Mexico's Basic-Crops Subsector: Structure and Competition Under Free Trade

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INTRODUCTION

Any discussion of the future structure and competition of Mexico's agricultural sector must acknowledge that, unlike Canada and the U.S., agricultural transformation in Mexico is still underway.[1] Currently, small household farms continue to prevail as a major domestic supplier of corn and beans; about 26 percent of Mexicans are still in agriculture; and most of them live below the poverty line.

My purpose in this paper is to discuss probable trends for Mexico's major field crop subsector—that of grains and oilseeds--in the context of overall domestic liberalization and agricultural policies and of trade disputes between NAFTA countries. The information and arguments I present here are based on recent changes in Mexico's agricultural policies and on the evolution of its agricultural sector during the 1990s.

This paper is divided into five sections. In the next, I summarize recent policy changes, the intended impacts of these changes, and recent trends in Mexico's supply and trade of major field crops. In the third section I propose explanations for facts that contradict the expected impacts of those policy changes. Then I present probable future trends for the field crop subsector. Finally, I end by discussing some policy issues.

POLICY REFORMS AND RECENT TRENDS OF MEXICO'S MAJOR FIELD CROPS

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[1] Because of this, and because of space limitations, issues such as the future impacts on Mexico's field crops from the biotechnological and the communications revolutions are not considered here.

Up to the 1980s, the Mexican State intervened in the production, distribution, and marketing of what it considered being its basic crops. Barley, beans, corn, rice, sorghum, soybeans, and wheat have been the most important, both in terms of area planted and because they make up 90 percent of Mexico's agricultural output (Yunez-Naude and Barceinas, 2000). Since 1991, the Mexican governments have been expanding its overall market-oriented policies, with reforms that have included trade liberalization; trade agreements with other countries or group of countries; the abolition of Mexico's major state trading enterprise, CONASUPO (the National Company of Popular Subsistence), and with it, the elimination of guaranteed prices, that is, basic crop producer price supports (OECD, 1997; Casco, 1999).

Liberalization began with the anticipation that, with domestic reforms and NAFTA, Mexico's agricultural economy would be transformed rapidly and in such a way as to make it fully and quickly competitive. Such a transformation implied substituting basic non-competitive crops such as corn for more competitive fruits and vegetables. This would decrease Mexico's domestic supply of its basic crops and require Mexico to import these same crops, especially its primary staple, corn, from the U.S. In addition, significant rural out-migration was expected.

Figures 1 to 7 show that from 1994 to 2000 only soybeans and wheat decreased in domestic production and increased in imports.[2] In contrast, imports of barley, beans, corn, rice, and sorghum likewise increased during the same period, but their domestic production also increased.

EXPLAINING THE TRENDS

The crisis that the Mexican economy suffered during 1995 and 1996, and the initial period of NAFTA implementation make it difficult to explain why production of five of Mexico's seven major crops has not collapsed. However, five hypotheses can be proposed (the first two hypotheses are from Rosenzweig (Dec.: 2000)). [3]

[2] In addition to this, one can argue that the case of soybeans is special, since its supply was hit by a disease beginning in 1995.

[3] It could also be argued that the devaluation of the peso caused by the macroeconomic crisis of the mid-nineties erased the effects of trade liberalization under NAFTA by increasing the value in pesos of imports, however, this hypothesis ignores the effects of devaluation in the prices of imported inputs for agricultural production as well as the high inflation rates created by a devaluation of the peso.

1. Barley, beans, and corn are still subject to tariff rate quotas (TRQs) under NAFTA and are therefore protected from full competition with Canada and the U.S.

2. Despite the abolition of CONASUPO and/or the elimination of guaranteed prices for the producers of basic crops, the Mexican government has continued to support commercial or entrepreneurial farmers producing such crops through the Agricultural Marketing Agency (Support Services for Agricultural Marketing or ASERCA), whose programs are coupled to production. [4]

So far, our hypotheses do not explain why the volume of imports of barley, beans, corn, sorghum, and rice has also increased since 1994.

3. The evolution of domestic and international prices in a context of rising domestic demand may explain why imports of basic crops increased while domestic production has not sharply decreased. If the prices of domestically produced basic crops have not differed much from international prices, it would seem that the elimination of CONASUPO´s guaranteed prices might not have affected domestic production. At the same time the end of the Company's function as the sole importer of basic crops may have allowed more imports in a context of increasing domestic demand from food processors. Preliminary findings of ongoing statistical research of differences in domestic and international prices for the seven major basic crops show similar trends from 1970 to 1999. If liberalization of the field crops subsector of Mexico has meant freer access to imports and yet not necessarily lower prices for the imported crops, this may explain the phenomenon of rising imports and stable or increasing domestic supply.

One characteristic of Mexico's agrarian structure must be considered in any efforts to explain why domestic production of barley, beans, corn, rice, and sorghum has not declined with the domestic reforms and NAFTA.

That characteristic is the prevailing heterogeneity of Mexico's agricultural sector. This feature--frequently ignored in the literature--is reflected by the coexistence of small household farms with entrepreneurial agriculture. It is difficult to take this fact into account because nationwide data is insufficient to analyze separately the evolution of peasant from entrepreneurial agricultural production. However, the significance of agricultural heterogeneity can be approximated using the official data on basic crops production in irrigated and in rain-fed

[4] ASERCA was created in 1991 and, together with PROCAMPO (a decoupled income transfer scheme to the producers of basic crops), has been a major component in the actions followed to eliminate CONASUPO. The basic function of ASERCA is to promote the marketing of basic crops. However, its interventions have also included price supports for producers in several regions of Mexico (see Yunez-Naude and Barceinas, 2000).

lands and assuming that entrepreneurial agriculture is conducted mainly in irrigated lands and that medium-sized and small farms are maintained under rain-fed conditions. Figure 1 and Figures 3 to 5 show that production under rain-fed lands explains the rise in barley, corn, rice, and sorghum production during the seven years of NAFTA implementation.[5]

I propose two complementary hypotheses, numbers 4 and 5, to explain this latter trend.

4. A portion of the subsector that we are considering here is formed by good lands and rain precipitation and is owned by commercial farmers with medium-sized plots. These farmers have received government supports through ASERCA and the Alliance for the Countryside to continue to produce and even to increase their production of basic crops.[6]

5. This is a more specific hypothesis, since its focus is corn, the basic crop of the Mexican population's diet. A considerable portion of Mexico's supply of this grain comes from small household farms. Lack of infrastructure (such as proper roads) and the absence of other institutions required for the functioning of markets (such as financial entities), mean that these producers face high transaction costs. These costs are one reason small farmers produce staples, particularly corn, for their families' own consumption.[7] This indicates that corn prices are endogenous (i.e., determined at the village or regional level), and hence, that small farmers do not face competition with this crop. That is, they do not suffer directly from agricultural price and trade liberalization (see Yunez-Naude, 1998). It could therefore be argued that high transaction costs for small Mexican farms is another reason that domestic production of corn has not suffered after seven years of NAFTA implementation.

FORCES OF CHANGE IN THE FUTURE

Mexico's agrarian structure and recent trends in domestic supply and imports of basic crops indicate that the agricultural transformation of Mexico is still underway. This view is also

[5] In Mexico, soybeans, and wheat are basically produced on irrigated lands, and their production has decreased substantially (see Figures 6 and 7). As for beans, their domestic production and imports have not radically changed under NAFTA (Figure 2).

[6] The hypothesis is consistent with Rosenzweig's argument about ASERCA (see above), and with the FAO's evaluation of Alliance for the Countryside (FAO and SAGAR, Dec. 2000). Alliance for the Countryside is a program President Zedillo created in 1996 to help “potentially competitive” small- and medium-sized agricultural producers during the economic crisis of 1995 and to promote their technological change and crop substitution.

supported by the fact that, contrary to expectations, the Mexican labor force in agriculture remained relatively unchanged during the 1990s (Zedillo, 2000). The argument that structural transformation of Mexican agriculture has not happen yet is also consistent with the evidence shown in Figure 8. In relation to industrialized countries the proportion of workers in agriculture is still very high in Mexico and its per capita income is very low.

A discussion about the future of Mexico's agricultural sector and its basic crop sub sector can be based both on hypotheses 4 and 5 and by using the results of nationwide General Equilibrium Models (GEMs) that have been applied to Mexico and its agricultural sector. I will focus on the results of those GEMs specifically designed to estimate the potential impacts of NAFTA and domestic reforms on Mexico's agricultural sector (Levy and Wijnbergen, 1992; Robinson, et al., 1991, Romero, J., 1997; and Yunez-Naude, 1992)

For my purposes, the GEMs built during the NAFTA negotiations are adequate models, because they simulate full trade and domestic liberalization. In addition, these models do not consider the heterogeneous character of Mexican agricultural (that is, the models ignore the different conditions under which entrepreneurial agriculture and small farming produce and the existence of high transaction costs for small farmers). Therefore, we can interpret their conclusions about what would happen with the full liberalization of Mexican agriculture and the disappearance of transaction costs (the latter is a plausible medium- to long-run scenario if economic development in Mexico's agricultural sector proceeds as it has in industrialized countries).

Four different nationwide GEMs emphasizing Mexico's agriculture have been built to estimate the possible impacts of NAFTA and domestic reforms (see references above). While the specifications of these models vary, all of their results indicate that NAFTA and/or agricultural liberalization will a) promote efficiency gains in Mexico's agricultural sector, but at the expense of a depression in the domestic production of basic crops; b) that within this subsector, the farmers producing basic crops (corn in particular) on rain-fed lands will be more negatively affected; c) that imports of basic crops will increase considerably (especially those coming from the U.S.); and d) that rural out-migration (to Mexico's cities and to the U.S.) will increase substantially.

[7] According to the Agricultural Census of 1990, more than 55 percent of the agricultural units under 5 hectares of arable land produce for the household's own consumption (Hernandez Estrada, 2000).

The model whose specifications are most similar to the thesis of this paper is that of Robinson and associates. [8] This is particularly true for the scenario that simulates the elimination of all tariffs and quotas between Mexico and the U.S.; abolition of export subsidy programs for US. agricultural exporters to Mexico; and elimination of all support programs to Mexican agricultural producers.

Under this scenario, Mexico's gross domestic product (GDP) grows, the corn production in Mexico decreases by 19 percent while other basic crops decrease by 21 percent, and imports from the U.S. of these crops increases by 185 percent and 88 percent, respectively.

The negative impact of NAFTA and domestic agricultural liberalization in Mexico's basic crops subsector is partially compensated for by a rise in the production and export of fruits and vegetables and other competitive agricultural products. Hence, the manufacturing and service sectors explain the growth of Mexico's GDP under NAFTA.

Restructuring the Mexican economy as shown in the simulated reforms implies a huge rural out-migration to both urban Mexico and to the U.S. According to the results of Robinson and associates, 800 thousand rural workers would emigrate--544 thousand to the U.S., either directly from Mexico's rural sector into U.S. agriculture, or indirectly from urban Mexico to the urban U.S. The rural sector of Mexico will lose about 30 percent of its labor force.

This simulation shows that the future of Mexico's basic crops subsector could be bleak, especially if the new government decided to eliminate the agricultural programs that support producers of basic crops; if its promise to build rural infrastructure were fulfilled; if Mexican farmers did not adopt technical change; and if investment in agriculture remained low.

FINAL REFLECTIONS

Just as we may have to accept the collapse of Mexico's supply of basic crops as a necessary cost consequent to market-oriented reforms, related rural out-migration may also be considered an undesirable event. In addition, domestic food security could become an issue of concern for the government as trade liberalization proceeded.

Such concerns could be partially resolved by adopting technical change and crop substitution on medium-sized farms, a process that has been delayed mainly by Mexico's

[8] The model, for the Mexican and the U.S. economies, subdivides agriculture into four sectors: food corn, program crops (cotton, feed grain, rice, and wheat), fruits and vegetables, and other agriculture. The model has two

financial crisis during the mid-1990s and its consequences: high interest rates and the lack of credit. Along with the need to solve these financial problems, we must consider the promotion of non-farm activities in the rural sector and investing in the rural infrastructure (see Haggblade, S.; P. Hazel and T. Reardon (eds.), in print).

As for small household farms, even in a context of lower transaction costs, certain options could create incentives for small farms to continue producing the basic crops of Mexico. The design of agricultural policies in Mexico must include these farms for three reasons: small farms produce basic crops for the Mexican population's diet; members of rural households have a high propensity to migrate; and small agricultural producers maintain the genetic diversity of Mexico's crops. It is necessary to remember that the indigenous population of Mexico forms a considerable portion of small farmers, and a response to their demands for their rights and for better economic conditions has become a national priority.

One option for small farmers (that is, for poor rural households) is related to corn. We have shown in a participatory experiment with farmers in the Sierra Norte de Puebla--an indigenous region, in one of the poorest rural areas of Mexico--that it is possible to increase corn production for farmers' own consumption and for the local market while maintaining the crop's local genetic diversity, and, at the same time, allow farmers to dedicate more land to competitive crops such as coffee (Pita, A. *et al.*, 2000). In addition, demand for quality corn for human consumption in Mexico and in U.S. areas with populations of Mexican origin makes it plausible for small farmers to succeed by selling specialty corn. However, for this to be viable, official support for its commercialization is necessary. Other options include developing regional rural markets for basic crops and creating cooperatives for productive, credit, input acquisition, and/or distribution. Finally, more productive use of the remittances that small Mexican farmers receive from relatives working in the U.S. could be an important consideration for positive development in rural Mexico (for the case of international migrants from the State of Oaxaca, see Reyes, R. et al., Feb. 2001).

To put into practice policies that promote options for small farmers is more likely now, with the probable break in Mexican State control exerted in rural Mexico through the ejidos and through agricultural programs designed in Mexico City for the purpose of retaining political support. The goals of the current presidency—to allow more independence of the States forming the Mexican Federation in policy design and decision making, to promote regional development,

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limitations: it is static, and it rules out technological change.

and to resolve the Indian conflict led by the Zapatist Movement of Chiapas--are all signs of potential change. However, the government still has to be convinced that small farms are a viable economic option for at least a portion of Mexico's rural population.

Other changes in the economic policy arena of Mexico could arise if the Agricultural Ministry is allowed to participate more actively in designing agricultural policies. (Before the Fox Administration, decisions about trade and domestic agricultural price policies were dominated by the views of the former Ministry of Commerce and Industrial Development.)

By empowering entrepreneurial farmers, the above-mentioned changes, together with the government's promotion of small- and medium-sized farms, could extend safety nets to agricultural producers. This, in turn, could lead to trade tensions between Mexico and its NAFTA partners.

To avoid such tensions in the grains and oilseeds subsector, the Mexican government has to clearly define any modifications to its agricultural policies and its interventions in agriculture. In particular, the government has to convince its North American partners that its interventions are intended to lead to the agricultural transformation of Mexico, as well as to promote the sustainability of small farming. For this to happen, it is essential that Canada and the U.S. become conscious of Mexico's unique agricultural situation. Communication between the governments of the three North American partners is the key to Mexico's success in its efforts to transit to a more market oriented economy, to fight poverty and to offer to its rural population income options within its frontiers.

References

FAO and SAGAR: 2000, "Evaluación de la Alianza para el Campo: Informe Global", Mimeo, Oct. 16th.

Haggblade, S., P. Hazel and T. Reardon: in print (Eds.), Strategies for stimulating growth of the rural nonfarm economy in developing countries, IFPRI, Washington D.C..

Hernandez Estrada: 2000, "Tipología de productores agropecuarios", in Yunez-Naude, A. (Editor) Los Pequeños Productores Rurales: Las Reformas y las Opciones, El Colegio de Mexico.

Casco, A. (1999), "CONASUPO: A Case Study of State Trading Deregulation, Paper presented at the Simposium: Globalization and its Impacts on Governmental Organization and Parastatals, Canadian Agricultural Economics Society, Otawa, April, 21st.

Levy, S. and S. van Wijnbergen: 1991. “Transition Problems in Economic Reform: Agriculture in the Mexico-U.S. Free Trade Agreement”, manuscrito.

OECD: 1997, Examen de las políticas agrícolas de México: políticas nacionales y comercio agrícola, Paris.

Pita, A. et.al.: 2000, "Participatory improvement of maize production in indigenous villages of the Sierra Norte de Puebla, Mexico", Poster presented at the International Simposium:

Scientific Basis for Participatory Improvement and Conservation of Crop Genetic Diversity, Oaxtepec, Oct., 9 to 13.

Reyes, R. et.al.: Feb. 2001, "Impacto de las remesas internacionales en el desarrollo de las comunidades expulsoras de población en Oaxaca, México", Preliminar Report to UC-MEXUS, mimeo.

Robinson, S., M.E. Burfisher, R. Hinojosa-Ojeda and K.E. Thierfelder; 1991, "Agricultural Policies and Migration in a U.S.-Mexico Free Trade Area: A Computable General Equilibrium Analysis." UC Berkeley, Department of Agricultural and Resource Economics Working Paper No. 617, December.

Romero, J.: 1997. "Propouesta de Gasto Público para el Campo" en: Revista de Estudios Económicos, El Colegio de México. México. Vol. 12. Núm. 1. Enero-Junio de 1997.

Rosenzweig, A.: 2000, "Mexican Agricultural Trade under NAFTA: Am Assessment after five years of implementation", paper presented at the, 7th Policy Disputes Information Consortium Workshop, San Diego, Feb. 16-19.

Rosenzweig, A.: Dec. 2000, "On NAFTA: Mexican Experience after Six Years of implementation", draft of a paper to be presented at the 7th Policy Disputes Information Consortium Workshop, Tucson, February, 14-17, 2001.

Taylor, J.E. and P. Martin: forthcoming, "Human Capital: Migration and rural population Change" in G. Rausser and B. Gardner (editors), Handbook of Agricultural Economics, Elsevier Science Publishers, New York.

Yunez-Naude, A: 1998, "Small-Scale Corn and Livestock Mexican Farmers", in Loyns, R.M.A., R.D. Knuston and K. Meilke, Economic Harmonization in the Canadian/U.S./Mexican Grain-Livestock Sub sector, Friesen Printers, Winnipeg, 1998, pp. 209-230.

Yunez-Naude: 1992, "El tratado de libre comercio y la agricultura mexicana; un enfoque de equilibrio general aplicado", Estudios Económicos, El Colegio de México, México, Vol. 7, 1992, pp. 225-64.

Yunez-Naude A. and F. Barceinas: 2000, "Efectos de la desaparición de la CONASUPO en el comercio y los precios de los cultivos básicos", Estudios Economicos.

Zedillo, E. (Poder Ejecutivo Federal): 2000, 6th Governmental Report, Presidencia de la Republica, Sept.

Figure 1. Mexico, Barley. Volume of Production and Imports.

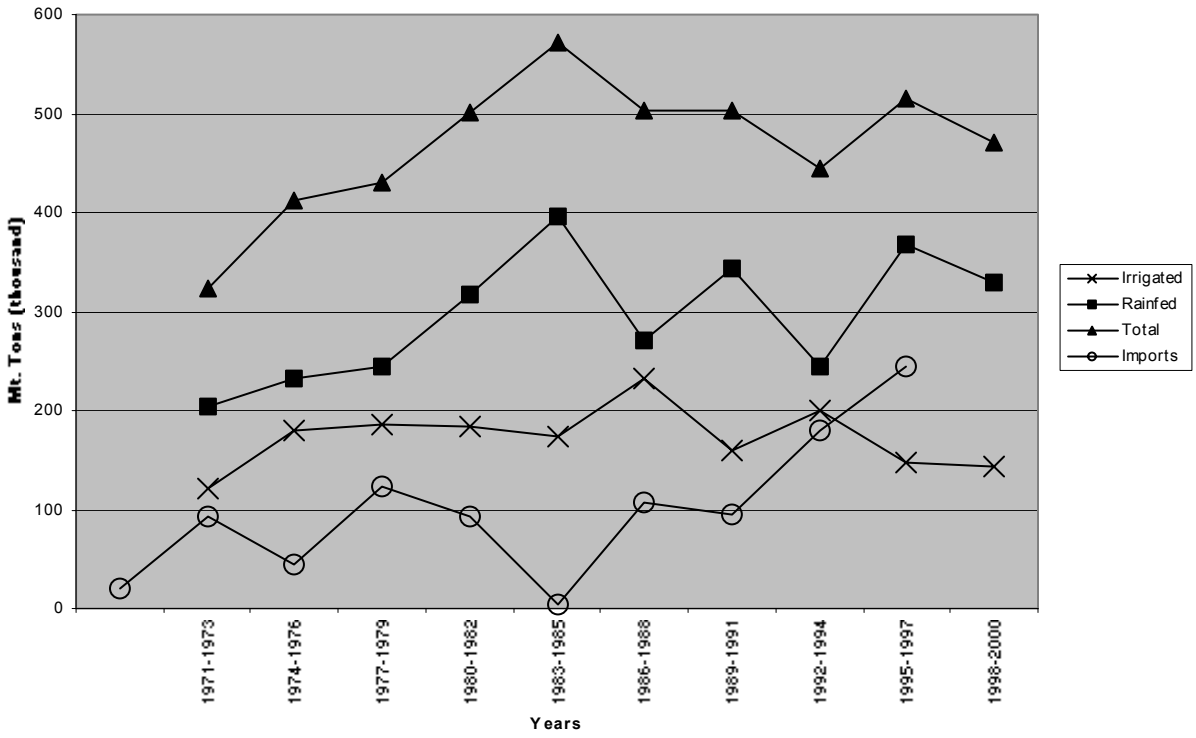


Figure 2. Mexico, Beans. Volume of Production and Imports.

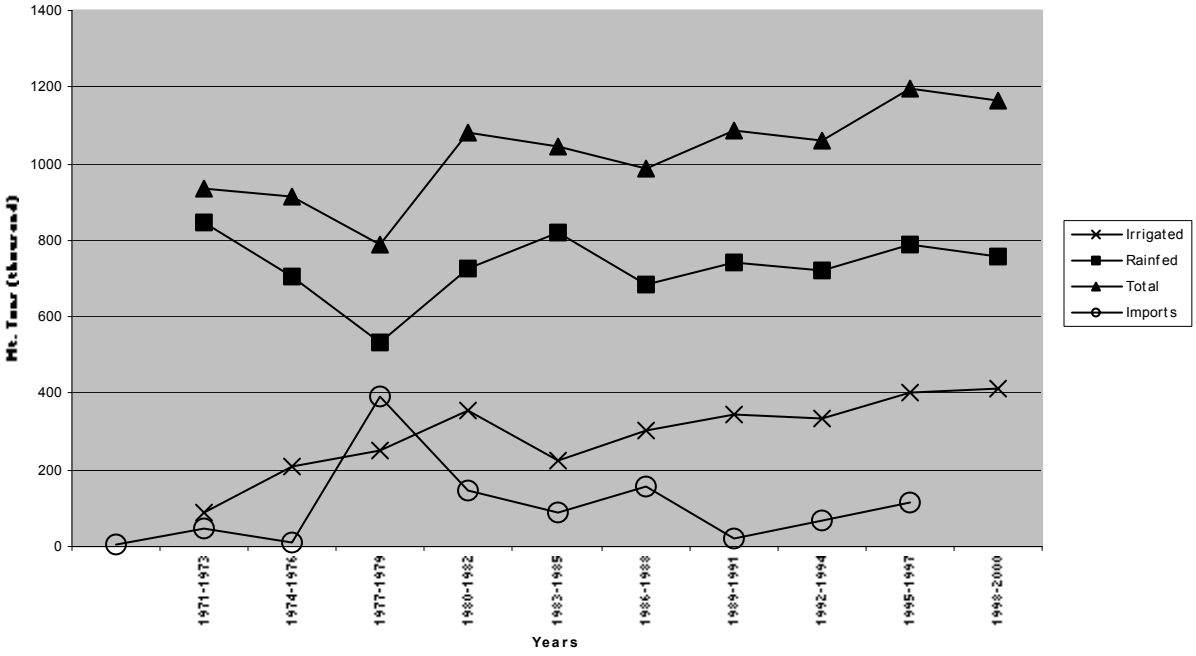


Figure 3. Mexico, Corn. Volume of Production and Imports.

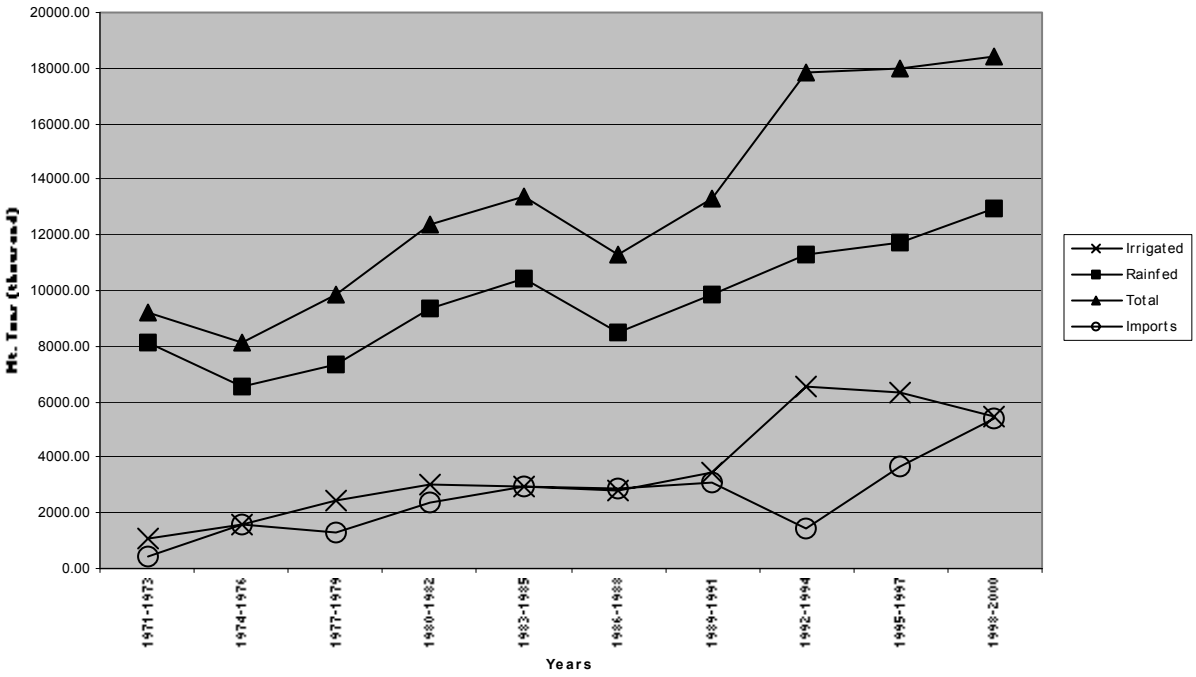


Figure 4. Mexico, Rice. Volume of Production and Imports.

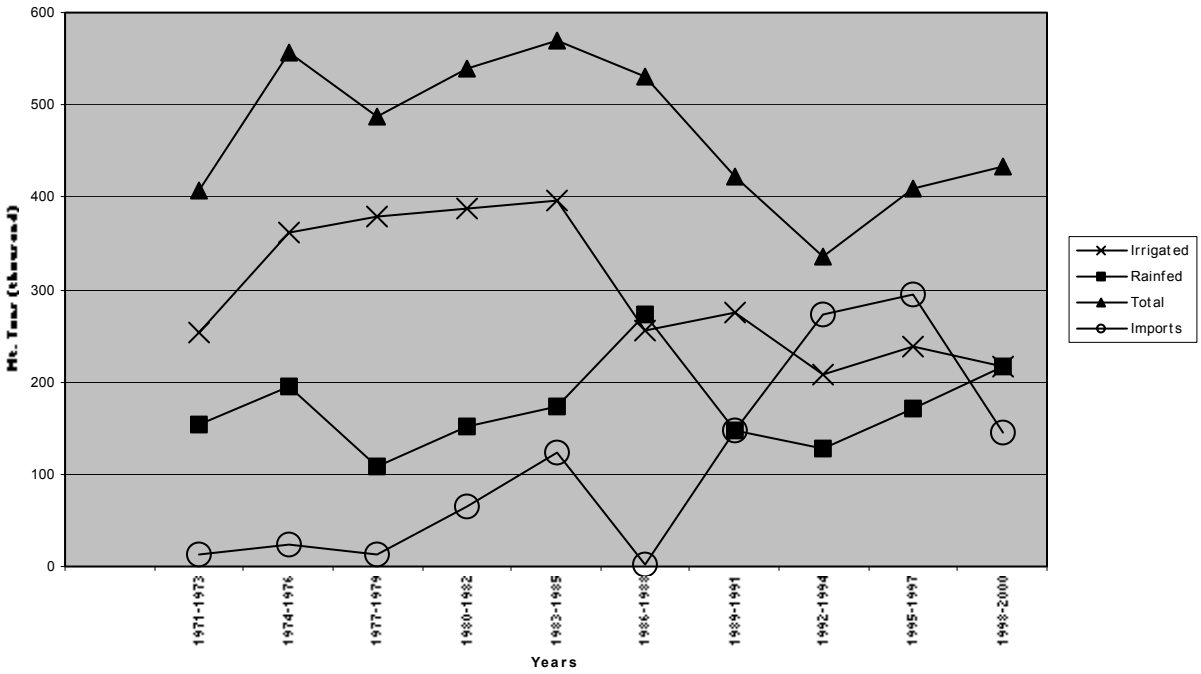


Figure 5. Mexico, Sorghum. Volume of Production and Imports.

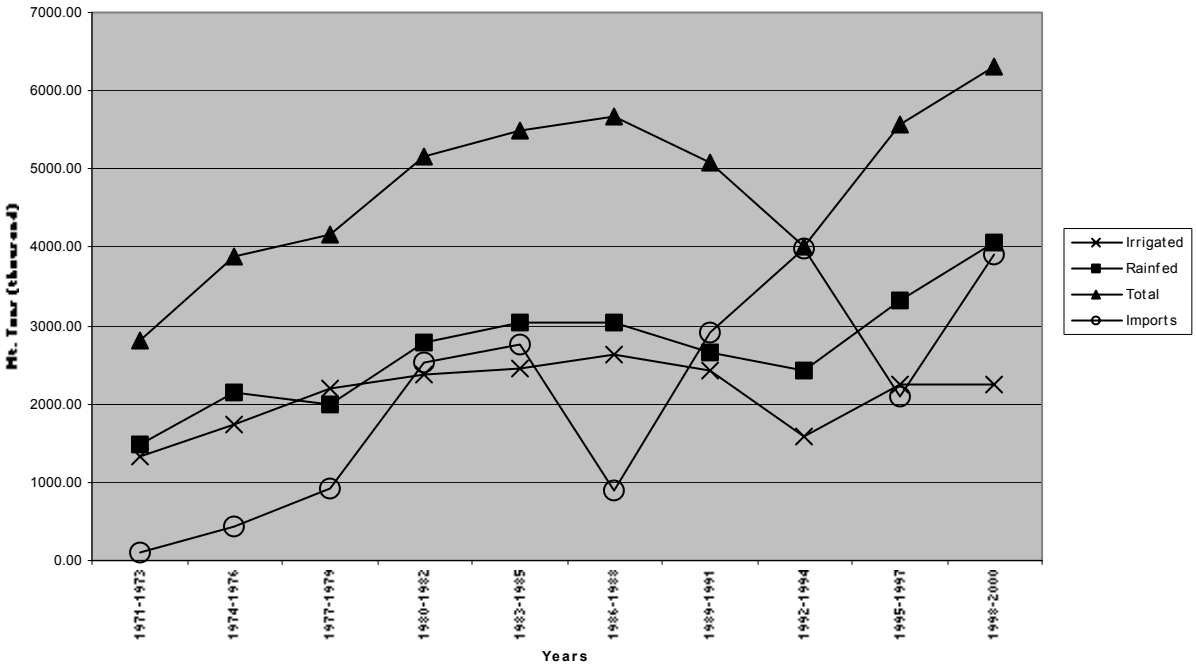


Figure 6. Mexico, Soybean. Volume of Production and Imports.

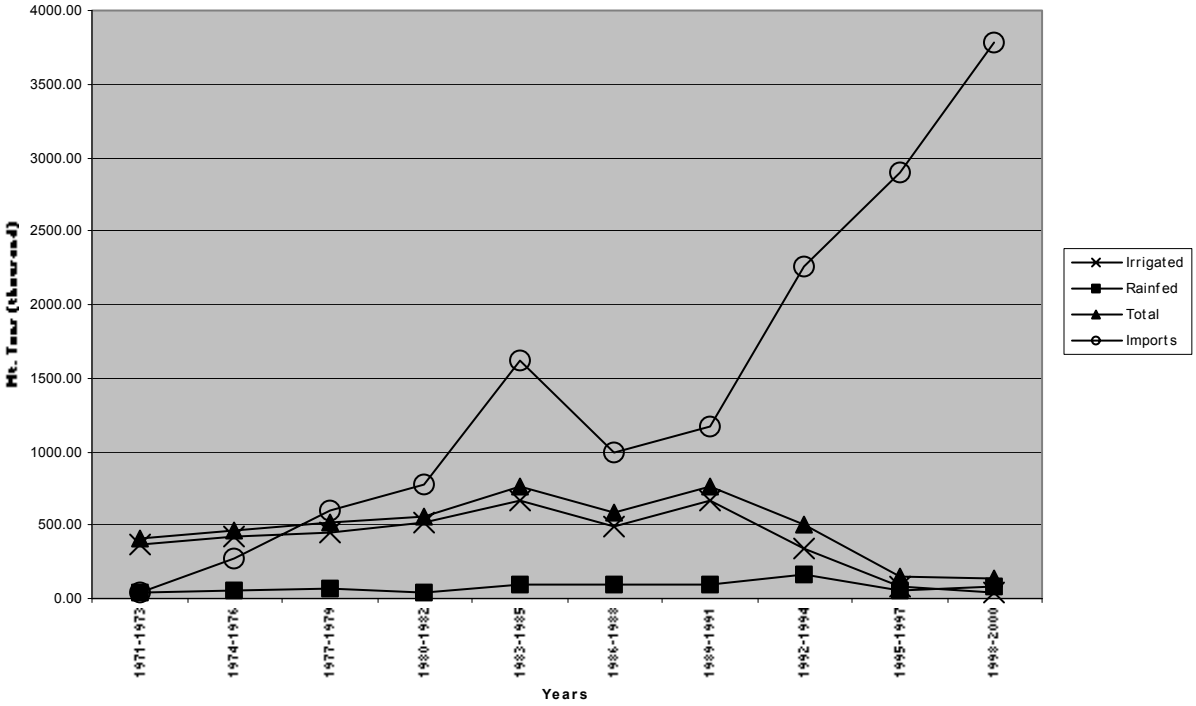


Figure 7. Mexico, Wheat. Volume of Production and Imports.

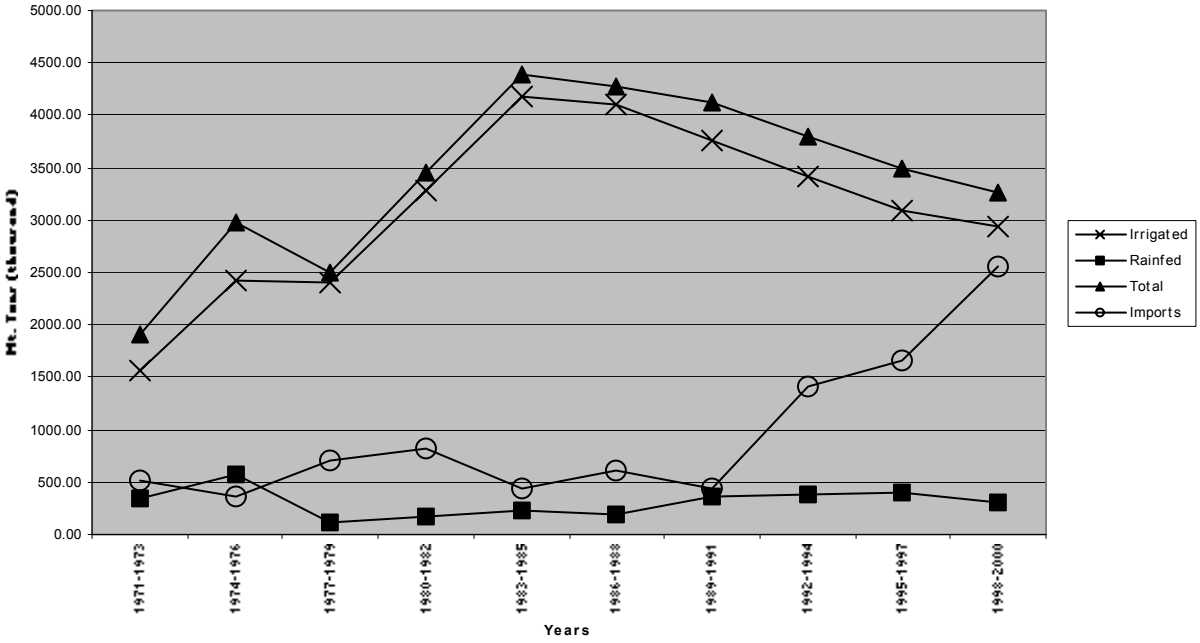
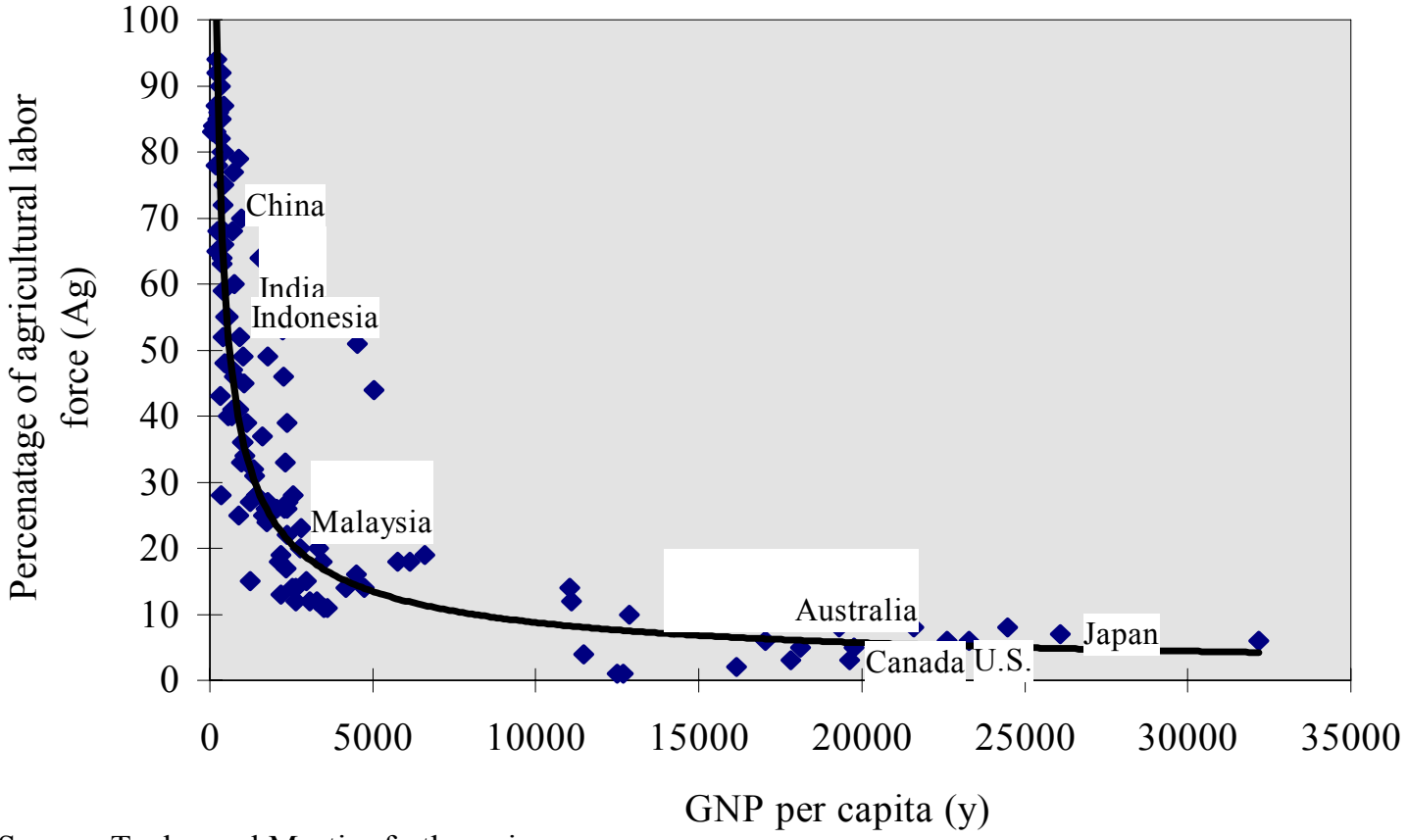


Figure 8. Agricultural Labor Shares and GNP Per Capita, 1990.



Soruce: Taylor and Martin: forthcoming.