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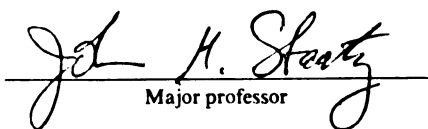
**The Impact of US-Mexican Economic Integration on
National and Subsector Competitiveness**

presented by

Ellen T. Fitzpatrick

has been accepted towards fulfillment
of the requirements for

Ph.D. degree in **Agricultural Economics**


Major professor

November 24, 1999
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**THE IMPACT OF US-MEXICAN ECONOMIC INTEGRATION ON NATIONAL
AND SUBSECTOR COMPETITIVENESS**

By

Ellen T. Fitzpatrick

A DISSERTATION

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

DOCTOR OF PHILOSOPHY

Department of Agricultural Economics

1999

ABSTRACT

THE IMPACT OF THE US-MEXICAN ECONOMIC INTEGRATION ON NATIONAL AND SUBSECTOR COMPETITIVENESS IN MEXICO

By

Ellen T. Fitzpatrick

This study explores how the process of integration between a large well-developed economy and a smaller less-developed economy has affected the performance of the less-developed economy by examining the evolution of new institutions, rules, norms and conventions. The primary query posed is how does this new institutional setting, and a changed opportunity set and winners and losers, contribute to or detract from national and subsector competitiveness.

This study uses an institutional framework to develop a model of behavior that traces out how changes in key environmental variables exert pressure on the collective and individual mental models, leading to the creation of new institutions. In this study institutions are seen as evolving relationships with changing economic, cultural and political rules. The inclusion of power into this model of behavior allows us to examine intra-governmental, corporate, and market power---sources of pressure which affect the evolution of institutions and allow us to explore outcomes when there are asymmetric power relationships.

National competitiveness sets the stage for subsector competitiveness. A case study of the effect of integration on the asparagus subsector is presented for two regions in Mexico, one close to the US border where it is expected there will be deep integration,

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and an area, the Bajio, in central Mexico with fewer direct ties to the US. The case study of the asparagus subsector allows us to address the following questions: 1) how has economic integration influenced governance arrangements, 2) how has institutional change and changing governance arrangements affected the structure of the subsector and, 3) how has integration, as manifested in changes in the environment, institutions and structure, influenced the performance of the subsector?

The conclusion from this study is that the Mexico's path of integration with the US has resulted in economic instability, dampened rates of economic growth and has made Mexico increasingly vulnerable to exogenous shocks. These phenomenon have had a detrimental affect on national and hence on subsector competitiveness. However, because the asparagus subsector has no domestic demand and is integrated with the US industry, it has been isolated from the instability of domestic demand and underinvestment. But if the story ends describing only this short-term phenomena, we miss the subtle but profound changes that are occurring in the subsector in response to the direct pressure from the US agribusiness, the indirect pressure of macroeconomic policies, and from intra-national dependencies. Changes in production and contracts and differential access to resources have led to a more concentrated subsector with a marked increase in the role of US agribusiness firms and a decline in numbers of Mexican owner/operators. The model in this study examines the historical changes that integration has created in institutions, governance, and structure. This background makes it possible to identify the new set of winners and losers and to assess whether the behavior of these new participants as they interact in this changed environment, are enhancing or hindering subsector and national competitiveness.

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1999

**This dissertation is dedicated to Jim Shaffer, who inspired me and helped me to find my
niche as a social scientist.**

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1. Problem 1

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Chapter 1

Introduction

1. Problem statement

This study examines the impact of economic integration on both the national competitiveness of Mexico and on the competitiveness of the asparagus subsector. In order to understand how a subsector responds to a changing environment it is essential to investigate the linkages between the changing rules with integration, macroeconomic policy, commercial policy and the subsector. The question that we want to explore in this study is twofold: how has the process of economic integration, with its concomitant changes in institutions, organizations¹ and opportunities affected the national competitiveness of Mexico; and second, how this process affected, both directly and indirectly (through macroeconomic policy), subsector performance?

The process of economic integration doesn't take place in a vacuum, but is influenced by political and economic events affecting the countries involved. The process of structural adjustment, which is discussed in chapter 3, increased the speed of integration, exerting pressure for rapid change in the rules governing economic exchange between the US and Mexico.

Changes in rules have had a direct and an indirect impact on the process of integration. The direct mechanisms are changes in foreign investment laws, rules governing land tenure, and to a lesser extent, a reduction in tariff barriers. The indirect elements of integration provide a supporting environment and are also the main features of conditionality. These elements include the reduction in public expenditures and

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investment, the exchange rate band between the peso and US dollar, and the privatization of public sector activities. One of the objectives of this study is to explore how these direct and indirect changes in rules and institutions in the Mexican economy have facilitated the process of integration and how the process of integration in the last 10-15 years has influenced the competitiveness of the nation and the asparagus subsector.

General equilibrium analysis and the theory of comparative advantage suggest that trade liberalization and economic integration will result in increased specialization and lower international prices. These two effects allow a nation to move to a higher indifference curve, which is reflected in an increased standard of living. Countries will specialize in goods in which they have a comparative advantage. The model predicts that as both countries trade, both economies will improve their productivity and hence their long-run potential for growth. The relationship between integration and the potential for growth, which is later defined as an important component for national competitiveness, is one of the key relationships that we want to explore in this study.

Another conclusion of the model of comparative advantage is that a small country trading with a large country stands to gain more than the larger one does. The rationale is that the large country's prices will be less affected by the opening of trade than the smaller country's because the smaller country's trade is a small percent of the market. This would suggest that the small nation takes most of the gains from trade, while there is little change in the larger country.

There are numerous examples of countries that have increased their GDP/capita at the same time that economic integration has occurred, but these tend to be among countries with similarly sized economies, and at a similar (sophistication) level of factor

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There are also other assumptions of the general equilibrium model of comparative advantage that do not reflect the complex economic environment between the US and Mexico, so that the outcomes predicted by this model may be faulty or incomplete. For example, the general equilibrium model, along with the Ricardian model, are static. They do not include dynamic effects such as changing production possibilities (technology) or changing tastes. But perhaps more profoundly, the models assume constant returns to scale. If there are increasing returns to scale, then this may provide a basis for trade

² Krugman, (1995), discusses the concept of polarization which describes a situation where areas that were most advanced to begin with may come to dominate and reap the gains from trade.

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independent of comparative advantage. It may be the case that with national external economies of scale, free trade may make a country worse off than in autarky³. For example, assume that Mexico and the US have removed both tariff and non tariff barriers to trade. Let's further assume that in autarky, Mexico and the US produce good A. The US is the larger producer of this good, but it can't meet the needs of the combined market on its own during the current time period. The US becomes the primary producer of the product and Mexico is reduced to operating a smaller industry than in autarky. This means that Mexican labor will be very inefficient, because of the economies of scale. But US labor will be very efficient in the large US industry. Since competition requires Mexico to sell for no more than the US product, the Mexican wage needs to be very low to compensate for the low Mexican labor productivity. The role that each country plays is important. The exporter of the good gains and the importer, whose wages must fall enough to preserve a small, inefficient industry, loses. This story of trade when only one country has national external economies of scale contrasts sharply with the outcomes of the general equilibrium model, where the two countries share gains and either has an incentive to refuse trade.⁴

1.2 Economic Integration

Integration is often described as a process where the rules or institutions governing economic activity across national borders change to facilitate the unencumbered flow of factors and products across national borders. Integration involves not only a reduction in the barriers to trade and factor mobility, but also some unification

³ Scale economies are external to the firm (and internal to the industry) if the firm's average costs depend upon the size of the industry. They are considered national if average cost depends on the size of the national industry.

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of economic policies. Economic integration is by its nature complex because it involves not only a myriad of economic phenomenon but is bounded by the political interests and institutions of the participating nations. It is necessarily dynamic and evolutionary. When integration is advanced, commodities which are traded across borders are subject to the same determinants of supply and demand. But for countries to have the same determinants of supply and demand, the economies must have similar factor endowments, tastes and preferences, and institutions to facilitate the movement of goods and services. The European Community and US/Canada trade are good examples of economies where these similarities have facilitated the process of integration.

As discussed in the previous section, the Ricardian and general equilibrium models of trade concluded that economic integration would be beneficial for the countries involved. Free trade was seen as the optimum and trade agreements represented a movement towards more integrated economies. In the 1950's, Viner demonstrated that under specific circumstances, economic integration could result in a reduction of welfare⁴. The idea being that although the first best course of action must optimize welfare, the second best course of action is indeterminate, and may not increase welfare. How does this happen? The assumption of Viner's model is that integration (via a trade agreement) would allow lower-priced imports from a partner outside the new agreement to be replaced by higher priced product within the new agreement, thus increasing welfare within the new agreement. This would occur when, for example, the elimination

⁴ This example draws from a discussion by Either (1995), and can be found in many advance text in international trade theory.

⁵ Viner's analysis was conducted using partial equilibrium analysis, where the differences between consumer and producer surplus are used to determine welfare gains or loses. This is not directly comparable to the outcome measure of the general equilibrium model, which is movement to a higher indifference curve.

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of tariffs between country A and B creates trade between these two countries and generates gains. Each country produces the goods in which it has a comparative advantage, and trade expands. But trade diversion could also occur. This would happen when country A places a tariff on a country outside the agreement, country C. Residents of A will now buy the good from country B instead of C. This is trade diverting if country C could produce the product for a lower cost than country B. When this situation occurs, Viner suggests that trade has been diverted from a more efficient to a less efficient producer. The welfare effects of trade creation using a Ricardian partial equilibrium analysis rest on whether the gains to consumer surplus outweigh lost producers' surplus and lost revenue. If this is the case, the trade agreement creates more trade than it diverts, and welfare is enhanced.

We have examined the impact of integration using a static model, but there are some important dynamic effects that need to be explored that are not included in Viner's model. The dynamic effects usually discussed fall into two categories: competition effects and scale effects. The competition effects include higher levels of investment, improved marketing, greater productive efficiency, and the adoption of new technologies. Scale effects come from the enlarged market, and the ability to realize scale economies not possible in a smaller market. A country like Mexico may have potential scale effects that come from the Free Trade Agreement, but not be able to take advantage of these new opportunities in the short to medium run because of a lack of information, technology, or infrastructure.

Viner's model of trade creation and diversion provides valuable insights into how new rules may affect where production takes place and therefore the welfare impacts on

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the countries involved. The model is limited for our purposes because it is static and assumes the conditions of a competitive market. Absent from the model is the influence of market power, strategic behavior, and asymmetric information--economic phenomena that lead to situations of economic polarization and may greatly undermine the conclusions of Viner's model. Using a static model also greatly hinders our ability to understand how integration transforms an economy. Including the dynamic effects of competition and scale are important, but it isn't enough to help us understand the impact of changes in rules. What we want to examine is how a change in rules precipitated by the process of integration affects the institutions and structure of a subsector and how the change in structure will influence national and subsector competitiveness.

1.3 The Nature of Competitiveness

To trace the dynamics of change within a particular part of an economy, it is essential to understand the micro (firm/industry) and macro (national) environment which envelope it. This two-pronged approach provides insight into how the environment motivates change in the system. The query to be explored then is whether changes in the environment (macro and micro) provide sufficient incentives for new institutions to evolve that will enhance industry and national competitiveness? The definition of competitiveness will then determine how we evaluate the performance of the subsector and the effectiveness of national public policy. There are many definitions of competitiveness, most of which have evolved as a rationale for strategic trade policy. This discussion will define industry/ firm competitiveness and present an eclectic view of national competitiveness.

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1.3.1 Industry/firm competitiveness⁶

Porter describes a firm or industry which is competitive as one which has substantial and sustained exports to many countries or significant outbound foreign investment based on skills and assets created in the home country (Porter, 1990). Markusen is really saying the same thing but describes the outcome of the optimal mix of Porter's factors as the conditions needed to enhance productivity. "An industry is competitive if its productivity is higher than that of its competitors or if its per unit costs are lower than or equal to those of its competitors" (Markusen 1992). Industry competitiveness may also be defined by the ability of an industry to respond to a changing environment, that is, the ability to adjust the mix of resources used, prices paid for those resources, and the goods produced to changing market conditions while getting a return comparable to what those resources would get in their next best alternative (Tyson and Zysman, 1983). The ultimate measure of competitiveness for a subsector is a sustainable market share⁷.

What factors contribute to this dynamic process? Rugman and Verbeke, using a two-pronged approach similar to the one developed in this study, labeling the macro contributors to competitiveness as 'Country Specific Advantages' (CSA) and the micro contributors 'Firm Specific Advantages' (FSA). The subsector, being a compilation of different levels of firms, contains FSA, which include demand and factor conditions. These conditions include human and physical capital, knowledge and infrastructure and can be upgraded, created and specialized. These are what Porter labels advanced factors,

⁶ In this paper the term *industry* and *subsector* are interchangeable.

⁷ If the subsector is able to maintain share because of a subsidy, which is often the outcome of strategic trade policy, then that subsidy must be sustainable until potential competition is driven from the market.

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which require high and sustained levels of investment and play an important role in the innovation process. These factors are specific to a subsector and are more likely to provide a basis for sustained competitiveness because they are scarce and more difficult to cultivate. Successful competitors may perform many activities outside their home country and draw their competitiveness from a worldwide network rather than just their home base. Therefore it may be important to look beyond the home country borders to understand the dynamic competitiveness of a subsector. This will be illustrated in chapter 5 in the discussion of the asparagus subsector.

The structure of the subsector is also an important indicator of potential competitiveness. Coordination within the subsector and the vigor of related and supporting industries create economies of agglomeration which may enhance the subsector's competitive position by lowering production and marketing costs. The degree of competition and concentration is also an indicator of the motivation to innovate and seek higher order and more sustained sources of competitiveness (Porter,1990).

Entry and exit barriers are also elements of structure which are influenced by changing rules under integration. Entry barriers include production issues, such as economies of scale and learning curves, and demand conditions, such as product differentiation and segmented markets. A change in the rules could result in new entries of foreign firms because of a decrease in barriers or an increase in barriers because existing firms can now expand and profit from conditions leading to economies of scale.

Exit barriers can also weaken the competitiveness of a subsector when it prevents a firm from divesting. This may come about because of specific assets, fixed costs of exit, information or emotional barriers or mandate from government. If these barriers are

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significant, it may prevent a firm from divesting that would have otherwise, and hinder the competitiveness of the subsector⁸.

1.3.2 National Competitiveness

Industry and firm competitiveness are concrete. If a firm is not competitive and is not protected, then it will fail. But national competitiveness is a more difficult concept. National competitiveness is a continuum measuring the degree to which economic and political institutions either encourage or dampen economic growth and stability. It is the foundation from which industry and firm competitiveness evolve.

North develops this idea further when he discusses an economy's technical and structural production frontier. He contends that the stock of knowledge and resources in an economy determine the upper limits for productivity and output, which is the economy's technical production function. For each structure of property rights, however, there is a structural production frontier, which is reached by selecting those structures that minimize cost and maximize output. He contends that an economy's structural frontier will depend on three factors, which can enhance competitiveness: 1) the degree to which decision makers bear the full social costs and benefits of their actions, 2) ownership rights both present and future, which are secure and well defined so that contractual performance can be settled quickly and at low cost, and 3) property rights that contribute to lowering both the cost of measuring and transferring goods and assets. The structure of property rights can lower the costs of transacting and move the economy closer to its technical production frontier. The closer a country's structural production frontier is to its

⁸ If a government supports their mandates with technical and market assistance, that is, facilitates the development of the subsector's intrinsic capabilities, then the mandate may enhance long-run competitiveness.

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technical frontier, the more efficiently it is using its scarce resources. North's basic premise is that secure and stable property rights are needed to reduce transaction costs and enhance competitiveness. North (1981) contends that the government has a crucial role in facilitating this process.

Contrary to popular thought, national competitiveness is not measured by the quantity a nation exports or whether a country has a trade deficit or surplus. For example, US exports as a percent of GNP were about 14% in 1996, while Mexico's was about 22%. Does that mean that Mexico is more competitive? No, US exports as a percent of GNP says more about the size of the domestic market than about competitiveness. A trade surplus is not necessarily positive. In 1980, Mexico was forced to run a large trade surplus to pay the interest on a foreign debt that occurred when there was a decline in capital inflows into Mexico. Trade deficits may often be high when there is high confidence in the economy. Consumers import more products from abroad, and foreign capital is attracted into the country. The capital inflows allow for a deficit on the current account. Certainly Mexico's current trade surplus and debt crisis are not a sign of international competitiveness.

In current international discussions, the issue of international trade is described as win/lose situation, hence a "war of competition" as Thurow suggests (Thurow, 1992). Krugman counters Thurow's perspective by drawing on the Heckscher-Ohlin model of the gains from trade to show that international trade makes both countries better off by allowing the trading nations to reach a higher indifference curve (Krugman, 1995). Krugman's view is more realistic in that trade would not take place unless both parties wanted what was being traded - trade is a mutually beneficial activity. Krugman's

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analysis is simplistic though, in that it does not take into account nations with very different sized economies with different levels of economic sovereignty. Economic sovereignty refers to the degree to which a country's monetary and fiscal policy outcomes are relatively independent of those of another country or international institution. Power relationships and the potential for coercion from a politically and economically more powerful nation may affect micro variables such as property rights, access to inputs and marketing networks. Macropolicy variables such as the money supply, exchange rates, investment in public goods and infrastructure may also be influenced by the dominant nation. Hence Krugman's view of win/win should be modified to reflect long-run benefits and costs associated with trade in an environment of unequal economic power. So if international trade isn't a battlefield, nor an unencumbered gain, what determines national competitiveness?

The idea of national competitiveness only makes sense in the long run. As mentioned previously, a trade deficit doesn't tell us much about the competitiveness of a country. It does reveal how much a nation saves, and a nation's savings rate is a function of demographics, depth of capital markets, and social institutions. A large (as a percent of GNP) and persistent trade deficit will require an equally large inflow of foreign capital. To attract foreign capital, interest rates must be high, which may discourage investment in human and physical capital and hence the growth in potential GNP⁹.

⁹ High interest rates tend to encourage large inflows of capital, often in financial assets. In the early nineties, Mexico's inflow of financial assets as a percent of total capital inflows was about 68%. These assets are highly liquid and are potentially destabilizing to the host country, especially when these assets comprise such a large percentage of total capital inflows. In Mexico, the sudden movement of assets in the fall of 1994 led to enormous pressure on the peso, which then collapsed, and the economy fell into recession. This characteristic of high liquidity, which allows the owner to move quickly in anticipation of upturns or downturns, has lead many analyst to characterize short-term financial assets as speculative. This will be discussed more in chapter 3.

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Both of these definitions of national competitiveness emphasize long-run growth of real incomes and the connection between economic growth and trade. Growth, measured by per capita GNP, is an important component of national competitiveness. Increases in productivity (output/worker) are an important contributor to economic growth. Krugman believes that increases in productivity and living standards occur because a country has specialized in goods and services in which domestic firms are more productive than other countries. Those countries then import goods in which they are less productive. Then national competitiveness must have to do with why countries are productive in certain goods /services. Comparative advantage emphasizes differences in factor endowments, but since WWII, a large and growing part of world trade has been in products whose characteristics can't be attributed to the specific factor advantages of a country. An increasing proportion of trade is intra-industry, where countries import and export the same or similar products. The New International Trade theory allows us to fold increasing returns to scale and product differentiation into an understanding of how nations develop specializations that increase gains from trade.

We get closer to understanding the phenomenon of national competitiveness when we examine the factors that have allowed some countries to maintain rising productivity and economic growth. Many of the previous models in economic growth (Solo, 1993, Maddison, 1987, Barro, 1991) attribute growth to increases in total factor productivity or technical change, which is the residual in their models. Endogenous growth models, on the other hand, try to make technical progress and its determinants the variables explaining growth (Romer, 1994, Grossman and Helpman, 1994). These models hypothesize the importance of innovation, externalities, and human capital in

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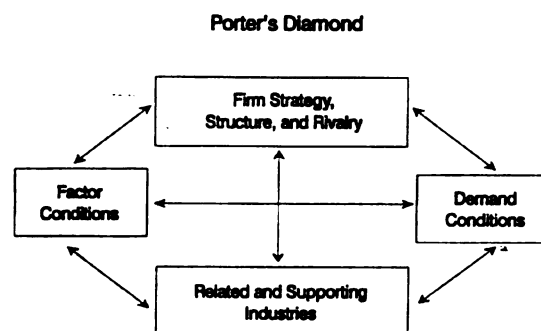
understanding differential rates of growth among countries and provide insights into the process of creating national competitiveness.

Schmookler, in his study in 1996, found that the stimulus to innovation was a costly problem to be solved or a previously missed opportunity to be seized, so that most inventions were a response to a market opportunity rather than a scientific discovery in a vacuum (Schmookler, 1996).

Ergas reported on three factors which he found to explain why innovations occur and why some countries are more likely than other to innovate: (1) on the supply side, the quality of a country's scientific base, research institutions, and the quality of education system are key variables; (2) also on the supply side, an industrial structure where there is strong competition as well as the institutions necessary for firms to share the financing and dissemination of scientific research are important; (3) on the demand side, the key factor is consumers' demanding increasingly complex goods (Ergas, 1992).

Porter's diamond is a generalization of Ergas's model of innovation. The diamond illustrates his view of the necessary elements for competitiveness.

Figure 1 Porter's Diamond



Source: Porter (1990), p. 127.

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Although Porter doesn't describe it as such, his diamond is a analytical tool for assessing how well the institutional structure facilitates growth. He underscores the importance of factor conditions: the quality and quantity of human, physical, and knowledge capital, all of which contribute to the infrastructure. The model also incorporates the role of clustering, spillovers that occur when inter-related or supporting firms are located in close geographical proximity.

The endogenous growth models develop the role of externalities more fully and provide deeper insights into the potential gains to be had from exploiting these "free lunches" or opportunities for growth.¹⁰ These models, which incorporate increasing returns to scale, focus on the role of externalities in determining the rate of return on capital investments. One of the important assumptions is that public and private investments in human capital generate external economies and increases in productivity that are greater than the private gain. Therefore, investment in human and physical capital can improve not only the productivity of the investing firm or worker but the productivity of other firms and workers. Knowledge gained in one part of an industry or subsector tends to spillover into the knowledge of other firms. A strong national industry can lead to a national knowledge base that reinforces the industry's advantage (Krugman, 1996).

So if knowledge is seen as a factor of production, the long-run growth of potential GNP may be enhanced through an investment in knowledge. This investment in

¹⁰ The idea of the existence of free lunches comes from T. Schelling in his commencement address to the Department of Economics at Berkeley in 1994. His idea is that free lunches are ubiquitous in the form of positive spillovers and gains from trade. It is the role of the economist to find those free lunches. (Schelling, 1995)

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knowledge may also spur new investment in more capital (deLong, and Summers, 1991). Although there are potentially high rates of return on investment in LDC's, these rates are diminished by lower levels of complementary investments in human capital, infrastructure, research (Romer, 1986). So LDC's tend to gain less from investment, and the market leads to the accumulation of less than the optimal level of complementary capital.

Where complementary investments produce social as well as private benefits, governments may improve the efficiency of resource allocation. They can do this by providing public goods (infrastructure) or encouraging private investment in knowledge-intensive sectors where human capital can be accumulated and increasing returns to scale can be generated (Todaro, 1996). Public policy can play an active role in promoting economic growth and hence national competitiveness through direct and indirect investment in human capital.

There is also the potential to enhance national competitiveness through a liberalized trading regime, which may increase the advantage that an innovating firm has in capitalizing on its knowledge. If a firm has a new innovation and is not restricted to its domestic market, the profits it can earn with the new product before imitators enter are potentially large. Trade may act as a catalyst for innovation and may have contributed to the high growth rates of some export-oriented economies. Chenery and Syrquin (1989), Romer (1986), and Balwin (1992) document a link between exports and economic growth in the countries they examined. On the other hand, there are some cases where an export orientation does not necessarily maximize long term growth. Countries (like Canada and perhaps Mexico to a lesser degree) that become dependent on primary

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exports and resource related activities may invest too little in creating new knowledge, to the detriment of long-run potential GNP (Grossman and Helpman, 1994, Innis, 1995). Whether exports lead to growth depends on what is being exported and whether profits from the resource extraction are being re-invested in the domestic economy. Natural resources without a valued-added component may contribute little to growth unless profits are reinvested into activities that support both backward and forward linkages in the sector or investment elsewhere in the economy. The long-run potential is often diminished, especially in developing countries, because primary resource extraction has not encouraged the development of advanced factors, especially human capital. In Mexican agriculture, foreign firms are purchasing agricultural land and former owners are now working as laborers on the land. Owners of production are using many skills other than their physical labor power. When foreign ownership is able to push out domestic owners, there is a loss in terms of development of human capital. After losing their land, the former owners are only able to supply their labor power. There is little incentive for the foreign owner to develop higher skill levels among the nationals when they can import managerial expertise from the US. This is especially true in the case of Mexico and the US where there are many Mexican Americans that aware of the cultural and political nuances necessary to be effective in Mexico. This trend will not enhance national competitiveness because the potential for creating an advanced factor, labor, is destroyed as Mexican nationals lose their managerial roles and become wage laborers.

The Porter/business school approach to competitiveness and the endogenous growth models provide important insights into what enhances productivity and growth in

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a national economy and the role that the government can play in fully exploiting and coordinating those sources of growth. But neither of these approaches takes into account the impact that macroeconomic policy has in stimulating growth and in providing stability, and hence the important role that monetary, fiscal, and exchange rate policy play in creating national competitiveness.

A nation that is competitive is one that can create institutions that foster growth and stability. Growth is a by-product of stability, where economic stability is in large part the ability to keep aggregate demand close to aggregate supply or potential GNP while the aggregate supply curve shifts out over time.¹¹ This equality of aggregate supply and demand minimizes the output lost due to inflation reduction policies and recessions. When a country like Mexico has to deal with inflation rates of 50 to 100%, the loss in output resulting from the disinflation process will have a profound impact on growth. The direct effect of loss of output may also be compounded by diminishing entrepreneurial spirit, worn down by repeated recessions and a lack of confidence in the political system to create stability, as in Mexico 1994-96. Monetary policy plays an important role in stabilizing aggregate demand and dampening the fluctuations. A semi-autonomous central bank minimizes the political ability to determine the money supply and is seen in a number of case studies as contributing to successful monetary policy and stability (Carstens, 1995).

Exchange rate policy is also an important factor contributing to the degree of stability.

¹¹ Political stability is impossible to separate from economic stability. For simplicity, I am assuming that political instability will reveal itself through the factors that determine aggregate supply and demand.

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The exchange rate regime is tied to monetary policy in that if the currency is fixed to another currency or a basket of currencies, then the rate of the growth of the money supply must be similar between the two countries¹². Otherwise one of the currencies will become over-valued. When that occurs, devaluation may take place, and concomitant inflation and recession. Countries that are able to either manage their float or have coordinated monetary and fiscal policy with the country they are tied with have a better chance of minimizing frequent or large devaluations.

Fiscal policy includes the set of policies which determine how public monies are spent and collected. While fiscal policy can contribute to stability by modulating aggregate demand, it is far more effective in stimulating long-run aggregate supply. Fiscal policy is the tool for implementing many of policies prescribed by the endogenous growth models. Government investment in infrastructural development can lower the costs of trade. Public investments in those areas that have positive spillovers for the rest of the economy enhance growth opportunities.

A legal code, specifically foreign investment laws that encourage investment in human, physical, and knowledge capital and minimize the amount of speculative investment which can destabilize an economy when it leaves quickly, is essential. It is also crucial to have a set of rules, norms, and institutions that are expected to endure. The more similar these norms and rules are to one's major trading partners, the more trade will be facilitated. National competitiveness is enhanced with the development of institutions that reduce the amount of uncertainty associated with trade as countries move toward more impersonalized interactions over time.

¹² This assumes that productivity growth is the same in the two countries.

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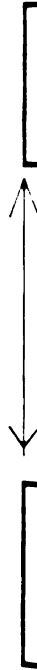
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Monetary and fiscal policy can minimize swings in the business cycle and minimize the waste of resources through failed activities and investment opportunities not taken because of perceptions of uncertainty. Both fiscal and monetary policy play an important role in creating and maintaining growth in an economy--the essential element of national competitiveness.

National competitiveness is important because it has a profound impact on the competitiveness of a subsector. As we will see when looking at agriculture in Mexico, changes in monetary, fiscal, legal (domestic and international) institutions have influenced how resources are allocated in the sector as well as the structure and performance of the sector.

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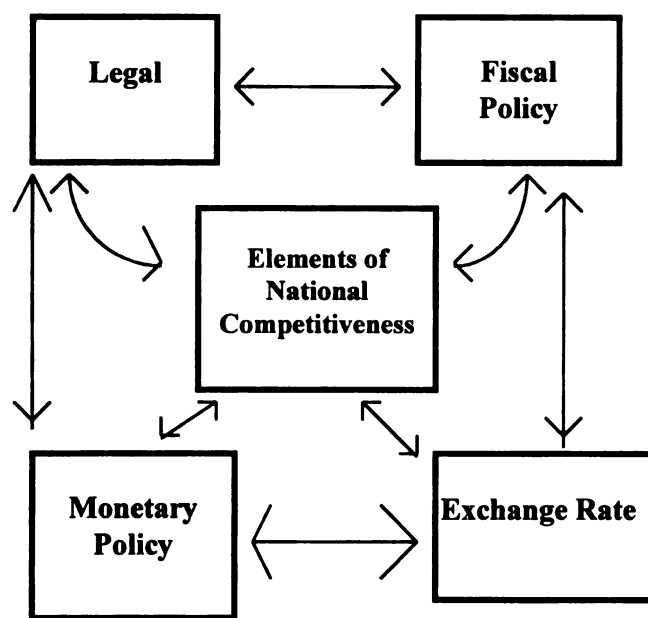
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The following is an illustration of the dynamic factors that mold national competitiveness.

Figure 1.2 A Model of National Competitiveness



1.4 The Choice of Subsectors

The asparagus subsector was chosen to illustrate the effects of integration on Mexican agriculture for several reasons. Michigan asparagus farmers were concerned about potential competition from Mexico with the ratification of the NAFTA agreement and the classification of asparagus as a sensitive crop¹³. Michigan is the third largest asparagus producing state, with over 80% of production being directed into processing. The current concern for California, Washington and Michigan is to determine how the liberalization of trade will affect their competitiveness and the type of product

¹³ Classification as a sensitive crop means that quick removal of the protective tariff may impose serious hardship on the subsector; therefore the removal of the tariff will occur over a 17 year period.

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produced.¹⁴ The NAFTA agreement eliminates a 25% import tariff on fresh and processed asparagus from Mexico. The elimination schedule for processed asparagus calls for an immediate reduction to 17%, followed by a five year elimination schedule toward open trade. The elimination schedule for fresh asparagus also calls for a reduction of tariff of 17%, but with elimination of the rest of the tariff taking place over ten years. Mexico has more than doubled its fresh exports to the US since 1985, whereas the exports of processed products have declined slightly. The US asparagus industry is concerned that heightened integration will stimulate Mexican exports of asparagus to the point where supply dampens US price and forces many out of production.

Although issues of competitiveness in the US subsector and specifically Michigan are not addressed in this study, the insights gained from assessing the changing structure of the Mexican subsector should provide information for the Michigan asparagus industry to use in formulating a more complete strategic plan.

This subsector is also interesting because asparagus is both complementary and competing with US asparagus. This phenomenon will be discussed in chapters 4 and 5.

1.5 The Importance of the Research

The studies of integration to date have failed to capture the dynamic elements of the process and so provide little insight as to how an economy will adjust to a changing set of rules over time. The analyses of economic integration have been of three types; those that look at integration within a region and display various methods for calculating

¹⁴ The major production regions in the United States are California, Washington, and Michigan. California is the largest producing state with 90% of production going to the fresh market. California competes with the northern areas of Mexico. Increasing costs of production and other investment opportunities have resulted in a 16% decline in acreage between 1992-1998. Washington is the second largest producing state. Currently it is the largest processing state. Involvement in the fresh market has increased threefold from 1984-1994. About a third of its production enters the fresh market. Washington harvests later than California and northern Mexico and therefore avoids direct competition with them.

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the degree of integration, those that use the traditional criteria of trade created/trade diverted to assess the welfare impact of a customs union or other form of multilateral agreement, and those that use large structural models to examine the linkages between sectors to demonstrate the impact of a cost (usually the reduction of trade barriers) throughout the economy. These studies have largely focused on a static analysis that assumes the current structure when determining the impact of changes on the economy.

The approach used here is different from the above studies in that it identifies the linkages between the macroenvironment and the subsector when analyzing the process of economic integration. Assessing the long-run competitiveness of a subsector also requires an understanding of how the structure of the subsector has evolved. This includes a knowledge of how changes in the environment motivate institutional change and how these new institutions may affect the structure of a subsector. Examining changes in the structure of a subsector will provide crucial insights into how a subsector is performing under a changing environment.

Understanding the long-run implications of the process of economic integration is important in two ways: 1) it provides policy makers with the knowledge of likely impacts on subsectors by tracing through the impact of macro variables on the subsector and determining the winners and losers and, 2) it will help to identify blocks to competitiveness for both the nation and the subsector, and monitor the progress as blocks to competitiveness are overcome. This will provide more information than traditional neoclassical analysis about the evolving competitive potential.

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1.6 The Research Objectives

This study aims to: 1) develop a conceptual framework for assessing the long-run dynamic impact of economic integration on national competitiveness and apply this framework to the case of Mexico-US integration. The framework will allow us to trace the linkages between integration and macro economic policy, and macro policy and competitiveness, 2) develop a conceptual framework for examining the impact of integration and macro policy on the subsector. This framework will be applied to the asparagus subsector, where we will assess how changes in the environment have led to new norms, conventions, and institutions in the subsector and how these evolving institutions have influenced the structure, and the long-run competitiveness of the subsector.

1.6.1 The Organization of the Study

This introduction presents the problem being studied and the impact of economic integration on national and subsector competitiveness. The chapter discusses the concept of competitiveness, both because national and subsector competitiveness are the main performance indicators for the study, and because national competitiveness is an especially contentious term, with different meanings to different groups. The definition presented is eclectic in that it draws from endogenous growth theory, the business school definition, and macroeconomic theory. It stresses that national competitiveness is a long-run phenomenon that depends on the ability of the economy to create growth and stability. This first chapter also discusses the research objectives, the contribution that this study makes to the literature on economic integration, and the rationale for choosing the asparagus subsector.

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Chapter 2 develops a model of behavior that serves as a building block for the larger conceptual framework developed in this study. The discussion also outlines the method of inquiry and draws upon the theoretical contributions of the 'old institutional economics' to build a dynamic and evolutionary model of institutional change. One of the underlying assumptions of this model is that an economic system responds to both endogenous and exogenous change. This allows the analysis to trace out an evolutionary decision-making process that contributes to institutional change. The last section of this chapter illustrates how the conceptual framework will be operationalized in this study of economic integration.

Chapter 3 examines the linkages between macroeconomic policy and subsector competitiveness. The chapter examines how Mexican policy evolved from protecting various sectors from international competition to embracing trade liberalization. One of the queries raised in this chapter is the degree to which Mexico was pressured by the international community to embrace a trade liberalization package which has not best served Mexico's long-run objective of national competitiveness. Do we see a situation where Mexico has been made worse off because of the design of the trade liberalization package instead of better off through more open trade? The chapter ends with a discussion of the winners and losers of Mexico's current brand of liberalization and the implications of adhering to this path for Mexico's long-run competitiveness.

In chapter 4, a model is developed for examining how the process of integration affects the performance of an agricultural subsector, specifically how integration has changed the opportunity set of firms within the subsector and how actors have coordinated their activities in response to exogenous and endogenous political and

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economic changes. This chapter moves the focus of the study from conceptual issues and the macroeconomic environment to the asparagus subsector. The discussion of the framework begins by identifying the elements in the political and economic environment, which motivate changes in institutions and in governance mechanisms within and between firms. This includes an examination of the evolution of contractual relationships, and unified or autonomous market. Attention is then directed at how new institutions and organizations influence the market structure and strategy, looking at issues such as changes in concentration, ownership, barriers to entry, and economies of scale. The last section of this chapter outlines several perspectives on indicators of subsector performance and concludes with a recommendation similar to the Schumpeterian notion of creative destruction.

Chapter 5 is an application of the framework presented in chapter 4. The description of the field research techniques used in the study are discussed in the beginning of the chapter. The discussion then focuses on the key elements of integration that have affected the asparagus subsector. The questions which are addressed in the chapter are: how have these key elements and the changes in institutions associated with them influenced the governance mechanism in the subsector? Then building on the information about institutional and organizational change, what are the structural changes that are taking place in the subsector, how have these changes affected different kinds of producers, and how will the changes in structure influence the performance of the subsector?

To address the issues outlined above, chapter 5 includes a description of the physical and economic environment, which includes the two main production areas the

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North (Sonora and Baja California) and the Bajío. An integral part of the environment has to do with economic phenomena, the international demand for asparagus, changing tastes and preferences, Mexico's place in the international asparagus industry, major markets and specific market windows. On the supply side, the chapter explores the quality, price, and availability of land, labor and capital and raises the question of whether the quality of these inputs enhances long-run competitiveness. A discussion of productivity, investment in human capital, and wages will shed some light on labor constraints. Differential access to capital and the transaction costs associated with acquiring capital are also discussed in this section as well as the opportunity costs associated with investment and reinvestment decisions in the subsector.

The organization of the production and marketing relationships are described for the two asparagus regions. This description, coupled with an understanding of the environment, allows us to analyze the development of new governance mechanisms, an evolving structure and ultimately the performance of the two asparagus producing regions.

Chapter 6 synthesizes the evidence presented in the previous chapters and addresses the question of how the process of integration has affected Mexico's competitiveness as a nation and the competitiveness of the asparagus subsector. One of the conclusions of the paper is that the particular approach that Mexico followed in its pursuit of trade liberalization contributed to the serious economic instability of the mid-eighties and nineties. Mexico lacks some of the important institutions necessary to follow its current path towards liberalization with the US without risking serious economic instability. The institutions that should have been in place during the late

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1980s in preparation for increasing integration include a central bank separate from the ruling political party, an exchange rate that allows the value of the peso to be more accurately reflected, more selective rules guiding speculative investment, and a monetary and fiscal policy that enhanced rather than hindered the growth of potential GNP.

The most profound effect on subsector competitiveness has been the dramatic devaluation of the peso and the recession that ensued. The asparagus sector, unlike the rest of agriculture, has been insulated from the most damaging effects of the recession because asparagus is an export crop. The decline in purchasing power of Mexicans has not adversely affected the international demand for asparagus. In fact, the asparagus subsector may have increased total revenue because of a relatively low peso/low price, and increased exports. At the same time though, asparagus producers import equipment and other inputs from the US. When the peso is devalued, imports become more expensive. The increasing price of imported inputs and very high interest rates affect the short run competitiveness of the subsector. The lack of domestic economic stability affects investment decisions, which is especially important perennial crops. Those who can insulate themselves from the instability have an advantage. Those tend to be US affiliated firms.

Chapter 6 concludes by exploring the policy implications of the structural changes that have occurred in the subsector in response to integration. This includes the implications of foreign involvement in new governance arrangements and concludes with a discussion of potential winners and losers as integration proceeds. Questions for further research are also outlined in this final chapter.

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Chapter 2

A Model of Behavior in Institutional Analysis

2. The Objective of the Chapter

This chapter provides a research approach that allows us to address complex interactive change in an economic system. This is a systems approach in that when a key variable changes, as happens in the process of integration, a chain of events occurs which affect the whole economic system. This is the process we want to examine. The essential building block to a systems approach is a model of behavior that allows us to analyze the behavior of actors individually and as a group in order to understand the pathways of institutional change.

2.1 Organization of the Chapter

The first section will discuss the method of inquiry in institutional economics and briefly illustrate how this method will be applied in the following chapters. In the second section, we develop a model of behavior specifying assumptions and identifying the relationships between key variables. This model draws heavily from a rich literature in institutional economics and underlines the appropriateness of “old institutional economics” for the problem being addressed in this study. The third section builds on the previous discussion to describe how decision-making occurs in an evolutionary framework. The fourth section summarizes this approach and illustrates how it can be operationalized through a revised Environment-Situation-Structure-Conduct-Performance framework. The next chapter applies this framework to the macroeconomy, tracing out the impact of integration on the national competitiveness. Chapter 4 extends this approach and incorporates the elements to examine the impact of integration on a

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subsector. Chapter 5 is the application of the analytical model for the asparagus subsector.

2.2 Method of Inquiry

Institutional economics is a useful tool for the problem being investigated because it allows the flexibility to look at complex interactions over time, and to examine the process of change. Because economics deals with human interactions, responses to endogenous and exogenous changes in an institutional setting, analyzing the parts is only possible by understanding how they fit into a coherent whole¹. Institutional economics also acknowledges the importance of power and property rights and the inevitable conflict that arises as agents change their aspirations to fit changes in the environment (Varoufakis, 1990). Understanding the roots of conflict and how it stimulates institutional change provides important insight for a dynamic analysis.

To construct a coherent explanation of an economic phenomenon, Deising suggests investigators pursue a participant-observer method, which would allow the investigator to observe recurrent themes that may exist in a variety of contexts. A theme is more important the more links it has with other themes. These themes may take the form of an accepted practice, a cultural norm, or a particular mode of production which may condition everything else (Diesing, 1964).

The next step is to develop a hypothesis about the parts of the system from the observed recurrent themes. Hypotheses are tested using many sources of data. These may include case studies, observation, and secondary and survey data. In this study,

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evidence to examine queries will be evaluated by means of contextual evaluation. This is the process of cross checking different types and sources of evidence, which serves as a way of evaluating the plausibility of the investigator's initial interpretation (Wilber and Harrison 1988). Validity of evidence will be assessed by comparing it with evidence over time and across commodities. After the different hypotheses have been validated, it is then possible to link them together using what Diesing and Kaplan call a pattern model of explanation. As this pattern model is constructed, previous descriptions of parts are evaluated by how well they fit together in a pattern and to what extent new evidence can be explained within the pattern. Chapters 3, 4, and 5 will be looking at the forces of economic integration that influence the subsector, such as macroeconomic policy, foreign direct investment, and exchange rate management. It is then possible to piece these parts together to describe a process of change in the Mexican asparagus subsector². This methodology and the tools of institutional economics allow for the examination of complex interactions over a historical period, to uncover the process of change in the structure of a subsector. The following section will describe the basic elements of the institutional economics to provide a theoretical foundation for our model of behavior.

¹ Endogenous change refers to changes in rules, norms and conventions that occur because of pressure within the group. This is in contrast to exogenous change, which is precipitated by forces outside the group.

² To verify the relationship between key variables, we will also look at the experience of other subsectors. These will provide us with our "out of sample" observations.

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2.3 The Foundations of Institutional Analysis

There is a schism in institutional theory between the institutional thought of Veblen, Commons and Mitchell, which will be referred to as the “old institutional economics” (OIE), and the “new institutional economics” (NIE) applied by Williamson, North, Sugden, Olson and of course, Coase³. Institutional economics as a school of thought began with Veblen in the late 1800s and was applied extensively to problems of public policy by Commons and Mitchell in the 1920's and 30's. Institutional economics was marginalized until the 1970's. Developments in economic theory were dominated by mathematical formalism and a movement to make economic methodology mirror physics. In the 1970's and especially the 1980s there was the birth of the ‘New Institutional Economics’ (NIE), which recognized the importance of institutions and offered several hypotheses to explain institutional change. The NIE models still retain many of the assumptions of the neoclassical model, such as methodological individualism, and individuals characterized as rational maximizers albeit with bounded rationality. These assumptions, while they provide elegance and professional acceptability, inhibit the ability of these models to analyze the process of change. Without being able to understand the process of change within an economic entity, it is difficult to assess how and why structures are changing and the implication of these changes on economic performance.

The essential element of OIE that differentiates it from orthodox theory are the very elements which make it a more useful framework for understanding the process of

³ There is an extensive literature containing the works of the NIE. Eggertsson (1990), Langlois (1995), Lethers (1989) and Samuels (1995) provide illustrations.

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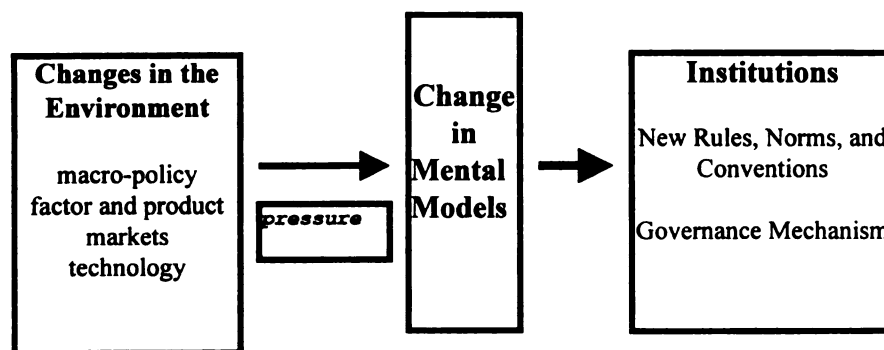
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change in a system. In the next section we bring together key elements of the OIE to build a model of behavior.

2.4 A Model of Behavior

The purpose of this model is to provide a tool to analyze the forces that motivate a change in the behavior of individuals and groups. The critical assumption of this model which differentiates it from the neoclassical model is the unit of analysis. Moving from the individual as the unit of analysis to the group enables one to incorporate change that comes from within the institution. This is essential for tracing out evolutionary change. The key variables in this model can be grouped into what we will later define as the *environment*. These variables include path dependency, power and property rights, the role of the state, technology and information. A change in one or more of these variables exert pressure on the system. When sufficient pressure builds, the actor's mental models of appropriate behavior change. When perceptions change, new institutions and organization evolve. Schematically it may look like this following:

Figure 2.1 A Schematic Model of Behavior



The next section will discuss the theoretical importance of the underlying assumptions of the model followed by a discussion of the key variables as they relate to each other and their foundations in OIE.

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2.4.1 The Assumptions: Unit of Analysis and Endogenous Change

The unit of analysis in OIE is the group⁴. Examples of a group include the family, a community, an association, or an industry. This is an important differentiation from both neoclassical theory and NIE because it allows for endogenous as well as exogenous change within the economic system.

The institutional environment has a significant effect on the behavior of individuals, and therefore it is important that the unit of analysis be the firm or group as well as the individual actor. Hodgson describes the firm's ability to mold preferences by eliciting a sense of loyalty and cohesion within the firm. Through this social power, a firm or another institution encourages individuals to act differently from what they would as autonomous individuals in the market. Bowles supports this assumption by stating that behavior of individuals is derived from past institutions, culture, and power.

Acceptance of endogenous behavior means that we can't explain current institutions by making assumptions about the commonality of preferences outside of an environmental context (Bowles, 1985). This is in sharp contrast to both neoclassical and NIE, which presupposes methodological individualism where the individual with her/his assumed behavioral characteristics is taken as an elemental building block (Hodgson, 1993).

"Individuals are pictured abstractly as given, with given interests, wants, purposes, and needs" (Lukes, 1973).

⁴ Common's view of the unit of analysis is profoundly different from Williamson's view. For Williamson, the unit of analysis is the opportunistic individual, whereas Commons emphasizes process and events –underlining the organic and collective quality of institutions. For further discussion see Hodgson, 1993.

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When attempting to explain the development of institutions, the premise of the NIE is that institutions can affect behavior but only in terms of choices and constraints present to the individuals, but not by molding preferences. It is assumed that individual actions lead to the formation of institutions, but institutions do not change individuals, other than by supplying information or constraints (Hodgson, 1993). The idea that the individual may be molded in some basic way by institutions is not considered. The OIE, on the other hand, assumes that preferences are influenced by the group or firm through habits, customs and conventions. According to Veblen, "The situation of today shapes the institutions of tomorrow through a selective, coercive process, by acting upon men's habitual view of things, and so altering or fortifying a point of view or a mental attitude handed down from the past" (Veblen 1919, p.190-1).

Since this framework allows for endogenous behavior, and specifically includes historical pathways, insights can be gained by looking institutions as evolving relationships with changing economic, cultural, and political rules (Nelson, 1981; Hodgson 1988). Understanding how norms and conventions form and re-form behavior is the key to understanding institutional change and therefore structural change. This is in contrast to the NIE, which sees transaction costs as the primary motivator of institutional change⁵. Transaction costs are the costs of finding a partner, arranging an agreement, and enforcing and monitoring the agreement. The basic premise of the NIE is that the individuals are optimizers, and that they will create institutions that minimize transaction

⁵ Not all NIE analyses give transaction cost such a primary role. Hayami and Ruttan suggest that institutional change occurs with technological advances. Their analysis omits the role played by behavior, it ignores that technology will not be adopted until there is a change in norms or conventions regarding its use.

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costs. In this framework, institutional change comes about as part of an optimizing process but begs the question of whose preferences are optimized.

2.5 Key Elements in the Model of Behavior

2.5.1. History and Path Dependency

The OIE and evolutionary economists have developed a historical context to demonstrate how the market, state and other institutions have evolved together through time (Whalen, 1992). In subsector analysis, a historical approach provides insights into the factors that lead to the creation and deterioration of past institutions. The historical context also allows us to examine path dependency, where past events and circumstances have led to a specific set of institutions and technologies and essentially lock an economy into a path until there is a radical disruption (Arthur, 1989).

In the analysis of the asparagus subsector, there are examples of the interaction of technology and property rights that illustrate how path dependency led to institutions which are not necessarily the most efficient, but continue to prevail.

2.5.2 Property Rights and Issues of Power

Relationships of power can be defined on four different levels: international, intra-national, corporate, and market. This study will examine the characteristics of these three types of power. One of the reasons a discussion of power is so important is because power has historic links which influence future institutions. “Power held today confers upon the holder the ability to influence the evolutionary dynamics of institutions to support the maintenance of power over time (Samuels, 1995)”. Power is an important factor in determining the evolution of institutions. These institutions or rules define rights and obligations not only of individuals and corporations but of nations. Power is

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dynamic and endogenous (Samuels, 1995). The source of power can be changed by technology, new institutions or governance mechanism and even by changes in perception or mental models.

A.A. Schmid describes power and the measurement of power in the following way:

“If person A owns a piece of land and can decide its use without anyone else’s permission, this is power. Power means the ability to exercise one’s will even if the outcome is not preferred by others. It is a matter of whose preferences count when interests conflict, whatever the source.

But, can’t the person who is the non-owner always make an offer to buy from the owner? Surely, but the decision to enter or exit from a transaction begins from a fundamental prior of power—namely, who is the buyer of the opportunity and who is the seller. The individual owner (seller) or individual buyer may have no ability to affect price. That doesn’t mean that the owner has no power over non-owners. Can power be observed? If the owner can be observed and the consequences for the owner and non-owner can be observed, then power can be observed.

The consequences of power are reflected in income and access to resources. A person whose preferences do not count has little income. They have little to sell to others. A person who has only their labor to sell has less power than a person who also owns land and access to bank credit. It may not be possible to have a unit measure of power, but it is certainly possible to describe the outcome and the sources” (A.A.Schmid, personal communication, 11/97).

Power between nations is manifested in the ability to force one sovereign nation to accept a set of rules imposed by another. This relationship may evolve because of the ability of one nation to use military or economic sanctions to enforce its will. Power enables one nation to define or guide the activities of a less powerful nation. The dependency relationships that evolve out of unequal power are frequently subtle, not overt exercises in military power (Although Latin American history is replete with examples of an overt military/economic presence to enforce US will upon other nations).

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It may often be difficult to determine the demarcation between national power and corporate power, especially when we are looking at large multinational corporations which have the ability to influence decision-making at the national level. In the most general sense, corporate power is the ability to use and control channels of economic and political processes to achieve corporate objectives. Power is also the ability of corporations to predominate over other institutions as a means to shape and reinforce social values.

In this study we see corporate power determining the terms of trade. This power comes from the control over scarce but essential resources (Samuels, 1995). Some of these scarce inputs in Mexico are credit and information. This leaves the less powerful country in a position of dependency, where it is not possible to move away from a relationship which is working to one's disadvantage⁶.

Market power is the term orthodox economists tend to use when referring to issues of power. Market power refers to the degree to which a firm is a price searcher as opposed to a price taker and hence is concerned about the elasticity of demand for the product. Market power plays less of a role in this study. More profound influences will be corporate power and the power relationships between Mexico and the US, and Mexico and international institutions such as the IMF and the WTO.

Political and economic rules establish property rights and determine who has the power to mold and adjust to evolving institutions. The inclusion of issues of power in an evolutionary economic analysis further diminishes the explanatory power of transactions

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costs. This study explicitly examines how power can be used to capture the benefits of an exchange and how those with power are able to influence the nature of the institution that evolves. Since transaction costs explain only part of the motivating force behind institutional change, it is important to determine who benefits from the existing or new institution. It is often the case that a different governance structure could evolve, but that those who are gaining benefits have a stake in maintaining an particular institution (Dietrich, M 1994). This issue is discussed in chapter 4 where we examine how governance structures evolve and influence the structure and performance of a subsector.

2.5.3 The Role of the State

Inclusion of the economic role of the state is essential, as the state is seen as an inseparable part of the economy. Dugger warns of the prevailing ideology, where the relationship between the state and the market is seen as an either/or relationship.

"Isolating the political from the economic we miss the mutuality and cumulative power of the state-market combination" (Dugger, W. 1992). In this study, the role of the government is paramount, as we see how the macroeconomic policy of several governments has shaped and created many of the institutions that have a profound impact on the agricultural sector. The state plays a major role in creating and reinforcing property rights as it establishes, interprets, and enforces the rules facilitating exchange. In Mexican agriculture we see the government radically change property rights as the rules of land tenure and foreign investment change and access to credit opportunities or

⁶ This is a disadvantage in the sense that a majority of a population are worse off in terms of standard of living, in the long run. A position of dependency may make a portion of the population better off; therefore, it is important to discuss who the winners and losers are given a specific set of rules.

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conditions change. All of these examples demonstrate the role of the state in determining who gets to participate in decisions about how resources will be used.

2.6 Institutional Change and Decision Making in an Evolutionary Perspective.

The issue to be explored in this section is how the different models of behavior lead to different explanations of institutional change. The NIE, as stated in the previous section, assumes that all individuals are rational optimizers. The explanation for institutional change in the NIE is that individuals will create institutions which will minimize their transaction and transformation costs. Williamson, a major contributor to the transaction cost literature, narrows the assumption further by requiring that individuals exhibit bounded rationality and opportunism. The OIE, on the other hand, relies heavily on conventions as a mechanism for ensuring stability and for creating opportunities for change. Conventions are norms of behavior, or mental models that evolve from a collective attempt to deal with uncertainty. Two complementary ideas on how conventions are created and how they provide a mechanism for institutions to change, are Choi's paradigm shifts and Thorbecke's interpretation of Leibenstein's X-efficiency (Choi, 1993, Leibenstein, 1978, and Thorbecke, 1990).

The first part of this discussion will examine inconsistencies in the behavioral assumptions of the NIE. Convention theory will then be presented as a more useful way to characterize decision making.

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2.6.1 The Problems with Bounded Rationality and Decision Making in Transaction Cost Economics

Coase was the first to discuss the evolution of the firm as response to the costs of market transactions (Coase, 1937). Williamson then builds on this to develop the idea that changes in institutions (which he refers to as governance structures) come about as agents minimize the costs of exchange. These costs of exchange or transaction costs include search and information costs, bargaining and decision costs, and policing and enforcement costs. All of these costs represent resource losses due to a lack of information (Dahlman, 1979).

Williamson calls upon Herbert Simon's concept of bounded rationality as one of the conditions necessary for an agent to choose an institution which minimizes the cost of the transaction. (Simon, 1959) He suggests that economizing on transaction cost has the effect of economizing on bounded rationality (Williamson, 1985). Simon's view of bounded rationality is different from Williamson's interpretation. Simon's intent was that because there is not omniscient presence, one can't have complete information, nor have the mental capacity to analyze infinite possibilities, and that agents then satisfice, attempting to find an acceptable minimum. Williamson interprets Simon's satisficing as cost minimizing, the dual of the neoclassical assumptions of maximization. It is not logical to expect the agent to be able to go through all the cost calculations necessary to identify which institutional arrangement has the lowest transaction cost. Uncertainty and bounded rationality will inhibit this assessment (Hodgson 1993).

As all agents do have limited computational capacity, it is necessary to abandon the idea of the all-knowing agent. If we do this, then we are left with the problem of how

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agents make the choice between different institutional structures, or in Williamson's terminology, how agents discern the comparative costs of different governance structures.

If there is no way to calculate the different costs, how are decisions made on what institution should predominate?

2.6.2 Decision Making in an Evolutionary Perspective

In the above discussion, one of the inconsistencies discussed in Williamson's approach was the assumption that individuals and firms display optimizing behavior. In the NIE model, agents characterized by opportunism and bounded rationality choose structures that minimize transaction costs. This is the same as in the neoclassical model, where agent's optimizing behavior is assumed and exogenous to the model. In both of these models the mechanism for decision making is optimization and the information needed to make an exchange is known.

There are two recent contributions to the literature that provide interesting insight into economic behavior and rest upon the assumptions outlined in the OIE. Choi has developed a theory which provides a framework for examining the behavioral implications of decision making under uncertainty. The two basic components of his theory are that:

1. every human action presupposed an associated paradigm - i.e., our mental model of how the world works guides our decision making process under uncertainty.
2. individuals will continue to search for a mental model until they find one.

Under this scenario, individuals will be committed to their mental model of what the world is like and their behaviors to cope with their perceptions. Their actions are then

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likely to be characterized by routines, habits, and rigidities. Changes in behavior are therefore more likely to be discontinuous, rather than smooth adjustments (Choi, 1993).

So as individuals and groups are faced with a new situation, they will identify a suitable mental model and a set of conventions or rules for operating in that situation. Individuals within a society then create and share new conventions as a way to handle uncertainty. Choi suggests that as a community regulates its actions through these conventions or institutions, a stable society evolves. These conventions provide a way to deal with uncertainty and a wide range of coordination and cooperation problems. But no environment remains static, and as the environment changes, and the rules remain, unexploited opportunities are generated and create an opening for entrepreneurial activity and endogenous change.

Entrepreneurs play a critical role in pushing a society to change. They do this by identifying and pursuing opportunities ignored or unknown to others. They are held in check by the costs of potential failure. Their incentive to break convention is the potential large gain from taking advantage of previously 'missed opportunities'.

Choi asserts that the decision an individual makes to maintain or break a convention can best be explained by the differences in circumstances, not the character of the actor. In Choi's approach, the presumptive truth is convention instead of perfect markets. The market is not given, but is driven by entrepreneurs, a characterization that underlines the aspect of the market as a social learning process.

The new convention may not necessarily be more 'efficient,' but it does allow a group to gain, perhaps at the expense of the larger society. This is exemplified by use of

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tariffs and quotas--new rules to expand and protect a group. Underlying the potential to introduce new conventions is not only the potential for gain, but a position of power.

Thorbecke, using an X-efficiency model, contributes to an understanding of institutional change by exploring the decision making process that leads to new conventions. Drawing from Leibenstein, he defines X-inefficiency as the difference between maximal allocative efficiency and actual observed efficiency, i.e., it measures the degree of ineffectiveness in the utilization of the inputs (Leibenstein, 1978). This goes beyond looking at how inputs are allocated, but examines how they are used. X-inefficiency measures the actual loss in total efficiency resulting from conventions, habits and decisions. More importantly, X-efficiency represents the potential gains from changing conventions and the rules of the game within the firm or industry.

Three underlying assumptions of X-efficiency theory that provide it with its explanatory power are that:

1. the response to opportunities is a function of the environment and,
2. individuals are guided by selective rationality rather than maximizing behavior and,
3. inert areas exist because individuals may be hesitant to move, i.e., the costs of moving are high.

X-efficiency addresses the question: how does an increasingly competitive environment affect convention formation? This theory is not looking at the rationale for the occurrence of conventions as transaction cost analysis (TC) does, but examines the decision-making process underlying the conventions. The importance of Thorbecke's contribution is that he describes how pressure leads to changes in conventions. The basic idea is that as the environment in which an individual operates changes, pressure is put on agents, which affects their choice of technology, and therefore their costs of production.

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The motivators behind the decision-making processes are pressure and effort. With effort related to the amount of pressure, the decision process that is followed depends on the amount of environmental pressure. At the lowest pressure range, decisions are made on the basis of habit. The next jump is decisions based on convention, followed by work ethics, and calculation (Leibenstein, 1986). It is assumed that decisions are made in terms of an ordering, with an individual shifting from one category to the next as the pressure mounts (Thorbecke, 1990). For example, when there is greater market pressure, firms (subsectors) have an incentive to adopt new conventions and rules of the game or may be replacing habits by conventions. Pressure may lead to a more formalized relationship to achieve better cooperation, i.e., relational or unified contracting.

2.6.2.1 Conventions and Institutional Change

Both Choi and Thorbecke describe the primary role played by conventions in motivating institutional change. The difference is that Choi believes that conventions only change when enough missed opportunities create an incentive for an entrepreneur to break with the convention and begin the process of creating new ones. Thorbecke's description of changes in conventions uses the concept of pressure, similar to Choi's missed opportunities. This pressure comes from the environment and creates incentives to change the rules. One source of environmental pressure that will be examined is the desire to compete in the international market⁷. This pressure will grow as economic integration within the Americas continues.

⁷ This desire becomes a need as Mexico is obligated to repay structural adjustment loans in US dollars.

In later chapters we will be able to trace the impact of pressure from an increasingly competitive environment on conventions and specifically on the types of contractual relationships that have evolved. It is this analysis of pressure and the focus on the decision making process that Thorbecke suggests is the distinguishing characteristic of X-efficiency in contrast to the transaction cost approach.

2.6.2.2 The Stability of Conventions and Power

Choi and Thorbecke discuss why conventions are slow to change. Choi believes this has to do with the need for stability, a way to function in an environment of uncertainty. Thorbecke, on the other hand, emphasizes the role that power and property rights play in determining who is able to make changes in customs or conventions. Issues of power and property rights are especially important in this study of Mexico, where property rights are not completely assigned, e.g., land tenure, and where the initial distribution of wealth has influenced the political and economic power structure. Institutions have evolved that reflect the "non-neutrality of property assignments" (Bowles and Gintis, 1988). When powerful groups will lose by the change in the rules, they will try to block those changes. Power will also play an important role in determining how the state intervenes to create rules to help certain groups through monopoly rights, protection, price and subsidy measures.

2.7 Towards an Eclectic Model of Institutional Change

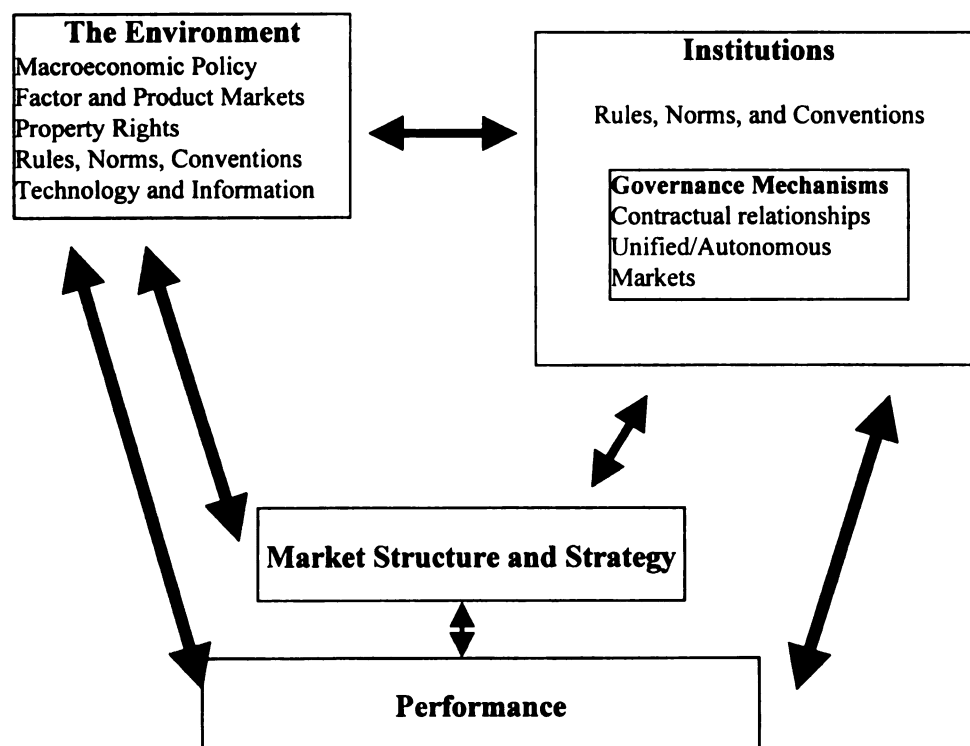
In this methodological approach, institutional change is key to understanding economic outcomes. But in order to understand how institutions evolve it is essential to disregard orthodox assumptions about behavior, and draw from the rich literature and empirical evidence that shed light on new behavioral regularities in the development of rules, norms, conventions, and hence institutions. Institutions are seen as the mechanism for translating changes in the environment to changes in the structure of the subsector. The evolution of the structure will have implications for the ability of the subsector to fulfill its performance goals and will have important policy implications for both national and local governments.

This model is eclectic as it draws from the OIE, transaction cost analysis of the NIE, and evolutionary economics. The different parts brought together in this approach allow for the examination of the paths of change in an economic system. The assumption of the group as the unit of analysis allows one channel for the analysis of dynamic change. Dynamics are also incorporated through the inclusion of historical relationships in an economic system and through a non-linear feedback analysis that provides a framework to integrate all of the known processes that contribute to change in the system.

2.7.1 ESSCP as a Hanger for the Eclectic Model

This chapter has outlined a model of behavior which increases our understanding of the process of institutional change. This model fits into a more complete model of institutional change similar to the Environment-Situation-Structure-Conduct-Performance framework (ESSCP)⁸. This framework provides a systematic way to trace the impact of economic integration on national and subsector performance. The following diagram provides a visual interpretation of this process.

Figure 2.2 A Generalized Model of Institutional Change.



⁸ Contributors to this framework, Marion, 1983, Shaffer, 1980 and, Schmid, 1987.

The analysis begins with an historical exploration of the micro and macro environment. This will include past institutions, norms and conventions. Micro issues such as demand and supply, infrastructure and macro issues like the impact of IMF conditionality, changes in foreign investment laws, or land tenure on the subsector, are addressed. The environment also outlines the power relationships in the subsector and among the national and international participants.

Technology plays an important role in that it affects the combination of resources used in production and therefore costs. It also affects the relationships in production, so that changing technology may lead to changes in the power structure. It can also be expected that changes in technology, because they change the mechanics of production, will have an impact on norms, rules, and conventions (NRC) and therefore is an important motivator for institutional change. (The reverse is also true. NRC will influence the adoption of new technology/information.)

The eclectic nature of the model also incorporates the impact that transaction costs have on institutional change, albeit without the behavioral assumptions of the NIE. What is taken from the transaction cost approach is the idea that costs of exchange come about because of the nature of the good being exchanged, property rights, and the institutions (including customs and conventions) in place. Transaction costs can create a motivation for change as groups, firms, and individuals respond by changing the conventions and institutions that maintain high costs. These transaction costs may create the cumulative missed opportunity and provide the pressure to lead to a change in custom, convention, or institution that will ameliorate the costs and create more opportunities. The changes that will be made will, of course, be a function of who wins and loses.

Transformation costs are also included in the determination of institutional change. It is expected that one of the influences on agents will be to lower costs. Both of these costs are directly affected by the environment, technology, and power. These costs also exert direct influence on norms, conventions and institutions.

As the institutions change in response to external and internal phenomenon, the structure of the subsector is also going to change. This study traces through many changes in institutions in the asparagus subsector. Behavioral issues are imbedded in the formation of norms, conventions, and institutions and determine how a change in structure affects performance.

There are no economic absolutes when determining what criteria an economist should use to determine whether an economy or a subsector has been successful. These criteria are determined by the participants (stakeholders). In the case of the commercial agriculture, the desired outcomes are a competitive sector (and that has different meaning to the different stakeholders) that can meet the needs of the domestic market, replace imports, and create a sector with a growing share of exports to North America and the world. For participants in the asparagus sector, the ability to deliver high quality product to the various markets either in off-season or at a lower price than their competitors is a frequently articulated outcome. Our question as we look at the process of integration over the last fifteen years is whether the changes in institutions led to a structure in the subsector that has enhanced the likelihood that these outcomes will be reached. What can we learn about this process that will help policy makers and participants design or refine institutions to better enable them to reach their desired outcomes?

The next four chapters will look at this process of change. Chapter 3 will address the macroeconomic issues that have affected commercial agriculture and asparagus.

Chapter 3

The Impact of Macroeconomic Policy on the Competitiveness of the Agriculture: Implications for the Horticultural Subsector.

3. Introduction

The purpose of this chapter is twofold: to explore how the macro environment influences national and sectoral competitiveness and to examine how changes in macroeconomic policy objectives shape agricultural policy. Specifically we want to look at how the process of integration was translated into macro-policy and the effect of these policies on national competitiveness. We want to investigate how fiscal, monetary, and commercial policies have influenced the creation of ‘advanced’ factors, economic and political stability, and assess whether there is evidence of increased polarization. We want to look for evidence of polarization because it will inhibit long-run national competitiveness by dampening the creation of advanced factors. The key issues we will focus on in this chapter are the changing role of the federal government, and emanating from that, changes in entitlements, new foreign investment laws, and the consequences of severe economic instability. To assess the effect of these institutional changes, we will examine the process of integration over the last 25 years.

As outlined in chapter 1, we are taking a two-pronged approach to this analysis, focusing on not only the macroenvironment but how macro-events directly and indirectly influence the agricultural sector. The latter part of the chapter focuses on the linkages between changing national institutions and sectoral competitiveness and looks at the effect of change on various groups of producers within the agricultural sector.

This chapter begins with an examination of the roots of the Mexican financial crisis of 1982 and the resulting radical change in macroeconomic policy. The response to this first crisis was a dramatic move from an inward-oriented, protected economy to an outward-oriented economy embracing integration with the US, including the implementation of NAFTA. The response to this crisis also led to a more open trade and investment regime with the rest of the world, as demonstrated by Mexico's acceptance into GATT. This reorientation required the creation of new institutions, new rules and norms of behavior. This chapter will trace the evolution of these institutions, the resulting changes in the macroenvironment, and the impact of these changes on the structure of the agricultural sector. The analysis of this evolutionary process suggests that Mexico's emphatic embrace of trade liberalization contributed to the second financial crisis of 1994, which has had a profound impact on national and sectoral competitiveness.

3.1 The Links between Macroeconomic Policy and the Agricultural Sector.

Macroeconomic policies are economic choices which play a decisive role in the allocation of resources between sectors. Macroeconomic policy affects price structure, public expenditure and trading regimes, all of which have implications for each sector in the economy.

The agricultural sector plays an important role in the Mexican economy as a supplier of foreign currency, employment, food and raw materials. Political and economic involvement by the state can stimulate or paralyze the sector. The competitiveness of the sector will depend on nation-and industry-specific factors. The nation-specific factors that we want to focus on in this discussion are how the macroeconomic environment, as it adapts to pressure from the outside world (IMF), creates new economic and legal

institutions, and the effect of these institutions on the structure of the sector. The state plays a role in facilitating an appropriate institutional environment by channeling resources toward the agricultural sector. These resources may include infrastructure, credit, and research.

3.2 The New Direction in Economic Policy: a Historical Overview.

3.2.1 Factors Leading to the Mexican Debt Crisis.

In the summer of 1982 Mexico announced that it could not meet its debt repayment schedule, and a serious financial crisis was revealed. This crisis was precipitated by a dramatic drop in oil revenues, a sharp increase in interest rates, an inability to borrow from abroad, capital flight that led to deficit and balance-of-payments problems, and a tremendous increase in inflation. The origins of the crisis lie largely in the large debt burden accumulated in the 70s and also, in part, from a post-war import-substitution strategy which was not dynamic enough to allow Mexico to adapt to new opportunities¹. Mexico imposed tariff and nontariff barriers on imports and subsidized manufacturing during this inward-looking period. Policy was oriented towards preventing foreign domination by restricting direct investment and foreign ownership of assets. The government also controlled the exchange rate, restricted access to foreign exchange, controlled over 1000 firms and established stringent regulatory control over commercial activities. ²

¹ Mexico, like many other developing nations, borrowed heavily at variable interest rates. Interest rates rose in the late seventies in the US as the Federal Reserve Board in the US began to peg the money supply rather than interest rates.

² This history of the Mexican financial crisis draws from many readings. The most succinct discussion came from Sheahan 1991, and Roett 1993.

These import-substitution policies led to the impressive growth of Mexico's manufacturing sector in the post-war decades, but debts accumulated after the second oil shock left Mexico over-burdened with debt, contributing to the financial crisis of the 1980s. To cope with this growing crisis, Mexico financed sizable debts by creating money. This contributed to high rates of inflation. The repayment of debt absorbed a sizable share of national savings, making it essential for Mexico to borrow from abroad for investment. To attract foreign capital, Mexico had to offer relatively high interest rates, which increased the demand for the peso. As the peso appreciated in value, exports became less attractive and the trade deficit increased. In addition, the level of protection, both through barriers to trade and a complex web of regulations, inhibited trade and affected the allocation of resources within the domestic economy. Mexico also borrowed heavily on the international market to maintain high levels of current consumption and finance unproductive investments.³

International events also contributed to Mexico's inability to repay loans: the global recession, which reduced the demand for Mexico's exports; tight monetary policies in the US, which had the effect of raising the interest rate on Mexico's debt; and the appreciation of the US dollar, which effectively increased the value of Mexico's debt. There was also an agricultural crisis which was characterized by massive annual imports of cereals and high rural unemployment.

³ This is not to imply that investments were purposely unproductive. Prior to the crisis, Mexico was following an infant-industry strategy, with the belief that if an industry is protected from international competition while it moves down the learning curve, it will allow the industry to survive on the international market. Unfortunately, because of its belief that the barriers will not be reduced, the protected industry often has no incentive to be a low-cost producer. Resources stay in the protected industry when perhaps they would receive higher returns in other areas.

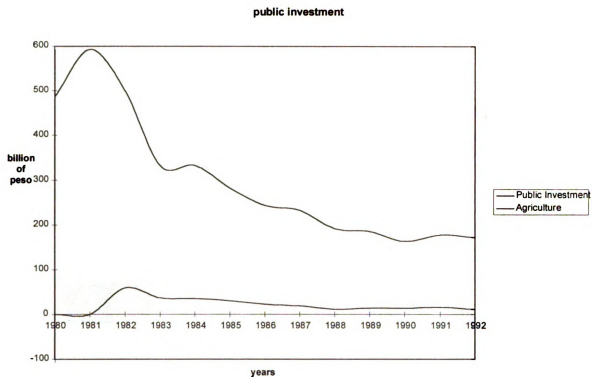
The IMF intervened in September 1982 on the condition that Mexico reduce its budget deficit, decrease borrowing, reduce subsidies and limit wage increases. These actions were part of the initial stabilization policy. Mexico also had to agree to undertake a structural adjustment program, abandoning the import-substitution model for a more outward-looking approach.

The management of the crisis took place in two steps. The first was an immediate stabilization program, which consisted of measures to contract demand in the short run. The basic objective of these measures was to restore the balance of payments, especially the current account balance, by reducing demand and therefore imports. The second component, which was more long-term in nature, required structural reforms aimed at increasing productivity. These included measures such as exchange rate adjustment, internal price adjustment, restructuring the financial system, trade liberalization, changes in public spending, and privatization of national firms. The expectation was that these structural reforms would enhance the efficiency of the productive system through a greater mobility of factors, allowing them to be allocated according to the highest return.

3.2.1.1 The Stabilization Policy 1982-1987.

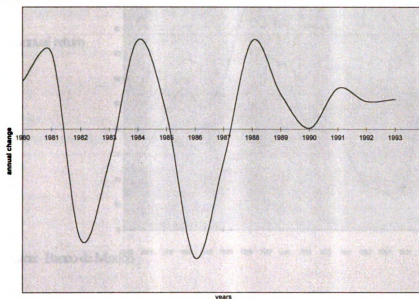
The stabilization policy relied primarily on monetary and fiscal policy to solve the immediate problem of a large public deficit, inflation, and distortions in the exchange rate. Decreasing public expenditure was seen as an immediate and integral component of this policy. To fulfill this objective, subsidies, public investments (see figure 3.1) and social services were reduced, and many public firms were privatized. A large part of the budget was directed towards debt repayment.

Figure 3.1 Public Investment (billion pesos) [Constant peso at 1980 prices]



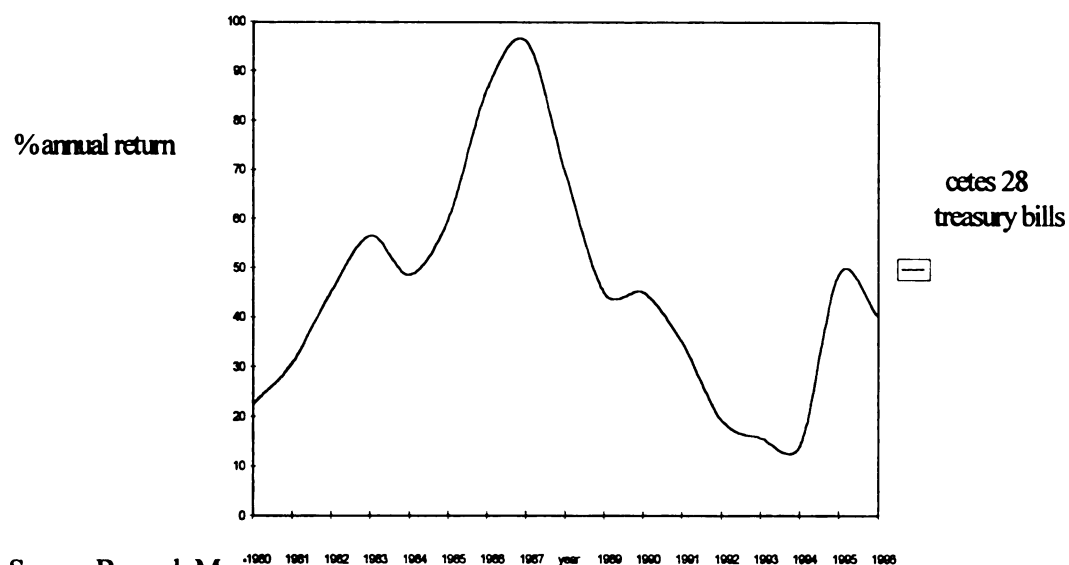
To make imported goods less attractive and enhance the competitiveness of exports, several devaluations were undertaken (see Figure 3.2).

Figure 3.2 Annual Rate of Change Real Exchange Rates peso/US dollar (1980=100) 1980-1993



A real wage reduction was undertaken as part of a strategy to reduce inflation through the contraction of internal demand. Interest rates were increased to compensate for inflation and to slow the amount of capital leaving Mexico (see figure 3.3).

Figure 3.3 Real Interest Rates in Peso Denominated Instruments.



Source: Banco de México

The reduction in wages lead to a serious recession, characterized by a contraction in investment, and consumption. Although the intent of these policies was to control high inflation, the policies were unsuccessful.

The social cost of this policy was high. Unemployment increased from 1 million to 6.5 million from 1982-1988 (INEGI 1993). The real minimum wage declined 35.8%, contributing to the deterioration of purchasing power of 50%. This decline in wages can be seen in table 3.1.

Table 3.1. General Average Wage(pesos/day)

Year	Constant Pesos at 1980 prices
1980	140.70
1981	143.36
1982	156.53
1983	111.81
1984	105.85
1985	103.37
1986	112.45
1987	126.83
1988	73.21
1989	76.87
1990	71.63
1991	65.42
1992	56.64

Source: Informe de Gobierno(1992) and INEGI Selected Years.

It was hoped that the efforts to reduce demand, coupled with increased exports, would be sufficient to contain inflation, but price liberalization and the decrease in subsidies led to inflationary pressure. The failure of devaluation to dampen inflationary pressure was also disappointing. The devaluation increased the price of imported goods. Since the price

of imported goods increased, the price of substitute products and of imported inputs also increased. The result of was higher costs of production and higher prices for the products, as prices rose in order to maintain margins. This behavior fueled the inflationary fires, as is illustrated in table 3.2.

Table 3.2: Price Indices 1980-1993

Year	National consumer price index 1980=100 General	National consumer price index 1980=100 Agriculture	National producer price index 1980=100 General	National producer price index 1980=100 Agriculture	National producer price index 1980=100 Agricultural raw materials
1980	100	100	100	100	100
1981	128	129.47	125.50	137.00	121.9
1982	203.35	174.56	197.70	186.70	189.8
1983	410.52	327.56	394.10	380.70	435.2
1984	679.24	535.33	644.80	624.90	712.8
1985	1071.47	841.20	1001.00	987.8	1097.4
1986	1995.45	1573.43	1796.70	1925.90	2118.9
1987	4626.00	3297.82	4407.20	4550.8	5006.7
1988	9907.03	7442.12	8783.70	9119.80	11241.20
1989	11889.28	10154.32	9904.80	12429.10	12796.80
1990	15057.94	13539.68	12157.40	17804.9	16370.4
1991	18470.4	15246.74	14477.70	21865.2	20782.9
1992	21334.76	16917.40	16220.00	26797.5	25443.9
1993			17508.9		

Source: Indicadores Economicos del Banco de Mexico

The devaluation also increased external indebtedness. Mexico had borrowed US dollars through public and private firms, assuming the exchange rate risk. As a result of the devaluation, Mexico's debt in peso terms has increased. This is one of the risks of borrowing from foreign sources.

3.2.1.2 The Structural Adjustment Policy 1987-1994

As Mexico plummeted into this morass of stagflation, it was obvious that it couldn't maintain its current path. There was a need for a new policy direction that would not only allow the country to continue to make progress in managing inflation, but also stimulate growth. The administrations of de la Madrid and Salinas believed that the way out of the economic stagnation was through export promotion. Salinas especially saw the opening of the Mexican economy not only as a way to facilitate exports but also as a way of forcing the economy to reallocate resources to be consistent with its comparative advantage. Several policies were aimed at increasing trading opportunities, such as eliminating state-owned monopolies and eliminating regulation that contributed to higher costs and restricted the availability of goods. These included liberalizing restrictions on foreign investment and reductions in tariffs and quotas.

The first set of initiatives implemented by de la Madrid was still primarily a program of austerity. Salinas later revamped the program to meet the broader objectives of ensuring economic growth. Madrid's program was the Economic Solidarity Pact (PSE) in which labor, business, government, other groups such as agricultural producers agreed to participate. The main objective was to reduce inflation. This was to be accomplished by a freeze on prices, wages, lower guarantee prices (support prices) in agriculture, continued efforts to reduce government expenditures, and restrictions on credit as a way to slow growth of money supply.

The PSE also called for slow adjustment of the exchange rate, minimizing the need for radical devaluations. The exchange rate was protected by currency reserves built up by trade surpluses since 1982. The immediate goal was to slow the depreciation of the peso

against the dollar using an announced crawling peg. The long-run objective was to stabilize the \$/peso rate once inflation was under control. This meant that the Bank of Mexico could only expand its money supply at the same rate as the US money supply (Sheahan, 1991). When Salinas came to office, the plan was renamed (Pacto de Estabilidad y Crecimiento) (PECE). This was the beginning of a strategy to enhance economic growth, price stability, and a manageable levels of internal debt and annual trade deficits (Salinas, 1985)⁴.

It was under Salinas that a broad range of structural reforms to enhance national competitiveness was first articulated. These included changing the institutions that regulated trade and investment. Salinas focused on making Mexico attractive to foreign investors. Rules governing foreign direct investment were liberalized, tax laws were changed to provide incentives for Mexican entrepreneurs to keep investment funds in Mexico, high interest rates were maintained, tariffs on many products were reduced and the number of import licenses declined. Salinas's objective was to double the level of foreign direct investment by 1994 (Salinas 1985).

⁴ Neither Salinas nor those at the Central Bank provided the criteria for defining a 'managable' level of external and internal debt.

3.2.2 The Role of Trade Liberalization in Facilitating Macroeconomic Objectives

The two objectives of macroeconomic policy are growth and stability. Salinas's move towards trade liberalization was an attempt to stimulate growth in an economy with very little domestic savings, and one that suffered from both recessionary and inflationary pressure stemming from the structural adjustment process. It was expected that liberalization would stimulate growth by improving the allocative and technical efficiency both between and within the sectors. A more liberalized trading regime would first increase imports. The prices of the imports would force Mexican prices to the international price, creating a new system of relative prices. These new prices would serve as better indicators of scarcity, and resources would move towards the sectors where they commanded the highest value.

The commitments required of Mexico upon accession to the GATT were already realized through its own liberalization program. Mexico's membership into the GATT didn't expand the liberalization process but was seen as an indication of the intention to pursue liberalization, an important signal to enhance the credibility of the program with both domestic investors and foreign financial institutions. The current degree of trade restrictions in Mexico is close to those characterizing the US and EU. Current quantitative restrictions to imports only involve some agricultural products, oil products, and the auto sector (Barkin, 1990).

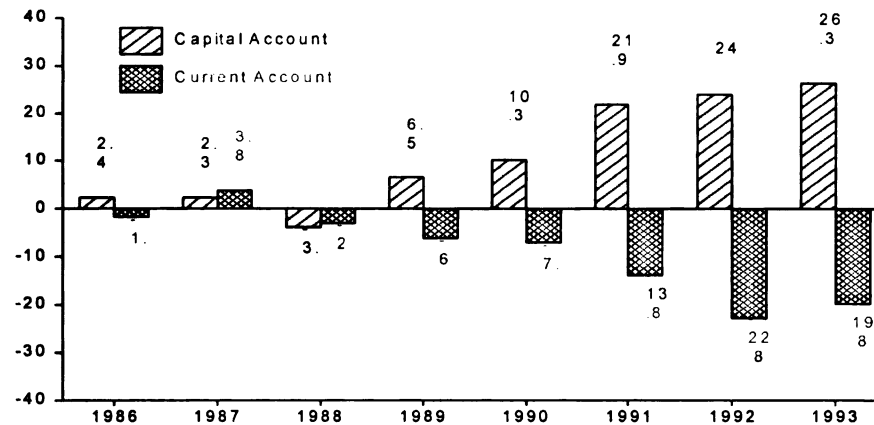
3.2.3 Preliminary Results of the Structural Adjustment Policy 1989-1992

The Salinas administration was successful in redirecting the economy towards positive growth while still controlling inflation. Economic growth (real GNP) averaged 3.7% from 1989-1992 (INEGI,1993), while inflation fell to 11% in 1993, down from 20% in 1989 at the beginning of the PECE (Informe de Gobierno, Banco de Mexico,1992).

As we can see from figure 3.4, between 1990 and 1992 Mexico's current account deficits grew rapidly, reaching 6.9% of GDP in 1992. The large deficits were the result of the growth of imports by 50% over that two-year period. Large capital inflows in the early nineties, mostly in the form of foreign direct investment, offset the current account deficit and permitted a healthy build-up in foreign exchange (Banco de Mexico, Annual Report 1993).

The decision to privatize many government enterprises facilitated fiscal balances. Subsidies to government-owned enterprises were reduced, and revenues from the sale of these government firms were placed in a stabilization fund, both to reduce debt and as a reserve against future uncertainties.

Figure 3.4 Balance of Payments in Millions of Dollars (1986-1996)



Source: Banco de Mexico, IMF

The inflows of foreign investment via the capital account financed the deficit on the current account. One of the problems with unregulated capital inflows into Mexico was that only 1/6 of this capital was invested in long-run productive activities. The remaining capital was invested in short-run speculative activities. Investors can use short-term investments to take advantage of the peso/dollar fluctuations. This left the Mexican economy vulnerable to changes in international interest rates. Interest rates had to be kept high to attract foreign capital. When interest rates fall, as they did in 1994, this speculative capital leaves, forcing the central bank to use scarce foreign currency to pay the debts. Another concern with inflows of speculative capital is that it only contributes marginally to Mexican productive capacity, and therefore there are no future returns from which to pay

for the loan. The inflows of foreign capital allow the middle class to import goods cheaply, and as such, enhance political stability.⁵

The amount of credit available to the private sector increased in real terms, because of the growth of middle class. There were more pesos flowing into the banks and an increased availability of loanable funds. The growth in credit availability was also a response to changing interest rates. Under PECE, interest rates were freed, which led to an increase in the flow of savings to financial institutions and to high rates of returns in contrast to previously negative real rates of return. This increased credit to the private sector allowed private investment to fill some of the gap created by the withdrawal of government investments⁶.

3.2.3.1 Exchange Rate Policy

Since the crisis in 1982, the government's macro-strategies have been in conflict. The efforts to reduce domestic demand and inflation by strong fiscal contraction clashed with attempts to stimulate export promotion through devaluation. This conflict can be seen in the vacillations in the real value of the peso, which during one period was pushed down to stimulate an export-led recovery and then allowed to rise in order to lessen inflation and to put downward pressure on real wages (Roett, 1993).

Initially, under the austerity program of de la Madrid, there was a tight hold on demand. Domestic consumption was held below production for six years, 1983-88. It was hoped that the restraint on demand would reduce inflationary pressures, while devaluation

⁵ The policy implications of speculative versus productive capital is discussed in more detail in Chapter 6.

⁶The groups that can get access to loans have changed. Only those considered a good financial risk can qualify for commercial loans; hence, the gap is only filled for those with significant collateral.

would keep up production by increasing exports. What happened initially was that output fell and inflation increased. The severe restraint on domestic demand led to falling output uncompensated by increases in exports. Devaluation drove up domestic prices and inflationary expectations even though there was falling demand and output. A brake was placed on inflation by letting the peso appreciate, which had a dampening impact on industrial and agricultural exports.

The first years of Salinas's administration marked several major changes. In order to develop and maintain a political coalition to support his administration, Salinas needed to provide some relief from the austerity years while still keeping inflation under control. As discussed previously, his administration stopped holding domestic demand below output and forged a new strategy of export promotion and liberalization. In order for liberalization to stimulate growth, that is, for firms to succeed in the export market, the peso couldn't be overvalued. The question was whether the market could be relied on to keep the real exchange rate in equilibrium or whether intervention was necessary to facilitate competitiveness in the export sectors. In the situation of Mexico in the early nineties, high export earnings from both agriculture and the industrial sectors, plus high inflows of capital, would have led to an appreciation of the peso unless there was some management of the exchange rate. Since competitiveness in the international market was a key objective, limits on the inflow of foreign capital or targets for the value of the peso were perceived to be necessary to support competitiveness and prevent the onset of the Dutch disease. If large amounts of capital can move in quickly, it will create pressure for a high value for the peso, making it difficult for the domestic industries to compete with low import prices.

In 1992, to increase stability, a controlled exchange rate was replaced by a rate that floated within a band in relation to the US dollar. It was hoped that this band to the dollar would make the peso appear stable, by indicating that the money supply in Mexico would grow at a similar rate to that of the US. This is appropriate if the monetary and fiscal policies of the two countries are coordinated. Unfortunately, it allowed Mexico to attract foreign investment, stimulate imports (because the exchange rate became overvalued), and it became increasingly difficult politically to let the peso depreciate. The band was a significant factor leading to the painful devaluation that finally occurred in 1994. This policy still has not changed, and so leaves Mexico open to another exchange rate appreciation/depreciation cycle.

3.2.4. Monetary Policy and Interest Rates

Since 1987, the Bank of Mexico has followed monetary policies aimed at reducing inflation, channeling more resources to the private sector, and ensuring that capital inflows are sufficient to fill the domestic saving gap, finance the trade deficit, and build up foreign reserves.

Mexico has also been able to use open market operations rather than printing money to cover the government's borrowing needs, thus controlling the amount of liquidity in the economy. Open market operations allow the central bank to fine tune the economy more effectively by increasing and decreasing the money supply quickly. This tool requires reasonably well-developed financial institutions, a phenomenon of the last decade or so in Mexico.

Real interest rates have been high for the last decade, for a number of reasons. The first is strong private sector demand for credit. Second, the government has had to finance a

large but shrinking current account deficit, which has meant that domestic interest rates have been high to keep capital flowing into the country. Third, the Mexican stock market has been volatile, so high local interest rates have been required to keep money in the country.

Mexican policy makers hoped that NAFTA would reduce the need for high interest rates. It was thought that the agreement would create an environment of confidence in Mexico for international investors. NAFTA was also expected to lead to increased foreign direct investment, reducing the need to rely on high interest rates to attract capital. Again, this expectation was shattered in December 1994. The political and economic instability during the period 1994-98 created high inflation and high interest rates, undermined investors' confidence in Mexico's economic stability, and decreased their willingness to make long term investments⁷.

⁷ Both the Wall Street Journal and the Economist have had numerous articles citing this phenomenon. This observation has also been supported by interviews with businesses already in Mexico and those planning on investing. Many of those who had planned to invest are waiting to see whether the economy stabilizes and growth occurs.

3.2.4 The Financial Crisis of 1994

The Mexican financial crisis of 1994 was significant because it was tremendously destabilizing to the economy and revealed the vulnerability of the Mexican economy to rapid liberalization, especially with regards to financial flows.

What precipitated the financial crisis of 1994? Several events were directly responsible. The most destabilizing element was the unsustainable appreciation of the peso. Other contributing factors were relatively higher interest rates in the US, which drew capital to the US, the anticipation of devaluation with a new administration, the political instability of the PRI and the conflict in Chiapas.

3.2.4.1 Unsustainable Appreciation of the Peso.

In the late eighties, the Salinas government reformulated the exchange rate regime, tying the value of the peso to the US dollar. Tying the peso to the dollar was part of Salinas's strategy for stimulating investment in Mexico. Mexico had low domestic savings. If growth was to occur, investment had to come from foreigners. Dollars were attracted to Mexico by high interest rates, and the relatively risky environment was tempered by the pegging of the Mexican peso to the dollar. Pegging the exchange rate to the dollar required that Mexico's money supply grow at a rate similar to the US. This required that inflation rates in the two countries had to be similar. According to the theory of purchasing price parity, or PPP, the exchange rate between two currencies should reflect the ratio of the countries' price levels. If it is assumed that the countries exhibit competitive markets, free of transportation costs and barriers to trade, then identical goods sold in different countries must sell for the same price when their prices are expressed in terms of the same currency. In a free floating currency regime, when prices rise in one country more than its trading

partner, the demand for the country's currency and its products fall, pushing the exchange rate and prices down. This does not happen in a fixed currency regime like the Mexican band. With a fixed band, differential inflation rates lead to reduced purchasing power of the peso. The peso should have been devalued to reflect PPP. Evidence of this could be seen along the Mexican/US border in the Fall of 1994. Throngs of Mexican shoppers were crossing the border because goods were often cheaper than in Mexico, where purchasing power was diminished by inflation (Wall Street Journal, January 5, 1995).

The overvalued exchange rate was attractive politically, as it allowed the growing middle class access to cheap imported consumer goods and services, and gave firms which used imported inputs an inexpensive and preferred substitute to domestically produced goods. One of the problems with this strategy was that it made Mexican exports more expensive, and the trade deficit increased. The only way a country can support a current account deficit is by maintaining a capital account surplus and attracting foreign capital.

3.2.4.2 International Capital Flows and the Interest Rate.

Maintaining an overvalued exchange rate left Mexico vulnerable to exogenous forces. When interest rates increased in the US, foreign capital moved to the US. The only way the exchange rate band could be supported was through Mexican foreign currency reserves. As Mexico ran down its foreign currency reserves, the decision was made to devalue the peso and after a brief float, to tie it again to the US dollar. The devaluation threw Mexico into one of the worst recessions in its modern history.

3.2.4.3 Political Instability.

Economists in the Bank of Mexico had been urging Salinas to devalue 10 months before the elections. Salinas was in a very difficult political position because his political party, PRI (Party of the Institutionalized Revolution), was in danger of not winning the Presidency in 1994. His hand-picked successor was assassinated, the Zapatistas were challenging Mexico City's authority, and several wealthy entrepreneurs had been kidnapped and held for ransom. These events contributed to the perception of a politically unstable situation, and to the movement of speculative capital out of Mexico.

A large devaluation is painful to those segments of the economy which are often the most politically expressive: middle-class consumers, who now have to pay higher prices for imported goods, and firms which use a large component of imported inputs. When a large devaluation occurs, the cost of production increases and inflation ensues. Salinas did not want to throw the economy into an inflationary/recessionary spin months before a tight political race. Devaluation finally occurred after the election, and only when Mexico had depleted its foreign reserves.

The devaluation was tremendously destabilizing. During 1994-1996, inflation peaked at 200% and interest rates stabilized at 50%. High interest rates have made it difficult for firms to get enough capital to replenish inventory. Purchasing power was cut by about 40% from 1995-1997, squelching demand, resulting in the worst recession in modern times for Mexico (Banco de Mexico, 1998). The recession is taking a long time to subside. It is only in 1998 that we begin to see positive real growth in GDP/capita. Signs of discouragement among the entrepreneurial class include movement of capital out of Mexico and bankruptcy. Discouragement coupled with a high level of uncertainty have led to a lack

of investment and stalled growth. This will have a significant impact on the long run aggregate supply curve, dampening future growth.

The desire for rapid economic growth through a liberal trade regime led to policies to encourage the flow of foreign capital into Mexico. This is demonstrated by the design of the foreign exchange regime but also by the liberalization of the foreign investment laws. In the early nineties, foreign investment laws were deregulated. The problem with the new foreign investment laws was that there are no safeguards or regulations controlling the amount of speculative investment. At the time of the devaluation in December of 1994, 5/6 of the foreign investment in Mexico was short term and speculative⁸. This inflow in the capital account allowed high levels of consumption but it had two destabilizing effects: the speculative nature of the investment meant that it could be pulled out quickly, leaving inflows subject to variations in international interest rates and, since the capital was consumed, and not used to create productive potential, there will be lower flows of income in the future than would be the case if the capital had been invested in physical plant and equipment.

⁸Short-term ranges from 6 hours to 28 days. Most of the funds reported as speculative were very short term-less than 48 hours. This was reported by Lance Taylor in the Economist (8/95)

3.2.4.4 Conclusions

During the last two decades, Mexico has experienced radical changes in its strategy for economic growth. Mexico has moved from an inward-oriented, protected economy to an outward-oriented economy embracing trade liberalization and the creation of NAFTA. This has brought the approval of the industrialized world, and with that approval, international capital. This capital is seen as being essential to augment meager domestic savings and to catalyze growth. But these policies that were meant to stimulate growth and international competitiveness: the exchange rate band with the US dollar, liberalized rules governing the flow of speculative capital, and an overvalued currency, have left Mexico vulnerable to vacillations in the international capital markets and has undermined Mexico's ability to create a stable economy.

An essential element of Mexico's export-oriented strategy for growth is creating a competitive agricultural sector. The following section will examine how the new "rules of the game" under trade liberalization have affected the competitiveness of agriculture.

3.2.5 Agricultural Policy

Macroeconomic policy has affected how resources are allocated in the agricultural sector in several ways: 1) through monetary policy, controlling the money supply and hence manipulating interest rates and levels of inflation, 2) through fiscal policy, with the budget austerity program causing a severe contraction in the amount of public funds flowing into the agricultural sector, 3) through trade liberalization, forcing producers and firms to face a new set of input and output prices as well as a new dependency on the international markets. The process of trade liberalization includes changes in the foreign investment laws, land tenure, NAFTA, and the foreign exchange regime. Underlying all of these

changes is a new set of institutions that regulated exchange relationships. The net effect of the reduction in the support of agriculture, the liberalization of the economy, and an evolving set of institutions is that firms/producers now have to respond to a different set of incentives. This is requiring a reassessment of the competitiveness of the different subsectors, and has and will continue to lead to a reallocation of investment within the sector.

This section will trace the impact of macro policy on agriculture from the early eighties to the mid-nineties. Macro policy has had a significant effect on agriculture, with the most profound impacts being the destabilization associated with the devaluation and the change in the foreign investment laws. As we see how "the rules of the game" have changed, which groups have benefited and lost, how the structure of the sector has changed, it will bring us closer to understanding whether these policies have created a competitive environment for the sector and for horticulture in particular.

3.2.6 Agricultural Policy During the Stabilization Period of 1982-1987

3.2.6.1 Public Expenditure and Investment in Agriculture

Total public spending (in real pesos) allocated to agriculture decreased 67% during this period. The budgets of organizations involved in agriculture and rural development decreased 78%, as evidenced by Table 3.3.

Table 3.3. Public Investments (Billion Pesos)
Constant pesos at 1980 prices

Year	Public Investment	Public Investments Agricultural
1980	486.20	--
1981	592.58	--
1982	499.58	59.31
1983	332.60	36.76
1984	333.08	35.25
1985	282.82	30.31
1986	244.03	22.59
1987	233.23	19.16
1988	192.52	11.58
1989	186.02	14.49
1990	164.01	14.19
1991	177.84	16.09
1992	172.66	14.12

Source: Informe de Gobierno(1992); Cuenta de la Hacienda Publica Federal (1991-1992).

Reductions were made in input subsidies and support of guaranteed prices for basic commodities. The privatization of support services to agriculture was also motivated in part by this austerity program.

Public investment in agriculture decreased 76% (see table 3.3)⁹. The main consequence was a decline in the area benefiting from new irrigation. Private investments decreased as a result of falling public investment and, according to Gordillo, it also decreased as a consequence of the general pricing policy more oriented to inflation reduction than to facilitating production. The reduction of private investment may also have resulted from the contraction of internal demand resulting from the decrease in real wages (Gordillo,1992).

⁹ Total spending includes public monies used to support consumption policies, e.g., subsidized food, while public investment refers to expenditures made to increase future productive potential. In this data set, investment is capturing new public expenditures in physical infrastructure. It is difficult to differentiate between consumption and investment on a program level - support for current consumption may also be seen as investment in human capital.

3.6.1.2 Agricultural Credit Policy

In real terms, agricultural loans dropped by 42% in 1982-1987. The decrease in agricultural credit was because of a decline in public funds from BANRURAL, the development bank ¹⁰. This drop in agricultural loans is seen in the following table.

Table 3.4. Agricultural Credit (Million Pesos)
Constant Pesos at 1980 Prices

Year	Total Agricultural Credit	Agricultural Development Bank Credit	Agricultural Commercial Bank Credit
1980	177703.00	104548.00	73155.00
1981	170694.53	85457.81	85236.72
1982	137945.41	73014.51	64930.91
1983	104006.63	56065.72	47940.90
1984	117958.31	57551.09	60407.22
1985	118249.60	60434.45	57815.15
1986	91117.49	51529.08	39588.41
1987	79803.33	38894.44	40908.88
1988	82625.68	41727.16	40898.52
1989	113830.43	47560.94	66269.50
1990	142043.06	53933.92	88109.14
1991	134537.93	34958.46	99579.46
1992	156517.34	38057.34	118460.00

Source: Informe de Gobierno (1992); Cuenta de la Hacienda Publica Federal (1991;1992).

In 1988-89, as publicly supported BANRURAL withdrew from the rural credit market, the commercial agricultural banks increased the total amount of credit granted by 37%. The

¹⁰ BANRURAL serves the small commercial and semi-subsistence farmers who don't have the collateral or credit history to qualify for commercial loans. These subsidized and guaranteed loans are processed by the commercial banks.

new flows of credit went to large commercial farmers who were considered modern and efficient producers. Those producers with smallholdings on unirrigated land had increasing difficulty getting access to credit (interviews with BANRURAL bank managers in Mexicali and Queretaro 1993).

3.2.6.3 Subsidy Policy

Producer Subsidies: An important component of the reduction in public expenditure in agriculture was the decline in subsidies. Most producer subsidies were channelled through differential interest rates, crop insurance, fertilizers, seed, and irrigation.

Credit subsidies consisted of below-market rates. The amount of the subsidy was determined by the type of producer (subsistence or commercial), the type of credit (short or long term), and the type of activity (small scale, agro-industrial, or commercial). Subsidies to credit were maintained in 1982-84 and progressively withdrawn from 1985. In 1984, interest rates for short-term credit to low-income agricultural producers represented 52.1% of the CPP (annual rate for term deposits at commercial banks); in 1985, 69.3; and in 1989, 95%. This means that recipients paid 95% of the market rate. Other producers of basic products in 1989 paid 105.75--these producers were taxed rather than subsidized through interest rates. Table 3.5 illustrates the subsidies received by producers.

Table 3.5 Real Agricultural Interest Rates as a Percentage of Unsubsidized Commercial Rates (in pesos)¹

Year	Short term credit small ag.producers	short term credit to agricultural producers - basic products	Short term credit producers of other products.
1981	59.03	88.55	120.85
1982	50.37	74.32	113.24
1983	48.40	66.32	110.59
1984	52.08	71.37	119.02
1985	60.61	89.20	111.22
1986	69.29	99.04	106.52
1987	73.51	99.71	104.21
1988	71.68	85.03	89.59
1989	94.98	105.75	116.76
1990	96.75	108.20	119.32
1991	96.87	114.08	133.05
1992	96.95	119.47	145.43

Source: FIRA, 1993

1. This ratio illustrates the change in the agricultural interest rate compared with the commercial rate. The commercial rate is a ratio of CPP which is the average annual rate of term deposits for commercial banks and CETES which is the 28 day rate of Federal Treasury Certificates.

Until 1989, the government controlled the production, import, export, and distribution of agrochemicals. It also provided fertilizers at subsidized prices through a government corporation, FERTIMEX. The fertilizer subsidy represented about 4% of the value of crop production during 1982-89 (Agricultural Trade Research Consortium, 1991). In 1988 the readjustment of fertilizer prices brought them closer to the international prices. Another parastatal, PRONASE, regulated the seed market and provided certified seed at subsidized prices.

Table 3.6 illustrates the changes in fertilizer prices over time.

Table 3.6. Domestic Fertilizer Prices in Mexico as a Percent of the International Fertilizer Price

Year	Urea	Ammonium Sulfate	Super Phosphate Triple
1981	74.26	68.40	105.13
1982	54.63	46.65	61.87
1983	67.41	93.59	77.40
1984	67.35	73.13	108.65
1985	81.22	58.37	108.02
1986	73.89	77.94	72.11
1987	69.71	66.09	52.24
1988	82.23	104.18	80.72
1989	95.63	79.55	81.08
1990	133.81	136.20	157.45
1991	108.61	207.27	n.a
1992	n.a	203.90	143.38

Source: Informe de Gobierno (1992). Department of Commerce and Information.

Irrigation was supported through direct subsidies on surface water or through a subsidy on the electricity used to pump ground water. Irrigation subsidies have fluctuated up and down over the last ten years. In 1993 subsidies decreased, but producer uproar led to a modest increase in the subsidy in 1994. This subsidy represented about 5% of the gross value of the crop during most of the eighties. Table 3.7 illustrates the changes in constant prices from 1980-1994.

**Table 3.7 Input Prices in Constant Pesos
1980-1994**

Year	Electricity Price ¹	Fuel Price ²
1980	0.35	--
1981	0.33	2.50
1982	0.11	6.29
1983	0.05	5.92
1984	0.16	4.90
1985	0.18	7.47
1986	0.17	8.98
1987	0.15	6.78
1988	0.22	5.75
1989	0.19	5.06
1990	0.21	4.83
1991	0.37	4.30
1992	0.45	4.44
1993	.52	4.72
1994	.57	8.86

Source: Informe de Gobierno (1992); Indicadores Economicos del Banco de Mexico.

1 Electricity Price is in pesos/kwh and is based on 1981 prices

2 Fuel Price is in pesos /liter and is based on 1980 prices.

Between 1982 and 1987 the decline in subsidies led to increased prices for fuel, electricity, and water. Fertilizer and seed prices increased less rapidly until they were adjusted upward in 1988 under the PSE. Intensifying the impact of the reduction of subsidies, several devaluations during this period made the imports more expensive.

Marketing and consumer subsidies: CONASUPO was the government parastatal that implemented many of the marketing and consumer subsidies. The principal activity of

CONASUPO was to ensure that all the domestic production of grains and oilseeds were absorbed on the domestic market at prices high enough to support those producers who were not viable commercial firms. CONASUPO also controlled the mills and refining facilities, and marketed subsidized grains. Subsidies from CONASUPO were channeled to the distribution of basic food in the following ways:

- 1) subsidies incorporated in CONASUPO's selling prices; prices didn't cover the costs incurred by the parastatal.
- 2) direct subsidies to food processors intended to cover the difference between cost of production and the selling price.
- 3) subsidies granted through social distribution programs (Appendini, 1992).

During the late eighties CONASUPO went through a major restructuring. Total public transfers to CONASUPO decreased in real terms by 42% as are illustrated in table 3.8. The progressive reduction of subsidies was obtained by raising CONASUPO's selling prices and by the reduction of direct subsidies to industries.

Table 3.8. Public Transfers To CONASUPO and FERTIMEX (Billion Pesos)
Constant Pesos at 1980 Prices

Year	Transfers and Subsidies To Conasupo	Transfers and Subsidies To Fertimex
1980	28.40	3.30
1981	36.64	6.95
1982	39.88	11.26
1983	30.74	17.71
1984	51.19	11.54
1985	42.26	11.28
1986	31.84	11.83
1987	22.46	10.91
1988	17.88	8.80
1989	23.35	4.98
1990	27.06	4.95
1991	16.27	4.82
1992	16.69	2.23

Source: Informe de Gobierno (1992); Cuenta de la Hacienda Punlica Federal (1991-1992).

3.2.6.4 Price Policy

From the early 1950's through the late eighties, the government set nationwide guaranteed prices for the major crops. These prices were supported by CONASUPO through the purchases of these crops and remained the principal instrument to assist producers. This policy changed as guaranteed prices were lowered as part of an anti-inflationary policy to support the austerity objectives of the stabilization program. The lower guaranteed prices also led to lower food prices. Lowering food prices was an important political move to mollify those who felt that they were not participating in the

growth of the economy. Table 3.9 illustrates declining prices as the Salinas administration opened the economy, forcing domestic prices into alignment with lower international prices.¹¹

Table 3.9 Ratio of Guarantee and Agreement Prices in Mexico/US Price for Basic Crops 1984-1992(peso/kilogram)¹

Year	Maize	Wheat	Sorghum	Soybeans
1984	221.67	178.87	165.09	208.85
1985	183.71	120.3	111.73	165.52
1986	176.94	108.95	118.02	148.07
1987	229.90	81.43	134.10	152.60
1988	162.69	105.62	115.70	144.71
1989	165.51	98.69	121.04	161.13
1990	228.92	143.91	133.83	140.72
1991	252.13	177.76	139.63	171.35
1992	260.26	179.45	143.78	180.26 ¹²

Source: Indicadores economicos del Banco de Mexico and FIRA 1993.

1. The discussion of guarantee and agreement prices begins on page 98.

3.2.6.5 Impact of the Stabilization Program on the Terms of Trade for the Agricultural Sector

Production costs increased during this period because of the decrease in agricultural input subsidies and the devaluation of the peso. The increase in production costs was greater than the increases in output prices, resulting in a declining terms of trade between agriculture and other parts of the economy.

¹¹ Since the beginning of the PECE, guaranteed prices have been adjusted with regards to changes in consumer prices, and are no longer associated with the cost of production. This change represents an unfavorable price policy towards producers. This pricing policy gave rise to an ongoing debate between SARH (the division of the ministry of agriculture which is responsible for marketing of agricultural products), which defends prices aligned with production costs, and the commerce and finance ministries, which support price stability.

¹² Hectares devoted to individual subsectors such as horticulture, grains, and legumes remained stable during this time period.

Over the period of 1982-1988, the national index of agricultural input prices increased by 42% more than the agricultural guarantee price index (Calvo, 1992)¹³.

Not only was the profitability of agricultural activities in decline, but the rural consumers' terms of trade deteriorated. During this same period of time, the consumer price index increased by 4772%, whereas the the agricultural producer price index increased by 4164%, corresponding to a deterioration of 13 percent and a decline in the living conditions of those in the agricultural sector (see Table 3.2, Consumer and Producer Price Indexes).

The macroeconomic and agricultural policies affected the various types of producers differently. The withdrawal of input subsidies affected primarily commercial producers who used modern, irrigated facilities requiring fuel, water, and electricity. A further distinction can be made between those commercial producers who used relatively labor-intensive techniques, as in the horticultural sector, and those whose operations were relatively capital intensive, such as those involved in mechanized grain production. The increase in input prices of horticultural producers was compensated for by the decrease in real salaries¹⁴. They were able to maintain levels of profitability, whereas the mechanized grain producers, who realized higher input cost without an increase in productivity, had reduced profits.

Usage of inputs, especially fertilizer and seed, were at their lowest levels since the green revolution in the late seventies. The deterioration of agricultural profitability and the

¹³ Hectares devoted to individual subsectors such as horticulture, grains and legumes remained stable during much of this period.

¹⁴ During the period 1982-1987, the real salaries of agricultural workers dropped by 39% (Calvo, 1988).

reduction of public investment in agriculture had an important impact on investment in the sector. An indicator of the decline in investment can be seen by a decrease in the imports of agricultural machinery from US\$ 221 million in 1981 to US\$39 million in 1986 (Calvo 1988). An undervalued peso during this time also contributed to a decline in imports.

3.2.7 Structural Reform: A New Agricultural Policy Under Salinas.

Salinas was concerned with the impact that the stabilization program had had on the agricultural sector. By the late eighties, the sector was marked by deteriorating terms of trade and depressed agricultural production and productivity due to decreases in public spending and investment. Several sectoral issues were identified to be addressed in a new policy agenda. These were:

- 1) The very small size of agricultural holdings that inhibited achievement of economies of scale and deterred investment. This phenomenon led to rural migration to the cities, abandonment of rural land, and acute poverty in specific regions.
- 2) The insecurity of land tenure, and hence low levels of investment.
- 3) Insufficient agricultural credit, limiting investment and increased productivity.
- 4) The real cost of water was not reflected in its price, and large volumes of water were wasted.
- 5) Low use of fertilizer affected agricultural yields.
- 6) The infrastructure needed to stimulate the development of the agricultural sector was insufficient. The network of roads, storage and refrigeration was poor.
- 7) There were weak linkages between agricultural research and extension.

8) Resource management (credit, subsidies, insurance, and inputs) corresponded more to political/power issues than economic logic. That is, producers benefiting from resources were the powerful ones (commercial producers), who had associations with the organizations responsible for allocating these resources.¹⁵

9) Imbalance between output prices and input cost, leading to a decline in the profitability of agricultural activities.

The identification of these issues by the Salinas administration led to a revised policy agenda geared towards promoting growth and investment in the sector (Salinas, Report of the President, 1991).

¹⁵ According to SARH, a farmer who produced 1 ha. of maize using a traditional technology received a subsidy of 946 pesos, whereas a large farmer received subsidies of water, energy, fertilizer and certified seed worth about 16,973 pesos/ha.. This policy, which consisted of channeling all resources toward more productive regions and producers, increased the polarization of the sector, and continued during the Salinas regime, with some modifications (example relayed to me by a policy specialist in SARH).

3.2.8 Principal Measures to Transform Agricultural Policy

3.2.8.1 Changes in Land Tenure: Reform of Article 27 of the Constitution.

In 1992 the Mexican Congress enacted legislation to amend Article 27 of the Mexican constitution. This new law changed the land tenure regulations and represented an important component of Salinas's economic modernization program.

The 1992 law has several components; it supersedes the law which previously allowed the government to give land to the landless living in rural areas. The intent of the original law was that the ejidos¹⁶ would work together to achieve economies of scale.

Under the old law, the ejidatarios only received the right to the use of the land, and to pass this right on to children. Since they didn't have title to their land, the land belonged to the State, and they could not use this land as collateral for a loan. Consequently, any resources channelled to the ejidos were from public funds.

Capital investment was inhibited and public investment alone could not develop this sector. This lack of investment led to low yields and low profitability. The low level of investment also affected the development of the processing and marketing of agricultural products.

This structure provided incentives for illegal practices, such as rental agreements, sharecropping, and sales of the ejido land. In good agronomic areas, the ejidos were often illegally rented to outsiders. The new law allows corporations to engage in agricultural production and provides for increased protection against expropriation. The law also provides that ejido members may rent their land or associate with individuals to farm their

¹⁶ The ejido system evolved from an earlier attempt at land reform (under Cardenas in 1930) where individual plots of land were established under public title.

land. With this change in the law, any landowner or firm can enter into an agreement with ejidatarios to rent or sell their land (Article 27, Constitution of Mexico, 1992). This reform makes a significant contribution to restructuring the sector by allowing for economies of scale, but perhaps more importantly, by more clearly defining property rights.

The legislation made no changes in the maximum size of farms, which is 100 hectares of irrigated land for row crops, 300 hectares of irrigated land for orchards, and enough land for 500 head of cattle. Foreign investors may now own up to 100 percent of an agricultural operation. However, foreign companies may not own land; the use rights must be obtained through a trust. A foreign-owned Mexican company can own land, subject to some restrictions. A foreign individual can also own land outside the "restricted zones," which are areas within 100 kilometers of the borders of the US and Guatemala and within 50 kilometers of the coast¹⁷.

¹⁷ A foreign-owned Mexican firm must have 41% Mexican ownership.

3.2.8.2 Public Expenditure and Investment

As we can see from Table 3.10, the total annual public spending in agriculture was lower in 1990-92 than during the previous decade.

Table 3.10. Public Spending (Billion Pesos)
Constant Pesos at 1980 prices

Year	Total Public Spending ¹	Public Spending To Agricultural Sector	SARH ² Budgets
1980	1159.80	139.60	60.10
1981	1408.91	149.84	68.28
1982	1299.98	122.84	56.41
1983	1034.32	99.41	38.88
1984	1051.37	89.03	38.01
1985	986.73	79.96	34.28
1986	861.80	70.71	26.90
1987	847.88	54.06	24.52
1988	749.18	40.40	17.21
1989	742.46	40.95	2.70
1990	777.81	45.38	9.83
1991	794.30	42.81	10.91
1992	821.16	44.29	12.42

1.Total public spending refers only to recurrent expenditures. New investment is documented in Table 3.3.

2. SARH is the marketing and credit division of the Ministry of Agriculture.

Source: Informe de Gobierno(1992); Cuenta de la Hacienda Publica Federal(1991-1992).

Although public investment in agriculture decreased through 1993, the beneficiaries of this smaller amount of public investment continued to include water projects. As a consequence, the total area benefiting from irrigation infrastructure increased by 338% from 1984 to 1992. This change is illustrated in Table 3.11.

Table 3.11 Area Benefiting from Improved Hydro-Agricultural Infrastructure (in Hectares)

Year	New Infrastructure	Improved Infrastructure	Repaired Infrastructure
1980	88994	16512	97224
1981	146050	64957	77142
1982	109659	19200	40671
1983	97180	11319	34341
1984	98421	17099	41553
1985	66737	10688	52458
1986	46300	8173	23700
1987	77473	1124	13621
1988	27752	689	2149
1989	21032	21548	13478
1990	38000	5086	38687
1991	38997	23547	140724
1992	49553	25577	170504

Source: Informe de Gobierno, 1992.

A new trust fund for investment in the rural sector (FOCIR) was created, with the objective of promoting productive investments and associations between the ejidos and the private firms. This was to be accomplished by providing risk capital and by channeling resources through existing financial institutions. FOCIR will support medium and large-scale projects.

3.7.1.3 Agricultural Credit Policy

In the late 80's many farmers accumulated high debts. This occurred because interest rates for agricultural activities were high—up to 50% depending on activity (FIRA and Banco de Mexico, 1993) and loans were readily disbursed because of the anticipation of high rates of return. In horticulture, the BANRURAL anticipated rates of return close to 25%. When these expectations were not fulfilled, producers were left without the ability to repay these high-priced loans. To respond to this high level of indebtedness in 1990, the SARH developed a policy not to grant credit to those in debt and to direct assistance to those small farmers and ejidos that had displayed economic potential. Commercial farmers would only be provided service from a commercial bank.

Credit channeled through the development banks between 1989 and 1993 declined, but total credit going to the agricultural areas increased by 37.5% because of the growing participation of the commercial banks in financing agricultural activities. Agricultural credit provided by these banks rose by 79% in real terms. Commercial banks now are the main providers of credit in the agricultural areas. Table 3.12 illustrates the changes in producers' indebtedness.

Table 3.12: Real Agricultural Producer Indebtedness (million pesos)

Year	Agricultural producer indebtedness towards development bank	Agricultural Producer Indebtedness toward commercial banks
1980	na	na
1981	na	na
1982	8323.7	4090.7
1983	588.4	2829.9
1984	6159.1	1780.4
1985	5487.0	3214.9
1986	4632.0	2831.6
1987	3314.1	1596.5
1988	3130.8	854.3
1989	10062.3	1694.3
1990	15301.0	3185.1
1991	7306.8	5460.5
1992	7434.5	8269.7

Source: FIRA 1993, and Indicadores economicos del Banco de Mexico, 1992

The government also channels development money through the commercial banks to finance small farmers. These are farmers who traditionally face problems getting access to commercial credit. The channelled funds include an interest rate subsidy. The subsidized rates are aimed at covering the transaction costs that commercial banks face when lending to small producers.

CONOSUPO has withdrawn from the marketing of all primary commodities other than corn and dry beans. CONOSUPO continued to purchase part of these crops at guaranteed prices until April 1999 when CONOSUPO was abolished. Table 3.13 illustrates the changes in agreement and guarantee prices from 1980 to 1992.

Table 3.13 Guarantee and Agreement Price(pesos/ton). Constant Pesos at 1980 prices

Year	Dry Beans	Maize	Wheat	Soybean	Sorghum
1981	12500.00	5117.19	3593.75	8437.50	3070.31
1982	10376.20	4684.04	3578.81	7523.97	2557.17
1983	7612.30	4287.25	3921.86	7064.21	2935.30
1984	6834.84	4339.41	3849.89	8244.51	3091.60
1985	11199.57	4503.16	3593.19	8213.02	2832.56
1986	12628.73	4284.75	3583.15	8268.81	3006.84
1987	9457.41	4377.43	2594.03	8819.71	2939.90
1988	7396.26	3482.38	3129.09	8680.70	2609.26
1989	8301.36	3387.46	3154.10	8293.19	2691.50
1990	12285.88	4104.15	3214.25	5644.86	2570.07
1991	11369.54	3776.31	3031.88	5805.91	2329.03
1992	9843.09	3433.36	2699.82	--	2156.11

Source: Informe de Gobierno(1992); Indicadores Economicos del Banco de Mexico.

A new agency, Support and Services to Agricultural Marketing (ASERCA), was created in 1991 to facilitate the phasing out of CONASUPO's intervention in the marketing of grain and oilseeds. ASERCA is charged with administering production subsidies to ensure an adequate supply of grains on the domestic market. Under this scheme, industrial consumers are asked to estimate the price that they would have to pay for a similar imported product. ASERCA then channels a subsidy towards these industries, which is equal to the difference between the import price and national guaranteed price. The differential between

these two prices should reflect some of the difficulties of marketing in Mexico, such as insufficient infrastructure, transportation, and the large distances between producer and consumers. This type of subsidy is compatible with GATT rules and is used by many countries.

ASERCA's objective is to support the liberalization of the agricultural sector. Its main functions are to provide information about markets to producers, improve collection and storage infrastructure, and facilitate marketing of export crops. ASERCA has been trying to determine what specific role it can play in the international marketing of exports. ASERCA is also involved in formulating a futures market for agricultural and livestock products.

3.2.8.4 Research and Extension

INIFAP (Instituto Nacional de Investigacion Forestal y Agropecuaria) has been the organization responsible for generating and diffusing applied agricultural research results. Because of its centralized nature and the lack of coordination with the Department of Agriculture (SARH), INIFAP did not meet the regional needs of most producers. To strengthen links with SARH and other related institutions, INIFAP was reorganized, with the objective of better serving the agricultural sector. In 1992 INIFAP was directed to conduct a nation-wide study of the rural geophysical resources in order to determine the productive potential of each agricultural region for each crop. Based on this preliminary analysis, INIFAP will examine the economic viability of the production systems in each region in order to determine regional advantages. Production plans will then be established for each region. These plans will include an outline of the resources needed for the area for it to develop its most viable subsectors. The resources provided by the national and state

governments may include targeted short-term subsidies, extension and training, and marketing and financial assistance. The State will play a major role in determining the resources which will flow to the various groups. An important part of the social policy will involve directing resources in the form of transfers to the producers with the lowest potential. This is part of the PROCAMPO program, which is discussed in the next section.

One of the major changes that has occurred in the delivery of research and extension is that now either producers will have to pay for these services, or these services can be linked to agricultural credit provided by the commercial banks¹⁸. Extension services will no longer be provided by the State, but will be the subject of direct contract between the producer and the technician. One of the impetuses for reorganizing the areas of research and extension was to be sure that the research and extension that was being conducted was serving the needs of the producers. Many growers felt that the researchers were isolated in their field stations and were not answering many of the farmers' immediate concerns. It is hoped that by contracting for specific services, the agronomic priorities will be directly communicated. The problem with the State not financing agricultural research is that because of high exclusion costs, there are no incentives for private firms to undertake basic research, which provides the foundation for solving specific problems. The policy implicitly assumes that basic research can be done in the US and transferred to Mexico. The asparagus industry in the Bajío illustrates the problems in this kind of program. The Bajío has unique agronomic conditions that makes it difficult to transfer asparagus

¹⁸ In the first year, 80% of the total cost of technical assistance is paid to the producers by the financial institution. This percentage declines over the next four years, after which it is assumed that producers will be able to afford to pay the full cost as a result of productivity increases. The initial costs of extension are wrapped into the cost of the loan (El Financiero, 1/28/93).

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cultivars from the US or Northern Mexico to this area. Since growers have not been able to find an appropriate cultivar, yields have been decreasing over the last 10 years, and it would not be surprising if asparagus production was abandoned in this area in the next 10 -15 years. Large vertically operated firms are the exception to this trend. Many of them have their own agronomists, conduct field trials, and develop their own cultivars. The large firms can fill this gap themselves. It is the medium to small producers who suffer from the government's disinvestment in agricultural research.¹⁹

3.2.8.5 Price Policy

In 1989, the government eliminated the price guarantee program for all primary commodities except corn and dry beans²⁰. These other crops are now subject to 'agreement' prices. These agreement prices are based on a compromise between producers, distributors, processors and the government, with the objective of gradually moving to a market price. The agreement price is linked to the international price and government-approved marketing costs.²¹ CONASUPO no longer buys a portion of the domestic production, but private traders must purchase the entire domestic crop at the agreement price before any imports can be purchased. Since 1991, the guarantee prices of maize and beans have been adjusted on the basis of exchange rate variations and the inflation rates of Mexico's main trading partners, emphasizing a policy orientation of aligning domestic and international prices.

¹⁹ Except for isolated pockets in Mexico, there are few producer groups that have collectively purchased (contract for) agronomic research and extension services.

²⁰ The price guarantee program was a support price enforced through buffer-stock operations.

²¹ These costs differ according to product, but in general include freight, insurance, taxes, transportation, and storage costs.

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As part of the Salinas program to liberalize agriculture, guarantee prices were substituted by direct payments to grain producers. These payments cushion producers' income while they adjust to international prices. Many large producers have taken hectares out of maize and beans in response to new international prices, and have planted other high-return crops²². As the domestic price for basic grains declines, it will benefit peasant families who don't produce enough maize for consumption and rely on the market to purchase the rest of their needs. At the same time, this fall in price may make it difficult for some peasant farmers with a marketable surplus to sell their grains, and therefore limit their access to cash for medical care, debt repayment, improvement of the land, and school fees.

In October 1993, the government announced the beginning of PROCAMPO, a new program for supporting agriculture in areas of low productivity. The main feature of this program is direct payments to farmers based on the amount of land that they own and the crops they have grown in the last few years. The objective is to provide these growers with direct payment for 10 years, decreasing in the 11th and ending in the 15th years. The idea is that the 15-year period will allow the producers time to leave agriculture and find employment off the land. The policy objective is to eliminate the need to subsidize this group of producers. Whether this program will add to the sector's or nation's agricultural competitiveness or merely proletarianize these participants will be discussed in chapter 6.

²² These high-return crops tend to be horticultural exports. Mexico is losing the ability to provide basic foodstuffs and is purchasing them by using its resources to produce high value export goods to the high-income world. This increases the vulnerability of the subsistence and semi-subsistence producers. This makes these marginal producers more vulnerable for two reasons: if producers are not producing food crops for home consumption and rely on wages to purchase their food, then when purchasing power is dramatically cut, as it was in 1982-84 and 1994-96, they are less able to meet their household consumption needs. Producing at least a portion of the household food needs also acts as a hedge against inflation. If nominal food prices rise, marginal producers can protect themselves at least partially by avoiding purchases of food at inflated prices.

It is expected that price liberalization will provide appropriate signals about what to produce in each region. PROCAMPO's goal is to shift resources away from some of the grains and towards horticultural products. Scarce resources are likely to be directed towards horticulture because it is seen as the more competitive subsector. The more productive land that was involved in cereals, particularly maize, is likely to be put in to horticulture. Maize was considered a good cash crop for producers with the resources to achieve high yields and low unit costs.

Agricultural activities that rely on grains, such as the livestock or dairy industry, will benefit from the availability of these inputs at much lower prices. This will benefit the middle and upper economic classes who consume meat products and will reduce the cost of production for these industries. Benefits will also accrue to laborers who purchase food grains on the market.

3.2.8.6 Commercial Policy

From 1985-94, the focus of commercial policy was on the deregulation of agricultural input and product markets. In August 1992, import licenses were eliminated on agricultural inputs and machinery and replaced with tariffs. In March 1994, imports of fertilizers, agricultural machinery, and some veterinary materials were totally free of tariffs.

3.3 Impact of the New Agricultural Policy

The period 1989-1992 shows a deterioration of the agricultural terms of trade with regards to guarantee prices, agreement prices and the prices of inputs. The average real prices of the main fertilizers increased 13.8 % during this period. Producers who rely on deep wells for irrigation faced large increases in electricity costs, whereas the price of fuel decreased during this period. The prices of the main crops deteriorated 3.6% (See Tables

3.7 and 3.13). The horticultural subsector fared better than the grains; real prices for horticultural products increased by 5% during this time.

As a consequence of the general deterioration in the terms of trade for agriculture, total sales of fertilizer and insecticide dropped 40%, contributing to an overall decline in yields. This drop in sales is illustrated in Table 3.14.

Table 3.14. Fertilizer and Insecticide Sales 1980-1992

	Fertilizer (1,000tons)	Insecticide (1,000tons)
1980	3615	11
1981	3966	9
1982	4847	378
1983	3943	165
1984	4915	352
1985	5066	393
1986	5155	420
1987	5142	312
1988	4739	224
1989	4543	258
1990	4440	317
1991	4465	335
1992	2875	238

Source: Informe de Gobierno 1992, and INEGI 1994.

The rate of growth of agricultural GDP changed from negative to positive in 1990-1991. in part due to high guarantee price for dry beans and maize but this growth also mirrors general growth in the economy. Agricultural growth vacillates through the early nineties until the recession in 1995.

Table 3.15 Percent Change in GNP/Capita

	Total	Agricultural
1981	8.8	6.8
1982	1.2	2.0
1983	-4.0	-2.1
1984	3.3	1.9
1985	2.2	2.3
1986	-2.7	4.2
1987	.25	.45
1988	1.7	-3.4
1989	3.9	-1.0
1990	4.4	2.5
1991	4.4	2.5
1992	4.0	-3.2
1993	2.2	4.9
1994	3.75	.87
1995	-4.7	-2.4
1996p	1.0	1.6

The deterioration of growth in the sector resulted from a combination of the adjustment that comes with liberalization: the decline of output prices, the increases in input prices, reduction of services such as credit and extension, and the uncertainty that comes from rapid and extensive institutional change.

With the divestiture of many public firms, there was a fundamental change in organizations from which producers get inputs, credit, and involvement in international markets. This divestiture represents a major change in the way that resources flow to agriculture.

3.3.1 The Impact of the 1994 Devaluation on Agriculture

Usually a devaluation enhances the price competitiveness of a nation's exports. The nation's currency is worth less relative to that of their major trading partner, so the price of the country's exports is lower, in foreign currency terms, on the international market. This doesn't tell the complete story for Mexican agriculture. This devaluation, because of its

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depth, concurrent negative growth rates, and degree of integration with the US economy, resulted in high and persistent inflation and recession. The devaluation made the price of imported inputs rise, leading to inflation. The impact of the inflation is more severe, the more production is dependent on imported inputs. As the price of imported inputs increases, the price of domestically produced inputs will also increase.

Real interest rates have been held high to attract investment and to suppress demand. The result is that Mexico has been in a severe recession since 1994. Real wages have declined and unemployment increased and so domestic demand has been

3.3.2 The Impact of Devaluation on Horticultural Producers

In an environment of inflation, recession, and devaluation, how are horticultural producers faring? The recessions and inflations had a differential effect on Mexican agricultural firms. The main differentiation is whether the good or service was being produced for the domestic market or for export, and whether the actor was affiliated with a US firm.

A producer is considered affiliated with a US firm if the producer obtains at least 20 percent of the inputs for production and marketing from a US firm. Falling into this category would be firms that receive US inputs through contractual agreement or ownership. Inputs include goods and/or services such as credit. The purpose of this discussion is to explore how the characteristics of goods produced influence how the producers are affected by the devaluation. The discussion is necessarily simplified.²³

²³ In chapter 5, the analysis will be applied to asparagus, an export crop, where some producers have US affiliations and others are largely Mexican owned and rely on Mexican resources.

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A Mexican firm which exports its produce and has US affiliations has been able to minimize its exposure to devaluation. For example, many of the larger horticultural producers, especially in Sonora and Baja California, operate totally in US dollars²⁴. Their costs, except for labor, remained constant with the devaluation, as did their gross revenues. Labor is paid in pesos, so the price of labor declined after devaluation, leaving these firms with a small decline in their cost of production²⁵. This group of producers was untouched by domestic recession and inflation. If these firms do have a lower cost of production, they have the opportunity to lower price, increase quantity and hence total revenue—this will, of course, depend on the elasticity of demand for horticultural products.

The costs for autonomous Mexican-owned export firms after devaluation, without access to US credit or other inputs, have increased. The devalued peso makes it more expensive to buy inputs in US dollars, and the interest rates have been as high as 200% after the devaluation. The impact of the devaluation will again depend on the amount of imported inputs and the amount of credit needed to sustain the operation until harvest. Because of devaluation, the price these Mexican producers received in pesos also increases—they receive more pesos if they are operating at the official exchange rate.

²⁴ These producers have access to US banks and purchase US inputs in US dollars.

²⁵ The amount that these producers gained from declining wages depended on how much labor is used. Strawberry producers, for whom labor is a large part of their cost of production, have lowered their costs substantially, while producers of a highly mechanized crop like maize did not see a large drop in their costs.

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The quantity exported increases because the horticultural products can be purchased for fewer US dollars than before the devaluation occurred. Total horticultural exports increased in 1995 and the first half of 1996, as can be seen in Table 3.16.

Table 3.16. Horticultural Exports (Millions of Constant Dollars)	
Year	Horticultural products
1980	169
1981	199
1982	178
1983	149
1984	179
1985	162
1986	198
1987	238
1988	269
1989	197
1990	430
1991	490
1992	516
1993	525
1994	529
1995	620
1996 ^a	622
Source: Informe de Gobierno(1992); Indicadores Economicos del Banco de Mexico.	

The Mexican exporters' total labor bill has declined, and because they are serving the US market, they do not have to adjust to a reduction in demand for their product. The negative impact of devaluation for this group is largely inflation, the increased price of imported

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inputs, and the very high interest rates. The net effect for many producers is that their increased cost of production is not compensated for by a sufficient increase in demand or by an increase in the nominal price.²⁶

For those producers serving the domestic market and operating in US dollars, costs of production will be similar to those exporting. The important difference is that this group is affected by a nationwide recession. Demand for horticultural products shifted back due to changes in income. It is also expected that demand will be relatively elastic, as fruits and vegetables are considered nonessential. Although this group's cost of production probably didn't change significantly, the demand for the product domestically changed radically.

Mexican producers without US ties and serving the domestic market fared the worst. Their costs of production increased, although they are the producers most likely to substitute cheap labor for capital. As noted, credit became prohibitively expensive and scarce. Demand for their domestic products also declined. The devaluation hurt these producers' ability to cover their variable costs in the short run--not an unusual phenomenon for farmers, but the impact of the recession has been so severe that there is a sense of hopelessness and distrust of the government among this group of commercial farmers²⁷. It has been very difficult for them to compete with those producers who are able to get inputs

²⁶ Several loan facilitators from FIRA told me that the producers that are in trouble now are so because of earlier loans at high interest rates on which they have defaulted. The defaults and the current high interest rates have led increasing numbers of Mexican commercial farmers to sell their land.

²⁷ In the Summer 1995, I conducted interviews in the main horticultural areas of Sonora. When talking with farmers groups and individuals there was a strong sense of defeat. When I asked them how this recession compared to the recession of the early eighties, they said they this one was much more severe. They did not feel the government knew how to stabilize the economy. This was different from the early eighties, when there was great hardship but also optimism about the future.

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more cheaply. In the next few years there will probably be an increasing number of producers either developing an affiliation with foreign partners or selling out.

Those producers with significant financial ties to the US and who produce an export crop are in the strongest position. They are immune to the vagaries of exchange rate movements, and they service a market with increasing opportunity. This differential access to strategic resources is leading to an increasingly unlevel playing field, one where the concentration of wealth and power is likely to intensify. The long-run implications of the devaluation/recession has been that it discourages Mexican entrepreneurial producers without ties to the US from making investments in the subsector necessary to keep these autonomous producers in the subsector competitive.

3.4 A Synthesis of Macroeconomic Linkages to Agricultural Policy

The agricultural sector has been influenced through fiscal, monetary, and commercial policy and has had an effect on the competitiveness of the sector.

1) Monetary policy: The control of the money supply has been used to curb inflation and keep interest rates high. Tight money has meant high interest rates and scarce credit, which has deterred investment in agricultural infrastructure and production. The high interest rates also made it more likely that the debt producers accrued before the rise in interest rates will be more difficult to repay. The high levels of indebtedness in the eighties and nineties were magnified after the 1994 recession when output prices fell dramatically in response to contracting demand in the domestic market.

2) Fiscal policy: The most profound element of fiscal policy has been the reduction in public expenditure, which has included a severe decline in the budgets of public organizations involved in agriculture, public investment and subsidies, a decrease in credit

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availability, and privatization of state-owned firms involved in the agriculture sector (FERTIMEX, PRONASE, and CONASUPO'S subsidiaries).

During the period 1989-92, policymakers moved from the harsh austerity of the early years to a policy that channeled resources toward areas with growth potential. More resources were channeled to the agricultural sector, but in a more selective way, where only the most productive regions and producers had access to these programs. The objective of targeting resources was to increase productivity through the 'modernization' of agricultural production systems. The factors expected to increase productivity were the privatization of extension, land reform to encourage economies of scale, and changes in the foreign investment law. Activities such as technological transfers, domestic and international marketing, which served the needs of the large commercial interests, were given priority.

This policy regime is a clear departure from just two decades earlier, when agricultural policy was seen as an important component of a broad-based development strategy. Salinas was careful to accommodate marginal producers with a program that makes them less dependent on the agricultural sector and more involved in other sectors. This is illustrated in the PROCAMPO program, which provides marginal farmers an income for 15 years so that they can become integrated into another part of the economy and not rely on agriculture for their subsistence. This is an important move on the part of the PRI to try to avoid the disenfranchisement felt in the poorer areas such as Chiapas.

Will the 'modernization' of agriculture lead to a more competitive sector? The answer depends in part on whether one is interested in the short or long run. In the short run, the lower unit costs of the producers that survive will allow them to compete successfully with higher-cost producers in the US and abroad. The long run is less certain.

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One of the important aspects of competitiveness is developing the technical and managerial skills of the labor force. What we see in the horticultural sector is a polarization occurring between those with access to US inputs and those who must depend on the domestic economy for their inputs. If economic and political instability prevail, it will be increasingly difficult for autonomous producers to compete with those producers with ties to the US. Chapter 5 will discuss this situation for the asparagus subsector in detail.

In the quest to reduce national expenditures, and hence reduce domestic debt, policymakers have confused expenditures that stimulate consumption (demand) with expenditures which are made to enhance the productive capacity of the sector, that is, to increase potential GDP (supply). It will be important to monitor the level of public investment and private investment in agriculture. It is likely that the government, in its quest to be seen as 'market-oriented', has failed to appreciate the important role of public investment in research, extension, and infrastructure. This error may put Mexican agriculture at a competitive disadvantage in the long run.

3) Commercial Policy: Commercial policy was crafted in the eighties and nineties with the primary objective of enhancing economic integration with the United States. Economic integration would be the engine of growth for a nation that has pinned its hopes for growth on an outward orientation.

Since an outward-looking, high-growth economy is the objective, and Mexico has a low savings rate, attracting foreign capital has been essential. Mexico has attracted foreign capital through a combination of investment and exchange rate policies. The problem with the new foreign investment law is that there have been no safeguards or regulations controlling the amount of speculative investment. The amount of short-term speculative

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investment also left Mexico much more vulnerable to the volatility of international capital movements.

The rapid devaluation of the peso could have been avoided if the peso had gradually be devalued to reflect the differential inflation rates between the US and Mexico. But devaluation, even if it occurs gradually, causes inflation and the eroding of purchasing power - not the best economic environment for winning a presidential election. The rapid devaluation resulted in the worst recession in modern times in many regions of Mexico. Yet the peso is still tied to the dollar, and there have only been minor policy changes. This leaves Mexico open to another dramatic devaluation. Mexico has so tightly embraced trade liberalization and the fast growth that it promises, that it is willing to gamble with vulnerability and uncertainty. In the long run, an environment of uncertainty can dampen investment both domestic and foreign, and have serious implication for competitiveness and growth.

3.5 The Impact of Agricultural Policy on the Horticultural Subsector.

Macropolicy has influenced the horticultural subsector both directly through a **changing** cost structure and indirectly through changing the opportunity costs associated **with** investment in horticulture²⁸.

The basic strategy for dealing with the horticultural subsector has been to force it to **compete** internationally. This fulfills two objectives. The first, mandated by the IMF, is to **maximize** the amount of goods for export and earn US dollars to repay the external debt.

²⁸The horticultural subsector is comprised predominantly of large commercial producers, with domestic and international agribusiness firms dominating processing and marketing activities.

The second is for the horticultural sector to be a source of growth for the economy. To facilitate this growth, the sector has been encouraged to modernize and to specialize in areas where it has its greatest advantage. Because of this explicit policy decision, commercial agriculture has received some benefits. Also because the horticultural sector wasn't as protected as the food grains sector, there has been less of an adjustment.

The issues in agricultural policy that have had a direct impact on this sector are the access to credit, the change in subsidies for inputs (especially water), changes in tariffs, the level of investment in the subsector and the changes in land tenure rules that legalize the control of much larger tracts of land.

Agricultural policy has indirectly affected the subsector through the withdrawal of price supports to the basic grains and beans. As guaranteed prices have declined, it has become less attractive to invest in the production of grains and beans and more attractive to invest in horticultural crops which are sold in growing urban and international markets.

These issues will be discussed in more detail in the following chapters as we look at competitiveness in the horticultural subsector, specifically the asparagus industry.

3.6 The Roots of Institutional Change

Institutions change because of changing incentives within the system. These incentives, which take the form of costs and benefits for different participants, have their roots in changes originating in both the domestic and international economy. Endogenous change may be a new marketing arrangement that comes about because it allows a group of farmers to save on shipping and packing costs. Often these domestic or endogenous changes are intertwined in exogenous changes such as a change in demand, technology, or information.

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Understanding the environmental forces which motivated changes in macro policy and the impact of these changes on agricultural institutions provides insight into how agricultural institutions will evolve in response to a constantly changing environment.

The institutions of macroeconomic policy were reshaped in response to exogenous influences in the last two decades. The new institutions that evolved led to a radical change which involved new beneficiaries, a change away from resources being directed to the agricultural sector to support a broad-based development strategy, to resources being directed toward a more commercialized, export-oriented sector within agriculture. Access to resources and the right to participate in decisions about how resources were used moved from the more marginal, subsistence producer to the more productive commercial farmer.

How did this happen? Beginning with the crisis in 1982, there evolved three major policy changes: austerity, channeling resources to their highest growth potential, liberalizing the economy. These changes have been reinforced through changes in laws, treaties, and the institutions that channel resources to the different sectors.

One of the most profound changes has been the nature of state involvement in the economy. There has been a reduced role of the state in the procurement of inputs. This change has its roots not only in the need to reduce public expenditures, but also in the opening of the economy, which has forced the input sector to compete. There has also been a much reduced role in the marketing and consumption of agricultural products, as can be seen in the changes that have occurred in CONASUPO. Extension and research activities have been privatized. Commercial banks have increased their involvement in the agricultural sector to the point that they are now the main lenders.

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Perhaps the most radical changes have been in the land tenure laws and the foreign investment laws. As discussed previously in this chapter, the ejidos were created out of the belief that those who worked the land had a right to the benefits. The rights of these small holders were explicitly outlined in the constitution. The implication of Article 27 is that the agricultural sector cannot provide a living for all those in the rural sector and that it is more appropriate to use scarce agricultural land to support commercial activities, and it lays the legal ground work to facilitate this.

The foreign investment law and NAFTA open the economy to foreign involvement unlike any other time in Mexico's history as an independent country. This is a significant departure from a history of distrust and fear of US cultural and economic domination.

Political pressures have been mounting that are modifying the direction of both macroeconomic and agricultural policy and the nature of the institutions involved in the sector. The large numbers of poor and potentially landless producers (those carrying large debt burdens as a percentage of the total income) have faced an absolute decline in their standard of living, while the more well-off have had more access to the benefits of a growing commercialized agriculture. As the access to resources and income growth has become more polarized in the sector, there has been increasing pressure to modify the direction of agricultural policy to include some of the social issues involved in a demographically contracting sector. These pressures will most likely intensify and provide continuous pressure on policy makers.

Chapter 4

An Analytic Model for Assessing the Changing Competitiveness of a Commodity Subsector

4. Introduction

This chapter is a continuation of the framework outlined in chapter 2 which addresses the process of institutional change. The objective of this chapter is to develop a model for examining how the process of international economic integration affects the performance of an agricultural subsector. This model will identify key economic variables for assessing the impact of a systematic change in rules on the performance of a subsector. In Chapter 3, we developed a macro-perspective and examined how changes in national institutions affected the agricultural sector relative to other sectors in the economy. Now we want to expand this framework to look at how economic integration has changed the opportunity set of the actors within the subsector, and how firms within the subsector coordinate their activities in response to exogenous and endogenous political and economic changes.

Beginning with the preliminary negotiations of NAFTA, there have been a **plethora** of studies assessing the impact of the reduction in tariffs and easing of rules of **exchange** on the competitiveness of different subsectors. The analysis for these studies **was** done largely by comparing the costs of production of the various regions. This **approach** provided a snapshot of the price competitiveness, but it didn't relay how new **pressures**, some of which will be translated into changes in costs, will create a new set of **incentives** which may erode and recreate new norms, and conventions--i.e., new **institutions** that may fundamentally or marginally change the opportunity set, allowing a

new structure to emerge. Examining this evolutionary change is necessary to understanding how economic change, in this case integration will affect the structure and performance of the subsector.

4.1 The Assumptions of the Model

To appreciate fully the complexities of the process of economic integration, a political economy approach is essential. There are three important assumptions to such a model. The first is that behavior is endogenous and must be explored, not assumed. In the neoclassical model, the behavior of actors is given and as so is equal to a constant. These models demonstrate what individuals/groups do when they are in a situation they can't change. We don't learn from these models how individual or groups craft new sets of rules and change their opportunity sets. Understanding the crafting of new rules requires insight into the mental models which shape actors' choices. How rules, norms and conventions --basically organizations and institutions-- evolve from a dynamic and complex environment is essential for examining behavior. We can then use this information to understand how change takes place in a subsector, and how these affect structure and performance.

The second assumption is that power is an integral part of understanding behavior. Many of the new institutionalists see changes in transaction costs as motivating new institutions. What is left out of their analysis is the understanding that actors only respond to these changes in costs if it is perceived by the actors to be advantageous and if they have the power to change the rules and norms of behavior. Information and power are closely linked. The link to political economy is that the political system creates and

reinforces the power structure via property rights and it is property rights that shape the basic incentive structure of the economy.

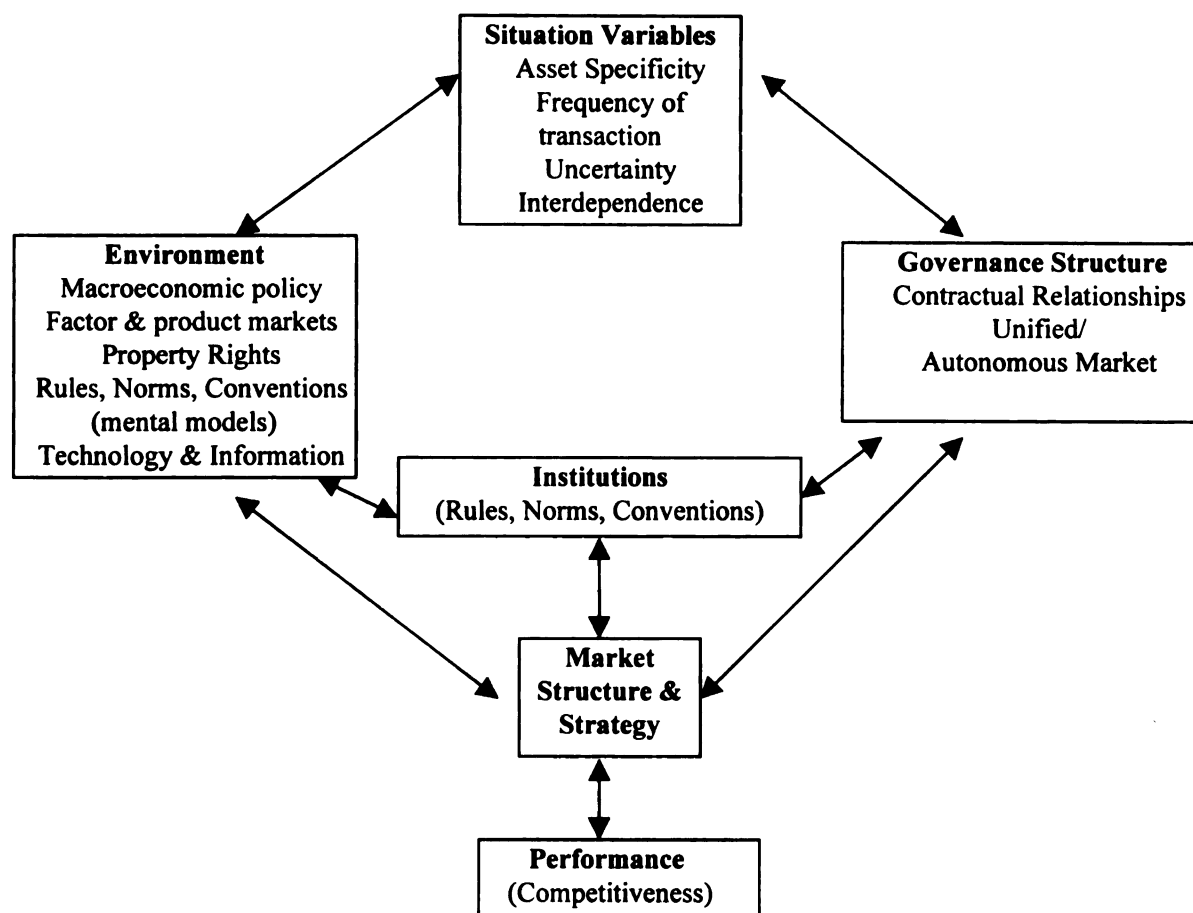
The third assumption that we want to make explicit is that to effectively understand the impact of economic change on a subsector we need to look in the long run. By looking backward we can understand why particular paths were taken and how those paths have influenced norms of behavior, mental models and relationships of power. With the longer view of the process, the analyst is also able to observe the unintended consequences of new rules and the impact that changes in behavior have on the structure and ultimately the performance of the subsector.

With these three assumptions explicitly outlined, we can now present the conceptual framework.

4.2 Overview of the Conceptual Framework

The objective of this chapter is to provide a framework for examining the key variables that influence subsector competitiveness. This framework, as illustrated in Figure.4.1, is dynamic and non-linear with feedback loops indicating the direction of change between the variables.

Figure 4.1 A Dynamic Model for Subsector Analysis



To grasp the idea of the dynamic evolutionary nature of the framework, think of the environment as time period 1. It represents the culmination of past institutions (manifesting power relationships and behavioral norms) and knowledge. The environment also describes demand and supply conditions and the structural variables in the subsector at the particular moment. Understanding the environmental setting allows the analyst to then examine how economic change motivates new institutions affects structure and ultimately the performance of the subsector.

The characteristics of the trade (situational variables) relay information about the specific production and marketing characteristics of the subsector. The variables being explored in this discussion are frequency of transactions, uncertainty, and asset specificity. These characteristics are tied to past norms of behavior, where existing institutions reveal how a group deals with uncertainty or the levels of trust in an exchange relationship. Identifying the situational variables that are important and how firms within the subsector respond provide key behavioral links between the environment, governance mechanisms, and institutional change.

The governance structure defines the boundaries of a firm, the determination of what activities are internalized and what activities are acquired through the market. The governance structure evolves within an institutional context. North likens it to how players in a game respond to the rules. The choice of coordination within and between firms tells us about the strength of the firms' capabilities relative to what can be purchased in the market, i.e., their transformation and transaction costs. For example, if there is a poorly developed banking system, more of those activities will be held by the firm or conducted collectively. The governance structure is necessarily evolutionary, responding to changes in the environment, the ability of the firm to learn ways to increase the value of its capabilities, and the developing capabilities within the market.

Institutional change in the subsector reveals the history of economic and political relationships and gives us insight into how institutions have shaped the interaction between actors. Institutions are formal and informal rules, norms and conventions. They mold actor's mental models of complex situations and hence guide the decision making process and consequently the resulting behavior. What we want to explore is how pressures from

the environment such as changes in technology, transformation and transaction costs, power, and the characteristics of trade, influence institutional change. The resulting institutional framework fundamentally influences and is influenced by the governance structure within the subsector. So together the institutional and organizational interaction have a profound influence on the structure and performance of the subsector.¹

Market structure and strategy is directly influenced by the governance structure, the institutions and the environment. Structural variables include number and size of firms, economies of scale, and the degree of foreign ownership. Behavior or strategies, such as product differentiation, can be anticipated from different kinds of structure. A multinational firm may have different resources and objectives than a domestic firm. A firm which is a price searcher may be benefiting from economies of scale and enjoying at least temporarily barriers to entry from other firms. The examination of structural variables will also tell us about who potential winners and losers are as economic change percolates through the subsector. The change in structure that results from economic change will produce outcomes which may or may not meet the politically articulated performance criteria. It is possible to determine if the changes in the rules, within a specific environment, enable the subsector to achieve its politically articulated objectives. This allows the analyst to better assess potential policy interventions.

¹ North, in Institutions, Institutional Change and Economic Performance, differentiates institutions from organizations, with institutions being the rules and organizations being the players. Within this context, firms are considered to be organizations operating within an institutional framework (North, 1990).

4.3 The Environment

Change in an economic system originates in the environment. These changes may develop in response to change occurring directly in the subsector or be the result of exogenous occurrences that affect either the subsector directly or indirectly through the macroeconomy. By examining the myriad of factors characterized as the environment, we can isolate pressures that lead to a change in the mental models of actors on both the macro and subsector level. For example, we looked at the historical economic and political pressures which led Mexican policy makers to believe that Mexico would be better off by liberalizing the economy. This change in their mental model motivated radical change in institutions: the change of the national constitution, tax laws, and the laws governing foreign investment to name just a few.

On the subsector level, a change in technology or technique may trigger a new mechanism for organizing production or marketing activities. But this change doesn't happen automatically with the introduction of the new technology. First there has to be a change in the actor's mental model or perception of the opportunity set and enough missed opportunities building up so that the actor has the incentive to deviate from past norms, rules or conventions, and adopt a new behavioral model.

To understand the complex factors influencing participants' mental models, the analysis begins by exploring the historical setting. To reiterate the discussion in chapter 2, much of the institutional and organizational structure of a subsector is the result of the past institutional history of both the country as a whole and its place in the larger global economy. From this history we should develop an understanding of the pressures that have led to the creation of the current institutional framework and the organization of the

subsector. These pressures include the power relationships or property rights, the type of economic change affecting the system, and the core capabilities of firms within the subsector and those in the market.

4.3.1 Power

Power is the ability to participate in decisions about how resources are used and to have your interests count when interests conflict. Property rights distribute power. A nominal property right may have little effect if not enforced. These rights include control over resources, where those with the right are able to appropriate returns and restrict access and use. Power is what enforces property rights. It is the ability to exert influence on those who make the rules. Understanding the property rights in a subsector and the power that enforces and creates those rights provides insight into why particular sets of rules are created and maintained, why some seemingly beneficial innovations are blocked and why new rules are created that may impose costs on one group while benefits accrue to another. For example, if a large number of participants in the subsector sell only their labor power and have little or no collective power, then we could expect economic change to percolate through the subsector differently than if a large number of participants owned capital as well as their intellectual and physical labor power.

In Mexico, we see a change in property rights of small and large agricultural producers. The small producers lost a set of entitlements to land and inputs while those with access to greater resources are now able to purchase ejidos' land. This allows for economies of scale and is hoped to be the engine of growth for the rural economy.

Market power is the degree to which a firm is a price searcher or price taker. It is integrally related to political power in that it is within the political framework that property

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rights are specified. As North (North, 1993) suggests, political rules in place lead to economic rules. In the process of economic integration the political rules and structure of property rights change. When this new economic relationship occurs between a less developed and developed economy, where newly competing firms have differential access to resources, how will this affect the structure of the subsector in the LDC? Will the resulting power relationship lead to dependency? Williamson suggests that manifestations of power as dependency is just a question of asset specificity, and that appropriate contracts will be written which will make all the participants better off by trading (Williamson, 1985). What we want to explore is whether this initial relationship of differential power leads to a permanent asymmetric relationship or whether the structure of the relationship will change over time. This will have important implications for the structure and performance in the long run. Understanding existing power relationships makes it possible to trace through the ways in which economic change alters these relationships.

Although power plays an important role in determining a set of property rights, a more pervasive long-run role that power plays is in creating and maintaining conventions and norms of behavior that govern the interactions of participants in the subsector. These may not be formal laws or rules but closer to standard operating procedures, or guidelines developed as a means for dealing with uncertainty. These conventions also play an important role in determining transactions costs. For example, when looking for a partner to trade with, if the convention is to trade with a specific group, then that will narrow down choices, and allow an actor to focus on finding a partner from a small well-defined pool.

4.3.2 Technology

Technology and information may appear to be exogenous to the environment, especially in a developing country setting where new technologies often originate in an industrial economy and are adopted in less industrial economy. But in order for technology to be adopted, conventions, behaviors must change, allowing a new technology to be put into use. In this sense, technology and information are tied to norms and conventions. The adoption of technology and innovation is also tied to power in that access is determined largely by having the resources to invest and the power to mold preferences within the subsector to accept the new technology or innovation. Even if a change will lower transaction or transformation costs, it will likely be slow to be adopted if it does not serve the interests of those holding political or economic power. These factors are important because they have the potential of changing participants mental models of their opportunity set and hence their behavior.

4.3.3 The Nature of Economic Change

It is expected that any significant change in an economy will have an impact on the participants in the subsector as they adjust to a new opportunity set. Classifying the type of economic change as systemic or autonomous² provides an indicator of the coordination mechanisms that will likely evolve. An autonomous change is one that doesn't require coordination through the subsector, such as a new fertilizer. This would require only the coordination between the supplier and the producer. A systemic change, by contrast, is one

² Robertson and Langlois, (1995) and Teece (1986) developed this differentiation of types of economic change and the connection between type of change and coordination mechanism. The roots of both of theirs are in Schumpeter (1950) and his theory of vertical coordination.

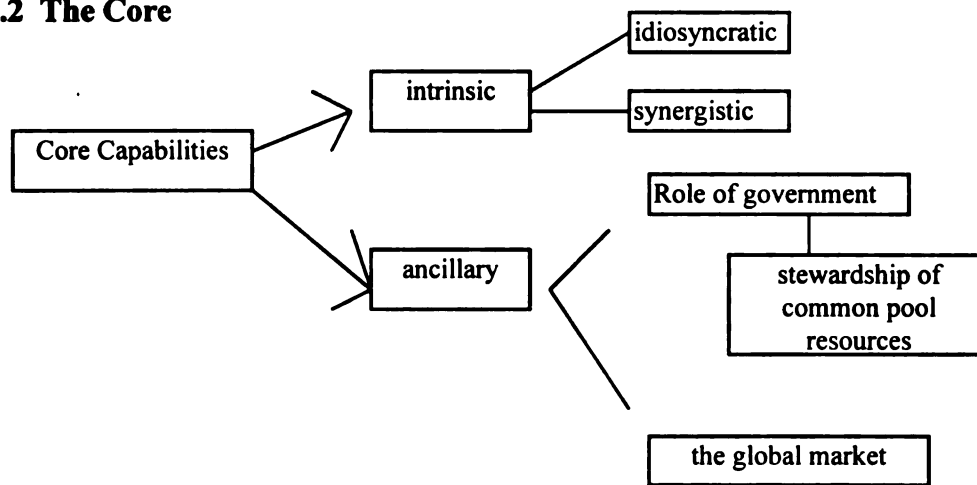
that requires a simultaneous change in several stages of production. The potential to create new value may arise from a reduction in price, an improvement in a non-price characteristic of the product, or from an enlargement of the market (Langlois and Robertson, 1995). An example of a systemic change would be the 1970s green revolution technology in Asia, where the package of inputs changed production technology and techniques and required new marketing systems. A systemic economic change may make previous production systems obsolete, causing participants to lose the value of their investment. This may lead to a reluctance to adapt to the change and develop new capabilities if the firms are decentralized. With systemic change, firms which are internally coordinated may adapt more quickly and develop new capabilities because they have the managerial and financial resources to adapt to the changed environment. On the other hand, there is the argument that small decentralized firms are more flexible, that they are not burdened by the X-inefficiencies that may make quick adaptation to a changed environment cumbersome. It is this flexibility and quick adaptation, that characterizes the systemic changes occurring in the Mexican asparagus subsector.

4.3.4 The Core

The core describes several key environmental factors: norms, rules, SOPs of the firms, development of the market infrastructure, and the role of the state in facilitating the market. Predicting how firms will respond to economic change also requires a knowledge of firms' core capabilities and the abilities available in the market. This is described by Robertson and Langlois as the firm's intrinsic core and the ancillary capabilities (Robertson and Langlois, 1995). The firm's intrinsic core consists of capabilities which are idiosyncratic and synergistic. Elements of the core combine to generate unique outcomes,

outcomes that are more valuable because they are produced synergistically, that is, they combine skills and organization. Outcomes are also more valuable because they use capabilities that are unique to the firm (figure 4.2). Ancillary capabilities are contestable, they are often not unique, and they can be purchased on the market. These ancillary capabilities provide an important insight into how well the market functions.

Figure 4.2 The Core



A poorly developed market would lead to pressure to coordinate activities internally, whereas in a well-developed market there would be more opportunity for specialization. Markets and firms are dynamic; as more learning takes place, the costs of transacting decline. As markets become more capable over time, they shift the opportunity cost for nonspecialization to the firm, making it cheaper to contract through the market. Markets and firms evolve as institutional capacity expands. An interesting variation is foreign direct investment. A foreign firm facing an underdeveloped market can rely on the

home market to supply inputs that are not available in the foreign market³. In this case there would not be the same pressures for vertical coordination that would face a domestic firm.

4.3.4.1 The Role of the State and the Global Economy

The idea that the core of a firm predicts coordination mechanisms is an attractive analytic tool but it leaves out, or doesn't explicitly include, two components that are essential when looking at the process of economic integration. These are the role that the government plays in infrastructure development and the interaction of the subsector in the larger global economy. The government contribution to the core should be explicit. The provision of public goods, whether in the form of roads, ports, or schools, lowers the cost of production and facilitates the performance of the economy in general. The development of institutions also lowers costs by reducing the uncertainty associated with trade. For example, if contracts are not enforceable, then there will be a tendency for trade to take place only among known firms where loyalty or reputation will enforce the terms of the trade. The government also has a role in providing stewardship for common pool resources when the stakeholders do not effectively govern these resources. If the government does not take on this role, resources may be consumed and unavailable for sustaining economic activity. A good example of a common pool resource that is essential to sustain economic activity in Northern Mexico is water. If the government does not provide adequate stewardship of the aquifer, agricultural production will become prohibitively expensive.

³ In the case of foreign direct investment in horticulture, not only do firms commonly draw on the home market for many inputs but they also rely on the home market for marketing networks and information, making it unnecessary to develop these linkages in the host country.

If the firms in the subsector are price takers on the international market, then to understand the firm's core competencies and the behavior of the firms, it is important to examine international supply and demand conditions for the input and product markets relevant to the subsector.

With regards to input markets, we need to understand the supply, demand and quality of labor and the opportunity costs associated with the use of the resources. In the output markets we want to know which countries are competitors, the distinguishing characteristics of the subsector's final product compared to other suppliers, and trends in demand for the product.

4.3.5 The Physical Infrastructure

The description of the physical infrastructure allows us to define further the opportunity set both of the specific subsector and the larger economy. This description includes quality and quantity of roads, airports, size of truck fleets, deep-sea ports and in agriculture, irrigation networks, and cooling facilities. The infrastructure at a particular time reflects past priorities and public investment that affects the cost of production for all users. It also contributes to an understanding of the capabilities of firms within the subsector and the ancillary capabilities of the market and will help us determine likely paths of coordination. If the market has few ancillary capabilities, we would expect more internal coordination, the firm internalizing activities which can't be purchased on the market. A well-functioning market, on the other hand, would indicate more specialization within the firm, allowing the firm to focus on developing and exploiting its idiosyncratic capabilities.

4.3.6 The Environment as the Foundation for an Institutional Model

The environment provides the context from which we can analyze the firm's core capabilities, including access and quality of input markets, marketing networks, demand for output, organizational skills of firms, cooperative mechanisms between firms, and the broader institutional framework. The environment should also include exogenous forces, such as changes in international demand and supply conditions for inputs and output, infrastructure, and weather. These exogenous as well as the endogenous factors outlined above will be important motivators for institutional change. They also provide us with a clearer picture of the firm and subsector constraints as they operate within the larger economy and allow us to develop a sense of the core capabilities of firms within the subsector, and the capabilities of the market.

Much of what is learned while exploring the different aspects of the political, institutional, and physical environment, will be used throughout the analysis to understand the process of change in a subsector. The environment, coupled with the situational variables appropriate for the subsector, allow useful insights into the process of institutional and organizational change.

4.4 The Characteristics of Trade

4.4.1 Asset specificity

Asset specificity describes an investment a firm makes to fill the need or specification of another firm. The investment would diminish in value if it were no longer being used to meet the requirements of that firm (Milgrom and Roberts, 1992). Once the investment has been made, it leaves open the possibility that one party may gain at the expense of the other. When you can't redirect your assets to avoid opportunistic behavior,

there is more concern how profits will be distributed--to those that are holding the specific assets or to those who are able to take advantage of the assets' immobility or sunk costs.

There are several forms of asset specificity that are important to consider when understanding changes in a agricultural subsector. These include temporal, dedicated, physical, and site specificity. **Temporal specificity** comes about when the value of the good is dependent on timeliness. This is often the case for growers with perishable fresh vegetables. If the shipper reneges on an agreement, then the grower will either lose the crop or be forced to sell the product quickly at a much lower price than originally expected. If the grower reneges on the contract with the shippers/distributors, then the shipper/distributor must either provide less to their customers (perhaps not be able to fulfill their commitments) or scramble to fill their commitments by accepting a lower quality or paying a high price in a possibly thin market⁴.

Dedicated assets are created when a product is tailored to meet the specifications of a shipper/packer/distributor. These may include both physical and human assets. Physical dedicated assets may include the meeting of specific grades and standards, whereas human dedicated assets refers to the informal relationships that evolve within the subsector. Both categories of specificity will minimize coordination costs involved in finding a partner, negotiating an agreement and monitoring that agreement. This interdependence may lead to a more open relational contract or hold-up depending on the norms of behavior that have evolved within the subsector. Hold-up may occur when one party acts strategically by

⁴ Kroeber describes a similar set of choices for processors of fruits and vegetables (1983).

withholding a necessary input or failing to provide a service in order to re-negotiate the terms of an agreement.

Physical asset specificity is when capital is designated for a particular use, and it has a much lower value in the next best use. Perennial crops exhibit physical asset specificity. Once they are planted, there is often several years before the crop can be harvested. This represents a long-term commitment of valuable resources to the crop.

A site specific asset occurs when the firm's geographical proximity to a large supporting infrastructure yields positive spillovers. All of these types of specific assets create interdependencies, which will influence the type of governance structure, which evolve in the subsector.

4.4.2 Frequency of Transaction

As frequency of interaction moves from occasional to recurrent, it is expected that simple market transactions will be replaced by contractual relationships. The frequency may lead to self-enforcing contracts due to reputational effects. Moral hazard problems are likely to be held in check by norms of reciprocity and cooperation (Alexrod and Sugden, 1986). The recurrent interaction also may lead to behavior becoming increasingly routine, resulting in norms and conventions structuring the relationship.

4.4.3 Uncertainty

Uncertainty is different from risk in that with uncertainty there is no way to determine the probability of an event. Risk, on the other hand, implies an ability to make a probabilistic account of the likelihood of an event. There are two types of uncertainty with which firms within a subsector must cope. Structural uncertainty occurs when a firm needs to base its decisions on judgments about the future that are unknowable. Parametric

uncertainty occurs when a firm may need a resource that it doesn't have in adequate supply and that it may be subject to behaviors which are not predictable. The firm that can transform some of the uncertainty into risk through contracting or creating a hierarchical structure will add to its intrinsic core.

4.5 Governance Arrangements

The governance arrangements that a firm or group of firms adopts to develop its core capabilities will largely depend on the strength of the firm's existing capabilities relative to those that can be purchased but also on the characteristics of trade, such as asset specificity, uncertainty, and the frequency of interaction. The response to these variables grow out of an already existing institutional and organizational framework where characteristics are tied to past norms of behavior. For example, how a group deals with uncertainty or differing levels of trust will depend on past rules governing behavior. These rules structure relationships within the subsector and provide insight into the governance choices that were made, whether they be internalization, contractual relationships, or reliance on the spot market.

The following discussion presents three perspectives on how firms determine their governance arrangements. They each present different assumption about behavior and differing predictions. The first is a transaction cost economics (TCE) model by Williamson, the second, a model drawing from the organizational behavior literature by Van de Ven and Ring. The third is a political economy approach underlining the importance of interdependency and power.

4.5.1 Williamson and the TCE model

In Williamson's first model (Williamson, 1975) he uses a simple transaction cost approach to establish the link between the characteristics of a trade and the institutions that evolve. Williamson makes the assumptions that individuals act only with opportunism and with bounded rationality. His efficiency hypothesis is based on the premise that a firm will choose a governance mechanism that will minimize transaction costs. As a result, the governance mechanism that emerges will be the most efficient.

Williamson identifies three characteristics of a trade--asset specificity, uncertainty, and frequency--which he suggests are important in determining the type of governance mechanism that evolves. This model suggests that when assets are highly specific, there is a high degree of uncertainty and transactions are infrequent, the most efficient mechanism for a firm is one where transactions are internalized. Low levels of asset specificity, little uncertainty and frequent transactions will lead to the market as the governance mechanism. Transactions that are characterized by relatively intermediate levels of these characteristics most typically result in recurrent or relational contracts.

In 1979, Williamson refined this model to look at the relationship between frequency, the degree of asset specificity, and a more detailed description of the evolving governance mechanism. His conclusions are as follows: when the transaction involves no specific assets, and either frequent or occasional interactions, the autonomous market is the governance mechanism. When transactions are occasional and have elements of asset specificity, recurrent contracts are likely to prevail. These contracts contain specific terms, but contingencies are left for future resolution. These tend to be largely short-term contracts, and the parties in the contracts see themselves as legally equal and autonomous, perhaps

building the groundwork for a more embedded relationship. Williamson suggests that when frequency increases and the level of asset specificity increases, relational contracts become more common. These contracts tend to evolve from recurrent contracts. The relationship is often characterized by jointly developed goods and services and may entail highly specific investments. This is a contract that accommodates the complexity of the relationship and extends beyond the rules based on a specific exchange. Disputes tend to be solved without outside mediation, with the aim of preserving the relationship. Williamson suggests that as assets become even more specific and the frequency of trade increases a unified governance structure evolves. His rationale is that the greater the asset specificity, the more one party is open to opportunism and that the transaction-cost-minimizing strategy is to develop an internally coordinated governance mechanism.

Although insights into the relationship between characteristics of trade and evolving governance arrangements are obtained from the Williamson's model, there are serious omissions that make it less useful for understanding the process of change in a subsector. Transaction cost is a static analysis, it assumes that both organizational structures and institutions do not change⁵. Also, because transaction cost analysis looks only at the cost side and not at the benefits, it excludes the role of power in influencing governance structures. The inclusion of power is discussed in the next section. Williamson's model assumes the driving behavior of all actors is opportunism instead of exploring what motivates their behavior. This assumption has come under a great deal of criticism because

⁵ The Coase-Williamson type of transaction cost analysis involves comparative static comparisons of different types of governance structures across two or more equilibrium situations (Hodgson, 1993).

it limits the explanatory power of the model (Kay 1992, Dietrich 1994, Hodgson 1993, Marginson 1989).

4.5.2 The Organizational Behavior Model

Ring and Van de Ven's model portrays governance structures as being embedded in social relationships and characterized by reciprocal dependencies. They look at the key role played by trust. They suggest four categories to predict governance structures. These are:

- 1) low risk, low reliance on trust leads to markets⁶
- 2) high risk, low reliance on trust leads to internalization
- 3) low risk, high reliance on trust leads to recurrent contracts (third party enforcement)
- 4) high risk, high reliance on trust leads to relational contracts

These authors explore how firms may build trust through recurrent contracts which may lead to relational contracts. Both these forms of contracts allow varying degrees of flexibility that come from not having to specify every aspect of the contract (Klein, 1981). The trust comes from the need to work cooperatively over a sustained period of time and involves reciprocity and the expectation of a fair rate of exchange, that is, parties receive benefits proportional to their investments. In these relationships there are non-legal sanctions available to encourage organizations to fulfill commitments that have to do with developing norms of behavior. For example, frequent interaction and the fear of ostracism from inappropriate behavior promote courtesy. The prospect of a continuous long-term relationship discourages narrow self-seeking behavior. Firms are most likely to extend trust to other firms if those firms have a reputation for following 'norms of equity'. This occurs when partners have successfully completed transactions in the past and were perceived as

⁶ High reliance on trust means that no formal or informal enforcement mechanism is necessary for a trade to take place. The characteristics of the trade (levels of risk and trust) refer to both parties.

complying to norms of equity. The reliance on trust that is especially important for relational contracting comes about as a consequence of repeated market transactions. Ring and Van de Ven also suggest that greater harmony and enhanced ability to preserve a relationship flows from the increased production and transaction flexibility available through relational contracts (Ring and Van de Ven, 1992).

Ring and Van de Ven's model based on trust suggests an alternative to Williamson's model which assumes opportunism. These different behavioral assumptions lead to different predictions of governance structure. Williamson is looking at the single transaction as the unit of analysis whereas Ring and Van de Ven look the embeddedness of the relationships within the subsector. Given a situation which is characterized with high asset specificity, uncertainty and frequency, and embedded personal relationships resulting in trust and reciprocity, Ring and Van de Ven predict that vertical integration and hierarchy are not the likely outcome; rather, relational contracting will dominate. They also suggest that as levels of trust change over time, and minimize many sources of risk, hierarchies may use relational contracts for functions that no longer need to be within the hierarchy.

There are some important elements missing from Van de Ven and Ring's discussion. As with the Williamson model, it does not explicitly include power. It assumes that the dependencies and reciprocity are mutual and equal. This may be misleading, especially as we look at the activities of multinational firms in less developed countries. Their analysis also does not address the importance of understanding the intrinsic and ancillary core of the firms in the subsector. The governance mechanism reflects the extent to which ancillary capabilities are either acquired through the

autonomous market, contractual relationships or internalized. Therefore, it is important to understand the strength of the firm's own capacities, both organizationally and technically, relative to the market. It is these two omissions that I would like to incorporate into the framework for subsector analysis. Perhaps the most serious omission of these two models is the lack of an explicit discussion of power and the role that power plays in determining governance.

4.5.3 The Political Economy Approach

If statements about shifting governance mechanisms are to be made, it essential to look at not only changing costs but also changing benefits. These benefits come from skill idiosyncrasy (Dietrich, 1993) or what has been referred to as the intrinsic core (Langlois and Robertson, 1995) and market power. In TCE, the assumption is that the appropriate governance structure emerges because it is the most efficient in terms of bargaining and policing costs. In this model, issues of power are cloaked as efficiency. This occurs in part because of TCE roots in neoclassical thought, where it is assumed that transactions are made because of mutual advantage i.e., Pareto improvements. But if we change the assumptions, and allow for a governance mechanism to exist which allows for pecuniary advantage (economies resulting from price changes), it is possible to observe a transaction which doesn't involve mutual benefits (Dietrich, 1993). Dietrich continues, "pecuniary transfers represent a governance structure benefit for those in effective control of the transaction, rather than a cost" (Dietrich, 1993,p180). The access to these benefits depends on relative market power and bargaining ability.

Marglin suggests that power is derived from differential control or a monopoly over knowledge of production activities. This differential control comes from

asymmetric information and pecuniary transfers and hinges on the dependency of one party on another, where it is not possible to move away from a relationship that is working to one's disadvantage (under a given set of rules, norms, and conventions) (Marglin, 1984). It is therefore essential to focus on governance structure benefits as well as costs and to explore this link between the exercise of power and the development of governance structures. To acknowledge the role of power is particularly important in this study which looks at the relationship between a very large and well-developed economy and a smaller, less-developed one, and to look at the role that FDI and MNC play in the smaller, less-developed economy. This differential relationship may also have important implications for the contractual terms that occur in the subsector.

4.5.4 The Synthesis

When we are examining how economic change affects governance within a subsector, at least four major issues need to be explored: power--that is, the benefits being derived from the governance structure; the influence of power on behavior (how it effects the opportunity set of actors); the level of development of the intrinsic and ancillary core; and the interaction of these two phenomena with asset specificity, frequency and uncertainty.

The assumptions that we make about behavior play a critical role in determining the type of governance structure we predict will evolve. If we have a situation with moderate to high asset specificity, uncertainty, frequent interactions, opportunism and bounded rationality, what governance mechanism would likely evolve? The TCE analysis, assuming bounded rationality and opportunism would predict a unified governance structure, whereas Ring and Van de Ven predict that if trust and reciprocity

replace opportunism and bounded rationality, relational contracting will result. In Ring and Van de Ven's model, trust and reciprocity are based on the assumption that both parties see themselves as equal partners. Let's modify this assumption to reflect a situation, which is perhaps, more common in a Mexican horticultural subsector, where one party has more power than another. More power refers to greater access to resources, perhaps at lower prices or because of asymmetric information. If this differential power creates a relationship of dependency, a relational contract may evolve but the terms may be such that one party is locked into a situation where she/he is not able to capture or appropriate their share of the returns from the joint activity⁷. Since issues of power are often intertwined with behavior, it is essential to examine both of these phenomena when examining changes in governance structure.

The level of development of both the intrinsic and ancillary core also contributes to our understanding of the kinds of governance structures that will evolve. The firm's ability to develop its intrinsic core is a long-run capability that depends on the firm's ability to learn. This ability to learn is a function of internal organization. Contracts will likely be more relational if firm learning is well developed.

Contracts may also be more attractive when those involved with marketing the final product don't want to tie up capital in a potentially uncertain situation, or in activities which they do not have a comparative advantage—i.e., when the cost of non-specialization is too high. Here, the benefits of coordination integration via contracts may in fact be better at overcoming information fragmentation than a unified system. In

⁷ This is assuming that the product resulting from the joint activity has greater value because of the relationship than would occur if each partner had acted independently.

horticulture it is often Mexican nationals who are producing the basic product because of their knowledge of cultivation of the crop but, more importantly, their ability to operate within their own economic and social milieu better than an outsider.

A contractual relationship may dominate when firm-specific expertise creates mutual dependencies. Kay makes the point that asset specificity reinforces reciprocity and reduces opportunistic behavior. This is supported by the empirical studies of Blois (Blois, 1972). “ If both parties are sitting in the same rowing boat, a threat to pull out the bung will be unconvincing” (Kay, 1993). This interdependency is often seen in a subsector when one party may hold production expertise and the other marketing expertise. In order to get the value (increasing returns) that comes from long-term cooperation, they will contract with each other, probably establishing their relationship initially through recurrent contract, and then as they modify their assets to accommodate each other, a more relational contract evolves. Interestingly, Contractor and others point out that it is the non-specificity of assets and concerns with the protection of property rights that are frequently cited as the problems that lead to the adoption of a unified structure (Contractor 1981, Casson, 1979, Dunning 1981, Caves, 1982). This is contrary to the outcomes predicted by Williamson.

When we are looking at the impact of economic change in a subsector, it is important to examine how the change(s) have affected or redefined property rights. If issues of appropriability have been clarified, contracts will likely be more attractive than operating on a spot market. This can be seen in the Mexican tomato industry where recurrent contracts dominate between Arizona and California shippers, packers and growers in Sinaloa. The change in the Mexican foreign investment law has clarified the

rights and obligations of both parties. Over the last five years enough trust has emerged that these new rules will be enforced so that contracts have become the dominant form of governance. Before the clarification of property rights, growers hedged their bets; if it looked like prices were going to be high in the fresh market, they would renege on agreements with processors. If it looks like prices would be low in the fresh market, they would fulfill their agreements to processors.

The strategy that a firm uses to deal with uncertainty influences the governance arrangement. A firm will look to see what their future resource needs are and determine how to get them. This may occur by generating new resources internally, purchasing them on the spot market, or obtaining them through contractual arrangement. This will be a strategic decision because if the firm can gain preemptive control over the resource or use the resource to create new capabilities which will add to its idiosyncratic core, then it will try to secure the resource either through contracts or a unified structure. If the new resource does not extend the firm's intrinsic core, it is likely that it will be cheaper to purchase the good on the autonomous market (Langlois and Robertson, 1995).

In the situation where a firm is facing unpredictable change and it is costly to specify a long-run contract, then it is likely that a situation calling for expanded residual rights of control or relational contracts which have residual rights for each party built into the understanding will evolve (Teece, 1986). This is frequently the type of contract that has become common in the Mexican horticultural subsectors.

Power plays an important role in determining who benefits from particular organizational structures and dispels the Williamsonian prediction that the most efficient

governance structure will necessarily prevail⁸. The governance structure that evolves in response to economic change will be influenced by the existing property rights and how economic change redefines those property rights. This is not to minimize the importance that the characteristics of goods have in determining coordination mechanisms but provide broader behavioral insight. The inclusion of the core requires that the analysis include not only the environmental factors affecting a specific firm but also the organizational capacity within the subsector and in the larger economy.

4.6 Institutions in a Subsector Model

One of the fundamental results of the web of institutions in an economy is that it creates and enforces property rights. Governance structures are part of the web, allowing the observer to understand better the interplay between the rules of the game and behavior. What we will be examining in the next chapter is how changes in specific institutions, which have created a new set of property rights, have affected governance arrangements and related and complementary institutions. We can then trace the impact of economic change on the structure of the subsector and evaluate whether this evolving structure is enhancing or hindering subsector competitiveness.

4.7 Structure and Performance

One of the major criticisms of other studies that look at the effects of integration on subsector competitiveness is that they assume that the structure of the subsector does not change given a change in the rules of the game. So the first question we want to ask is, has the structure changed? Typical indicators of change are concentration of firms,

⁸ If organizations reduce the cost of transacting below those obtained in the market, then they are considered by Williamson to be more efficient (Williamson, 1975).

ownership (national or foreign), barriers to entry or exit, internal and external economies of scale and market power. The key question though, is how will that change affect performance? What will be the performance indicators? How will we measure competitiveness? There are two levels of competitiveness that we will explore in this study, both of which have important implications for the subsector. Subsector competitiveness is often thought of as price competitiveness; that is—can the firm or firms deliver the product to the market at a price which is the same or below other firms? A more sustaining indicator of competitiveness is innovative competitiveness, or what Schumpeter identifies as creative destruction, which is the ability to respond to changes in technology, organization, and product. If a firm is able to do this, it tells us something about the firm's intrinsic core, its ability not only to combine resources in order to create a synergistic value, but its ability to develop governance mechanisms that enhance the core.

4.8 The Application of the Framework to the Case Study of the Mexican Asparagus Subsector

This chapter has presented a framework that identifies key variables that motivate change in institutions, structure, and ultimately the performance of a subsector. In Chapter 5 we are going to use this framework to guide our analysis of the Mexican asparagus subsector as it has responded to the process of economic integration with the US.

This framework allows us to critically examine how changes in institutions (rules) affect behavior and therefore governance within the asparagus subsector. In the next chapter we are going to look at the factors which have affected the intrinsic and ancillary core of firms. To do this we draw on an understanding of both the macroenvironment in

which the subsector operates and the specific environment of the subsector. The first sections of the chapter describe the physical and human resources present in the subsector and a history of the agronomic practices and constraints. This description provides a base from which we can examine how changing rules (institutions) have influenced the core of firms within the subsector.

To examine the development of the intrinsic core we will look at the nature of contracts and examine how contracts have enhanced the unique and synergistic value for the subsector. Complementary to the intrinsic core is the ancillary core. When we examine the ancillary core we are looking at how effective the state has been in developing an infrastructure and providing stewardship of common resources. In order to understand the core competencies of firms in this subsector it is also important to examine the position of the asparagus subsector in the world market. As we will discuss in the next chapter, Mexico is a major player in the world asparagus market. This is in part because of the firms' long history in the international market, and in the North, to technology transfers from the US.

Understanding the changes that have occurred in governance allows us to look at how the structure of the subsector has responded. One of the queries in chapter 5 is how the change in rules associated with integration has affected structure. We first document the change in the structure of the subsector and then look at how new governance arrangements influenced the new structure.

The last section of chapter 5 focuses on whether the new rules, especially the changes in property rights, foreign investment law and economic instability, and the accompanying changes in the structure and strategies of the subsector, have enhanced the

long-run competitiveness of the asparagus subsector. The criterion that is used to assess long run competitiveness is the Schumpeterian criterion described at the end of this chapter.

Through the application of the framework to the asparagus subsector we are able to make an assessment of how key elements of economic integration have influenced performance and to make some preliminary observations of winners and losers in the subsector.

Chapter 5

Applying the Analytic Model of Subsector Competitiveness: a Case Study of the Mexican Asparagus Subsector

5. The Objective of the Chapter

In this chapter we will apply the analytic framework of the last chapter to look at the ways in which key elements of economic integration have influenced the performance of the asparagus subsector. The elements that have affected the subsector the most can be broadly categorized as follows:

1. The changing role of the federal government. Manifestations of this include a significant decline in federal support for public investment in infrastructure.
2. Changes in property rights. These includes changes in entitlements reflected in the price of inputs and access to inputs such as credit.
3. Changes in the laws governing foreign investment.
4. Changes in the federal constitution resulting in new laws concerning land tenure.
5. Extreme economic instability resulting from devaluation, recession and inflation, and uncertainty.
6. Enlargement of the market.

5.1 Questions to be addressed

1. How has economic integration, with the concomitant change in institutions, influenced governance arrangements in the asparagus subsector, in particular, the types of contractual relationships that have evolved and vertical integration?
2. How have institutional change and changing governance arrangements affected the structure of the subsector? The structural variables to be explored are ownership, concentration, barriers to entry and economies of scale. How have these changes affected different kinds of producers?

3. How has the process of economic integration, as manifested in changes in the environment, institutions and structure, influenced the performance of the subsector?

5.2 Organization of the Chapter

The discussion of the queries posed in this chapter will begin with a description of the field research techniques used in this study. The next section will outline the macro and micro components of the environment, both of which are integral to understanding how endogenous and exogenous factors associated with economic integration have influenced the competitiveness of the asparagus subsector. The macro component refers to the nation as a whole and includes natural endowments, such as resources; and man-made infrastructure, such as human and physical capital. This macro aspect will also include a discussion of the dynamic international supply and demand conditions in which the Mexican subsector operates. The international supply and demand conditions are part of the environment but the conditions are also important for developing a complete picture of the subsector's ancillary competencies. This macro component helps us understand the physical and economic setting and completes the picture of the impact of national and international policies on the subsector. The micro components will address the environment specific to the asparagus subsector. The discussion of the physical and institutional setting will allow us to develop linkages between integration, institutional and organizational changes, structure and the performance of the subsector.

5.3 Data Gathering Techniques

The description of the two major asparagus producing regions in Mexico is based on interviews conducted in Mexico as well as the examination of primary and secondary documents in Mexico and the US. The following discussion outlines the data gathering techniques used for this study.

The objectives of the interviews were to understand how the subsector works, concerning production practices, marketing mechanisms, key factors, driving forces, and infrastructural support from private and public institutions. This includes an understanding of how the subsector has evolved over the last twenty years in response to economic and political changes. Along with this information, several sets of data were collected from the interviews. These include transformation and transactions costs for the subsector, and the rates of return for competing crops in the Bajio.

5.3.1 Transformation costs

Transformation costs were collected during field interviews conducted in northern Mexico for six weeks in January and February 1994 and in the Bajio two weeks in April 1994¹. In northern Mexico, 17 of the 23 growers were interviewed, all of the shipper/packers, and all three of the marketing firms. In the Bajio, 32 of the 50 growers were interviewed, all the shipper/packers, and representatives from all the marketing firms in the area. Costs were collected to assess differences in relative prices both between the two major producing areas and between the competing areas in the US and Mexico.

¹ I returned to both areas for approximately two weeks in 1995. I was not able to extend all of the early data but focused on updating key variables. I was especially interested in how the 1994 crisis affected the various groups of producers in the two regions.

Key informant and grower interviews provided a background on the history of investment in the subsector, production practices for the different categories of producers, the marketing mechanisms, and other key factors affecting costs and returns for the asparagus subsector. Individual growers provided their perspectives on how the subsector operated as well as detailed information on their transformation and transaction costs. The transformation costs are the costs of production, harvesting and marketing for one year, assuming a mature crop.² The cost of the initial investment discounted over the life of the investment was not included.³

I compared the cost data I received during my interviews with data collected by FIRA and SARH and data from key informants. I found that most of the data from FIRA and SARH were very different from my data and that of others involved in the industry. For example, the FIRA data report yields that are twice what growers and industry personnel report. This over-estimation grossly inflates farmers' rate of return. Therefore, there is wide variance between some of the official data and the data I present.

To determine the opportunity costs that producers in the subsector face, data on rates of return for alternative crops were collected. In the Bajío, there were rates of return studies for the major horticultural crops. I conducted interviews with a sample of the major producers of these crops, many of whom were also asparagus producers, to verify the data.

² Asparagus is considered mature on the third year.

³ It was originally intended to include establishment costs and to discount over time, but many of the growers either didn't have records of these costs or did not want to share them.

Again, the previous studies overestimated yields and farm gate prices. I adjusted these data sets based on the results of my interviews with producers and key informants⁴.

5.3.2 Transaction Costs Surveys.

The first set of key informant interviews made it apparent that the costs that producers faced were a function of how they organized their marketing (networks) opportunities. To determine if this was true, I organized the transaction costs studies to include three categories of growers: those with no marketing relationships⁵, those with contracts to US marketing firms, and those that are vertically integrated. The transaction cost analysis draws from information obtained through grower and shipper/distributor interviews and from time logs of production/marketing activities that were made by representatives of each category of producer. There are two case studies of those with no long-run marketing arrangements, three with contracts with a US marketing firm, and one vertically integrated firm. These firms were asked to record all of their activities for a three-week period that included a preharvest, harvest, and postharvest week. The timing of my fieldwork only allowed this part of the interview process to be extended to the northern areas. To complement these logs, interviews were conducted to solicit a description of what they perceive to be the issues which inhibited their cost competitiveness.

⁴ Some of the key informants that I interviewed to verify producer prices were the ones who actually purchased large quantities from the area either for processing or for the fresh market.

⁵ This group has no consistent marketing relationship. They enter into a short run arrangement with a broker and the terms are negotiated for each transaction or season.

5.4 The Macroenvironment

The purpose of this exploration is to develop a more complete picture of the environment—the physical and institutional constraints and endowments in which the subsector evolves. Broadly this will provide insights into how integration has affected the structure and performance of the subsector. Specifically, exploring the environment provides insights into the strength of the ancillary core –an important factor in determining governance.

5.4.1 Natural Resources

The natural resources of interest to this study are arable land and water. Mexico has a very limited supply of high quality agricultural land and a severe water constraint in most of the agricultural areas. The combination of location (proximity to the US) and climate have influenced the development of the horticultural sector including asparagus. Access to US markets and an ability to provide many fruits and vegetables to the US at times when there is no domestic supply have given Mexican horticulture an important place in the US market. The many climatic variations in Mexico have also facilitated the development of the horticultural sector. There are three distinctive climatic zones in Mexico for the production of asparagus, each of which provide unique marketing windows.

5.4.2 Physical Infrastructure

Physical capital can be accumulated through either public investment or private investment. Much of the macro investment, such as large public infrastructure, represents goods with high exclusion costs and is therefore funded with public monies. These include transportation and communications networks, which are important for the development of a

subsector that services both a domestic and international market. In the early nineties, national funds were directed towards the building and maintenance of highways between major agricultural areas and Mexico City and the US border. The highway network includes 92,000 km of paved roads, 10,000 of which are four lane highways (Banamex, Review of the Economic Situation of Mexico, January, 1994). But the amount of public investment in physical infrastructure has declined by over 400% since the 1980's and has declined 15% since the economic crisis of 1994 (Informe de Gobierno, Annual Report 1996). Although there is a great deal of rhetoric about building national competitiveness, there has been declining public revenues devoted to this task. The consequence of insufficient ⁶ capital investment is increasing costs of production. If a road is not passable or a bridge is out, the costs to the firm increase. This makes the firm less competitive.

National private investment has increased 4% while public investment has decreased 34% from 1980 to 1994. Total gross domestic investment fell 43% in 1995, the lowest in forty years (Banco de Mexico, Indicadores Economicos Informe Anuales, 1996). While gross domestic investment was relatively stable until the devaluation, savings as a percent of GDP declined 9% between 1985 and 1995, forcing Mexico to rely heavily on foreign investment or not make significant additions to capital stock. With savings less than investment, replacing the current stock of capital has been problematic. This situation has been especially difficult since the economic crisis because of the decline in FDI and high domestic interest rates which make it difficult to make new investments on capital stock or replacement stock.

⁶ Insufficient suggests that there are not enough funds to replace or maintain the current stock of infrastructure.

5.4.3 Human Capital

The low rate of investment in capital stock has important implications for creating labor as an ‘advanced’ factor⁷. One of the factors that contributes to a nation’s and an industry’s competitiveness is the quality of labor. Competitiveness is heightened as labor becomes more skilled. This allows a country or subsector to move toward the production of more highly valued products and to capture the returns from this activity within their own country. One of the results of an increasingly advanced labor force is an increase in labor productivity. The level of labor productivity depends on several factors: the investment in human capital, training, and education; the amount of capital available to labor; and the size of the pool of unskilled labor. It is difficult to assess society’s commitment to education because skill enhancement takes place on many levels. One indicator that is readily available is the amount of revenue directed towards primary and secondary education. Between 1980 and 1995, the per capita revenue directed towards primary education has declined 10%. The expenditure toward secondary education has declined 17%. But the percent of primary and secondary school graduates has remained fairly stable (INEGI, Macroeconomic Indicators, 1996). This may imply that the growing middle class invested in their children’s education. It seems probable that the growing underclass has had increasingly less access to education. This, along with disinvestment in the rural areas, will likely increase the growing pool of unskilled labor.

The annual growth rate of new capital formation from public, private and foreign sources has averaged 1.67 during the 1986-1993 period. (INEGI, Macroeconomic

⁷ This is Porter’s term, indicating a growing sophistication and specialization of the labor force.

Indicators 1996). This is less than the rate of population growth.⁸ Again, the decline in capital available per worker further diminishes the ability of labor to become a more 'advanced' factor. That, along with government policy to dampen demand, will continue to put downward pressure on wages.

Low productivity also contributes to low wages. Will this change given the increasing economic integration between the US and Mexico? The Factor Price Equalization (FPE) theorem tells us that when there is unencumbered trade between two nations, if a country where labor is expensive (US) and capital-abundant imports labor-intensive goods from a country in which labor is inexpensive and capital is scarce (Mexico), then the ratio of labor costs to capital cost will tend to converge between the two countries. Wages will rise relative to capital in the labor-abundant country, and fall in the labor-scarce country.

But, the ability of international trade to move factors towards equality is strictly limited. The conditions under which full equalization would occur are very restrictive. Some of these restrictions include perfect competition in all markets, full employment of each factor, no transportation or information costs, no tariff or non-tariff barriers, and the same production functions in each country.⁹ These are just a few of the restrictions of the model that are not met when looking at the trading relationship between Mexico and the US. This makes the possibility of factor price equalization unlikely. There are also institutional factors that make it unlikely that wages, more specifically, agriculturally

⁸ The annual population growth rate averaged 2.1% from 1986-1993. The rate for 1994-5 has been 2.0%

⁹ See Paul Samuelson, 1948.

oriented wages in the US, will decline. Downward stickiness on wages and income protection of labor unions tend to minimize downward pressure.

There are several factors which will keep agricultural wages in Mexico low at least in the short run. Government policy to channel resources only to the most productive sectors of agriculture is resulting in the development of a growing commercial agricultural sector but contracting opportunities for the subsistence and semi-subsistence population. As this group leaves the land they will either migrate to urban areas or be released into the rural labor force, which will exert downward pressure on agricultural wages. Also, government policies to control inflation, devaluation and specific wage and price agreements made under the PECE will also constrain wages. Perhaps the most profound influence on productivity and wages is economic instability, for it creates an environment which inhibits new investment in human and physical capital.

5.4.4 Labor Productivity and Mexican/US Competitiveness

Productivity of labor in Mexico much lower than the US; therefore, looking at just wages doesn't reveal the sources of competitiveness. The important issue is that lower productivity reduces Mexico's labor-cost advantage. We have outlined the role that government policy has played in hampering labor productivity, but there are also cultural norms and conventions that have affected the growth of productivity.

Runston and Young, in their study of labor productivity differences between horticultural subsectors in the US and Mexico, quantify the difference and then analyze several norms of behavior that contribute to the differences. Runston and Young found that the difference in cost of labor between the two countries is 7:1 to 8:1 for hourly wages when

productivity differences are not factored into the calculation. This figure tends to fuel the arguments of many US producer groups that they are not playing on a level field with Mexico. But Runston and Young shows that if productivity is factored into unit costs, what appears as a 9:1 wage difference in tomatoes is really 2.5:1.¹⁰ Table 5.1 illustrates the differences in productivity for several horticultural crops.

Table 5.1. Labor Productivity Estimates, Mexico and California

Crop	Hours/Hectare		M. Tons/Hectare		Kilograms/Hour	
	Mexico	CA.	Mexico	CA.	Mexico	CA.
Asparagus	640	226	3.8	3.8	5.9	16.8
Broccoli	144	129	9.4	12.3	65.3	95.3
Cauliflower	230	199	9.5	12.5	41.3	62.8
Tomatoes	528	188	22.4	31.4	42.4	167.0
Strawberries	4,382	2,713	20.0	52.7	4.6	19.4
Source: Runston and Young, page 7, Sept. 1992.						

¹⁰ Runston and Young give an example of tomato harvesting in Baja California (BC) compared to California (CA). In BC, the average cost of picking a bucket was .58 cents/box. In CA, cost varied from US\$1.50-1.90 using same hand-picked method. This suggests that BC unit cost was 39 percent lower than the unit cost in CA. However, if one looks at the hourly wage the US is \$7.91 per hour, while BC averaged .88 cents per hour. Thus if labor productivity is factored into unit cost, what appears as a 9:1 ratio in hourly wages is really 2.5:1.

Runston and Young suggest that low labor productivity is more than the choice of labor-intensive technologies in Mexico and is largely related to the following set of conventions and behavioral norms:

1) In Mexico, workers receive a daily wage and are required to pick a minimum amount. After they reach that minimum they often go home. The norm for growers has been to put as many as possible on the field at once. This has occurred because there has been plenty of labor available and because the taxes growers pay on their workers have not been related to the numbers employed.

2) Runston and Young also suggest that the efficiency wage theory prevails in Mexico, and the wage is seen as a subsistence, not as a means to accumulate wealth. Immigrant labor in the US is more willing to work hard to earn what they view to be a very high wage.

3) In the US, there is very careful supervision and more pressure to work faster and more carefully, whereas in Mexico, there is a more relaxed environment. Runston and Young cite certain social norms that restrain harassment of the workers in Mexico, and often solidarity among the workers to limit the pace of work.

4) Many more women and children are working the fields in Mexico than in the US. In Mexico, women can take days off to take care of children without penalty. In the Bajio, it is not uncommon to see just women doing

most of the agricultural tasks. Part of this is probably related to the degree of labor migration to the US of the men.

Low productivity of Mexican labor, particularly in agriculture, has contributed to low wages. This low productivity is a function of economic instability, which dampens investment in human and physical capital; of government policies, which have limited public resources available for investment; and of norms and conventions, which prioritize alternative objectives. In the long run, government policy that inhibits investment in human and physical capital will not enhance productivity. The wage levels in Mexico mirror this low productivity, dampening potential synergistic and idiosyncratic capabilities, thereby posing a constraint to long-run competitiveness.

5.5 International Supply and Demand for Asparagus

5.5.1 Consumption and Production Trends

Over the last 15 years there have been tremendous changes in consumption patterns for asparagus. There are two types of asparagus: white, where the soil is mounded to prevent the spears from turning green, and the spear is harvested under the soil; and green, where the spears are harvested when they reach 18-22 cm. above the ground. Most of the white asparagus production takes place in France, Spain, Europe, Taiwan, and Peru (Nichols, 1990). There is increasing consumption in green asparagus and declining consumption in white (Nichols, 1990). This is due to changing tastes and an increase awareness of the importance of green vegetables in the diet. This consumption trend is most evident among younger consumers. Most of the world's green asparagus is grown in the US and Mexico.

Table 5.2. Production of Asparagus (fresh and processed) in metric tons.

	US	Peru	Mexico	Chile	France	Germany
1984	94800	11393	18745	2000	48900	na
1985	106800	16150	24616	2000	51000	na
1986	111500	16796	25000	3000	51100	na
1987	117350	20344	26000	4000	57900	na
1988	121100	26646	27000	5037	58385	na
1989	124750	41904	28100	7179	48820	na
1990	122350	57996	43219	10440	41779	na
1991	112650	64663	37441	17820	38336	15481
1992	117550	96698	38000	16233	41450	24656
1993	110150	107300	33600	18700	na	na
1994	110500	113550	35250	18750	na	na

Source: FAO/Dares in World Horticultural Trade and US Export Opportunities, 9/94, US Embassy Report, Mexico City, 1996.

Asparagus is used for processing as well as the fresh market. There is a trend towards consuming fresh rather than processed asparagus. In the US, the world's largest consumer of asparagus, the percent of total utilization of asparagus that went to fresh in the

seventies was approximately one half of what it is today. Fresh consumption has increased 150% since the early seventies, whereas processed consumption has declined 41% (USDA Vegetable -Fresh Market Annual Survey 1993).

5.5.2 Principal Exporters to the US Market

The US imports asparagus from Mexico, Chile, Peru, Greece, Germany and the Netherlands. In the nineties, Mexico has exported over 60% of its asparagus production to the US. Mexico's main competitors for the US market are Chile and Peru.

Table 5.3. Exports of Asparagus to the US from Major Latin American Producers (metric tons)

	Mexico	Chile	Peru
1990	12815	2497	750
1991	14526	3756	850
1992	20465	3122	6600
1993	10787	2350	10500
1994	25542	2370	12700
1995	22000	na	na
1996p	18300	na	na

Source: National Trade Data Bank and Economic Bulletin Board. USDC 10/96

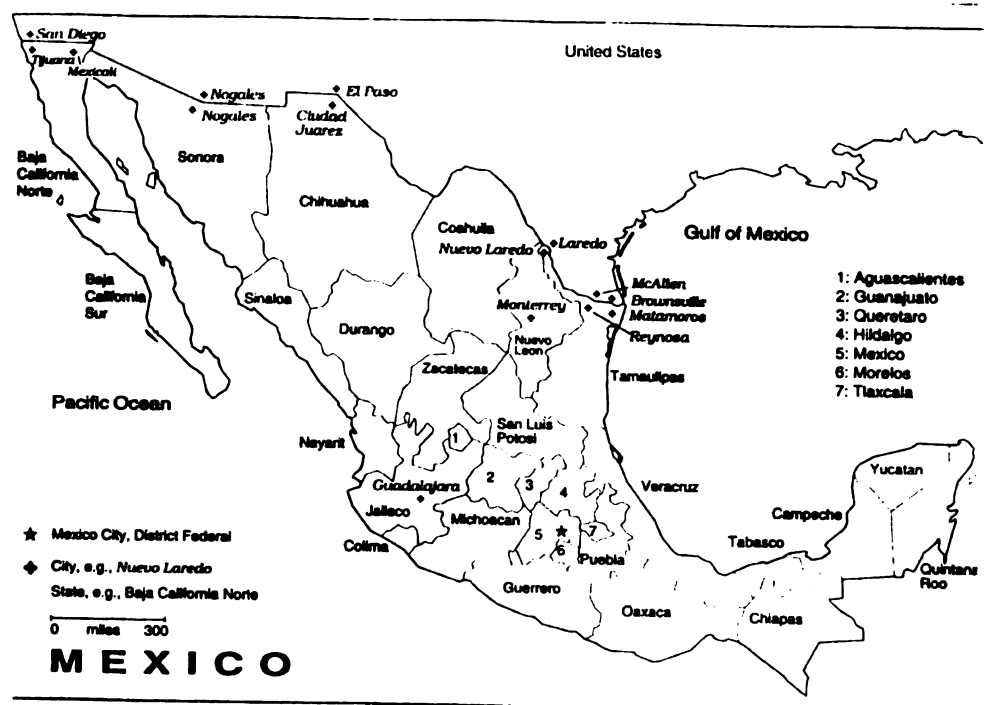
Japan is a large producer of asparagus. In 1993, 11,000 hectares were planted, 90% to green asparagus (Nichols, unpublished document 1994). Japan is also a large consumer of asparagus out of season. The Japanese have increased their consumption of top-grade jumbo from Northern Mexico three-fold from 1990-1995 ¹¹. Mexico sends between seven and ten percent of its exports to Europe. In the sixties and seventies this was primarily white asparagus; in the eighties and nineties it is 90% fresh green asparagus.

¹¹ This figure was given to me by a representative of a large US distributor who has been active in the Japanese market during the last ten years.

Mexico's competitive strength comes from its complementary production season and geographical proximity to the US market. Mexico is able to supply fresh asparagus 7 months of the year. Its closeness to the US minimizes transportation costs and encourages joint enterprises with US firms. Chile is probably the most immediate threat to Mexico's market share in the US. Chile has lower cost of production than Mexico and a reputation for consistently high quality. Chile's cost disadvantage is the tariff regime and transportation costs. Peru's main advantage is that it can produce throughout the year due to its different climatic zones. Peru's costs of production are comparable to Mexico's.

There are two major asparagus producing regions in Mexico which will be described. Northern Mexico refers to the states of Sonora and Baja California. The Bajío includes the states of Queretaro, Michoacan, Jalisco and Guanajuato.

Figure 5.1 Map of Mexico



5.6 A Description of the Asparagus Subsector in Northern Mexico

Climate and sandy soils make northern Mexico an excellent environment for the production of fresh asparagus. Asparagus production began in this region in the late sixties with a partnership between two large US food shipper/distributors and several Mexican entrepreneurs. This partnership yielded rates of return to equity averaging 25% through the eighties. The main production areas are in San Luis-Mexicali in Baja California, Caborca and the coastal areas of Sonora and the newest areas in Villa Constitucion on the Pacific coast. In Caborca, the area under asparagus production has been increasing because of the firm's organizational ability, disease-resistant cultivars, and a growing availability of land that was previously cultivated in grapes. The binding constraint for continued expansion this area is water. The first production area in the North was Mexicali-San Luis. Hectares planted to asparagus have declined. The cause of this decline is unclear, but as the area is dominated with Mexican producers, it may be related to their declining competitive position relative to US affiliated firms¹².

¹² This declining competitiveness will be further developed throughout this chapter.

Villa Constitucion is a new area for asparagus production, which allows producers to harvest asparagus as much as 2 months ahead of Caborca, and well before the increased supply of the California industry.

Table 5.4. Production of Asparagus in Northern Mexico in Hectares

	1991	1992	1993	1994
Villa Constitucion	120	291	521	680
Caborca	4,400	4,660	4,696	4,905
Mexicali-San Luis	3,367	3,297	3,100	2,800

¹ Data collected from SARAH data and revised based on key person interviews in the various states in Northern Mexico.

5.6.1 Agronomic Practices

5.6.1.1 Water Situation

The combination of low rainfall and sandy soils contributes greatly to the superior quality of the northern Mexico asparagus. This environment also requires intensive use of irrigation. The water table is under severe pressure because of the water needed for agriculture. This resource is being managed by the state government, which requires a license in order to drill a well. Licenses have been reported by growers to cost US \$500,000. Currently no licenses are being issued for new wells unless an old well is capped.

It is not uncommon for well in this area to be 200-300 meters deep. The electricity to run these wells is the main source of expense after installation. Until 1992, the national government subsidized electricity for agricultural use. In 1993, due to a well-organized negative response from various grower organizations, the government reinstated a small

subsidy for electricity. The price of electricity is determined by the usage. Higher users pay a higher rate than those with lower requirements. This is part of a policy to appear supportive of small farmers during a time of structural adjustment (Table 5.5).

Table 5.5. Electricity Prices (real peso/kwh)

1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
.18	.17	.15	.22	.19	.21	.37	.45	.47	.41

¹ Prices from 1985-1992 are from The Economic Indicators, Bank of Mexico 1992. 1993 and 1994 prices were collected from key informant interviews and verified by Sonoran Dept. of Agriculture personnel.

The availability of water is the most constraining factor to increasing asparagus production in this area. Because of this constraint, the only way for the area under production to increase will be by replacing other perennial crops such as grapes and olives. This is a likely scenario because asparagus has the highest gross margin of the crops grown in the area. This is different from the Bajio, where declining yields have forced costs up and made asparagus production a less attractive investment.

5.6.1.2 Soil Preparation

No-till bed preparation is common in about 60 percent of production. This is a common practice in the US as it has been found to minimize damage to the crowns. No till is most successful in areas with sandy soils.

5.6.1.3 Varieties and the Productive Life of the Crown.

The ability to transfer varieties from California and adapt them through breeding over the last few decades has been an important contributing factor to Northern Mexico's competitiveness. The UC 157 and Brock are the most common varieties in northern

Mexico. The Brock variety was developed by Warren Brock by selecting and breeding quality stock from hundreds of hectares over several decades. The original seed stock came from the Central and Imperial Valley of California, but it has been adapted to the different areas of northern Mexico for the last few decades. Brock has patented this variety and currently provides growers with seed or stock in exchange for 6% of the final price received by the grower. Brock may also require that all hectares planted with his variety be packed through his packing shed. This has been difficult to enforce. Mexicali is the other major cultivar used in the area. A US-Mexican firm developed this early-producing variety, which has been very successful. Selections were made over 35 years for size, straightness, disease and insect resistance, and a 21-day shelf life. A 10-year marketing contract with this firm is one of the conditions growers must meet if they use the Mexicali variety.

The productivity of the crowns is a function of where they are grown. The production cycle is about 8-12 years. Over-harvesting when the crowns are young and excessive weeds are the main factors causing a field's productivity to deteriorate. In areas such as the Sonoran coast, where producers are trying to force a late fall production, the plant is productive for only 5 -7 years.

5.6.1.4 Disease and Pest Problems

The northern Mexico area is relatively disease free. A semi-arid environment and varieties well-suited for the area contribute to this situation. All asparagus-producing areas in Mexico and the US are infested with European asparagus aphid, rust, worms, and thrips. Field management, appropriate chemicals, and resistant varieties have minimized the damage to yields.

5.6.2 Fresh Market

All of the asparagus production in Sonora and Baja California is marketed for fresh export. Sixteen to 25% of fresh production for the region goes to Japan and Europe, with the remaining markets being in the US and Canada. One distributor is able to move asparagus from Mexico to Japan in 14 days via ship. Japan and Europe command the highest prices and require the highest quality.¹³ Jumbo and extra large go to these markets, whereas the US receives large and Canada takes the smallest spears, often-termed whips. The different regions in northern Mexico supply asparagus at different times. The market window with the highest returns is from October to the second week in January. Once the Imperial Valley in California begins harvesting in early January, supply increases considerably, and there is a significant decline in price. As the more northern valleys in California come in, northern Mexico drops out of the market as the price falls.

Table 5.6. Marketing Windows for Northern Mexico

Region	Marketing Season
Villa Constitucion	Mid-October to December 1.
Caborca	Mid-December to Mid-March
Coastal Sonora	Early December to end January
Mexicali/San Luis	January to March

¹³ The superior grades that go to the Pacific Rim and Europe are priced from US\$ 6.00 to US\$10.00 per box (12lbs) higher than the US grade. Monthly prices vary from year to year. Over the last three years, prices received from the Pacific rim began with US\$ 60.00/box in December and reached a low in March of US\$ 40.00/box.

5.6.3 The Processed Market

There has been very little processing activity in Mexico. Asparagus production and related investments in this area were made to supply the fresh market. There are two freezers that have taken product. One of the major concerns of the growers was that because they export only the highest quality, much of the rejected product is still of high quality, but perhaps an inch shorter than the export market requires. A large amount of these culls could be channeled into frozen spears instead of being thrown away or intermittently delivered to freezers. There are three freezers of IQF (pre-packaged frozen food) that regularly take rejected culls. Two are privately held and one is owned and operated by a large grower's organization with financial assistance from the state of Sonora. Revenue from the culls will enhance the profitability of asparagus production, especially in years of high supply.

5.6.4 Current Structure

5.6.4.1 Size and Number of Firms

There are approximately 8,000 ha. of asparagus in northern Mexico. Almost all of the production is controlled by large growers having over 100 hectares in asparagus. Several firms produce on more than 500 ha. There are 23 firms producing asparagus in this northern area.

Several types of firms are involved in asparagus production: 1) Mexican-owned firms with no long-term relationship with a US or other foreign firm, 2) Mexican-owned firms with a long-term marketing/production relationship with a foreign firm (vertical

coordination), 3) vertical integration through ownership, and 4) US/Mexican incorporated firms.

From 1984 to 1994, the percentage of Mexican-owned firms in the subsector without a long-term relationship with a foreign firm declined 70%. During the same time period, Mexican firms with long-term relationships with predominantly US-based firms increased their relative percentage of asparagus area by 47%. This is a significant change that has largely been due to a change in the relative costs of the two groups, as will be illustrated in the section on economic concerns. The increase in the percent of holdings of the vertically coordinated firms is from the expansion of one firm. The only vertically integrated firm is a US owned firm. This firm was originally established to take advantage of maquiladoro status. This allow the firm to import inputs duty-free because the output, fresh asparagus, was being exported to the US and not consumed in Mexico. This firm also believed that it could lower the cost of production and assure a higher quality product by having direct control over the production process. In 1988, the land needed for cultivation was rented. By 1995, 2/3 of this land was owned by the vertically integrated firm.

Table 5.7. Organization of Production as a Percent of Asparagus Hectares

	Mexican owned, short-term contracts	Mexican owned, long-term contracts	Vertically Integrated, (ownership)	US/Mexican incorporated firms
1984	60	20	0	14
1994	18	42	8	20
1996	8	45	11	23

¹information compiled from key person interviews 2/94. The total percent of hectares do not sum to 100 percent because of missing observations.

Joint ventures between mostly American and Mexican asparagus producers have grown 30% over the last decade, largely because of Mexico's foreign investment law, which prohibited foreign ownership of land in the border areas until 1993. The new investment law, which allows foreign ownership of land, may be having a significant impact, as the growth in joint ventures was flat from 1994-1996.

5.6.4.2 Land Tenure

Mexico's 1992 constitutional amendment on land reform, discussed in chapter 3, expands the legal size of land holdings, allows the sale of ejidos, and the sale of land to foreigners. An individual owner may own up to 100 ha. of irrigated land for row crops. Those who find this limit a constraint to production and who have access to capital may lease the land needed from other land owners or from the ejidatarios. Forty percent of the land used in asparagus production in northern Mexico is leased. These are long-term leases averaging 10 years. This change in land tenure allows for the concentration of land holdings and potential economies of scale. It is important to note that most leases are

negotiated in the long-term without indexing to account for inflation. Landowners real earnings may decline when inflation rates increase unexpectedly.

5.6.5 Economic Concerns

5.6.5.1 Investment and Reinvestment

Most of the new investment in asparagus has taken place on irrigated land that was already in production in another crop¹⁴. Table 5.8 shows hectares of new plantings over the last three years. The new production is occurring in the areas on the coast and on old vineyards that have been abandoned

Table 5.8 New Hectares of Asparagus Production in Northern Mexico		
1992	1993	1994
361	68	69
This was based on SARH database and revised with the assistance of key informants in the asparagus industry.		

Replanting an asparagus field represents a commitment to be in the industry for the next 10 years. Replanting has been occurring at a rate of about 15% percent per year. The new plantings have occurred in Villa Constitucion, the Sonoran coast, and in Caborca. Again, Villa Constitucion is an area with tremendous potential because of its marketing window. Water availability will be the binding constraint to extending the production area.

¹⁴ The main crops in this area are asparagus, olives, grapes, onions, and lettuce. Many of the olive groves were planted 25 years ago. A combination of the increasing cost of harvesting and decreasing demand has led to a decline in the amount of olive groves being replanted. The grapes in this region provide the inputs for a large brandy facility. The grapes are also used for raisins, and some are exported to the US as table grapes. The high cost of water and cash flow problems have resulted in many abandoned vineyards in the region.

5.6.5.2 Cost of Production

The transformation cost of production per ton is greatest for the wholly Mexican-owned firms and lowest for those Mexican-owned firms with long-run contracts with foreign firms (table 5.9). The cost difference between the firms with long-term contracts and US/Mexican joint ventures is very small, as they share many of the cost discounts that come from having access to lower priced US inputs. These two groups are also most likely to be operating largely in US dollars, thus avoiding dramatic increases in prices of foreign inputs that occur with a devaluation.

The cost differential between the Mexican-owned firms with long-term contracts and the Mexican-owned with no long-term contracts is due to two interrelated factors: yields and input prices. The yield/ha. is considerably lower for the Mexican firm without a long-run relationship with a foreign firm (table 5.9). These lower yields can be attributed in part to high and variable cost for inputs such as fertilizer, pesticides, and fuel, which influence the optimal use of these inputs. As noted in Chapter 3, the price of fertilizers, fuel and electricity increased sharply from 1990 through 1994, although electricity was subsidized for lower-using producers in agriculture in 1993-1995. Perhaps the root of this cost differential lies in an increasing unwillingness of Mexican producers who lack long-term contracts to invest in irrigation, new varieties, and management techniques when these producers see themselves as unable to compete with lower-cost US and Mexican firms in association with foreign-based firms. Interviews with these same growers after the 1994 devaluation revealed heightened discouragement from operating in an environment of

severe recession, extremely tight and expensive credit, large debt burdens, and uncertainty about movement in exchange rates.

It is likely that the US-based vertically integrated firm has, in the short run, a higher cost of production than those firms affiliated with US firms because it is relatively new to the industry in northern Mexico, its middle management is largely from the US, and so may be experiencing unfamiliarity with the norms of behavior of the workforce¹⁵. Interviews with middle managers and owners of the other Mexican-operated firms suggest that it takes several years to develop a cohesive and reliable workforce. Many of the laborers in asparagus production come from north-central Mexico. Production managers work to recruit the same crew each year, and in fact the competition for these skilled workers is so high that the producers try to bid workers away from each other. Higher wages are only part of the process. The long-standing relationship between the owner/manager and the work crew contributes to the ability to maintain well-trained labor and to secure their services in the long-term¹⁶. This relationship gives the Mexican-owner/operator a direct and indirect cost advantage over a foreign-managed firm.

¹⁵ Foreign firms have an incentive to bring in foreign managers as it allows them to influence the norms and conventions of the workplace. This is especially true when there is an excess supply of qualified laborers. The success of these foreign managers lies in their ability or power to co-opt labor into compliance. If foreign managers don't have this ability, nationals are used to smooth the transition.

¹⁶ The high demand and relatively low supply of skilled workers in the asparagus subsector account for the unique bargaining position of these workers. This is not true in other horticultural subsectors in Mexico.

Table 5.9 Cost of Production for Four Categories of Growers 1991-1993¹

	US/Mexican joint ventures	Wholly Mexican owned	Vertically Coordinated	Mexican-owned, long-term contracts with foreign firm
Expected yield (t/ha)	4.3	2.8	4.0	4.3
Land preparation (\$/ha.)	202.00	188.50	180.00	187.70
Planting (\$/ha.)	2193.10	2000.50	2172.60	2100.00
Fertilizer (\$/ha.) ²	428.00	560.00	415.00	415.00
Labor for cultivation (\$/ha) ³	196.00	197.00	197.00	196.00
Pest control (\$/ha)	225.00 ⁴	218.00	240.00	220.00
Irrigation/ Electricity (\$/ha)	592.40	570.00	598.00	593.00
Harvesting (\$/ha) ⁵	2892.00	2800.00	2990.00	2890.00
Subtotal (\$/ha) ⁶	6975.50	6401.60	6937.60	6601.70
Costs/ton ⁷	1622.00	2286.20	1734.40	1535.20
Other production costs ⁸	2620.00	2900.00	2204.00	2589.00
Labor/packing (\$/d)	7.50	6.00	7.50	7.50
Material packing (\$/box) ⁹	.69	.70	.65	.45
Transport to border (\$/box)	.21	.27	.18	.18
Border crossing (\$/box)	.15	.15	.15	.15
Broker Commission (% sale) ¹⁰	11%	19% ¹¹	internal to the firm	11%
Other sales cost (% sale)	8%	8%	5%	8%

1. The costs presented in this table are averages within category, spanning 3 years.
2. This includes the labor used in applying fertilizers.
3. This includes weeding and cutting the fern.
4. This number varies greatly depending on the specific marketing arrangement. If the US marketing firm involved purchases the agro-chemicals, then there are savings for the producer. As of the 1994

season, fertilizer can be imported into Mexico without a tariff. These are savings for those producers who are able to purchase in the US. The amount of the savings depends on the international price and price in Mexico. For a historical trend see table 3.6.

5. This assumes daily cutting for 80 days.
6. These are annual costs in \$/ha. from land preparation to harvesting without taking into account establishment costs for the field.
7. These are costs in \$/ha. divided by yield in tons/ha.
8. This includes crop insurance, association costs, interest on loans accrued since 1992, and a social security tax.
9. The price is \$/12lb. box. Materials or the boxes themselves are imported from the US.
10. This is a percentage of US FOB price.
11. This brokerage charge varies depending the firm's relationship with a US shipper/packer/distributor or whether it uses an independent broker. Brokers fees are higher because they receive more variability in quality and do not have long-standing suppliers.

The more autonomous growers have not worked collectively to lower their costs and gain a competitive advantage with regards to US linked firms. The exceptions to this are a few local organizations that assist in mitigating transaction costs for these producers. There are several growers' associations in the region. Some of the organizations service all fruit and vegetable growers and others are for all agricultural producers. Their main objectives are politically based. The organizations lobby the state and national government to improve their position. They also help facilitate issuance of water permits, export vouchers, and help growers apply for credit. There is also a large input cooperative, SOCHADA, which has been in existence for thirty years. SOCHADA started out as a cooperative which pooled producers' resources to buy fertilizer and other agro-chemicals. It is currently a multifaceted cooperative with a dairy, construction services, a machine shop, and many other services. It is the oldest and largest cooperative in Mexico, but is now running into financial troubles. There are no producer bargaining groups or credit associations. This lack of collective action or organizations for more autonomous Mexican firms has made it difficult for them to compete with respect to costs with those firms linked with foreign interests. As the agricultural economies become increasingly integrated, it is

likely that the cost differential will become so pronounced that autonomous firms will leave the subsector or that the differential will push these firms into increasingly cooperative relationships with foreign firms.

5.6.6 Marketing Arrangements

Approximately 85% of the fresh asparagus marketed in northern Mexico is marketed by US firms. The marketing arrangement include 1) long-run annual contracts¹⁷, 2) short-run seasonal contracts, 3) Mexican-US joint ventures, and 4) vertically integrated firms from production to marketing. The completely vertically integrated firms only control about 11% of the production. Mexican firms that have a long-run contractual relationship with US marketing firms or that are in a joint venture with a US firm not only have the lowest marketing costs, but their relationship offers a stability, a buffer from some of the vacillations of the Mexican economy. It is this group of producers who, through their relationship with the US marketing firm, are best able to take advantage of an enlarged market. The autonomous producers with short-term contracts and no long-run relationship with a marketing firm are the least cost competitive. Not only are their direct marketing costs--i.e., broker commissions and transportation--higher but their transaction costs are higher as well. These firms often have to spend time securing cash for planting and harvesting, they have to find and negotiate with a broker to export their asparagus, and they have a less reliable mechanism for ensuring that they are paid for their product in a timely manner. As discussed in the previous section, the costs of many inputs are going to be more expensive if they have to be purchased in Mexico or imported with devalued pesos

¹⁷ Although these contracts are negotiated annually, they often are the formalization of long-standing relationships.

from the US. Since these producers are less likely to be operating in US dollars, when the peso shifts in value, it will affect the autonomous producers terms of trade more profoundly than it would affect the linked producers. The table 5.9 illustrates some of the differences in cost between the groups of producers. The most profound differences are not easily placed in a comparative table. They have to do with the transaction costs of getting access to inputs and to markets. Access and information are closely linked with power, and the autonomous producers have experienced declining market and political power in the last 15 years.

5.6.6.1 Description of Marketing Arrangements.

Marketing contracts with US food-marketing firms, whether short-term or long-term, account for most of the movement of fresh asparagus in the region. The objective of the three dominant firms is to increase the amount of high quality product they market during the season. This is done by providing growers with lower-cost inputs and access to an enlarged market. In the 1992-93 season, the three firms were vying for suppliers, offering competing input packages and marketing services to try to increase the number of new suppliers while continuing a strong relationship with those with whom they had a long-term relationship. By the 1995-96 season, one of the marketing firms had begun to withdraw from the area, the region was in a severe recession, and the package of inputs and services offered to those with short-term contracts declined relative to the 1992-93 season.¹⁸

In the following section we will explore these contractual relationships.

¹⁸ The value of the input package declined by 5%, and the broker commission increased by 1%. This change in the short-term contracts was verified by 3 producers in the Mexicali and Caborca in July 1996.

5.6.6.2 Long-term Contracting.

Often the relational contract involves a joint agreement involving production as well as marketing activities, but it is the marketing of the product which captures the interest of most of the US firms in this region. One of the major differences among US firms in relational contracting has to do with the financing of the grower. There are three ways that US marketing firms provide financial assistance to the grower. The least involvement is for the US firm to advance money for the harvesting and packing of the product. Under this arrangement, the US firm supplies cash for covering the cost of harvesting, boxes and labels. The costs of the materials is deducted from the price the grower receives. This is beneficial to the grower because the US firm buys boxes in large quantities in the US at a lower price and better quality than is available in Mexico. It is beneficial to the US firm because it can control the quantity and quality of the box. The quality of the box is a major factor in the quality of the spears upon arrival to the final destination.

Another US firm advances some of the growers money for all the production and marketing activities. This has been common practice since 1992, and may be a strategy for the US firm to increase its control of product.¹⁹ The third, albeit less common, mechanism is to provide financing is by forming a joint venture. This has become more attractive since the change in the foreign investment law which allows a Mexican-US firm to purchase land along the border and on the coast. Since the change in the law, there have been several new

¹⁹ A representative of one of the firms which is just beginning to enter the northern Mexico market relayed in an interview that the strategy that his/her firm is pursuing is to advance large sums for production activities, get the growers in debt, and then offer to purchase the land. If the firm wants to integrate production and marketing activities, and land is very scarce, this provides a mechanism to acquire land.

US-Mexican partnerships. Although this is a minor form of financing now, it was how the industry originally got started in the early sixties. Two US firms and a Mexican partner invested jointly in the Mexicali Valley. One firm underwrote the production expenses, the other the packing facilities, and the Mexican partners managed the production. Another long-standing US-Mexican joint venture developed a variety of asparagus well-suited for northern Mexico. This joint venture continues to provide other growers with seed or stock, and extracts 6% of final price for the payment. This firm also may require that growers who have used the seed/stock send the product to the firm's packing shed. This has been difficult to enforce.

The US marketing firms charge 11% percent of FOB price-Nogales for their marketing services for those with a long-term relationship with the firm. The firms differ in how the growers are paid for their product. One firm advances 40% of price as harvest goes on, paid weekly during the harvest. The firm markets the asparagus and then pays the grower minus advances, commission, and other fees. The other US firm pays the grower for the product after it is sold in the US, about one week after it is shipped. The firms also differ in how they handle duty drawback²⁰. One firm does not share duty drawback; it believes that it is its premium for participating in the market. The other firm returns the duty drawback to the growers.

Many growers stated that they go with these large US firms because of the security the relationship affords them: the advance of funds, marketing channels, and the certainty of getting paid. These firms can be relied on to pay and to pay promptly. This is important

²⁰ If firms export more to the US (value) than they import, then they are refunded the duty that was imposed on the imported goods from the US. This is called duty drawback.

because there is no protection for the Mexican producer like the PACA (Perishable Agricultural Commodities Act 1930) ²¹ guarantees in the US. A Mexican interest could sue via PACA, but few growers know about this option or how to pursue it.

These long-run relational contracts provide lower marketing and production costs, as many of the expensive inputs are imported from the US at a lower price or higher quality than is available in Mexico. If many of the production and marketing costs are funneled through the US marketing firm, the grower in Mexico can operate largely in US dollars, as can joint venture firms. This is a tremendous advantage, not only because it is less costly, but because it minimizes unexpected variability in costs and prices due to movements in the exchange rate. The Mexican firms have little bargaining power in northern Mexico; there is little negotiation of the terms of the contract. The Mexican firms have very little power, for there are only a few US marketing firms operating in this area. It is difficult for the Mexican firms to develop their own marketing networks into the US. A lack of knowledge of the US network and a lack of independent financing pose high barriers to entry.

A small percentage of asparagus is produced and marketed by vertically integrated firms based in the US. These firms produce fresh asparagus in Sonora, Mexico, and in California. About 600 hectares in Mexico feed these plants. About half of this hectareage is owned and the other half leased. The firms pack and market under different labels for the US, Europe, and Japan. Investment capital and other credit needs are supplied via the US

²¹ One of the key elements of the PACA legislation in the US is that it requires marketing firms to pay for the produce the firm purchases within 30 days. The legislation also requires that a third party must be involved if the product is considered to be of lower quality than was contracted. This protects the producers from the opportunistic behavior of marketing firms and facilitates the exchange between parties who are unknown to each other.

parent corporations. All inputs for production and marketing are supplied from the US. These include seed stock, fertilizer, pesticides, irrigation pipes, and packing crates. The machinery in the packing sheds as well as the trucks that transport the product to the US are imported from the US. The local factors used in production are those that are not mobile, such as water, land and labor. These firms have struggled with the production end of the operation. They have cited their major obstacles to be labor productivity and managerial skill. Without parent firms to subsidize the operations for 4-5 years, they wouldn't have made it. The firms have plans to expand by 100 ha. These firms have maquiladora status. With this status, they are able to import all the inputs to production as long as they export 70% of the product. They easily meet this criterion, as they export the entire crop.

5.6.7 Strengths and Weaknesses of the Asparagus Subsector in Northern Mexico.

Northern Mexico has shown high returns in the production and marketing of fresh asparagus over the last two and a half decades²². These can be attributed to good climatic conditions, dry sandy soils, and varieties that have been bred specifically for the region. The combination of appropriate varieties and arid conditions have minimized problems with disease. There is also potential to expand production on abandoned grape land that already has wells in place. There is growing potential for new land opening on the coast.²³ These new areas will expand the marketing window for northern Mexico by at least two months.

The change in the Mexican foreign investment law may make it more attractive for US firms to invest in asparagus production in Mexico. Foreign investors may now own up

²² There have been years when either low prices or low or yields low have dampened the profitability.

²³ The upper limit to increased hectareage is 1500-2000 because of the limited water supply.

to 100% of agricultural operations in Mexico. However, they may not own the land, but use rights can be obtained through a trust. A foreign-owned Mexican company can own land²⁴. Upon registration with the ministry of Foreign Relations, Mexican companies with foreign participation will be allowed to own land in the restricted border (100km) and seacoast (50km) for non residential purposes (US Department of State, US Embassy, Mexico,1993).

The most binding constraints to expanding the industry are water and access to operating credit. The government hydrologists in Caborca report that the water table in the region is dangerously low and must be carefully monitored. Water is rationed through licenses to drill wells. Since there are no new licenses being issued, growers are seeking ways to conserve the water without reducing yields. One path they are exploring is the feasibility of drip irrigation. Some of the growers who have used drip have reported that it is not useful in dry sandy soils because one can't get enough moisture to the plant before it the water evaporates. As no new wells are being drilled, the land abandoned by grapes and olive growers presents the only opportunity for expansion in the Caborca-Mexicali area.

5.7 The Asparagus Industry in the Bajio

The Bajio is an agricultural area about 200 km. outside of Mexico City. Guanajuato is the center of the Bajio region. The states of Queretaro, Michoacan, and Jalisco make up most of the region. The varying altitude of its valleys, plains, and hills provide for an array of climatic conditions, varying in temperature and rainfall. The temperature ranges from 11 degrees to 24 degrees centigrade and the average altitude is 2,000 meters. The average rainfall is 600 to 700 mm from June to September. Forty percent of Guanajuato, about 1.3

²⁴ A foreign-owned Mexican firm must meet two criteria: it must be incorporated in Mexico and have at least 20% of the firm owned by Mexican nationals.

million hectares, is used for agriculture. Forty three percent of the agricultural land is irrigated. The main crops are corn, wheat, onions, broccoli, potatoes, carrots, chili, asparagus, beans, and lettuce. Guanajuato has 580 agribusiness and food processing companies. The state exported a total of US \$220 million of fresh and frozen fruits and vegetables from 1990 to 1993 (Guanajuato World Trade Commission, 1992).

Asparagus was first planted in the Bajio in 1923. The original intention for planting was to can asparagus for the European, Asian, and US markets. About 70 percent of the production was in white asparagus. As discussed in a previous section, demand conditions changed dramatically over the last few decades and currently only about 3% of the asparagus hectares in the Bajio are devoted to white asparagus, all of which is canned.

5.7.1 Agronomic Practices

5.7.1.1 Soil Preparation

The soil is tilled because of the clay-like structure. If no-till methods were used, it would be difficult for the crowns to emerge. The ferns are cut in June, and an irrigation regime usually begins just prior to harvesting.

5.7.1.2 Water Situation

The water for irrigation is drawn from wells 120 to 150 meter deep. Similar to Northern Mexico, water is a binding constraint. There is no more irrigated land for fruits and vegetables available in the Bajio. If more area were to be put into asparagus, another crop would have to be taken out of production.

5.7.1.3 Varieties and the Productive Life of the Crown.

There are no varieties that have been developed specifically for the Bajio region. Growers are therefore using primarily varieties developed in New Jersey and California. There are several research stations in the region that have been involved in plant breeding for many years, but none of the information has been disseminated to the growers. The varieties that are being used are UC 157 F2 males, UC 72, Viking, and Jersey.

The main pest and disease problems are aphids, rust, and fusarium. The growers interviewed report that these are manageable problems, and producers do not relate the problem of declining yields in the region to disease and pests. Those growers who are associated with US shipper/distributors receive assistance in solving their pest and disease problems. These US firms are concerned with producing a blemish-free product. US firms provide growers with diagnostic expertise and fumigants or pesticides. The cost of this service is usually folded into the brokerage fee. The large vertically coordinated firms have their own agronomists. Although grower organizations that could sponsor research exist, there has been little financial support for research coming from the organizations.

Cultural practices are used which force the asparagus spear out from July through September so that growers can capture a high-priced market window in the US, Europe and Asia. This has led to a shorter productive life of the crown--7 to 10 years--compared to 12-15 years when this technique is not used.

5.7.2 Current Market Structure

5.7.2.1 Size and Number of Firms

There are approximately 2500 ha. of asparagus in the Bajio. This represents a decline of about 500 ha. from 1988 to 1993. Some of this decline has been due to a downturn in the demand for white asparagus, but also a significant portion of asparagus area is not being replanted. There are about 50 growers in the region. Most of the land is controlled by growers with more than 100 ha., which is a significant commercial enterprise.

Table 5.10. Size of Holdings of Asparagus Producers in the Bajio

Size of Holding	Number of Asparagus Producers
Greater than 100 ha.	10
Less than 100 ha. Greater than 30 ha..	15
Less than 30 ha.. Greater than 15 ha.	25

The major growing areas are in San Luis de la Paz, which is cool and has sandy soils; and Guanajuato, which is warmer and has heavier soils. There are 4 packers in the area. All of these asparagus packers also pack other vegetables. Asparagus is usually packed only from July to September. Harvesting begins after California has finished and before Peru and Guatemala begin in October.

5.7.2.2 Land Tenure

Ninety percent of the land in asparagus is owned by the grower (or the immediate family). This is different from land-tenure practices in northern Mexico because the industry in the Bajio is much older and more established. Most of the large growers have

been in asparagus for many decades. Other vegetables in the area are grown on rented land or through a sharecropping type of relationship²⁵.

5.7.3 Economic Concerns

5.7.3.1 Declining Yields

There has been concern over declining yields in the Bajio since the mid-eighties. Some of the factors contributing to the decline in yields have been reported to be a lack of a cold season to facilitate growth, inappropriate field management practices that have led to problems with weeds and insects, water stress, and soil deficiencies from both improper use of fertilizers and depleted soils. These declining yields have caused the per unit cost of asparagus production to increase at the same time as growers have had to face dampened prices and exchange rate uncertainty associated with their exports.

The organization of production and marketing of asparagus is different in the Bajio than northern Mexico. In the Bajio, costs are reflected more in the size of the holding than in the source of ownership or contractual relationships. This is because production activities are largely managed and financed by autonomous Mexican owners. The large producers own their own packing facilities and may or may not sell to a US marketing firm for international distribution. Costs are largely going to reflect the producers' economies of scale and the ability to negotiate terms with either a US or Mexican distributor.

Since the initial austerity program, and through the current structural adjustment program, real prices for fertilizer, pesticides/herbicides, irrigation equipment, fuel and

²⁵ In the Bajio, perennial crops tend to be grown largely on producers' own land, with 10-15% additional lands rented. Annual crops tend to be produced on land that may contain 35-50% of rented land. The quantity of annual's production shows much more sensitivity to price and therefore more fluctuation in the number of hectares under cultivation.

interest rates have been rising²⁶. Wage rates have continued to decline. Overall, the producer price index for agricultural raw products has increased, indicating an increase in the costs of production.²⁷

As of 1994, 90% of asparagus land in the Bajio was held by Mexican nationals. Production activities are largely managed and financed by owners/operators. Smaller producers use larger Mexican owner/operators of packing facilities to pack their product. The larger producers often market their product through a US firm.

²⁶ The price of electricity declined slightly in 1984 due to heavy lobbying from growers. This was election year phenomenon, and real prices have continued to increase about 2% annually.

²⁷ This index does not reflect changes in the price level resulting from the 1994 devaluation. Inflation rates are reflected in the CPI and PPI.

Table 5.11 Cost of Production for Three Categories of Growers 1992-1993 (\$/ha.)

	15 ha.>30 ha.	30 ha.>100 ha.	100 ha.>
Expected yield t/ha	1.7	2.5	3
Land preparation	212.00 ¹	230.00	220.00
Planting	2263.00	2260.00	2267.45
Fertilizers ²	360.00	496.00	520.00
Labor for cultivation ³	192.00	194.00	200.00
Pest control	470.00	587.51	577.00
Other production costs ⁴	2800.00	3517.00	3152.00
Summary costs/ha.	6106.00	6856.00	6990.00
Production costs/ton.	3591.00	2742.00	2184.30
Harvesting ⁵	2148.00	2619.00	2720.60
Labor packing \$/day ⁶	6.70	7.00	7.00
Materials \$/box ⁷	.90	.75	.75
Transport to border \$/box	.65	.65	.65
Border crossing \$/box ⁸	.20	.18	.18
Broker commission % sale ⁹	11%	11%	9% ¹⁰
Other sales cost	6%	11%	11%

This information was collected from surveys conducted in April of 1994 for the 1992-93 season.

1. Seventy percent of farmers interviewed use at least 10% family labor, for which they do not pay the going wage rate.
2. This includes the labor used for fertilization.
3. This includes weeding and cutting the fern.
4. These include crop insurance, association costs, interest on loans accrued since 1992, and social security . Many of the smaller producers choose not to purchase crop insurance or purchase less coverage
5. This assumes four cuttings during harvest and a wage rate of \$7.00/day. Producers with fewer than 30ha. report an average daily wage for harvesting of \$6.10/day..
6. If the producer does not have his/her own packing shed, the usual charge for packing is \$1.50/12/lb. box.
7. The price is \$/12lb. box. Materials for the boxes are imported from the US by most of the US shipper/packers.
8. This includes costs at the Mexican side, which vary week to week, and an ad valorem tax in the US.
9. This is the percent of US FOB price.
10. In general, the larger growers are able to negotiate lower brokerage fees.

5.7.3.2 Reinvestment in Fresh Asparagus

There is some evidence that the asparagus industry in Bajío is shrinking. This may be a short-run phenomenon, in response to perceptions of short-run high cost and lower returns, or a long-run adjustment to price and cost. It is likely a long-run adjustment, reflecting increasing cost/ha. due to declining yields. There are currently no institutions to address the serious agronomic problems in the region. The state and federal governments have not been involved in research and extension since the mid-80's. There has not been a successful effort to privatize research and extension in the region. The evidence of shrinkage is in the decline in asparagus production of 500 ha. from 1989 to 1994. It is predominantly the smaller growers who are leaving production.

Table 5.12. Hectares in Asparagus Production - Guanajuato

1989	1990	1991	1992	1993	1994
3,926 ¹	3,886	3,961	3,004	2,762	2,545

¹ The number of hectares reported by SARH. 1994 is an estimated figure based on grower interviews.

Another factor leading to the decline in hectares is the number of fields that have been in production for longer than seven years. Guanajuato has a stock of about 18% of these fields, which are considered old, declining in productivity. Growers report that only 10% of these old fields will be replanted in 1994.

Table 5.13. Age of Asparagus Fields in Guanajuato March 1994

	San Luis	Irapuato	Guanajuato
New fields less than 4 yrs	20%	15%	10%
Mature Fields 4-7 yrs.	60%	70%	70%
Old fields greater than 7 yrs.	20%	15%	20%

Source: This data was collected during grower interviews conducted 4/94.

It is mainly the smaller growers who are choosing not to replant. The reasons cited are declining yields, increasing cost of production, and low and variable price. The number of hectares for large growers is relatively stable. Large growers intend to keep the current amount of hectares in asparagus. A large vegetable distributor/exporter has recently purchased land from several smaller growers. The strategy of this firm is to increase the volume of product going through the facility, to take advantage of scale economies, to develop more control over the quality of supply, and to assure the supply to satisfy their European fresh market.

5.7.3.3 Opportunity Costs

Asparagus has historically had rates of return on investment in land, working capital, and equipment of close to 25% in the 1970s-80s²⁸. This has changed in both the major areas of production in Mexico, but especially in the Bajio, where current rates of return are 7-10%²⁹. Asparagus production still represents a lucrative investment when

²⁸ Several growers and the FIRA office in Hermosillo, Sonora, reported this rate of return to me.

²⁹ This rate of return represents the mean rate reported from key informant interviews in the Bajio and Sonora.

compared to the other high-valued crops in the region. But it has some characteristics that make it less attractive as an investment. Harvest occurs for three months, and the cash flow needed to keep a work crew and packing-houses operating is large. So unless the grower receives cash advances through their shipper/packer, or is diversified, it is difficult to remain in an operation which has no domestic market.³⁰ Also, since asparagus is a perennial crop, the first 2-3 years yields very little income. In addition, if the fields are harvested too much during the first few years, yields are reduced for the remaining 4-5 years. The problems with cash flow and the years with low income from the new fields, and problems obtaining operating and investment credit, make financing an investment in asparagus more difficult than many of the annual crops.

Table 5.14. Gross Margins for Competing Horticultural Crops¹ - Guanajuato

	Asparagus	Broccoli	Onions	Garlic
Yield (t/ha.)	2.5	9	18	9
Expected price (peso/t)	4,907	870	450	2,000
Income (peso/ha.)	12,267	7,830	8,100	19,000
Costs ² (peso/ha.)	10,749	5,862	6,921	17,497
Expected profit (peso/ha.)	1,518	1,968	1,179	1,503

³⁰ Asparagus production in Mexico has no domestic market. This leaves producers more open to exchange rate movements and makes it more difficult to respond quickly to changes in consumer tastes and preferences.

5.7.3.4 Income Variability and Risk

Sources of variability in asparagus production are weather variations, pests, and disease problems. Movement in exchange rates can also affect income through the price of inputs and outputs. There are also barriers to entry in that the producers have to wait 3 years before they are able to harvest. This makes it very difficult for producers to maintain a sustainable cash flow for several years. Therefore, most producers have either inherited their land, gradually added land over time, or other sources of income. They also tend to be well-established commercial horticultural producers.

5.7.4 Processing Sector

There is very little processing of asparagus in the Bajio. Those growers who originally grew both green and white for processing have plowed under their white asparagus and either replanted with green for the fresh market or planted annual crops. Two of the packing sheds send culls to Campbell's for soup stock and one large grower/shipper/processor packs a small quantity of frozen IQF spears for the US market. Del Monte and Green Giant, both with plants located in Guanajuato, have not canned either green or white asparagus for the last two years. They both report still having inventory in their warehouse that they cannot sell. These two large firms cite declining demand for processed asparagus and the growing demand for fresh green asparagus as the main reason for discontinuing these products. Both Del Monte and Green Giant report that they do not intend to can asparagus in the future. There is a small firm, which packs spears in glass containers for the domestic market.

5.7.5 Marketing Mechanisms

5.7.5.1 Description of Different Packing/Marketing Arrangements

There are three types of marketing arrangements: small growers who channel their product through a packing sheds that have a relationship with a US marketing firm, large growers with their own packing sheds but who contract with a US firm for marketing services, and vertically integrated firms which have their own marketing and distribution facilities. Within these three categories there are variations.

Most of the small growers, those with fewer than 100 ha., deliver their fresh asparagus to a larger grower who runs a packing shed. The firm which runs the packing shed pays the grower a standard price for the delivery³¹. At the end of the season, if the packing facility has made more than the base amount, the amount above the base price is distributed to the growers in proportion to the amount they sold to the shed. The packing shed charges the grower for packing and cost of materials.

The packing shed usually has a contractual relationship with a US marketing firm. In the Bajío, 50% of all fresh asparagus goes through a Mexican-owned packing facility, where it is graded, packed, and cooled. Frequently these packing facilities have a long-standing contractual relationship with a large US produce marketing firm. This US firm provides the packing facility with boxes, labels, and on-site quality control. The US firm then deducts a commission, freight, and taxes from the market price received in the US, and remits the remaining amount to the packing shed. Only about 20% of the product is directly packed and marketed by a US firm. In this case, the US firm rents packing facilities from a

³¹ The average standard price was US\$ 15.00/box in the 1993-94 season.

Mexican firm and handles all the cost associated with running the facility. The US firm packs under its own label and ships to the US, Japan, and Europe. This rental agreement is negotiated each year.

The remaining 30% of fresh asparagus is grown, packed, shipped and distributed by a large vertically integrated food-marketing firm. This firm is based in the Bajío and produces and processes 10 different fruits and vegetables. This firm has brokerage offices in the US and markets under its own label in the US, Mexico, Europe, and Japan. This firm also freezes IQF, 3-5% of the asparagus each year for specific customers in the US. The firm doesn't anticipate the quantity of IQF product to increase beyond the present 5%³².

5.7.5.2 Marketing strategies

Garnering a share of fresh asparagus for marketing in the Bajío is very competitive and has led to some interesting strategies. One of the US marketing firms introduced a program in 1993-94 where the marketing firm would pay a flat rate per box at the packing shed upon arrival of the product. If the price received in the US was higher, then the grower was rebated the amount above the initial price. This was attractive for the grower because it alleviated cash-flow problems, which are most strained during harvest, and it shifted the burden of negative price movements to the marketing firm. In 1994, this strategy cost the marketing firm close to US\$6 million, as the shipments arrived at their final destination in the US with severe phytophthora damage. The marketing firm, in response to this loss, renegotiated, making the agreement based on acceptance of the product to the final destination in US a requirement. This new agreement shifts the quality risk from the US

³² A key informant in the subsector reports an increase of 2% in IQF in 1996.

food-marketing firm back to the grower. In the first agreement, the marketing firm was accepting much of the risk with regards to price and quality. Initially, it would seem that in this contractual relationship, the producers/packers have the power to dictate terms of the contract that are in their favor, i.e. minimize their risk exposure. The marketing firm's strategy was not only to cultivate the loyalty of a large number of packers to ensure a continuous supply of high-quality product, but to become the dominant marketing firm controlling the flow of fresh asparagus to the US. The ability of the marketing firms to change the terms of the contractual agreement so radically suggests that the producers/packers have little bargaining power in this situation. They are largely dependent on the food processors for market access and the financing of harvest and packing.

Another major US food-marketing firm has been increasing its access to fresh product by developing a financial relationship with growers. The food-marketing firm advances money for harvesting and packing, then markets the product. This is beneficial for the grower/packers, especially during times of great economic instability when the domestic interest rates are 50-75% higher than monies available from US firms. Growers who have access to this financing mechanism have a significant cost advantage over grower/packers who don't have this relationship. This relationship with US marketing firms dampens the incentive for the grower/packers to act collectively and to develop higher-order skills (marketing knowledge) that will enhance their long-run competitiveness.

5.7.6 Transaction Costs

As discussed in chapter 2, transaction costs are the cost associated with finding a partner to trade with, negotiating an agreement, monitoring and enforcing that agreement.

5.7.6.1 Finding a Partner

One of the most fundamental costs of exchange is finding a partner. In the Bajio, the grower/packer is the intermediary between small producer and the US marketing firms. These small commercial producers usually have a long-term arrangement with the packer/growers to pack. They may receive financial assistance from the US marketing firm that is marketing their product and occasionally provides technical support. Unless the grower is a large diversified and/or vertically coordinated operation, most growers have a marketing contract, whether informal or formal, with a US based shipper/distributor. This provides them with an assured means to export their product at a relatively good price. The small grower's relationship with the US marketing firm, whether directly or indirectly, also allows him/her to share some of the risk associated with varying price. If production is high in a particular year, and the prices are low, the grower and distributor negotiate price and share in losses. In this way they are able to pool both losses and gains. As we have discussed, the US marketing firm may also provide financial assistance during harvesting and, occasionally, technical assistance. If a grower does not have a formal or informal agreement with either a grower/packer or directly with a US food-marketing firm, his/her costs of production may be much higher. The costs that will likely be higher are the costs of shipping materials (crates) transport to the border, brokerage fees and credit. If a

producer doesn't have a contractual relationship with a broker, then brokerage fees are significantly higher.³³

5.9.6.2 Access to Credit

Those growers that have access to US credit either through their US partners/owners or, if vertically integrated, through their parent firm, have a cost clear advantage over both the firms with marketing arrangement but, more profoundly, by those which rely on either Mexican commercial or concessionary loans.³⁴ The kind of marketing arrangement used also has a significant impact on the costs of many inputs.³⁵

Table 5.15 Cost of Operating Capital by Source 1993 and 1995 (Annual Rate of Interest).

	Marketing Firm 1 ¹	Marketing Firm 2 ²	Commercial Mexico ³	Concessionary Mexico	Commercial US ⁴
1993	10%	3%	23.5%	20%	7.5%
1995	8%	4%	45-50%	42%	7.5-8.5%

1. Percentage reported to me by firm.
2. This low interest rate reflects firm's strategy for extracting loyalty from growers/packers.
3. Commercial, average percentage rate reported by FIRA.
4. This is the yearly average, Bank of America, California.

5.7.6.3 Lack of Investment in Research

As discussed in the Chapter 3, one of the objectives of the structural adjustment process was to reduce government expenditures. One of the outcomes of this decision was to sharply reduce investment in agricultural research and extension. The assumption was

³³ Often the higher brokerage fees are hidden by as special charges.

³⁴ This is assuming that those with concessionary loans repay them under current terms.

³⁵ Those producers who are dependant on commercial and concessionary loans operate almost completely in Pesos. These producers are paid for their product in pesos. Whereas, those producers who have access to US credit are usually receive US dollars for their product.

that viable commercial activities should pay for their own research and extension. This would require commercial producers to act cooperatively to agree on priorities and to fund the research. The result of this divestment has been a lack of basic agronomic research. Agronomic research is particularly important for the Bajio, which is unlike any other agro-climatic region where asparagus is produced and where no direct technology transfer is available. In northern Mexico, climatic and soil conditions are very similar to the Imperial Valley; therefore much of the US technology can be transferred to this region. Since this is not possible for the Bajio, and there is no public provision of research and extension, the agronomic problems are having an increasingly profound affect on yields. The major agronomic concerns of the growers are the increasing incidence of phytophthora, aphids, declining fertility of the soil, and lack of new varieties that are disease resistant.

5.7.6.4 Conclusions

The Bajio has a seasonal market window with very few competing participants and therefore is able to extract high market prices during the late June to September season. The growers are established and have access international markets. Potential competition for this season comes from Chile, whose delivered cost of production is slightly lower than that of Mexico.

The industry in the Bajio is stagnating. Yields, hectares of production and new investments are all in decline. One of the major problems is that a variety hasn't been specifically developed for this agro-climatic environment. This contributes to low yields and the shorter life span of the plant. The margin of profit for fresh asparagus has been so low in the last few years that growers have been unwilling to purchase the inputs needed to

control disease and pest problems. Both of the US marketing firms are looking to Chile and Peru instead of the Bajio as a source of supply in the next few years. If a major breakthrough is made in developing a disease-resistant variety in the next few years, which is unlikely given the public divestment that has already occurred, then the Bajio may continue to be a major participant in the international market. If producers are unable to stop the declining yields, it is likely that the industry will further contract.

5.8 The Components of Integration that have Motivated Change in the Asparagus Subsector

As outlined in Chapter 3, the imposition of structural adjustment on the Mexican economy was a major turning point, moving the economy from an inward, more protectionist economic structure to a significantly more outward and liberalized regime. This chapter has outlined fundamental changes that have occurred in the subsector in the last 10-15 years. Now we can develop the connection between the institutionalization of integration and the changing structure and performance of the subsector.

There are several institutional changes that have played an important role in the asparagus subsector. These new institutions or rules which have significantly altered property rights include the changing role of the federal government, entitlements, foreign investment, and land tenure. Along with changing the structure of property rights, the process of integration (a change in the rules between the US and Mexico) enlarges the market, reduces the tariff and non-tariff barriers across borders and results in a new set of relative prices to signal changing opportunities for the subsector. The impact of these changes in property rights, that is, the particular path of liberalization that Mexico followed, contributed greatly to the financial crisis of 1994 and a serious recession. This

recession caused extreme instability and encouraged firms and producers to create new behaviors and governance structures in an attempt to insulate themselves from extreme movements in costs of production. The desire to create a buffer against macroeconomic shocks and to increase access to a growing market are the critical forces motivating changes in behavior and in the governance structures that evolved. The following discussion will suggest linkages between the institutional change resulting from integration and changes in the governance structures. This will then allow us to see how changes in institutions and governance arrangements affected the structure of the subsector.

5.8.1 The Impact of Changes in the Role of Government on the Governance Structure

In Mexico, especially northern Mexico, contracts tend to be more relational than recurrent, relying on reciprocity or dependency rather than in the ability of a third party to adjudicate disputes. This is a common adaptation in economies with an underdeveloped legal system, where unbiased third parties are perceived to be unusual. Relational contracting also occurs when there are several reasons for the move to long-term contracts that are directly related to the changing role of the federal government and to changing entitlements.

5.8.2 The Changing Role of Public Investment in Research and Extension

As discussed in this chapter and chapter 3, there has been a significant decline in federal support for public investment in research and extension in agriculture. This reduction in expenditures may have its most profound impact for the subsector in the Bajío. The lack of research to deal with serious agronomic problems is driving up the

costs of production and may greatly undermine the presence of asparagus in the region. The argument in support of federal funding for research and extension is that these services are public goods with high exclusion costs. Because of this characteristic of the good, it is very hard to prevent others in the industry from appropriating techniques or new cultivars. Therefore, there are few incentives for a private firm to undertake long-term research. The exception to this is one large vertically integrated firm in Bajío. Individual growers are unlikely to have the financial resources that could make a long-term investment, especially when returns are uncertain and long-run. It is also unlikely that producer groups will evolve that have the cohesion or financial resources to collectively purchase or produce the research and extension skill that they need.

In northern Mexico, where technology and cultivars are easily transferable, it is the US firms, both marketing firms and joint ventures, that are the vehicle of technology transfer. The lack of domestic capacity to carry out research and extension strengthens the dependency of Mexican producers on foreign firms for technology transfer.³⁶ The access to this technology heightens the attractiveness of long-term relational contracts with US firms; moreover, it puts those growers without this access to new technology at a competitive disadvantage.

³⁶ Long-term contracts are the only way that growers can get access to technology. It is difficult to 'borrow' the technology; the grower would have to steal the root stock. It is therefore rather easy to maintain barriers to entry to those growers who do not develop contractual relationships.

5.8.3 A Change in Entitlements and the Effect on the Choice of Governance Mechanisms

Some of the more difficult adjustments for the industry have been those that follow from the changing role of the federal government, a change in property rights, specifically entitlements. The elimination of subsidies on many of the inputs to asparagus production is a change in entitlements, which is reflected in price and access to inputs. Firms in the subsector that have access to US operating and or investment capital have a significant advantage over autonomous firms. This is especially the case in times of economic austerity where tight control over the money supply has led to prohibitively high interest rates in Mexico. Not only are interest rates high, but the transactions costs associated with securing a loan via the domestic banking system are very high. The prices of many other inputs have risen dramatically as subsidies were eliminated in the eighties and nineties. This has increased the cost of production for those that are reliant on domestic sources of the inputs or who must pay for imported inputs with pesos. The relational contracts between Mexican commercial asparagus producers and the US food-marketing firm allow the Mexican grower to purchase credit, fertilizer, pesticides, equipment, and packing material at prices below the market cost in Mexico. Not only is the real price of these US inputs lower, but the relationship with the US marketing firm also lowers the transaction cost of purchasing the inputs.³⁷ Many of these relational contracts also stipulate an allowance for ‘pick and pack’, that is, the funds to pay for harvesting and packing cost. These direct cost advantages that come with a long-run

³⁷ Costs of many inputs are higher in Mexico for several reasons. An underdeveloped marketing mechanism for those producers not involved in either a cooperative or a contractual relationship makes the cost of importing higher and the reliability of supply lower. Also, economies of scale lower the per unit costs for US agribusiness firms, which then pass on those lower costs to affiliated growers.

association with US firms leave the autonomous firm uncompetitive. If an autonomous firm goes through a broker each season, then each season, the terms of the contract have to be negotiated. There is no financial support, and no access to less expensive inputs.

In years where supplies are short, the autonomous grower is in a good position to bargain for a high price, and will probably receive a price higher than those in long-term contracts, but the reverse is also true: years of high supply will likely result in lower prices. The contractual relationship acts as a coordinating arrangement, smoothing out some of the large swings associated with both external shocks and policy-induced adjustments. Because asparagus has no domestic market, access to the international market is essential. A relationship that minimizes the transaction costs of entering the international market will add another layer to the firm's competitiveness and therefore bind the Mexican producer closer to the US marketing firm.

Another advantage of relational contracting for the asparagus producer is the ability to operate in US dollars. The US food-marketing firm provides inputs to the grower, markets the product and then returns to the grower the amount received for the product in US dollars minus the costs of inputs and the marketing services. This dollarization is advantageous to the grower because it greatly reduces the uncertainty associated with exchange rate movements and other macroeconomic policies.

The acreage controlled by vertically integrated firms in northern Mexico has grown by 11% over the last 12 years. In this area, the vertically integrated firm is US-based. The growth in vertical integration as well as joint ventures has occurred largely because they share some of the same advantages as the firms with relational contracts.

The motivating advantages are lower transaction costs--fewer resources expended to negotiate, monitor and enforce contracts. Both forms of governance operate totally in US dollars (except for labor) and have maquiladoro status. Therefore, there are no duties on imported inputs from the US (since the total product is exported back to the US). The integrated firm has direct control over the quality of the product. In the Bajio, the largest vertically integrated firm is large enough to either import inputs from the US or produce the inputs itself. Not having to rely on the domestic market for critical inputs has greatly enhanced the stability of these firms.

5.8.4 Changes in Foreign Investment Laws and Land Tenure

Liberalizing the foreign investment laws, combined with changing the constitution of Mexico concerning land tenure, would likely result in increases in joint ventures along the border and in foreigners increasing their land holdings either directly through ownership or indirectly through renting ejidos lands. But this doesn't seem to be happening yet. This may be because many of the advantages associated with ownership can be realized without making large and perhaps risky investments in fixed capital. As the economy began to unravel in September of 1994, it is not surprising that there hasn't been more foreign investment in land. Since Mexico is still in serious recession and experiencing significant political backlash, many investors contemplating investment in fixed capital may hold off until the political situation stabilizes. Likely the first movement we will see will be California growers relocating production centers in northern Mexico. It is unlikely that foreign firms will be interested in tying-up capital in asparagus land in Bajio. There are just too many agronomic problems, and in the long-

run, there is no need to continue to source asparagus from this area, as supply can be procured from Chile and Peru.

5.9 Impact of Governance Arrangements on the Structure of the Subsector

In the last 12 years, the percentage of hectares in asparagus owned by autonomous producers in northern Mexico has declined by 86%. During this same time period, the percent of hectares cultivated by those with long-term contracts has increased by 55%. Autonomous producers have been leaving the subsector, and those with relational contracts with US firms have been increasing their hectareage³⁸. This has resulted in a more concentrated subsector, fewer producers with larger holdings.

The growth of long-run contracts has also created barriers to entry. It has taken approximately 5 to 7 years for the current growers and US firms to establish relational contracts. Given the established advantages of scale economies, low cost inputs and access to the US market, it would be difficult for a new entrant to come in and be cost competitive. The degree of concentration existing in the subsector in this area will likely maintain barriers to entry. The exception could well be US interests purchasing or renting land in northern Mexico with existing access to markets and inputs.

How does the growing incidence of relational contracts affect the power relationships in the subsector? Market power is manifested in the ability to influence the terms of exchange. The US food-marketing firm offers a service which allows producers

³⁸ Based on interviews with producers and other informants in the subsector, since 1982, 20% of the autonomous producers have developed long-term contractual relationships with US agribusiness. The remaining 80% have left the subsector.

to insulate themselves from the impacts of difficult economic events and provides them with access to the US market at a lower cost than if they didn't have the relationship. The producers have little bargaining power. Two illustrations of this lack of power are: 1) The inability of Mexican producers to include indexing into their long-run contracts with foreign food-marketing firms and, 2) the unwillingness of foreign food-marketing firms to share the risk of phytophthora damage with the grower. The entire risk is now borne by the grower. Based on interviews with the growers in the Bajio, the phytophthora damage was not expected by the growers (i.e., it was not a case of moral hazard where the growers were trying to hide the incidence of the disease. Phytophthora may not be visible in the field but develop several days after cutting while in storage). So over a large number of transactions, it is average quality that counts. The occasional diseased product is a cost of production. The question is who is in the best position to bear the risk? In terms of expected utility, it would be the group with adequate capital. The expectation would be that the risk would be borne by the firm that could bear it the cheapest. The foreign food-marketing firm that asked the grower to bear the risk would have to compensate the growers because of their higher cost of credit³⁹. This has not been the case in the Bajio. Although we know asymmetric power exists the question is will this aspect of the relationship change? Growers may lose what little power they have if these foreign food-marketing firms have contracts with a significant proportion of the producers. Growers could exert leverage if they bargained collectively. The power to negotiate the terms of contracts will depend on the behavior of both actors. The US firms

³⁹ This analysis was drawn from discussions with Allan Schmid, November 1997.

can collude and agree to divide the suppliers (producers) among themselves or they can compete for the largest share of suppliers. If they choose to compete then the suppliers (producers) will have some bargaining power. The suppliers' behavior will also influence their bargaining strength. They could negotiate the terms of their contracts collectively or negotiate as individual firms. Currently producers are developing their contracts individually. Their driving force is the need to secure inputs and access, and the marketing firms are anxious to develop a long-run relationship with those growers who are able to produce the highest quality consistently.

5.9.1 Structure and Performance

The structure and therefore the performance outcomes of the asparagus subsector in northern Mexico and the Bajio is different enough to discuss them separately. The asparagus industry in the Bajio is not growing; investment and number of hectares in production is declining. The subsector is older and is part of a larger Mexican-dominated horticultural sector. US food-marketing firms do play a role in the Bajio, especially in marketing the product, but a significant percentage of the asparagus is marketed by large Mexican-owned horticultural firms. The results have been that this area is less dependent on US marketing firms. But the lack of investment in solving serious agronomic problems in the Bajio has left the industry increasingly uncompetitive. What has maintained the industry has been its unique marketing window. This window is increasingly being filled by Chile and Peru.

The structure in northern Mexico can be characterized as increasingly more concentrated, exhibiting economies of scale, and having significant barriers of entry.

Does this developing structure enhance the subsector's competitiveness? The new institutions and organizations which have molded the structure have enhanced short-run competitiveness. The sector has become relatively more price competitive in northern Mexico. The ability to produce and deliver a high quality product at a relatively low price is largely a function of the producers' relationships with US marketing firms. This region has also developed a more coordinated subsector where it is attractive to make investments because those with access to US markets for both inputs and output are sheltered from the economic environment in Mexico. The US food-marketing firm is able to insulate the asparagus subsector because the entire product is exported and does not respond to changes in Mexican domestic demand. The important question is whether this price competitiveness and enhanced coordination is a long-run phenomenon.

Currently the situation is beneficial to both producers and foreign marketing firms. Two events may change this relationship. If the US food-marketing firms gain monopsonistic control of the asparagus supply in northern Mexico, then there is the potential that the terms of the relational contracts will become less advantageous to the Mexican producers who have few alternatives⁴⁰. The interdependency which is making these relational contracts attractive now may become less so if the power relationships are altered.

In the long-run, it is possible that the effects of economic stabilization and liberalization in Mexico will be lower international prices for the inputs of production. If this situation evolves, then asparagus producers will be less dependent on US food-marketing firms for inputs. It is also possible that an outcome of economic integration

⁴⁰ If there were a significant expansion of demand for green asparagus, then producers would likely have more bargaining power. Based on the data for the last ten years, a large expansion of demand is unlikely.

between the US and Mexico will be that Mexican producers develop the information and skills to bypass the US marketing firms. But the current situation does not lend much support to this possibility. The asparagus subsector is not developing the advanced factors necessary to maintain competitiveness in the long-run. This doesn't suggest that some of the producers in the subsector are not running profitable enterprises. Those producers with relational contracts are profitable at least in the short run. But if the benchmark for competitiveness is what was previously defined as Schumpeterian competitiveness, that is the dynamic ability to respond to changes in technology, organization and production then the subsector may experience difficulties in the long-run. Mexican producers reliance on contracts provides no incentive for the subsector to develop backwards and forward linkages in the agricultural sector to support either improved domestic supply of inputs or marketing expertise. The multinational agribusiness firms are filling missing markets through different contracting arrangements and by importing key inputs and exporting the total product through a US dominated marketing chain. If these missing markets are dominated by multinational firms, with no enhancement of domestic capacity (backward and forward linkages), then this asymmetric information and expertise may well leave the producers in a perpetual situation of dependency and compromise their long-run competitiveness.

5.9.2 Conclusions

The asparagus subsector has undergone several changes in the last 15 years. These changes include a movement from participants who were more autonomous (wholly Mexican owned) to more vertically coordinated participants. This is largely

because vertical coordination whether it be through US/Mexican corporations or US vertically integrated firms offers lowers the cost of production for both the US firm and the Mexican producer. Another significant structural change in the subsector that was discussed was the increase in contract farming. This is not an unexpected development.

When a large well-developed subsector like US food-marketing becomes involved in sourcing food from a subsector characterized by missing or poorly functioning markets, the multinational corporations are able to fill the missing markets. This is enables both the US food-marketing firm and the producer in the less developed economy to lower their costs of production (both transaction and transformation costs). The coordination allows the US firms to source globally, ensuring relatively inexpensive products with limited investment in capital. The producers in Mexico gain access to a very large market, and the opportunity to avoid the negative effects of vacillations in exchange rates.

The query raised in this discussion has been whether the process of integration over the last 15 years enhanced the competitiveness of the Mexican asparagus subsector. The answer depends on what segment of the subsector is being examined. For those producers with contractual relationships with US food-marketing firms, especially in northern Mexico, the answer is yes. Several factors contribute to this competitiveness: the ease of technical transfer, proximity to US markets and a long history of sourcing asparagus from this region. Changes in Mexican macroeconomic policy have also facilitated the economic integration that has contributed to the competitiveness of this group of producers. Changes in entitlements have removed low-interest loans and

subsidized inputs, changing the opportunity cost of operating independently and pushing producers into contractual relations with foreign firms. The disinvestment in public infrastructure has also created a vacuum that the foreign firm can fill. Economic destabilization has played an important role in stimulating coordination with foreign firms. The economic instability of the last 15 years but more profoundly since 1994 has dampened domestic investment in the subsector and led to deteriorating backward and forward linkages (these linkages are also deteriorating because of disinvestment in public infrastructure). Important institutions and organizations are not being developed because their functions are being filled by foreign firms (e.g. producer, marketing cooperatives).

Is the enhanced competitiveness of the firms in northern Mexico sustainable?

With the caveat that a competitive position is dynamic, the answer is yes. This is most likely if the ancillary capabilities in the economy continue to be underdeveloped, that is as long as national competitiveness is encumbered by economic instability and macropolicies are pursued that facilitate dependency on foreign multinationals.

There is an asymmetric power relationship between foreign food-marketing firms and Mexican asparagus producers. This asymmetric relationship and a slowdown or stabilization of demand for fresh asparagus in the major markets will further weaken the bargaining position of Mexican asparagus producers. If foreign food-marketing firms become more monopsonistic, that is the foreign firms involved collude, divide the market for suppliers, and set prices, then the long-term prospects for developing domestic competencies will be poor. This possible sequence of events could leave Mexican producers trapped in the production of low valued-added products. Now if there is a

growing demand for asparagus in the international market, and US food-marketing firms have difficulty securing adequate supply, then asparagus producers in Mexico will have more power in negotiating the terms of their contracts. What is it that will enable producers to go beyond producing just the raw product, to be involved in the international marketing of the product, and hence receiving the returns from a more advanced factor? The argument of comparative advantage is that the foreign firms should provide the inputs and market the product because they can do it more cheaply. If Mexican policy facilitates this process without developing the capabilities of the sector at the same time, will there exist the necessary conditions for the Mexican agricultural sector to develop the more advanced factors which will increase the likelihood of long-run subsector competitiveness?

Chapter 6

The Synthesis

6. Introduction

This discussion will begin with a summary of the key issues presented in each chapter and how the issues form a cohesive study. The second section will address the critical methodological issues that this institutional framework incorporates that haven't been captured by more traditional methods. This discussion includes a general model of behavior which is applied to macroeconomic phenomena and to behavior within a subsector. The third section will discuss the policy implications of the conclusions from the chapters on macroeconomic policy and the asparagus subsector, focusing on the changing role of the state. The final section will outline important variables to continue to monitor, reflecting the commitment of this approach to examine long-run economic variables and relationships. Questions for future study will also be addressed.

6.1 The Overview of Key Issues

The primary objective of this study has been to determine if the process of integration between a large well-developed economy and a smaller less-developed economy has led to the enhanced performance of the less-developed nation. Specifically we have looked at how the process of integration between the US and Mexico has affected the national and subsector competitiveness in Mexico. This assessment involved how macroeconomic policies and the process of integration have influenced competitiveness at both the national and subsector level. National competitiveness as defined in this study provides the foundation for analyzing subsector competitiveness, particularly as it focuses on long-run structural changes and the benefits and costs borne

by participants in the subsector. The conclusion from this study is that the particular path of liberalization that Mexico followed to develop an integrated economy with the US has resulted in extreme economic instability, hindered economic growth (a decline in public and private investment, and depressed demand as compared to historical trends) and has made Mexico increasingly vulnerable to exogenous shocks. Each of these phenomenon has had a detrimental effect on national competitiveness and hence on subsector competitiveness. However, it should be noted that the asparagus subsector is somewhat protected from at least the short-run effects of instability because it is highly integrated with the US industry and it has no domestic demand. The entire crop is exported to the US, Europe and Japan. The subsector is also protected because of its integration with the US. This integration isolates the subsector from not only the instability of domestic demand but also from instability and underinvestment in the supply of the factors of production. But if we end the story describing only this short-term phenomena, we miss the more subtle but profound changes that are occurring in the structure of the subsector in response to the direct pressure from the US agribusiness, the indirect pressure of macroeconomic policies, and from intra-national dependencies.

6.2 Methodological Issues

A model of behavior is developed which allows us to trace how changes in key environmental variables exert pressure on the collective and individual mental models, leading to the creation of new institutions, where institutions are seen as evolving relationships with changing economic, cultural and political rules. The inclusion of power into the model of behavior allows us to explore intra-national, corporate, and market power---sources of pressure which affect the evolution of institutions and allow us

to explore outcomes when there is an asymmetric power relationship. Why is this important? Studies of the process and impact of integration, by not explicitly acknowledging power, assume it has no impact on outcomes. By explicitly identifying the source of power in a relationship and how power is institutionalized in that relationship, the model determines who will benefit from a relationship and how sustainable that relationship (institution) will be.

How do we see intra-national, corporate and market power manifested? If this power is used to meet the objectives of the more powerful party, then the objectives of the weaker party have no voice and the stronger will impose their agenda on the weaker, forcing the weaker to accept a relationship that may not be in its long-run interest. Understanding how power influences the formation of institutions provides insight into the particular path of liberalization Mexico has taken and the factors that may alter this path in the short and long-run.

The subsector model is a special case of the general model of institutional change. This model allowed the examination of governance arrangements within an evolving institutional context. One of the key variables in the model was power, which played an important role in determining property rights, and in creating and maintaining conventions and norms of behavior that govern the interactions of participants in the subsector (e.g., whether technology is adopted). Another environmental pressure that was important in understanding governance arrangements is the nature of economic change – systemic or autonomous. The inclusion of both power and the nature of the economic change in an economy has contributed important insights into the dynamics of governance arrangements in this study. These variables become more concrete in the

context of the intrinsic and ancillary core capabilities within and between firms in a subsector.

Governance arrangements reflect in part the strength of the firms' core capabilities relative to those in the market. Examination of the core reveals the firm's ancillary and intrinsic capabilities, illustrating the synergy between national and subsector competitiveness. The development of the ancillary core reveals the effectiveness of the government in filling the void of missing markets, stewardship of common pool resources, and investment in infrastructure. If there is active public investment in these tasks, there is a tendency to see more involvement of nationals and heightened private investment nationally as well as in the subsector. If there has been disinvestment in infrastructure, foreign involvement may fill some missing markets, but it will be based on the foreign firms' agenda and may not reflect synergistic opportunities. Foreign firms have cheaper access to resources due to economies of scale, technology, or well functioning markets in their home country. Because of these advantages, foreign multinationals are able to handle uncertainty and they have access to information to make more informed decisions and minimize the impacts of exogenous shocks. This gives them more power in determining the trading relationship.

Ancillary capabilities are a barometer of the role the state plays in developing and maintaining infrastructure. If governments abdicate this role, costs of production rise, which will hurt both national and subsector competitiveness. Foreign investment can fill at least part of this gap. When this happens, there is little incentive for nationals to develop backward and forward linkages in the subsector. The cost structure of the subsector then becomes dependent on linkages provided by the foreign firms.

How do we predict the governance structure that will evolve from this model?

The important variables are the nature of interdependence, power/asymmetric information, firm specific expertise, and well-defined property rights. We have observed predominantly recurrent and relational contracts. This is because firm-specific expertise--where firms modify their assets to accommodate each other--will create interdependencies. The nature of the interdependencies will be important—which firm has the ability to impose the terms of trade on the other? Clear appropriability will facilitate recurrent or relational contracts. Relational contracts are more common when partners can leave some elements of the relationship unspecified, allowing slack to cope with unexpected events.

6.3 National Competitiveness and Public Policy

The process of integration between Mexico and the US has led to several important policy shifts. What we want to do is synthesize how those shifts have influenced national competitiveness and then discuss policy alternatives that will enhance the process of long-run national competitiveness of Mexico.

Integration between Mexico and the United States has influenced the political ideology prevalent in Mexican policy making. In last 15 years we observe the state abdicating a major role in coordinating economic growth and social infrastructure to the ‘market’. This shift in responsibility occurred as part of a neoliberal ideology that contends the ‘market’ is better able to articulate social and economic preferences than the state. This new ideology facilitated the process of integration that required a changed role for the state in the economy. This new policy regime is articulated through fiscal, monetary, and commercial policy as well as directly through changes in legal codes. One

of the issues examined in this study was how integration has reformulated macroeconomic policy so that the market plays a greater role in laying the economic foundation for long-run growth and stability. If this reformulation has been successful, then the policy outcomes that should be observed are growth and stability, which result in enhanced national competitiveness.

How have the pressures of integration translated into macroeconomic policy?

With regards to fiscal policy we have observed changes in public expenditures leading to a smaller public sector. The most notable outcomes have been reductions in public investment in infrastructure, in a social safety net via food subsidies, and the privatization of state companies. This reduction in state expenditures has allowed Mexico to direct more monies to reduce debt burdens to international and US banks.

Integration, but specifically the linking of currencies through an exchange rate band, requires that monetary and fiscal policy between the countries need to be coordinated. This means that levels of inflation and that ratios of debt to GDP in the two countries are similar. This has not been the case between Mexico and the US. Consequently, there has been continued pressure on Mexican exchange rates to become under or overvalued. The Mexican state has controlled the value of the peso for most of the last 15 years as part of a policy to attract foreign investment—especially during a time of significant financial instability. The control of value of the currency provided a means for the government to stimulate or dampen demand for imports –an important political tool at election time.

Legal institutions have facilitated the process of financial liberalization, that is, the exposure of the domestic financial system to world capital markets. This is an

outcome that was institutionalized by Mexico through changes in the foreign investment laws governing foreign direct and portfolio investment. These laws diminished the role of the state in regulating international capital flows.

Changes in commercial policy, which include the reduction of tariff and non-tariff barriers, go hand in hand with the changing role of the state. Privatization of previously state-owned enterprises, the elimination of subsidies, and the change in the constitution of Mexico concerning land tenure are examples of this link between a more liberal trading regime and a diminished role of the state in crafting economic policy.

6.4 The Elements of Integration and Macroeconomic Policy

When looking at long-run national competitiveness there isn't one variable or even a series of specific variables that having reached a critical value, makes a nation is competitive. Instead, national competitiveness is an evolving process which involves creating a political and economic environment that stimulates sustainable growth and stability in the economy. The sustainability of this process is predicated on the degree to which the larger population shares growth and stability. We have had approximately 15 years from which to evaluate Mexico's success in this process.

Trading patterns between countries are determined largely by their comparative advantages in production, which is influenced by their relative endowments. We want to concentrate on how these endowments change in the long-run. Is the process of integration with the US encouraging Mexico to develop the 'advanced factors' or 'ancillary core' necessary to lead it towards increasing competitiveness? Or is Mexico's path towards growth and stability likely to lock it into dependency, creating a dualistic economy with a small advanced sector which has invested in human and physical capital

but a large sector of the economy where there has been no investment, therefore no improvements in productivity? Distribution matters in a discussion of long-run competitiveness. It matters because if people are not participating in the growth, that is, people continue to be poor, the economy is necessarily less successful than if people are improving their standard of living.

Investment in research and development can increase the level of technology and change the productive endowments of a country. Education and training can raise the skills of the labor force, and trading patterns are therefore dynamic. If Mexico's labor force remains largely unskilled, this will promote the growth of industries that require cheap labor and increasingly trap Mexico into a developing country pattern of primary exports and slow economic growth.

How does Mexico's position as a source of cheap labor for the US hinder its national competitiveness? The problem is that a reliance on a low-skilled labor force does not lead to innovation and new technology. In sectors where low skilled labor is plentiful and used intensively such as agriculture, there is little incentive to invest either in the capital that would make labor more productive, or in the worker's human capital. Instead, there is an incentive to develop a set of rules that will ensure an adequate supply of low-cost labor.

It is therefore essential for long-run competitiveness that macropolicy facilitate broad based growth and stability. Mexico must determine the rules of integration to ensure that the 'advanced factors' or 'ancillary core' are being continuously upgraded. This entails investment in human capital, in knowledge and in physical infrastructure.

Much of this investment is in public goods, which have high exclusion costs and provide positive spillovers both socially and economically.

The state and private firms need to invest in research and extension in formal and informal education. They need to develop the capacity within their own country to move beyond relying heavily on the export earnings of primary products and to develop backward and forward linkages between and within the sectors. This involves developing a domestic capacity to sustain growth, not in isolation from the international market, but with a set of competencies that will ease them out of a dependant relationship. Monies allocated to public sector investment have an opportunity cost. To take advantage of the longer run positive spillovers associated with investment in public infrastructure Mexico may have to renegotiate its debt burden. The cost of not making investments in infrastructure may be to diminish future productive potential and dampen Mexico's dynamic competitiveness.

The other important component of long-run competitiveness is stability. Without stability, growth is dampened because investments in human and physical capital are postponed. So what kinds of macropolicies facilitate stability? One component is a monetary policy which is capable of smoothing fluctuations in aggregate demand. This assumes a well-functioning banking system and credit market. The separation of control of the money supply from the political process is essential to avoid inflation and wild vacillations in exchange rates. If currencies are going to be tied, it is necessary to create the institutions to either manage the float or tie fiscal and monetary policies of the countries together.

Fiscal policies are not as useful as monetary policy in modulating demand and have a more indirect effect. Legal codes which create rules that are expected to endure, are enforceable and similar across countries are an important component in facilitating integration and national competitiveness if it is perceived that these rules will minimize the risk associated with cross-border trade and enhance the willingness to invest in productive capacity.

6.5 Macroeconomic Policy and National Competitiveness

We have outlined how integration is facilitated by macroeconomic policy and the role that policy plays in creating long-run national competitiveness. Now let's evaluate how well Mexico has developed its national competitiveness and discuss alternative policy options. Detrimental to Mexico's growth and stability in the last 10 years has been the particular path that Mexico has taken towards financial liberalization. This has resulted in a destabilizing recession/inflation trap. The recessions have cut incomes and effective demand, made it difficult for firms to plan for the future, and have contributed to the dollarization of many segments of the economy.

The state should provide more oversight of the amount of short-term portfolio investment that flows into Mexico, at least until the institutions within the economy can be developed to minimize the destabilizing impact of radical movements of international capital flows. The current 'hands-off' approach to the regulation of speculative investment leaves Mexico vulnerable to the repeat of the 1994 financial crisis. Mexican policy makers face the challenge of minimizing the volatility of capital flows that have led to damaging exchange rate crises while also taking advantages of access to capital inflows. One of the major policy challenges is combining macroeconomic policies that

stimulate growth and at the same time don't lead to an over-valued exchange rate and excessive growth of aggregate demand.

The intention of peso band with the US dollar is to make the peso and Mexican bonds attractive investments to foreigners. The troubling side effect is that it has allowed the peso to become overvalued and, as we have seen, when there is no separation of currency policy and politics, an overvaluation can lead to balance of payments problems and a financial crisis.

It has been destabilizing for Mexico to tie the Peso to the US Dollar. To tie the two currencies without jeopardizing national financial stability requires monetary and fiscal policies in line with the US—a difficult and perhaps not appropriate objective for a less well developed economy. If Mexico decouples, at least partially, the value of the peso from the US dollar, and allow the peso to be more free-floating, market forces will likely result in a lower value of the peso, and more volatility, especially during the short run adjustment period. There will be smaller flows of foreign capital and therefore domestic investment will be more reliant on domestic savings. This de-linking may well lead to lower growth rates in the short-run but more stable rates in the long-run. More importantly, this strategy will avoid the need for dramatic re-valuations.

Why hasn't Mexico significantly changed the rules of financial liberalization and exchange rate management since the 1994 crisis? The inflows of foreign capital allow Mexico to finance a current account bloated with consumption goods. The winners from this policy are those who can afford imported consumption goods, and who can insulate themselves from depression/inflation. This benefits primarily those who operate in dollars and who sell their product largely on the international market. The losers are

wage earners, who see the real value of their wages cut in half from inflation, the middle class entrepreneurs who face rising costs of production and declining demand, and the lower economic classes, who have declining access to earning and employment opportunities. The long-run costs of this instability is high, because it reduces both domestic and foreign investment in human and physical capital, and further erodes the bargaining position of Mexico vis-à-vis the international financial institutions and the Mexican producer/worker with respect to foreign firms.

6.6 The Role of Public Investment and Growth

Investment is important for determining Mexico's capital stock and therefore future growth and employment. Without going back to an import substitution strategy, there is still an important developmental role that the government can play in facilitating the optimal functioning of a market economy, that is, providing for the essential social and economic infrastructure. The severe reductions in public investment through the 1980's and continuing severe cuts in the financial crisis in 1994 have resulted in reductions in the amount of investment in the country's transportation systems, power and sanitary facilities.

There is an extensive literature which has demonstrated the complementary effect of public investment on private investment and that in fact suggest that failure to make these public investments may well undermine efficiency gains associated with trade liberalization (Munnell, 1996 and Barro, 1990). When we examine the participation of the state in capital formation as a percentage of total fixed capital formation of the last 20 years, the coefficient goes from an average coefficient of participation of .41 1980-85 to

.29 1986-90, and then plummeting to .18 from 1991-1996¹. Policymakers translated much of the fiscal austerity requirements into cuts in government capital expenditures because the negative effects of such a move are not apparent in the short run. This was extremely shortsighted on the part of these policymakers, especially as empirical evidence suggests significant complementarities between public and private investment (Ramirez, 1994)

The dampening effect on private investment was further exacerbated by real exchange rate devaluation. As imports, which represent a large part of the capital stock, increase in cost, profits are squeezed and investments declined. Mexico is not alone; other Latin American countries have experienced a similar negative effect on the rate and level of capital formation. Mexico was more extreme than most, dropping 23 points in the level of capital formation in 15 years. This change in public investment was mirrored by deterioration in private investment during most of the 1970-1995 period. This suggests that the severe reductions in public investment expenditures, particularly those in social and economic infrastructure may have been responsible for the overall deterioration in the country's investment performance. Public investment facilitates private capital formation if it is well targeted because it can relieve bottlenecks in education (skilled labor force), transportation, and communication and generates increases in total factor productivity and labor productivity.

The factors which had the most impact on reducing national competitiveness have been those which have slowed broad-based growth and created instability. These two categories of factors are linked, as instability will certainly contribute to slower growth.

¹ The 1996 figure is preliminary and will most likely be revised downward. The historical data was compiled by Ramirez, 1994 and has been updated using data from NAFINSA 1990-1996.

Instability from international adjustment shocks could be lessened through policies that provide closer management of short-run capital inflows. This management of capital inflows and the decoupling of the peso from the dollar would minimize much of the instability associated with financial liberalization. If Mexico does not play a more active role in investing in public infrastructure, there will be negative implications for both short and long-run competitiveness. In the short-run, costs of production will not be comparable with those nations that do make investments in human and physical infrastructure. In the longer run, foreign capital will go elsewhere and domestic investors will be more likely not to make long-run investments. It is therefore critical that the state play a developmental role not only to keep the cost of production in Mexico comparable to other Latin American nations but also to attract the necessary private investment to broaden and strengthen sources of growth in the economy.

6.7 The Effect of Integration and Macropolicies on the Asparagus Subsector

The instability of the Mexican economy since 1982 and especially since 1994 has encouraged horticultural producers and asparagus producers in particular to create new behaviors and governance arrangements to insulate themselves from radical shifts in costs. This is illustrated by the increasing incidence of long-term relational and recurrent contracts. Relational contracts have flourished in the Bajío because of the vacuum created by public disinvestment in research and extension as well as in physical infrastructure. The lack of research to deal with serious agronomic problems is driving up costs and may well undermine the presence of asparagus in this region.

In the North, where technology and cultivars are easily transferable from the US, the source of dependency on foreign firms stems from Mexican producers' lack of direct

access to export markets. The producers are dependent on the US firms to market their asparagus. In both regions, producers are dependent on foreign multinationals for credit and inputs for production. Those asparagus producers without a long-term relationship with a US food-marketing firm are at a disadvantage, and their transformation and transaction costs are higher.

The asparagus subsector, especially in the northern states, has become more concentrated as a result of integration. What we have observed is that many of the autonomous producers are leaving the industry. Frequently, these asparagus producers are selling their land to producers associated with the multinationals and then selling their labor power.

A short-run analysis would characterize the asparagus industry, at least in the north, as increasingly integrated with the US food marketing industry and with producers more competitive internationally than many other regions because of the cost advantages associated with the long-run contracts. But our framework suggests that to assess structural change and performance we need to look in the long run. When the analysis turns to the long run and the long-run behavior of the participants, then relationships of power become important. We have observed asymmetric power in the subsector. Growers have little power in the negotiation of the terms of the contracts in part because they bargain individually. A question for a future study would be what pressures will have to exist before producers bargain collectively for terms in their contracts? What rules would have to be in place to provide the incentive for Mexicans to develop backward and forward linkages in the subsector? What role can the government play in facilitating the eventual development of backward and forward linkages? If these

linkages are not developed, will this jeopardize the long-run competitiveness of the subsector?

How will US food marketing firms maintain their ability to determine the terms of trade? Some options for the food-marketing firms are to collude and divide the suppliers amongst themselves. As long as discipline is maintained among the US food-marketing firms, and there are significant barriers preventing other firms from providing marketing services, then US food-marketing firms can control the terms of trade. This position of power is further strengthened by their option to source asparagus from Chile and Peru. The macroeconomic instability of the last 15 years has also created an important market for the food marketing firms to provide the inputs for production and to tighten the bonds of dependency between themselves and the asparagus producers in Mexico.

6.8 Questions for Future Study

This study has focused on the impact of integration on a specialized group of commercial producers. It has provided us with a interesting glimpse of one the most highly integrated subsectors but it hasn't given us much insight into how integration has affected other agricultural sectors, especially those important to Mexico's food security.

An important policy question still remaining is whether the instability and stagnant growth of the 1980s and 1990's is a short run adjustment problem or a long-run structural problem. This is an important issue to assess because it tells us, at least for Mexico, whether integration between a high income country and a low income country leads to broad-based growth and stability or whether it leads to increased polarization between the two economies and a deepening of a dualistic economy in the low income country.

Although the long-run results of this study can't be conclusive, there is sufficient

evidence to suggest that this issue is in need of continuous review. Mexico has been an especially interesting country to examine because of its proximity to a large and powerful economy, but social scientists need to look at this issue across many nations. This is especially important because of the unquestioning adherence of many policy makers to the prescriptions of the neoliberal ideology. The second phase of this study should examine the distribution of income both geographically and between and within the sectors. The objective would be to look for evidence of an increasing gap in access to resources (both for producers and consumers) and between different sectors in the Mexican economy. It would be interesting to assess how the changing role of the state, and hence the increasing role of the market, has influenced the set of winners and losers and how successful this more market-oriented approach is in creating broad-based growth and stability. In the long run, if this approach is not creating broad-based growth, it will not be politically sustainable. It is therefore crucial for social scientist to assess this process so that policy makers can avoid the economic and social disruption that comes with a poorly performing ideology.

BIBLIOGRAPHY

BIBLIOGRAPHY

Alexrod R. 1986. "An Evolutionary Approach to Norms" *American Political Science Review*. 80: 1095-1111.

Appendini, K. 1992 "Politica alimentaria y estabilizacion economica en Mexico: el dilema entre una mayor produccion o precios mas bajos", pp23-48 in UNRISD y El Colegio de Mexico, eds., *Reestructuracion*. Mexico City: Mexico.

Arthur, B. 1989. "Competing Technologies, Increasing Returns, and Lock-In by Historical Events." *Economic Journal*. March, 394, pp. 116-131.

Baldwin, R. 1992. "Measurable Dynamic Gains from Trade" *Journal of Political Economy*, February, 100, pp.162-174.

Banamex, 1991-1996. "Examen de la situacion economica de Mexico". Mexico City: Banamex.

_____. 1985-1998. *Informe de Gobierno* (annual reports). Mexico City: Banamex.

Banco de Mexico, 1990-1997. "Indicadores Economicos; Informes anuales; Carpete de Principales Indicadores Basicos del Sector Agropecuario y de FIRA" Mexico City: Bank of Mexico.

Barkin, D. 1990. *Distorted Development: Mexico in the World Economy* Series in Political Economy and Economic Development in Latin America. Boulder: Westview Press.

Barro, R. 1990. "Economic Growth in a Cross Section of Countries." *The Quarterly Journal of Economics*. May, 301, pp.65-101.

Blois, K. 1972. "Vertical Quasi-Integration" *Journal of Industrial Economics*. July, 3, pp. 253-272.

Bowles, S. and H. Gintis 1988. "Contested Exchange: Political Economy and Modern Economic Theory." *American Economic Review*. May, 2, pp.145-150.

Bowles, S. 1985. "The production process in a competitive economy: Walrasian, neo-Hobbesian, and Marxian Models." *American Economic Review*. March, 1, pp.16-36.

Calvo, J. 1992. Probables Efectos de un Tratado de Libre Comercio en el Campo Mexicano. Mexico City: Fontamara.

_____. 1988. Crisis agricola y alimentaria en Mexico, 1982-1988. Mexico City: Fontamara.

Caves, R. 1982. *Multinational Enterprise and Economic Analysis*. Cambridge: Cambridge University Press.

Carsten, A. 1996. "Foreign Exchange and Monetary Policy in Mexico", *Columbia Journal of World Business*. Winter, pp. 12-21.

_____. 1995. "The Importance of the Central Bank in Avoiding Exchange Rate Crisis" *The Columbia Journal of World Business*. Summer. pp.61-69.

Casson, M. 1979. *Alternatives to the Multinational Enterprise*. London: Macmillan.

Caves, R. 1982. *Multinational Enterprise and Economic Analysis*. Cambridge: Cambridge University Press.

Chenery, H. and M. Syrquin. 1989. "Patterns of Structural Change," pp. 348-359 in Chenery and Srinivasan, eds., *Handbook of Development Economics*. Amsterdam: North Holland.

Choi, H. 1993. *Paradigms and Conventions: Uncertainty, Decision Making, and Entrepreneurship*. Ann Arbor: University of Michigan Press.

Coase, R. 1937. "On the Nature of the Firm" *Economica*. November, 4, pp. 386-405.

Contracter, F. 1981. "The Role of Licensing in International Strategy" *Columbia Journal of World Business*. 16, pp. 44-52.

Dahlmann, C. 1979. "The Problem of Externality". *Journal of Law and Economics*. 22, pp.141-162.

deLong J., and L. Summers. 1991. "Equipment Investment and Economic Growth" *The Quarterly Journal of Economics*. May, 106, pp.445-502.

Diesing, P and Kaplan, A. 1964. *Conduct of Inquiry: Methodology for Behavioral Sciences*. San Francisco: Chandler Publishing.

Dietrich, M. 1994. *Transaction Cost Economics and Beyond: Towards a New Economics of the Firm*. London: Routledge

Dugger, W.M. 1992. In Evolutionary Theory of the State and the Market” in W. Dugger and W. Waller, eds., *The Stratified State*. New York: M.E. Sharpe.

_____ 1987. “Review of *The Economic Institutions of Capitalism*,” by Oliver Williamson. *Journal of Economic Issues*, 21, pp. 723-731.

Dunning, J. 1981. *International Production and the Multinational Enterprise*. London: Allen & Unwin.

Ethier, W. 1995. *Modern International Economics*. New York: Addison Wesley,

El Financiero, 1993 “NAFTA’s Legacy on Mexico’s Economic Policy” Mexico City, Mexico 1/28/93.

Eggertsson, T. 1990. *Economic Behavior and Institutions* Cambridge: Cambridge University Press.

Ergas, H. 1992. “Does Technology Policy Matter?” reported in *The Economist*. January 11, 1992.

Fagerberg, J. 1988. "International Competitiveness." *The Economic Journal*. 8, pp56-62.

Gordillo, G. 1992. “La insercion de la comunidad rural en la sociedad global, Hacia un nuevo modelo de desarrollo para el campo.” *Comercio Exterior*. 40 (9).

Gordon, R. 1982. "The Output Cost of Disinflation in Traditional and Vector Autoregressive Models," *Brookings Papers on Economic Activity*. pp.23-42.

Grossman, G. and E. Helpman. 1994. "Endogenous Innovation in the Theory of Growth" *The Journal of Economic Perspectives*. Winter, pp. 121-132.

Greenes, T. et al, 1991. "An Analysis of the US-Canada-Mexico Free Trade Agreement" *IATRC*, Paper No. 10.

Guanajuato World Trade Commission. 1992. “Economic Overview of the State” Leon, Guanajuato.

Hodgson, G. 1993. "Institutional economics: surveying the ‘old’ and the ‘new’.” Pp. 50-77 in Hodgson, G. eds., *The Economics of Institutions*, Elgar Reference Collection. International Library of Critical Writings in Economics. Aldershot, UK: Elgar/Ashgate.

_____ 1988. *Economics and Institutions*. Cambridge: Polity Press

Instituto Nacional de Estadística Geografía y Informática (INEGI) 1990-1996. *Macroeconomic Indicators*, Mexico City.

_____ INEGI, 1980-1996 *Cuaderno de Informacion Oportuna: El Sector Alimentario en Mexico*. Mexico City.

Innis H. 1995. "The Importance of Staple Products in Canadian Development" in Drache, D. *Staples, Markets, and Cultural Change*. McGill-Queens University Press: Montreal.

Kay N., 1993. "Markets, False Hierarchies, Asset Specificity" in Pitelis, C. ed. *Transaction Costs, Markets and Hierarchies*. pp. 242-261, Cambridge: Basil Blackwell:

_____. 1992. *The Evolving Firm: Strategy and Structure in Industrial Organization*. London: Macmillan.

Klein, B. and Leffler, K. 1981. "The Role of Market Forces in Assuring Contractual Performance" *Journal of Political Economy*. 89, pp. 615-641.

Kroeber, C. 1983. "An Alternative Mechanism to Assure Contractual Reliability" *Journal of Legal Studies*. June, pp. 333-343.

Krugman, P. 1996. *Pop Internationalism*, Cambridge: MIT Press.

_____. 1995. *International Economics: Theory and Practice* New York: Harper Collins.

Leathers, C. 1989. "New and Old Institutionalists on Legal Rules: Hayek and Commons" *Review of Political Economy*. November, pp. 361-380.

Langlois, R. and Robertson, P. 1995. *Firms, Markets, and Economic Change*. New York: Routledge.

Leibenstein, H. 1989. "X-Efficiency Theory, Productivity and Growth" K. Button eds., in *The Collected Essays of Harvey Leibenstein*. 2, New York: New York University Press.

_____. 1986. "Infra-firm Effort Decisions and Sanctions: Hierarchy versus Peers" in Gilad, B., ed., *Handbook of Behavioral Microeconomics*. A, pp. 112-134, Greenwich Ct.: JAI Press.

_____. 1986. "Organizational Economics and Institutions as Missing Elements in Economic Development Analysis" Presented at conference on: The Role of Institutions in Economic Development, Cornell.

_____. 1980. "Issues in Development Economics: An Introduction." *Social Research*, 47, Summer, pp. 204-212.

_____. 1978. "On the Basic Proposition of X-efficiency Theory". *American Economic Review, Papers and Proceedings*, 68, pp. 328-332.

Lukes S. 1973. *Individualism*, Oxford: Basil Blackwell.

- Maddison, A. 1987. "Growth and Slowdown in Advanced Capitalist Economies." *Journal of Economic Literature*. 2, June, pp. 649-698.
- Markusen J. 1992. *Productivity, Competitiveness, Trade performance, and Real Income: the Nexus Among Four Concepts*. Ottawa: The Ministry of Supply and Service.
- Marginson, P. 1993. "Power and Efficiency in the Firm: Understanding the Employment Relationship" in Pitelis C. ed., *Transaction Costs, Markets and Hierarchies*. Cambridge: Basil Blackwell.
- Marglin, S. 1984. "Knowledge and Power" in F. Stephen ed., *Firms, Organization and Labour* London: Macmillan.
- Marion B. and Mueller W. 1983. "Industrial Organization, Economic Power, and the Food System" in ed. Paul Farris, *Frontiers in Agricultural Marketing Research*.
- Milgrom and Roberts 1992. *Economics, Organization, and Management*. Englewood Cliffs, NJ: Prentice Hall.
- Munnell A. 1996. "How Does Public Infrastructure Affect Regional Economic Performance" in Haynes, Kingsley, et al, eds. *Regional Dynamics Vol 2*. Elgar Reference Collections, Modern Classics Regional Science, 4. Lyme NH: Elgar Press.
- National Trade Data Bank and Economic Bulletin Board/ STAT-USA US Department of Commerce. 10/96 URL: [http://www. Useacohio.doc.gov/svntdb.html](http://www.Useacohio.doc.gov/svntdb.html).
- Nelson, R. 1981. "Research on Productivity Growth and Productivity Differences: Deadends and New Departures". *Journal of Economic Literature*. 29, pp. 1029-1064.
- Nichols, M. 1994. personal correspondence.
- _____. 1990. "Asparagus Production in the Tropics" *Horticultural Science in the Tropics* 270, pp. 27-34.
- North, D. 1993. "Institutional Change: A Framework of Analysis" in Sjostrand, Sven Erik, ed. *Institutional Change: Theory and Empirical Findings*. Armonk, NY: Studies in Socio-Economics.
- _____. 1990. *Institutions, Institutional Change and Economic Performance*. New York: Cambridge University Press.
- _____. 1981. *Structure and Change in Economic History*. New York: W Norton Press.
- Porter. M. 1990. *The Competitive Advantage of Nations*. New York: The Free Press.

Ramirez, M. 1994. "Public and Private Investment in Mexico, 1950-90: An Empirical Analysis" *Southern Economics Journal*. 61, July, pp. 1-7.

Ring, P. and Van de Ven A., 1992. "Structuring Cooperative Relationships Between Organizations" *Strategic Management Journal*, 13, pp. 483-498.

Roett, R ed., 1993. *Political and Economic Liberalization in Mexico at a Critical Juncture*. Boulder, CO: Lynne Rienner.

Romer P. 1994 "The Origins of Endogenous Growth" *The Journal of Economic Perspectives*. 8, Winter, pp.3-22.

_____ 1986. "Increasing returns and long-run growth," *Journal of Political Economy*. 94, October, pp. 1002-10037.

Rugman, A. and A. Verbeke, 1988. "The Strategic Responses to Free Trade" in Farrow, M. and Rugman A. eds., *Business Strategies and Free Trade*. Toronto: C.D. Howe Institute.

Runston D. and L. Young 1992. "Technology and Labor Intensive Agriculture: Competition between Mexico and the US" in Bustamante, Jorge, Reynolds, C., eds. *US-Mexico Relations: Labor Market Interdependence*. Stanford: Stanford University Press.

Salinas de Gortari, 1991. "Iniciativa de Reformas al Artículo 27 de la Constitución" *Comercio Exterior*. 41, pp.11.

_____ 1991 "Diez Puntos para la Libertad y Justicia en el Campo Mexicano" *Comercio Exterior*. 41, pp.24-26.

_____ 1991. Report of the President, Mexico City, Mexico, February.

_____ 1985. Speech to the National Congress, Mexico City, Mexico, May.

Samuels, W. 1995. ed. *Institutional and Evolutionary Economics Vol. 1 & 2*. London: Elgar Press.

_____ 1959. "Theories of Decision-Making in Economic and Behavioral Sciences" *American Economic Review*, 49, pp.11-22.

Samuelson, P. 1948. *Foundations of Economic Analysis*. Cambridge: Harvard University Press.

Schelling, T. 1995. "What Do Economists Know?" *The American Economist*. 39, Spring, pp. 8-14.

Schmid A, 1987. *Property, Power and Public Choice: An inquiry into law and economics* Westport CT: Greenwood Press: Praeger.

Schmookler J. 1966. *Invention and Economic Growth*. Cambridge: Harvard University Press.

Schumpeter, J. 1950. *Capitalism, Socialism and Democracy*, New York: Harper and Brothers.

Shaffer, J. 1980. "Food System Organization and Performance: Toward a Conceptual Framework" *American Journal of Agricultural Economics*. May, pp. 310-318.

Simon, H. 1959. "Theories of Decision-Making in Economics and Behavior Sciences" *American Economic Review*. 49, June, pp. 65-80.

Sheahan J. 1991. *Conflict and Change in Mexican Economic Strategy* Center for US Mexican Studies San Diego: University of California-San Diego.

Solo, R. 1993. "Neoclassical Economics in Perspective in the Chicago School of Political Economy" pp. 75-83, in Warren Samuels, ed., *Classics in Economics Series*, London: Edward Elgar.

Solow, R. 1956. "A Contribution to the Theory of Economic Growth". *Quarterly Journal of Economics* 70, February, pp. 137-144.

Taylor, L. 1995. "The Consensus That Made a Mess of Mexico" Christian Science Monitor, January 17, 1995.

Teece, D., Rumelt, R., Dosi, G. and Winter, S. 1994. "Understanding Corporate Coherence: Theory and Evidence," *Journal of Economic Behavior and Organization*. 23, pp. 1-30.

_____ 1986 "Firm Boundaries, Technological Innovation, and Strategic Management" in L.G. Thomas (ed.) *The Economics of Strategic Planning*, Lexington: M.D.C. Heath.

Thorbecke, E. 1993. "The Impact of State and Civil Institutions on the Operation of Rural Market and Nonmarket Configurations, *World Development*, 21, April, pp. 591-605.

_____ 1990 "Institutions, X-efficiency, Transaction Costs, and Socioeconomic Development" in Weirmair and Perlman, *Studies in Economic Rationality*, Ann Arbor: University of Michigan Press.

Todaro, M. 1996. *Economic Development*, New York: Addison Wesley.

Thurow, L. . 1992. *Head to Head*. New York: Morrow Press.

Tyson, L and Zysman, J. 1983. "American Industry in International Competition," in Tyson and Zysman (eds) *American Industry in International Competition: Government Policies and Corporate Strategies*. Ithaca, NY: Cornell University Press

Veblen T. 1919. "Why Is Economics Not an Evolutionary Science?" in *The Place of Science in Modern Civilization*. New York: BW Huebsch.

USDA/ERS Fruits and Vegetables Section. 1993. *Vegetable-Fresh Market Annual Survey*, Washington DC

USDS/US Embassy Mexico, 1993. *Mexico Foreign Investment Report*. Fall/Winter.

Varoufakis, Y. and D. Young. eds., *Conflict in Economics*. New York: St. Martin's Press 1990.

Viner, J. 1965.(originally published in 1937) *Studies in the Theory of International Trade*. Clifton NJ: Augustus M. Kelly.

Wall Street Journal, 1/5/95.

Whalen, C. 1992. "Schools of Thought and Theories of the State: Reflections of an Institutional Economist" in Dugger and Walker (eds) *The Stratified State: Radical Institutional Theories of Participation and Duality Studies in Institutional Economics*, Armonk:New York & London:Sharpe,

Wilber, C. and Harrison, R. 1988. "The Methodological Basis of Institutional Economics: Pattern Models, Storytelling, and Holism" in Samuels, W.(eds) *Institutional Economics Vol.2*. Brookfield VT: Gower.

Williamson, O. 1985. *The Economic Institutions of Capitalism: Firms, Markets, Relational Contracting*. London: Macmillan.

_____1975. *Economics of Internal Organization*. New York: Free Press.

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