GETTING THE PRICE RIGHT :

MAIZE PRODUCTION IN MEXICO AFTER MARKET LIBERALISATION

by

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ABSTRACT

The liberalization of the maize economy through NAFTA eliminated Mexico's guaranteed prices for maize and was expected to result in the reallocation of productive resources away from maize and into other crops in which Mexico had a comparative advantage. This research essay explores the observation that in spite of the lower world price being adopted and a corresponding loss of profitability, the amount of land area allocated to maize production has not been reduced. Commercial and subsistence decision-making frameworks are presented that provide the basis for a qualitative analysis of this observed response. The essay concludes that commercial producers reallocated land to other crops but their withdrawal was compensated by a corresponding increase in land allocated to maize production by subsistence producers.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

GLOSSARY OF ACRONYMS

BANXICO: Banco de México: Bank of Mexico.

CIMMYT: Centro Internacional de Mejoramiento de Maíz y Trigo: International Centre for Improvement of Maize and Wheat Varieties.

CONASUPO: Compañia Nacional de Subsistencias Populares: National Basic Foods Company.

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DICONSA: Distribuidora de CONASUPO. Distributor for CONASUPO.

ELZN: Ejército Zapatista de Liberación Nacional: Zapatista Army for National Liberation.

FIRA: Fideicomisos Instituidos en Relación con la Agricultura: Agricultural Trust Fund.

IBRD: International Bank of Reconstruction and Development: part of the World Bank Group.

INDESOL: Instituto Nacional de Solidaridad

INEGI: Instituto Nacional de Estadística y Geografía e Informática: National Institute of Statistics, Geography and Informatics.

PRI: Partido Revolucionario Institucional.

PROCAMPO: Programa Nacional de Modernización del Campo: National Program for the Moderization of Rural Areas.

PROCEDE: Programa de Certificación de Derechos Ejidales y Titulación de Solares Urbanos. Program of Certification of Ejido Rights and Titling of Urban land parcels.

PRONASOL: Programa Nacional de Solidaridad: National Solidarity Program.

SAGAR: Secretaría de Agricultura, Ganadería y Desarrollo Rural: Secretariate of Agriculture, Livestock and Rural Development.

SAM: Systema Alimenticio Mexicano. Mexican Food System.

SARH: Secretaría de Agricultura y Recursos Hidraulicos: Agriculture and Irrigation Resources Secretariate.

SCT: Secretaría de Comunicaciones y Transportes: Transportation and Communication Secretariat.

SEDESOL: Secretaría de Desarrollo Social: Secretariate of Social Development.

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"A man is his milpa[1]. If he doesn't grow maize, then who is he?"

ejidatario, Tinún Feb. 1982 (Gates, 1993: 110)

INTRODUCTION

Maize has been of spiritual, social, economic and political importance in the lives of the indigenous peoples of the Americas for thousands of years. After the conquest of America by Europeans in the 15th and 16th Centuries, maize was established world-wide as an important food crop because of its adaptability and productivity. Today it is the third most-planted field crop in the world after rice and wheat (Salvador, 1997).

Maize is traditionally Mexico's largest crop, occupying approximately half of its cultivated area (source: SAGAR) and to varying degrees of intensity, over three quarters of Mexican farmers (De Janvry, 1995: 1349).

In response to the debt crisis of the 1980s, the Government of Mexico began to dismantle its import substitution-led industrialisation (ISI) policies and firmly embraced the International Monetary Fund (IMF) and World Bank supported neo-classical vision of an open-market. In the late 1980's this policy reform was expanded to include agriculture and the maize economy.

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[1] The milpa is the peasant's plot of maize.

The neo-classical trade theory adopted viewed government market intervention as undesirable and Mexico's allocation of resources to the maize economy as inefficient versus its largest trading partner, the United States of America (USA). Policy reforms were put into place to reallocate resources to other more lucrative export crops and economic activities in which Mexico had a comparative advantage, while less-expensive maize would be imported from the USA. Mexico produces white-coloured maize that is destined primarily for human consumption. The USA also produces small amounts of white-coloured maize but its production and exports are dominated by yellow-coloured maize, used primarily as a component of livestock and poultry rations. However, yellow maize is used for human consumption in Mexico as an acceptable substitute for white maize.

The major policy changes to the maize economy began in 1988 and included privatising state agriculture-related agencies, eliminating subsidies formerly targeted at both maize production and consumption and changing legislation establishing the security of land tenancy. The consolidation of these reforms occurred in 1993 when Mexico signed bilateral free-trade agreements in agriculture with the USA and Canada as part of the North American Free Trade Agreement (NAFTA). Under NAFTA, Mexico bound itself to remove barriers to trade and investment in agriculture and to entirely withdraw tariff protection of maize for its NAFTA partners. A 15-year phase-out period was to allow Mexican maize prices that had consistently been held at levels higher than the world price, to converge with the world price, set largely by the USA. World-price parity was however achieved in mid-1996, 12 years ahead of schedule, when Mexico chose

to no longer collect duties on it maize imports originating in NAFTA countries[2] (Raghavan, 2000. Casco Flores, 1999: 407).

The reforms, embedded in allowing the domestic price of maize to converge with the substantially lower world price, were expected to provoke a significant shift away from commercial production of maize and into forages on rain-fed lands and fruits and vegetables for export on irrigated lands. Success in inserting Mexican agriculture into the global trading system, i.e. the USA market, and allowing Mexico to develop its identified comparative advantage, depended upon the creation of a favourable investment climate that would attract foreign direct investment necessary to finance the "retooling" of Mexican agriculture

In addition to the efficiency gains resulting from the policy reforms, welfare gains for the poor were also anticipated (Levy: May 1992, Sept. 1992, De Janvry: 1995, Doroodian: 1999).[3] The poor, who were assumed to be net buyers of maize would benefit from the substantially lower import prices expected to result from liberalisation. In a close parallel to Lewis' dualistic growth theory of the 1950's, they would be released from the labour demands of commercial maize production and instead be able to involve themselves in more productive economic activities. Public money, no longer spent on maize subsidies, could be more effectively targeted to human-capital improvement and reducing poverty.

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[2] For all practical purposes, this meant USA imports.

[3] The following World Bank Reports for projects in Mexico are based on this same analysis: PAD 23 Dec. 1997. Report No. 17263-ME, Loan to Nacional Financiera for Rural Development in Marginal Areas Project: SAR 24 Jan. 1994. On-farm and Minor Irrigation Networks Improvement Project: SAR 15 Jun. 1994. Rainfed Areas Development Project No 12533-ME: SAR 31 May, 1996. Water Resources Management Project: TA Sept. 1996. Mexico Rural Finance Technical Assistance and Pilot Project No. T-6924-ME.

However, while maize prices have dropped substantially (Raghavan, 2000. Avalos Sartorio, 1998: 4-5), up to 45% since 1995 (author's calculation see Figure 3.3), no apparent change in the total crop area allocated to maize production, or the total volume produced has been observed (Source: FAO, SAGAR). Analysis that specifically addresses the status of the expected transformation of the maize economy in Mexico to the production of other crops is lacking.

Given the market disincentives created by the reforms and expressed by lower prices, the question this research essay asks is, "Why do Mexican farmers continue to allocate their resources to the production of maize?" contrary to what the neo-classical model implemented predicted.

A possible explanation is the persistence of market failures.

> "Remoteness, scarce and poorly maintained roads, inadequate transport and storage facilities and difficulties in accessing reliable information on products and prices prevent the rural poor from participating in competitive markets, often restricting them to non-contestable markets dominated by a few, powerful purchasers" (World Development Report, 2000: 186).

However, my hypothesis is that the neo-classical assumption that price is the major determinant of how productive resources will be allocated in rural Mexico, is inappropriate. The bulk of Mexico's maize producers may not be as motivated by profits as they are by ensuring their farm unit's and community's subsistence and reproduction. In other words, the value system that assigns relative prices

and the implied opportunity costs to factors of production, society and maize are distinct from those of the classical model adopted.

If this is true, the policy implications are that the challenge of rural development in Mexico is not how to go about installing the bells and whistles of capitalist agriculture but how to shape rural development such that it will either conform to or change the existing value criteria of rural Mexico.

Methodology

The first chapter of this investigation provides an outline of the political economy of maize production in Mexico. Within this context it briefly describes the social and economic importance of maize and the structure of the Mexican agricultural sector.

The second chapter orients the reader with the distinct theoretical perspectives of the motivation of production decision-making presented by "peasant logic" and the basic neo-classical assumptions of capitalism's "rational man". It will identify factors to which capitalism and peasant logic would be expected to respond and the direction of this response, assuming that Mexico's maize economy is dualistic.

The third chapter will analyze the changes in the dynamics of maize production in Mexico since 1988 and the degree to which peasant production has been incorporated into the capitalist system, focusing on maize prices, basic infrastructure, land and labour allocation to maize. Two groups of states that have been identified as operating predominantly under the assumptions of the commercial and subsistence frameworks respectively, will be compared. This exercise will determine if their response to the converging of the domestic and

international maize prices in Mexico was different and to what degree the capitalist and peasant frameworks help to understand the observation that Mexico's production of maize has not been reduced as a result of the reforms.

Reliable time-series data for Mexico is difficult to obtain because of frequent changes in criteria for data collection. Data collected from INEGI,[4] SAGAR,[5] FIRA,[6]will be verified with other sources such as the United States Department of Agriculture (USDA) and the United Nations Food and Agriculture Organisation (FAO) when available. In light of this limitation, the focus of the investigation will be a qualitative analysis of the identified themes.

The third chapter will also consider the original data collected and published in the M.A. thesis of Heather Rawlinson (2000). While her research focussed on rural micro-finance in Mexico, a portion of the survey questions she posed at the level of the rural household is complementary to the present investigation.

Finally, the major findings of the investigation will be summarized and discussed.

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[4] Instituto Nacional de Estadística Geografía e Informática

[5] Secretaría de Agricultura, Ganadería y Desarrollo Rural

[6] Fideicomisions Instituidos en Relación con la Agricultura.

CHAPTER ONE

The Political Economy of Maize Production in Mexico

Introduction

This chapter introduces the reader to the political economy of maize production in Mexico. It briefly describes the importance of maize and the structure of the Mexican agricultural sector. It explores the major economic crises and the structural reforms undertaken that led to Mexico's participation in North American Free Trade Agreement (NAFTA). It concludes by fleshing out the argument made for liberalising the maize economy.

Maize

The development of maize [*Zea mays ssp. mays*] during the period 4000 B.C. to 3000 B.C is closely linked with the rise of the great pre-Columbian civilizations of Mesoamerica. The closeness of this historical relationship between the development of maize and humanity is portrayed in Mesoamerican creation lore that regards humans as being made of maize (Salvador, 1997). In Mexico, the heart of Mesoamerica, this concept is not too far off the mark. Maize continues to be the staple of the diet and the country's largest agricultural crop.

Most Mexican meals are based on maize and, for even the richest socio-economic classes, a meal would be incomplete without *tortillas*.[7] Annual per capita consumption of tortillas in Mexico is currently 186 kilograms per person. In rural areas tortillas are even more important, providing about 70% of total caloric intake. When supplemented with beans in the traditional diet, all basic nutritional requirements are met (Idem). While in many areas of Mexico indigenous people still subsist on a basic diet of tortillas and beans, access to the resources, particularly land, needed to produce these staples has long been contested.

Land Tenure

The annexing of indigenous lands by large landowners during the period of Mexican history called the *Porfiriato*,[8] was the source of widespread civil discontent in rural Mexico. This gave rise to massive peasant participation in the Mexican Revolution of 1910-1917 in a bid to regain control over land (Huizar, 1979: 26-27). The promise to return peasant lands to communities that could document their claims and to establish *ejidos*[9] for those that could prove their need for land, became the basis for brokering the end of the Revolution and a

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[7] Tortillas are a flat bread. They are made by rehydrating dried maize kernels in an alkaline broth that removes the pericarp or hard skin of the kernels and also makes the essential amino acid, niacin, more available. The kernels are then rinsed and ground into a soft dough, shaped and cooked. Although tortillas can now be made by machines the process remains the same as in pre-Columbian times.

[8] Named after Porfirio Díaz, President of Mexico (most would say dictator) for 35 years.

[9] A form of land tenure similar to pre-Hispanic times in which the holder had the right of sole use of a small plot of land to cultivate food crops and common access to other lands for grazing of livestock gathering of firewood and other resources. The *ejido* will be discussed further in the section about maize production.

fragile social peace. The hope of attaining Emeliano Zapata's[10] demands for land and liberty, was used to legitimize the one-party rule of the *Partido Revolucionario Institucional* (PRI) for over 60 years following the Revolution.

Peasant access to agricultural land and the search for social justice associated with it in rural Mexico, dominated Mexican politics after the Revolution and throughout what remained of the 20th Century. The issues of land tenure are contemporary and still violently contested, largely because little was actually delivered on the PRI mandate as steward of the action plan for land reform that arose from the Mexican Revolution.

In 1988 93.7% of Mexican agricultural producers farmed individual plots of less than 20 hectares representing just over 13 % of total arable land, while only 6.3% of producers farmed areas larger than 20 hectares representing nearly 87% of arable land (Conchiero, 1995:9). On November 14, 1991, President of Mexico, Carlos Salinas de Gortari announced sweeping reforms to Article 27 of the country's 1917 Constitution that dealt with land tenure in a speech entitled, "Diez puntos para libertad y justicia al campo mexicano".[11] He heralded the completion of the revolutionary project of land reform, curiously, stating that there was no more land to divide. There were at the time over 32,000 unresolved petitions for *ejidos* on file awaiting decisions by the various levels of bureaucracy involved in the process (Ibid. : 205).

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[10] The peasant revolutionary leader from Morelos, considered to be Mexico's peasant hero for his role in establishing the ejido.

[11] Ten Points Toward Liberty and Justice in Rural Mexico.

Changes to Article 27 were part of a larger policy shift by the Mexican government toward abandoning traditional import substitution-led industrialisation and instead, focusing on outward-oriented development through the creation of a liberalised market economy in Mexico. The attempt was made to legitimise the plan to insert Mexican agriculture into the global marketplace by including its primary components in the traditional PRI imagery of the Mexican Revolution. The message of the hand bill shown is that, "Yes, Zapata said, 'Land and Liberty' during the 1910 Revolution, but now that we are entering the year 2000, Zapata would say, "Land, liberty, justice, security of tenure, technology and credit."[12] The "hope" of land reform that had maintained a relative social peace in rural Mexico and sustained the PRI in political power since the Revolution had however been dashed to pieces by the fact that no more *ejidos* would be created. The *Ejército Zapatista de Liberación*

[12] "But they say that the reform goes against what Zapata said, "Land and Liberty?", "Just think about it a little, Chimino", "Yes, Zapata said, 'Land and Liberty' during the 1910 Revolution", "But now that we are entering the year 2000, Zapata would say, "Land, liberty, justice, security of tenure, technology and credit." This is an excerpt from an actual handbill collected in 1994 in Mexico. Cartoons are often used to communicate with rural Mexico's population as technical literacy levels are low. The mimicking of indigenous speech in the dialogue is not meant to be humorous rather an accessible means of communicating with the target audience.

Nacional (EZLN) declared war on the PRI on January 1, 1994, the first day of NAFTA. EZLN condemned the reforms as being not at all what Zapata would have said (Camacho, 1994: 8).

Mexican Agriculture

Mexico has a total land area of 196.7 million hectares of which approximately only 12% (24 million hectares) is arable. 16% of arable land is irrigated and the remainder is rain-fed (Conchiero, 1995: 2, 4). Travelling between any two major Mexican cities reveals startling contrasts in the agricultural production technology applied to this land. While the majority of farmers still use hand labour or occasionally draft animals to plant and harvest centuries-old crop varieties, another small elite group, predominantly located in the north-western states, utilises the latest innovations that modern production technology can offer. These farmers achieve crop yields similar to those of the USA and enjoy a comparable lifestyle. As can be seen in Table 1.1, the majority of Mexico's farmers are far less productive and it can be assumed, prosperous. Looking specifically at maize yields, on average Mexican farmers produce less than a quarter of the yield of their USA counterparts or Northern compatriots, while devoting 17 times as much labour. The reallocation of this high labour input to other activities was a key goal of the reforms that began in 1988. A number of historical factors in the creation and perpetuation of the 'gap' between these two distinct modes of production can be identified but principal among them are the relative resource endowments made.

Land redistribution from powerful *latifundia* or large landowners to the landless peasants is portrayed in Mexican history as the central component

Table 1.1 Comparison of USA and Mexican Agriculture

Cultivated Area:	Average USA cultivated area per producer of rain-fed lands are 23 times that of Mexico and of irrigated lands, 10 times as large.			
	Yields tonnes/hectare		**Labour Requirement/tonne**	
Crop	USA	Mexico	USA	Mexico
Maize	6.9	1.7	< 1 hour	17 man days
Beans	1.6	0.5	< one man day	50 man days
Tractors/worker	1.5	One for every 50 workers	**Improved Seeds** In the USA nearly all producers use improved seeds. In Mexico only 16% of maize producers and 12% of bean producers use improved seeds.	
Fertilizer Tonnes /producer	5.812	0.192		

Source: Author's construction from Concheiro, 1995:199.

of the victory of the Mexican Revolution (1910-1917). However, meaningful land reform actually took place only on a very small scale. For example, of the 43 million hectares distributed to *ejiditarios*[13] between 1958 and 1976, 91% was hillsides and mountainous terrain. Only 8.4% was rain-fed land and 0.4% irrigated land suitable for annual cropping (Levy,1992:481).[14] Nation-wide, only 21% of the land held by *ejidario*s is arable, the rest is pasture and forests (DeWalt, 1994:1-2). The creation of *ejidos*, possible only by presidential decree, was used sparingly to diffuse crises and achieve or maintain a fragile social peace following the Revolution of 1910, the depression of the 1930's, the recession of the 1950's and the recession of the mid 1970's (Walsh, 1984: 149, 154).

After the Revolution the *latifundia* owners divided up their properties into the largest parcels allowed by the Constitution and "sold" it only in name through

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[13] Members of an *ejido*.

[14] Quotes: Salinas, 1990:816-829.

a paper-shuffling scheme involving *prestanombres*.[15] The original owners thereby retained control over Mexico's most productive agricultural land. Because of their influence and capability to extend credit and other resources, these same landowners often gained tacit control over nearby smaller properties. In later years, formal presidential decrees and informal pledges of allegiance to the ruling PRI party resulted in their being granted indefinite protection from possible expropriation by the creation of *ejidos* (Otero, 1989: 284, 288). On the other hand, the peasantry obtained only limited use of land in being granted *ejidos*.[16] Generally ejido land has poor productive capacity. This initial difference in the productive value of the land resource allocated must be considered when attempting to understand the production and technology gap that persists in Mexican agriculture.

Import Substitution-led Development

Following WWII, Mexico embarked on a successful import substitution-led industrialisation (ISI) scheme of development, later to be dubbed, 'the Mexican Miracle', because of the sustained economic growth it produced for over twenty years. The modernisation of agriculture in northern Mexico and the production of export crops was a key component of this scheme because of its capacity to generate foreign exchange with which to purchase industrial inputs, and, to feed the urban working class that emerged.

During this period of time, improved seeds were developed by the *Centro Internacional de Mejoramiento de Maíz y Trigo* (CIMMYT) in Chapingo near

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[15] Literally, "name lender".

[16] It could not legally be bought, sold, used as collateral to obtain credit or even rented out.

Mexico City, as part of what has become known as the Green Revolution. New plant varieties, chemical fertilisers and crop protection products were combined with massive public investments in irrigation on Mexico's most productive lands to produce basic grains for domestic use and even export (Martin, 1993: 97). The public investments made, primarily benefited the elite group of *latifundias* that had retained control of their land since the Revolution. These groups were concentrated in the northern states that were settled during the Porfirio Díaz regime. Porfirio Díaz provided incentives for the political elite of the time to populate these large fertile areas and also arranged for the construction of rail links for this area to the markets of the south-western United States (Sanderson, 1986: 41).

In the mid-1970's, Mexico suffered a balance of payments problem as the world and the Mexican economy lapsed into recession. In response to the International Monetary Fund's (IMF) structural adjustment measures that bailed Mexico out of this crisis, this same small group of producers took advantage of further economic incentives to grow cash crops like winter vegetables for export to the USA. In so doing, they reduced their production of basic grains, including maize. Population increases soon outstripped domestic grain production and by the late 1970's, Mexico had become a net importer of food commodities (Martin, 1993: 97). Agriculture lost its ability to act as the motor of industrialisation. More foreign exchange was needed to purchase food commodities abroad than the sector could itself generate. In 1980 Mexico imported 10 million tons of basic grains from the United States (Sanderson, 1981: 2). While industry's share of

GDP grew from 27% in 1965 to 38% in 1982, agriculture's contribution shrank from 14% to 7 % (Collier, 1994: 91).

Sistema Alimenticio Mexicano

A petroleum boom in 1980-1982[17] briefly allowed Mexico to borrow internationally and reinvest in agriculture. The *Sistema Alimenticio Mexicano* (SAM) was initiated in 1979 to stimulate domestic production in order for Mexico to once again achieve food self-sufficiency and eliminate its growing dependence on American imports. SAM focused on improving basic grains production and distribution in rain-fed areas by offering subsidised fertilisers, credit and road construction to ensure access to markets (Collier, 1994: 94). Its principle mechanism was producer price guarantees that later became the target of reforms addressed by the current investigation. Producers were paid prices that were linked to world prices but set substantially higher to encourage production. At the same time, consumption[18] was subsidised by ensuring that consumers paid prices that were lower than world prices (Sanderson, 1990: 237).

By 1982, rural Mexico had become saturated by state intervention in all aspects of agricultural production, distribution and marketing. Public funds were invested in irrigation systems, infrastructure, credit and mandatory government-subsidised crop-insurance schemes.[19] Trade restrictions including import quotas and tariffs covered all agricultural products while the state enterprise,

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[17] The combined effect of the Iranian revolution and the Iran/Iraq war resulted in crude oil prices more than doubling from $US14 in 1978 to $US 35 per barrel in 1981. These events coincided with the discovery of vast reserves of oil in Mexico.

[18] Primarily urban consumption as rural CONASUPO stores where the subsidised products were sold were more accessible in urban areas.

CONASUPO[20] maintained significant market influence with its extensive network of processing plants, warehouses, urban markets and rural stores. It acted as the sole authorised importer of key products, including maize (World Bank, 15 June, 1994: 2).

The Debt Crisis

The SAM policies gave agriculture a boost, raising production by 4.4% annually in its first two years of operation, but this success was short-lived. The oil boom ended in late 1982. Oil prices dropped as the world market became glutted and foreign consumers simultaneously switched to other energy sources. Mexico had over-extended itself financially; the debt crisis that would affect nearly all of Latin America began with the declaration of President José López Portillo in September 1982, that Mexico could not meet its foreign debt repayment obligations. The SAM program and the intense level of government intervention aimed at food self-sufficiency were not fiscally sustainable. There could no longer be a specific national agricultural policy aimed at food self-sufficiency; rather, government resources were directed toward resolving the economic crisis (Martin, 1993: 97).

Structural Reform

As a result of the debt crisis, Mexico had no alternative but to embrace IMF and World Bank structural reforms. The first step was to devaluate the peso in order to limit imports and maximise export potential and thus obtain a positive trade balance with which to again meet its foreign debt payment obligations.

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[19] The main beneficiaries were the northern commercially oriented states.

[20] Compañía Nacional de Subsistencias Populares

Later, the role of the State in the economy would be minimised and taxes raised to eliminate the fiscal deficit. The money supply was tightened to control inflation. Higher interest rates were imposed by the central bank to encourage savings and attract foreign investment. The country's economy was opened up to international trade to reallocate productive resources to those areas in which Mexico was believed to have a comparative advantage.

In agriculture, structural adjustment resulted in an even greater emphasis on agro-exports which consolidated Mexico's dependence on imported seeds, fertilisers, machinery and agricultural technology as well as food imports for domestic consumption (Minda, 1993: 205-214). By 1990 Mexico was the third largest net importer of food in the world (Conchiero, 1995: 195-196). Beginning in the late 1980's structural reforms in agriculture were geared towards Mexico's participation in NAFTA.

NAFTA

The *apertura* or opening up of Mexico's economy to international trade from its former state of complete protection under ISI, was initiated with its entry into the GATT in 1986 (Sanderson, 1986: 69-70). In that year Mexico's foreign policy was still focussed on diversifying its international trade relations in an attempt to reduce its economic dependence upon the USA economy. However, in 1988 under the presidency of Carlos Salinas de Gortari, a radical change was made to seek preferential access to the USA market (Peres, 1990: 9-10).

Just why Mexico made this abrupt turn is no doubt complex but the immense market opportunity of bordering the largest and richest economy in the world, the debt crisis and conditionalities imposed by the IMF and the World

Bank were surely important factors. Canada had already signed the Canada United States Free Trade Agreement (CUSFTA) ensuring its own access to the USA market. It soon found its way to the negotiating table with Mexico. The North American Free Trade Agreement (NAFTA) that resulted, was to phase out 90% of all tariffs in most economic sectors among the three signatory countries, over a period of 15 years. Agriculture, however, received special treatment.

Canada and the USA negotiated separate bilateral agreements for agriculture with Mexico that were to create a free trade zone for maize, beans, fruits, vegetables, and a number of other farm products. Tariffs, quotas and licensing requirements previously applied by these countries to each other's products, were scheduled to be fully phased out by 2009, in contrast to Mexico's commitments under the GATT which only required a partial liberalisation of the agricultural sector.

From 1988 to 1994 the transition to a market economy was accelerated as a USA condition for participation of Mexico in NAFTA. State support of agricultural production, technical services, investment, input subsidies, marketing, price and other subsidies were almost completely withdrawn. State enterprises related to agriculture were privatised and nearly all trade protection to the sector removed (World Bank:June 1994:2-4).[21] In 1993 only 6.6% of public funding was directed to this sector, the culmination of a 75% reduction in public spending in agriculture over the period 1982-1992 (de Ita Rubio, 1994:16). Mexico's agricultural sector had become one of the most open to international

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[21] Maize and Beans were exceptions.

trade in the world. In terms of the GATT, by December of 1993 Mexico had reduced its average tariffs to only 20%, more than double the reduction agreed upon in Mexico's protocol of accession of 50% (Concheiro,1995:198).

Principal among the promises of NAFTA for Mexican agriculture, was the recurring Revolution theme of the need to achieve a more equitable distribution of economic and social benefits. The premise that only free trade in agriculture could exploit Mexico's comparative advantages in this sector was championed as the newest vehicle for attaining the long-sought-after modernisation of the sector. Modernisation was taken to imply an equitable distribution of benefits for rural Mexico (Salinas,1991).

On January 1 of 1994, the first day of the North American Free Trade Agreement, the *Éjercito Zapatista de Liberación Nacional* (ELZN) of Chiapas publicly declared war on the Mexican army and the government of Carlos Salinas de Gortari as a "last but just measure" to avoid dying of hunger (Camacho, 1994: 8). This justification is more understandable given the discussion of the peasant decision framework that will be discussed in Chapter Two. Although armed opposition to the Government of Mexico has been present at varying levels of intensity since the Revolution, in addition to ELZN, a number of new armed groups have been organised since 1994 with similar demands of justice for rural Mexico[22] as income distribution worsened (Stratfor, 2000) and government repression of opposition increased. Poverty and the lack of effective institutions

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[22] They include: the *Ejército Popular Revolucionario* (EPR) in Guerrero (1996), the *Ejército Villista de Liberación Nacional* (EVLN) in Aguas Calientes (1998), and the *Ejército Revolucionario del Pueblo Insurgente* ERPI in Oaxaca (1998).

and public policies to address it are an integral part of the challenge facing rural Mexico and the dynamics of its economy, dominated by maize production.

Maize and Poverty

In Mexico, federal policies directly targeted at improving the condition of the poor were most often initiated only in response to a perceived threat to the PRI's continued hegemony over political power; the timing of redistribution of land through the creation of *ejidos* by presidential decree for peasants during times of crisis is an example. Policy action did not last much past the crisis period[23] (Kurtz, 1999: 22). Most other major efforts at addressing poverty have originated from outside of Mexico.

Between 1949 and June of 2000, the World Bank loaned more than US$ 31.5 billion to the Government of Mexico in an almost continuous stream of 173 development projects (World Bank, September , 2000). Mexico is the largest recipient of World Bank loans (Banco Mundial, 1997: 194).[24] It is not surprising therefore that the World Bank's conviction that what is best for the poor, namely the liberalisation of markets, has been a key factor in poverty reduction programs in Mexico since 1982.

The debt crisis obligated Mexico to adhere to World Bank and IMF structural adjustment policies, eliminating most subsidies in agriculture and privatising the state enterprises involved in the sector. Mexico initially retained its

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[23] The possible exception in the case of land redistribution was the administration of Lázaro Cárdenas.

[24] These have been made almost exclusively through the International Bank of Reconstruction and Development (IBRD).

double subsidy on maize[25] because of its political "sensitivity". In the absence of other measures, this policy was regarded as Mexico's *de facto* rural employment and antipoverty program but it was also identified as a major contributor to the poverty cycle. In 1984 over 76% of Mexico's rural population was classified as extremely poor compared to only 9.9% of the urban population. 61% of the poorest rural heads of household were either self-employed, likely as small-scale producers or landless agricultural labourers. Mexico's poor, who are predominantly rural, were seen to be net buyers of maize and made worse off by the higher-than-world prices that CONASUPO's price guarantees generated.[26] Guaranteeing maize prices at levels above the world price was also seen as perpetuating a production system that allocated land and rural labour inefficiently and benefited only a very small group of already better-off producers (Levy and van Wijinbergen, May 1992:16-19).

The removal of tariff protection for maize and untargeted consumer subsidies was widely seen as a pro-poor policy change (Levy: May 1992, Sept. 1992, De Janvry: 1995, Doroodian: 1999).[27] The poor, who are considered to be net buyers of maize would benefit from the substantially lower import prices

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[25] Guaranteeing producer prices that were higher than the world price and urban consumer prices that were lower than the world price.

[26] Subsidized maize was only available at CONASUPO stores that the rural poor did not have the same access to as did urban consumers.

[27] The following World Bank Reports for projects in Mexico are based on this same analysis: PAD 23 Dec. 1997. Report No. 17263-ME, Loan to Nacional Financiera for Rural Development in Marginal Areas Project: SAR 24 Jan. 1994. On-farm and Minor Irrigation Networks Improvement Project: SAR 15 Jun. 1994. Rainfed Areas Development Project No 12533-ME: SAR 31 May, 1996. Water Resources Management Project: TA Sept. 1996. Mexico Rural Finance Technical Assistance and Pilot Project No. T-6924-ME.

expected to result from liberalisation.[28] At the same time, they would be released from the labour demands of commercial maize enterprises and be able to involve themselves in more productive economic activities. Public money, no longer spent on maize subsidies, could be targeted with greater efficiency to human-capital improvement and reducing poverty.

The net sellers of maize would be the clear losers but with an anticipated shift to other labour-intensive crops, especially on irrigated land, it was estimated that very few people would be without work,[29] while close to six million rural people could potentially benefit from the policy change. The alternative crops suggested were fruit and vegetables on irrigated land and pasture on rain-fed lands (Levy and van Wijinbergen, Sept. 1992: 481-498).

Other economic analyses also predicted minimal negative welfare effects resulting from the removal of subsidies (Doroodian, 1999 and De Janvry, 1995).

A number of World Bank Staff Appraisal Reports,[30] sketch out this same analysis but add that selling vegetables to the USA market would generate enough foreign currency to offset the costs of purchasing imported maize from the USA. Vegetable production was already an important sub-sector of Mexico's agricultural economy.[31] Although it occupied only 3.4% of the total seeded area in 1993-94, it provided 21% of the total value of the agricultural sector and 46%

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[28] The assumption is that that the poor are economic actors and that the cash income previously used to purchase maize would go further because of the lower price for maize.

[29] Levy and van Wijinbergen estimated the number of unemployed would increase by only 145,000 people if all of their recommendations were adopted by the government of Mexico.

[30] See footnote number 3.

[31] It is obvious that the majority of Mexican producers would be unable to grow vegetables commercially because of inappropriate asset endowments, access to credit or markets.

of foreign exchange generated by agro-exports in this same year (Gómez,1995: 258).

Other authors writing on the effect of NAFTA on rural Mexico predicted an abandonment of agriculture and massive movement of rural people into the cities as maize production was liberalised (De Ita Rubia, De Walt). It was even postulated that peasant agriculture might be totally eliminated by the reforms (Valtonen, 1997: 3). Neither of these extreme scenarios have been documented although it may be argued that rapidly increasing rural poverty trends (Social Watch, 2000) and depopulation of rural communities (Mojar Ponce, 2001: 29) may support these hypotheses.

Mexico's participation in NAFTA was billed as an opportunity to modernise rural Mexico by creating an investment environment that would attract the foreign and domestic capital needed to complete the transformation to the production of crops other than maize.[32] Marginal areas lacking this productive potential would receive direct producer payments[33] over the 15 year phase-out period proposed to help them establish themselves in other economic activities during the transition period (World Bank, June 15, 1994:6-15).

The planned 15-year transition negotiated in NAFTA for reaching parity with world maize prices was compressed into roughly 30 months. As a result of the peso crisis, domestic corn prices fell by 48% between January 1994 and August 1996, converging with those of the international market, 12 years ahead

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[32] By enhancing productivity of land assets through improving or creating new irrigation systems, labour allocation would focus on vegetables rather than maize.

[33] Through the Programa Nacional de Solidaridad(PRONASOL) and the program PROCAMPO.

of schedule. Because Mexico decided to no longer collect tariffs on imported maize, Mexican producers were forced into a rapid adjustment (Raghavan, 2000). However, no change in the annual area seeded to maize on a national basis has been observed since 1994 (FAO, 2001). This will be discussed in more detail in Chapter Three. On January 1, 1999 the end of consumption subsidies on tortillas and of the state enterprise CONASUPO[34] was declared, marking the nearly complete withdrawal of direct government intervention in the maize economy (Casco Flores, 1999: 495).

Conclusion

Maize emerged in a close relationship with the civilisations of central Mexico. It continues to be the main dietary staple and to varying degrees of intensity, its production involves most of the rural population. The struggle for control of agricultural factors of production, especially land, dominated the 20th Century and remains a contemporary issue. In the context of the debt crisis, structural reform and market liberalisation that followed during the 1980's, Mexico's maize price policies were identified as being a major contributing factor to rural poverty.

Radical policy reforms were undertaken by the Government of Mexico to withdraw subsidies and other government price support of domestic production of maize, in preparation of the signing of NAFTA and the formalising of Mexico's newly liberalised market. These policies were expected to have net positive welfare effects in rural Mexico. Although Mexico negotiated a 15 year phase out

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[34] Compañía Nacional de Subsidios Populares

period for its protectionist maize policies under NAFTA, it reduced this period to only two and a half years by choosing to not collect tariffs on maize imports after 1996. This decision was related to the debt crisis of 1995 and a sharp peak in world maize prices in 1996. This will be discussed further in Chapter Three. Since liberalisation, the expected shift away from maize production has not occurred.

It is hoped that this chapter has given the reader a basic understanding of the context of the political economy of the maize sector in Mexico. While the treatment of specific issues was not exhaustive, it is hoped that an appreciation for the complexity and interconnectedness of these issues has been gained. The next chapter will look at the underlying theoretical assumptions of how Mexican farmers were to be encouraged to abandon the commercial production of maize in favour of other productive activities. It also provides a summary of the theoretical framework of 'peasant logic' that may better explain the observation that land allocated to maize production does not seem to have changed since the reforms, including pricing policies.

Chapter Two

Decision-Making Frameworks in the Maize Economy

Introduction

This chapter will contrast two theoretical decision-making frameworks under which farmers decide what crops to plant. Many authors confirm that there are two distinct agricultural production systems that coexist in the Mexico, those associated with subsistence and commercial agriculture respectively. The Mexican agricultural ministry, SAGAR, identifies these same two systems as dominating domestic maize production. For SAGAR, the subsistence framework concentrates on production for household consumption, with its priority being to ensure a sufficient supply of maize to feed the members of the nuclear family production unit. These units rely on intensive use of family labour and the sharing of resources obtained from family-member involvement in a number of productive activities. The second system, commercial production, produces maize in order to sell it in the market place. Producers using the commercial decision-making framework make intensive use of capital (SAGAR, 2000: 26) and are assumed to be motivated by the neo-classical, liberal assumptions of a "rational man" in that they maximise profits. This chapter will focus on the direction of the response to changes in the price of maize for each of these frameworks and their respective production systems.

The Neo-classical Framework

Following the debt crisis of the early 1980's, Mexico embarked on a neo-classical development road, dictated in large part by the IMF and its sister organisation, the World Bank (WB). This model was at first only reluctantly accepted by the government of Mexico, however, beginning with the administration of Carlos Salinas de Gortari (1988-1994) and ever since, it has been fully embraced as Mexico has sought deeper economic integration with the USA market through NAFTA (Grinspun, 1996: 177).

The relationships that comprise any economic system, can be analyzed with reference to two key terms. "Competition" refers to horizontal relationships created when a relative equality of power or influence exists among individuals in the context of offering choices of goods and/or services to one another. The terms of exchange or choice are assumed to be made voluntarily, primarily through the mechanism of prices in markets (Bowles, 1993: 19-23). The model presented by the IMF and the World Bank had as its base this horizontal equality of opportunity of actors as its dominant feature.

A second dimension is "change". This refers to the dynamics of the system that help it to perpetuate itself (idem) or lead to its demise over time. For the neo-liberal decision-making framework, the supremacy of "liberalism" as its philosophical and normative base acts as a major contributor to its perpetuation.

Liberalism emerged during the French Revolution of 1789. It rejects the value of plurality and all notions of traditional culture that emphasize the good of "community". Instead, liberalism proclaims the absolute sovereignty of reason and the supremacy of the individual over the community. The underlying

assumption made is that traditional plural societies must fit into a single homogenous mould where only liberal values are acceptable (Díaz Polanco, 1998). Applying liberal values to the maize economy, all "rational" economic actors are assumed to organize themselves according to a single production logic and to respond in the same way to an identified set of stimuli, in a word, prices, determined by supply and demand in an unobstructed market.

The standard trade model is the contemporary expression of liberal ideology in this system in which commercial maize producers are assumed to function. The essence of the standard trade model is that differences in the productive capacity of individual economies give rise to trade, through which static and dynamic welfare benefits can be obtained. This capacity is disciplined by the relative prices of factors of production, usually simplified as land, labour and capital and, the prices of the final goods and services produced by them. When countries trade, it is assumed to be to their mutual benefit (Krugman, 2000: 92-113). The neo-classical framework challenges that government intervention, specifically protectionism and subsidies that are still widely used in agriculture as instruments to redistribute income, have resulted in distorted prices and, led to economic inefficiencies with welfare costs instead of gains. The neo-classical framework posits the removal of government intervention in markets and makes the following assumptions that are relevant to the present investigation:

1. Within nations, factors of production are perfectly mobile among production activities, and the economy as a whole is characterized by perfect competition without risks or uncertainties.

2. Prices are determined by supply and demand as many small and anonymous producers attempt to minimize costs and maximize profits in market transactions.
3. Trade is balanced at any point in time as all national economies are able to readily adjust to changes in international prices with minimal dislocation.
4. Secure land tenancy exists to assure capturing benefits of long-term investments.
5. Adequate market information is provided to both buyers and sellers, especially the characteristics of the products offered and their price.
6. Safety nets mitigate risk and uncertainty for those affected by economic misfortunes or weather-related events (Keyfitz, 1991: 7-14 cited in Todaro, 2000: 642-643).

The expression of these in Mexico will be discussed in more detail in Chapter 3.

A major criticism of the general trade model is that its relationships exist only in theory, as many of the model's assumptions do not adequately reflect what is observed in the real world; full employment does not exist, factors of production are not immobile internationally nor are they necessarily mobile domestically, etc.. As well, the market preconditions and institutions described are specific to the cultures and values of only a handful of countries.

It is also often assumed that the model is neutral in regard to the normative judgements it makes. An "invisible" hand decides the outcome of "where, what, when and for whom?" goods and services will be produced. However, that all goods and services must be assigned a price in the market in order to be produced and that the price is directly proportional to the buyer's ability to pay, are themselves normative, value-laden assumptions. As we shall see, in the *economía campesina* or subsistence framework, the relative values placed on factors of production and the final product, maize can be distinct.

Given the assumptions named in the commercial framework, the decision-making process for commercial producers is based on their knowledge of the characteristics of the factors of production, and final good, maize, embedded in the competitively established market price. This implies a functioning communication infrastructure.

When commercial producers discern that profits are increasing over time, the expected response is that they will increase their production of maize. In the present investigation, the producers' production decision will be measured by the allocation of land to maize. When profits decline, it is expected that land will be allocated to other crops and thus maize area would be decreased. Similarly when economic losses are expected, commercial producers would cease to produce maize and instead allocate land resources to other crops or productive activities.

It was expected that Mexico would no longer produce maize commercially on a large scale after the liberalization and integration of the maize economy into NAFTA. The policy change in 1996 that resulted in the converging of the domestic price of maize with the lower world price, offers an opportunity to examine the observed response of Mexican maize producers to the scenario of declining and even negative profits. On the surface at least, it appears that the neo-classical commercial framework described does not adequately explain the production decisions actually oberserved. Labour use in agriculture declined by just under 7 % during the period of liberalization. However, the change was not the result of a retooling of agriculture. As will be shown in Chapter three, the aggregate of maize producers responded to sharp declines in prices (estimated

at 45%) and profits by continuing to devote the same area of land to maize production. The framework of the peasant economy, or *economía campesina*, may provide a better explanation for what was has been observed.

The Peasant Economy

Alexander Schejtman points out that most studies do not regard peasant agriculture as a distinct form of organizing production. From the view of the "change" dynamic of liberalism just presented, peasant agriculture is viewed simply as a remnant of pre-capitalism that is destined to disappear as modern commercial agriculture is established. According to this analysis, empirical differences observed between modern and traditional subsistence agriculture are attributed to the relative scale and availability of factors of production. The allocation of resources by all producers is seen to be governed by a single decision rational, that of minimising costs and maximising profits as disciplined by prices (Schejtman, 1988: 364).

For example, Roger Bartra, a noted writer on Mexican agriculture, states that, "there is no indigenous mode of production distinct from the simple commodity or capitalist economies". He points to the participation of rural Mexicans as day labourers in modern enterprises as evidence of peasant integration into the larger capitalist economy (Bartra, 1993: 181). Schejtman does not deny that there is not a linkage or relationship between the capitalist system and the peasant economy, but points to the relative shallowness of this integration in contrast to the argument that the peasant economy is merely an outcome or function of capitalism.

Defining what is meant by the *economía campesina*, or the peasant economy (these terms will be used interchangeably), must begin with understanding the term, peasant or *campesino* in Mexico. Diverse human civilisations have lived in what is now present-day Mexico, for over 5 thousand years. This cultural diversity persists, in spite of efforts that began in the 19th Century and that continue even today in an effort to assimilate indigenous peoples into a single, homogenous Mexican society (Bonfil, 1987). An indicator used in Mexico to identify indigenous populations, flawed as it may be, is language. The mother tongue of approximately 14% of Mexico's population is not Spanish and it is assumed that because they speak an indigenous language they are the only remaining indigenous peoples. In 1988, 55 distinct indigenous languages were documented encompassing over 200 dialects (SIL, 1996). Far from disappearing, between 1970 and 1990 the indigenous population measured in this way grew by 2.7 % annually compared to only 2% for the Mexican population as a whole (SEDESOL, 2001).

In contrast to the language criteria officially used to measure indigenous populations, it is estimated that a quarter of Mexico's population regards itself as *campesino*. "*Campesino*" is the rural productive face of almost all of Mexico's indigenous population from the *lechero* in the high lands of Jalisco, the *oaxaquita* that picks tomatoes in Culiacán, the *henequenero* in Chiapas and the *maicero* that weaves rugs in the mountains of Guerrero (A. Bartra, 1998: 3). What they have in common is diversity; historic, economic, ethnic and productive (Cruz, 1998: 1, SEDESOL, 2001: 3, Bartra, 1998: 3).

Maize production is their most important activity although crop yields, levels of investment and technology vary widely (Cruz, 1998: 1). At least 167 distinct agricultural production systems have been identified in Mexico, corresponding to different combinations of economic incentives, growing conditions, yield profiles and production costs (Zuloaga, 1994: 93) making general equilibrium analyses used in the neo-classical framework as difficult to construct as is a definition for an "average" *campesino.*

On the one hand, the government of Mexico states that indigenous people use a logic different than that of the larger *mestizo* population (SEDESOL: 2001: 4). On the other hand, Guillermo Bonfil in *México profundo* argues that the essential elements of indigenous culture apply to most Mexicans including *mestizos*, although they may be unaware of or even deny their origin (Bonfil, 1987). There is no typical Mexican *campesino.* However, it is possible to make some generalizations about how they are organized in productive units and the expected direction of their production response to changes in prices of maize as outlined previously for the neo-classical framework.

Labour

A. W. Lewis distinguished between the *economía campesina* and capitalist views of labour because the former does not offer a wage in return for labour and because profit is not its motive (Lewis, 1954: 142).

Schejtman explains the significance to the peasant economy of retaining what for the capitalist would be unproductive labour. The supply of labour for a peasant unit is determined by the size of the family and the stage of each of its

member's biological cycle.[35] As Lewis states, unlike the capitalists who can dismiss "unproductive" labour, the participants of the peasant economy are morally committed to their labour supply. It is a relatively fixed, not a variable factor of production. Heads of household find work for all members of the family by increasing the intensity and range of their efforts, regardless of whether or not such efforts are productive in the commercial sense. A common contemporary rural saying reflecting this same logic is that farmers have "more time (labour) than money (capital)".

The peasant family maximises its income, measured by subsistence goods (versus profits). All members of the family including women, children (both adult and minors) and ageing parents contribute to productive activities on what in most cases is marginal land.[36] Until its subsistence requirements are met, it is prepared to devote additional labour to productive activities even though this labour may be remunerated at a lower rate. It will produce anything it can, for which it would otherwise have to enter the marketplace to obtain. This allows the peasant to continue to live on an income, that in statistical terms, is insufficient (Schejtman, 1988: 373-374).

The further the peasant is from meeting his subsistence requirements the more days he will be willing to work off his holding (ibid. : 380-381). In contrast, the commercial sector will only commit its resources when there is a reasonable probability of profit, or in the case of a wage-good labourer, he or she demands

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[35] The socially-accepted and age specific labour capacities.

[36] For example President Gustavo Díaz Ordaz (1964-1970) distributed 25 million hectares of land in Mexico to peasants but only 10% was arable (Ortero, 1989: 298, 293).

as much payment for every hour of labour contributed to an enterprise (Ibid. : 371) up to the legal maximum and then, overtime must be paid.

The peasantry is defined by Schejtman as being dominated by family units with access to land, whose primary activity is agricultural production and whose most important goal is to ensure its members' subsistence and the reproduction of its living and working conditions (Schejtman, 1988: 366). This is the "change" aspect previously mentioned. While the reproduction of the commercial system relies on creating profits from the factors of production at its disposal (land, labour,[37] capital), the motivation of the peasantry is the reproduction of itself through the subsistence of all of the members of the nuclear family unit and of the community.

Land

In the *economía campesina*, land is regarded as something more than a factor of production to which a price can be assigned. It represents a vital source of food and a territorial space linked to both individual and social identity. Land is a source of power and prestige deeply embedded in Mexico's continuing plurality of cultures. Access of families to land organized in *ejido*s arose as a popular means of achieving social justice. It is thus proposed that rural land markets in the *economía campesina* do not operate simply on the principles of supply and demand, but are complicated by social and political factors. As an example, it has been observed that in rural communities, private land tends to be sold only to people regarded as being part of the community and denied to outsiders,

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[37] This includes the peasant labour economy.

regardless of the price that is offered. In the *economía campesina* the survival of the community is linked to the social limits that are placed on land markets (Diego, 1998: 6,8).

Land is a constant that defines peasant agriculture. For Schejtman, the dominant production substitution identified is between land and labour, labour and land, while in a commercial model, it is between land and capital and labour and capital (Schejtman, 1988: 370). This intimate physical involvement of the peasant community in a two-factor (land and labour) subsistence economy, no doubt contributes to the powerful bond and spiritual relationship among peasants, land and the staple crop that is produced, maize in the case of Mexico.

In stark opposition to the neo-liberal assumption of many small and anonymous producers who individually attempt to minimize costs and maximize profits, Mexican indigenous communities and *ejidos* are administered under a complex social system of decision making. While this system has adapted to outside pressures and opportunities that have arisen over time, it is said by the government of Mexico to have retained its original essence of an economy that makes use of sophisticated allocations of time and community labour to satisfy both community and family needs (SEDESOL, 2001: 1) versus individual accumulation.

Capital

The Mexican *campesino* household is an economic actor as Schejtman points out, but more importantly, it is a part of a complex social fabric whose center is the agrarian community. Various intensities of community integration with the commercial system exist among the diverse groups that make up rural

Mexico but the *campesino* is never a single person or even a family. Instead, a *campesino* is part of the full range of economic and social relations that are connected by the neighbourhood, the community, the agricultural guild and the region. *Campesinos* use capital but its accumulation is subordinate to sociocultural objectives. The wellbeing of the community comes before profits. The community, on which one's sense of belonging depends, is preserved at all costs (A. Bartra, 1998: 6,9).

Prices

The peasant relationship to the marketplace is distinct from the commercial sector in that production decisions are not geared toward producing what is saleable or the most profitable. Crops are grown that will consistently support the unit's subsistence requirements. The peasant unit sells small portions of its crop[38] or hires its members out as labourers, as specific needs arise for goods that it cannot itself produce and, in order to make external cash payments such as taxes or rents that are imposed upon it (Schejtman, 1988: 372). The various analyses made that concluded that lower maize prices would harm only the commercial production units in Mexico excluded the possibility that subsistence units were economic actors. The valuation of their status as net buyers of maize somehow excluded the selling dynamic of their market participation.

Consumption subsidies like those formerly offered at CONASUPO stores, the granting of *ejidos* and proximity to cities where day labour can be obtained,

all tend to broaden the options that permit the subsistence peasant unit to survive. A growing population, deteriorating ecological factors and increasing dependence upon the market place (i.e. it being more difficult to consistently satisfy cash requirements) threaten the peasant unit's ability to be self-sustaining and would be expected to lead to the gradual elimination of the peasantry (Ibid.: 384-386).

The peasant unit does not enter into the market place with the intention of accumulating wealth. It does so only to meet its immediate cash needs as part of a larger risk-mitigating strategy. As a result of this approach to the market, the price at which peasants offer their products for sale and at which they are willing to work is far below what a capitalist would exchange his products or labour for. The peasant's criteria for judging whether or not a given activity is worth the investment of labour or the opportunity cost of selling a small portion of its production is based upon whether or not the transaction will meet the immediate requirements (Schejtman, 1988: 380). On this point, in the context of falling maize prices, one would expect subsistence maize producers to increase their production of maize given that they would anticipate having to sell a larger quantity of their production in the marketplace over and above their subsistence requirements in order to meet the same level of external cash needs.

Risk and Uncertainty

The peasant unit attempts to internalise risks and uncertainty in order to lessen the variability of its output of subsistence goods, not profits. Peasants

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[38] It is understood that generally, these would be regarded as surplus amounts though in fact they

tend to shield themselves from risk and uncertainty in their selection of proven reliable crops, reducing the amount of purchased inputs to the lowest level possible, and similarly, their participation in the market place. They rely instead on their most abundant resource, labour (Schejtman, 1988: 375).

When asked if he would consider using hybrid seeds, an ejiditario responded, "*Como nuestras tierras son muy pocas no podemos, arriesgas el pan de nuestras bocas. Es por eso que no sembramos hibrido*".[39] While this statement was made in the mid 1960's, in the 1980s it was estimated that only 16% of Mexico's maize acreage was planted with improved varieties compared to nearly 100% in the USA (Conchiero, 1995: 199). In the capitalist way of thinking, given the proven superiority of the new varieties, the *campesino* is responding irrationally. However, this analysis does not consider the possibility of different values being placed on production (subsistence) and its goal (reproduction of the peasant unit).

Frank Cancian offers a different view of why peasants do not demand higher prices for their labour or goods produced. Cancian first makes a distinction between risk and uncertainty. Risk, in neo-classical terms, is the special condition where uncertainty is measurable or quantifiable (and associated with a market price). For Cancian, risk describes a situation in which the actor knows the odds for and against a desirable outcome resulting from a given course of action, whereas uncertainty describes a situation where he does not.

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may not be.

[39] Because we have such a small amount of land, we are not able to risk losing the food it might produce. And so we do not plant hybrid seeds (free translation).

Peasant production and market decisions are considered to be made in the context of uncertainty versus risk, in the absence of full market information (Cancian, 1972: 191). This may arise because of poor information channels, intermediaries with vested interests, language barriers etc.. In the present investigation, an effort will be made to address the structure of communications and transportation systems as a possible explanation for the apparent market failure demonstrated by producers continuing to grow maize even though it is not profitable to so in commercial terms.

Conclusion

This chapter has contrasted two distinct theoretical decision-making frameworks within which farmers make decisions of what crops to plant. The *economía campesina* is associated with subsistence agriculture, while the neo-classical framework is associated with commercial production. Commercial production assumes that producer decisions are motivated by the potential for maximising profits in order to accumulate capital. Commercial farmers are cognisant of and respond to prices such that if profit potential increases, a shift to increase maize production is expected. If profits decrease a shift to decrease production is expected. When profits are negative, production would be expected to cease and be replaced by other profitable crops.

Frank Cancian suggests that economic man always operates within a cultural framework prior to determining the values made. It is the cultural framework that defines values, with which he or she then economises (Cancian, 1972: 191). In the neo-classical framework, land, labour and maize prices are taken to be determined by supply and demand, while culture and social adhesion

are not given a value. In the *economía campesina*, the valuation is distinct. Prices associated with these same factors of production and output are inversely proportional to his or her labour input or participation in the market. When maize and labour prices are high, market participation need only be limited in order to obtain the unit's cash requirements. The peasant does not need to produce much of a surplus to cover both the subsistence and the cash needs necessary to sustain the unit. However, if prices are low, the peasant unit would be obligated to increase production over and above his subsistence needs. He would have to produce more maize to sell or alternatively, participate to a greater degree in the labour market in order to meet the unit's cash requirements.

In Mexico, large commercial producers control about 40% of arable land and access two thirds of the capital resources used in agricultural production in Mexico (Conchiero, 1995:18). They dominate economically, but if the measure is sheer human mass, it is peasant agriculture that is more important. 2,773,887 *ejidos* and 443,091 indigenous communities comprise 87 % of agricultural producers and they control 60% of land resources. Individually, peasants have limited land that is generally of poor quality and they have access to few capital resources.

The following chapter analyses the response of this complex mix of assets and decision makers to falling maize prices and profitability.

CHAPTER 3

MAIZE PRODUCTION

Introduction

In the late 1980's, the goal of attaining domestic food self-sufficiency in Mexico was abandoned in favour of an open-market model in which Mexico would specialise in the production of crops for which it had an identified competitive advantage, and trade for those it did not, specifically, maize.

This chapter begins by exploring the definitional distinction made between commercial and subsistence production units in the structural organisation of maize production in Mexico. Using the classification made by the Mexican Department of Agriculture SAGAR, two groupings of states are identified as being dominated by either commercial or subsistence agriculture. These two groupings are used as a basis of comparisons throughout the chapter to determine if they have responded differently to the reduction in maize prices since domestic prices converged with world prices in 1996. Major changes in policy instruments and initiatives introduced since 1988 by the Government of Mexico that affect the domestic maize economy will also be discussed in terms of their relevance to the decision-making frameworks identified in Chapter Two. This chapter investigates the dynamics of the observation that the area of land dedicated to maize production in Mexico has not been reduced. It concludes by discussing the degree to which this observation can be understood using the decision-making frameworks of the *economía domestica* and the commercial system respectively.

The Structure of the Maize Economy

According to the 1991 Mexican census on agriculture, there were between 2.5 and 3 million maize production units in Mexico. This represents about 18 million people who depended in one degree or another, on maize production for their livelihood. 26% of maize production occurred on irrigated land while the remaining 74% was on rain-fed land (Mohar Ponce, 2001: 60).

Again referring to the 1991 census data, 23% of maize producers obtained good yields (2.8-3.2 tonnes/hectare), produced 50% of the total maize crop (some of these are *ejiditarios*) and were net sellers to the market (Idem). Their production system is characterised by intensive use of capital, technology, large-scale production (relatively) and high levels of market participation. The decision-making criteria is understood to be focused on generating maximum profits (SAGAR, 2000: 26).

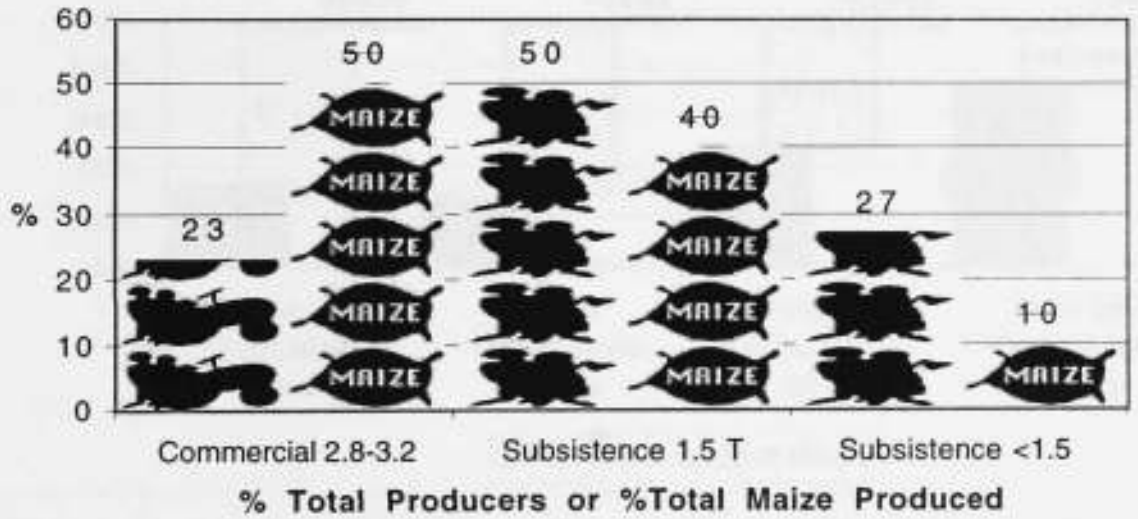
SAGAR, identifies eight states where commercial maize production defined in this way is the dominant production system: Sinaloa, Sonora, Jalisco, Tamaulipas and the Bajío region which includes Aguas Calientes, San Luís Potosí, Guanajuato, Querétero (Idem). Data from these states will be used subsequently to make a number of comparisons with the other production system, peasant agriculture, in order to gauge the degree to which they may have responded differently to changes in the maize pricing.

The second group, comprising 50% of producers, obtained relatively low yields (1.5 tonnes/hectare) and produced 40% of the national maize crop. The last 27% of producers farmed 21% of agricultural land and produced only 10% of the total maize crop. In 1991, 46% of all maize producers indicated that they do

not sell maize in the market (Mojar Ponce, 1999: 60). SAGAR identifies the production priority of this second group as being to assure the supply of maize for individual household consumption. They do not used improved seeds and contrary to what the peasant logic framework suggests, according to SAGAR they make use of significant amounts of fertiliser and pesticides. Family labour is used intensively to produce maize. Nine states are identified as being dominated by subsistence agriculture: Estado de México, Puebla, Guerrero, Morelos, Veracruz, Oaxaca, Chiapas, Hidalgo and Yucatán (SAGAR, 2000: 26).

This structure of maize production is displayed graphically in Figure 3.0. The groupings are made on the basis of maize yields with those achieving yields of 2.0-3.2 Tonnes/ha being classified as commercial producers and those producing less than 1.5 Tonnes/ha classified as subsistence.

Figure 3.0 Maize Producer Productivity

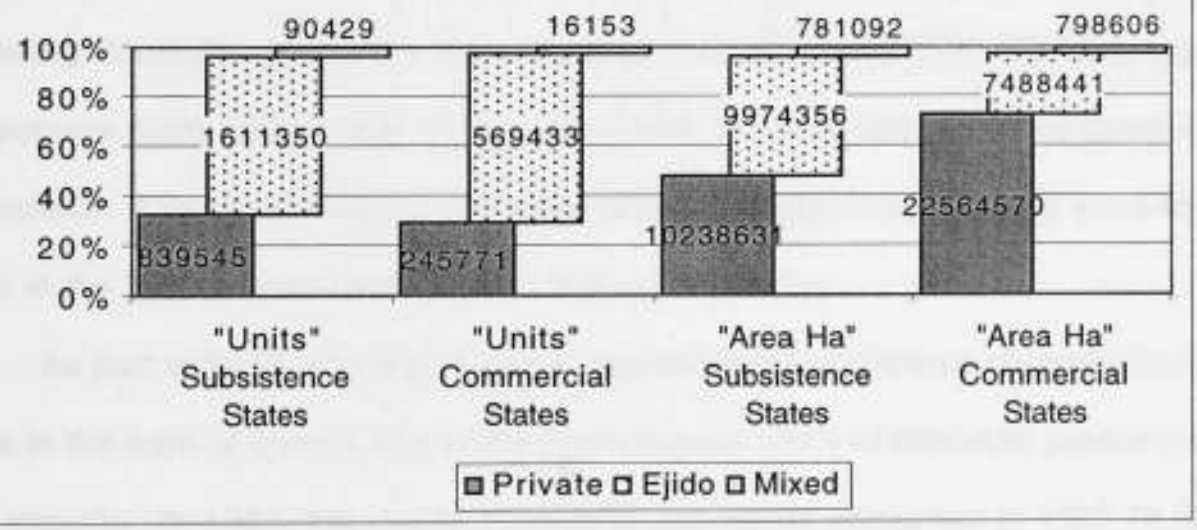


Source: Author's construction from Mojar Ponce, 1999: 60.

One cannot help but note the correlation between the subsistence states and a high incidence of poverty and social unrest throughout the history of Mexico. These eight subsistence states are also the same states with the highest population of peoples that still speak indigenous languages in Mexico. In both 1995 and 1997, only 8 % of the total indigenous population lived in the named states representative of commercial agriculture, while the eight states representing subsistence agriculture accounted for 79% of Mexico's total indigenous population (King, 2000: 8). It seems reasonable to conclude that subsistence agriculture is associated with indigenous populations given that language as an identifier likely underestimates the size of population.

Figure 3.1 shows that the relative proportion of the number of *ejiditarios* to private agricultural units is nearly identical for the two systems, approximately

Figure 3.1 Comparison Production Units & Land Area: Commercial vs. Subsistence States



Source: Author's construction from INEGI. 2001. "Principales Características de las Unidades de Producción Rurales, 1991". http://www.inegi.gob.mx.

65% and 31% respectively. (The *mixto* category consists of persons with land in both categories). However, we also see that the average land endowment varies considerably between the two groupings of states. In the commercial grouping, *ejiditarios* control on average 13 ha of land, while the private production units control 92 ha. In the subsistence grouping the *ejiditarios* control on average 6 ha of land while the private production units control 12 ha of land. Relatively small land holdings are a distinctive feature of the subsistence states in Mexico. We will now move to a discussion of the development of maize prices in Mexico.

Maize prices in Mexico

In order to manage the risk of not having adequate domestic supplies of basic food items at reasonable prices,[40] governments world-wide have implemented policies to foster food self-sufficiency. These policies include domestic price supports, crop insurance programs, preferential credit and marketing schemes as well as tariff and quota barriers which have the effect of shielding domestic producers from income fluctuations (OECD,1987:10) and consumers from prices that reflect the level of production risk involved in agriculture. Closed and highly protected domestic agricultural sectors were the norm in the 1980's world-wide, Mexico was no exception.

As part of its ISI strategy, Mexico imposed strict restrictions on agricultural trade in the form of quotas and tariffs that covered 100% of domestic production and imports. In 1989, the maize subsidy to producers amounted to US$ 72.80 per tonne or 54% of the world price. Maize consumption was also subsidised to

the tune of US$ 50.37 per tonne or 37% of the world price (Barbier and Burgess, 1994 cited in Doroodian and Boyd, 1999: 151). In 1991 the world maize price adjusted for quality differences between yellow and white maize, was US$ 132.50 per tonne, while the Mexican domestic price guarantee to producers was US$ 226.60 per tonne (Levy, May 1992: 21).

In 1989, 68 state-owned agricultural enterprises were involved in all aspects of agricultural production, processing and distribution. The most important of these to maize production was the *Compañia Nacional de Subsistencias Populares* (CONASUPO). It managed a network of processing plants, storage facilities, urban markets and rural stores. It also functioned as the sole legal importer of strategic products, including maize. CONASUPO was also responsible for managing Mexico's system of guaranteed maize prices and subsidies for production inputs (WB SAR, 15 June, 1994: 2).

From 1988 to 1994 Mexico underwent a radical change toward achieving a market economy and participation in NAFTA. State support of agricultural production, technical services, investment, input subsidies, marketing, price and other subsidies were almost completely withdrawn. State enterprises related to agriculture were privatised and nearly all trade protection of the sector removed (World Bank:June 1,1994:2-4). Under NAFTA, Mexico agreed to gradually liberalise its maize sector in exchange for guaranteed access to the Canadian and the US markets for horticultural products and other labour-intensive crops in which it believed it had a competitive advantage (Raghavan, 2000: 3).

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[40] For example, due to crop failure, natural disasters, lack of reliable and efficient transportation

As a result of the Uruguay Round of the GATT, Mexico converted import licenses into tariff-rate quotas[41] for maize (215%) and beans, agreeing to reduce this rate by a minimum of 10% (193.5% for maize) by 2004. However, under NAFTA, it agreed to completely phase-out this form of trade protection by 2009. By the year 2000, 24 % of the restrictive limit of the quota was also to be eliminated (NAFTA, October 26, 2000). The state enterprise, CONASUPO, that managed the system of guaranteed maize prices and consumer subsidies would be gradually dismantled. Targeted direct income support under the PROCAMPO program was provided to ensure a smooth transition toward a market system.

Just a little less than a year into NAFTA, the 1994/1995 devaluation of the peso had the effect of dropping the guaranteed price of maize offered by CONASUPO below the world price (Casco Flores, 1999: 998). In August of 1996, Mexico took advantage of the converging international and domestic prices to accelerate and complete the liberalisation process, 12 years ahead of schedule (Raghavan, 2000: 5). In Figure 3.2 we see a sharp rise in the international maize price beginning about the same time as the peso crisis and peaking in mid 1996. This likely contributed to the Government of Mexico's optimism about future prices in it decision to liberalise the maize economy. Figure 3.3 looks at prices in Mexico for the Spring Maize crop from data collected by Fideicomisos Instituidos en Relación a la Agricultura

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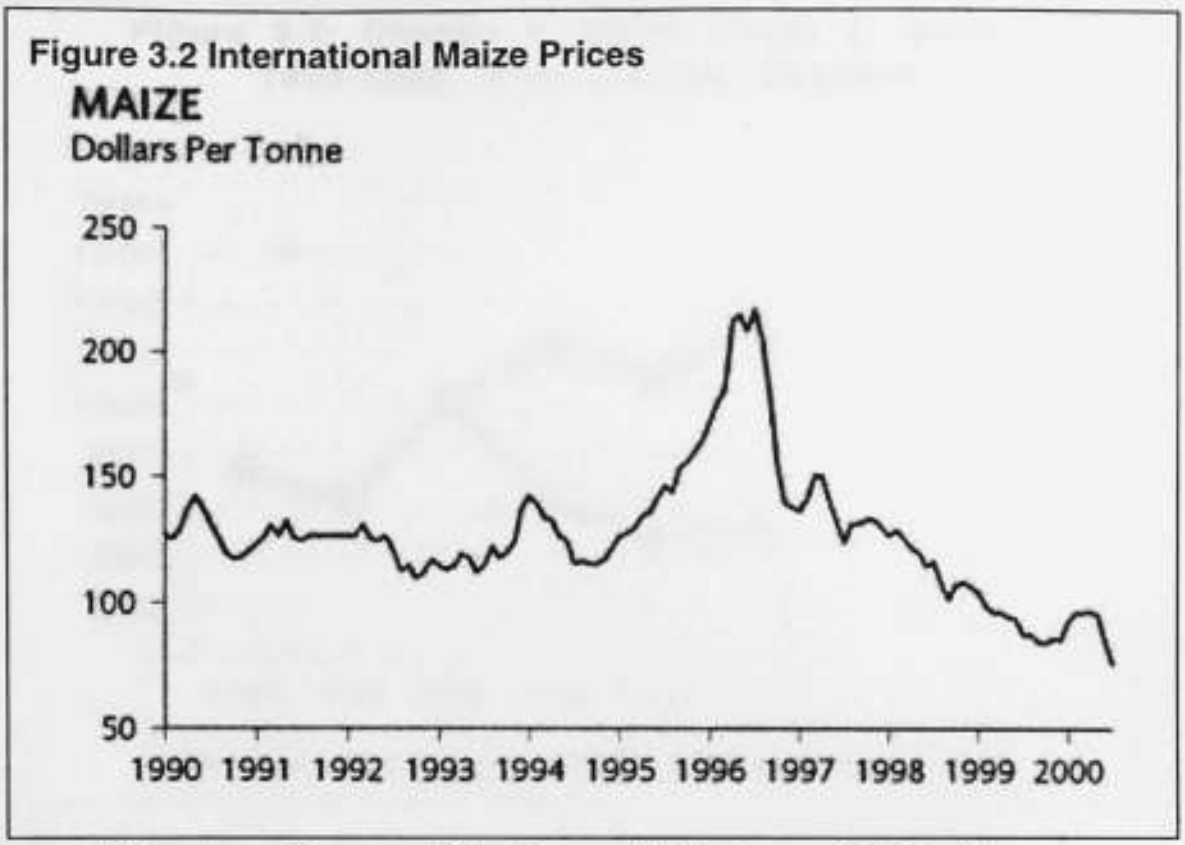
networks or supply disruptions caused by wars or trade disputes.

[41] A low tariff rate is charged within quota and a higher tariff rate is charged for over quota access. The effect is to enable the management of domestic supplies by being able to cut off over-quota imports.

Figure 3.2 International Maize Prices



Source: "Barclays Commodities Survey", 14 August 2000: 12.

(FIRA).[42] A country price was obtained by averaging the available data for each year. Real prices using 1994 as a base year were calculated using indices from Banxico, the Mexican central bank. Values are expressed as a single number for the entire year and thus the relationship to Figure 3.2 is only approximate. In December of 1994, Mexico abandoned its crawling peg approach to moderating the exchange rate of the peso to the USA dollar and instead allowed the peso to fluctuate according to supply and demand. This resulted in high rates of inflation in Mexico after this date. We see in Figure 3.3 that the real domestic prices (1994) tend to converge with the

[42] FIRA is a development bank that specialises in lending to commercial agricultural producers. It undertakes surveys of its clients to gather production information. Because costs have been calculated using a uniform methodology, FIRA's surveys can be used to monitor and compare prices over time (Avalos Sartorio, 1998: 14).

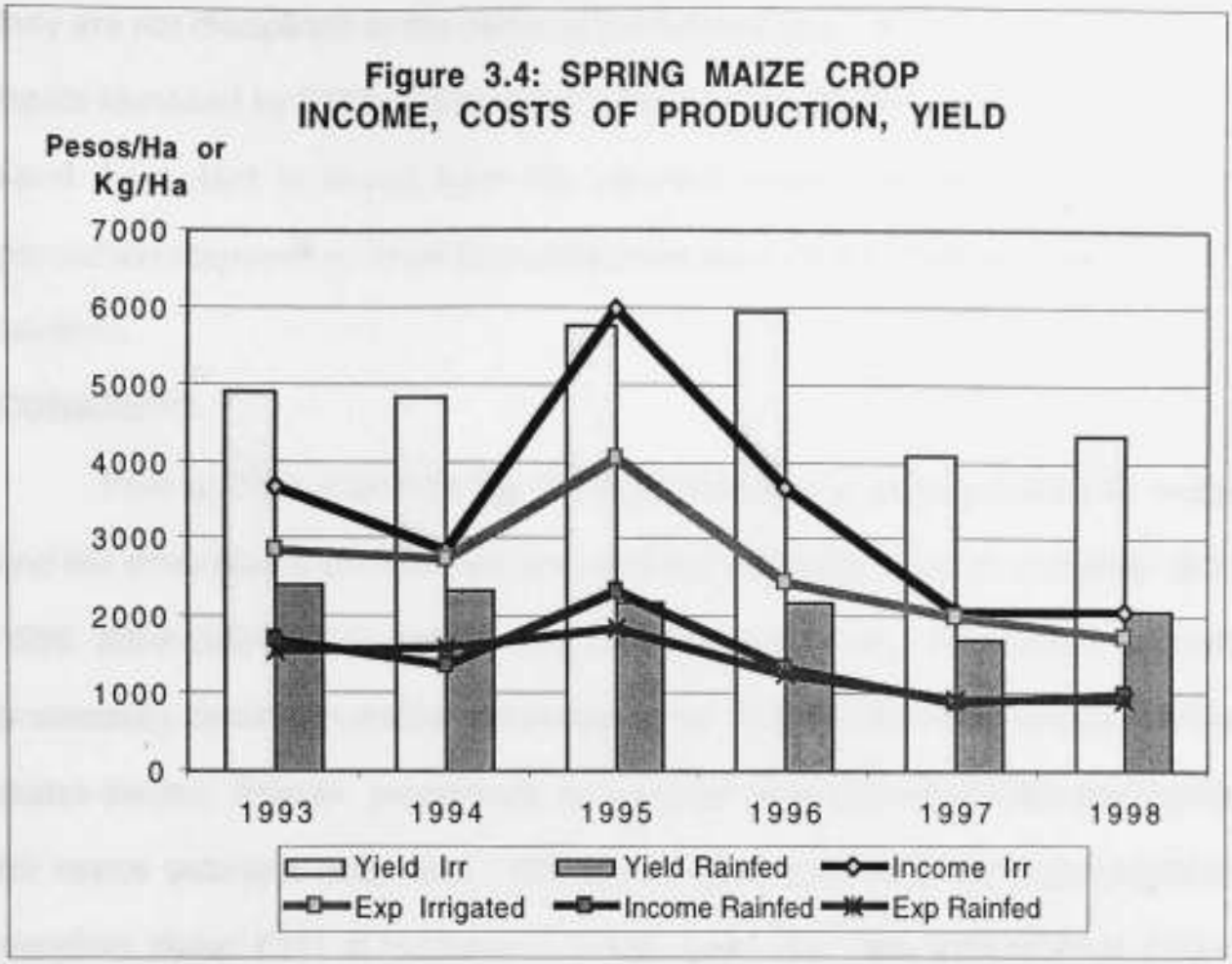
Figure 3.3: Change in Maize Prices in Mexico 1993-1998 Real versus Nominal

Source: Author's construction from FIRA and BANXICO data.

general trend of the falling world maize prices after 1996.

Figure 3.4 graphs production income and expenses (current pesos) as well as yields for commercial irrigated and rain-fed maize for the Spring crop,[43] again using FIRA data. A significant change is observed in all of these factors in 1995, corresponding to the combined effect of the devaluation of the Mexican peso and the sharp increase in world prices for maize. The most striking feature after 1995 is the rapid loss of profitability for maize production, i.e., the converging of the expenses and income lines. Commercial producers reduced production expenses as income potential fell which also resulted in reduced yields. The continued high yield in 1996 likely occurs because production

[43] Two crops per year can be grown under irrigation but the largest portion of the crop is rain-fed and is planted in the Spring.



Source: Author's calculations from FIRA data. July 2001. http://www.fira.gob.mx.

decisions for the Spring crop were made on the basis of market signals received prior to planting. Producers could not have anticipated the drop in prices or other factors such as Mexico's decision to fully liberalise Mexico's maize economy with the USA, twelve years in advance of what was agreed under NAFTA. The plunge in world prices in mid-1996 is attributed to the return of China as an exporter, increased exports from Argentina and new production records being set in the USA (Jourdain, 1997: 2-3).

In regard to sales that occur within the context of the subsistence production system, as previously explained, unlike the commercial producers

they are not disciplined to the same degree by the price of maize or by the capital inputs identified by FIRA. Their major inputs are family labour and land while the seed they plant is saved from the previous crop. One would expect less production response to price fluctuations because of this shallow integration with markets.

CONASUPO

Prior to 1990, CONASUPO managed the support price schemes for maize and ten other grains and oilseeds and was the only legal importer of maize. After 1990, price support was applied only to maize and beans. The largest crop and processing industry subsidy administered by CONASUPO was directed at the maize sector. Private processors on average paid 12% above the world price for maize between 1985 and 1989 while small *nixtamaleros*,[44] who together supplied about 20% of processed maize, paid less than international prices. CONASUPO absorbed the cost of transportation, storage, losses, and administration overhead for both types of sales. The only conditon imposed was that commercial purchasers had to sell their output at the official controlled price (Anderson and Bannister, 1992: 17).

Beginning in 1992, CONASUPO's subsidiaries were eliminated, privatised or transferred to the Ministry of Social Development (SEDESOL).[45] 89% of CONASUPO's rural storage facilities were transferred to producers, *ejidos* or local authorities reducing the activity of CONOSUPO in the market. In 1993 and 1994 CONASUPO purchased an estimated 42% and 31% respectively of the

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[44] Businesses that transform maize into tortillas.

domestic market supply of corn. In 1995 this was reduced to only 7.4% as the result of a small domestic crop and better prices offered in markets (Casco Flores, 1999: 499) The pan-territorial price previously paid by CONASUPO was replaced by regional support prices set below the market price.[46] CONASUPO became the buyer of last resort versus its former position as the prefered national buyer (Avalos Sartorio, 1998: 13).[47]

In 1998 the Government of Mexico announced that CONASUPO's remaining assets would be liquidated. A joint task force was set up to encourage the private-sector to undertake the activities formerly carried out by CONASUPO and to ensure that maize supplies continued to flow during the transition period to areas previously serviced by CONASUPO. In 1999, seven private marketing firms were supplying maize to millers at the national level. They purchased domestically and through NAFTA (Casco Flores, 1999: 495-504). As of February 1999, CONASUPO could no longer legally import maize. DICONSA, a former subsidiary of CONASUPO, now under SEDESOL, distributes subsidized maize, maize flour and other basic staples to targeted rural areas. In 1999 it had sales of 1.1 million tonnes of maize (INDESOL, 2001: 1), representing only about 6% of domestic production.

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[45] Secretaría de Desarrollo Social

[46] Base price + fixed transportation price + handling adjustment + regional marketing factor + quality adjustment.

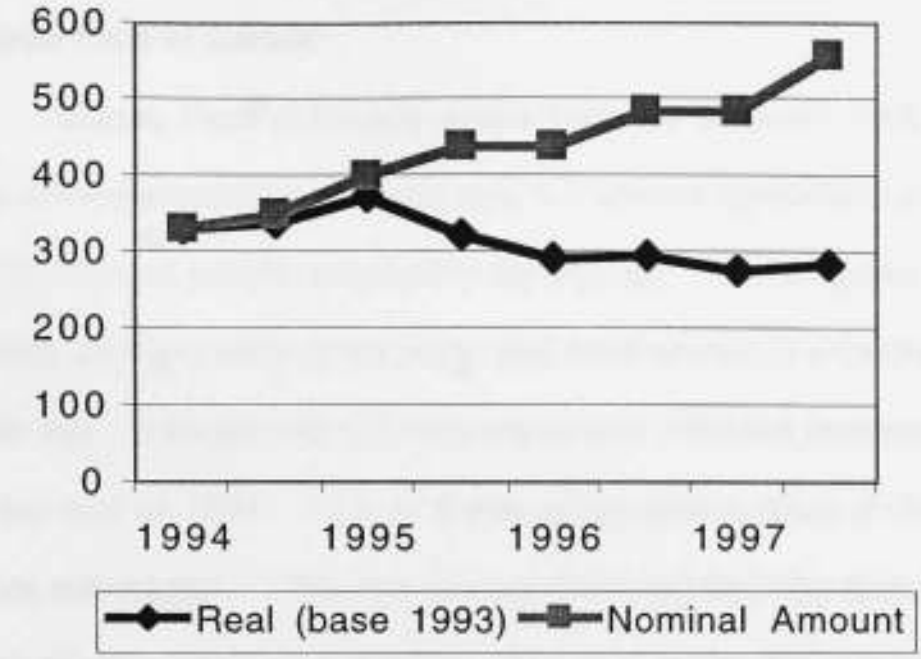
[47] CONASUPO offered a guaranteed price, accessible delivery points, and payment within 24 hours.

PROCAMPO

The goal of eliminating subsidies and tariff protection was to reach price parity between domestically grown maize and the international market price. The programs PROCAMPO (1987) and PRONASOL (1989) were designed to assist maize producers during this transition. Coinciding with the implementation of NAFTA in 1994, PROCAMPO makes annual direct payments to producers based on their historic cropped area of nine support crops. Maize is one of these crops. It was anticipated that 3.3 million producers would receive an annual payment amount of approximately US$ 110 per hectare for the first ten years of NAFTA, after which the amount would be gradually reduced to zero at the fifteen year mark. The payments are not directly linked to production or market participation (WB SAR, 24 Jan., 1994: 3).

It is argued that PROCAMPO has been effective in its goal to help farmers during the transition period (Davis et al., 1999, Mohar Ponce, 1999). The transfers represented, on average, eight percent of household income in 1994, reaching a high of more than 12% for a number of areas and for the poorest households. PROCAMPO would be expected to support peasant agriculture in the medium term in that it provides a source of cash disposable income. However, it has been pointed out that the transfer amount has not been fully adjusted to keep pace with inflation and hence its real mitigating impact has tended to decrease over time. This effect is shown in Figure 3.5 (Mohar Ponce, 1999: 64). The argument that Mexico's producers respond to nominal prices has been put forward (Cancian, 1972:191). This issue will be dealt with toward the end of the chapter.

Figure 3.5: Annual PROCAMPO Payments



Source: Author's construction from ASERCA data cited in Mohar Ponce, 1999: 64.

The PROCAMPO payments were announced in advance of the details of the program under NAFTA. The immediate result, according to the World Bank, was that farmers increased production of eligible commodities in the hope of increasing future program payments, opposite to the policy goal of reducing economically inefficient production of crops such as maize. However, subsequently, poor information as to who qualified for the payments and changing rules midstream is said to have discouraged participation (Baffes and Meerman, 1997: 7). In 1998 there were 2.7 million participants (Mohar Ponce, 1999: 64). When asked what they did with PROCAMPO transfers, 69 percent of respondents declared having used them to purchase inputs (Davis et al., 1999: 121). In 1997, 759,000 producers, or 17% of PROCAMPO participants ceded

rights to future payments as credit guarantees for repayment of loans (Avalos Sartorio, 1998: 13).

Alianza Para el Campo

Alianza Para el Campo arose from the Mexican 1995-2000 federal five-year development plan. Its goal was to increase agricultural productivity by mass introduction of proven production technology. The program was reinforced by training and technical assistance and mechanisation incentives (Mohar Ponce, 1999: 66). It began with 23 subprograms in 1996 but increased to more than 50 by the end of 1997. Two of these subprograms have a direct impact on the maize sub-sector. The first fosters mechanisation by discounting the price of domestically produced tractors and precision drills (seeding equipment). Producers can repair or purchase a new tractor or drill at roughly half the price of similar, imported machinery. In the first year of the program 11,176 tractors and 729 drills were bought or repaired. In 1997, a further 10,185 tractors and 1850 drills were funded under the program (Avalos Sartorio, 1998: 12).

The second program is called "*Kilo por Kilo*". It promotes the use of improved seed varieties of maize, beans and rice by selling a kilo of improved seed at the going price of a kilo of maize from the producers own harvest. This program has been implemented where the use of improved seed is not yet a general practice. In 1996 7000 tonnes of improved seed were provided and in 1997, 15,600 tonnes were provided under this program (Avalos-Sartorio, 1998:12). Both of these programs have benefited mainly commercial producers.

The beneficiaries of Alianza Para el Campo were supposed to be at least 72 % *ejiditarios*. However, The World Bank reported that as of 1997, 67% of the

beneficiaries were from the private sector, 22% were *comuneros* and only 11% *ejiditarios* (Mohar Ponce, 1999: 68).

Land Tenure

Probably the largest potential change to the maize economy lay in the reform in 1992 of Article 27 of the Mexican Constitution. On the eve of this reform, it was estimated that 7.2 million hectares of Mexico's 14.7 million hectares of cultivated land were planted to maize, involving 78% of Mexican farmers and 12.5 million family members (De Janvry, 1995:1349). In this same year, 45.2% of Mexico's rain-fed acreage and 35.5% of irrigated acreage was devoted to maize production (Gomez Cruz, 1995:2). In 1994 of Mexico's 31 states, 15 had more than 80% of their cultivated area devoted to rain-fed maize production (World Bank June 15,1994:6).

Article 27 of the 1917 Mexican Constitution established three forms of land ownership, the *ejido*, indigenous communities, and private property. The first two entailed limited property rights, in that land so designated could not be sold, rented or used as collateral for loans. It had to be worked by a single head of household and could only be "legally" transferred by inheritance to a single successor. The 1992 reform of Article 27 of the Mexican Constitution[48] openly favoured large-scale commercial agriculture at the expense of the *ejido* by institutionalising the following changes:

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[48] Reform of Article 27 brought the *ejido* into existence in 1917. This same article had been reformed a number of times prior to 1992.

1. The end of land distribution and the right of rural communities to demand access to land.
2. Corporations were allowed to own up to 25 times the previous amount permitted individual producers.
3. Agrarian rights of *ejiditarios*, previously granted and held communally as family units were individualized in the titling of parcels.
4. *Ejidos* could be dissolved and the land privatised (Diego Quintana et al, 1888: 2)

A document published by the FAO in 1995 describes the goal of these changes to be the creation of a land market in Mexico that would foster the establishment of commercial agricultural enterprises by consolidating smaller subsistence peasant units. This was to be accomplished by withdrawing the former federal prohibition on the sale or rental of *ejido* land and establishing security of tenure for private land owners by eliminating the possibility of future expropriation to create *ejidos* (Concheiro, 1995: 201).

Several sources point out that informal sales without legal documentation and verbal rental agreements were common practice long before the 1992 reform and that a land market has existed as long as the *ejido*. It is estimated that in the early 1990's prior to the reform, up to 50% of the best *ejido* and communal lands were already rented out (Diego Quintana et al, 8: 1998). What the reforms addressed was the possible inclusion of new actors into this existing land market, specifically the encouragement of foreign investment in agriculture.

In 1992, the PROCEDE[49] program set about the task of measuring and documenting the boundaries of individual plots within *ejidos*, the rationale being

[49] Programa de Certificación de Derechos Ejidales y Titulación de Solares Urbanos

to facilitate capitalist, market-based land transactions. As of December, 1998, the land of 22,525 *ejidos* and *comunidades* had been measured and registered (INEGI, 17 July, 2001) representing just over 76% of the total number these agrarian units. In 1997 less than 500 *ejidos* had opted to dissolve. They were agrarian units that were no longer either rural or agriculturally-oriented but instead had been transformed into urban developments. They disbanded to take advantage of the increase in value associated with urban versus rural property (King, 2000: 21). In regard to the reform of Article 27 that allowed producers to incorporate, the response has also been minimal. Seven years after the 1992 reform only 2% of agrarian units had done so (Mojar Ponce, 1999: 74).

The allocation of agricultural land to maize production in the context of the lower maize prices was expected to shift production to other crops; fruits and vegetables on irrigated land and forages on rain-fed land. Looking at FAO data in Figures 3.6, we see that the harvested area[50] for maize has tended to increase over the period while vegetables and the area occupied by permanent forages has not changed significantly since 1988 when the reforms to the maize sector began. The assumption that production would shift out of maize production and into other uses was based on the inefficiencies of maize production in Mexico versus the USA. The choice of permanent cover as an option for rain-fed land seems to have been more of a default use than a production choice per se.

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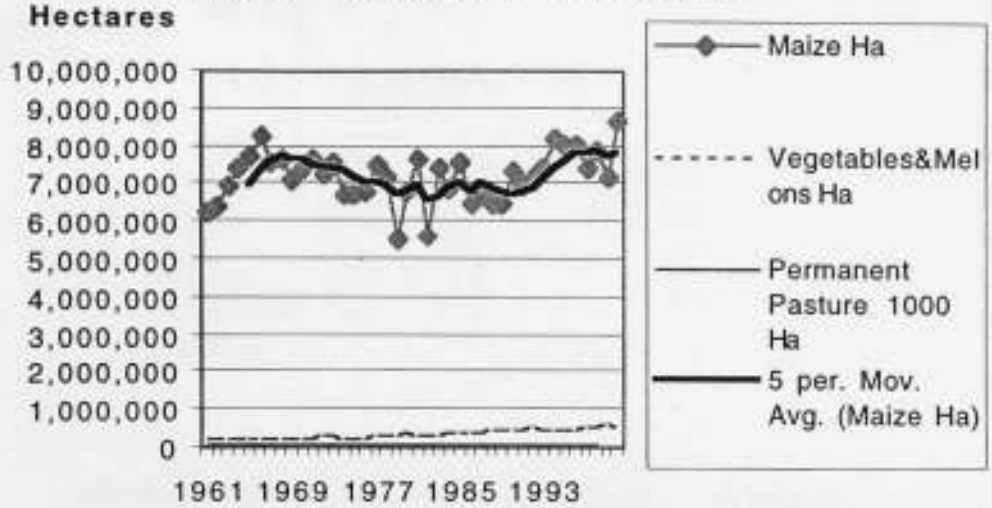
[50] Area harvested is an indicator of production decision making to plant, albeit that climatic conditions may reduce this number as crops can be destroyed by drought, pests or other calamities and thus may not be harvested.

Simply not cultivating land will result in it becoming permanent forage, albeit perhaps of poor quality.

Figure 3.6 Maize, Vegetables, Forages Area Harvested 1961-2000

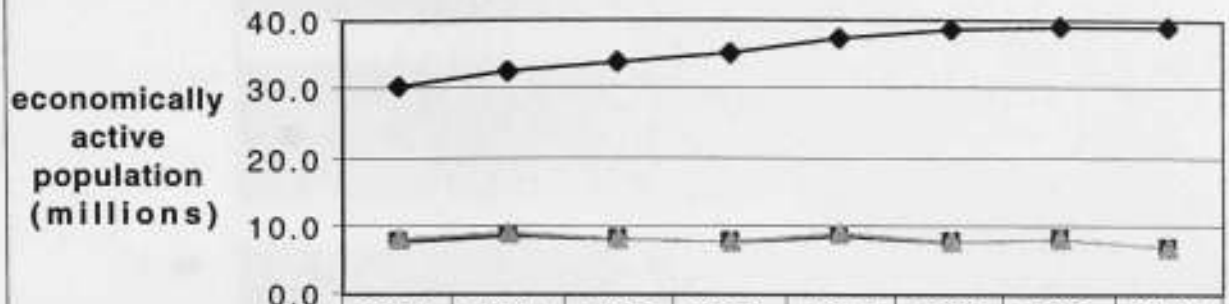


Source: Author's construction from FAO data. http://www.fao.org.

Labour Allocated to Agriculture

Under the commercial framework, labour expected to be diverted out of maize production and into fruit and vegetables on irrigated land and out of cultivated agriculture altogether on rain-fed land as a result of the reforms. The largest negative effects were expected to be experienced in rain-fed agriculture (World Bank, June 15: 6). Estimates of the magnitude of rural to urban migration varied widely. Levy and van Wijinbergen for example estimated that up to 700,000 workers per year would migrate if liberalization was immediate, whereas "gradual" liberalization would spread the migration response over a longer period (Levy and van Wijinbergen, May 1992: 38). As shown in Figure 3.7, even with what amounted to an "immediate" liberalization in mid-1996, there has

Figure 3.7 Change in Labour Employed in Primary Sector 1991-2000



	1991	1993	1995	1996	1997	1998	1999	2000
Total EAP	30.5	32.8	33.9	35.2	37.4	38.6	39.1	39.0
Farmers	7.9	8.8	8.1	7.6	8.6	7.5	8.0	6.8
Agricultural Activities	8.2	8.8	8.4	7.9	9.0	7.8	8.2	7.1

*Includes agriculture, livestock, forestry, hunting and fishing.

Source: Author's construction from "*Encuesta Nacional de Empleo*", La Secretaría del Trabajo y Previsión Social. http://www.stps.gob.mx/302a/302_0199.htm.

not been a massive movement out of agriculture distinguishable from the long-term trend.[51] In Figure 3.8 similar data collected by INEGI is displayed for 1991 and 2000. We see that primary activities are relatively more important to the subsistence states. The decline in primary sector labour allocation in the subsistence states was 9% over the ten year period, 7.1% in the commercial states and 6.8% for all states. After 10 years of reforms the allocation of labour to the primary sector in the subsistence grouping is still more than double that of the commercial grouping and ten points above the national average.

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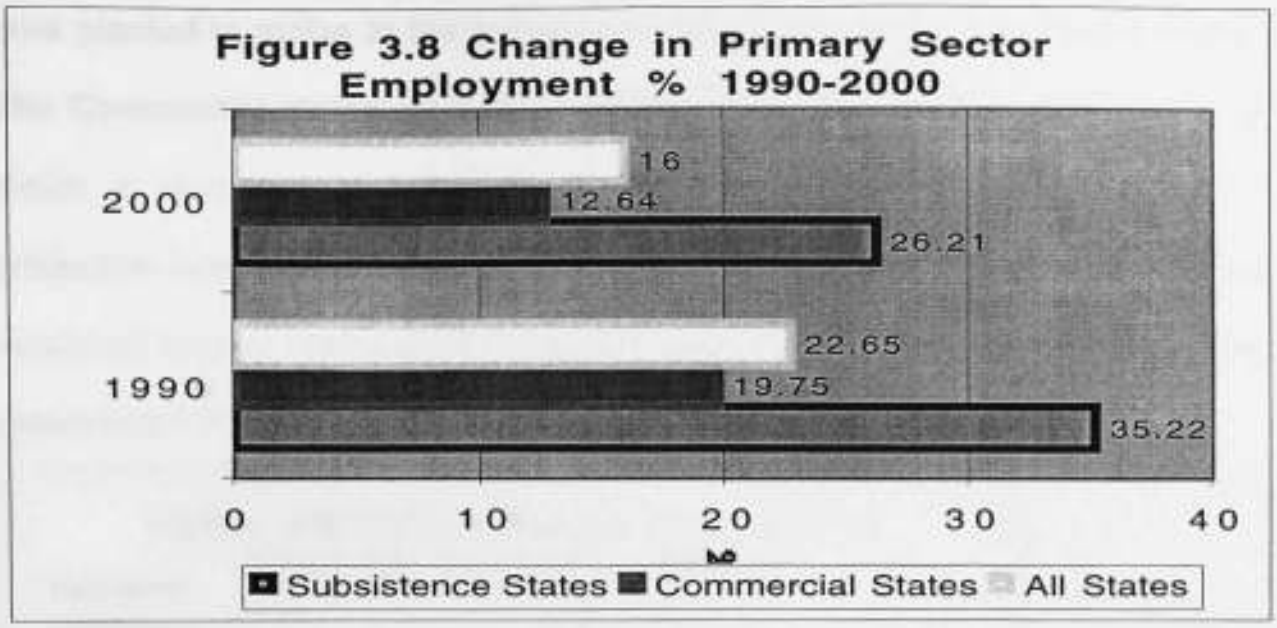
[51] The data fluctuates over the period with Agricultural Activities consistently employing 300,000 persons more than the number of farmers. Proportionately primary agriculture is declining rapidly but that the absolute change is statistically significant is questionable.



Source: Author's construction from INEGI. "*Cuadros de indicadores sociodemográficos*". http://www.inegi.gob.mx.

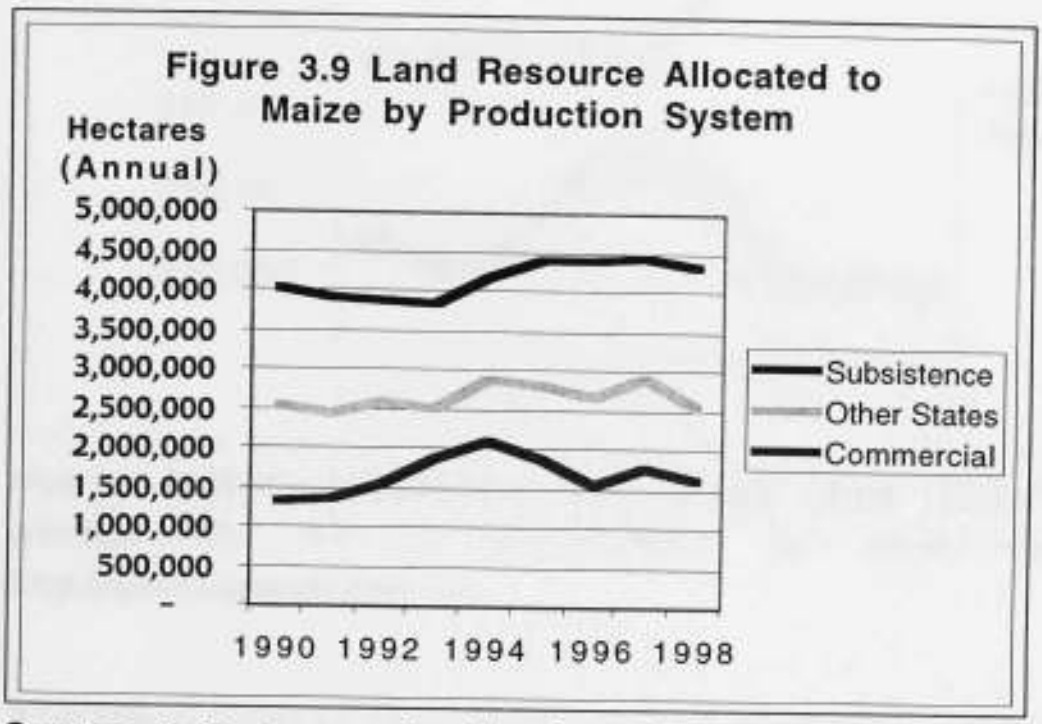
Looking at the *ejido* sector between 1994 and 1997 Davis et al observed that off-farm income had increased from 45% of total income to 55%, made up predominantly by self-employment and remittance income. No change was recorded for wage labour (Davis et al, 1999: 106). In 1996 more than one in twenty Mexican households received income from foreign remittances. While urban households receive 63% of total remittance income, and rural households only 37%: one in ten rural households received remittance income contrary to the assumption of the commercial framework that labour is immobile internationally (Mojar Ponce, 2001). We will now examine the response of the two groupings of subsistence and commercial groupings of states to the changes in Maize prices.

Response to Changing Maize Prices

Figure 3.9 shows a distinct difference between the subsistence and commercial states in land allocation to maize after 1996 when domestic prices converged with the lower world price. It also shows the significance of the

area planted to maize in the subsistence states versus the commercial states. The Commercial states reacted as expected by reducing the area planted to maize in response to lower prices and profits, while those states whose production logic was identified as being that of subsistence or peasant agriculture remained largely unchanged throughout the period. This effect is even more pronounced if we look at individual states.

Figure 3.9 Land Resource Allocated to Maize by Production System

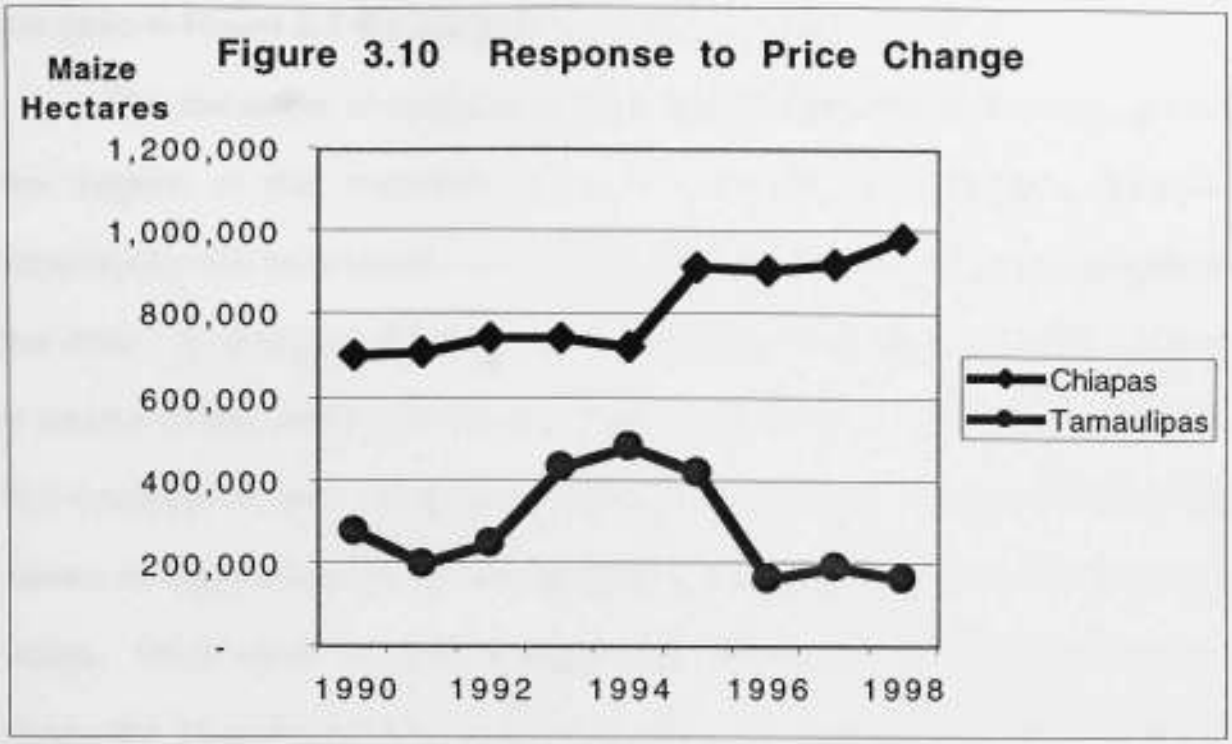


Source: Author's construction from SAGAR. 2000. "Situación actual y perspectiva de la producción de maíz en México". http://www.sagarpa.gob.mx.

In Figure 3.10 we look at the state of Tamaulipas that borders the USA and would be likely to be most affected by cheap imports because of the relatively low cost of transporting maize imports from the USA. We compare it to Chiapas, the state that we would expect would be the least affected by maize imports because of its physical distance from the USA assuming that transportation costs for USA imports would be relatively more prohibitive. FIRA price data for Tamaulipas is only available for 1993. In that year the average

state price was reported as 710 pesos per tonne while in Chiapas it was about 6% higher at 750 pesos per tonne.

Figure 3.10 Response to Price Change



Source: Author's construction from SAGAR. 2000. "Situación actual y perspectiva de la producción de maíz en México". http://www.sagarpa.gob.mx.

If we look at prices for Tamaulipas' neighbour Chihuahua for 1997 the FIRA price was reported as 1225 pesos per tonne while in Chiapas it was about 11% higher at 1358 pesos per tonne. Assuming the price differential to be similar for Tamaulipas, and given that the real price of maize has declined since 1994, the magnitude of the change in land allocated shown in Figure 3.10 is likely not adequately explained by the price differential. Of course this point needs further investigation.

If Chiapas and Tamaulipas could be considered to be representative of subsistence and commercial agriculture respectively, their response is as predicted in the frameworks described in Chapter two. Chiapas as a subsistence

state is seen to increase its allocation of land to maize production as prices fall, while Tamaulipas reduces land allocation as prices fall. These general trends are seen in Figure 3.9 that considers the two groupings of states.

The remainder of states seem to follow the general commercial pattern but the degree of the response is likely tempered by a broader mixture of subsistence and commercial operations rather than dominance by one system or the other. As shown in Figure 3.9 the bulk of land allocated to maize production is located in the states identified as being dominated by subsistence producers. The increase in land allocated to maize production in the subsistence states seems to have made up for the decline in maize production in the commercial states. Thus when we look at aggregate figures for land allocated to maize production as in Figure 3.6, no change or an increase is observed over the time period shown.

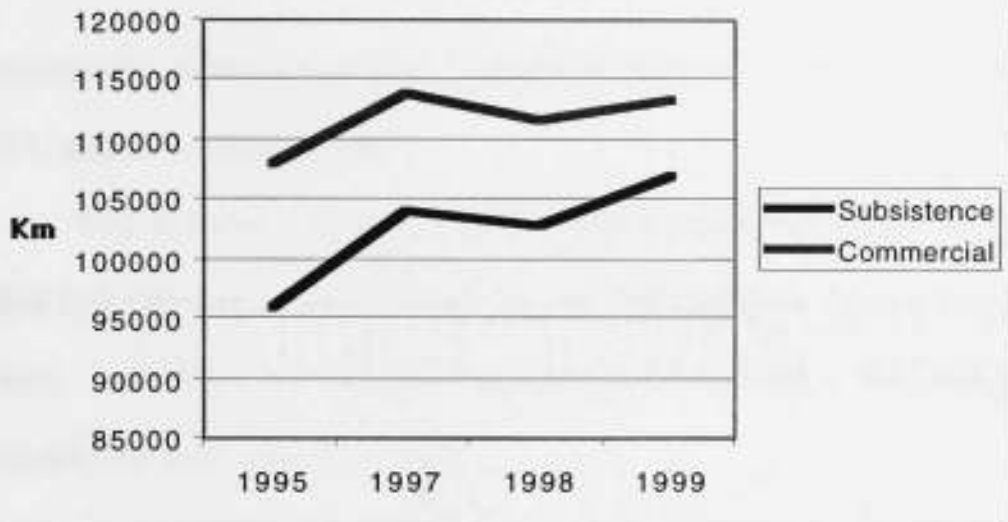
Why subsistence states have not reacted as expected to lower prices could be explained by a lack of supporting market infrastructure as is argued by the World Bank in the 2000 World Development Report (WB: 2000: 186). If producers are unable to receive market information or transport systems such as roads and trucks are lacking, market failure would be the result and the status quo would be expected to be maintained. We will now look at basic infrastructure, roads and communications technology to determine to what extent this might be the case.

Basic Market Infrastructure

Looking at total road infrastructure in Figure 3.11 we see that the subsistence group of states has less roads than the commercial grouping (note

that data is not available for 1996). However, in Table 3.0 if we consider the total length of roads as a proportion of total state area we find that the subsistence grouping is slightly better served with 0.27 kilometers of roads per square kilometre of state area versus 0.21 km of road per square kilometers of state area for the commercial grouping. The contrast is even more striking when we look at paved roads that are technically more valuable in that they can be used

Figure 3.11 Total Road Infrastructure



Source: Author's construction from Secretaría de Comunicaciones y Transportes (SCT), Dirección General de Evaluación data. http://www.sct.gob.mx.

year round.[52] 36% of roads in the subsistence states are paved versus only 25% in the Commercial states and using the comparison of roads/state area, again the subsistence states are substantially better endowed. The number of transport trucks registered is also substantially higher in the subsistence states

[52] Roads classified as "teracería" cannot be used by transport vehicles in the rainy season.

than in the commercial states. In addition the number of trucks in the subsistence states grew by 11.8% between 1995 and 1999, while in the

Table 3.0 Transportation Infrastructure
Subsistence versus Commercial Maize States 1999

	Paved Roads km/km2 area	Proportion Paved Roads	Km Paved Roads	Total Roads	Trucks
Subsistence	0.089	36%	37899	104994	37899
Commercial	0.054	23%	27903	113420	27903

Source: SCT Dirección General de Evaluación. http://www.sct.gob.mx

commercial states the growth during this same time period was only 9% (Source: SCT, author's calculations).

The number of rail lines in Mexico remained static between 1990 and 1999 but the cargo transported by rail increased by over 50% during this time frame. However, rail transport represents only a fifth of the tonnage transported annually by truck (Source: SCT).

Given the caveats already mentioned about the reliability of data sources in Mexico, it does seem that the argument that there is a lack of transportation infrastructure in the subsistence states is not substantiated by the data that is available. The inability to obtain market information is another possible market failure.

Table 3.1 compares telephone service for rural populations (defined in Mexico as those with less than 2500 persons). The column labelled SCT is a special service provided only to populations of 100 to 499 people. The percentage of total rural communities with telephone service is slightly better for the subsistence states than for the commercial states. If we look specifically at

Table 3.1 Communications Infrastructure and Rural Communities
Subsistence versus Commercial Maize States 1997.
Population data is for the year 2000.

	Number of Rural Communities with Telephone Service		Number of Rural Communities	
	SCT Service Total	Rural Total	Pop 1-499	Pop < 2500
Subsistence	10580	18944	70952	78778
Commercial	6496	10630	51320	54409
	% of Pop 1-499 served		% Rural Served	
Subsistence	14.9%		24.0%	
Commercial	12.6%		19.5%	

Source: INEGI http://www.inegi.gob.mx

populations of less than 500 persons, again the subsistence states are slightly better served. Another possible factor to consider is that there has been substantial growth in mobile telephone users. In 1994 the total number of subscribers was 571,800. The preliminary estimate for 1999 was 7,731600 subscribers (Source: SCT). Data broken down by state however was not available. Possible internet access for both groups, measured by the number of internet hosts is very low. In 1999 the subsistence states had only 19 service providers while the commercial states had 25 (source: SCT). Rural communities in the commercial-state rural communities on average appear to be as poorly serviced by communication technology as are the subsistence states.

The last point that will be considered in the category of basic market infrastructure is access to credit. In 1980 the agricultural sector received 14.5% of the total value of bank loans granted. By 1990 the sector received only 4.1% of this same value with only 25% of agricultural producers having access to bank

credit. The high incidence of payment defaults for agricultural loans and the decreasing profitability of agriculture in general is said to have caused the general withdrawal of commercial credit from the sector except for the largest producers (Cruz Hernández, 1994: 95). Looking at Table 3.2 we can see that the total amount of credit delivered to agriculture in general has not increased (considering that the figures are expressed in nominal values) and that compared to the other sectors, the proportion of loan defaults both for credit delivered by the commercial and development bank in Mexico remain very high. Rural credit coverage/availability has declined from 40-50% in the mid 1980's to only 10-12% of rural production units with access to credit. This access has been concentrated on large commercial producers and agri-business to exclusion of small producers (Cruz Hernández, 2001: 4).

While I did not find detailed information about access to credit for the two groups of states under consideration, the 2000 INEGI Business Survey provides some interesting detail about the role of credit in Mexico and Guillermo Bonfil's assertion that indigenous culture may apply to most Mexicans. Of all wholesale and retail businesses surveyed, on average, just over 20% obtained external financing of any type in 1999. Of wholesale agricultural supply businesses, only 13% received financing. The sector that received the most credit was the automobile industry with just over 30% of businesses receiving credit. When credit was received, 66.1 % of the time it was obtained from commercial banks and 32.8 % of the time it was received from other sources (only 1.1% of which was from the Development Bank). At the retail level 82% of the time credit was received from commercial banks (Source: Encuesta Annual de Comercio. 2000.

INEGI). That credit seems to be used so infrequently in all commercial businesses begs the question whether or not access to bank credit is as important an issue as it is made out to be by many authors. Mexico's economy has been booming since its recovery from the peso crisis and it is viewed as being the winner, by far, of NAFTA (USDA: 1999. Stundza, 2000. Rubio, 1999).

Table 3.2 Credit & Defaults:Type of Bank & Principle Activity

millions of pesos (current)	1995		1999	
Private Sector Bank	**Credit Granted**	**Loan Defaults**	**Credit Granted**	**Loan Defaults**
Agriculture Forestry and Fishing	40,169	9,081	45,984	11,639
Industry	189,493	26,483	237,198	37,272
Services/other activities	241,220	38,692	230, 218	40,333
Development Bank	**Credit**	**Default**	**Credit**	**Default**
Agriculture, Forestry and Fishing	15,337	4,327	12,685	3,609
Industry	27,549	1,933	40,556	5,364
Services/other activities	15,091	4,134	7,159	1,724

Source: Banxico. Indicadores Económicos. May 1996 and March 2000.

The Economía Campesina

Heather J. Rawlinson carried out field research in September to December, 1997 dealing with the appropriateness of rural micro-enterprise development as a means of mitigating the negative effects of agricultural restructuring on Mexican peasants. Her research included 75 household interviews in several rural

communities in the states of Yucatán and Campeche as shown in Table 3.3 and subsequently more in-depth interviews of 44 of these same households. Yucatán is one of the states identified by SAGAR to be dominated by subsistence agriculture and is used in the comparisons made in the present

Table 3.3 Communities included in the Field Research

State	Municipality	Community	Population
Yucatán	Opichen	Calcehtok	996
		Opichen	3300
	Tekanto	Tekanto	3300
Campeche	Hopelchen	Xpujil	1200
Source: Author's construction from: Heather Rawlinson, 2000: 95,77.			

Chapter. Rawlinson's interviews were predominantly carried out in Yucatán, however, the profile of the single community surveyed in the state of Campeche is as relevant in that the survey participants were even more intensely involved in agricultural production than the other populations studied. The timing of Rawlinson's research is also complementary to the present investigation in that the interviews take place shortly after the complete liberalization of Mexico's maize economy.

The first round of interviews consisted of 75 households. Interviewees were asked what they considered to be their primary activity. The common response for women was domestic work (57%), while 84% of men reported that their primary activity was peasant farming. 51 of the 75 households were growing crops, dominated by maize. Although 42 of these households (56%) engaged in other economic activities, 90% considered that their crops were their most vital economic activity. All

stated that agricultural activities were important as a source of food for the household and 78% also stated that it was important for reasons of family and cultural tradition. For approximately 50% of households, crops were identified as an important source of cash income (Rawlinson, 2000: 107-110). Rawlinson's data documents the general assumptions of the *economía campesina* framework in respect to the production of maize for both food and as an income source for peasant farmers.

The notion that farming has an important cultural value is also reflected. Rawlinson asked what it would be like for them if they did not grow their own crops. She reports that for a large number of families, the idea of not having crops was unthinkable, and that many interviewees actually cringed when the question was posed, and all reacted strongly in the negative to the idea of not farming (Ibid.: 133). Clearly profits are not the primary motive for maize production in these households.

In regard to the reforms made to the maize economy, Rawlinson asked interviewees in the second round of interviews to rate their present standard of living and to think back 10 years and then rate their standard of living at that time according to the same criteria. If they reported a change, they were further asked to give concrete examples of this change. The perceptions were split roughly 50/50 in regard to whether or not welfare had changed over the ten-year time period for peasants that relied solely on agriculture. The reasons for the decline in welfare given by households engaged in farming only or farming supplemented with day labour coincide with the general subsistence framework outlined in Chapter Two as far as the importance of labour resources and crop

sales in the reproduction of the production unit (Ibid. : 199). 67% of respondents that had crops and a business reported that their welfare was either the same or had improved. Among their responses for why their welfare had improved were:

Started a business.
Learned to work the land better.
Gained more experience in business and so strengthened business.
Gained better local infrastructure-roads, public water supply.
Developed better business skills.
More modern farming-gained access to a cooperative tractor (Idem).

The value of participating in a wider range of economic activities is indicated by the perception of improved welfare for peasants and among Rawlinson's conclusions. The responses also give some indication of improvements that have been made to infrastructure. It is however important to note that all considered themselves to be poor with approximately two thirds of the 75 household sample indicating that they had less than adequate resources to live on (Ibid.: 115).

In the second round of interviews, 61 % reported having no knowledge of NAFTA, but most that responded in this way were women that did not actively participate in agricultural production. 75% of men interviewed had some knowledge of NAFTA. Several explained that they had learned of the agreement through government advertising on television and the radio. All respondents expressing negative opinions (6) about NAFTA were growing crops or engaged solely in agriculture. They specifically complained that it had caused losses in the value of their farm production. Four respondents said they had experienced

negative impacts in the form of falling maize prices (Ibid.: 122).

Rawlinson also asked this subset of households about their awareness of the activities of CONASUPO. Most were unaware that CONASUPO bought basic food crops from farmers at elevated prices. Those who were aware of this activity stressed that CONASUPO did not buy their crops. At the time of the study, CONASUPO was buying the crops of only one of the 29 household actively producing crops in this sample. Three respondents stated that they were no longer able to sell to CONASUPO as they once had. The majority that were aware of CONASUPO's activities stated that it had never helped them, rather the benefits had gone to middlemen and larger farmers (Ibid.: 123).

Approximately 60% of respondents were aware of the changes to Article 27 dealing with land tenure, most of those who were not aware were women. Only one man out of 21 in the sample did not know of the changes. 70% of those who knew of the changes "felt quite strongly that they were very bad changes" (Ibid. : 124).

Rawlinson's research documents the expected responses under the peasant decision-making framework, i.e., that maize is grown for food, as a source of cash income and as an important cultural tradition. It also indicates that producers are aware that real maize prices have been falling in Yucatan and Campeche, contrary to the illusion that increasing nominal prices might have created, weakening the argument that market failure can explain the lack of response to lower prices.

Conclusion

This Chapter has outlined the persistence of two distinct responses to the push and pull factors associated with maize liberalization in Mexico.

The subsistence system consists of many small producers with poor quality land assets who it was anticipated would respond according to the *economía campesina* framework. The dominant economic group of maize producers is made up of a relatively small number of producers with generous asset endowments who were described as making production decisions based on the assumptions of the neoclassical commercial framework.

The aggregate response to declining prices and profitability was not a change in the allocation of land away from maize production or of labour out of agriculture as posited prior to and during the reforms.

However, a distinct response was observed between those states identified as commercial maize producers and those where subsistence agriculture dominates. Commercial producers reacted as expected to the lower profitability of maize by reducing the area of land allocated to this crop. Because the land area originally dedicated to maize by commercial producers was considerably smaller than the subsistence states, their withdrawal from maize production was likely compensated for by the increase in production by the larger masses of subsistence producers. Subsistence states seemed to increase land allocated to maize in response to lower prices as the peasant economy framework predicted.

The possibility of a lack of basic infrastructure to explain the observation of unchanging land allocation in the subsistence states was investigated. On the

basis of the data available, the subsistence states do not seem to be at a disadvantage to the commercial states. Interviews conducted by Heather Rawlinson in 1997 indicate that producers in Veracruz and Campeche were able to distinguish the drop in real prices from the increasing nominal price, raising doubt that a lack of adequate market information was the main cause of the observation of an unchanged maize area. Her research also identified strong cultural motives for peasants to continue to produce maize.

CONCLUSION

It is important to reiterate the limited scope of this investigation due to the lack of possibilities to verify the reliability of the data collected with other sources. The intent was thus to conduct a qualitative analysis of the available information. The major findings of the investigation as to why Mexico continues to grow the same amount of maize in spite of the apparent disincentives to such an outcome will be reviewed in these last few pages. A number of broader implications will be discussed as well as suggestions for further research.

Looking at the aggregate data for land allocated to maize production in Mexico or harvested crop area, a significant increase in production was observed in the years when rapid structural reforms were being made, just prior to the country's entry into NAFTA. This response was explained by the announcement of the PROCAMPO direct producer payments, well in advance of the details of the program. Farmers expected that in order to maximize their payments under the program, a larger area of qualifying crops would be desirable and so they planted more maize, contrary to the intent of the reforms. The argument itself implies that there was a functioning information dissemination system in place to which farmers responded.

Less farmers than anticipated actually qualified for PROCAMPO payments and in addition, the payments have not been fully indexed with inflation. From the perspective of the neoclassical framework, this effect, combined with the substantially lower prices for maize that resulted when Mexico liberalized the sector in 1996, led to the surprising outcome that production of maize did not

decline, and if anything, increased since 1996. The drop in commercial profitability reported by FIRA and alluded to by several authors resulted in an increase in total domestic maize production, opposite to what was anticipated by the Government of Mexico.

That SAGAR identified groups of states that were dominated by one or the other system was useful in that it allowed analysis of their distinct response to the reforms, especially the convergence of domestic maize prices with international prices.

It was observed that farmers in the commercial grouping responded as the neo-classical or commercial framework anticipated they would. Faced with declining profitability, they reduced the amount of land that they dedicated to maize production and it is assumed that they grew other more profitable crops. This effect was particularly prominent in the state of Tamaulipas that borders the USA, and in which pressure from cheaper foreign imports would be expected to be the greatest.

In a similar manner, the subsistence group was observed to respond as the peasant economy framework described in Chapter Two predicted it would. Faced with growing uncertainty in the context of the reforms, that it can safely be assumed they had little or no input into, they intensified their production in an attempt to minimize the risk of not being able to survive or sustain their family production units. Because of the larger crop area that this group dedicated to maize production, their collective response of planting more maize seems to have balanced out the reduction in the commercial maize area.

The data also revealed that with these distinct changes gross production remained the same (Source: FAO). Commercial farmers are said to have yields that are about 4 times that of the subsistence farmers. This would suggest that in order for production to remain the same, an increase of four times the rain-fed area would have to be allocated to maize production for every one unit of commercial area reallocated to other crops or activities. The magnitude of the documented changes in land area seem to be about one to one for the subsistence group compared to all other farmers. This is an area that requires further investigation.

That the modernization of agriculture could be accelerated by liberalization was over-ambitious. The observed response of a lesser amount of labour being allocated to agriculture over the period of liberalization cannot be attributed to liberalization because the trend is clearly stable throughout the reforms, even after 1996. The steady decline observed in primary sector employment does indicate the slow integration of peasant agriculture into the capitalist system but it is likely to take generations not decades to complete under the current policy regime.

The contribution of wage labour to total peasant income did not change while self-employment and remittances increased significantly. This may indicate that there was a lack of wage labour opportunities available or perhaps, as indicated by the peasant framework, this option was undesirable.

Another major finding was that between the subsistence and commercial groupings, little difference in essential market infrastructure such as roads and telephones was documented that could have contributed to the persistence of the

dualistic structure of the sector.[53] That subsistence farmers were aware of NAFTA, the PROCAMPO program, and the lower prices that they received for their maize as identified by Rawlinson is further evidence. This casts doubt on the suggestion that farmers respond to nominal prices and the argument that a lack of information might explain why subsistence farmers continue to grow maize.

It was expected that by eliminating Mexico's high tariffs on maize imports and guaranteed domestic prices that Mexico would no longer produce maize commercially, leaving this task to the more efficient USA producers[54] (World Bank, 1994: 6-7). What constitutes a commercial producer seems to be a key issue. While subsistence maize farmers may not direct all of their productive resources towards satisfying market demand, selling maize commercially is an integral part of their survival strategy. Contrary to the neo-classical notion, peasants are economic actors.

My hypothesis was that the neo-classical assumption of price being the major determinant of how productive resources are allocated in rural Mexico, was inappropriate and, that this same model did not adequately explain the observation that maize production had not changed in the direction anticipated. The hypothesis has been validated considering that the weight of peasant

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[53] According to the World Bank World Development Report 2000, in Bangladesh, the presence of a phone in a village makes information about input and output prices readily available p. 172.

[54] USA producers are in fact subsidised to between 30 and 40 percent of export price according to a recent preliminary ruling by Canada's CCRA in a preliminary dumping investigation. Economists might argue that this is good for Mexico as it means cheap maize imports but the social cost and dependency relationship that will be consolidated in my view need to be more seriously considered as negative outcomes.

agriculture seems to have been able to compensate for the withdrawal of commercial producers from maize production. It is however recognized that at least two distinct frameworks for decision making continue to coexist in the maize economy

Literature abounds on how Mexico has been the overall economic winner, by far, of NAFTA as a result of its aggressive liberalisation and early buy-in of the neo-liberal model (USDA: 1999, Stundza: 2000, Rubio: 1999). However a troubling parallel outcome has been that the incidence of poverty more than doubled between 1994, the first year of NAFTA, and 1999[55] (Social Watch, 2000) and that the face of poverty in Mexico remains largely rural. Given the distinct response of subsistence maize producers to the policies that were implemented with the belief that they would be beneficial, the relationship between poverty and the strength of cultural factors in the production of maize in Mexico warrants further investigation.

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[55] Social Watch states that the Government of Mexico acknowledges a figure of 46 million poor and 26 million extremely poor. The total population of Mexico was estimated at 90 million in 1999.

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