI</th>
<th>Rural poverty</th>
<th>Urban pop</th>
<th>Rural pop</th>
</tr>
</thead>
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<tr>
<td><strong>US corn price</strong></td>
<td>1</td>
<td>0.897</td>
<td>-0.694</td>
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<td>-0.645</td>
<td>-0.584</td>
<td>-0.661</td>
<td>-0.311</td>
<td>-0.885</td>
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<td>26</td>
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<tr>
<td><strong>GUA corn price</strong></td>
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<td>-0.633</td>
<td>-0.924</td>
<td>-0.605</td>
<td>-0.535</td>
<td>-0.656</td>
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<td>26</td>
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<tr>
<td><strong>GUA corn Imp</strong></td>
<td>-0.694</td>
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<td>0.956</td>
<td>0.942</td>
<td>0.953</td>
<td>0.559</td>
<td>-0.837</td>
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<td>26</td>
<td>26</td>
<td>26</td>
<td>4</td>
<td>6</td>
<td>6</td>
<td>6</td>
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<tr>
<td><strong>Min Urban wage</strong></td>
<td>0.858</td>
<td>0.924</td>
<td>-0.665</td>
<td>1</td>
<td>-0.595</td>
<td>-0.538</td>
<td>-0.668</td>
<td>-0.091</td>
<td>0.984</td>
<td>-0.746</td>
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<tr>
<td><strong>N</strong></td>
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<td>26</td>
<td>28</td>
<td>26</td>
<td>26</td>
<td>29</td>
<td>29</td>
<td>4</td>
<td>6</td>
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<tr>
<td><strong>GUA Imp</strong></td>
<td>-0.645</td>
<td>-0.605</td>
<td>0.965</td>
<td>-0.595</td>
<td>0.956</td>
<td>0.995</td>
<td>0.978</td>
<td>0.696</td>
<td>-0.895</td>
<td>0.965</td>
<td>0.622</td>
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<td>26</td>
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<td>26</td>
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<tr>
<td><strong>GUA Exp</strong></td>
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<td>0.942</td>
<td>-0.538</td>
<td>0.995</td>
<td>1</td>
<td>0.975</td>
<td>0.682</td>
<td>-0.848</td>
<td>0.947</td>
<td>0.583</td>
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<td>27</td>
<td>26</td>
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<td>26</td>
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<tr>
<td><strong>GDP</strong></td>
<td>-0.661</td>
<td>-0.656</td>
<td>0.953</td>
<td>-0.668</td>
<td>0.978</td>
<td>1</td>
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<tr>
<td><strong>FDI</strong></td>
<td>-0.311</td>
<td>-0.160</td>
<td>0.559</td>
<td>-0.091</td>
<td>0.696</td>
<td>0.682</td>
<td>0.617</td>
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<td>-1.27</td>
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<td>0.225</td>
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<tr>
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<td>26</td>
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<td>28</td>
<td>28</td>
<td>4</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td><strong>Rural poverty</strong></td>
<td>0.885</td>
<td>0.965</td>
<td>-0.837</td>
<td>-0.984</td>
<td>-0.895</td>
<td>-0.848</td>
<td>-0.969</td>
<td>-1.127</td>
<td>1</td>
<td>a</td>
<td>a</td>
</tr>
<tr>
<td><strong>N</strong></td>
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<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td><strong>Urban pop</strong></td>
<td>0.860</td>
<td>-0.707</td>
<td>0.973</td>
<td>-0.746</td>
<td>0.965</td>
<td>0.947</td>
<td>0.980</td>
<td>-0.748</td>
<td>1</td>
<td>0</td>
<td>0.775</td>
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<tr>
<td><strong>N</strong></td>
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<td>6</td>
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<td>6</td>
<td>6</td>
<td>6</td>
<td>1</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td><strong>Rural pop</strong></td>
<td>-0.958</td>
<td>-0.954</td>
<td>-0.986</td>
<td>0.975</td>
<td>0.622</td>
<td>0.583</td>
<td>0.718</td>
<td>-0.225</td>
<td>-0.775</td>
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<td>6</td>
<td>1</td>
<td>6</td>
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</tr>
</tbody>
</table>

Table 5.2 Pearson’s Correlation matrix
The table shows the Pearson’s coefficient values (r), the significance values for a two-tail test (p), and the number of cases in each pair wise comparison (N). The significant values are highlighted in gray and mark * or ** for alpha values of 0.05 and 0.01 respectively. The letter a means no data. US corn price = Yearly average of US corn prices US dollars per Ton, from 1980 to 2006 adjusted to Consumer Price Index (CPI) values of the US for the year 1983. GUA corn price = Yearly average of Guatemalan corn prices in US dollars per Ton from 1980 to 2005, adjusted to CPI values of Guatemala for the year 1983. GUA corn Imp = Tons of corn imported by Guatemala per year. GUA corn Exp = Tons exported by Guatemala per year. Min Urban Wage = Minimum wages in urban areas in Guatemala relative to 2000. GUA Imp = Guatemala’s
total imports in millions of US dollars at current prices. GUA Exp = Guatemala’s total exports in millions of US dollars at current prices. GDP = Guatemala’s Gross Domestic Product in millions of US dollars at current prices. FDI = Foreign Direct Investment millions of US dollars. Rural poverty = Percent of Guatemala’s rural population living in poverty. Urban pop = Population of individuals living in urban areas. Rural pop = Population of individuals living in rural areas. For information on sources or the data, see the respective graphs.

5.1.5 Consequences of trade liberalization

I use corn as a model to understand some of the consequences of economic openness for Guatemala. Imports of corn started to rise around 1989 (Figure 5.5) and the trend has continued. Allowing large amounts of international corn into Guatemala’s market affects the local corn market and (Figure 5.6), has dietary implications, such as changes in protein source, caloric energy intake and food type consumption, explained below. For example, a small farmer working on less than three hectares of land does 47 percent of the production of corn in Guatemala for 2005 (Red SICTA 2007). The reduction of the local production of corn can have cultural and biological consequences. In addition, it can have an impact on food security as less people produce food for their consumption (Winkler 2008). Furthermore, a relation between nutrition transition and economic openness is possible through a reduction in price of meats, as well as a increase access meats and processed foods with a high content of fats, sugars, and salt (Thow and Hawkes 2009). Nutritional transition becomes of special importance when rural to urban migration happens, as city migration increases “sedentarism and undesirable eating habits” that have been related to increase risk of cardiovascular disease (Torun et al. 2002).

One of the common arguments in favor of open trade is that it has positive social and economic impacts (Bhagwati 2007). For this to be true, we would expect to see a national reduction of poverty. There has been a reduction in poverty. This poverty reduction has also been reported in rural areas (Figure 5.7). An important question is what are the forces driving this reduction in poverty? Non-traditional agricultural export promoted the poverty reduction in the
highlands (Carter et al. 1996). The migration of people from rural to urban areas has happened (Figure 5.8). It is possible that this migration has helped reduce poverty when migrant sent funds back home to the rural areas or that the individuals migrating to urban areas are the poor. Urban centers attract workers despite the fact that minimum wage in urban areas has been decreasing (Figure 5.9). In concordance with results from Rigobon and Rodrik (2005), the urban centers are providing a steady source of income, not present before. Thus, economic openness by itself may reduce poverty, but concurrent social processes that might be unrelated to economical openness, such as remittances, may also be driving the reductions in rural poverty.

**Figure 5.5** Guatemala's imports and exports of corn, ECLAC

**Figure 5.6** Comparison of prices between the US and Guatemala, US prices USDA and Guatemala's prices ECLAC
Figure 5.7 Percent of Guatemala's rural population living in poverty and extreme poverty, ECLAC

Figure 5.8 Population living by geographical area in Guatemala, ECLAC

Figure 5.9 Minimum wages in urban areas in Guatemala, ECLAC
5.2 What are the effects of corn liberalization at a national level?

Economic openness policies that reduce tariffs on the trade of agricultural products, like DR-CAFTA, will increase the demand, production, and trade of those products. This is the case in Guatemala in which 4 of the top 5 exports are agricultural products (BANGUAT 2007), and non-traditional agricultural exports (Figure 5.10) and corn imports have increased (Figure 5.5) (CONAGRAB pers com). Because of the increase of imports of corn, and the increase in the area harvested of traditional exports economic openness policies are putting pressure on traditional methods of corn production.

![Area harvested by product category](image1)

**Figure 5.10** Area harvested by product category, ECLAC

![Corn prices US and Guatemala adjusted to 1983](image2)

**Figure 5.11** Corn price US and Guatemala adjusted to 1983, with regression equations, USDA and ECLAC
The Figure 5.11 is similar to Figure 5.6, the difference is that Figure 5.11 incorporates the analysis that determines when the two corn prices (Guatemala’s and US) become statistically similar. Guatemala corn prices began tracking US corn prices beginning in 1988 (slopes were not significantly different, $t_{32}=1.84$, $p = 0.07$). Both Guatemala’s and the US’s corn prices are decreasing over time (slopes of –3.11 and –2.10, respectively), and they were significantly positively correlated after 1988 ($r= 0.74$, $p<0.001$) (Figure 5.11).

![Area of corn harvested](image)

**Figure 5.12** Area harvested of corn for Guatemala for the years 1980 to 2006, ECLAC

The area of land harvested for corn has decreased (Figure 5.12) while the corn production has almost doubled, from 1.37 tons/hectare in 1980 to 2.6 tons/hectare in 2006 (Figure 5.13) (ECLAC 2007). This increase of corn production in Guatemala is not enough to supply the internal corn demand, as seen in the increase of the amount of corn imported (Figure 5.5).
Changes in the area of harvested corn are likely to be related to changes in the diets of Guatemalans, as seen in the concurrent changes in food consumption over that time period. Most directly, the amount of corn consumed has decreased, from 306 g/person/day in 1979-1981 to 248 g/person/day 2001-2003 (Figure 5.16). The caloric intake of Guatemalans has decreased from about 2300 kcal/day in 1979-1981 to around 2225 kcal/day in 2002-2004 (Figure 5.17). Also, there has been a decrease in the percentage of proteins consumed that are derived from cereals, 64 percent in 1979-1981 to 56 percent to 2001-2003 (Figure 5.18).
Importation of wheat started to increase around 1991 similarly to what happen to the imports of corn (Figure 5.5). In contrast to the case of corn the production of wheat was reduced dramatically. Production of wheat went from 53 thousand tons in 1985 to 1.6 thousand tons (ECLAC 2009). These reduction in the production of wheat opened more than 20 thousand hectares from 1988 to 2000 (ECLAC 2009) (Figure 5.15). During the same period the area under production of vegetables rose from just under 13 thousand hectares to more than 26 thousand hectares (ECLAC 2009). The argument that vegetable production supplanted wheat production can be made because production of the two happened mostly in the highlands of Guatemala.

*Figure 5.15* Guatemala’s area of wheat harvested in hectares

*Figure 5.16* Food consumption in daily grams per capita, FAO
Figure 5.17 Guatemalans daily consumption of food energy, ECLAC

Figure 5.18 Dietary protein consumption by food group for Guatemalans, FAO

The amount of food consumption daily in grams per person by type of product saw a 22.5 percent reduction of maize products consumed and a 155.5 percent increase in the consumption of vegetables from 1992 to 2003. The area of corn harvested for 1980 was around 650 thousand hectares compared to the area in 2006, which was about 570 thousand hectares (Figure 5.12). This reduction of 80 thousand hectares is substantial when you consider that 47 percent of the volume corn production in Guatemala is done by a small farmer working in less than three hectares (Red SICTA 2007).
Even as the yield of corn has increased from around 900 thousand tons in 1980 to 1500 thousand tons in 2005, an increase in corn imports happened at the same time, from 11 thousand tons in 1980 to 1450 thousand tons in 2005. National production during the period of 1989 to 2005 was not enough to satisfy Guatemala’s internal demand, and the introduction of corn from other markets affected the corn price in Guatemala (Figure 5.11).

The amount of corn consumed by a person has decreased, from 306 g/day to 248 g/day from 1981 to 2003 (Figure 5.16). A possible explanation for this change is that farmers are not growing corn for their consumption; instead they are growing other vegetable products destined for exportation (e.g., nontraditional food exports. Figure 5.10), and consuming more vegetables (Figure 5.16). This is comparable to what Immink and Alarcon (1993) found, that smallholder farmers that diversify their production were more vulnerable to scarcity of self-produced food.

5.3 What are the effects of corn liberalization at a local level?

The objective of this question is to describe what have been the changes in agricultural production in the area of Tinamít. Specifically, I am focusing on different component of the production of corn and NTAE. For corn, I was focusing on where the change happened. I had three lines of inquiry for the investigating how corn production had changed: interview, informal conversation and observation. How has corn consumption changed? Has the number of corn producers changed? The rest of this section describes my results from the observation, informal conversations and interviews.

5.3.1 Corn production

5.3.1.1 Lo principal (the main thing)

When talking to the people in Tinamít about agriculture and in particular about corn production they comment on how important corn is in their lives (“Corn is the most important”
“More necessity of planting more corn, corn is first above all”). Some comments expressed the importance of corn in relation to with its value as a food source. One farmer commented “…corn is the only thing that holds the body.” The individual was alluding to a comparison between corn and wheat. This type of comment also referred to the capacity of corn to give sustenance to the individual when corn is consumed in the meals.

Farmers also commented on the importance of corn in relation to other vegetables they produce: “You have to plant corn anyhow, it is more important than vegetables, because if you get sick corn is still there for your family.” This comment reflects what Annis (1987) has said that other businesses are complements to corn production and not competing against it.

Furthermore, this comment shows the reliance in corn as an insurance policy for the family, implied in this statement is the storage capacity that corn has.

5.3.1.2 Topography of the corn production from seed to tortilla

<table>
<thead>
<tr>
<th>April to May</th>
<th>November to December</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Planting</strong></td>
<td><strong>Crop maintenance</strong></td>
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<tr>
<td>Soil preparation</td>
<td>First clean</td>
</tr>
<tr>
<td>Crop combination</td>
<td>Second clean</td>
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<tr>
<td></td>
<td>Fertilization</td>
</tr>
<tr>
<td></td>
<td>Folding</td>
</tr>
<tr>
<td></td>
<td>Tapisca (Harvest)</td>
</tr>
<tr>
<td></td>
<td>Husking Seed selection</td>
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<td>Shelling</td>
</tr>
<tr>
<td></td>
<td>Storage</td>
</tr>
<tr>
<td></td>
<td>Market</td>
</tr>
<tr>
<td></td>
<td>Transport to other markets</td>
</tr>
<tr>
<td></td>
<td>Product from other towns</td>
</tr>
<tr>
<td></td>
<td>Consumption</td>
</tr>
<tr>
<td></td>
<td>Corn dough</td>
</tr>
<tr>
<td></td>
<td>Feed</td>
</tr>
</tbody>
</table>

*Figure 5.19* Description of the procedure to grow corn, market and consumption

Figure 5.19 provided a schematic description of the corn production process. Corn production starts with the seed selection. The characteristics that are taken into consideration to select the seeds are ear size and number of rows of grains present in the cob. The best ears are collected from the previous harvest. The selected seeds are stored and planted the following season.
Planting commences with the soil preparation in late March or early April. The soil preparation includes reincorporation into the soil of any vegetation material left from previous harvest or the weeds that grow during the resting period. Along with corn; beans, lima beans, squash and hierbita\(^5\) are planted simultaneously in the same field within the corn rows. The seed setting for the beans, lima beans and squash happens after corn has sprouted, while for hierbita is a perennial plant that is left when farmers are cleaning the field (see Figure 5.20).

There are several treatments that need to be done for maintenance. The first treatment is a weeding and two weeding happen during the growing period of corn. The first weed removal happens when corn plants reached about knee height, this is done with the hoe (see Figure 5.20). The second treatment is a combination of weeding and fertilization. Farmers apply fertilizer at the base of the plant, and then cover the fertilizer with soil from the elevated part of the furrow. Piling of the soil onto the base of the plant helps by giving support to the plant, which can reach more than 8 feet in height. The last treatment happens after the male and female inflorescences have turned brown; the corn plants’ stem is folded down and left to dry.

The harvesting procedure is called \textit{tapisca}. This happens once the corn ears have dried in the field. Corn ears are husked and transported it back to the household for storage. Usually, shelling of the kernel from the cob happens at home. Corn is stored in plastic sacks of 100 pounds capacity. The cobs are used to supplement firewood.

The family of the farmer consumes most of the corn harvested. Some farmers sell a fraction of their corn harvest to pay for expenses of the next year’s production or to have money to cover some the basic expenses of the family. Farmers sell the surplus corn in the local market

\(^5\) Hierbita is a plant in the Brassicaceae family (broccoli and cabbage family). It is consumed cooked in a soup form combined with tomato and onions.
or in neighboring towns. Local markets also have corn from other regions, especially from the Pacific coast region.

In order to consume corn the individuals in this region nixtamalize the corn, which consists of the boiling of corn grains with calcium hydroxide in a pot (non-aluminum). This process weakens the seed coat of the grain, allowing for faster cooking, and provides nutritional benefits to the consumer (see for example Bressani et al. 2004). After boiling for a while, the grains sit overnight. During this resting period, the grains absorb water and the seed coat ruptures. The next process is washing the corn grains with the aim to remove the seed coat and removing the water used in the boiling process. Now the gain is ready to be ground. Motorized mills do most of the grinding, but in some instances, the *mano y metate* are still used. The final step is the preparation of tortillas, tamales, or using the dough as a thickening agent for soups or stews.

Sometimes corn is fed to the homegrown fowl. Specially, corn is used to fatten the domestic fowl before a celebration is close.

![Figure 5.20 Corn intercropping with beans and after first weeding](image)

*Figure 5.20* Corn intercropping with beans and after first weeding

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6 *Mano y metate* is a stone grinding tool. *Mano* is the stem or pistil used to pressure the object being ground and the *metate* is the base.
5.3.1.3 Topography of the changes reported by farmers on corn production

Figure 5.21 Description of the changes in the procedure to grow corn, market and consumption

A general topography of the changes reported by farmer in the process of corn production is presented depicted in Figure 5.21. Farmers reported the use of tractors for soil cultivation, saying that the use of tractors was cheaper than hiring manual labor. Farmers recognized the hoe was more effective than the tractor for turning over the soil. The advantage mentioned in favor of the hoe was that the hoe turns the soil deeper. Further, if the farmer does it alone (not hiring extra labor) the hoe has no extra cost. The cost for renting a tractor is 1120 to 1344 Quetzals per hectare and the cost of hiring a worker to hoe the soil is around 2689.37 Quetzals per hectare.

One respondent stated that a disadvantage of the tractor was that it spreads the “sickness,” from one plot to another. Another disadvantage was that the tractor leaves the soil uneven, because of the weight of the tractor and the tilt of the soil, the tractor produces uniformities in the soil that allow water to accumulate and form puddles. One more reported disadvantage was that the tractor left the soil too finely textured, facilitating erosion. Lastly, the tractor cannot be used on sites that don’t have a wide enough access.

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7 The sickness refers to a wide array of agricultural pests that include grubs and fungi. In the case of the tractor, the transmission happens from the transportation of soil residues from on plot to another in the blades or in the tires of the plow.
Another change reported by farmers was a reduction in the varieties of corn produced in Tinamít; farmers reported not growing the red corn anymore because their yields were low. According to one farmer, the red corn has only five rows of grains in the ear. The same farmer recognized that red corn was still planted in higher altitudes because of its tolerance to colder weather.

The used of fertilizers was also reported as a modification in the farming techniques. Farmers reported the application of chemical fertilizer on their corn plantations. Furthermore, farmers reported returning to use natural fertilizers, such as cow or chicken manure, because of the increased prices of chemical fertilizers.

One more change, this time not reported by farmers, is the import of corn. Specifically, yellow corn imports without tariffs or quotas began in the early part of the 1990s. Yellow corn is primarily used industrially for animal feeds and high starch products. Figure 5.11 and the associated text describe the effects tariff and quotas reduction on the local corn price.

Local markets in and around Tinamít have also changed. One change seen is locality where the corn that is sold in town comes from. In Guatemala, the low land areas in the Pacific coast and the El Petén are able to harvest twice a year. The production of corn from these areas reaches the markets of the highlands areas in Guatemala especially in periods of scarcity. However, the corn from El Petén and the Pacific coast is not the preferred type of corn; farmers reported that this type of corn gave a different flavor to the tortillas. Another change that has happened in that the local production of corn is also sold in neighboring markets.

The consumption of corn products has changed, also. Farmers commented on substitution in the consumption preferences of tortillas, switching from eating tortillas to eating bread, especially by the younger generations, indicating that youths prefer wheat products. This pattern
of dietary change and the relation with national policies has also been reported elsewhere (Hawkes 2006). Thow and Hawkes (2009) documented the relation between diet change and increased levels of obesity and chronic diseases for Central America.

5.3.1.4 Description of the production and changes in the production of corn

<table>
<thead>
<tr>
<th>How many quintals of corn do you get each time you harvest? N = 21, average yield 10.14 qq/cuerda (4120.24 kg/ha)</th>
<th>Times mentioned</th>
</tr>
</thead>
<tbody>
<tr>
<td>Below 8 qq/cuerda (3250.68 kg/ha)</td>
<td>2</td>
</tr>
<tr>
<td>8-10 qq/cuerda (3250.68-4063.36 kg/ha)</td>
<td>10</td>
</tr>
<tr>
<td>11-15 qq/cuerda (4469.69-6095.04 kg/ha)</td>
<td>8</td>
</tr>
<tr>
<td>Above 15 qq/cuerda (6095.04 kg/ha)</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 5.3 Yields of corn reported by interviewees

Farmers when giving their answers provided a range of the amount they harvest, in the local measuring units, which are the quintal\(^8\) (qq) and cuerda\(^9\). The broadest range was from 10 to 15 qq per cuerda (4063.36 to 6095.04 kg/ha). The highest yield reported by a farmer was 18 qq for a cuerda (7314.04 kg/ha) and the lower yield reported was three qq per cuerda (1219 kg/ha). To obtain the grand average I took the midpoint for each range reported by farmers, and then I calculated the grand average with all the midpoints.

The average yield of corn per cuerda was 10.14 qq (4120.24 kg/ha) for the interviewed farmers. The categories were created based on the average of the respondents and gaps in the

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\(^8\) Quintal is a unit of weight. One quintal is equivalent to 100 lbs or 45.35 kilograms.

\(^9\) A cuerda is a unit of area, where one cuerda is equivalent to 1115.56 square meters or 0.111 hectares.
ranges provided. Twelve farmers reported yields under the average and nine farmers reported yields above the average. Wind was mentioned as a weather factor affecting the yields. According to the IV National Agriculture Census 2003 (INE 2004; in Lopez 2005) Guatemala’s national average yield was 3.97 qq/cuerda (1613.15 kg/ha). Almolonga, in Quetzaltenango, had the highest yields reported in the census (8.37 qq/cuerda or 3401.03 kg/ha). Further discussion of this difference will be found in Chapter 6.

<table>
<thead>
<tr>
<th>Has your yield of corn increased/decreased/stayed the same since you started planting corn? N = 15</th>
<th>What do you think made your yield increase/decrease?</th>
<th>Times mentioned</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased yield</td>
<td>Rotation of crops</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Increased area of production</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>NA</td>
<td>1</td>
</tr>
<tr>
<td>Decreased yields</td>
<td>Fertilizers’ reduced their power</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Weather</td>
<td>2</td>
</tr>
<tr>
<td>Same yields</td>
<td>Weather</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>NA</td>
<td>3</td>
</tr>
<tr>
<td>Other factors changing</td>
<td>No money for fertilizers</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Depends on the quality of the Milpa$^{10}$</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Weather</td>
<td>2</td>
</tr>
</tbody>
</table>

Table 5.4 Trends and factors affecting corn yields reported by farmers

The increased yield category includes only the answers from farmers who gave a direct statement indicating an increase. Other statements that did not specifically indicated increase.

$^{10}$ Milpa refers to a corn plantation
were placed in the “Other factors changing” category. Explanations for why the yields increased were based on the changes in the strategy of production such as crop rotation and expansion of the area planted. I am not certain of what the farmer meant with the expansion of the area planted, because more area does not necessarily relate to more yield per unit of area. Weather was mentioned several times in this question as a factor that restrain the capacity to increase the yields or as a factor that in fact reduced their yields. The weather factors mentioned where too much rain and wind.

Three farmers indicated that their corn production has increased since they started to plant corn, because of crop rotation and bringing more land in to use. One farmer did not provide an explanation for his increased production. There were two reasons given for why the corn production had decreased. One explanation blamed the fertilizers, suggesting a reduction in their chemical content. The other explanations for the decrease in corn yields were weather factors, such as, strong winds and drought.

<table>
<thead>
<tr>
<th>From the corn that you harvest, how much do you sell? N = 20</th>
<th>Times mentioned</th>
</tr>
</thead>
<tbody>
<tr>
<td>I don’t sell</td>
<td>13</td>
</tr>
<tr>
<td>I sell the surplus</td>
<td>3</td>
</tr>
<tr>
<td>25- 50 %</td>
<td>1</td>
</tr>
<tr>
<td>Depends on the family</td>
<td>1</td>
</tr>
<tr>
<td>I do sell</td>
<td>2</td>
</tr>
</tbody>
</table>

Table 5.5 Corn harvest sold by farmers

The individuals who responded that they did not sell acknowledged that they grow corn just for family consumption. The individuals that reported selling the surplus commented that they sold the corn in the local markets. There was one farmer who answered that he just sells to
have something to spend (*para el gasto*), but this phrase can have several meanings: one is to recover what he has spent in the production; is to have enough to money to produce when the next planting comes. The phrase can also mean to have money for basic needs.

The majority of the people indicated that they do not sell a portion of the corn they harvested (thirteen out of twenty). Three individuals reported that they only sell the surplus of their production. Another three individuals commented that they do sell part of their production of corn. One individual mentioned that selling corn depended on the needs of each family.

<table>
<thead>
<tr>
<th>From the corn that you harvest, how much do you consume at home? N = 10</th>
<th>Times mentioned</th>
</tr>
</thead>
<tbody>
<tr>
<td>100%</td>
<td>7</td>
</tr>
<tr>
<td>85%</td>
<td>1</td>
</tr>
<tr>
<td>55-60%</td>
<td>1</td>
</tr>
<tr>
<td>50%</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 5.6 Percent of corn harvest consumed at the farmers’ homes

The 100 percent category includes several kinds of answers given by farmers. Five farmers answered that they consumed almost all the corn they harvest. Only two farmers answered that the corn harvested was only for consumption. One farmer responded with the specific amount that his family consumed (25qq or 1133.75 kg), which constituted 55 to 60 percent of this total production. His answer to the question, “what do you do with the rest of the corn harvested?” was “I sell 20 to 15 qq (907 to 680.25 kg)”. This calculation has the assumption that he did not use the corn for something else.
Seven individuals out of eleven reported that they consumed all their harvested corn. One farmer mentioned that his family consumed 85 percent of the corn harvested, while two farmers mentioned that they consumed around half of the corn they harvest.

<table>
<thead>
<tr>
<th>How many days does a quintal of corn last your family? (ask # of people that eat corn)</th>
<th>N = 21</th>
<th>Factors affecting families’ corn consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average in gr/capita/day</td>
<td>430.91</td>
<td>The size and age distribution of the family matters.</td>
</tr>
<tr>
<td>More or equal to average</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Less than average</td>
<td>14</td>
<td></td>
</tr>
</tbody>
</table>

Table 5.7 Rates of corn consumption (gr/capita/day) and factors affecting the rates of consumption

There is no apparent relation between the consumption rates and the yields (Pearson’s correlation: \( r = 0.005, p = 0.982, N = 21 \)). One would expect that consumption rates and yields would be related. However, household factors of age and number of dependents would contribute to variability. Furthermore, when comparing the yields against the number family members consuming the corn the Pearson’s correlation coefficient (\( r = 0.15, p = 0.517, N = 21 \)). This indicates that there is no relation between family size and the yields. The expected result would be that as the number of family members increased, the yields also increased because of more labor or a higher demand. However, I suspect that yields depend on multiple factors aside from available labor or the age distribution of the family members. Further discussion of this topic can be found in Chapter 6. Additionally, when comparing the consumption rate and the number of family members there was a statistically significant negative Pearson’s correlation (\( r \))
= -0.55, p = 0.01, N = 21). This suggests that as the family increases in size the amount of corn received by the individual is reduced because it has to be divided into more portions.

The average corn consumption rate for individuals interviewed was 430.91 gr/capita/day. Two thirds of the individuals interviewed had corn consumption rates below the average (fourteen out of twenty-one). Only seven individuals indicated that their corn consumption rate was above the mean. The highest rate reported in the interviews was 907.18 gr/capita/day, reported for a family of five and the hundred pounds of corn were consumed in ten days. The lowest rate reported in the interviews was 249.47 gr/capita/day, were the hundred pounds of corn were consumed by six family members in thirty days. There are two factors mentioned by interviewees with regard to what is affecting the rate of corn consumption. The first factor mentioned was the number of family members; families with fewer members can consume more corn per capita in comparison to larger families. The second factor is age distribution of family members; younger individuals consume less corn than adults do. Other reports on corn per capita direct consumption of corn for Guatemala are 299.36 gr/capita/day (Fuentes et al. 2005), 290.29 gr/capita/day (FAO 2010) and 326.41gr/capita/day (ECLAC 2010) (see explanations for the differences between reports of consumption rates).

<table>
<thead>
<tr>
<th>Do you think the amount of corn grown in the region is enough to feed the community? N = 18</th>
<th>Times mentioned</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>8</td>
</tr>
<tr>
<td>No</td>
<td>4</td>
</tr>
<tr>
<td>Sometimes there is not enough</td>
<td>2</td>
</tr>
<tr>
<td>Depends</td>
<td>2</td>
</tr>
<tr>
<td>People only live from corn</td>
<td>2</td>
</tr>
</tbody>
</table>

Table 5.8 Opinions of farmers about the amounts of corn produced in the area
Farmers did not respond “yes” or “no” to the question. From the beginning farmers said “sometimes it is not enough” or “depends.” These answers were given by the farmers who recognized that their yields varied due to weather effects. Among the individuals who answered that there was enough corn grown in the area to feed the community the explanations provided were that there was surplus of corn production in the community which was sold at the local market or in nearby towns. For the individuals that answered that there was not enough corn been planted in the region, they offered two types of explanations. One mentioned the competition with vegetable production. The other cited economic restrictions such as people not having land to plant corn and cost of production was too high.

Eight out of eighteen individuals interviewed mentioned that the amount of corn grown in Tinamit was enough to meet the community’s needs. Four individuals reported that the corn grown in the area most of the time the corn in the areas was enough to meet the community’s needs, but sometimes there were corn shortages. Only two individuals indicated that the corn grown in the region was not enough.

The explanation for why the number of corn producers has increased or decreased reflects the complexity of the factors that are affecting corn production. For the explanations of increase in number of farmers they point to an increase demand of the product. While the explanations for the decrease of corn farmers point out to the changes in the market (senso lato), such as profitability of corn and the presence of new agricultural products. Another explanation for the decrease the farmers related the new generations finding other jobs like working in the maquilas.
Seven farmers indicated that the number of individuals producing corn has increased. The reasons given to explain the increase in producers were: corn can be stored, population growth, people have a need, a market exists, and production of corn has improved. Eight farmers said there has been a reduction in the number of individuals that produce corn. The reasons presented were: the new generations are not producing corn because there are new ways of employment, corn is not profitable, there are new products to produce, and some people only grow corn. Three individuals indicated that other factors influence the number of corn producers; according to them, the number of corn producers depends on the rotation schedule of the corps, and the product alternatives that a producer has.

<table>
<thead>
<tr>
<th>Do you think the number of people producing corn in this community has increased/decreased/stayed the same in the last 20 years? N = 19</th>
<th>Could you tell me why the number of people producing corn in this community has increased/decreased?</th>
<th>Times mentioned</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased</td>
<td>Storage characteristics</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Population growth</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Need</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>There is a market for corn</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Improvements on production</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>NA</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Decreased</td>
<td>New generations / new jobs</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Corn is not profitable</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>New products</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Some people only grow corn</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Depends</td>
<td>Or they plant vegetables or they plant corn</td>
<td>1</td>
<td>3</td>
</tr>
</tbody>
</table>
Table 5.9 Opinion of farmers on changes in the number of individuals producing corn and explanations for why

<table>
<thead>
<tr>
<th></th>
<th>Rotation</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>NA</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>I don’t know</td>
<td></td>
<td>1</td>
</tr>
</tbody>
</table>

Table 5.10 Opinions of farmers about corn consumption in the community

<table>
<thead>
<tr>
<th></th>
<th>Times mentioned</th>
</tr>
</thead>
<tbody>
<tr>
<td>More</td>
<td>5</td>
</tr>
<tr>
<td>Less</td>
<td>4</td>
</tr>
<tr>
<td>Same</td>
<td>0</td>
</tr>
<tr>
<td>Depends</td>
<td>2</td>
</tr>
<tr>
<td>I don’t know</td>
<td>1</td>
</tr>
</tbody>
</table>

Many farmers offered comments on the relation between bread and corn as part of this answers, though these comments were found mostly in the “more” category they were also offered in the “less” category. Farmers who answered in the “more is being consumed now” stated that “bread was not food” or that “the stomach does not grab the bread.” This comparison relates to what was mentioned previously in the section *Lo principal* where farmers saw corn as providing sustenance in their meals. Additionally, the farmers who said less corn is being eaten said fewer individuals in the community consume corn. They report that younger generations are eating more bread instead of tortillas. Farmers who reported “depends” cited fluctuations in the corn production that track weather factors.
5.3.1.5 Types of corn in the region

When asked what kind of corn the individual liked best the general response was that they preferred the *criollo* because it produced a better tasting tortilla than other corns. Other characteristics used to describe the better tasting tortilla were softness, meaning that it did not break apart easily and that it lasted longer, meaning that it did not get stale very quickly.

Other types of corn reported by interviewees to be found in the area are: corn from the *costa* (coast), a type of corn grown in the lowlands of Guatemala and H3 corn, a variety promoted by the Institute of Agricultural Science and Technology (ICTA in Spanish). One farmer estimated that almost 90 percent of the corn grown in Tinamít was *criollo* corn, while the other 10 percent was the H3 corn type. The same farmer told me that this type of corn was introduced about ten years ago.

The *criollo* corn has four different colors: yellow, black, white, and red. The color varieties of corn still planted in Tinamít are yellow, black, and white. One variety not planted anymore is red corn, because it produces very low yields. According to farmers, red corn is good for high altitudes, as it better tolerates low temperatures (see Historical Context Section 2.6 for more information on corn’s importance culturally).

5.3.2 Changes in agricultural production

5.3.2.1 Creating a tradition of nontraditional agriculture. The story of the introduction of Broccoli

According to a retired farmer, one of the first vegetables that came to Tinamít was broccoli, starting in the area around 1972. He told me that the first plantations of broccoli were done by his father and an American. The retired farmer remembers that it was hard to sell broccoli in the market because it has a peculiar taste that nobody was accustomed. After broccoli
began to be planted in Tinamít, it spread to other areas of Guatemala. Now the broccoli grown in the region reaches other countries like El Salvador and the US.

According to Hamilton and Fischer (2003) there have been two waves of non-traditional agricultural exports in Guatemala. The first wave started around the mid-1970s with the production of broccoli, cauliflower and snow peas. The later wave, happening in the 1990s, added a new array of products such as French beans, miniature zucchini and berries.

5.3.2.2 Description of the agricultural changes (technological)

<table>
<thead>
<tr>
<th>Changes reported by farmers on the way farming is done in the area</th>
<th>Times mentioned</th>
</tr>
</thead>
<tbody>
<tr>
<td>Could you tell me the changes that you notice in the way people farm in this area since 1980? N = 21</td>
<td></td>
</tr>
<tr>
<td>Change to organic</td>
<td>1</td>
</tr>
<tr>
<td>Bad market</td>
<td>1</td>
</tr>
<tr>
<td>Change to more intensive techniques</td>
<td>10</td>
</tr>
<tr>
<td>No change / almost no change noticed</td>
<td>9</td>
</tr>
</tbody>
</table>

Table 5.11 Changes reported by farmers on the way farming is done in the area

When asked “what changes have you noticed in the way people farm?” nine out of twenty-one farmer responded that they had not noticed a change in farming. Ten farmers reported changes of increased intensity of production, such as, the use of irrigation systems, tractors, and the application of agrochemicals. One farmer reported, the deterioration of the market in the sense that the prices have dropped. Furthermore, one farmer reported seeing a change to organic farming.

<table>
<thead>
<tr>
<th>When do you think they started to use organic fertilizers (manure and allies)? N = 15</th>
<th>Times mentioned</th>
</tr>
</thead>
</table>
The category “Since old time” also includes the answers that were indeterminate, in some cases referring to before the speaker was born. A farmer commented that organic fertilizers take a long time to prepare, which discourages people from using them. With the increase in the price of chemical fertilizers in recent years people have started to use organic fertilizers again.

I consider that this question alone has little utility, because it is asking farmers to recall an event that happened a long time ago, but at the same time when it is considered in conjunction with the questions presented in Table 5.13 and 5.14, one can have a better idea of when the transition to intensification took place. For the question in Table 5.12 the answers offered by farmers where usually a particular year. The separation of the answers by fifteen year categories were made because in the answers in Table 5.13, that was a break point in the responses, and in order to maintain consistency I followed the same pattern with this Table and with Table 5.14.

Ten farmers out of fifteen reported that the use of organic fertilizers started more than fifteen years ago. Two farmers reported not knowing when the use of organic fertilizers started in the region. Only three farmers indicated that the use of organic fertilizers started less than fifteen year ago.

<table>
<thead>
<tr>
<th></th>
<th>Times mentioned</th>
</tr>
</thead>
<tbody>
<tr>
<td>I don’t know</td>
<td>2</td>
</tr>
<tr>
<td>1-14 years ago</td>
<td>3</td>
</tr>
<tr>
<td>15-29 years ago</td>
<td>3</td>
</tr>
<tr>
<td>Since old time</td>
<td>7</td>
</tr>
</tbody>
</table>

Table 5.12 Farmers’ opinions on when organic fertilizers appeared in Tinamít

When do you think they started to use fertilizers in this community? N = 16

<table>
<thead>
<tr>
<th></th>
<th>Times mentioned</th>
</tr>
</thead>
<tbody>
<tr>
<td>I don’t know</td>
<td>2</td>
</tr>
</tbody>
</table>

When do you think they started to use fertilizers in this community? N = 16
Table 5.13 Farmers’ opinions on when chemical fertilizers appeared in Tinamít

The answers provided by farmers tended to be in ranges of five years intervals. As mentioned above, there was a cut in the answers at fifteen and then at thirty years ago.

Fourteen out of sixteen farmers reported that the use of chemical fertilizers began more than fifteen years ago. Only two farmers reported that they did not know when the people in the community started to apply chemical fertilizers in Tinamít.

Table 5.14 Farmers’ opinions on when pesticide use started in Tinamít

One point of reference mentioned by farmers in response to this question was the earthquake that happened in 1976; two farmers commented that the utilization of the pesticides happened after the earthquake. Another point of reference was with the introduction of the vegetable crops such as broccoli and carrots. A farmer mentioned that the pesticide started to be used at the same time that the vegetable crops started. Another farmer stated that pesticide used started about the same time as the introduction of broccoli in the area around 1972, almost 40 years ago.
Eleven out of seventeen farmers reported to that the use of pesticides in the area of Tinamít started more than fifteen years ago. Three farmers reported that the use of pesticides started less than fifteen years ago. Other three farmers reported that they did not know when the use of pesticides started.

Many of the answers given by the farmers to the questions in Table 5.13 and 5.14 were the same. Two factors may account for the similarity. One is the continuance of the questions, in the interview schedule these questions were next to each other. The other factor is their association to the production of vegetable crops, meaning that when the crops were introduced, their introduction also promoted the use of chemical to increase or guarantee the production of the crops.

When viewing the answers presented in Tables 5.12-5.14, it seems that the application of agricultural inputs started before the implementation of the trade liberalization policies. However, these answers do not allow conclusion regarding any quantification of organic fertilizers, chemical fertilizers or pesticides.

5.3.2.3 Description of the strategies to decide what to plant

One goal of this study was to determine how corn production is being affected by the trade liberalization policies that allow importation of corn and also promote the export of nontraditional agricultural products. It becomes important to understand what individuals are considering in when deciding what to plant.

Four strategies arise from the comments farmers made when discussing what they take into consideration in deciding what crop to plant next round. In the first strategy, “good price previous years,” farmers consider the price of a crop during the same period the year before.
During my stay in Tinamít, the product planted based on recent favorable prices was cabbage. The price of cabbage in 2008 reached 10,000 quetzals for a cuerda and about three years before that it reached 18,000 quetzals for a cuerda (1,200 $/cuerda, three years ago 2250 $/cuerda). In a cuerda a farmer can produce 3000 to 2800 heads of cabbage equivalent to 250 to 186 nets\textsuperscript{11}. The price of a net of cabbage in August of 2009 was 17.69 Q/net (MAGA 2010). The drop in the price was suspected to be caused by over production of cabbage and a reduction in the general consumption due to the 2009 economic crisis. One consequence of over production was that cabbage fields were left to waste, because the proprietor was not able to find a good price for this seasons’ production of cabbage (see Figure 5.22). They did this because the price was so low that the farmers could not recover cost, such as, harvesting and transportation to the market.

\textit{Figure 5.22} Cabbage fields left abandoned

Another strategy offered by farmers was “good price right now.” Farmers following this strategy have noticed that there is a good price in the market for a particular product and decide to plant this crop with hopes to catch the end of the good price wave. For this strategy, the farmer needs to consider the time from planting to harvest of the crop.

\textsuperscript{11} A net consist of 15 to 12 units of cabbage.
One more strategy presented by farmers was “luck.” The farmers reported that they did not think much about the crop that they were going to grow, a lo que caiga (to whatever comes). When I ask further about this topic, a farmer told me that it was impossible to determine what was planted all over; he pointed to a corn stand and said,

“You see, you cannot tell what is behind that corn stand. The other day I planted cabbage when it came time to harvest there was no price, so I took a loss. I decided to plant cabbage again for a second time, and again there was no price. For a third time I planted cabbage and no price. In total, I lost over 90 thousand quetzals in the three attempts, in about nine months.”

A different strategy presented by farmers suggested that the farmers took into consideration their “knowledge of the crop and physical capacity.” One farmer, when asked how he made the decision of what to plant next, commented on the characteristics of güicoito. He argued that other farmers were afraid to plant güicoito during the cold parts of the year because it is susceptible to the cold. Another farmer said he was too old to produce other crops and that was why he continued producing the same crop (cabbage).

Other strategy used for planning what to grow, is the “diversification” of products. A farmer that owns and rents several cuerdas in Tinamít commented on how he planted various crops in his lands. He argued that sometimes some crops have good price, other times, crops have a bad price; what you don’t get from one crop you might get from another. This hedging strategy has also been addressed by Goldín (1996).

Hamilton and Fischer (2003) describe another strategy where farmers dedicate on average a quarter of a hectare to NTAE production and the rest is planted with traditional crops. They argue that this strategy is used because capital constrains, the cultural relation with corn and averting risk.
Table 5.15 Reasons given by farmers to explain what motivated their changing crops

<table>
<thead>
<tr>
<th>Reason</th>
<th>Times mentioned</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wanting a good price</td>
<td>9</td>
</tr>
<tr>
<td>To increase production</td>
<td>6</td>
</tr>
<tr>
<td>Personal reasons</td>
<td>3</td>
</tr>
<tr>
<td>Motivation from export company</td>
<td>1</td>
</tr>
<tr>
<td>To diversify with intention of reducing risk</td>
<td>1</td>
</tr>
</tbody>
</table>

When asked what motivated them to plant one crop instead of another nine out of twenty farmers responded that they were looking for a better price. Six farmers responded that they were looking to increase production. Three farmers provided personal reasons, such as, “one has necessity” or because I wanted. One farmer indicated that he was encouraged by an export company. Another farmer said that he wanted to reduce the risk since there is no “fixed market.”

There is a wide variety of products produced in Tinamít including: beans, beets, broccoli, cabbage, carrot, celery, corn, cauliflower, güicoy (squash), güicoito (small squash), lettuce, lima beans, potatoes, purple cabbage, strawberry, string beans and zucchini.

5.3.3 Market fluctuations

5.3.3.1 Fluctuations in the price of Broccoli and Cabbage
The analysis of the variation in prices of broccoli and cabbage shows that for broccoli the biggest decrease from one month to another was from February to March 2004. In this period, the price of broccoli decreased 8.27 Quetzal a box. The biggest single month increase in price was 14.87 Quetzals for a box. This increase happened from March to April 2005. The average price for a box of broccoli was 25.05 Quetzals from January 2003 to July 2009 (Gray line in Figure 5.23) with a standard deviation of 5.82. For cabbage, the price fluctuation was sharper.

\[\text{A box of broccoli consist of 20 to 24 units}\]
The biggest single month increase was 33.37 Quetzals for a net of cabbages, from December 2004 to January 2005. The biggest decrease was from February to March 2005, where the price fell 29.32 Quetzals for a net of cabbages. The average price of a net of cabbage was 25.58 Quetzals (Gray line in Figure 5.24) with a standard deviation of 11.58, from January 2003 to July 2009.

5.3.3.2 El loteriazo (The lottery) of NTAE

The fluctuations in the market prices have made farmers compare agriculture with a lottery game where sometimes one wins. A farmer told me he lost over ninety thousand quetzals in a nine month period. Yet he continued to plant because he knew that eventually there would be a pay off. Fischer and Benson (2006) tell the story of a Guatemalan farmer who had been exporting his production to the United States. After the September 11 attack he lost that contact he had that allowed him to sell his products in the United States. Instead of looking for different market or occupation the individual continued to look for buyers of his product. “Growing vegetable is like playing the lottery” –said a farmer– “sometimes you hit the jackpot, sometimes you win something, but most of the time you lose.” I am curious about what this farmer means by “lose,” because if everyone was losing all the time one has to wonder why farmers continue producing NTAE? I feel that this could be explained with the diversification strategy of production mentioned above. Farmers produce a diverse array of crops in order to find a good market price in some of the products, find an even market price on other products and the farmers expect a bad market price for the rest. Accomplishing production of multiple crops might be a human-capital and working-capital limiting factor as described above. Once these barriers are surpassed production of NTAE could generate a profit.
5.3.4 Recapitulating the changes in corn production at a local level

The promotion of trade policies that liberalized trade of corn and wheat had an impact at a national level (Section 5.2). The goal of the ethnographic part of the study was to assess how a local community, Tinamıt was affected. In particular I was looking for changes in the production of corn and NTAE, changes in the consumption patterns of corn and changes in the producers of corn. The findings for this section indicate that the corn production continues to be an important component in Tinamıt. However, this does not mean that change has not happened. Among the factors that have changed is an increase intensification of corn production that includes the application of chemical fertilizer and sometimes the use of tractor. Another factor that has changed is the discontinued production of red corn. Furthermore, there has been the expansion of local market in the sense that local corn is sold in other towns and corn from other areas, like the lowlands, has access to local markets. I consider that the changes that have happened in the corn production of Tinamıt reflect the continued importance of corn production.

On the topic of corn consumption, I have found the farmers are producing corn with the intention of consumption within the family. Only the surplus is sold in local or nearby markets. Additionally, members of bigger families consume less corn per capita in comparison of smaller families. This relation is because with more family members the harvest needs to be split with more members.

Recapitulating the changes in corn production, according to farmers the amount of corn produced in Tinamıt was enough to satisfy the needs of the community. Some farmers indicated that the number of corn producers was decreasing because of the bad market situation of corn and the competition with non-traditional agricultural exports (NTAE). At the same time other farmers mentioned that the number of corn producers was increasing because of population
growth created a need for more corn producers and because at present there was a good price for corn. I asked farmers about their opinions on the number of consumers. Some indicated that the number of consumers has increased because other alternatives, like bread, are not good enough. However, other farmers mentioned that the number of consumers has decreased because other products are being consumed, such as bread. An attempt to explain this contradiction appears in the next chapter.
CHAPTER 6. Discussion and Conclusions

In this chapter I present the discussion of the main results and the general conclusions. This chapter is divided according to the questions that have motivated this research project.

6.1 “Why the trade liberalization of Guatemala happened when it did?”

It is clear that trade increases the welfare of societies, as economies are more liberated they grow faster economically (Edwards 1998). Others suggest that trade liberalization as part of a package that includes domestic policies and institutional reforms is a better path that leads to economic growth (Panagariya 2004). An important caveat is who is influencing the design and implementation of the policies that lead to economic growth. With the insight of international political economy, we can analyze who is influencing the design and the implementation of policies, shaping the policies to their favor (winners). At the same we can analyze who is being affected by how the benefits of the policies are redistributed (losers). Guatemala’s recent history, 1980 to 2007, can be considered in two time periods. From 1980 to 1996 the country experienced military control, repression of labor organization and the promotion of the traditional export products (coffee, bananas, or sugar). These exports benefited the established owners of capital.

Pressure to liberalize trade in the first period came from international institutions such as the IMF, WB, and WTO. These institutions conditioned loan monies to acceptance of structural adjustment programs (IMF, WB) (Economic Intelligence Unit 1997) by Guatemala. The second part of this period, from 1996 to 2007, was characterized by the control of power (via elections) by the owners of capital and land (abundant factor of production). It was during this time that the promotion of policy to open the economy has taken place. Another source of influence to promote trade comes from Guatemala’s biggest trading partner, the US, which promoted the implementation of Central America Free Trade Agreement (CAFTA).
There is a strong division between the owners of capital and the owners of labor (defined here as the humans that receive wages) in Guatemala. The civil war increased this division, by reducing the formation of leaders of owners of labor. The historical political, economical, and cultural exclusion, combined with these new mechanisms of exclusion increased the tensions. In the near future as new organizers of the owners of labor emerge, we can expect a challenge to the institutions that presently control the creation of policy and how they distribute the resources.

Economic openness, when it is implemented with the intention to distribute welfare, is beneficial to society, as trade increases the efficiency in the use of resources available within the country. However, every time there is a change in economic policies, it implies a change in who benefits. In the case of Guatemala, the owners of capital and land had strongly influenced and continue to influence the changes in the economic policies. Change in the distribution of the benefits for the owners of capital and land has therefore not been very dramatic. On the other hand, the effects on the owners of labor have been much greater, as is shown by the drop in price of the main agricultural product (corn). The same happened for urban wages. Even though corn prices and urban wages have dropped, the levels of poverty have also declined, suggesting there has been an increase of social welfare due to trade.

During the period of 1980 to 2007, Guatemala increasingly liberalized its world trade. The institutions that were involved in the design and implementation of the trade policies were the owners of the capital and land, and the military. As mentioned earlier, the owners of capital and land can be considered institutions as they can coordinate in trade guilds or chambers to promote commerce. Guatemala’s military was a key element that reduced with oppressive force the capabilities of collective organization of the owners of labor. Understanding the economic
policies implemented by a country provides ideas on which institutions are promoting the
economic policies and which institutions have the capability to enact the policy they demand.

6.2 “Is it possible to identify the effects of Guatemalan trade liberalization on poverty, diet and
minimum wage at a national level?”

Guatemala’s liberalization of trade to the world around the late 1980s has had an impact
on agricultural production by rural Guatemalans. The influence of trade liberalization policies on
agriculture can be seen in the increase area harvested of agricultural products intended for
export.

The impact of the economic openness policies regarding agricultural products is reflected
in the comparison of the trends of the corn price between the US and Guatemala. A sharp decline
in Guatemala’s corn price is seen at the same time that the imports of corn start to increase
(compare Figure 5.5 and Figure 5.6). Guatemala’s local markets are not able to compete against
the prices set in a bigger and subsidized market like the US, forcing Guatemalan farmers to
change their techniques of production. Examples of change are the reduction in the area of corn
planted and the increase in the area planted of non-traditional exports. This effect is very
important if one takes in to consideration the cultural value of corn for Guatemalans. One
eexample of the cultural importance of a having a good milpa is that it is an indicator to the
working qualities of the individual (Little 2004).

The area of corn harvested for 1980 was around 650 thousand hectares compared to the
area in 2006, which was about 570 thousand hectares (Figure 5.12). This reduction of 80
thousand hectares is substantial considering that 47 percent of the volume of corn production in
Guatemala is done by small farmers working on less than 3 hectares (Red SICTA 2007).
Even as the yield of corn has increased, from around 900 thousand tons in 1980 to 1500 thousand tons in 2005, an increase in corn imports happened at the same time, from 11 thousand tons in 1980 to 1450 thousand tons in 2005. National production during the period of 1989 to 2005 was not enough to satisfy Guatemala’s internal demand, and the introduction of corn from other markets decreased the corn price after the prices were adjusted to inflation in Guatemala (Figure 5.11).

The amount of corn consumed by a person has decreased, from 306 g/day to 248 g/day from 1981 to 2003 (Figure 5.14). A possible explanation for this change is that farmers are not growing corn for their consumption; instead they are growing other vegetable products destined for export (e.g., nontraditional food exports. Figure 5.10) and consuming more vegetables (Figure 5.14). This is comparable to what Immink and Alarcon (1993) found, that smallholder farmers that diversify their production were more vulnerable to scarcity of self-produced food. The vulnerability to scarcity comes from a combination of factors. One factor is the perishability of vegetables, which cannot be stored as corn and beans can. The other factor is the lack of off-farm employment, either because there are no options or because the labor pool does not have the technical skills.

Guatemala’s present model of agricultural production that is focused on exporting products is not based on a sustainable and equitable system that guarantees national food security. The inequity of the agricultural system in Guatemala is reflected in the land production/distribution. About 21.86 percent of the area of land is worked by 92.06 percent of the farmers (usually small producers), and 56.59 percent of the area of land is worked by 1.86 percent of the farmers, (usually commercial producers) (CONCOOP 2007). The push for nontraditional export agriculture can have important health-environmental implications with
increased use of agrochemicals (Arbona 1998). Also, there are economic implications that affect
the poor farmers the most, due to their dependence on brokers who have access to markets
(Goldín and Asturias de Barrios 2001).

Guatemalan governments in the past were not able to address the complex agrarian
issues. This deficiency is carried forward to the present as it has been demonstrated the
vulnerability of the food security due to the global sky rocketing of staple food prices. Moreover,
in the near future Guatemala will have to deal with agricultural damage due to global warming.

6.3 “What responses were evident in a rural community, heavily dependent on corn, as a result of
national policy change regarding corn imports?”

At a local level, in Tinamít, Guatemala’s trade liberalization has had an impact on
agricultural production. Even though the national corn prices collapsed, corn production
continues and in some cases the production includes intensification made possible by increased
application of agrochemicals. This apparent contradiction of farmers who produce with increased
costs in a market that has a low price can be explained by the cultural importance of corn.
Farmers repeatedly state that corn is the “principal thing.” By this they mean that corn is not only
food but it stores well. Further, Solomon (2000) indicates that corn when is complemented with
beans is highly nutritious. Farmers remark on the virtue of corn as an insurance policy that
provides food for the family up to a year in case of future disaster or short fall.

About corn production there has been an increase use of chemical inputs in contrast to
organic fertilizers. However, one farmer commented that recently there has been a change back
to the use of organic fertilizers due to the increase in the price of the chemical fertilizers. The
local corn that is sold in Tinamít’s market seems to be the production surplus, rather than corn
that is produced with the intention to be sold. Further, commercialization of locally produced
corn is limited to local markets or nearby towns. Corn from other areas is also being sold in Tinamit, responding to variations of corn availability due to its seasonality.

Corn yields are highly dependent on the weather, as well as the use of fertilizers and the rotation of products. When compared with other areas and to the national average Tinamit yields are higher. There are several ways to explain these differences. First, there are methodological differences. In my case, I asked individuals to remember usual yields, which can be boosted or contracted according to the opinion and memory of the farmer. Second, it is possible that there was a sample bias. I interviewed farmers I found in the field. Inadvertently I may have over sampled particularly hard working farmers. Finally, it is possible that weather factors not occurring in the Tinamit region, might have played a role in reducing the national average.

Corn consumption rates in daily grams per capita for Tinamit are also higher than the national average. This difference was expected as the national average includes metropolitan areas, where people consume fewer tortillas than individuals living in rural areas. There are also differences in the national consumption rates reported by other sources (see Table 5.7 and accompanying text); these differences are due to the methods used in calculating the consumption rates. One method, the direct consumption rate, takes a measurement of the actual food weight to be consumed by individuals and then calculates a population estimate. Other methods are estimations that consider the total corn imported, exported, produced and industrially consumed. The balance then is divided by the population size.

In this research, I asked the interviewed individuals how many days a 100 pound sack of corn lasts in their families. I also asked how many members where in their family. With this information I calculated how many pounds of corn an individual consumes per day \(\frac{(100 \text{ lb of corn} \div \text{number of days it lasts})}{\text{number of family members}} = \text{per capita consumption corn}.\)
At present local corn production is sufficient to satisfy local demand. More research to determine if and how this trend might shift is needed. There are factors that support opposing shifts in the trends. For example, farmers suggest that the younger generation is consuming less corn, and that individuals are finding other employment. Pointing to a reduction in the demand and in the producers, when these two factors are combined it indicates a reduction of the importance of corn. On the other hand, farmers commented that corn yields are increasing, a trend also reported by other researchers (ECLAC see Figure 5.13 and Immink and Alarcon 1993). Corn supplies in Tinamít are supplemented in times of low production by corn brought from the coastal and northern areas of Guatemala. Even though, the taste of lowland corn is not preferred in Tinamít, it might present a pathway for supplementing local corn production.

Another component of local corn production is the farmers. When asked if the number of corn producers had changed farmers commented, in similar numbers, that the number of corn producers had increased and decreased. Farmers attributed the increase of producers to population growth, requiring more producers. Additionally, farmer mentioned improvements on the techniques of production available.

In the case for decreasing number of corn producers, farmers mentioned the presence of new products to grow, and that new generations are looking for other means to acquire income such as maquila employment. There was an interesting contradiction between the comments of the farmers; some individuals that were arguing the number of corn producers was increasing indicated that there was an improvement in the market, referencing that there was an improvement in the price they found when selling their corn. While farmers indicating that the numbers of corn producers had decreased claimed that there was no market meaning that they cannot find a good price to sell their corn.
These opposing viewpoints are explained with the time scales that the individual were considering. For those who claimed there was an improvement in the market may have been influenced by the climate conditions in Guatemala at that time. That year (2009) was a very dry year, which affected the corn production and its price at a national level, causing an increase in the market price. It may be that the other farmers who stated that market conditions were bad, were considering a broader time period.

New varieties of corn have been introduced in the area by an agricultural research institute that is sponsored by the government (ICTA in Spanish). These varieties are not common in Tinamít and farmers prefer to grow the varieties that they have stored. Steinberg and Taylor (2002) and van Etten (2006a, 2006b) have described the genetic diversity in the highlands of Guatemala. Bretting and collaborators (1990) go beyond describing the diversity and explains that geography and agriculture play an important role in maintaining this diversity. Among the comments received from farmers there were indications that the red variety of corn was not being planted any more in the region due to its low yields, though one farmer mentioned that the red variety continued to be planted in the higher altitudes due to its cold tolerance.

More than half of the farmers interviewed indicated that farming has changed in Tinamít, saying that the majority of the changes have been related to increase intensification of the agricultural production such as the use of tractors and agrochemicals. To pinpoint when this technification started, I asked farmers when chemical fertilizers and pesticides started to appear. It was not possible to draw a conclusion because there was a wide variance in their responses. However, the majority of farmers commented that the use of both agrochemicals happened in the range from 15 to 45 years ago. There are two possible explanations that pesticides and fertilizers made their appearance at the same time. The first explanation uses ecological ideas and the
second explanation is methodological, focusing on the design of the interviewing tool. Ecologically, this is expected as monocultures of products exotic to an area suffer from the propagation of pest. Also, the non native crops to the area would not have the natural symbiotic relations that assist in the nutrient intake and the increase frequency of planting the particular crop would remove the nutrients for the soil if there was no application of fertilizers. The methodological explanation recognizes that the two questions were asked consecutively, indicating that there is a possibility that the farmers answered to the questions eight and nine (Table 4.1) in a paired manner, giving the same answer to both question because it was easier to recall.

During the interviews I was able to identify four strategies that the farmers used to determine what they were going to plant in the next time. These strategies were selected by farmer’s based on the information available on the market conditions, their knowledge and capacity of the crops and dispersion of the risk by planting several products at a time. The farmers were motivated to switch crops in order to achieve better prices and to increase production. Farmers compared the production of NTAE to playing the lottery; in the sense that they play and lose but in some cases you hit the jack pot. The fluctuation of the prices for broccoli and cabbage can be seen in the Figures 5.21 and 5.22. According to my observations I believe that the prices of the products collapsed because producers coordinated their production and over produce. Alternative explanations have been mentioned. One of those explanations indicates that the price can be affected by the influence of the intermediary which buys the product a cheaper price that the market (Fischer and Benson 2006). The other possible explanation for the alteration of prices is the effect of the export companies that have the capacity to affect prices of the product they contract to third parties (Conroy et al. 1996).
In general the highlands of Guatemala have seen a change in the agriculture products. In part it has been encouraged by the promotion of NTAE and the removal of barriers to import basic grains like corn and wheat. This liberalization allowed the import of corn and wheat, causing the collapse of their prices. The land that was used to produce wheat is presently used for the plantation of NTAE. The NTAE production caused a change in the land tenure, which has been identified as one mechanism of poverty reduction (Carter et al. 1996). Other mechanisms identified to improve the welfare of communities have been the increased levels of education and nutrition (Hamilton and Fischer 2003, 2005). Other effects of the production of NTAE are the indebtedness of individuals whose crops fail or did not past the qualifications of the exporting company (Conroy et al. 1996). Furthermore, incorporation of agrochemical into the environment and their effects on human population has been studied (Arbona 1998), but more investigation is needed, specifically, research that explains the weaknesses of the NTAE like the fluctuations of prices and economic inefficiencies. Anthropologist should get involved to assist in the communication between ecological, health, economic sciences and cultural practices among different groups.

The bottom line is trade policies that promote exportation of NTAE products have benefits and costs. The benefits of the agricultural transition can be maximized with the promotion of policies that consider food security, the health of the community and the environmental effects. Costs can be minimized by the reducing the economic inefficiencies in the production of NTAE and corn, and by promoting policies that consider the effects on the environment and human health.
6.4 What are the implications of this work?

In this section, I reflect on my conclusions and provide an interpretation of what I have found.

For the first question, “Why did the trade liberalization of Guatemala happen when it did?” I recognized that the period from 1980 to 2006 can be divided in two periods. The first period (1980 to 1996) was characterized by the military control of the government. The second period (1996 to 2006) was characterized by the control of the government by the owners of land and capital. I argue that the movement to liberalize trade would not have happened if the military had continued to be in power. It was not until the owners of land and capital obtained control over the mechanisms of policy design and implementation that they agreed to the pressures from international donors and lenders. I consider this to be a topic that had not been developed previously for Guatemala. Trade liberalization is part of a global process that has international actors promoting its liberalization at the same time there are national dynamics that help shape the design and implementation of the trade policies.

The second question was, “Is it possible to identify the effects of Guatemalan trade liberalization on poverty, diet and minimum wage at a national level?” Identification of the effects that trade liberalization has at a national level is important because it provides very general ideas on how factors might be interconnected. In the case of Guatemala, trade liberalization of corn and wheat had a positive impact on the diversification of Guatemalan’s diet, especially by increasing the consumption of vegetables. Moreover, there was a reduction in the levels of poverty and a reduction of urban wages. However, the present model of NTAE production is not sustainable and is making Guatemalans vulnerable to food security issues, particularly with the fluctuation of global prices of corn, beans and rice. Additionally, issues like
access to land, unskilled labor, promotion of off-farm employment and global climate change should also be included in the formulation of a NTAE production model. This suggests that trade liberalization had many direct consequences on the overall welfare of a nation and these should be taken into account in the future when making trade liberalization decisions and policies.

Lastly, to narrow the scope to a local level, my third question was “What responses were evident in a rural community, heavily dependent on corn, as a result of national policy change regarding corn imports?” Corn production is important in Tinamit. Some farmers have intensified their production of corn by adding agrochemicals and the utilization of tractors. Farmers continue to grow corn because it is intended for consumption within the family. Still, corn production seems to be affected by market conditions. In some cases farmers stop producing corn because market prices are low when compared with NTAE production. I do not think that production of corn is going to disappear in the region. However, this could change if and when the barriers to import white corn into Guatemala are lifted. In Guatemala the quotas and tariffs on white corn are expected to be removed gradually in the next 10-15 years as it is stipulated in DR-CAFTA. In this context I suspect that traditional production of corn will suffer the same fate as the local production of wheat which was stopped as soon as influx from external markets began. But as Nadal (2000) has reported for Mexico, even though the markets saw a reduction in the price of corn, farmer’s salaries were also affected by inflation and the response from farmers was to maintain or expand the area under corn production. Even though in my interviews I was told that the corn was very important for many reasons, I was also told that there was an increase in preference for bread, which was replacing the tortilla. Another perspective could be that this cultural importance might be transferring from corn to other agricultural products as it has been suggested by Hamilton and Fischer (2005). Studying the
consequences of globalization at a local level is important because it gives us explanation for why and how of the outputs of national level statistical descriptions. Furthermore, it provides us with ideas on how to improve national policies to redistribute the benefits acquired by the increase of trade.
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<table>
<thead>
<tr>
<th>No</th>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Please tell me what crops have grown in since you started farming?</td>
</tr>
<tr>
<td>2</td>
<td>What else have you grown besides the ones you have told me about? (looking for the crop)</td>
</tr>
<tr>
<td>3</td>
<td>Why did you switch from growing (answer in question 1) to (answer in question 2)? (if there is no change between 1 and 2 ask)</td>
</tr>
<tr>
<td>4</td>
<td>Have the yields increased/decreased/stayed the same since you started growing this produce? (if the same go to question 5, increase/decrease ask why they think the yield have increase?)</td>
</tr>
<tr>
<td>8</td>
<td>Could you tell me when you think they started to use pesticides in this community?</td>
</tr>
<tr>
<td>9</td>
<td>When do you think they started to use fertilizers in this community?</td>
</tr>
<tr>
<td>10</td>
<td>When do you think they started to use organic fertilizers (manure and allies)?</td>
</tr>
<tr>
<td>11</td>
<td>How many quintals of corn do you get each time you harvest on average? (per cuerda)</td>
</tr>
<tr>
<td>12</td>
<td>Has your yield of corn increased/decreased/stayed the same since you started planting corn?</td>
</tr>
<tr>
<td>13</td>
<td>What do you think made your yield increase/decrease?</td>
</tr>
<tr>
<td>14</td>
<td>From the corn that you harvest, how much do you sell?</td>
</tr>
<tr>
<td>15</td>
<td>From the corn that you harvest, how much do you is consumed at home?</td>
</tr>
<tr>
<td>17</td>
<td>How many days does a quintal of corn last your family? (ask # of people that eat corn)</td>
</tr>
<tr>
<td>18</td>
<td>Could you tell me the changes that you notice in the way people farm in this area since 1980?</td>
</tr>
<tr>
<td>19</td>
<td>What do you think caused the changes in the way people farm?</td>
</tr>
<tr>
<td>20</td>
<td>Could you tell me the changes that you notice in the way people produce corn in this community since 1980?</td>
</tr>
<tr>
<td>22</td>
<td>Has the size of a usual plot of land changed since 1980?</td>
</tr>
<tr>
<td>23</td>
<td>How much does it cost to rent a cuerda/hectare of land?</td>
</tr>
<tr>
<td>25</td>
<td>Do you consider it is easy or hard to find land to rent in this community?</td>
</tr>
<tr>
<td>26</td>
<td>Could you tell me why you consider it is (easy/ hard) to find land to rent in this community?</td>
</tr>
<tr>
<td>27</td>
<td>Where do you sell the products that you harvest?</td>
</tr>
<tr>
<td>28</td>
<td>Where do the products that you sell end up?</td>
</tr>
<tr>
<td>29</td>
<td>Do you think the number of people producing corn in this community has increased/decreased/stayed the same in the last 20 years?</td>
</tr>
<tr>
<td>30</td>
<td>Could you tell me why the number of people producing corn in this community has increased/decreased?</td>
</tr>
<tr>
<td>31</td>
<td>Do you think that people in this community are consuming more/less/same amount of corn than 20 years ago?</td>
</tr>
<tr>
<td>31b</td>
<td>Why do you think that corn consumption has changed?</td>
</tr>
<tr>
<td>32</td>
<td>Do you think the amount of corn grown in the region is enough to feed the community?</td>
</tr>
<tr>
<td>33</td>
<td>Do you think the number of people farming has increased/decreased/same since 1980?</td>
</tr>
<tr>
<td>34</td>
<td>Could you say why the number of farmers has (increased/decreased) since 1980?</td>
</tr>
</tbody>
</table>