

## *Productive Diversification and Structural Transformation in Mexico: Case Studies of Three Regions*

FERNANDO RELLO  
FERNANDO SAAVEDRA\*

### **Abstract**

This article uses the structural transformation conceptual approach to study three regional processes in Mexico, examining the effects of economic liberalization and growth on their rural economies. It concludes that rural families deal with the opportunities and dangers generated by these processes by diversifying their activities and sources of income to include areas beyond the sphere of agriculture. This strategy's success and limitations depend on their resources and the kind of structural transformations taking place in the regions where they live. Modernization based on economic liberalization benefits some rural sectors but preserves the dual character of the rural economy and continued poverty in the countryside.

**Key words:** structural transformation, liberalization, regional development, dual agriculture, diversification, poverty.

**JEL Classification:** R, R11.

### **INTRODUCTION**

This article's objective is to analyze the structural transformation process in three regions of Mexico. Its starting point is the idea that structural transformation has taken various paths in different countries and regions, and certain typologies can be constructed to facilitate the study of this process from the standpoint of regional development. It emphasizes the effects of economic liberalization and the public policies that accompany it.

The empirical information comes from a survey of households applied in three regions of Mexico as part of the international Rural Struc research project,

---

Received March 2012; accepted March 2013.

\* Faculty of Economics at the Universidad Nacional Autónoma de México (UNAM), Mexico, <relo@unam.mx>, and Facultad Latinoamericana de Ciencias Sociales (FLACSO), Mexico, <saave@flacso.edu.mx>. The authors wish to thank the journal's anonymous reviewers for their valuable comments.

whose aims have been to examine the structural changes in rural societies in the context of liberalization.<sup>1</sup> The article's starting point is the hypothesis that, faced with the opportunities and dangers posed by economic liberalization, rural families opt to diversify their activities and sources of income in areas outside the sphere of agriculture. The possibilities for them to be able to do so depend on their resources and the opportunities that the surrounding process of economic transformation creates, as well as their capacity to make good use of those opportunities, which, in turn, is influenced by various factors, among them, their regional geographical location. The type of structural transformation that occurs in the different regions is a determining factor.

### **STRUCTURAL TRANSFORMATION, A UNIVERSAL PROCESS WITH HETEROGENEOUS RESULTS**

Structural transformation (ST) is a process of change in the structure of society during its continual, complex evolution. The common thread of all ST is the transformation of traditional rural societies into modern ones based in cities and on industry and services. After a long period of economic and demographic stagnation in which societies can barely satisfy their material needs, they begin a process of economic and social change leading to increased productive capacity. This increased capacity occurs thanks to the greater domination and utilization of natural energy sources—both biological and physical—that scientific knowledge and technology permit. The first historic case of this process was the European Industrial Revolution in the eighteenth and nineteenth centuries.<sup>2</sup>

Broadly speaking, the following are the main changes that constitute structural transformation:

---

<sup>1</sup> These are socio-economic surveys of households applied as part of the Rural Struc research program financed by the World Bank, the International Fund for Agricultural Development (IFAD), and the government of France. About 300 questionnaires were filled out in each of three rural areas with between 500 and 5 000 inhabitants in Tequisquiapan, Ixmiquilpan, and Sotavento in Veracruz. Rural Struc covers an analysis of seven countries: Mexico, Nicaragua, Morocco, Mali, Senegal, Kenya, and Madagascar. More information about the survey and the Rural Struc project can be found at <<http://www.worldbank.org/afr/ruralstruc>>. The final comparative report was written by Losch, Freguin-Gresh, and White (2011).

<sup>2</sup> Bairoch (1973) has explained the transformation during the Industrial Revolution and the central role played by agriculture.

- 1) A decline in the relative importance of agriculture in the gross domestic product (GDP) and total employment and its replacement as the driving force behind economic growth by industry and, later, services.
- 2) An hike in productive capacity expressed in increased industrial and agricultural productivity.
- 3) Migration from the countryside to the city leading to the urbanization of society.
- 4) A demographic transition that moves from very slow population growth, the result of high fertility and mortality rates, to noticeable demographic acceleration associated with a drop in the mortality rate.
- 5) Continual change in institutions and forms of social organization that make possible and give direction to structural transformation. The state plays an important role in the creation of these institutions.

One fact observed in the ST of developed countries is that industrial expansion is always preceded by a growth in agriculture that creates the conditions for the expansion. Among the conditions required for economic growth to begin and be sustained is the solution of the problem of food. The modernization of agriculture makes it possible to produce cheap food, to stabilize wages at low levels, and to accumulate capital in the most dynamic economic sectors.

An increase in agricultural productivity in a rural society in which agriculture is the most important sector in terms of both production and employment generates an economic surplus that is the basis for capital accumulation in industry. In addition, this increase in agricultural productivity makes it possible to transfer surplus labor in agriculture to the expanding economic sectors.

The historical experience of the ST process in several countries allows us to conclude that the only way to increase material production and social well-being is to raise agricultural productivity in a sustained way over a long period. Not a single case exists of a country that has achieved the objectives pointed out above and reduced poverty levels in traditional rural society without sustained growth of agricultural productivity. For this reason, analyzing agricultural development is very relevant for explaining ST results.

ST is a universal process that has occurred or is occurring in almost all countries. However, notable differences in the specific forms it takes and its results exist. We can speak of successful ST when the food problem has been solved, incomes increase, and poverty decreases at the same time that the economic and social structure is changing. The social costs of modernization are relatively low in this kind of ST, which took place mainly in what are today the developed countries. To the contrary, an unsuccessful form of ST takes place

when agriculture stagnates, the food problem becomes a limitation to economic growth, and rural and urban poverty are high and take a long time to decline. This socially painful transformation is happening in many developing countries, among them, Mexico.

The ST approach has been widely used to analyze and compare countries in their process of change and development.<sup>3</sup> In this article, we use it to analyze regions of Mexico that are in different stages of ST. This is justified because the ST process does not take place homogeneously in all regions of a country, but rather presents itself in an unequal way. This is due to the fact that the conditions and factors that are the impetus for this process are more prevalent in some regions than in others. Among these factors are the availability of natural resources, infrastructure, market access, the distance to cities and regional development centers, and access to financial and economic regulatory institutions, among others. In order to analyze the role of agriculture in regional economic transformation, we use a typology presented in the following points.

### **STRUCTURAL TRANSFORMATION BASED ON DYNAMIC AGRICULTURE**

This is the classical path of ST followed by Western Europe, the United States, and Japan. Agricultural productivity grows continuously thanks to the use of technological innovations, facilitated by the creation of institutions that foster agriculture (research, technical advisory services, financing, infrastructure). Increased productive capacity creates an economic surplus that is transferred to the industrial sector, nourishing it as the sector that is the driving force of the economy as a whole. Cheap foodstuffs stabilize wages and foster capital accumulation in the industrial and service sectors.

Rapid industrial expansion creates jobs for rural immigrants and gradually absorbs the rural work force that becomes available every time labor productivity rises. Income increases because the rural population works in the more productive conditions and earns the higher wages offered by industrial and urban expansion. The poverty level in the countryside begins to drop in a sustained way.

---

<sup>3</sup> The following authors have fruitfully used the ST approach: Bairoch (1973); Johnston and Kilby (1975); Timmer (1988 and 2009); Tomich, Kilby, and Johnston (1995), and World Bank (2008).

Once labor productivity in agriculture and industry tend to equalize and agriculture reaches a mature stage, the expansion of world food and raw material markets under globalization sustain agricultural growth. Agro-industry and exports become the spark for agricultural growth in this phase. Agriculture's contribution to GDP and employment growth drops to a minimum, showing the advance of the ST process; but even given this, it continues to be of strategic importance that justifies large agricultural subsidies. ST is completed by paying relatively small social costs since poverty has substantially diminished and the level of inequality in income and social well-being has shrunk, creating more inclusive societies with fewer internal social tensions.<sup>4</sup>

**STRUCTURAL TRANSFORMATION WITH DUAL AGRICULTURE  
AND REGIONAL POLES OF DEVELOPMENT WITH LIMITED  
CAPACITY FOR DRAGGING THE REST OF THE ECONOMY WITH IT<sup>5</sup>**

On this kind of ST path there is a dynamic, modern, highly productive agricultural sub-sector with links to rapid-growth agro-industries. It has strong ties to the domestic and international markets, from whose expansion it benefits. This modern agricultural sub-sector invigorates the regional economy, creating jobs and sources of income, but only up to a certain point because of its relatively small size. Agricultural modernization has only happened in those geographical areas with good amounts of land and water and infrastructure and transportation routes that give them greater market access. On the other hand, the majority of rural producers, who cover most of the region, are involved in agriculture with low productivity, oriented toward self-consumption and the sale of small agricultural surpluses in local markets. Agricultural income is low and poverty levels high in these regions of traditional agriculture made up mainly of collective *ejido* lands and smallholdings. In short, regional agriculture has a clear dual structure.

A dynamic industrial sector is progressing in geographical and economic regions linked to growing medium-sized cities. These industrial activities and

---

<sup>4</sup> To review the cases of Japan and the United States, consult Hayami (1988), and Tomich, Kilby, and Johnston (1995).

<sup>5</sup> More detailed information about the three case studies that follow can be found in Rello and Saavedra (2010).

others in the service sector give the regional economy dynamism, creating intersectoral links that create jobs and income. These are taken advantage of by traditional rural families that cannot live exclusively from agriculture because they lack productive resources. This rural sub-sector of traditional agriculture constitutes a rural reserve army and a source of cheap labor, which is taken advantage of by industry and the services for their expansion. However, the industrial sector's capability to transform the regional economy is limited because its economic rate of expansion is not high enough, a fact related to the slow growth of the national economy.

This kind of structural transformation, based on a dual system of agriculture and poles of regional growth with a limited ability to drag the rest of the economy behind them is typical of many regions of Latin America. To offer an illustration of this kind of ST, we will examine the case of Tequisquiapan, Querétaro, in central Mexico, which has experienced important industrial and urban development. It has good infrastructure and a very convenient location on the national highway grid; it is close to medium-sized and large cities, in addition to having land more fertile than the national average.

To analyze this case study and the two others that follow, we will examine rural families' current sources of employment and income based on the survey of households done in each region. This information will be filled out with explanations of important changes in the region as a result of globalization.

The survey results (see Table 1) show that the households' on-farm income is a small part of their total income (11.8%). Their income from all agricultural activities (on-farm income plus agricultural wages) comes only to 27.8% of the total. This means that rural families in Tequisquiapan obtain 72.2% of their income from non-agricultural activities. These data show the advanced degree of ST of the region, where agriculture has been replaced by industry and services as the driving force of the regional economy.

The data in Table 1 show that households' sources of income are diverse. This indicates the existence of a household strategy of participating in various goods and labor markets to guarantee family survival and reduce the high risks these kinds of families are subject to. The main component of rural families' income is industrial wages (35%), a piece of data that jibes with the important development of industry in the region and an indicator of the point to which industry has replaced agriculture as the source of rural households' income in this kind of region.

TABLE 1  
*Tequisquiapan: Sources of income for rural households, 2008*

<i>Source of income</i>	<i>Percent of total income</i>
Total on-farm income	<b>11.8</b>
Agricultural wages	16.0
Total income from agricultural activities	<b>27.8</b>
Industrial wages	35.3
Self-employment in non-agricultural activities	25.7
Income from other waged work	6.6
Public transfers	3.0
Private transfers (remittances)	1.6
Total income from non-agricultural activities	<b>72.2</b>
<b>Total</b>	<b>100.0</b>

Source: *Encuesta Rural Struc.* World Bank/FLACSO (2008).

Mexico's economic transformation in the last two decades has been marked by liberalization, which the country has been intensely involved in, and by public policies aimed at balancing and healing markets and fostering private investment, but with scant deployment of sectoral policies to foster production.<sup>6</sup> We cannot explain these policies in this brief article, but we will examine some of their effects in the regions studied.

Liberalization has expanded markets, creating new economic opportunities. In Tequisquiapan, the modern agricultural sector and agribusinesses have made the most of them, increasing investment and production destined for expanding domestic and international markets. The most dynamic activities have been cattle and poultry raising, the dairy agribusiness, and horticulture for export. Agribusinesses, some of them multinational, led this transformation, but medium-sized and large agricultural producers were included as suppliers of raw materials and managed to benefit also.

By contrast, small, traditional agricultural producers were excluded. They have continued to produce basic goods for self-consumption and small-scale sales in local markets and to provide labor for the region's dynamic companies. They have not managed to increase their investments or productivity and they continue using traditional technology. This means that globalization has not helped even out income levels: to the contrary, it has increased the differences

<sup>6</sup> Moreno-Brid and Ros (2010) explain these policies and their results in the Mexican economy.

among producers and reinforced the dual character of agriculture. The very backwardness of the small farmers has fed this duality, for example, with weak community *ejido* organizations and backward, disadvantageous forms of commercialization—our survey reveals that 75% of their products are sold at the production site itself to intermediaries who pay low prices.

Poverty in Tequisquiapan is high despite its relatively high degree of development: 21.4% of households were living in extreme poverty when the survey was made in 2008; and 57.5% lived in moderately poor conditions.<sup>7</sup> The national data on poverty published by the Consejo Nacional de Evaluación de la Política de Desarrollo Social (Coneval) indicate that 31.8% of Mexicans living in the countryside in the same year our survey was done were living in extreme poverty.<sup>8</sup> That is, the poverty level in Tequisquiapan was only 10 percentage points lower than the national poverty level. If we divide the population surveyed into income quintiles, the individuals who fall in the first three quintiles, beginning with those with the lowest incomes, are suffering from some form of poverty. The depth of poverty of the first quintile is noteworthy because their incomes are only sufficient to cover 52% of the cost of the basic food basket.

If we take into consideration the fact that Tequisquiapan has a development level that is quite superior to the national average, we could conclude that its economic transformation has not contributed to making the income of different economic actors converge or to significantly reducing rural poverty in the region. It is a kind of structural transformation that preserves rural poverty because it does not raise the productivity of small producers. It also does not question agrarian structure, characterized by the concentration of productive resources, or the dual character of agriculture; rather, it tends to reproduce both structural components of rural society.

The dynamism of industrial and urban activities has not been sufficient to lower rural poverty significantly. These structural traits are also present in many countries undergoing a process of structural transformation. The recent

---

<sup>7</sup> The definition of extreme poverty is when income is insufficient to purchase the basic food basket even when all income is used to buy it; people are living in moderate poverty when income is insufficient to purchase a basic basket that includes food, clothing, lodging, and transportation.

<sup>8</sup> Strictly speaking, the Coneval data are not comparable with those of our survey because Coneval develops them based on the National Survey of Household Income and Expenditures (ENIGH) and defines rural population using a different-sized location. However, our purpose is to give background that makes our results significant.

*Informe sobre Desarrollo Mundial* at the World Bank (2008) dedicated to agriculture revealed that dozens of countries have experienced industrial and urban growth but rural poverty remains relatively untouched.

### **STRUCTURAL TRANSFORMATION IN POOR REGIONS WITH FEW NATURAL RESOURCES LINKED TO POLES OF URBAN GROWTH**

There are many regions in Mexico and in general in underdeveloped countries that have such poor natural resources (land and water) that ST cannot happen based on activities in the primary sector. In these cases, industrial activities and the services concentrated in expanding cities are the elements that can create dynamism in the regions. The inertia of this poverty is a heavy burden for the process of diversification and regional economic growth since the starting point is a situation of generalized poverty caused by a very unfavorable land/inhabitant ratio. This does not mean that agriculture is not important, given that it represents a vital supply of food and a way of ensuring food subsistence and reducing the risks associated to the vulnerability in which the rural households in these regions find themselves. However, the ST and the reduction of poverty depend on extra-agricultural factors: non-agricultural employment and emigration.

Ixmiquilpan provides us with an illustration of ST in this kind of region. Located in the Mezquital Valley, it is a semi-arid area with little cultivable land and water per inhabitant. Soil fertility is low and plot fragmentation high. Forty-five percent of homes have less than one hectare of land, and ninety-five percent have less than two hectares. An agrarian reform that generated smallholdings and demographic growth, which in turn sparked the inheritance of smaller and smaller plots, explain this fragmentation of the land. The poorest population, who belong to the Otomí ethnic group, is dispersed in communities of fewer than 500 inhabitants without adequate access to basic services. The Mezquital Valley was considered an archetype for poor rural areas by several research projects carried out during the 1970s.

Nevertheless, the region has experienced structural development over the last 30 years. In 1990, agriculture employed half the work force, and today, it only employs 30%. The most dynamic sector has been services, which in 1990 employed 30% of the work force. Today, more than half the economically active population in the region works in services. In this sector, commerce has been the most dynamic sub-sector and has become the main economic activity, made up

above all of small establishments, many of them informal. Family craft enterprises are another important source of employment in the region's rural areas.

In other words, the region has now become a service economy. There has been no diversification toward activities with greater value added. The local industry has not grown significantly. The field study we did revealed that there are no significant agro-industrial linkages in the area. The problem is that regional job growth has not sufficed to absorb the new entries into the labor market every year in Ixmiquilpan. The partial way out of this bottleneck has been the search for jobs in non-industrial activities and emigration.

During a first stage, the unemployed looked for jobs in the region's medium-sized cities, like Tula and Pachuca, or in Mexico City. Beginning in the 1990s, migration to the United States began, the migrants attracted by good wages; this flow consolidated over time until it became an activity with very important regional impacts. Ixmiquilpan has become a high-intensity migratory region: 19% of households receive remittances according to our survey, while, on average, only 4% nationwide receive them.

In addition to increasing household income and decreasing poverty, the flow of remittances brings the regional economy alive. Households have more money to spend, and this increased demand benefits a series of small establishments that supply them with merchandise and services. General commerce is the subsector that has benefited the most. Other migrant-linked businesses have also prospered: banks, exchange houses, firms that receive and send dollars, and establishments that provide long-distance telephone service, among others.

The composition of households' sources of income gives a good idea of the regional economic structure. According to surveys done in the area, agriculture contributes only 5% of total family income; this reflects the weakness of the activity in the region. We should add that agricultural wages represent 15% of total income, but even so, agriculture and animal husbandry contribute only 20% (see Table 2). The other 80% comes from non-agricultural wages, self-employment, and public and private transfers. Family survival strategy consists of finding jobs in the labor markets in more developed, dynamic areas, seeking alternatives for self-employment, and migrating. Subsistence agriculture is another supplement, when the family has land. It should be added that of the 306 households surveyed, 38% have land and 62% have to support themselves on wages, self-employment, and transfers. In the 1940s, most of the families had land. Now the reverse is true. This is the social expression of the structural transformation process.

TABLE 2  
*Ixmiquilpan: Sources of income for rural households, 2008*

<i>Sources of income</i>	<i>Percent of total income</i>
Total on-farm income	5
Agricultural wages	15.6
Total income from agricultural activities	<b>20.6</b>
Non-agricultural wages	49.5
Self-employment in non-agricultural activities	22.2
Public transfers	3
Private transfers (remittances)	4.7
Total income from non-agricultural activities	<b>79.4</b>

Source: *Encuesta Rural Struc.* World Bank/FLACSO (2008).

The Mezaquital Valley has stopped being the example for extreme poverty in Mexico because income levels have increased. However, the regional poverty level continues to be higher than the national average. To get a more precise measurement of poverty than the average data provide, the households have been classified into income quintiles, and the income of each quintile is compared to the poverty lines defined by Coneval. Those people who fall into the first two quintiles live in extreme poverty, and those in the third quintile surpass that threshold by a small margin. In addition, the depth of poverty of the first two quintiles is worthy of note: the poorest has practically no income at all, and the income levels of the second poorest quintile cover only one-third of the cost of a basic food basket. The great majority of people in this region live in “patrimonial” poverty, and only those in the top quintile escape this kind of moderate poverty.

The degree of inequality in regional income distribution is also worthy of note. The households in the wealthiest quintile concentrate 47% of total income, while those in the poorest receive only 3.7%. Transfers are a vital issue for the poorest 20% of the population. Public transfers (mainly those from the Oportunidades program) represent 33% of family income in this population segment, and remittances, 10%. We can conclude that on this path to ST in rural regions poor in natural resources and linked to urban areas for their survival, social vulnerability is offset by official anti-poverty programs and migration.

The downside of the migration of the younger, better educated men is the existence of desolated rural towns, inhabited by women, children, and the aged.

Migration weakens the local economy and recreates the local need for resources from outside the region, necessary for survival.

### **LIMITED STRUCTURAL TRANSFORMATION IN AREAS OF TRADITIONAL PEASANT AGRICULTURE**

Mexico has many rural regions where a traditional peasant economy is in place, basing its form of social reproduction on the production, consumption, and sale of corn. In this kind of economy, other crops and sources of non-agricultural income exist, but maize production is the axis of productive life. Another characteristic is that, while these regions are linked to other regions and poles of economic growth, they are not as developed as Tequisquiapan and Ixmiquilpan, and therefore, the lives of rural families there depend to a great extent on the local economy. This has begun to change with the rural crisis and the emergence of migration. The question that this research posed was how globalization and public policies are transforming this kind of region.

To try to respond, we picked a case study of Veracruz's Sotavento region, in particular, two sub-regions: one is the Santa Marta Mountains (Soteapan and Hueyapan de Ocampo), a relatively isolated, Popoluca indigenous region. The other is an area of lowlands on the banks of the Tesechoacan River (Isla and José Azueta) and Cuatzacoalcos (Texistepec), an area of flatlands and residual humidity that favors fertility, which we will call Tierras Bajas (Lowlands). In both areas, the production of white maize is the axis of the local economy.

This region had gone through certain transformations before globalization. One of these is the gradual transition from a maize-based economy centered on production for consumption to more market-linked economy. Another change came about because of the influence of the oil boom in Coatzacoalcos and Minatitlán, which attracted young men from Sotavento and began to diversify sources of household income. At the same time, federal government colonization programs put into circulation new cultivable land and attracted migrants from other parts of the country, particularly Tierras Bajas. However, both these factors stopped having an effect by the late 1980s.

The land-tenure structure of both sub-regions is a determining factor in income levels. Santa Marta has high levels of smallholdings (40% of households have less than two hectares of land). In Tierras Bajas, on the other hand, medium-sized plots prevail, and 15% of households have more than 20 hectares.

TABLE 3  
*Percentage of households by size of plot*

		<2 Ha	3-5 Ha	6-10 Ha	11-20 Ha	>20 Ha
Sotavento	% of households	28.6	24.7	23.6	13.6	7.8
Santa Marta	% of households	<b>39.6</b>	22.8	19.7	13.8	4.1
Mountains	% of households	12.6	17.4	26.8	29.0	14.2
Tierras Bajas	% of households	17.0	<b>27.5</b>	<b>28.6</b>	13.4	15.1
	% of land	2.9	11.0	19.6	18.5	<b>48.3</b>

Source: *Encuesta Rural Struc.* World Bank/FLACSO (2008).

The context of the changes in Sotavento starting in 1995 is marked by the acceleration of the globalization process caused by the advent of the North American Free Trade Agreement (NAFTA) and the reduction of government agricultural spending, the elimination of subsidies and institutions, and the drastic decrease in public agricultural services like the financing and agricultural extension programs that had begun in the early 1980s with structural adjustment programs. The most important factor in the changes has been the federal government's decision to intervene in regional rural markets to increase corn production there and elsewhere and try to reduce an alarming food dependence on corn imports from abroad.

From the point of view of production, the most important government action has been the financing by Fideicomisos Instituidos en Relación con la Agricultura (FIRA) of a package of technological innovation (fertilizers, agrochemicals, and hybrid seeds). This program's counterpart are the private technical agricultural consulting firms, which act as intermediaries between FIRA and producers' associations and ensure compliance with the program's norms. These firms, in addition to channeling FIRA loans and providing technical assistance, foster the signing of contracts for the purchase of corn between producers' associations and big buyers (cattle raisers and flour producers). As a result of the program, yield per hectare and production volume have increased significantly, particularly in Tierras Bajas, where the producers with more resources and greater commercial orientation are located.

It is a process of modernization of the agro-industrial productive chain for corn, still underway, in which the state, private capital (large flour producers and cattle ranchers), and corn producers' associations participate. The incipient use of contracts has made it possible to surpass backward forms of commer-

cialization and fix sales volumes and prices in advance. It is not yet possible to come to any conclusions about the effectiveness of the contracts, but we can say that they have benefitted producers, particularly the largest ones, who now have the resources they need to guarantee the volume and quality demanded by the flour producers.

In addition to the FIRA program, other public programs support producers like the Programa de Apoyos Directos al Campo (PROCAMPO), which offers a direct subsidy per hectare planted, and Apoyos Directos al Ingreso Objetivo, which guarantees a minimum income by covering the difference between target price and price paid when the latter is lower. These programs have protected producers from price drops caused by globalization and NAFTA.

The household income survey carried out in the region indicates that agriculture continues to be the main productive activity. The corn-based economy has been strengthened despite the low agricultural prices caused by globalization. Public programs have been an important contribution to this. The income generated by agricultural activities or agricultural income (on-farm income plus agricultural wages) represents 61% of the average total income of households in the Tierras Bajas. Off-farm income, made up of non-agricultural wages and income derived from self-employment, came to 24% of family income.

Agricultural income in the Santa Marta Mountains is slightly less important, representing 44% of total income, due to the area's poorer natural resources. Here, off-farm income contributes 38% of household income. This kind of income is important in both areas, but, in contrast with other regions more linked to industrial-urban poles of growth, non-agricultural activities are carried out within the region itself.

Despite the incipient productive modernization, increased production, and higher public spending in the region, the poverty level continues to be high. The survey reveals that 35.8% of inhabitants of the areas studied live in extreme poverty. This level of rural poverty is higher than the national average, which, in the same year came to 31.8% of Mexico's rural inhabitants.

To make a more detailed analysis of poverty levels, we have divided the population surveyed into quintiles by income and compared the average income of each with that of the three poverty lines stipulated by Coneval (see Table 4). All the individuals in the households belonging to the first three quintiles suffer from some kind of poverty, and those of the fourth quintile are practically on the threshold of poverty. Only one-fifth of the population, the best off, clearly

escapes poverty. The depth of poverty of quintile is noteworthy: incomes here cover only about 45% of the cost of the basic food basket. Only in the third quintile does extreme poverty disappear.

TABLE 4  
*Sotavento: Distribution of households by income quintile*  
(in current pesos)

<i>Item</i> <i>Quintiles</i> <i>320 households</i>	<i>Net monthly</i> <i>household</i> <i>income</i>	<i>Net monthly</i> <i>income per</i> <i>person</i>	<i>Net monthly</i> <i>income per</i> <i>person/Food</i> <i>poverty line</i> <i>(Mex\$665.32)</i>	<i>Net monthly</i> <i>income per</i> <i>person/Capacity</i> <i>poverty line</i> <i>(Mex\$786.61)</i>	<i>Net monthly</i> <i>income per</i> <i>person/</i> <i>“Patrimonial”</i> <i>Poverty Line</i> <i>(Mex\$1 207.29)</i>
Total	\$5 110.30	\$1 135.62	1.71	1.44	0.94
Q1 Mex\$506 to Mex\$1 918	\$1 334.62	\$296.58	0.45	0.38	0.25
Q2 Mex\$1 919 to Mex\$3 029	\$2 516.46	\$559.21	0.84	0.71	0.46
Q3 Mex\$3 030 to Mex\$4 350	\$3 672.10	\$816.02	1.23	1.04	0.68
Q4 Mex\$4 351 to Mex\$7 249	\$5 749.48	\$1 277.66	1.92	1.62	1.06
Q5 Mex\$7 250 to Mex\$42 630	\$12 278.85	\$2 728.63	4.1	3.47	2.26

Source: *Encuesta Rural Struc.* World Bank/FLACSO (2008).

Since the mid-1990s, rural public policy in Mexico has been characterized to a large extent by a series of anti-poverty programs. In the region in question, the social program with the greatest impact is Oportunidades. Total public transfers, both in the form of support for production and of social subsidies, play a very important role in both areas of Sotavento as a source of income and an element that makes the local economy more dynamic. After production for sale and agricultural wages, they make up the third most important source of income and represent 15% of the households' total income. For the households in the poorest quintile, they are even more important because they represent 26% of income. This means that eliminating these transfers would have important negative social effects.

In summary, the regions studied in Sotavento show limited structural transformation. They are peasant regions with no endogenous forces that would

tend to produce rapid changes. Rather, they tend to reproduce existing social relations with gradual changes. Demographic growth is one of the most important internal factors that create tensions toward change. It is external factors that give these kinds of regions dynamism, since they are forced to adapt to changes in markets and public policies and to try to make the most of the new opportunities represented by agro-industry or the expansion of industrial-urban poles. These regions' relative geographical isolation determines that these factors' effects are not intense, so economic activity revolves around local activities. Non-agricultural, well-paying job opportunities are few and far between, which limits family income growth.

Jobs and income revolve around agriculture. Government programs targeting increasing productive capacity and protecting producers from adverse changes in the markets have important social impacts by boosting the economic surplus available in the area. However, they have not been sufficient to diminish poverty significantly, and this great social problem continues to exist. The main factors with an impact on poverty are the agrarian structure based on smallholdings, the scant development of social capital, the existence of backward forms of commercialization adverse to producers' interests, the lack of local jobs, and the drop in agricultural prices and wages.

Demographic growth raises internal tensions, which have to be resolved somehow. The growth in the number of young people increases pressure on the land and accelerates the atomization of plots by repeated inheritance, in addition to boosting the number of under-employed and unemployed youths who fruitlessly search for work in the local economy. The way out of this grave problem is turning out to be emigration to national centers offering jobs and, more recently, to the United States. The future of these regions and their young people seems to be in leaving their communities in the search for jobs outside them.

## CONCLUSIONS

Structural transformation in the regions studied is profoundly marked by a polarized, unequal agrarian structure, the legacy of Mexico' agrarian reform. Poverty levels and the unequal distribution of rural income are associated to this structural fact.

Economic liberalization and its policies have fostered the growth of the agricultural sub-sector that has the most resources and potential, but have mar-

ginalized the majority sub-sector in the countryside. In other words, they have not contributed to making the income of regional economic actors converge, nor in significantly reducing rural poverty; rather, they have reinforced the dual character of Mexican agriculture.

We can conclude that, given the opportunities and risks brought by modernization and economic liberalization, rural families have diversified their activities and sources of income to areas outside agriculture. The intensity and forms this process takes depend on the kind of structural transformation that occurs in the regions where they live.

Mexico is evolving—and will continue to evolve—in the framework of two transitions, the economic and the demographic. The economic transformation is marked by a slow-growing economy and an agriculture that, having not resolved the problem of food, becomes a limitation for the country's economic growth. The fact is that most of the poverty in Mexico is found in rural areas and requires very difficult solutions that public policy has not been able to provide.

The other transition is the demographic transition, which is in its last stage. Thus, the number of young people who enter the labor market will continue growing until reaching its high point in 2030. The economic pressure that this represents is enormous if we take into account the Mexican economy's limited capacity to create new jobs and its vulnerability *vis-à-vis* outside shocks. The way out from under this pressure has been emigration to the United States, to other parts of the country, and peasant families' engaging in multiple activities.

Structural transformation itself has made non-agricultural income the most important source of income in many rural areas of the country. International experience has shown that in countries of medium-level development, the growth of non-agricultural employment has been the best way of absorbing the rural population into better-paying jobs and reducing rural poverty, at the same time that the productivity of agricultural work rises.<sup>9</sup> This requires invigorating regional economic growth. If this goal is achieved, regions with limited natural resources would benefit the most, given their dependence on non-agricultural income.

---

<sup>9</sup> In China, once the positive anti-poverty effect of the initial rural reforms had worn off, the increase in investment and the growth in the number of non-agricultural jobs were the key factors in later advances in poverty reduction (Lin, 1992).

The growth of agriculture continues to be a priority, particularly for mainly agrarian regions. Increasing agricultural productivity and the rural economic surplus is a key part of that growth. Nevertheless, our case study in the peasant region of Sotavento points to the fact that it is not sufficient to improve rural well-being. It must be accompanied by advances in forms of commercialization, of strengthening of social organizations, of improving rural institutions, and of applying public agricultural extension programs.

Rural problems have become worse after more than two decades of slow growth in agriculture and the economy in many regions. It should come as no surprise that the most important escape valve has been emigration to the United States. The social costs of this path are no small matter. The costs of continuing to have such high poverty levels in the countryside and cities are even greater. This situation will continue if the kind of structural transformation Mexico has followed in recent decades is not substantially changed.

## REFERENCES

- Bairoch, P., 1973. Agriculture and the Industrial Revolution, 1700-1914. In: C.M. Cipolla, ed. *The Fontana Economic History of Europe: The Industrial Evolution*, vol. 3. London: Collins/Fontana.
- Hayami, J., 1988. *Japanese Agriculture under Siege. The Political Economy of Agricultural Policies*. New York: St Martin's Press.
- Johnston, B. F., and Kilby, P., 1975. *Agriculture and Structural Transformation: Economic Strategies in Late-Developing Countries*, New York: Oxford University Press.
- Lin, J.Y., 1992. Rural Reforms and Agricultural Growth in China. *American Economic Review*, 82(1).
- Losch, B., Freguin-Gresh, S., and White, E., 2011. *Structural Dimensions of Liberalization on Agriculture and Rural Development, A Cross-Regional Analysis on Rural Change*. [On line] Washington, D.C.: World Bank, Proyecto Rural Struc, Informe Final. Available at: <http://www.worldbank.org/afr/ruralstruc>.
- Moreno-Brid, J. C., and Ros, J., 2010. *Desarrollo y crecimiento en la economía mexicana. Una perspectiva histórica*. Mexico City: Fondo de Cultura Económica (FCE).
- Rello, F., and Saavedra, F., 2010. *Cambios estructurales de las economías rurales en la globalización*. [On line] Washington, D.C.: World Bank, Proyecto Rural Struc, Informe sobre México, 2a Fase. Available at: <http://www.worldbank.org/afr/ruralstruc>.
- Timmer, P.C., 1988. The Agricultural Transformation. In: H. Chenery and T.N. Srinivasan, eds., *Handbook of Development Economics*, vol. 1. Amsterdam: North Holland.

- , 2009. *A World without Agriculture, The Structural Transformation in Historical Perspective*. Washington, D.C.: The AEI Press.
- Tomich, T., Kilby, P., and Johnston, B., 1995. *Transforming Agrarian Economies: Opportunities Seized, Opportunities Missed*. Ithaca, New York: Cornell University Press.
- World Bank, 2008. *Informe sobre el Desarrollo Mundial, 2008. Agricultura para el desarrollo*. Washington, D.C.: World Bank.