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Sector Study Series**

**CAFTA AND
THE RURAL ECONOMIES
OF CENTRAL AMERICA:
A CONCEPTUAL FRAMEWORK
FOR POLICY AND
PROGRAM RECOMMENDATIONS**

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PREFACE

The net benefits of CAFTA and their distribution among sectors of the economy and social groups are major concerns of policy makers in Central America. The objective of the Bank's support to Central America is to assist in the design of policies that maximize total net benefits while improving the welfare of the poorer segments of society, the majority of whom reside in rural areas. The purpose of this study is to provide a conceptual framework in order to identify policies that will meet these objectives. It is important to note that CAFTA has not been ratified yet by all congresses of the signatory countries, but throughout this paper we assume that all will ratify CAFTA as it stands today.

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EXECUTIVE SUMMARY

Representatives from Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua (the “CA-5”), and the United States signed the Central American Free Trade Agreement (CAFTA¹) on May 28, 2004, and the agreement now awaits approval by the legislature of each of the signatory countries. CAFTA will consolidate already established trade arrangements such as the Caribbean Basin Initiative (CBI) and expand opportunities in the largest market in the world. As such, it represents an important and logical step towards restructuring the economies of the CA-5 to increase growth and reduce poverty.

Much of the political debate in the countries has centered on the possible effects of CAFTA on the rural economies of CA-5 and the agricultural sector received special attention and generally longer adjustment periods in order to help ease the transition. The rural economies in the CA-5 remain extremely important, as agricultural and linked industries still represent a significant share of GDP, provide a significant share of total exports and employ a large proportion of the economically active population. The fate of poor rural households, which often produce staple crops for income and home consumption, are a particular concern to policy-makers as one of the expected effects of the agreement is that the domestic price of staples will fall.

Data on rural household income suggest that there are multiple paths towards improved welfare and out of poverty for rural households, including agricultural production but also non-agricultural self-employment and wage activities. In designing policy responses to CAFTA for the rural economy, this critical fact needs to be considered. It is not necessarily the case that in response to CAFTA agricultural producing households need to shift production from staple crops to non-traditional exports to improve their welfare. For many households, particularly those which produce on marginal lands, it may be better to shift more resources, particularly labor, to non-agricultural activities. Hence, the dynamics of rural labor markets, including the effects of improved connectivity with secondary cities and towns, need to be understood and incorporated in countries’ adjustment strategies.

The substantial amount of research devoted to studying NAFTA before and after its implementation provides a wealth of information on which policy responses to CAFTA could be based. Expectations for Mexico were that agricultural trade and exports of products for which Mexico enjoys a comparative advantage would increase, while production of crops that compete with lower cost imports would decline. Analysts also expected an overall improvement in agricultural productivity as market forces allocated resources more efficiently. Specifically, observers expected Mexican fruit and vegetable producers to benefit from NAFTA, while staple crop producers (especially of corn) would suffer losses as a result of lower prices for their crops. From the actual results seen in Mexico after 10 years, some important lessons can be learned from NAFTA. These are:

¹ CAFTA stands for the Central America Free Trade Agreement with the United States. Please note that after this paper was initiated in early 2004 and the first draft completed in June 2004, CAFTA has since been extended to include Dominican Republic and it is now called DR-CAFTA. The document does not include reference to the Dominican Republic although many of the insights provided in this document are relevant for that case.

1. The experience with modeling and predicting effects of trade liberalization indicates that there are many areas in which to improve. The fact that trade liberalization policies do not occur separately from other changes to the economy highlights the need for more detailed methodology to disaggregate effects. Detailed panel data on production, income, employment, migration and investment would improve the ability of researchers to evaluate trade agreements.
2. Predictions made about the effects of NAFTA indicate that the level of disaggregation in standard Computable General Equilibrium (CGE) models is not sufficient to determine the effects of trade agreements on specific sectors, especially agriculture. CGE model predictions of a dramatic reduction in staple production due to drops in domestic prices proved to be incorrect. This suggests the methodology does not adequately model agriculture and in particular fails to recognize many rural regions are not well integrated into the rest of the economy.
3. Even with the weaknesses in predicting the effects of NAFTA, CGE modeling is still a useful tool to determine the effects of CAFTA. Analyses should be conducted at the individual country-level to help identify other changes that should accompany the implementation of the trade agreement. Better estimation of the effects of the agreement at the country-level will allow policies to assist in the transition to the new trade regime.
4. Mexico's experience indicates that more transition support policies and programs are required to achieve the greatest benefits possible from trade liberalization. These support policies and programs should include technical assistance for farmers transitioning into new crops and activities, and assistance in reaching export markets and meeting export requirements.
5. The experience with PROCAMPO income transfers shows that direct income payments cannot be expected by themselves to enable the recipients to move out of staple production and toward higher value added crops and other rural activities. For small-scale staple producers, the payments, although important for poverty reduction, were, in themselves, generally insufficient for enabling producers to shift out of staple crops. Staple production actually increased in many areas receiving the payments due to the isolation of many rural areas and their large comparative *know-how* in staple crop production.

Some have expressed concerns that while CAFTA will offer many opportunities to the CA-5 through guaranteed access to the U.S. market, not everyone will gain. As with NAFTA, although CAFTA will affect all sectors of the CA-5 economies, it is the effects on the agricultural sector, and within this sector, the effects on producers of imported commodities, that has generated the most concern. Current available studies on the potential effects of general trade liberalization and specifically of CAFTA in the CA-5 highlight some important considerations that should be kept in mind when developing policies and programs (including IDB projects) to help adjust to the changes brought about by CAFTA. These include:

1. CAFTA can provide new opportunities to rural communities, secure better access to the U.S. market, promote regional integration and attract foreign direct investment into rural

areas. However, these positive effects will not occur without the appropriate adjustments to rural policies and programs. Of particular importance is infrastructure to reduce transaction costs and policies and programs that help facilitate access to US markets by meeting the phytozoosanitary standards of the market.

2. The adjustments that will occur in the CA-5 will impose some losses, but will take time. The CA-5 need to be prepared to manage the adjustment process, including with some form of assistance to those who suffer from welfare losses as a result of the transition to CAFTA. Those most at risk will be small-scale farmers producing imported commodities for the domestic market and other poor rural households which provide labor for uncompetitive enterprises. They will need transition assistance that includes income support and/or technical support to be able to make the necessary transitions to the further opening of the area's economy. Although some argue that the CA-5 may not have sufficient fiscal resources to finance such programs, more detailed analysis of current agricultural support is needed to draw conclusions. For example, analysis summarized in this paper suggest that Costa Rica currently dedicates substantial resources (over US\$280 million per year) to support the agricultural sector and could choose to use these resources in a more targeted way.
3. Transition assistance in rural areas should focus not only on agricultural activities but also include non-agricultural activities. While agriculture is still a necessary component for rural economic growth in the CA-5, it is not the only option for rural households, nor is it sufficient to ensure the economic vitality of rural areas. Many other economic activities have the potential to provide employment and income, and in some areas they have already become a significant part of household income.

The main goal of transition policies and programs should be to maximize the gains to household welfare while minimizing the losses, with particular emphasis on poor, small-scale farmers. From the experience of NAFTA and analysis of CAFTA, the ways in which policy can help to achieve these goals include: (i) preventing deteriorations in the welfare of poorer, small-scale staple producers by providing a combination of income support during the period of liberalization along with technical assistance in the production of higher-value export crops and other activities; (ii) creating a stable and competitive macro environment; (iii) facilitating rural economic growth through investments in rural infrastructure (including roads, telecommunications, energy and irrigation); (iv) providing assistance in access to export markets, in particular to meet phytozoosanitary requirements; and (v) prioritizing the management of the valuable natural resources, including water and marine resources, to ensure sustainability of production and correspondingly export levels.

The policies and programs suggested in this paper will help the CA-5 countries to maximize the gains to household welfare while minimizing the losses from CAFTA. As we learned from NAFTA, however, a free trade agreement can only provide opportunities for growth and development, but it does not guarantee them. To reap the benefits of trade, each country must actively respond to the changes brought about by the agreement. Many of these actions should probably be taken with or without CAFTA, so it is not surprising that many development programs already financed by the IDB and others are well-placed to help countries respond. This should facilitate addressing the task ahead, but further analytic work needs to continue to inform

the political debate in the countries and help policy-makers design effective measures in order to increase the likelihood of achieving benefits. However, most of this actions can be argued that should be taken regardless of whether CAFTA is ratified or not (CAFTA only provides deadlines on specific products to a process that should occur anyways in order to seek increased competitiveness), and therefore, CA-5 governments should immediately address these challenges and opportunities with unilateral and regional policies and programs.

I. INTRODUCTION

The Central American Free Trade Agreement (CAFTA) between the United States and the five Central American countries (CA-5) of Costa Rica, El Salvador, Guatemala, Honduras and Nicaragua is potentially a big step for these countries. While the countries had already embarked on a policy of liberalizing trade and markets at the time of signing the agreement, CAFTA will consolidate those changes and expand opportunities in the largest market in the world. As such, it represents an important and logical step towards restructuring the economies of the CA-5.

The effects of CAFTA are likely to be significant for the rural economies of the CA-5 since many of the commodities directly affected by the agreement are agricultural products. The rural economies in the CA-5 remain extremely important as agricultural and linked industries still represents a significant share of GDP, provide a significant share of total exports and employ a large proportion of the economically active population (see table II-3 for details). Although a number of high value agricultural commodities are already exported to the United States from the CA-5 (see table II-5 for details) tariff free and for the rest of the commodities, tariffs are eliminated under the Caribbean Basin Initiative, CAFTA expands, over time, for those crops such as sugar that enter under quota, the level of the quota (see section IV.A. for details). Many of these crops are high value added crops and the relative size of the US market compared to the CA-5 economies provides an attractive potential market. The agreement also, however, will eventually grant tariff free access for US farmers to the CA-5's agricultural markets with the exception of fresh potatoes and onions for Costa Rica and white corn for the other four CA countries. Given the level of subsidy provided by the US government to producers and their relative efficiency of production, the domestic prices for these commodities are likely to fall, making it difficult for the CA-5 farmers to compete. So while the agreement offers large potential rewards for the rural economy, there are also potential costs, with the net effect depending largely on the ability of the CA-5 public and private sectors to take advantage of opportunities.

Along with its value in the economy and a source of employment, agriculture remains a principal activity for many rural households in the CA-5, particularly poorer households who often produce staple crops for income and home consumption. As with Mexico prior to the implementation of the North American Free Trade Agreement (NAFTA), concerns have been raised over the effects the implementation of CAFTA may have on these poor households given the expectation that the domestic price of staples will fall. While some of these rural poor households are net sellers of staple commodities, many are subsistence farmers or net buyers and most produce largely for home consumption. As such, they tend to be marginalized and therefore not strongly affected by changes in prices in the greater domestic economy. Furthermore, because they tend to follow a strategy of ensuring home food requirements are met, they are unlikely to greatly alter their production of staples, even with changes in prices. While this partially shields them from the reduction of producer prices due to CAFTA, it also limits their ability to take advantage of opportunities that may come about because of CAFTA. Thus, while rural

poor households may be no worse off because of the CAFTA agreement, there is a great risk they will be left out of any of the benefits. To bring the benefits of trade liberalization to the rural poor, it is critical that interventions be designed that help facilitate their ability to participate in new opportunities.

The agreement determines the magnitude of net benefits, but policy responses to CAFTA will determine the distribution of those benefits in the economy. The objective is to provide the necessary tools to design policies that maximize total net benefits while improving the welfare of the poorer segments of society, the majority of whom reside in rural areas. Thus, the purpose of this paper is to provide a conceptual framework in order to identify policies and programs that will meet these objectives focusing on the short and medium term under the assumption that longer term strategies will be developed as the specifics of the agreement become clearer and the early effects are realized. It is important to note that CAFTA has not been ratified yet by all of the congresses of the signatory countries, but throughout this paper we assume that CAFTA will be ratified as it stands today. Towards this end, chapter II examines where the rural economies of the CA-5 stand at the initiation of CAFTA. This is the starting point from which the CA-5 must build. In chapter III, lessons that can be drawn from NAFTA and Mexico's response to NAFTA are discussed through a review of the existing literature. While the circumstances in Mexico at the initiation of NAFTA and the situation currently in the CA-5 are very different, some of the effects are likely to be similar and the policy responses taken by the Mexican government to address the effects of NAFTA on the rural economy, instructive. Chapter IV provides a review of the nascent literature on the predicted effects of CAFTA on the rural economy. Based on this background, chapter V provides an overview of an analysis of current policies and programs in the agricultural sector of Costa Rica and suggests policies and programs for responding to CAFTA to meet the objective articulated above. Finally, chapter VI provides a summary of the main findings of this study.

II. THE RURAL ECONOMY AT THE INITIATION OF CAFTA

While the CA-5 continue to urbanize, as seen in Table II-1 the rural population in the CA-5 still represents over 40% of the total population. To determine the potential effects of CAFTA on these households and in general on the rural economies of the CA-5, it is critical to understand the state of the rural economy and government policies and programs at the initiation of CAFTA; that is, the rural economy and its policy environment as it currently is in 2004. At present, numerous agricultural commodities are being exported to and imported from the United States and other countries including those within the CA-5 region. The level of exports and imports is dependent on a number of factors including any barriers to trade. By reducing these barriers, CAFTA will alter absolute and relative prices thereby changing the decision-making of economic agents and, correspondingly, modifying the level and composition of imports and exports. Even with these changes, the greatest benefits for the rural economy in CA-5 from CAFTA are likely to be in the expansion of agricultural and closely related agricultural activities that are already being exported. Similarly, the greatest risks are to current productive activities that already compete with imports. Therefore, in order to assess the potential impact of CAFTA on the rural economy, it is necessary to examine current agricultural production, exports and imports. Furthermore, it is crucial to consider the current socioeconomic conditions, particularly as they related to rural poverty. In this section, the starting point for the rural economy with respect to CAFTA is examined.

Table II-1: Rural population (% of total population)

	1998	1999	2000	2001	2002	Avg. 1998-2002
Costa Rica	42	42	41	40	40	41
El Salvador	42	41	40	39	38	40
Guatemala	61	61	60	60	60	60
Honduras	49	48	47	46	45	47
Nicaragua	45	44	44	43	43	44

Source: World Bank, WDI

A. RURAL POVERTY

While the economic conditions of rural inhabitants within the rural economies of the CA-5 varies, rural poverty is widespread, with the notable exception of Costa Rica. Table II-2 reports the most recent poverty figures for the CA-5 with a breakdown of rural and urban poverty. The table also includes poverty figures from the 1990s that allows an examination of the time trends in poverty indices. As can be seen from the table, in all cases incidence of poverty is greater in rural than in urban areas. Furthermore, with the exception of Costa Rica, poverty rates in rural areas are greater than 60% reaching around 80% for both Honduras and Nicaragua. The data indicate that in all countries there has been a general reduction in poverty rates with the greatest reductions in El Salvador and Nicaragua (5.3 and 4.3 percentage points, respectively). However, in all

cases except Nicaragua, the reduction in poverty has been greater in urban than in rural areas; in the case of Honduras there has been an increase in rural poverty. Even the limited reduction in rural poverty in the CA-5 may not be a result of rural economic development. A recent evaluation of rural poverty in Latin America by de Janvry and Sadoulet (2003) suggests that most of the reduction in rural poverty has come not through the development of rural regions, but through out-migration of poor rural inhabitants. This indicates that the failure to develop rural areas is leaving these areas even further behind their urban counterparts.

Table II-2. Rural and Urban Poverty in the CA-5

	Year	Total	Urban	Rural	Rural-Urban
Costa Rica	1994	23.1	20.7	25.0	4.3
	2002	20.3	17.5	24.3	6.8
	change	-2.8	-3.2	-0.7	
El Salvador	1995	54.2	45.8	64.4	18.6
	2001	48.9	39.4	62.4	23.0
	change	-5.3	-6.4	-2.0	
Guatemala	1998	61.1	49.1	69.0	19.9
	2002	59.9	44.3	67.8	23.5
	change	-1.2	-4.8	-1.2	
Honduras	1994	77.9	74.5	80.4	5.9
	2002	77.3	66.7	86.1	19.4
	change	-0.6	-7.8	5.7	
Nicaragua	1993	73.6	66.3	82.7	16.4
	2001	69.3	63.8	76.9	13.1
	change	-4.3	-2.5	-5.8	

Source: ECLAC, 2003

Associated with the widespread poverty in rural areas of the CA-5 is a wide range of market limitations that inhibit the development of rural areas. A recent review of rural financial markets in Guatemala, Nicaragua and El Salvador indicates that few formal financial institutions offer credit in rural areas and those that do tend to focus on short-term credit for micro-enterprises and offer little credit to agricultural producers (Wenner et al, 2004). The lack of financial intermediaries limits the ability of rural producers to invest in productive activities. As with credit, land markets in rural areas are also limited. The lack of clear land titles makes land transactions difficult and limits the incentives to invest in land. This reduces the efficiency of land use since it restricts the ability to transfer land to its higher value use and limits improvements in land quality. Finally, markets for labor are also problematic partially due to the seasonality and uncertainty of agricultural production and the transaction costs in securing work. While the landless and producers with limited land holdings may desire employment, the inability to obtain information on work opportunities and other transaction costs restricts the ability of rural laborers to obtain employment leaving many underemployed during long periods of the year. The weaknesses in these factor markets combined with poor rural infrastructure, including roads, electricity and communication, reduce the ability of rural areas to

develop and leave many rural communities marginalized. Of course, even with these limitations, as noted below, the CA-5 export a substantial amount of agricultural commodities to the US and elsewhere. The high transaction costs and barriers to access input and output markets present in the rural economy do not stop producers from taking advantage of domestic and even international opportunities but do limit rural competitiveness and the present and future ability of such producers to benefit from such market opportunities.

Furthermore, the importance of having a competitive rural sector has a direct relationship with agriculture, since it is, for most of CA-5, the largest activity within the rural economy (for example, in Guatemala, agriculture represented 64% of the rural sector's GDP). Even the importance of rural non farm income is increasing and in some countries like Costa Rica has already surpassed the 50% mark. However, agriculture is still the single most important activity in rural areas and is still at the center of decision making by rural households, providing a fixed income and nutritional security for its members.

B. THE ROLE OF AGRICULTURE

Table II-3 shows the importance of agriculture for the CA-5 countries as measured by the share of GDP in agriculture, share of economically active population (EAP) employed in agriculture and share of agriculture exports in total exports. Between 1998 and 2002 the average contribution of agriculture to GDP was 10% for Costa Rica and El Salvador, around 15% for Honduras and over 20% for Guatemala and Nicaragua. Note that over this period however, the value of agriculture in GDP has steadily declined with a particularly dramatic reduction in Nicaragua from 32% to 18%. While this share is significantly less than manufacturing and services, it masks the importance of agriculture in employment and export earnings. As can be seen in the table, the share of EAP in agriculture is much higher than its share of GDP indicating its importance in generating income for rural households. For Guatemala, Honduras and Nicaragua over one-third of the EAP remain in agriculture with the share remaining stable over the 1998-2002 period. The fact that the share of GDP in agriculture has dropped steadily over this period, particularly in Nicaragua, while the EAP has remained stable is troublesome and suggests a neglect of the sector or a failure to facilitate the shift of rural households to rural non-agricultural activities. Finally, note that the share of exports from agricultural commodities is significantly higher than its contribution to GDP ranging from an average of 36% for Costa Rica to 80% for Nicaragua. While the share of agricultural exports has generally declined between 1998 and 2002, agriculture still represents an important source of foreign earnings.

Table II-3. Importance of Agriculture (1998-2002)

Value added, % GDP	1998	1999	2000	2001	2002	Avg. 1998-2002
Costa Rica	12.8	10.5	9.5	8.6	8.5	10.0
El Salvador	12.1	10.5	9.8	9.4	8.7	10.1
Guatemala	23.4	23.1	22.8	22.6	22.5	22.9
Honduras	19.1	15.9	15.6	14	13.5	15.6
Nicaragua	32.4	31.6	18.6	17.7	18.0	23.6

Source: World Bank, WDI

Ag. Employment, % of total	1998	1999	2000	2001	2002	Avg. 1998-2002
Costa Rica	20.1	19.7	20.4	15.6	15.9	18.3
El Salvador	25.1	22.1	20.7	21.8	n/a	22.4
Guatemala	37.6	n/a	36.4	n/a	38.7	37.6
Honduras	34.6	35.1	n/a	32.8	n/a	34.2
Nicaragua	42.3	42.4	43.5	43.4	n/a	42.9

Source: World Bank, WDI

Ag exports, % of total	1998	1999	2000	2001	2002	Avg. 1998-2002
Costa Rica	46.1	31.1	33.1	36.0	34.7	36.2
El Salvador	47.4	43	43.2	35.5	33.5	40.5
Guatemala	62.8	59.9	58.5	53.8	55.7	58.1
Honduras	72.7	63.1	68.4	68.9	49.7	64.6
Nicaragua	83.6	83.4	85.6	78.6	70.2	80.3

Source: COMTRADE

C. AGRICULTURAL PRODUCTION AND TRADE

To identify the key products being produced at the initiation of CAFTA, Table II-4 reports data on average crop production in metric tons over the period of 2000 to 2003 in each of the CA-5 countries. The table highlights the relative importance of certain crops across countries. For example, sugar cane is produced in relatively large quantities in Guatemala and changes in the sugar cane quota for the US market could be very important for this crop. The fact that certain countries export more of a certain product than others may be due to agro-ecological differences. It may also be due to other factors such as limited technology, infrastructure, marketing channels or information. In assessing the potential for expanding agricultural exports under CAFTA, the CA-5 may look to their neighbors to identify possible markets to enter.

Table II-4. Crop production (Mt). (Average 2000-2003)

	Costa Rica	El Salvador	Guatemala	Honduras	Nicaragua
Cereals, Total	234,001	785,890	1,165,216	553,206	833,733
Citrus Fruit, Total	421,953	65,258	245,666	174,761	67,750
Coarse Grain, Total	13,639	750,274	1,115,471	544,460	560,759
Rice, Paddy	220,361	35,616	40,714	7,746	272,974
Maize	13,639	604,132	1,062,183	485,938	463,806
Sugar Cane	3,614,579	4,769,315	17,119,300	4,147,750	3,347,787
Beans, Dry	14,860	75,955	93,760	65,940	187,462
Oil Palm Fruit	666,900	-	494,975	690,799	53,125
Vegetables Freshness	37,250	20,000	137,500	55,500	6,400
Fruit excl Melons, Total	3,535,354	272,246	1,917,663	1,275,673	222,036
Bananas	1,866,055	65,000	934,750	728,744	56,911
Plantains	64,843	66,129	266,788	258,000	39,625
Oranges	393,891	37,258	105,582	149,113	67,750
Pineapples	892,687	5,759	101,419	65,282	46,500
Coffee, Green	628,730	102,329	254,895	182,754	67,225
Oilcrops Primary	149,350	10,553	121,306	121,729	34,037
Pulses, Total	14,860	75,955	128,750	65,940	187,462
Roots and Tubers, Total	216,039	88,580	251,879	36,474	84,325
Vegetables & Melons, Total	402,302	148,957	969,241	330,402	29,984
Oil Cakes and Meal	182,811	2,124	48,744	19,270	9,386
Vegetable Oils and Fats	184,317	3,974	101,952	120,655	12,669
Beef and Buffalo Meat	75,170	33,147	62,500	57,324	58,070
Eggs Primary	45,559	63,611	83,375	43,250	21,146
Meat, Total	184,620	119,244	240,195	146,980	121,291
Milk, Total	757,960	393,938	267,407	589,344	255,903
Poultry Meat	74,862	76,826	148,517	78,990	55,108
Butter and Ghee	4,813	170	569	4,448	511
Cheese (All Kinds)	8,079	2,400	11,250	9,052	22,500
Skim Milk & Buttermilk, Dry	1,000	586	1,500	200	0

- Data not available

Source: FAO Stat Database

Table II-5 reports data on agricultural exports from the CA-5 to the United States. The top five exports for each country are shaded. Agricultural exports to the US as a percentage of total exports to the US represent 28% for Costa Rica, only 7.8% for El Salvador, 28% for Guatemala, 13.6% for Honduras, and 34% for Nicaragua. In terms of volume, agricultural exports to the US are greater for Costa Rica than for any other of the CA-5 countries followed by Guatemala and Honduras. This is largely driven by the larger export by Costa Rica of edible fruits and nuts (including bananas) and coffee. Guatemala has a strong advantage in the traditional exports of coffee and sugar, but also exports a significant quantity of fruits and nuts including bananas. Honduras also exports substantial amounts of coffee and edible fruits and nuts. Nicaragua lags significantly behind its neighbors exporting less than half of what Honduras exports to the US. Part of

this may be attributed to differences in agro-ecology but part relates to barriers to commercialization and market access, and high transaction costs.

Table II-5. Agricultural exports to the US (Avg. Customs Value 1998-2002)
(Millions US\$ Dollars)

HTS	Description	Costa Rica	El Salvador	Guatemala	Honduras	Nicaragua
1	Live animals	0.08	0.49	0.16	0.13	0.28
2	Meat and Edible Meat Offal	24.81	0.00	0.00	1.01	22.46
3	Fish and Crustaceans, Mollusks	70.79	21.03	19.36	118.16	84.39
4	Dairy Produce, Bird's Eggs, Edible Products of Animal origin	0.12	0.14	0.05	0.52	0.93
5	Products of Animal origin	0.12	0.10	0.03	0.10	0.18
6	Live Trees and Other Plants, Bulbs, Flowers	36.83	0.73	17.03	0.78	0.01
7	Edible Vegetables and certain roots and Tubers	49.70	4.22	38.31	5.17	2.78
8	Edible Fruit and Nuts	483.22	1.05	258.50	120.38	10.31
9	Coffee, Tea, Mate and Spices	128.35	71.83	253.28	67.71	35.66
10	Cereals	0.01	0.01	0.00	0.00	0.00
11	Milling Industry products, Malt, Starches, inulin, Wheat gluten	0.01	0.22	0.09	0.00	0.00
12	Oil Seeds and Oleaginous Fruits	2.29	1.29	21.92	0.21	4.39
13	Lac, Gums, Resins and other vegetable saps and extracts	0.01	0.24	0.01	0.14	0.00
14	Vegetable Planting Materials and Vegetable Products	0.09	0.02	0.28	0.01	0.00
15	Animal or Vegetable Fats and Oils	0.00	0.05	0.11	0.38	2.24
16	Edible Preparations of Meat, Fish, Crustaceans, Mollusks	0.55	0.07	0.02	0.99	0.13
17	Sugars and Sugar Confectionery	15.30	26.32	57.21	9.15	12.81
18	Cocoa and Cocoa Preparations	1.48	0.09	0.17	1.62	0.00
19	Preparations of Cereals, Flour, Starch or Milk	2.48	1.93	1.89	0.13	0.03
20	Preparations of Vegetables, Fruits, Nuts	54.68	0.31	6.71	12.17	0.21
21	Miscellaneous Edible Preparations	3.55	1.20	7.00	0.04	1.32
22	Beverages, Spirits and Vinegar	17.69	8.33	0.75	0.76	0.30
23	Resides and Waste from the Food Industries	0.08	0.00	0.00	0.00	0.00
24	Tobacco and Manufactured Tobacco Substitutes	1.87	0.00	14.31	62.03	14.31
Total agricultural exports to the US		894.11	139.68	697.18	401.60	192.75
Total Exports to the US		3255.94	1768.03	2466.39	2947.71	564.13

Source: USITC

The top five exports for each country are shaded.

Table II-6 notes the agricultural imports to the CA-5 from the US. First, comparing total agricultural exports to imports in Table II-5 and Table II-6, note that in all cases except for El Salvador agricultural exports are much greater than imports. The imports are concentrated principally among cereals, which represent 42% of US agricultural exports

to Costa Rica, 37% to El Salvador, 27% to Guatemala, 32% to Honduras and 45% to Nicaragua. The changes in tariffs envisioned under CAFTA are likely to lead to a significant increase in these US exports. Other important imports include animal or vegetable fats and oils, preparations of vegetables fruits and nuts and residuals and wastes from food industries. Finally note that total agricultural imports from the US as a percentage of total imports from the US to the CA-5 are 7.7% for Costa Rica, 11.7% for El Salvador, 13.8% for Guatemala, 8% for Honduras, and 21% for Nicaragua.

Table II-6. Agricultural Imports from US (Avg. FAS Value 1998-2002)
(Millions of US\$ Dollars)

Description		Costa Rica	El Salvador	Guatemala	Honduras	Nicaragua
1	Live animals	1.90	1.81	2.49	1.48	1.33
2	Meat and Edible Meat Offal	3.14	2.18	28.15	7.15	1.28
3	Fish and Crustaceans, Mollusks	0.61	0.07	0.58	3.66	0.05
4	Dairy Produce, Bird's Eggs, Edible Products of Animal origin	2.97	5.81	5.29	4.85	5.97
5	Products of Animal origin	0.51	0.17	0.39	0.65	0.41
6	Live Trees and Other Plants, Bulbs, Flowers	0.34	0.05	0.52	0.02	0.00
7	Edible Vegetables and certain roots and Tubers	3.33	0.61	3.92	3.00	1.91
8	Edible Fruit and Nuts	8.71	5.19	10.01	3.87	0.67
9	Coffee, Tea, Mate and Spices	1.08	0.35	0.34	0.09	0.22
10	Cereals	83.40	71.94	72.25	63.00	37.71
11	Milling Industry products, Malt, Starches, inulin, Wheat gluten	2.81	1.91	4.87	1.40	1.61
12	Oil Seeds and Oleaginous Fruits	41.92	1.49	7.61	5.97	1.81
13	Lac, Gums, Resins and other vegetable saps and extracts	0.65	0.27	0.88	0.41	0.29
14	Vegetable Plaiting Materials and Vegetable Products	0.55	0.03	0.19	0.12	0.01
15	Animal or Vegetable Fats and Oils	5.02	27.96	33.25	12.55	13.26
16	Edible Preparations of Meat, Fish, Crustaceans, Mollusks	1.08	0.85	5.02	2.53	0.28
17	Sugars and Sugar Confectionery	1.13	0.65	2.10	2.26	0.35
18	Cocoa and Cocoa Preparations	2.37	2.73	2.74	1.67	0.62
19	Preparations of Cereals, Flour, Starch or Milk	6.33	3.97	8.31	4.24	2.64
20	Preparations of Vegetables, Fruits, Nuts	9.00	3.15	9.41	5.61	1.48
21	Miscellaneous Edible Preparations	10.48	29.77	25.59	41.09	4.06
22	Beverages, Spirits and Vinegar	1.76	1.32	1.65	2.68	0.78
23	Resides and Waste from the Food Industries	7.71	32.06	38.22	18.18	5.17
24	Tobacco and Manufactured Tobacco Substitutes	0.45	0.07	0.42	12.08	1.22
Total agricultural imports from the US		197.2625	194.41	264.19	198.57	83.15
Total Imports from the US		2550.44	1649.23	1913.29	2453.64	394.09

Source: USITC

The top five imports for each country are shaded.

D. THE RURAL NONFARM ECONOMY

As mentioned previously, since CAFTA reduces tariffs and expands quotas on some key agricultural commodities it is likely to first and foremost lead to changes in the level and composition of exports and imports of such products. The previous section broadly highlights some of these areas where countries may look to expand agricultural production for export and where they may expect greater competition from the US. Note, however, that while agriculture remains the principal activity in rural areas and the rural sector most likely to be most affected by CAFTA, it is important to highlight that non-farm income-generating activities are growing in importance for rural households. Evidence from the most recent studies indicate that rural non-farm income represent 59% of rural income in Costa Rica, 38% in El Salvador, 22% in Honduras and 42% in Nicaragua (Reardon et al, 2001). The evidence also indicates that women are more likely than men to be employed in non-farm activities. Finally, the trend is toward even a greater share of rural household income coming from non-farm activities. In summary, the data on rural household income suggests that there are multiple paths towards improved welfare and out of poverty for rural households including agricultural production but also non-agricultural self-employment and wage activities. In designing policy responses to CAFTA for the rural economy, this critical fact needs to be considered. It is not necessarily the case that in response to CAFTA agricultural producing households need to shift production from staple crops to non-traditional exports to improve their welfare. For many households, particularly on marginal lands, it may be better to shift more resources, particularly labor, to non-agricultural activities.

E. THE CA-5 AT THE INITIATION OF CAFTA

The discussion above highlights a number of factors that should be considered when assessing the impact of CAFTA on the rural economy of CA-5. These are as follows:

- a. At the initiation of CAFTA, the rural economies of the CA-5 have a base from which to build, but suffer from a number of weaknesses that are common to rural economies in developing countries. These weaknesses included poor functioning rural factor markets, limited infrastructure and widespread poverty. The key to obtaining benefits from CAFTA for the rural economy is to pursue a rural development strategy that seeks to improve rural infrastructure (physical and social) and the efficiency of factor markets (labor, land and capital). This will create the necessary conditions for rural households to take advantage of the opportunities brought about by CAFTA.
- b. Even with its limitations, the CA-5 exports a number of agricultural products to the US under the CBI and CAFTA provides the continuation of such benefits and also expands access to US markets for products under quota restrictions. Public policy responses should look to assist small and medium size producers in taking advantage of present and new opportunities.
- c. Increased access for the US to the CA-5 agricultural markets is likely to lead to expanded imports from the US, particularly in staple crops. Because of this

increased competition, it may be necessary to establish short-term policies and programs to provide support for those staple producers who would like to transition to other activities. While there is potential for staple producers to shift to profitable high –value-added crops, there may also be opportunities for these producers to shift into non-agricultural activities. Policies should support shifts to any activities that improve the welfare of rural households.

- d. In order to provide specific public policy recommendations, it is necessary to have a clear understanding of the current government policies and programs. These are discussed in chapter V.

III. LESSONS FROM NAFTA

The substantial amount of research devoted to studying NAFTA before and after its implementation provides a wealth of information from which to learn. Not only have we learned more about how trade liberalization can impact different sectors of the economy, but much has been learned about how to predict what the impacts might be. The various attempts at predictions illuminate the areas in which different prediction models can be capable and also inadequate to properly determine some effects. Moreover, ten years after implementation of NAFTA the available data provides some clues as to what the effect has been and the limitations in trying to determine all the effects of NAFTA. The following discussion synthesizes the NAFTA experience. This includes the experience with simulations prior to the agreement's implementation, what has been observed, what we have been unable to observe, as well as a discussion of what can be learned from the entire experience thus far.

A few different methodologies were used to try to predict what effect NAFTA would have on the Mexican economy, each having its advantages and disadvantages. The first section describes the different methodologies used to predict NAFTA's effects and compares their advantages and disadvantages. The second section highlights the predictions that were made about possible changes in Mexican agricultural production and trade, foreign direct investment in agro industry, non-agricultural activities in rural areas and the overall effects on rural employment, migration and poverty. The third section describes the actual changes to the rural economy that have been observed since NAFTA. Some of the predictions have been found to be inaccurate, the possible reasons for which are discussed in this section. The final section delineates the lessons that can be learned from Mexico's NAFTA experience, which include lessons about modeling, predictions and policy responses.

A. PREDICTION METHODOLOGY AND GENERAL PREDICTIONS

Prior to and immediately after the ratification of NAFTA, many predictions were made about the effects that the trade agreement would have on the Mexican economy. Kimbell (1993) describes three main ways in which NAFTA's effects on the Mexican economy were modeled. These are (1) the Historical Analogies (HA) approach², (2) Macroeconometric Model (MM) approach and (3) the Computable General Equilibrium (CGE) approach.³ In addition, partial equilibrium models were used to examine specific agricultural sectors, but are not discussed by Kimbell. The first method Kimbell describes draws on the experiences of other countries joining trade agreements, especially European countries joining the European community, and tries to predict what

² Hinojosa-Ojeda and Robinson (1992) identify a set of studies which use the experience of one country to determine the effect on another country, but use data to estimate the impacts. They refer to this as an extrapolation-regression model and identify 5 such studies: Hufbauer and Schott (1992), Prestowitz et al (1991), Koechlin et al (1991, 1992), Leamer (1991) and INFORUM (1990).

³ Kimbell describes a fourth method used to predict the effects of NAFTA (Trade-Theory Specification approach, Leamer, 1991 and 1992), but this method was only used to predict the effects on the U.S.

will occur with NAFTA based on what occurred in other countries.⁴ Kimbell points out that this methodology focuses mainly on the positive effects of trade agreements and liberalization and ignores the more complex effects that such an agreement can have. The MM approach uses a short-term forecasting model to make predictions about the long-term effects of NAFTA on economic growth, increases in productivity and capital accumulation.⁵ Kimbell argues that this method lacks a strong basis in theory and is also overly optimistic, not finding any losers due to NAFTA. The third method, CGE modeling, was the most widely used to predict the effects of NAFTA. The main advantage of CGE models is that they allow for disaggregation at the level necessary to predict changes to specific sectors of the economy. The main disadvantage with the CGE method is that results can be highly sensitive to the parameters used in the model and to the structure of the model (Lustig, 1993; Kimbell, 1993). Furthermore, the actual impact of a FTA on economic growth could be much larger than those estimated by static CGE models since they are unable to account for various dynamic effects associated with accumulation of capital, changes in the specialization patterns and stronger productivity spillovers. Partial equilibrium multi-market studies⁶ were also used to simulate the effects of NAFTA. These mainly focus on the impacts on specific sectors, especially agriculture. The partial equilibrium approach is able to differentiate many products in detail, which is especially useful in determining the effects of trade liberalization on the rural economy.

B. PREDICTIONS OF THE EFFECTS OF NAFTA ON THE RURAL ECONOMY IN MEXICO

The majority of the predictions of the effects on the rural economy were made based on the results of CGE models and are summarized and discussed by Brown (1992), Hinojosa-Ojeda and Robinson (1992), Josling (1992), Kimbell (1993) and Lustig (1993).⁷ The assumptions vary on the level of sectoral disaggregation, product differentiation between domestic and foreign goods, the returns to scale and if the model was dynamic or not.⁸ Brown, Kimbell and Lustig focus on the general predictions with minimal sector detail, while Hinojosa-Ojeda and Robinson emphasize the predictions on the effects on labor and Josling focuses on the effects on agriculture.⁹

⁴ Kimbell notes the Hufbauer and Schott (1992) study which used the experience of Portugal and Spain in joining the European Community to anticipate the effects of NAFTA on Mexico. Another study which also uses the experiences of Portugal and Spain to predict the effects of NAFTA by comparing relative disparities between the trade agreement members is Conroy and Glasmeier (1992/1993).

⁵ The main study utilizing this method was done by Ciemax-WEFA (1992), and Mexican forecasting firm.

⁶ These include Krissoff et al (1991) and Krissoff, Neff and Sharples (1992), reported in Josling (1992).

⁷ The model description summaries and comparisons can be found in Tables 1, 4 and 7 in Brown (1992), Table 4 in Hinojosa-Ojeda and Robinson (1992), Tables 1-4 in Kimbell (1993) and Table 5 in Lustig (1993).

⁸ Static GCE models include Bachrach and Mizrahi (1992), Hinojosa and Robinson (1991), Trela and Whaley (1991), Boyd, Krutilla and McKinney (1992), Sobarzo (1992), Brown, Deardorff and Stern (1992), Levy and van Wijnberger (1991a, 1991b). Dynamic CGE models include Young and Romero (1992) and Levy and van Wijnberger (1991c).

⁹ Predictions are found in Tables 2, 3, 5, 6, and 8 in Brown (1992), Tables 1-8 and 10 in Josling (1992), Tables 1-4 in Kimbell (1993) and Table 6 in Lustig (1993).

The general findings of these various models are that Mexican real incomes would increase between 4% and 8% as a result of NAFTA. However, the increase in income would not be equally distributed. It was expected that during the transition to more productive activities, some workers and producers would be negatively impacted. Those expected to be especially at risk were staple producers who might suffer a loss of income due to the expected fall in the domestic prices of staples. As these staple producers were forced out of production, migration from rural to urban areas or to the U.S. was predicted to increase (Lustig, 1993; Kimbell, 1993). Investment flows into Mexico were predicted to capitalize on the low wage labor, increasing the wages of urban unskilled workers, which could increase the flow of rural workers to urban areas. In a review of some theoretical studies on the effects of NAFTA, Josling (1992) stated that processing activities were predicted to move south to Mexico to take advantage of the low wage labor. Lustig (1993) concluded that if the productivity gains and capital flows were properly estimated, the largest gains were predicted to be for the poorest Mexicans. However, if capital flows did not increase with NAFTA, it was predicted that the effects would be regressive, thus leaving the poor relatively worse off.

The models also predicted that if Mexican consumers largely differentiate between domestic and foreign goods (such as preferences for Mexican over U.S. corn), then domestic prices would be less affected by changes in international prices of corn. Also, if the model was dynamic, larger changes in real incomes were predicted as increases in income are transmitted and multiplied through the economy. Lustig (1993) concluded due to the nature of the Mexican economy, the best model to predict NAFTA's effects was one that assumed increasing returns to scale, a non competitive market structure, product differentiation, and capital and labor flows.

1. AGRICULTURAL PRODUCTION, STAPLES AND EXPORTS

The general predictions about the effects of NAFTA on Mexican agriculture are summarized in Yunez-Naude (2002), while a review and summary covering CGE, partial equilibrium and commodity-specific prediction studies, was done by Josling (1992). The expected positive effects were that agricultural trade and supply of agricultural exports would increase, production of crops that compete with imports would decline and that agricultural productivity would improve as resources were allocated more efficiently. Specifically, fruit and vegetable producers were expected to benefit due to NAFTA while staple crop producers (especially of corn) would suffer losses as a result of lower prices for their crops.¹⁰

The results from a study by Krissoff, Neff and Sharples (1992; cited in Josling, 1992) using a partial equilibrium multi-market model are reported in Table III-1. Their model predicted that a trade agreement, along with unilateral Mexican trade liberalization, increases total agricultural exports by \$178 million, with an increased \$160 million going to the U.S. They also found that the net effect of such changes on Mexican welfare would be an increase of \$166 million. Due to falling prices of staple crops through the

¹⁰ See Appendini (1994), Conroy and Glasmeier (1992/1993), Cornelius and Martin (1993), GAO (1991), Josling (1992), Levy and van Wijnbergen (1991d), Runsten and Wilcox (1992)

removal of tariffs, producers and the government would suffer welfare losses of \$457 and \$462 million, respectively, while consumers would see a welfare gain of \$1.03 billion.¹¹ Their model uses 1988 as the base year, which probably overestimates the changes that would occur from NAFTA since Mexico began to unilaterally liberalize prior to the agreement's implementation. However, the general impacts predicted by this model are consistent with the CGE studies, that staple producers would suffer losses as the price of their crops fell, while consumers would gain as basic foods became less expensive.

Table III-1. NAFTA's effects on Agricultural Trade and Sectoral Welfare
(Millions of dollars)

	Scenario ^a		
	(1)	(2)	(3)
Total agricultural exports	171	49	178
Agricultural exports to the U.S.	166	25	160
Agricultural imports	443	465	469
Producer welfare	-438	-503	-457
Consumer Welfare	978	1,068	1,035
Government cost	-440	-500	-462
Net welfare change	100	65	116

Source: Krissoff, Neff and Sharples (1992), reported in Josling (1992) tables.

a. (1) Free trade agreement between U.S. and Mexico, (2) unilateral Mexican trade liberalization, (3) Free trade agreement and Mexican trade liberalization.

Table III-2 reports the results from a CGE study by Burfisher, Robinson and Thierfelder (1991; cited in Josling, 1992), which distinguishes 28 sectors including 10 agricultural and 10 food processing industries. The changes in output and exports of Mexican grains, vegetables and oilseeds are reported below. Each of the four scenarios includes complete trade liberalization (the removal of all tariffs and quotas), but vary in the assumptions about Mexican domestic agricultural policies. In all scenarios, grain output is predicted to decline while fruit and vegetable output and exports are predicted to increase. Mexican grain producers shift out of grain production because imported grains are much cheaper and drive the price of grains below the price at which domestic production is profitable. The elimination of tariffs on fruits and vegetables allows Mexican producers to take advantage of their comparative advantage of lower production costs to expand production and increase exports of these commodities.

Comparing Scenarios 2 and 4 shows that Mexican domestic agricultural policies can affect the outcome. When all agricultural supports are removed, the decline in grain production is predicted to be larger than that due to trade liberalization alone. This is because price or income supports for grain production shelter the grain producer from the full fall in price that occurs through complete liberalization. However, when price

¹¹ Josling does not report the time frame in which the changes occur. It is assumed that the values reported are the cumulative effect after the model returns to equilibrium, not changes per year.

supports are replaced by deficiency payments to corn,¹² there is almost no change in domestic food corn output. Overall, these simulations show that the price changes occurring with trade liberalization can be expected to have strong effects on the structure of agricultural production, as long as the changes affect producer income. However, it is important to note that the values reported in Table III-2 are percent changes from the base level, so estimations of total changes in volume of agricultural production and exports cannot be made directly.

**Table III-2. Changes in Mexican output and exports of various agricultural products.
(Percentage change from base)**

Crop	Scenario ^a			
	(1)	(2)	(3)	(4)
Food grain output	-6.5	-16.4	-14.1	-7.4
Food corn output	-15.2	-21.7	-20.2	-1.4
Feed grain output	-3.2	-5.6	-5.0	-3.7
Fruit and Vegetable Output	10.3	10.1	9.6	8.2
Fruit and Vegetable exports	25.8	25.6	25.3	24.7
Oilseed output	-4.7	-45.6	-46.5	-13.9

Source: Burfisher, Robinson and Thierfelder (1991), as reported in Josling (1992).

a. (1) tariffs and quotas removed from all sectors, (2) tariffs and quotas removed from all sectors and all Mexican agricultural support policies removed, (3) tariffs and quotas removed from all sectors along with the elimination of Mexican input subsidies, but not producer subsidies, (4) all tariffs and quotas removed and deficiency payments for corn in Mexico.

A number of commodity-specific studies included in a report by the American Farm Bureau Federation (1991) are summarized by Josling (1992).¹³ Overall, these studies are consistent with the CGE predictions, finding a 20% reduction in corn production if Mexican agricultural markets are liberalized and that a trade agreement could increase exports of fruits and vegetables (melons, cucumbers, onions, green peppers and tomatoes) to the United States.

De Janvry, Sadoulet and Davis (1995) simulate NAFTA's impact on maize producers in the *ejido* sector. The data are from a 1994 household survey and the model distinguishes households that are net sellers, net buyers and self-sufficient in maize production. They find that if the maize price falls 40% and rural wages fall 2%, households that are large net sellers of maize will reduce their production of maize by 22.5%, while large net buyers will reduce their production even further, by 39.8%, due to the increase in real income from the fall in the price of maize (Table III-3). The changes in real income

¹² The deficiency payments are not fully described in Josling (1992) and the original paper was not available. It is inferred from Josling's text that deficiency payments to corn are direct cash transfers to corn producers to compensate for their loss of income from falling prices.

¹³ The report by the American Farm Bureau Federation is *NAFTA*. The quantitative studies in this volume are Peterson, grains and oilseeds; Rosson, livestock and meat; McClain, dairy; Cook, fruits and vegetables; Spreen, citrus.

predicted by their model are -9% and 2.2% for net sellers and net buyers, respectively. Self-sufficient households are found not to change their maize production significantly, nor to have any significant change in real income. When all types of households (net sellers, buyers and the self-sufficient) are aggregated, overall maize production is projected to fall 20%, while fruit and vegetable production would increase 2.6% and real household income would fall 7.5%. When perfect markets for corn are assumed and the type of household is not distinguished, the reductions in corn production and marketed surplus are much larger. As in the Burfisher, Robinson and Thierfelder (1991) model, these values are changes from the base value, so overall changes in volume of agricultural production do not follow directly.

**Table III-3. Changes in the Rural Economy from a 40% fall in corn price and 2% decrease in wage
(% change from base)**

	Perfect Market for Corn – All Households	Large sell	Large Self- Sufficient	Large Buyer	Small Sellers	Small Self- Sufficient	Small Buyers	Aggregate of all Households
Agricultural Production								
Crops								
Corn/beans	-28.8	-22.5	-0.0	-39.8	-24.0	-0.0	-18.1	-20.0
Grains/oilseeds	13.6	14.7	0.0	10.4	14.3	0.1	10.3	10.5
Fruit/vegetables	5.1	6.2	0.0	3.7	7.8	-0.0	3.6	3.8
Livestock	4.2	8.2	-0.0	3.7	0.0	0.0	49.6	2.6
Purchased Inputs								
Hired Labor	-5.2	-7.7	0.8	-2.5	-6.8	0.9	2.0	-4.8
Inputs	-14.3	-14.8	-0.1	-8.5	-17.9	-0.2	-11.9	-10.8
Marketed Surplus of Corn	-56.3	-27.5	--	151.7	-37.5	--	27.4	-38.4
Labor Allocation								
Migration								
to Mexico	1.3	3.1	0.2	0.1	2.1	0.2	-1.1	0.7
to U.S.	0.8	2.2	0.2	0.0	1.4	0.1	-0.8	0.8
Main Activity								
On-farm	-2.4	-0.7	-0.1	-3.2	-2.4	-0.0	-2.0	-1.1
Off-farm	1.1	3.6	-0.4	-0.4	2.1	-0.4	-2.1	0.5
Self-employed	1.6	3.8	0.2	0.1	0.0	0.3	-1.6	1.0
Home	1.7	-0.3	0.1	3.2	1.1	0.0	2.4	0.9
Income	-14.0	-23.4	-0.2	-6.3	-13.5	-0.5	-6.4	-11.9
Real Income	-6.5	-19.0	-0.2	2.2	-8.4	-0.5	2.8	-7.5

Source: de Janvry, Sadoulet and Davis (1995).

Taken together, these CGE simulations show that the prices changes from the implementation of NAFTA were expected to be large enough to reduce the production of staple crops by about 20% and to increase production of export crops such as fruits and vegetables. However, the changes in staple production at the household level were expected to vary depending upon the household's dependence on staple goods for income. Consumers were expected to benefit from lower food prices. Overall, the country was expected to benefit from the policy changes as increases in consumer welfare would be larger than the sum of the income losses suffered by staple producers and the revenue losses by the government.

2. FOREIGN DIRECT INVESTMENT AND AGRO-BUSINESS/FOOD PROCESSING

One of the main advantages expected from NAFTA was an increase in foreign direct investment due to the more favorable rules and regulations for capital movements included in the agreement and Mexican unilateral reforms. Given Mexico's comparative advantage in low cost labor, increased investment in the food processing industry was expected. Mexico could benefit from improved technology, expansion of production facilities and coordination of the production of inputs to processed foods.

While no specific predictions were made about the increase of FDI in agro-industry, Appendini (1994) claimed that "agro-industry should provide an increasingly important source of foreign exchange and investment" (p.63). While NAFTA did provide additional incentives for foreign investment, she stated that the 1992 reforms in land tenure were probably the most important policy changes that would attract investment in agriculture and agro-industry. These reforms made previously prohibited joint ventures between the *ejido* and private sectors possible. It was hoped that such reforms, reinforced by NAFTA, would lead to large inflows of foreign capital which would help coordinate the *ejido* sector and other small scale producers and assist them in accessing the export market.

3. RURAL POVERTY, EMPLOYMENT, MIGRATION AND ALTERNATIVES TO AGRICULTURE

Given that changes in the composition of agricultural production were predicted, a more broad concern was what impact NAFTA would have on rural poverty, employment, out-migration and non-agricultural economic activities. The rural economy is largely affected by the production of staple food crops. Therefore, reductions in income of staple producers during the transition period could increase rural poverty, reduce agricultural employment and increase out-migration.

The estimates of the effects of NAFTA on rural poverty and employment are quite limited. Levy and van Wijnbergen (1991c; cited in Brown, 1992) predicted that liberalization of maize would reduce the real incomes of subsistence farmers, landless rural workers and rain-fed farmers by 3.3%, 1.6% and 5.7% respectively, while that of irrigated farmers would increase 2.8%. Hinojosa-Ojeda and Robinson (1991) estimated that without capital flows, the wages of rural workers would fall 0.2% due to trade liberalization, but that if capital flows and migration are allowed in the model, rural

wages would increase between 4.7% and 9.2% (cited in Brown, 1992). As mentioned above, de Janvry, Sadoulet and Davis (1995) predicted that real income would fall 7.5% in the *ejido* sector if the price of maize fell 40% and rural wages fell 2%, but when consideration is made for the PROCAMPO payments received by staple producers, real income would actually increase 3.7%. Rural out-migration was predicted to increase as staple growers were forced out of production (Appendini, 1994; Josling, 1992; and others).

These results do not lead to a clear idea of how NAFTA was expected to affect rural poverty. Some producers would suffer income losses, while others would gain, the net effect being dependent upon the assumptions held in the models. A general result was that rural out-migration would increase, but whether this would have a positive or negative effect on rural household welfare was unclear.

4. POLICIES USED TO ASSIST TRANSITIONS FOR NAFTA

The simulation and predictions regarding the effects of NAFTA on rural households highlighted the need for social welfare programs to assist those likely to suffer from the implementation of NAFTA. Along with the findings that incomes of staple producers were considerably at risk from the trade liberalization, it was suggested that liberalization of agriculture should be gradual and that compensation should be given to staple producers to help them adjust during the transition period (Hinojosa-Ojeda and Robinson, 1992; Lustig, 1993; de Janvry, Sadoulet and de Anda, 1995). Since NAFTA did allow for the gradual liberalization of agriculture, especially staple crops, it appears that this suggestion was followed in the development of NAFTA.

Associated with the free trade agreement, Mexico removed its price supports to staple crops¹⁴ and implemented an income assistance program, PROCAMPO. The removal of price supports eliminated many of the distorting incentives for staple production. The PROCAMPO program was specifically designed to compensate staple producers for lost income as a result of falling staple prices after liberalization and gave cash payments per hectare to farmers who had grown staple crops in the 3 years prior to the program's initiation in 1994, but did not require nor limit the present or future production of staple crops in order to receive the assistance. The program was not specifically targeted toward poor farmers and payments were allocated according to the land area cultivated, not according to income level. However, the program was progressive in the sense that the payments were based on the average productivity of all staple producers. In general, larger producers have higher productivity per hectare than small-scale producers, so large-scale producers were slightly under compensated while small-scale producers were over-compensated. Furthermore, PROCAMPO was later adjusted and provided: (i) higher payments per hectare for those producers with less than 5 hectares and set a maximum payment of 100 hectares for large producers; (ii) the ability of producers to receive the net present value of the payment stream of PROCAMPO payments to which they were entitled (up to the year 2008). The PROCAMPO program required that

¹⁴ The price supports were administered through the program, CONASUPO. A detailed description of the elimination of this program can be found in Yunez-Naude (2003).

producers continue to use their land in some way in order to receive the payments¹⁵ and there was some difficulty in properly managing and distributing such payments.¹⁶

De Janvry, Sadoulet and Davis (1995) modeled the effects of falling maize prices and rural wages along with PROCAMPO payments to staple producers in the *ejido* sector. They predict that self-sufficient producers would actually increase their production of maize because the payments have an income effect and increase the demand for maize.¹⁷ Without the payments, self-sufficient maize producers are predicted to not change their production. However, they do not predict that PROCAMPO will have a large impact on the maize production by net seller or net buyer households, with the overall effect being a reduction in maize production of -19.7%. Both groups are expected to reduce their maize production by about the same amount as without PROCAMPO payments. However, PROCAMPO is predicted to have large real income affects for all households. When comparing the results when PROCAMPO is included to when it is not, the model predicts that net maize sellers will see a reduction in real income of only 4.8% (instead of 19%), net buyers will see an increase of 12.4% (compared to 2.2%) and self-sufficient households will see an increase of 13.6% (compared to -0.2%). When all the households are aggregated, real income is predicted to increase 3.7%, instead of falling 7.5% when the fall in the price of maize and wages is modeled without PROCAMPO payments.

C. ACTUAL OUTCOMES AFTER NAFTA AND COMPARISON WITH PREDICTIONS/ EXPECTATIONS

When comparing the actual changes to the rural economy after the implementation of NAFTA, it is important to keep in mind that factors other than NAFTA affected the Mexican economy during the last 10 years. In 1994-1995, Mexico suffered an extreme devaluation of its currency; about 39% in real terms during one year (Yunez-Naude, 2002). The country also entered into other trade agreements during the period; with Chile in 1991, with Colombia and Venezuela in 1994, with Costa Rica in 1994, and with Europe in 2000. Also, changing world interest rates reduced the attractiveness of investing in Mexico and overall world demand declined in the late 1990's. In addition, transfer payment programs not specifically associated with trade liberalization, such as PROGRESA, could have influenced the way in which some sectors adjusted to the changes caused by liberalization. Moreover, many of the prediction models lacked sufficient detail of the rural economy to accurately estimate the effects. However, despite the many problems with the prediction models, they are still our best attempt to model the possible changes and are useful in order to compare our expectations with reality.

¹⁵ Either in agricultural production or some environmental/resource management program. They could not leave the land fallow and continue to receive PROCAMPO payments.

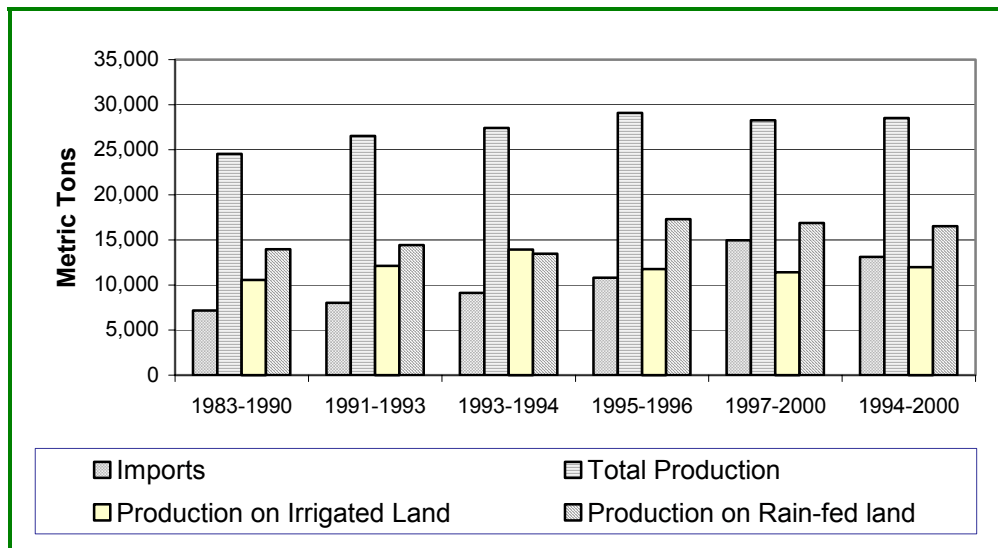
¹⁶ Marsh and Runsten (1995) note that two years into PROCAMPO producers were still be required to demonstrate they were growing one of the covered staple crops because of difficulties the government had in verifying who were eligible producers.

¹⁷ Taylor (2001) also predicted that PROCAMPO would cause small-scale staple producers to increase their staple production.

1. AGRICULTURAL PRODUCTION, STAPLES AND EXPORTS (NON-TRADITIONAL CROPS)

While there have been changes to agricultural production and trade in Mexico since NAFTA, this does not necessarily mean that all of the changes can be attributed to the agreement. Data show that the volume of agricultural trade has increased since NAFTA, but that Mexico has experienced a continual trade deficit in agriculture (Yunez-Naude, 2002).¹⁸ Moreover, Yunez-Naude and Barceinas (2004) studying the structure of agricultural imports and exports cannot find that NAFTA has had a large effect on agricultural trade. Figure III-1 shows the total production and imports of staple crops between 1983 and 2000. As can be seen in the figure, staple production has actually increased on rain-fed land. Moreover, there is no evidence that domestic production of agricultural goods which compete with imports has declined since NAFTA, with the exception of soybeans and wheat.

Figure III-1. Imports and Production of Staple Crops^a before and after NAFTA: Irrigated versus Non-Irrigated Production.



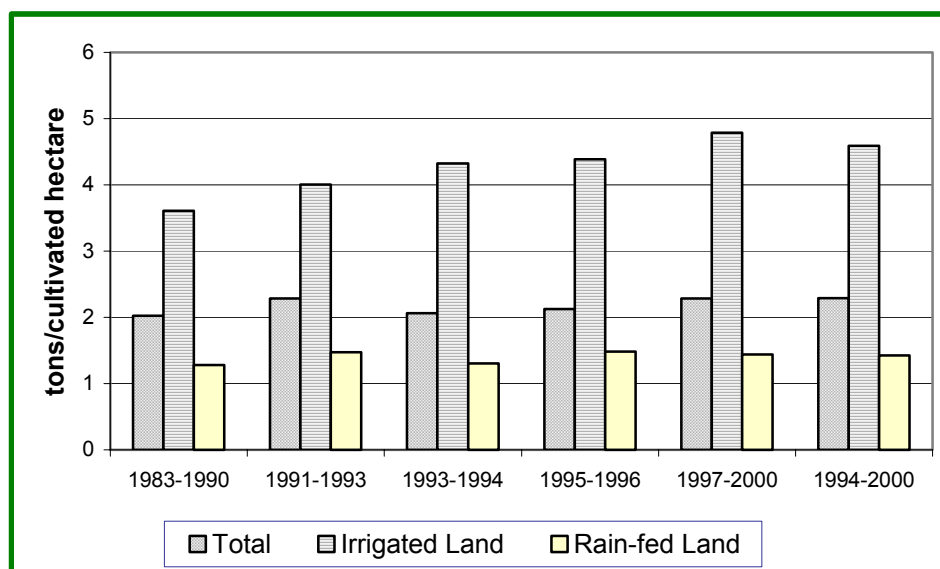
Source: Yunez-Naude (2002) based on data from FAO and the Mexican Ministry of Agriculture (SAGAR SIACON and “Anuario Estadístico de la producción agrícola 1999-2000”).

A. CROPS ARE BARLEY, BEANS, MAIZE, SORGHUM, SOYBEANS AND WHEAT.

Yunez-Naude (2002) argues that the data show that productivity of lands held by commercial farmers has increased, but not that of subsistence farmers, indicating that the effects of NAFTA have not been equal among agricultural producers. Figure III-2 shows that productivity on irrigated land has increased since NAFTA while that on rain-fed land has remained rather constant.

¹⁸ The exception is 1995 during the Mexican *peso* crisis (Yunez-Naude, 2003).

Figure III-2. Land Productivity in Staple Crops^a, Irrigated and Rain-fed Land, Mexico 1983-2000



Source: Yunez-Naude (2002), based on data from SAGARPA. (Also cited in World Bank (2003, ch.3)).

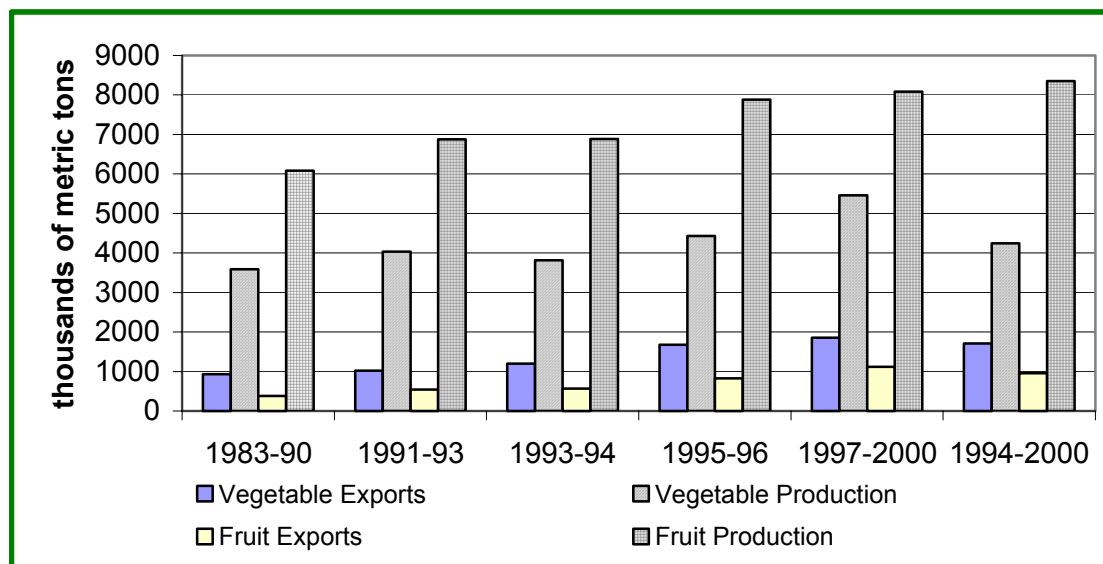
A. CROPS ARE BARLEY, BEANS, MAIZE, SORGHUM, SOYBEANS AND WHEAT

Consistent with predictions, production of agricultural exports such as fruit and vegetables has increased since NAFTA as well as total exports of these goods (Figure III-3). Total production of vegetables has increased from an annual average of 4,030.23 metric tons between 1991 and 1993 to an annual average of 5,461 metric tons between 1997 and 2000, an increase of about 35.5% between the two periods. Total exports of vegetables have grown from 1,019.61 to 1,856.26 metric tons between the same periods, an increase of 82% (Yunez-Naude, 2002).¹⁹ Production of fruits has followed a similar path, increasing about 17% from an annual average of 6,879.65 metric tons between 1991 and 1993 to an annual average of 8,081.74 between 1997 and 2000. Total exports of fruits have increased from 545.09 to 1,115.21 metric tons (almost 49%) between the same periods (Yunez-Naude, 2002).²⁰

¹⁹ The vegetables included are asparagus, cauliflower, broccoli, carrots, turnips, cucumbers, garlic, onions, peppers, tomatoes, eggplants and spinach.

²⁰ The fruits include avocados, lemons, limes, mangos, guavas, cantaloupe, oranges, papaws, pineapple, fresh and frozen strawberries and watermelon.

Figure III-3. Fruit and Vegetables, Mexican Production and Exports, Mexico 1983-2000



Source: Yunez-Naude (2002) using data from FAO, SAGAR (Base de datos SIACON, and Anuario estadístico de la producción agrícola 1999-2000).

While some rural areas have been successful at developing crops which can be marketed as organic, sustainable or to meet other niche market demands, these activities have not resulted in significant changes in overall rural production. However, since Mexico implemented other trade agreements (Polaski, 2003) and experienced an extreme devaluation of the *peso* during 1995, Yunez-Naude (2002) was unable to separate the effects of NAFTA from the effects of these other changes. However, one must note that most models base their predictions on medium to long terms horizons (8 to 10 years) and the Mexican real exchange rate *vis-à-vis* the US\$ in 1999 was at pre-crisis (1994) levels. Since 1999, the real exchange rate has appreciated, and thus, any long-term predictions would not have been affected.

The predicted negative effects of NAFTA were that the poorest producers (mainly staple producers) would suffer income losses as the domestic price of their goods fell with the removal of tariff protection. However, de Janvry, Sadoulet and de Anda (1995) point out that many staple farmers are subsistence farmers or only produce for a local market that is insulated from changing world prices. Therefore, only producers who are net sellers can be expected to be negatively affected by falling prices. Moreover, they found that in the case of maize, the fall in the maize price prior to 1990 had already caused large modifications in the production activities of farmers in the *ejido* sector.²¹ Since most studies ignored the fact that the majority of the staple crop producers (of which many are

²¹ The *ejido* sector constitutes the majority of the rural population (Sadoulet, de Janvry and Davis, 2001).

in the *ejido* sector) do not produce for the market, they argue that the predictions of the displacement of staple producers were over estimated. However, the predictions of de Janvry, Sadoulet and Davis (1995) expected a reduction in maize production of nearly 20%, even when accounting for the households that do not produce for the market.

Comparing what was predicted by Burfisher, Robinson and Thierfelder (1991) in Table III-2 (see section III.B.1. above) with the actual and current production and export values provides an idea of the success of the CGE models in predicting the effects of NAFTA. Table III-4 below compares the base level of production of Cereals, Fruits and Vegetables, and Oilcrops between 1993 (base level), the predicted scenario 4 and current output (in year 2003). We observe that current cereal output is higher than in the base level, contradicting the predicted decrease in output of such crops. Fruit and vegetable production has performed better than predicted, while oilcrops are very close to the predicted level. With regards to the prediction of a 24.7% increase in fruit and vegetable exports from base level, we observe that the actual increase as of 1997-2000 was already of 68%, showing that fruits and vegetables have increased both in production and exports well above model predictions.

Table III-4. Comparison of output prediction in Burfisher, Robinson and Thierfelder (1991) with actual output of Mexican agricultural products

MEXICO (Production Mt)	BASE LEVEL	PREDICTED	CURRENT
	1993	Scenario (4)	2003
Cereals, Total	25,200,006	23,335,206	30,565,504
Fruit and Vegetables	16,995,941	18,389,608	24,319,058
Oilcrops Primary	312,828	269,345	296,482

Source: FAOSTAT

The World Bank (2003, ch.3) argues that the income of staple crop producers has been much less affected by NAFTA than expected.²² This is in part due to the fact that rural households diversify their sources of income and that about 90 percent of Mexico's farmers received cash transfers through the PROCAMPO program. Also, since liberalization was spread out over time, the negative impacts on producers were probably reduced.

Sadoulet, de Janvry and Davis (2001) confirm the expected positive effect on real incomes of staple producers predicted by de Janvry, Sadoulet and Davis (1995). They found that the PROCAMPO payments to the *ejido* sector had multiplier effects between 1.5 and 2.6 times the amount of the payments, implying that the program was successful in helping farmers increase their income. It can be inferred that if PROCAMPO had not existed, the incomes of staple producers would have been negatively affected, as the CGE

²² The World Bank argues that rural incomes have not been greatly affected by NAFTA. The data used to support this claim was not specified.

models predicted.²³ Considering that PROCAMPO was established to compensate staple producers from the expected losses due to NAFTA, it appears that the program was successful in achieving this objective. Given that many staple producers face capital constraints, it was also hoped that the cash transfers would help them transition into more profitable agricultural activities. However, data on total staple production show that this has not been achieved through the program. Once PROCAMPO payments are terminated, those who have not transitioned to alternative activities may yet find themselves worse off.

Sadoulet, de Janvry and Davis found that the payments were used to increase traditional production, not to diversify crops or to improve technology. This result is consistent with many predictions made about the effect of such compensation payments. Appendini (1994) reported that farmers would invest in maize cultivation if they had access to credit with which to buy inputs or when other wage income was in short supply. Moreover, simulations using a village-town model (Taylor, 2001) predicted that the PROCAMPO cash transfers would cause large commercial farmers to reduce staple production and small farmers to increase staple production. The reason small producers may increase staple production is that the PROCAMPO payments have an income effect that leads to an increase in their demand for all goods, including staple crops. While NAFTA may put downward pressure on the domestic price of staples, for many rural communities that are not integrated into the national market there may only be a limited staple price effect of NAFTA. The increase in local demand due to higher income from PROCAMPO would then increase local prices, causing staple production to increase as well. Yunez-Naude (2002) reports data consistent with the Taylor (2001) and Sadoulet, de Janvry and Davis (1995) predictions, showing that staple crop production in the country as a whole has not declined dramatically since NAFTA. As Appendini (1994) argued, PROCAMPO is merely an income support program and not one of transition assistance.

Another factor relating to the effectiveness of PROCAMPO in helping staple producers shift into other crops is that the distribution of payments are according to land area cultivated (up to 100 hectares), so the wealthy farmers (those with more land) receive larger amounts than smaller subsistence farmers. In fact, while participation rates are much higher in the lower quintiles of the income distribution, the actual distribution of the program funds only slightly favors the poor (Wodon, López-Acevedo and Siaens, no date). Perhaps if the payments were targeted to poor, small staple producers, small farmers would be in a better position to transition into more productive activities.

There are other reasons besides capital constraints why staple producers did not transition into other production activities. Case studies by Marsh and Runsten (1995) expected significant push factors to move farmers out of staple production, but that pull factors into non-traditional crops such as fruits and vegetables did not exist to move small scale

²³ The simulations by De Janvry, Sadoulet and Davis (1995) predicted that PROCAMPO payments would reduce the negative income effect of falling maize prices for households that are net sellers of maize and increase the real incomes of self-sufficient and net buyer households. These findings support the inference that without PROCAMPO, the incomes of staple producers probably would have fallen.

producers into these activities. They claimed that limited access to transition (marketing, capital, technological) assistance and extension services as well as high transactions, migration and labor costs were some of the main limitations to pulling small and traditional farmers into non-traditional and export-oriented agricultural activities.

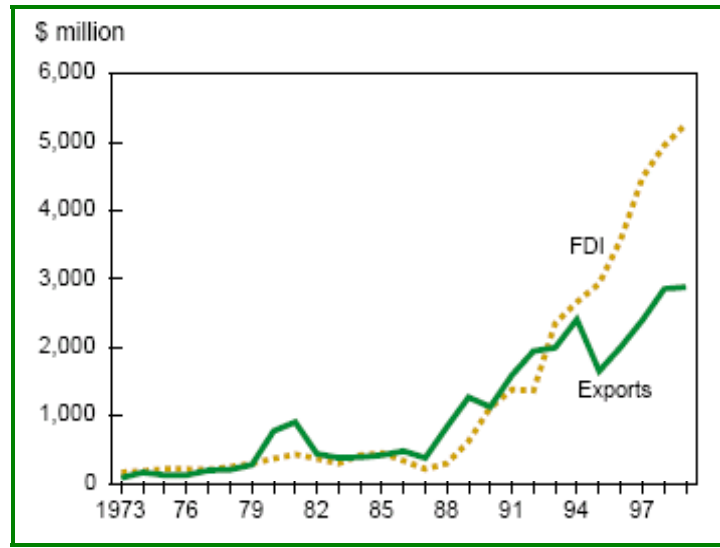
Moreover, as explained by de Janvry, Sadoulet and de Anda (1995), some producers did not experience the fall in domestic prices that would encourage them to find alternative income sources because the product market for which they produce is not integrated into the larger national market. This isolation in rural areas can be due to poor infrastructure, distance from urban areas or even social norms. According to the World Bank, this isolation can give producers “time to adjust to the inevitable long run competition on the import side” (2003 ch.4 p53). However, if the adjustments (transition assistance) on productive activities of small holders do not occur concurrently or prior to the development of infrastructure and trade liberalization, these rural areas might miss their opportunity to use transition programs to successfully adjust to the policies and economic environment of free trade. Once support programs are terminated,²⁴ producers that were insulated from the changing prices and did not change their production activities will find themselves without additional income and will be even less able to develop new sources of income. The impact will be even more severe if these isolated communities find themselves integrated into the national market once infrastructure development finally reaches them.

2. FOREIGN DIRECT INVESTMENT AND AGRO-BUSINESS/FOOD PROCESSING

NAFTA was expected to increase investment in the fruit and vegetable agro-industry, absorbing some of the agricultural labor supply released from staple production (Appendini, 1994; Bolling and Valdes, 1994). USDA (2002) finds that U.S. investment in food processing in Mexico increased US\$3 billion (from US\$2.3 billion to US\$5.3 billion) between 1993 and 1999. This increase was a continuation of the trend that began around 1988 (Figure III-4). The figure also shows that in 1994, the growth of U.S. exports of processed foods from the U.S. to Mexico leveled off. This suggests that U.S. FDI and exports to Mexico became substitutes in 1994, the same year in which NAFTA was implemented. While NAFTA did create more incentives for foreign direct investment, the devaluation of the Mexican *peso* also affected U.S. investment decisions in Mexico. Therefore it is not possible to completely attribute the increase in U.S. FDI in the Mexican processed food industry since 1994 to NAFTA.

²⁴ PROCAMPO is supposed to end in 2008.

Figure III-4. U.S. foreign direct investment (FDI) in the Mexican processed food industry and U.S. processed food exports to Mexico, 1973-1999



Source: USDA (2002) [Sources: For U.S. direct investment in food and kindred products, based on historical cost, U.S. Department of Commerce, Bureau of Economic Analysis; for U.S. exports of processed food (SIC 20), Foreign Agricultural Trade of the United States database.]

USDA (2002) reports that only 5% of the total U.S. FDI in food processing is in fruits and vegetables. Since the composition of investment in Mexican food processing prior to NAFTA has not yet been noted, it is unclear if FDI in agro-industry in fruits and vegetables has increased. Therefore, the general predictions that FDI in food processing would increase after NAFTA have been confirmed. Given the small share of total U.S. investments in processed foods going to fruit and vegetables, and the lack of data prior to NAFTA, it is unclear whether there have been significant increases in U.S. FDI in processed fruits and vegetables.

3. RURAL POVERTY, EMPLOYMENT, MIGRATION AND NON-AGRICULTURAL ACTIVITIES

While the data do not exist to determine whether NAFTA has affected rural employment (World Bank, 2003, ch.4)²⁵, data show that agricultural employment has decreased since NAFTA. According to Audley (2003) and Polaski (2003), 1.3 million jobs in the agricultural sector have been lost since 1994.²⁶ Hanson (2003) finds that between 1990 and 2000, the share of total employment in agriculture has declined over 8 percentage points, from 28.9% in 1990 to 17.3% in 2002.²⁷ While these facts alone do not imply that NAFTA caused the drop in agricultural employment, a comparison of the growth rates of

²⁵ According to the World Bank, the National Employment Survey, which contains the employment data, is only available since 1988 and has undergone considerable changes which make comparing data before and after 1994 very difficult.

²⁶ Polaski notes that the loss of 1.3 million agricultural job occurred between 1993 and 2002.

²⁷ This is also stated in Polaski (2003).

the sector before and after the agreement suggests a causal relationship. Between 1993 and 2002, the average annual growth of agricultural employment was about -2%, but prior to NAFTA (1984 to 1993), the average annual growth in agricultural employment was almost 2% (Polaski, 2003). However, considering the fact that the employment data might not allow direct comparisons of before and after NAFTA, there might be no direct relationship between NAFTA and the changes in agricultural employment.

Along with the decline in agricultural employment during the last decade, a study by Nicita (2004) finds that total agricultural income has also declined. However, Hanson (2003) concludes that wages in the agricultural sector increased between 1990 and 2000, suggesting that not all of the changes to Mexican agriculture have been negative.

In a detailed analysis of the effects of NAFTA on household welfare, Nicita (2004) found that while NAFTA has reduced total poverty by about 3%, it has increased inequality between urban and rural areas, skilled and unskilled workers²⁸ and between the north and south of Mexico. His study attempted to control for regional price differences in order to account for the fact that not all producers were equally affected by the price changes induced by tariff reduction. The estimation was done in three steps; (1) determination of the extent to which border prices are transmitted to local markets using pass-through methodology, (2) determination of how the price changes affected wages by the use of an earnings equation, and (3) determination of the effect on household welfare due to the changes in purchasing power found in step (1) and changes in income found in (2).²⁹ While the reduction or elimination of tariffs and other barriers to international trade did lower domestic prices of consumption goods, the lower domestic prices of agricultural goods resulted in lower household agricultural income, even when controlling for the differences in regional prices. Nicita calculated that trade liberalization between 1989 and 2000 decreased the average wages of unskilled workers 0.2% and increased the average wages of skilled workers 3.2%. In the South, trade liberalization was found to have reduced the wages of unskilled workers 2.8%. Overall, Nikita's results shows that trade liberalization has "contributed to the increase in inequality between the south and the north, urban and rural areas, and skilled and unskilled labor" (2004, p. ii).

Hanson (2003) also found that wages for skilled workers³⁰ and workers in areas near the border with the United States increased during the 1990s. Using 1% random samples from the 1990 and 2000 Mexican population census, he found that the labor force participation rates of men and women aged 16 to 65 years increased from 88.1% to 90% and 24% to 38.8% between 1990 and 2000, respectively.³¹ However, the average hourly

²⁸ Skilled workers were defined as those who have completed at least nine years of education or industry-specific training.

²⁹ The effect on household welfare is analyzed using a consumption basket of 12 goods (8 agricultural and 4 manufactured) which compose about 75% of poor household consumption. Estimations of the wage changes are done with only two types of workers are distinguished; skilled and unskilled, all agricultural products aggregated as one category and each of four manufactured goods as separate goods and the 32 Mexican states are grouped into 5 categories.

³⁰ Skilled workers are those with 13+ years of schooling.

³¹ The participation rates are the sum of the percentages of those who are self-employed and those who work for a wage.

wages in 1990 dollars, deflated by Mexico's CPI, fell from \$1.33 to \$1.11 for men and from \$1.24 to \$1.13 for women during the same time period. Examining the distribution of employment across 10 industries,³² Hanson found that the share of those employed in agriculture and mining fell from 28.9% to 20.7% between 1990 and 2000³³, while the shares of employment in the rest of the industries remained the same or only increased slightly. The results of simple OLS regressions show that between 1990 and 2000, the wages in agriculture increased relative to all other industries except social assistance sector. Hanson suggests that the agricultural reform which broke up the *ejido* sector could have left only higher wage agricultural workers in the industry. He concludes from these results that the changes in the wage structure in Mexico during the 1990s were similar to the changes that occurred during the 1980s. Wages of workers having more education, living near the border with the United States and working in the agricultural sector increased. However, none of these changes were linked specifically with NAFTA.

To attempt to identify if trade liberalization influenced wages in Mexico, Hanson constructed a synthetic panel of cohorts by state from the 1990 and 2000 census data.³⁴ Regressing the change in log wages of each cohort on the relative wage with the U.S. in 1990 and 2000, dummies for regions, age cohort, education level and variables to capture exposure to globalization, he finds that the share of FDI in state GDP and historical migration rates are positively correlated with increasing wages. In fact, the largest increases in wage gains were in states most exposed to international trade, FDI and opportunities for migration to the United States. Hanson claims that FDI appears to prefer higher skilled to low skilled labor. Therefore, when a trade agreement greatly reduces the protection for industries employing low-skilled labor and new capital flows are demanding high skilled labor, the immediate losers will be low skilled workers.

Poor infrastructure and distance from the export market were also factors limiting the benefits of NAFTA to low skilled workers. While limited integration to product markets (in part due to poor infrastructure) insulates staple crop producers from falling prices due to NAFTA, it also limits their ability to capitalize in areas where they have a comparative advantage. As Esquivel et al (2002) note, one of the main reasons why the Mexican southern states of Chiapas, Guerrero and Oaxaca did not benefit from NAFTA was that they were ill prepared with respect to their level of infrastructure, education and institutions to capitalize on the gains that NAFTA brought.

Infrastructure is also a limiting factor in the development of non-agricultural activities in rural areas. Since NAFTA, non-agricultural activities in rural areas have not increased significantly in Mexico, but there appear to be great opportunities for their development. The country possesses very rich cultural, historical and ecological resources that can be developed to create non-agricultural industries, such as tourism. However, the experience in southern Mexico, which is poorly connected internally and with other parts

³² The industries were: Agriculture and Mining; Manufacturing; Transportation, Communication, Electricity and Water; Construction; Commerce; Public Administration; General Services; Restaurants and Hotels; Social Assistance; and Domestic Services and Repair.

³³ Polaski (2003) reports that in 2002 only 17.3% of those employed were in the agricultural sector.

³⁴ The cohorts are created by age category, education level and by each of Mexico's 32 states.

of México, has shown that poor infrastructure can greatly increase the costs of doing business and can severely limit economic development. Poor infrastructure limits the availability of credit and investment flows in rural areas (Vaughan, 2003), which in turn limits the development of non-agricultural economic activities (World Bank, 2003).

D. LESSONS FROM NAFTA

The above discussion highlights some important lessons that can be learned from NAFTA. These are as follows:

- a. The experience with modeling and predicting effects of trade liberalization indicates that there are many areas in which to improve. The fact that trade liberalization policies do not occur separately from other changes to the economy, highlight the need for more detailed methodology to disaggregate effects. Detailed panel data on production, income, employment, migration and investment would improve the ability of researchers to evaluate trade agreements.
- b. Predictions made about the effects of NAFTA indicate that the level of desegregation in standard CGE models is not sufficient to determine the effects of trade agreements on specific sectors, especially agriculture. CGE model predictions of a dramatic reduction in staple production due to drops in domestic prices proved to be incorrect. This suggests the methodology does not adequately model agriculture and in particular fails to recognize many rural regions are not well integrated into the rest of the economy.
- c. Even with the weaknesses in predicting the effects of NAFTA, CGE modeling is still a useful tool to determine the effects of CAFTA. Analyses should be conducted at the individual country-level to help identify other changes that should accompany the implementation of the trade agreement. Better estimation of the effects of the agreement at the country-level will allow policies to assist in the transition to the new trade regime.
- d. Mexico's experience indicates that more transition support policies and programs are required to achieve the greatest benefits possible from trade liberalization. These support policies and programs should include technical assistance for farmers transitioning into new crops and activities, and assistance in reaching export markets and meeting export requirements.
- e. The World Bank (Ferranti et al., 2003) argues that the benefits to Mexico could have been larger if the trade liberalization policies and transition assistance would have been accompanied by investments in education, infrastructure and in making Mexico more attractive to investment.
- f. The experience with PROCAMPO income transfers shows that direct income payments cannot be expected by themselves to enable the recipients to move out of staple production and toward higher value crops. For small-scale staple producers, the payments, although important for poverty reduction, were, in themselves, generally insufficient for enabling producers to shift out of staple crops. Staple

production actually increased in many areas receiving the payments due to the isolation of many rural areas and their large comparative *know-how* in staple crop production. The isolation may be the cause of preventing staple prices from falling after NAFTA, while the higher income from PROCAMPO payments led to an increased local demand for staple crops. The higher demand, in turn, led to higher local prices and increase production.

IV. ASSESSING THE EFFECTS OF CAFTA

After nine rounds of negotiations which began at the beginning of 2003, CAFTA has been signed on May 28, 2004 by representatives from all six participating nations and now awaits approval by the legislatures of the signatory countries. The CA-5 hope that the provisions in the agreement will create opportunities for economic growth and development and improve the quality of life of its population, while the U.S. also hopes to achieve economic gains from the agreement. While CA-5 has reduced trade barriers, the agreement does require additional reduction and removal of tariffs and quotas. Concerns have been expressed that while CAFTA will offer many advantages to the CA-5 through guaranteed access to the U.S. market, not everyone will gain. CAFTA will affect all sectors of the CA-5 economies. The sector that will be having most adjustments will be the agricultural sector, and within this sector, the structural adjustment on the side of imported commodities will be larger than on the side of exports. Thus, the purpose of this chapter is to attempt to assess the effects that CAFTA will have on the rural economies in general and the agricultural sector in particular of Costa Rica, El Salvador, Honduras, Guatemala and Nicaragua through a thorough review of the literature and available data.

This chapter is structured as follows. The first section discusses the country-specific changes in tariffs and other barriers to trade that will occur as a result of CAFTA. The next section summarizes the few (*empirical*) general prediction studies that have been done about the effects of a free trade agreement with the U.S. The third section details the expectations of the effects that CAFTA will have on various aspects of the rural economy in each country. The final section provides a summary of the lessons learned from the review.

A. CAFTA AND CHANGES IN PROTECTION LEVELS

Two of the most important export crop commodities from CA-5 to the US, coffee and bananas, already enter the US with zero duty and are key income generating activities of the rural economies of CA-5. Furthermore, the Caribbean Basin Initiative (CBI) has given unilateral preferential access to the U.S. market since 1983 for the majority of CA-5 exports under certain conditions. These conditions include the requirements that manufactured products such as textiles or processed foods have to use inputs from other CBI countries, imported primary materials have to undergo substantial transformation and value-added has to be at least 35% of the total cost of the product (Monge-González, González-Vega and Monge-Ariño, no date). While the CBI granted the CA-5 access to the U.S. market, it did not require the countries to grant similar concessions to the U.S. However, it must be noted that the CBI coincided with the reintroduction of the US sugar quota which severely limited CA-5 export opportunities to the US. While the CA-5 lowered tariffs on most goods, tariffs on some agricultural goods have remained relatively high. CAFTA will provide the countries of CA-5 additional access to the U.S. market, but will require them to eventually remove their customs protections on agricultural goods.

The products which CAFTA adds to those already granted free access (no quota nor over quota tariffs) to the US under the CBI are: cotton and tobacco. While not all goods will have immediate tariff-free access, at the agreement's implementation, approximately 93.2% of the CA-5 agricultural exports will have tariff-free access (IDB, 2004). The United States will remove tariffs on dairy products, peanuts, cotton, tobacco, and beef over a period that could start immediately and that could end in 20 years, depending on the product. While the over quota-tariff on sugar to the U.S. will not be removed, the U.S. has granted additional CAFTA quotas to each of the CA-5 countries which range from 63.3% to 99.5% more than the quotas granted under the WTO. Once the tariff eliminations delineated in CAFTA have been completed, all exports from the CA-5, except sugar, will have free access to the U.S. However, many non-tariff barriers to trade will remain. The sanitary and phytozoosanitary restrictions on imports to the U.S. will not be changed and the subsidies given to U.S. producers are not affected by CAFTA. US subsidies represent in average 20 percent of the overall income received by US farmers in the period 2001-2003 (OECD, 2004, pp. 132-134). U.S. subsidies for some products are higher than 20%: 58% for sugar, 48% for dairy products, 46% for rice, 22% for peanuts, and 21% for corn. US subsidies will most likely still exist after 20 years, as their recent renewal in the 2002 U.S. Farm Bill implies (Hathaway, 2003). Also, the rules of origin will require complete accounting of all inputs of traded goods. These regulations could impose significant barriers to trade until the CA-5 countries are able to develop the sufficient institutions and policies with which to meet the requirements.

In exchange for the tariff-free market access to the U.S., the CA-5 countries will grant the U.S. tariff-free access to all products except, potatoes and onions in Costa Rica and white corn in Guatemala, El Salvador, Honduras and Nicaragua. However, not all goods will gain immediate access to the CA-5 markets. Almost 59% of U.S. agricultural products will have immediate access, while other agricultural tariffs will be removed over a period of 12 to 15 years. The most sensitive products will have tariffs eliminated between 18 and 20 years. Included as more sensitive products are; dark chicken meat, corn, pork, cigarettes, beef, some processed dairy and frozen potatoes (IDB, 2004).

The summary above generalizes the changes in tariffs and other trade barriers that will occur through CAFTA, however, each country has slightly different agreements with the U.S. for both exports and imports, especially with respect to agricultural products. This means that CAFTA is, to a large extent, an aggregation of five bilateral trade agreements between the U.S. and each of the CA-5 countries. Therefore, in order to accurately predict the effects that CAFTA will have on the rural economies of the region, it is important to distinguish the changes in protection that will occur for each country, along with the economic structure of each country. The specific changes in tariffs other trade barriers for agricultural products for each country are summarized in Table IV-1 and Table IV-2 below. The primary difference between the countries is in the quota levels. How these changes can be expected to affect each country, given the economic structure, will be discussed in the next section.

Table IV-1. Changes in Restrictions on Exports from the CA-5 to the U.S.

	Tariff Elimination	Base Tariff	Change in Quota		
Beef			Quota Year 1	Quota Year 15	
Costa Rica	1-15 years*	26.4%	10.536 Mt	17.062 Mt	Quota and tariff ends year 15
El Salvador	1-15 years*	26.4%	105 Mt	170 Mt	
Guatemala	1-15 years	26.4%	-	-	
Honduras	1-15 years*	26.4%	525 Mt	850 Mt	
Nicaragua	1-15 years*	26.4%	10.500 Mt	17.000 Mt	
Peanuts			Quota Year 1	Quota Year 15	
Costa Rica	7-15 years	163.8%			130% safeguard**
El Salvador	7-15 years*	163.8%	500 Mt	825 Mt	
Guatemala	7-15 years	163.8%			
Honduras	7-15 years	163.8%			
Nicaragua	7-15 years*	163.8%	10.000 Mt	19.000 Mt	
Sugar			Quota Year 1	Quota Year 20	Perpetual quota growth
Costa Rica	MFN	33.87¢/Kg	11.000 Mt	MFN	2%/year
El Salvador	MFN	33.87¢/Kg	24.000 Mt	MFN	2%/year
Guatemala	MFN	33.87¢/Kg	32,000 Mt	MFN	2%/year
Honduras	MFN	33.87¢/Kg	8,000 Mt	MFN	2%/year
Nicaragua	MFN	33.87¢/Kg	10,000 Mt	MFN	2%/year
Dairy Products			Quota Year 1	Quota Year 20	
Costa Rica	11-20 years	1.104¢/Kg + 14.9%	150 Mt	361 Mt	130% safeguard**
El Salvador	11-20 years	1.104¢/Kg + 14.9%	120 Mt	289 Mt	
Guatemala	11-20 years	1.104¢/Kg + 14.9%	250 Mt	602 Mt	
Honduras	11-20 years	1.104¢/Kg + 14.9%			
Nicaragua	11-20 years	1.104¢/Kg + 14.9%	100 Mt	241 Mt	
Tobacco					
Costa Rica	1-15 years	350%			
El Salvador	1-15 years	350%			
Guatemala	1-15 years	350%			
Honduras	1-15 years	350%			
Nicaragua	1-15 years	350%			

*Tariff over quota

** Once reached the activation level, the safeguard within CAFTA allows for an additional tariff as a proportion of the difference between the MFN tariff and the applicable tariff. Such products are also subject to WTO safeguards.

Table IV-2. Changes in Tariffs and Quotas on Imports to the CA-5 from the U.S.

	Tariff Elimination	Base Tariff	Change in Quota		
			Base Quota	Quota growth	
Cheese	Tariff over quota elimination between years 11 and 20	15%			Quota ends in year 20
Costa Rica					
El Salvador					
Guatemala			450 Mt	5%/year	
Honduras			410 Mt	5%/year ⁽¹⁾	
Nicaragua					
Powdered Milk	Tariff over quota elimination between years 11- 20				Quota ends in year 20
Costa Rica					
El Salvador					
Guatemala		15%	400 Mt	5%/year	
Honduras		15%	300 Mt	5%/year ⁽¹⁾	
Nicaragua					
Butter	Tariff over Quota eliminated between years 11-20				Quota ends in year 20
Costa Rica					
El Salvador					
Guatemala		15%	100 Mt	5%/ year	
Honduras		15%	100 Mt	5%/year ⁽¹⁾	
Nicaragua					
Ice Cream	Tariff over Quota eliminated between years 11-20				Quota ends in year 20
Costa Rica					
El Salvador					
Guatemala		15%	160 Mt	5%/year	
Honduras		15%	100 Mt	5%/year ⁽¹⁾	
Nicaragua					
Other Dairy					
Costa Rica					
El Salvador					
Guatemala	Tariff over quota, removed between years 1-10	15%	173 Mt	5%/year	Quota ends in year 10
Honduras	Tariff over quota removed between years 11-20	15%	140 Mt	5%/year ⁽¹⁾	Quota ends in year 20
Nicaragua					

(1) compounded growth rate

B. PREDICTIONS OF THE EFFECTS OF A FREE TRADE AGREEMENT

There is a great amount of discussion and hypothesizing about the potential effects that CAFTA will have on the economies of the CA-5. A common expectation is that the agreement will provide opportunities for economic growth, will attract foreign direct investment and will create increased employment which will reduce out-migration.³⁵ It is thought that the access to the U.S. market will provide opportunities for CA-5 businesses with comparative advantages to expand production and exports.³⁶ The agreement is also thought to improve investor confidence by delineating clear rules and reducing bureaucracy which will presumably attract much needed foreign direct investment in export sectors to the region.³⁷ However, not everyone is so optimistic. Some fear that CAFTA will facilitate the establishment of foreign monopolies and that only a small percentage of small businesses will survive the liberalization process.³⁸ These varying opinions and conjectures highlight the need for empirical studies using actual data from the CA-5 countries to predict what can be expected to occur as a result of CAFTA.

In contrast to NAFTA, less extensive research has been done on the possible effects of CAFTA on the CA-5 (Moreno, 2003). This is probably due to the fact that many thought that a Free Trade Area of the Americas (FTAA) would be the next large trade agreement in the region and that the CAFTA process has occurred much faster than NAFTA. Yet there are some studies which have examined the potential impacts of further integration of the CA-5 with North America via trade agreements. Now that CAFTA has been negotiated and signed by the executive branches of each government, much more research is planned and in process, but currently we have a limited amount of studies which attempt to predict the impacts that the trade agreement will have on the rural economies of the CA-5.

One study which does model CAFTA is that by Taylor and Materer (2002), which simulates the effects of CAFTA on labor demand and migration. Hinojosa-Ojeda, Robinson and de Paolis (1999) model a general free trade agreement between the CA-5 and the U.S., but not specifically CAFTA. Other studies on trade liberalization that include Central American countries are Rutherford and Martinez (2000), Monteagudo and Watanuki (no date) and Morley and Piñeiro (2004) and Diao, Díaz-Bonilla and Robinson (2002). Finally, Portner (2003) offers a partial equilibrium analysis of the potential impacts of CAFTA in Guatemala. In addition, a series of CGE studies in each

³⁵ Miami Harold, June 1, 2004; comments from Alberto Trejos, Costa Rican Minister of Foreign Trade, May 28, 2004; comment made by Alejandro Mansell, director of Cosep, part of Nicaraguan delegation in a round of negotiations (López, Isidro, *Tiempos del Mundo: Edición Nicaragua*, week of March 11, 2004).

³⁶ Peanut producers in Nicaragua are especially optimistic, hoping to gain access to the U.S. peanut market and expand production. "Los maniceros optimistas por la llegada del Cafta," by Isidro López, *Tiempos del Mundo: Edición Nicaragua*, week of September 4, 2003. and other similar comments made in *Tiempos del Mundo: Edición Nicaragua*.

³⁷ Maria del Carmen Aceña, *Prensa Libre*, March 13, 2003; comment made by economist Róger Cerda, cited in López, Isidro, *Tiempos del Mundo: Edición Nicaragua*, week of March 11, 2004.

³⁸ López, Isidro, "Opositores al Cafta están perdiendo la batalla," *Tiempos del Mundo: Edición Nicaragua*, 2003.; Maza, Mariana and Eduardo Smith, "No sobrevivirán al libre comercio," *Prensa Libre*, May 12, 2003.

of the CA-5 countries describe the impacts of unilateral trade liberalization (not a bilateral or multilateral trade agreement) and offer some insights into how fiscal policy can affect the benefits received.³⁹

Taylor and Materer (2002), use a micro economy-wide model to examine the effects of the agreement on labor demand and migration.⁴⁰ This type of model uses household survey data to model households which are then linked to a general equilibrium model at the local or regional level. This type of modeling allows for differences in local market integration and thus differences in effects of changes in trade policy on households (recall this was a problem for the NAFTA models). The CAFTA model Taylor and Materer use is actually an aggregate of separate country models, which allows for the differences between countries to be incorporated. The model includes 15 products, two factors of production (labor and capital), two sectors (rural and urban) and 6 countries.⁴¹ Simulations are conducted by changing the price of various agricultural goods, which are expected to occur with the removal of tariffs. As will be elaborated below, their simulations find that migration increases due to a reduction in the price of a staple good, but that migration decreases when the price of an export good increases.

The results from the simulations of a 10% decrease in maize prices are reported in Table IV-3 below. The 10% reduction in maize prices causes wages to fall, increases international migration and decreases rural labor demand. The simulation predicts that the price change will have the largest effect on rural labor demand in Costa Rica and Guatemala, reducing it by 3.7% and 1.75%, respectively. While actual results were not reported in the paper, Taylor and Materer state that the 10% reduction in maize prices results in agricultural production shifting out of maize and into other crops, along with some rural to urban migration. The authors note that their simulations only looked at a change in the price of one good at a time, so the full effects of many simultaneous price changes could be much larger. They also conduct a simulation of an increase in coffee prices, but coffee prices are unaffected by CAFTA and are not expected to increase given the increasing world supply. The simulation does show that an increase in the price of an export good (which is expected for sugar and other exports) tends to increase wages and rural labor demand. Given that decreases in the prices of staple crops have the opposite effect, it is possible that the effects of all of the price changes caused by the CAFTA agreement could offset each other.

³⁹ The series of studies are found in *Cambio estructural y apertura comercial en América Central, en la República Dominicana y en Norteamérica: un enfoque de equilibrio general aplicado*, (2000), edited by Antonio Yúnez-Naude and Raúl Hinojosa-Ojeda. The country studies include Costa Rica (Cattaneo, 2000); El Salvador (Ábrego, 2000); Guatemala (Yúnez-Naude, 2000), Honduras (Lizardo, Navarro and Suazo, 2000); and Nicaragua (Dubcovsky, 2000).

⁴⁰ Another micro-economy wide study by Taylor (2002), examines the overall effects of trade liberalization on Mexico and Central America as a region, but not specifically for each country or for a specific trade agreement. The general results are very similar to the results of Taylor and Materer (2002).

⁴¹ The products are: Coffee, bananas, cardamom and other spices, sugar cane, maize, plantains, oil palm fruit, potatoes, citrus, rice, other agricultural products, industry, services, meat, milk. The 6 countries are Costa Rica, Guatemala, Honduras, Nicaragua, El Salvador and Belize. Belize has been left out of the tables reported from the paper and out of this discussion.

Table IV-3. Estimated Economy wide Impacts of a 10% Decrease in Maize Prices

Percentage Change In...	Country				
	Costa Rica	Guatemala	Honduras	Nicaragua	El Salvador
Wages	-0.23	-0.10	-0.13	-0.10	-0.6
Labor Demand					
Rural	-3.70	-1.75	-0.75	-0.08	-0.38
Urban	0.83	0.36	0.44	0.36	0.20
International Migration (number of individuals)	162.27	463.8	365.27	221.12	476.69

Source: Taylor and Materer (2002)

Hinojosa-Ojeda, Robinson and de Paolis (1999) use a CGE model to look at the effects of a free trade agreement between the CA-5 and the U.S. The simulations involve changing the tariff structure to reflect the trade agreement and predict that there will be an increase in trade both with the agreement partners and with the rest of the world. The dynamic form of the model (allows secondary effects to occur as a result of increased trade) estimates an increase in GDP for each of the CA-5 countries ranging between 1% and 3% from the base level. In the model, labor was only allowed to migrate between countries, but not between categories,⁴² so it is unable to predict rural to urban migration. When migration is not modeled, the results predict that a free trade agreement with the U.S. would increase rural wages in all of the CA-5 countries, yet when migration is included in the static model, rural wages decrease in each country except Guatemala.

Rutherford and Martinez (2000) use a CGE model to look at the potential effects on net country welfare of expanding NAFTA to include the CA-5 countries. The model assumes perfect competition, constant returns to scale and product differentiation by consumers. While the tariff structure is changed to reflect a free trade agreement, the simulations also assume that the policy changes are revenue-neutral. This means that the revenue lost from tariffs is replaced with lump-sum taxes or other taxes. The simulations find that the net benefits of joining the free trade agreement are positive for the CA-5 region. The study also finds that the major source of gains is from increased market access, with larger net gains accruing when the trade agreement is with a “natural” trading partner.⁴³ However, these simulations do not distinguish country-level effects, nor do they disaggregate by region or sector. Therefore, the results cannot be used to determine the distribution of gains and losses. Moreover, the assumption that the trade liberalization will be revenue neutral eliminates the possibility that the public sector could suffer a welfare loss, which is rather unrealistic.

Another simulation is by Monteagudo and Watanuki (no date). They use a CGE model to examine the effects of complete elimination of all agricultural tariffs in the Western Hemisphere, from the base year 1997. The model uses SAM data for each of the 10

⁴² Categories of labor were rural and urban, so the migration flows modeled were only from one rural sector to another or from one urban sector to another.

⁴³ Rutherford and Martinez define a “natural” trading partner as one from which a country receives a larger share of its imports.

countries/regions, includes 16 agricultural products/sectors and 10 non-agricultural sectors, three types of productivity links, domestic agricultural support programs, assumes economies of scale in manufacturing and that consumers differentiate products according to their origin.⁴⁴ The countries of the CA-5 are modeled as a region. They find that the CA-5 exports of primary agricultural products and processed food products will increase 5.51% and 9.03%, respectively, as a result of such liberalization.⁴⁵ The only single product modeled for which total exports decrease as a result of tariff eliminations is other cereal grains. Four of the 16 crops modeled are expected to have exports increase over 10%; oilseeds and soybeans (13%), vegetable oils (13.5%), dairy products (14.9%), and beverages and tobaccos (15.4%). Exports of non-agricultural products were estimated to increase only about 1% from the base level.

A study by Diao, Díaz-Bonilla and Robinson (2002) also include Central America as a region in a CGE analysis of the potential impacts of a FTAA. Their simulations involve removing all tariff restrictions to trade, while other non-tariff barriers to trade such as quotas, producer supports and sanitary restrictions are held constant. With 1998 as the base year, the model predicts that the Central American region would see an increase of 6.21% in real GDP as a result of the policy changes. This GDP increase is decomposed into its three main sources, increases from the changes in efficiency, total factor productivity and employment (2.03%, 2.83% and 1.35%, respectively). Total employment of skilled workers is predicted to increase 7.1%, while that of unskilled workers, 4.5%. Total trade is also expected to increase, as total exports increase 12.1% and total imports 7.5% from their base level.

While the Monteagudo and Watanuki and Diao, Díaz-Bonilla and Robinson results suggest that Central America could net large gains through a free trade agreement, there are many considerations to keep in mind when evaluating the results. First, the results are reported as a percent change from base, not actual increases in absolute values. When evaluating changes in exports, it is important to keep this in mind because a large relative change to a small sector will mean only a small increase in total volume of exports. For example, Monteagudo and Watanuki note that the high growth they predict in Central American exports in the processed food sector is mainly due to the low initial level in the benchmark year. Moreover, it is important to note that these results are from simulations of policy changes that differ from CAFTA. The Monteagudo and Watanuki model is of a complete Free Trade Area of the Americas in agriculture (all countries in the western hemisphere remove tariffs on agricultural goods), which is not equivalent to the CAFTA agreement, while the Diao, Díaz-Bonilla and Robinson model is an FTAA where only tariffs are removed on all goods. CAFTA includes a much smaller portion of the Western Hemisphere than the FTAA modeled, which means that the effect of an agreement with

⁴⁴ The agricultural products used in the model are: grains, wheat, other cereal grains, vegetables and fruits, oilseeds and soybeans, sugar, plant-based fibers, coffee and tea, cattle, other animal products, beef, poultry meat, vegetable oils, dairy products, beverages and tobaccos, and other food products. These are classified according to the Global Trade Analysis Project (GTAP) classification system.

⁴⁵ Monteagudo and Watanuki classified processed food products are beef, poultry meat, vegetable oils, dairy products, beverages and tobaccos, and other food products. They classified primary products are those agricultural products that are listed in the previous note but not considered to be processed food products.

the U.S. alone could result in different changes. Also, since CAFTA involves changes in tariffs and quotas, and includes more than agricultural goods, the actual effects could be quite different. Finally, the simulations could overestimate the effects of complete trade liberalization now because the years used as the benchmark are 1997 and 1998, after which many countries reduced their trade barriers.

Morley and Piñeiro (2004) report the results of separate CGE models for 15 Latin American countries, which simulate the effects on consumption, trade, production in various sectors, and household welfare of an FTAA (Table IV-4). The scenario assumes the removal of tariff barriers to trade in North America, while non-tariff barriers such as phytozoosanitary restrictions are held constant. Wages are held fixed and unemployment (excess labor supply) is assumed in developing countries, while flexible wages and full employment is assumed in developed countries. The CA-5 countries included in this simulation are Costa Rica, El Salvador and Honduras. The 15 country models vary in their assumptions about the exchange rate and trade balance, which Morley and Piñeiro argue impacts the results. As can be seen in Table IV-4, the removal of tariffs is expected to increase consumption in all three countries, but to only really affect agricultural production in Honduras. Food processing increases in El Salvador and Honduras, while is only marginally positively affected in Costa Rica. Rural welfare improves in all three countries, most strongly in Honduras. Total poverty is reduced slightly, the largest reduction, of about 1.3%, is predicted for El Salvador.

**Table IV-4. Changes Due to a Free Trade Area of the Americas
(% change from Base)**

	Costa Rica	El Salvador	Honduras
Consumption	3.6	1.8	2.8
Imports	4.7	-0.2	2.4
Exports	-0.5	4.0	0.7
Real Exchange Rate	1.8	-0.7	-0.1
Agriculture	-0.02	0.05	2.44
Food Processing	0.05	0.81	1.5
Rural Household Welfare	4.1	1.8	5.31
Poverty			
Base	0.19	0.41	0.73
% change	-0.365	-1.283	-0.716

Source: Morley and Piñeiro (2004).

Portner (2003) uses data from the 2000 LSMS household survey to generate a partial equilibrium model to estimate the short-run impacts that CAFTA could have in Guatemala. The model focuses on predicting the changes to household welfare that will occur from price changes that are expected to result from the removal of tariffs and quotas on many agricultural goods. The model identifies households according to their position in the consumption distribution and according to their vulnerability of being poor in the next period.⁴⁶ The methodology does account for whether the household is a net

⁴⁶ The vulnerability classification is that calculated by Tesliuc and Lindert, (2002: "Vulnerability: a Quantitative and Qualitative Assessment," mimeo, World Bank.

producer, net buyer or self-sufficient in each good included, as the net effect is the sum of the gains from lower consumption prices and minus the losses from lower sale prices. However, Portner claims that the simulation is a “worst case” scenario because the model does not allow for households to adjust their production and consumption patterns in response to the price changes. The simulation predicts that the overall effect will be positive for the country, but that about 25% of rural households are predicted to suffer losses averaging 2.3% of base level consumption in the short-run. Table IV-5 presents the distribution of gains and losses for rural households by household type. Even though the relative losses for the households that are not vulnerable to being poor in the next period are larger than for vulnerable households, a 2% loss in consumption for a poor household could be much more disastrous in terms of welfare than a similar loss for non-poor household. Portner also ran simulations by region and consumption decile, but the results are not reported here. The main conclusion from the study are that policy intervention is needed for poorer households, especially those dependent upon staple crops prices for income, as they are expected to suffer short-term losses which could threaten their welfare.

Table IV-5. The Effect of CAFTA on Rural Households in Guatemala, Share of Households and Relative Changes from Base

		Households that will experience Gains		Households that will experience Losses		Households that will experience No effect
		% of households	Relative Gain (% change from level in 2000)	% of households	Relative Loss (% change from level in 2000)	% of households
Households Not Vulnerable		77.78	0.45	21.59	-2.6	0.63
Vulnerable with High Variance in Consumption		81.14	0.55	18.26	-2.21	0.60
Vulnerable with low mean consumption		73.05	0.65	26.78	-2.17	0.17

Source: Portner (2003).

The series of CGE studies in the volume edited by Yunez-Naude and Hinojosa-Ojeda (2000, see footnote 39) that examine the effects of unilateral trade liberalization in each of the CA-5 countries find results similar to the above studies, yet the changes predicted are much smaller than those from a unilateral or multilateral trade agreement. For example, exports, especially agricultural, are expected to increase, as well as rural incomes and consumption. While each of the studies reports the results of many different experiments, some general and new results are from the simulations of a reduction in government spending. It is assumed that government revenue will decline as a result of the removal of tariffs. The governments could choose to compensate their loss through the imposition of business taxes, sales taxes or other taxes. However, another option is to simply reduce government spending. Each of the country studies on unilateral trade

liberalization includes simulations of the effects of a reduction in government spending between 5% and 25%. The results show that reductions in government spending generally can be expected to have positive impacts on rural wages and consumption and agricultural exports. This is probably due to the fact that maintaining spending by imposing other taxes, reduces the benefits of trade liberalization to consumers and businesses. Sales taxes reduce the fall in consumer prices, limiting demand and consumption growth, while business taxes reduce incentives for businesses to expand production. A limitation to these studies are that the models were created using data from the early 1990's (1991-1994) and probably do not accurately predict the changes that can be expected from a base year of 2004.

The predictions about the impacts of CAFTA are rather similar to those that were made about NAFTA. Common expectations are that consumers will gain and some producers will suffer losses, but overall each country will benefit from the agreement. The fact that the models used to estimate the potential impacts of CAFTA are quite similar to those used for NAFTA is probably the main reason why the results are so similar. They incorporate similar assumptions and structure as those used for NAFTA, which means that many of the shortcomings are replicated as well. One of the main problems with most of the NAFTA studies was that they failed to account for the amount to which rural markets were integrated with the national and world market and the fact that most households diversify their income sources. With respect to CAFTA, only the Taylor and Materer study attempts to account for the degree of rural integration and diversification, but the simulations only capture the effects of a change in the price of one good at a time. Another limitation to the CGE models is that they usually only include one form of migration, not all of the migration possibilities, which can greatly affect the overall results. The CGE simulations of the effects of unilateral liberalization (Yúnez-Naude and Hinojosa-Ojeda, 2000) highlight the importance that government fiscal policy in reaction to liberalization can have in modifying impacts of tariff reduction. Despite these imperfections, the prediction models that we have are probably better than mere conjectures or hopeful political statements. However, their results should be interpreted carefully, as our experience with NAFTA has shown that they are limited in their ability to capture all of the factors impacting the changes.

1. EXPECTATIONS FOR AGRICULTURE; TRADITIONAL AND NON-TRADITIONAL CROPS

While the net total effects of CAFTA to the CA-5 could be positive, some have argued that the benefits will probably not be distributed equally and that certain socioeconomic groups will suffer more than others. Of particular concern is how the rural economies and poor rural households of each country will be affected. As noted earlier, the CA-5 countries have negotiated slightly separate agreements with the United States. Therefore, any attempt to predict how CAFTA will affect the rural economy of the CA-5 needs to incorporate the diversity between the countries as well as the different changes that CAFTA brings to their terms of trade with the United States. The following sections look at the country-specific and sector-specific expectations of the effects of CAFTA.

Traditional agricultural exports from the CA-5 are coffee, sugar, beef and bananas. The importance of these crops in total exports varies by country. Guatemala, Honduras and Nicaragua rely more heavily on these crops for their export earnings, while Costa Rica and El Salvador have come to rely on a number of non-traditional crops for the majority of their agricultural export earnings. Costa Rica is probably the most diversified, with approximately 85% of export earnings coming from non-traditional exports such as shellfish, cut flowers, ornamental plants and tropical fruits (Taylor and Materer, 2002). However, even given the differences between the countries, a common characteristic is that small farmers mainly produce the traditional export crops and/or staple crops such as maize, beans and rice. In fact, while significant achievements have been made in the development of non-traditional exports, the benefits from these crops go mainly to large-scale producers, representing a minority of the total labor force in agriculture.

Traditional exports will be given additional access to the U.S. market through CAFTA. New quotas on sugar will be introduced, in addition to the WTO quotas, and the tariff rate quotas on beef will increase and the over-quota tariff will be removed over a period of 15 years. The changes in quotas and over-quota tariffs for sugar exports to the U.S. granted in CAFTA can be expected to positively impact sugar producers in the CA-5. Table IV-6 below reports the total production and exports of sugar for each country and Table IV-7 reports the WTO and CAFTA quotas before and after CAFTA is implemented. Production is much higher than exports for each country, indicating that exports would be able to expand if barriers were removed. While the quota increases granted under CAFTA almost double the current quotas, exports of sugar to the United States will still be limited as a share of total sugar production in each country. However, the sugar quotas will grow a fixed amount (which differs by country) each year after implementation, which will allow for continued export growth.

Table IV-6. Total Sugar Production and Exports (Mt), the CA-5 2000-2003

	2000		2001		2002		2003	
	Production	Exports	Production	Exports	Production	Exports	Production	Exports*
Costa Rica	366,000	139,151	358,000	147,960	358,000	136,587	358,000	114,808
El Salvador	524,000	256,520	527,000	310,866	476,000	221,503	465,000	266,307
Guatemala	1,632,180	1,260,202	1,650,100	1,130,249	1,963,000	1,360,292	1,987,000	138,651
Honduras	344,434	16,298	366,787	89,635	337,200	105,314	323,000	100,000
Nicaragua	390,842	199,702	334,430	196,492	333,756	144,127	412,842	140,515

Source: FAOSTAT, 2004; accessed 6/9/2004. *accessed 2/4/2005

Table IV-7. Sugar Quotas before and After CAFTA

	WTO Quota, Fiscal year 2004 (Mt)	2004 Quota as % of 2003 total production	Quota 1 st year under CAFTA	1 st year CAFTA Quota as % of 2003 production	Annual quota increase/ as % of 2003 production
Costa Rica	15,796	4.4	28,796 ⁴⁷	8.0	
El Salvador	27,379	5.9	51,349	11.0	
Guatemala	50,546	2.5	82,546	4.2	940 Mt / 0.05
Honduras	10,530	3.3	18,530	5.7	160 Mt / 0.05
Nicaragua	22,114	5.4	44,114	10.7	

Source: IADB (2004) using data from USTR and author's own calculations using data from Table IV-2.

As noted by Hathaway (2003), one of the largest gains for the CA-5 from the agreement is the elimination of the tariff rate quotas (TRQs) on beef exports. He noted that beef exports from Costa Rica, Honduras and Nicaragua are limited by U.S. WTO TRQs. The CA-5 countries are free from foot and mouth disease and have an advantage over other origins in the continent. But El Salvador's Ministry of Agriculture and Ranching (MAGES) thinks that other factors limit beef exports from the region. Currently, El Salvador exports few beef products and a report by MAGES states that the country will have difficulty competing with imports of higher quality U.S. beef. Their prediction is that U.S. beef imports into El Salvador will meet restaurant, hotel, grocery store and niche market demand, while domestic production (of lower quality and lower price) will meet local demand. Furthermore, the opinion of MAGES is that this will be the case in general for the CA-5, despite the proximate elimination of TRQs on beef exports to the U.S. They claim that CA-5 production generally uses low technology and is on a smaller scale, making it very difficult to compete with the large-scale, high-tech, subsidized U.S. production. However, beef producers can be expected to benefit from lower prices of feed grains, which should help make CA-5 beef production more competitive.

Table IV-8. Beef and Veal, Production and Exports, 2000-2003 (Mt).

<i>Beef and Veal Production (Mt)</i>	2000		2001		2002		2003	
	production	exports	production	exports	production	exports	production	exports*
Costa Rica	82,268	25	75,995	3	68,312	84	74,104	18
El Salvador	34,749	1	35,052	0	30,288	0	32,500	0
Guatemala	62,000	0	62,000	7	63,000	4	63,000	0
Honduras	55,000	21	55,295	30	62,000	141	57,000	199
Nicaragua	52,500	3,320	54,077	2,540	60,145	8,373	65,558	8,259

Source: FAOSTAT data, 2004, accessed 6/9/2004. *accessed 2/4/2005

The production of poultry meat and eggs is an important part of agricultural production in the CA-5. For example, in Honduras, poultry production is about 18% of agricultural GDP (ANAVIH, 2003). The many non-tariff barriers imposed by the United States limits access by the CA-5 to the U.S. market, even though there are no tariffs restricting exports to the U.S. With CAFTA, the U.S. will gain free access to the CA-5 market between years 11 and 18. Current levels of support for U.S. producers are low (poultry

⁴⁷ Includes 2000 Mt of organic sugar.

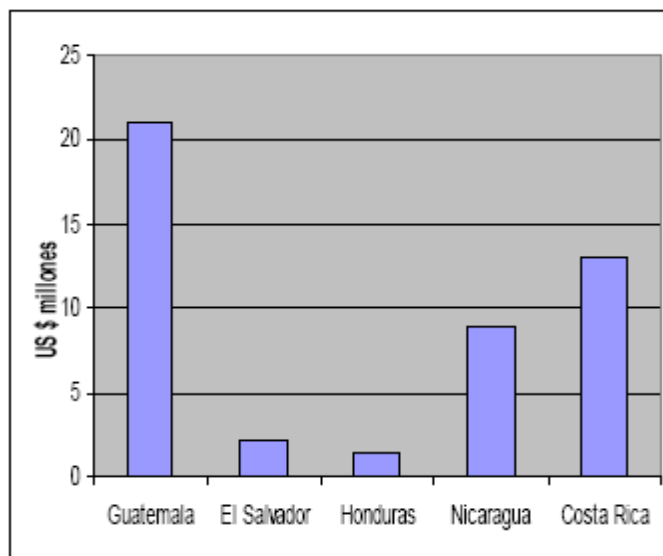
and egg subsidy is 4% of farmers income), so the only opportunity and challenge by CA-5 producers in this sector is with regards to technical, non-tariff barriers imposed by the U.S., such as certification of being free of certain diseases such as Newcastle. Furthermore, the delayed tariff reduction on poultry imports to the CA-5 should give producers some time to improve their production technology and sanitary measures, but nonetheless, gaining access to the U.S. market will prove to be challenging. After the implementation of NAFTA, Mexican poultry producers were still unable to gain access to the U.S. market due to the U.S. sanitary restrictions even though major US producers are also present in Mexico (MAGES, 2003).

Other traditional, but not exported, crops that are very important for the rural economies of the CA-5 are staples such as white corn, rice and beans, which will also be liberalized under CAFTA. These crops, along with traditional exports comprise a large share of total agricultural production and provide the main source of income for many rural families. In all countries except Costa Rica, domestic production of these products totals more than 40% of total domestic agricultural production⁴⁸ (Monge-González, Loria-Sagot and González-Vega, 2003). In consideration of this, CAFTA contains special considerations (quotas, safeguards and longer periods of tariff removal) for these “sensitive” agricultural products. Since the tariffs on these products are eliminated over a longer time period than other agricultural products, it can be expected that the negative effects on the producers can be reduced or mitigated. It is also important to note that not all producers of these staple/sensitive goods produce for the market. Many are subsistence producers⁴⁹ and therefore the price changes will not necessarily affect their production decisions. For those producers who are integrated into the national market and who will be affected by the falling prices of staple goods, assistance could be given to help them improve their efficiency and become competitive or to transition into other production activities. Given the falling prices for traditional crops such as coffee and bananas and the continued limitations on sugar, non-traditional agricultural crops or new manufactured forms of all crops could probably provide the best sources of agricultural growth in the region. Costa Rica has been successful in transitioning to non-traditional exports, with 85% of export earnings coming from non-traditional agricultural crops in 2001 (Taylor and Materer, 2002).

⁴⁸ These percentages were calculated based on the sensitive products: dairy, yellow corn, rice, beans, sugar, beef, pork, chicken.

⁴⁹ Guided by the data presented by de Janvry et al. (1995), about a third of producers in Mexico before NAFTA were subsistence farmers (they were not net sellers nor net buyers of agricultural products).

Figure IV-1. Value of Horticulture Exports, 2001 (Millions US\$)



In El Salvador, the most likely source of agricultural growth is in higher value-added agro-industry. Productivity in traditional crops has stagnated and even declined as more marginal lands have been used to expand production. Rural areas could realize large gains by switching out of food staples and other traditional crops and into non-traditional production. One of the main limitations small producers face in the country is a lack of technical knowledge and capital stock (IDB, 2000). MAGES has recently released a detailed analysis of 28 agricultural commodity groups in order to evaluate each group's position under CAFTA. The report identifies 10 groups in El Salvador which have potential to gain from the agreement. These are vegetable oils, sesame seeds, indigo, sugar, cacao, sausages, honey, nuts, seafood and ornamental plants and flowers. While the guaranteed market access provides the opportunity for growth in these areas, the document notes numerous barriers that could limit the benefits of CAFTA. Production of sesame seeds needs to adopt better technology and move into organic production to protect the environment and avoid falling world prices. Honey production could be improved through implementing better technology and sanitation measures and improving disease prevention and control programs. The ornamental plant and flower business will need to overcome some non-tariff barriers imposed by the U.S. These include size restrictions which do not appear to be based on technical or scientific reasons, but limit expansion of the industry in El Salvador. The analysis by MAGES implies that even though agriculture is relatively less important to El Salvador's GDP than for other the CA-5 countries, a significant reorientation of the sector to focus on high value crops could result in large gains for rural areas.

According to the Ministry of Agriculture in Honduras (MAGHO), the three most probable sources of agricultural growth in Honduras are aquiculture, horticultures and food processing. However, there are many limitations which must be overcome in order to successfully develop these areas. The condition of the country's marine resources has been declining and need proper management to improve productivity and ensure sustainability. Much of the current fruit and horticulture production is on small plots of

land and utilizes low levels of technology and is limited to melon, watermelon and pineapple. In order to expand and compete in this industry, producers will need to coordinate their production, improve technology and diversify their production (MAGHO, 2003). Food processing has been growing recently, but is still rather small-scale. In addition, MAGHO thinks that the country, as part of its overall rural development strategy, could further develop the production of high quality coffee, dairy products, poultry and pork. The country possesses a large amount of pasture land that is not suitable for activities other than dairy and can withstand the frequent natural disasters. Moreover, since most of the poultry and pork production in the country relies on imported grains, these sectors could see much lower costs as a result of the removal of tariffs and restrictions on such imports.

The Ministry of Agriculture and Forestry in Nicaragua also stresses the importance of developing the cultivation of new crops and products.⁵⁰ The only traditional crop which will gain an advantage through CAFTA is sugar, but the increase in the quota granted by the U.S. cannot be expected to propel Nicaragua's agricultural growth. With the gradual reductions in protections for Nicaragua's grain producers and the structural reduction in world coffee prices, the agricultural sector will need to innovate, produce higher –value-added crops and orient toward exporting to the U.S. and the rest of the world.

Overall, agriculture presents a great potential source for rural development in the CA-5. Transitioning into higher value-added crops can increase rural income and provide opportunities for poverty reduction and economic growth. However, agriculture alone cannot be expected to completely revitalize the rural economies, even with the access to the U.S. market granted under CAFTA. Rural non-agricultural activities will become increasingly more important in providing employment and income as well as reducing migration from rural areas.

2. EXPECTATIONS FOR RURAL POVERTY, EMPLOYMENT, MIGRATION AND NON-AGRICULTURAL ACTIVITIES

It is hoped that CAFTA through increased levels of rural economic growth will expand rural employment opportunities and wages thereby reducing rural poverty. Following from standard trade theory, Mellor (2003) argues that trade liberalization will increase the production of labor-intensive agricultural products because the CA-5 have a comparative advantage in labor. However, this advantage will translate into increased income for the poor only if the necessary structural conditions exist to allow for this advantage to be capitalized and reduce poverty. It is clear that CAFTA has the potential to bring benefits to the rural poor of the CA-5, but they will not necessarily be achieved without the proper institutions and policies. Not only is improved public infrastructure required, but also organization of small scale producers and connections to exporting firms (Mellor, 2003). Many areas in the CA-5 are lacking sufficient transportation and communication infrastructure that facilitate international trade. Morley and Hazell (2003) argue that investments in rural infrastructure could be an effective tool to reduce rural poverty.

⁵⁰ This point was made in the document *Políticas Agro MAGFOR*, accessible at: <http://www.magfor.gob.ni/ministerio/poliagro.htm>.

The media in the CA-5 has reported estimations on how increased exports will translate into increased jobs. An estimate for Guatemala is that for every million dollars of increased exports, 1,500 jobs will be created.⁵¹ According to the figures reported by MAGES, if (hypothetically) half of the area currently being used for maize cultivation was converted into the cultivation of tomatoes, over 272 thousand jobs could be created in El Salvador.⁵² This is not a realistic estimate since not all maize land would be suitable for producing tomatoes, but it illustrates how transitioning into labor intensive crops could generate employment in rural areas. Other horticulture crops such as green chilies, cucumbers and potatoes also have much larger labor requirements than white maize.⁵³ Moreover, according to Martel (1997; cited in IDB, 1999) production of ginger and plantains utilizes three times the labor as the production of beans and corn. If small-scale producers can transition into these or other non-traditional crops and gain access to export markets (and favorable prices) they can earn more income and can hire more labor at higher wages. Through increased production of non-traditional agriculture crops, rural areas could gain from CAFTA in the form of increased farm employment and income.

Although farm work is usually considered the main source of employment and income in rural areas, non-farm employment is also an important source of rural household income.⁵⁴ Moreover, as pointed out by Mellor (2003), there is a strong positive relationship between farm and non-farm income in rural areas. Income gained in the farm sector will usually be transferred and multiplied to the non-farm sectors. Reardon, Berdegúe and Escobar (2001) review a series of studies on rural non-farm employment in Latin America and find that income from non-farm employment comprises an average of 40% of rural incomes. They also find that the share of rural income from the non-farm sector in the CA-5 in the late 1990's ranges from about 22% in Honduras to 42% in Nicaragua. However, non-farm employment is not distributed equally geographically in each country, nor among rural households. In general, the review finds that more educated individuals are more likely to be employed in the non-farm sector and larger or wealthier rural households are more likely to have a household member working in the non-farm sector. Moreover, the higher the household income or the less land the household owns the larger is the share of income from non-farm employment. They also find that access to infrastructure increases the importance of non-farm employment and

⁵¹ Maza, Mariana, "CAFTA motivaría producción y nuevos empleos," *Prensa Libre*, May 8, 2003. Comment made by Enrique Lacs, Technical Coordinator of the Business Commission for International Commercial Negotiations.

⁵² This estimate is based on data from the Dirección General de Economía Agropecuaria (DGEA) of El Salvador, 2001-2002 (MAGES, 2003). It is estimated that 294,105 hectares are cultivated in white maize, employing just over 84,000 workers. This translates into 71 days of work per hectare. In comparison, cultivation of tomatoes requires 534 days of labor per hectare. If 147,052 hectares are shifted out of white corn production and into tomato production, this would generate 78,526,035 days of labor instead of 10,440,727 required from corn production. Based on an average work year of 250 day, this extra 68,085,307 days of labor translates into 272,341 more jobs.

⁵³ Similar calculations for green chiles, ejote, potatoes, and cucumbers similar to that in the previous note for tomatoes are: 172,345; 128,817; 123,524 and 81,173; based on work days per hectare requirements of 364, 290, 281 and 209, respectively.

⁵⁴ Reardon, Berdegúe and Escobar define "non-farm" as anything that is outside agriculture, where agriculture is defined as the production of raw food products. Therefore food processing is considered a non-farm activity.

income at the household and local level. While causality cannot be determined, non-farm employment is associated with lower levels of poverty and increased food security. Reardon, Berdegúe and Escobar point out that in many areas, much of the non-farm employment is directly related to agriculture, such as food processing and transportation, and that the growth of one sector is directly related to growth in the other. For this reason, Reardon, Berdegúe and Escobar conclude that more importance should be placed on the non-farm sector in rural development strategies than has been previously, but not at the expense of agricultural development.

The results reported in Reardon, Berdegúe and Escobar (2001) include three recent studies on rural non-farm employment and income in the CA-5. Lanjouw (2001) studies the situation in El Salvador, Ruben and Van Den Berg (2001) look at Honduras and Corral and Reardon (2001) study that of Nicaragua. Each of these country-specific studies finds that education and infrastructure are important determinants of non-farm employment. Moreover, non-farm activity is associated with lower levels of poverty. In El Salvador, households who participate in agricultural labor and non-farm employment have a poverty incidence rate of about 35% compared to a rate of 54.7% for households who are only involved in agricultural labor and farming. In Honduras, the poorest households are usually limited to diversification within the agricultural sector, higher-income rural households generally participate in both farm and non-farm activities. In Nicaragua, the rural households in the highest incomes obtain the largest share of their income from non-farm wage income (34%), while the households with the lowest income obtain the smallest share of their income from non-farm wages (15%).

While many non-farm activities will not be directly affected by CAFTA some, such as food processing, could be directly affected and others, such as tourism (see Box IV-1), have potential as alternative sources of income for rural households negatively affected by CAFTA. Other non-agricultural rural industries have the potential for growth in the CA-5 under CAFTA. In El Salvador, where agriculture has been declining, it is thought that the expansion of textile manufacturing, chemical and plant derivative processing and handicrafts could

Box IV-1. Tourism in Central America

Tourism in particular has great potential in the region. Costa Rica is the most advanced in the region in the development of tourism, where native fauna and flora in national forests attract many visitors each year. In 1998, Costa Rica ranked first within CA-5 with 942,000 tourists spending an average of US\$880/person, followed by Guatemala with 636,000 tourists spending US\$629/person on average (CEPAL-CCAD-BM 2001). Growth in other countries seems promising as well. Between 1988 and 1998 the amount of international tourists that arrived in Central America and the amount of income from tourism went from 1.3 million to 3.5 million and from US\$531 million and US\$ 2,147 million respectively. The projections for tourism growth in CA-5 are 4.38% annually until 2010 and 4.27% annually between 2010 and 2020 (CEPAL-CCAD-BM 2001). Also, visits to CA-5 countries by other Central Americans have helped to expand tourism, yet growth is still limited by perceptions of insecurity, especially in rural areas (IDB, 2000). In the traditional tourism, competitiveness is based on price, acquiring a type of "commodity" characteristic within tour packages. However, CA-5 can compete in other segments of the tourism markets, through differentiation. In the case of ecotourism, it has been shown that tourists have a willingness to pay that is 8.5% higher than average for services and environmentally conscious tour operators (White 1995). If rural areas can successfully develop and improve their tourist attractions and services, especially for ecotourism, they can capture the majority of tourist spending, capture large amounts of non-agricultural income and generate additional rural employment.

increase rural employment (IDB, 2000). In Honduras, small enterprises, furniture construction, communication system construction and maintenance, energy and financial services are all potential sources of rural employment growth (IDB, 1999).

It is expected that if employment in rural areas increases, the pressure to migrate will be reduced. Employment and migration could also be affected by the macro-economic effects of the trade agreement. Real depreciation makes a country's exports more competitive, but can also make remittances from migrants more valuable. Taylor and Materer (2002) find that if CAFTA causes the real exchange rates to depreciate, international migration may increase as migrant earnings become more valuable. However, this ignores the effect that real depreciation can have on promoting exports, which could reduce the incentive to migrate. Yet, if rural areas are isolated from the export market, the net effect of real currency depreciation will probably be to increase the incentive to migrate. Thus, infrastructure is also a key to increasing the net positive effects of real currency depreciation in rural areas.

C. LESSONS FROM STUDIES ON THE ANTICIPATED EFFECTS OF CAFTA

The studies described above on the potential effects of general trade liberalization and specifically of CAFTA in the CA-5 highlight some important considerations that should be kept in mind when developing policies to help adjust to the changes brought about by CAFTA. These include:

- a. CAFTA can provide new opportunities to rural communities, secure better access to the U.S. market, promote regional integration and attract FDI into rural areas. However, these positive effects will not occur without the appropriate adjustments to rural policies and programs. Of particular importance are policies and programs that help facilitate access to US markets by meeting the phytozoosanitary standards of the market.
- b. The adjustments that the CA-5 will need to make will take time and will not occur without some losses. The CA-5 should be prepared to respond with some form of assistance to those who suffer from welfare losses as a result of the transition to CAFTA. Those most at risk directly after the agreement's implementation will be small-scale farmers producing imported commodities and other poor rural households. They will need transition assistance that includes income support and/or technical support to be able to make the necessary transitions to the further opening of the area's economy.
- c. Transition assistance in rural areas should focus not only on agricultural activities but should also include emphasis on non-agricultural rural activities. While agriculture is still a necessary component for rural economic growth in the CA-5, it is not the only option for rural households, nor is it sufficient to ensure the economic vitality of rural areas. Many other rural economic activities have the potential to provide employment and income and in some areas have already become a significant part of rural household income. Transition assistance programs should incorporate the diversity of rural household activities and aim for long-run economic growth and vitality.

V. RESPONDING TO CAFTA

While the CA-5 have made unilateral trade reforms, CAFTA imposes gradual changes to many previously protected sectors. In order to take advantage of the opportunities offered by CAFTA, yet mitigate or avoid losses without adding to the fiscal burden, the CA-5 countries will need to modify some of their current policies and programs, especially with respect to agriculture and rural development. Moreover, in making such changes, it is likely the CA-5 countries will be able to take advantage of ongoing or new financial support of donors and Multilateral Development Banks. This chapter presents policy and program suggestions, given the expected impacts of CAFTA in the rural economies. First, current agricultural policies and programs are briefly discussed followed by a discussion of specific policy and program recommendations.

A. CURRENT POLICIES AND PROGRAMS IN THE AGRICULTURAL SECTOR OF CENTRAL AMERICA

To better understand current agricultural policies and programs in the CA-5 and their relationship to CAFTA, a qualitative and quantitative description of the agricultural support structure is an ideal starting point. Towards this objective, a first analysis was undertaken of Costa Rica's agricultural supports using the OECD methodology⁵⁵ to estimate price and fiscal support to producers of agricultural commodities. A similar analysis of other CA-5 countries is currently being undertaken.

Total support to the agricultural sector of Costa Rica for the year 2003 was approximately US\$282 million of which 70% (US\$195 million) comes from price support (transfers from consumers to producers) and 30% (or US\$87 million) from fiscal resources (transfers from taxpayers to producers). Over the past four year period (2000-2003), agricultural producers received some US\$970 million in total agricultural supports paid for by consumers and tax payers. Total support to the agriculture sector is calculated by adding the producer support to the general support via general services (general agricultural services that cannot be allocated to a specific commodity; i.e. research, information, marketing, etc.).

However, to be able to look at specific commodities, we focus on the analysis of producer support (fiscal and price supports that can be assigned to specific commodities), leaving out of the analysis the general support via services. A recognized indicator of producer support is the Producer Support Estimate (PSE). The PSE analysis follows the OECD methodology (see Box V-1 for an explanation of this estimate) and is calculated here below for selected agricultural commodities. Following the PSE analysis there are estimates of the price and fiscal supports that compose the PSE.

⁵⁵ For a detailed description of the methodology, please see: <http://www.oecd.org/dataoecd/33/48/32361345.pdf>

Table V-1 provides a summary of Producer Support Estimates (PSE) for Costa Rica for the years 2000-2003 for those agricultural commodities that will be facing tariff reductions under CAFTA. Potatoes producers received the highest support as a percentage of the total value of production at market prices in 2003, and this support has been increasing since 2000. By 2003, producer support to potatoes producers represented 70% of the gross value of their production at current market prices.

Box V-1. Agricultural Support Estimates

For the analysis of agricultural supports, the OECD methodology was used. From the 1999 edition of the report on *Agricultural Policies of OECD countries – Monitoring and Evaluation*, total agricultural policy measures have been grouped in three main categories: transfer to individual producers (PSE), transfer to individual consumers (CSE), and transfers to general agricultural services to the sector as a whole (GSSE). The most relevant estimate is:

Producer Support Estimate (PSE): it is an indicator of annual monetary value of gross transfers from consumers and taxpayers to support agricultural producers, measured at farm gate level, arising from policy measures which support agriculture, regardless of their nature, objectives or impacts on farm production or income. The PSE measures support arising from policies targeted at agriculture relative to a situation without such policies, i.e. one in which producers are subject only to general policies (including economic, social, environmental and tax policies) of the country. The PSE can be specified as a dollar amount or as a percentage of the value of production. In Table V-1, the PSE is expressed as a percentage of the crop's production value at market prices.

Table V-1. Producer Support Estimates to Agriculture for Costa Rica (*)

Product	2000 %PSE	2001 %PSE	2002 %PSE	2003 %PSE
Rice	36	32	52	45
Potatoes	12	32	74	70
Onion	28	48	24	10
White corn	39	35	38	30
Beans	27	6	18	9
Beef	7	11	10	12
Pork	30	24	47	49
Chicken	8	7	11	4
Eggs	40	36	47	63
Dairy products	31	32	48	46
African Palm	-1	-1	-19	-30

(*) PSE estimates are shown in this table as a percentage of the crop's production value at market prices.

Source: Stewart, Rigoberto, 2004.

TableV-2 provides a summary of the price support estimates at market prices for the same commodities as in Table V-1. This price support estimate reflects the difference, in a total annual US\$ amount, between the value of production of a given commodity calculated at domestic (farm gate) prices and the value of production of that same

commodity calculated at international⁵⁶ prices. A positive value, which is the case presented here, quantifies the total amount that Costa Rica's agricultural producers receive for each product above what they would receive if they sold it at international market prices instead. Producers of rice, pork, eggs and dairy received the highest price support (measured annually) at the farm gate level. This means, for example, that consumers of dairy products in Costa Rica paid, during 2003, US\$91 million above what they would have paid if they were charged international market prices. In 2003, almost half of the total price support went to dairy farmers. The case of African Palm is an interesting one because producers of this product are receiving a lower price domestically than if they were to sell their product at international market prices. This is due to the fact that 80% of production is in hands of a few large integrated oil enterprises, diminishing the negotiating power of independent producers.

Table V-2. Price Support Estimates (at market prices) to Agriculture for Costa Rica by Crop (US\$)

Product	2000	2001	2002	2003
Rice	25.129.649	16.389.523	22.279.027	18.868.422
Potatoes	2.354.067	7.628.779	21.538.244	12.263.721
Onion	1.904.407	3.088.529	2.204.387	902.037
White corn	1.834.488	1.115.861	903.745	764.014
Beans	2.601.385	598.289	1.490.062	752.051
Beef	10.122.400	14.667.257	11.367.908	15.094.154
Pork	13.904.920	12.122.232	25.194.262	28.812.177
Chicken	7.881.935	6.987.823	11.167.583	3.782.598
Eggs	16.060.530	18.230.463	19.648.967	32.936.757
Dairy products	56.369.611	62.727.648	95.374.076	91.506.983
African Palm	-211.710	-208.439	-5.812.361	-10.275.012
TOTAL	137.951.682	143.347.966	205.355.901	195.407.901

Source: Stewart, Rigoberto, 2004.

From the total support received by agricultural producers from taxpayers (fiscal transfers) in 2003 in Costa Rica, about US\$57 million (or 65%) were subsidies for input use and subsidized interests on loans, as well as debt forgiveness. These subsidies have been growing over the past years. From 2000 to 2003 it has increased by 35%, from US\$42 million to the current level of US\$57 million. This means then that there is an opportunity for the government to facilitate the competitive transition of the sector without adding to the fiscal burden by considering the reallocation of these US\$57 million (in 2003) to transition programs and/or compensation to help move small farmers towards the production of profitable higher value added crops and activities.

⁵⁶ The international price is determined by the Cost of Insurance and Freight (CIF) price of that given commodity. The CIF price is the cost of buying that given commodity in the international market and shipping it to Costa Rica. It can also be interpreted as the price the Costa Rican consumer pays at the domestic port before importing the product to the country

Furthermore, consumers in Costa Rica transfer a significant amount of resources by paying higher prices for agricultural commodities due to current price supports to producers. The fact that there is a high potential consumer gain from removing agricultural producer price supports also suggests that strategies could be developed under the current political economy context to: (i) assist agricultural producers cope with the reduction of producer price supports; and (ii) to restructure current transfers from taxpayers to producers to make such fiscal supports to producers more effective in supporting the transition of the agriculture sector.

These results for Costa Rica highlight the importance of reevaluating agricultural policies and programs prior to the implementation of CAFTA in each of the CA-5 countries. It is also important to note that agricultural policies and programs should not only consider the level of support or type of policy instrument (quantity), but should also consider the quality of institutions supporting policies and programs in the rural sector. Agricultural support programs that distort markets may limit the incentives to shift to higher value-added crops and thus reduce the potential benefits from CAFTA. CAFTA, therefore, provides an opportunity to change agricultural support policies and programs to farmers to increase efficiency in reaching the targeted beneficiaries while removing market distortions.

B. POLICY AND PROGRAM RECOMMENDATIONS

The above discussion and review highlights areas in which the CA-5 countries could act to adjust their policies and programs in the short and medium term in order to take advantage of the trade agreement. The main goal of any policy changes should be to maximize the gains to household welfare while minimizing the losses, especially of the poor, small-scale farmers. The ways in which policy can help to achieve this goal include (each of these is discussed in turn below):

- a. preventing deteriorations in the welfare of poorer, small-scale staple producers by providing a combination of income support during the period of liberalization along with technical assistance in the cultivation of higher-value export crops and other activities;
- b. creating a stable and competitive macro environment;
- c. facilitating rural economic growth through investments in rural infrastructure;
- d. providing assistance in access to export markets, in particular to meet phytozoosanitary requirements, and;
- e. prioritizing the management of the valuable natural resources, including marine resources, to ensure sustainability of production and correspondingly export levels.

The largest change caused by CAFTA will be the elimination of protection on staple crops which comprise a large portion of total agricultural activities. This is expected to bring large welfare gains to consumers, especially for poor households, by reducing the price of food. However, the falling prices are also expected to cause some parts of the

population who rely on the price of these crops for their income to suffer losses. While evidence from Mexico suggests that the predictions of a dramatic reduction in staple crop production were unfounded, this is largely because Mexico introduced a generous income support program to replace price supports and to assist subsistence farmers, and because many rural households were not integrated with the national market. This may protect them from reductions in domestic prices of staple foods, but it also limits their ability to take advantage of opportunities. That being noted, the reduction in prices of staple crops will affect a significant share of rural households. The terms of the agreement allow for gradual reductions of tariffs and increases in quotas of the sensitive crops for each country, often with grace periods of 8 to 10 years (in which there are no changes to protection). This is meant to provide producers with sufficient time to adjust to price changes. This strategy was used in Mexico under NAFTA, although the tariff reduction for sensitive crops occurred over a shorter time period (15 years vs. up to 20 years in CAFTA). In Mexico, the delayed tariff reduction on sensitive crops was accompanied by the elimination of distortionary production subsidies and their replacement by a compensation program, PROCAMPO. Data show that the larger Mexican staple producers were able to transition into other crops, while the small-scale producers largely did not. Some of the barriers that small-scale producers could have faced in order to transition into other crops could be due to the fact that even with the income support (PROCAMPO), smaller producers lacked sufficient capital to adopt new crops, and also that Mexico offered very little technical assistance for transitioning into alternative crops.

It has been argued that in CA-5, there are perhaps not sufficient funds to support a compensation program as large as PROCAMPO, which may explain why the longer tariff reduction periods for sensitive crops were negotiated into the agreement. A more detailed analysis of farm budgets and support is necessary to provide a concluding argument, but the analysis on Costa Rica in the preceding section suggests that substantial resources (over US\$280 million) are in fact currently being dedicated annually to support the agricultural sector. Moreover, the PROCAMPO program should not necessarily be used as a model for CA-5 compensation programs. While PROCAMPO did help to limit producer losses, for a large segment of the population it failed to promote the transition into more productive activities. Since the welfare of the poorest producers is of most concern, smaller, targeted compensation programs may be more appropriate to support those who are more vulnerable to falling into poverty and have the least amount of resources with which to adjust their production. Moreover, Mexico's experience suggests that these compensation programs should be paired with technical assistance and educational programs to help these producers transition to higher value added crops and activities. Some income support could be tied to the adoption of cost-reducing technologies. These policies would not only directly help small-scale producers, but as was discussed earlier, the development of more labor-intensive and higher-value crops can generate additional rural employment, adding to the benefits of CAFTA.

Another important policy issue in light of CAFTA is the need for further investments in rural infrastructure (roads, communications, education, health). The experience of Mexico's southern states of Chiapas, Guerrero and Oaxaca illustrates how poor infrastructure and integration with the rest of the country and the world can limit the

potential benefits from a trade agreement. Physical integration provides the channel for rural areas to become active parts of the national and world economy, and rural areas would not be able to capitalize on the production of export crops without access to export markets. Moreover, without adequate physical integration with the rest of the country or the ability to communicate and market activities to the world it is very difficult to expand non-agricultural activities as well. In fact, the critical role that infrastructure plays in the development of rural areas has been well documented and cannot be emphasized enough. While the construction of roads, telephone lines, schools, hospitals and other forms social and physical infrastructure can reduce the economic aspects of poverty, the process can also reduce social isolation, marginalization and other aspects of poverty. Notwithstanding these benefits, however, it is important to note that while rural infrastructure is necessary for development of marginal regions, it is not sufficient. Without additional support in the form of technical assistance and investment in targeted productive activities and natural resources management, infrastructure may just lead to households leaving rural areas rather than prospering within them or even moving further within the rural space to frontier areas, causing deterioration of the natural resources base. It may also, as noted, integrate the national and local staple markets bringing lower prices for producers of these commodities.

The fact that so many of the CA-5's agricultural producers are small-scale poses a number of challenges in accessing export markets. The transactions required are much different than selling to a local market and many producers have little experience in this area. As discussed earlier, gaining access to the U.S. market requires many sanitary and phytozoosanitary measures, and proper documentation of the entire production process. While some of these restrictions are not necessarily new, they will be new for those producers who are new to the sub-sector. So, in addition to transition assistance, countries will need to create policies and programs which will support producers in meeting export/import requirements and strengthen national systems to meet phytozoosanitary standards of the U.S. market.

In terms of specific areas of possible intervention, the Mexican experience illustrated the need for improved communications and social infrastructure in the face of trade liberalization. Poor infrastructure limits access to export markets, which impedes the transmission of benefits from trade liberalization to rural areas. Policies and programs that address these limitations can provide many benefits to rural areas, but a word of caution is in order. Improved roads provide greater access to domestic urban and export markets, increasing the incentives to raise productivity and to switch to higher value added crops. However, better transportation and communications infrastructure work both ways and could facilitate the negative impacts of CAFTA on staple producers by reducing farm gate prices. The evidence from Mexico suggests that much of the predicted negative effects were less severe because producers were not integrated into the national market due to their economic isolation. Therefore, the more integrated the rural areas become, the more likely it is that price changes brought about by CAFTA will be transmitted to small staple producers bringing about the adverse impact feared by CAFTA's critics. This is not a reason to avoid rural infrastructure, but it does suggest that infrastructure investments in rural areas facing increase trade liberalization and

competition should be accompanied by complementary investments to improve productivity and business opportunities

Finally, in the discussions about CAFTA's effect, much emphasis has been placed on the importance of the CA-5's environmental and other natural resources. For example, the marine fishing industry could contribute to export growth, yet it is currently suffering from over exploitation of the fishing stocks and deterioration of aquatic habitats.⁵⁷ Also, proper management of the region's natural resources such as water resources is vital to the development of tourism and the sustainability of export crops. National and regional water management strategies, policies and plans must be supported to be able to coordinate and increase effectiveness, efficiency, sustainability and productivity in the use of hydrological resources. The CA-5 will not be able to fully gain from CAFTA unless they manage those resources in which they truly have a comparative advantage. As we learned from NAFTA, a free trade agreement can only provide opportunities for growth and development, but it does not guarantee them. A country must actively and continuously respond to the changes brought about by the agreement in order to increase the likelihood of achieving benefits.

To ensure that the benefits from the agreement flow to rural areas and are distributed widely across rural households particularly to poor rural households, it is crucial to continuously monitor and evaluate the effects of the agreement on rural households. This requires establishing a pre-CAFTA baseline that includes a range of information from aggregate levels of input use, agricultural production and export as well as detailed household level data on household income and employment. At present, only the national household surveys for El Salvador, Guatemala and Nicaragua include some information on the agricultural activities of rural households. Honduras is currently in the process of conducting a national household survey that also includes an agricultural module. Along with national statistics on agricultural and other rural non-agricultural activities, household level data with details on agricultural production are key to monitoring and evaluating the effects of CAFTA. After an initial baseline survey prior to the implementation of CAFTA, each of the CA-5 countries should continue with a regular system of household surveys that include agricultural modules for rural households. Furthermore, data collection should be comprehensive and consistent with CGE model data requirements, allowing for a better simulation of adjustment scenarios *ex-ante* and for better evaluation of policy intervention *ex-post*. This regular data collection can be used to understand the changes in household portfolios of economic activities and total income and allow for an evaluation of policies and programs that have been implemented, as well as identify policies and programs that should be implemented to respond to CAFTA.

⁵⁷ CIDA Forestry Advisor's Network (<http://www.rcfa-cfan.org/english/issues.6.html>); USAID, 2002 (<http://islamabad.usembassy.gov/www02090605.html>).

VI. SUMMARY OF MAIN FINDINGS

The purpose of this paper is to identify policy responses to CAFTA that will maximize the net benefits of the agreement for rural areas and ensure those benefits are distributed in an equitable fashion so that the welfare of the rural poor is improved through the agreement. In order to pinpoint appropriate policies, this paper first considers the rural economy in the CA-5 at present to understand the conditions at the start of CAFTA. This is followed by a review of the literature related to NAFTA and the rural economy so that lessons could be learned from that experience as well as a review of preliminary studies on CAFTA's effect on the rural economy to ascertain what predictions are being made about the potential impact of CAFTA. Based on these reviews and a preliminary assessment of agricultural policies in Central America using a Costa Rica as an example, some policy and program recommendations are presented. In this section, the main findings of this exercise are presented. They are as follows:

1. *Predictions regarding staple producers:* Predictions that CAFTA will lead to a reduction in staple prices, a dramatic decrease in staple production and a dramatic negative effect on the welfare effect on poor staple producers seem unfounded. The evidence from Mexico and the NAFTA experience suggests that because of high transaction costs price reductions in staple crops did not reach marginal communities where these crops are often grown. Contrary to expectations ten years after NAFTA was initiated production of staples has risen. Similar predictions for CAFTA may not hold true. It is likely that prices for staples will decline, but the effect on total staple production and on rural households is likely to be limited due to continued high transaction costs in rural areas.
2. *Rural infrastructure and complementary actions:* Rural infrastructure appears critical to bringing the benefits of trade liberalization to rural areas by reducing transaction cost and improving access to export markets. However, investing in infrastructure alone without complementary interventions has the potential to worsen the effects of CAFTA by increasing the negative impact on staple producers. Projects designed to improve rural infrastructure should consider actions that not only provide infrastructure access but assist rural households in taking advantage of that access.
3. *Compensating losers:* PROCAMPO appears to have been helpful in reducing the income effects of NAFTA on rural households. However, it appears to have been less successful in helping small scale producers transition out of staple products into high value crops or other activities. While the funding for such a large scale program is unlikely to be available in the CA-5, preliminary evidence from Costa Rica suggests that there is room to substantially adjust agricultural policy and such an adjustment from distortionary policies would free up significant funds. These funds could be focused on compensating poorer households that may lose from CAFTA but should be sure to also assist in the transition to a new trade regime.

4. *Broad transition assistance:* In general, discussions of CAFTA tend to focus on shifting farmers from the production of staple crops to the production of high value agricultural exports. In many cases this may be appropriate, but it may also be the case that the best path out of poverty for a particular household is through other income generating activities, such as rural non-farm activities or production for the domestic market. In supporting rural households to transition out of staple crops, a range of options should be supported and there should not be a sole focus on promoting agricultural exports.
5. *Agricultural export market access:* For those rural households in a position to take advantage of export markets, it is critical that the government support these endeavors. This requires the government foster a competitive macro environment, particularly in relation to its exchange rate policy. Furthermore, while a number of direct actions may be taken to improve market access, one crucial area is in meeting the phytozoosanitary requirements of the United States.
6. *IDB capacity:* While a detailed review of IDB projects in execution and in the pipeline is beyond the scope of this paper, an overview of IDB projects suggest there are considerable financial resources available in existing projects and projects in the pipeline to respond to CAFTA in the short-run. The set of IDB loans that target the rural sector is widespread and include, among other areas, agriculture; rural potable water, irrigation and sanitation infrastructure, natural resources management; area-based sustainable development projects, rural roads and rural electrification; as well as projects in the social development areas, such as health, education, and in particular, the Social Investment Funds (SIF). At the writing of this paper, an initial review of a subset of the projects targeting rural areas in the CA-5 included some US\$650 million, of which US\$450 million (almost 70%) remained undisbursed. To ensure these funds are used wisely, a close dialogue between the CA-5 and the IDB is necessary.

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